



September 5, 2017

Hon. Kathleen H. Burgess
Secretary
New York State Public Service Commission
Three Empire State Plaza
Agency Building 3
Albany, NY 12223-1350

Re: Niagara Mohawk Power Corporation d/b/a National Grid – Part 102 Report
Gardenville-Erie 54/921 115 kV Maintenance Project
Case 17-T-_____

Dear Secretary Burgess:

Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”), pursuant to 16 NYCRR §102, submits for filing one CD-ROM containing a full electronic version of the *Gardenville-Erie 54/921 115 kV Maintenance Project* Part 102 Report. Upon request, National Grid will deliver one or more hard copies of the Application to DPS Staff.

The project is located in the Town of Cheektowaga in Erie County, NY.

Thank you for your attention to this matter.

Very truly yours,

Lisa M. Zafonte

Lisa M. Zafonte
Senior Counsel
Attorney for the Applicant,
Niagara Mohawk Power Corporation d/b/a National Grid

Enclosures

cc: Rachel Gibson, National Grid (via email without enclosures)
Mary Bitka, National Grid (via email without enclosures)

**Niagara Mohawk Power Corporation
d/b/a National Grid
Gardenville-Erie 54/921
115kV Reconductoring Project**

**Report to the State of New York
Public Service Commission
on the Installation of
Non-Article VII Electric Transmission Facilities
Pursuant to 16 NYCRR 102**

Prepared by:

nationalgrid

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Syracuse, New York 13202

September 2017

Contact Information

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1.0 INTRODUCTION, PROJECT OVERVIEW AND NEED

Niagara Mohawk Power Corporation d/b/a National Grid (“National Grid”) proposes to replace two structures (193 and 193-1), along with approximately 1,800 feet of conductor (the “Project”) on the T1230 Gardenville-Erie 54/921 115kV transmission line (“Line”) in order to improve the thermal rating of the Line. During studies of the system in Western NY, the Gardenville – Erie 54/921 line was observed to overload during contingency conditions. The Project is necessary because the existing copper and aluminum conductor between Structures 193 and 196 is not sufficient and will be replaced with 636 ACSR “Grosbeak” conductor, a heavier conductor; hence, the need to replace Structures 193 and 193-1 to structurally support the new conductor.

The Line is located between the National Grid Gardenville Substation in West Seneca, NY and the Depew Substation (owned by NYSEG) in Cheektowaga, NY. It is approximately 7.3 miles in length and traverses the Towns of West Seneca and Cheektowaga in Erie County, NY (*see* Figure 1). The Line, built in 1942, is supported on a combination of double circuit flexible steel structures, square based lattice towers and wood pole structures. The Line occupies its present location on a Right-of-Way (ROW) which is owned in fee. Structure 193 is a steel flex tower suspension tap structure and structure 193-1 is a 3 pole wood deadend tap structure (*see* Appendix A), both installed in approximately 1942 and both located in the Town of Cheektowaga, NY.

2.0 PROJECT INFORMATION

2.1 Project Purpose and Scope of Work

A review of the Project was conducted in accordance with the criteria specified in 16 NYCRR Part 102. The Project requires preparation of this Part 102 Report because: the Line has a voltage of 65 kV or higher; the proposed work is on a line where the total circuit length extends one mile or longer, even though the work to be performed is on a much shorter segment; and the proposed work involves the replacement of two (2) structures (Nos. 193 and 193-1) requiring an increase in structure height by more than 10 feet (*see* Table 1). *See* 16 NYCRR §102.2(a)(2). The increase in structure height is required in order to achieve the required conductor clearances for safety clearances over Norfolk and Southern railroad tracks.

The Project activities will take place completely within this portion of the existing ROW, which National Grid owns in fee. National Grid is actively coordinating the reconductoring activities, as described herein, with the underlying railroads. All required railroad permits (i.e., work and occupancy permits) will be obtained prior to the initiation of construction activities.

National Grid screened for the potential impact to priority areas specified in Section 102.3(a) via the use of desktop GIS analysis, agency consultation and field verification, and as indicated in Appendix B (the Part 102 Checklist), the Project will not impact the

priority areas specified in Section 102.3(a); therefore, an advantage-disadvantage analysis is not required as part of this Report. Discussion of “other areas” triggered under Section 102.3(b) is presented in Section 3.0 of this Report.

Construction access will be from Ludwig Avenue and existing access road on the ROW to access structures No. 193 and 193-1. Minor brush mowing to access structures No. 193 and 193-1 may be required and wood timber mats/work pads will be used to access the structures from the ROW access road. New structure 193 will be offset sixty (60) feet to the north from the existing location and new structure 193-1 will be offset sixteen (16) feet to the east from the existing location to permit construction of the new structures prior to removal of the existing structures. Erosion and sediment control measures (e.g., silt fence or filter socks) will be used as appropriate to minimize stormwater discharge.

2.2 Project Area/Setting

Figure 2 identifies the general location of the area that requires installation of replacement Structure Nos. 193 and 193-1. The Gardenville-Erie 54/921 transmission line shares a right-of-way with several other transmission lines, as shown in Figure 3, with voltages ranging from 60kV to 230kV.

As shown on Figure 2, none of the structures associated with this Project are located in agricultural districts, as determined from New York State Department of Agriculture & Markets’ agricultural data. A detailed aerial map is presented in Figure 3 and shows each structure to be worked on, structure access, along with nearby mapped National Wetlands Inventory (NWI) wetlands.

2.3 Transmission Facility

The existing Gardenville-Erie 54/921 115 kV line is supported on a combination of double circuit flexible steel structures, square based lattice towers and wood pole structures. National Grid is replacing steel suspension flex Structure 193 with a double circuit steel pole (with a caisson foundation). The foundation size is 6 feet (diameter) x 16 feet (depth) for Structure 193. Proposed insulators are porcelain disc 30K gray. The shieldwire consists of 2-3/8” CW between structures 193 and 194 and 2-3/8” H.S. ST between structures 194 and 196, but will not be replaced (*see* Appendix C for details on structures, conductor, insulators and shieldwire). The grounding specification is presented in Appendix D. Table 1 identifies the proposed structure type at each work location.

The existing conductor is 636 kcmil ACSR “Kingbird,” 636 kcmil AAC “Orchid” and 400 CU 19S. Reconductoring from Structure 193-1 to 196 (three wires) will consist of 636 kcmil ACSR “Grosbeak.” This span of new conductor will neither increase the overall rating of the line nor change the voltages along the line. Consequently, National Grid does not intend to conduct an electric and magnetic field strength study as part of this project.

Erosion and sediment control measures for all work on ROW shall be in compliance with National Grid USA "Environmental Guidance No. EG-303NY; Natural Resource Protection-ROW Access, Maintenance and Construction Best Management Practices." Best management practices (*e.g.*, silt fencing, timber mats, etc.) will be employed, as needed, while working on this Project and the area will be restored to original conditions.

3.0 ENVIRONMENTAL RESOURCES EVALUATION

National Grid screened for the presence of §102.3(b) classes of areas via the use of desktop GIS analysis, agency consultation and field verification. Additionally, the Town of Cheektowaga online zoning map was used to identify the subject parcel zoning information, as presented in Table 1. In support of the analysis of the criteria in 16 NYCRR Part 102, §§102.3(b)(1)-(13), and as shown in Appendix B (the Part 102 Checklist), the following areas were specifically reviewed:

Threatened and Endangered Species

The New York State Department of Environmental Conservation ("NYSDEC") Natural Heritage Program (NHP) newly upgraded online Environmental Resource Mapper was reviewed for potential impacts to rare plants and rare animals. The database did not return any identification of rare or state-listed animals or plants or significant natural communities located in the Project vicinity.

The USFWS Information, Planning, and Conservation System (IPaC) was consulted to determine the potential for occurrences of federally-listed species (*see* Appendix E). According to the USFWS species list, the Northern Long-Eared Bat (*myotis septentrionalis*) (NLEB) is listed as a threatened species, and also has the potential to occur in the Project vicinity. However, there are no trees located in the ROW of the existing transmission line that could provide summer roosting habitat for the NLEB. Therefore, this Project will have no impact upon NLEB that may be in the vicinity. Several migratory birds have been identified as potentially being affected by activities in the project vicinity; all are listed as "bird of conservation concern" as defined by the 1988 amendment to the Fish and Wildlife Conservation Act that mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1972." The proposed replacement structures are not expected to result in the take of any migratory birds nor impact the habitat of any of the bird species listed in Appendix E.

Historic Resources

The New York State Office of Parks, Recreation and Historic Preservation's (OPRHP) Division for Historic Preservation Cultural Resource Information System (CRIS) database was reviewed for the presence of any buildings, sites or districts listed on the State or National Registers of Historic Places ("NRHP") located within one mile of the Project corridor. None were identified. Additionally, via CRIS, a consultation request was sent via the New York State Historic Preservation Office ("SHPO") Cultural

Resources Information System (CRIS) requesting an opinion as to the Project's potential impact on cultural resources. On July 20th, 2017, OPRHP notified National Grid that the Project will have no impact on archaeological and/or historic resources (*see* Appendix E).

In addition to the aforementioned review, and as identified in the Part 102 checklist (*see* Appendix B), existing light industrial and commercial areas (e.g., industrial parks, shopping centers, office building complexes) §102.3(b)(5) required additional analysis.

Wetlands

The structure replacement activities will take place only in mapped NWI wetlands. Timber mats will be used during the construction activities. Minor permanent impact to wetlands is expected (i.e., less than 0.1 acres); however, all areas will be restored to original contours and mulched as necessary to promote re-vegetation. National Grid will self-authorize the use of US Army Corps of Engineer's Nationwide Permit #12 (Utility Line Activities) for this project.

3.1 Existing Light Industrial and Commercial Areas

As indicated in the Part 102 checklist §102.3(b)(5), structure Nos. 193 and 193-1 are located in an area zoned as "M2 – General Manufacturing District" by the Town of Cheektowaga. Minimal vegetation mowing may be required to install Structures 193 and 193-1. Access to the structure will be from an existing paved access road and matting to each structure. All work will be completed using National Grid's best management practices to minimize any potential impacts to the area.

TABLES

**Table 1. Summary of Proposed Work for Gardenville-Erie 54/921
Structure Replacement/Reconductoring Project**

| Structure(s) to be Worked | Existing Structure Type | Town | Parcel Zoning Code | Existing Structure Height Above Ground (feet) | Type of Work | Proposed Structure Height Above Ground (feet) | Proposed Structure Type |
|--|---|-------------|-----------------------------------|--|-------------------------|--|---|
| 193 | Steel flex suspension / Appendix A | Cheektowaga | M2 | 67 | Replacement | 86* | Steel single pole double circuit double shieldwire /Appendix C |
| 193-1 | Three pole wood deadend / Appendix A | Cheektowaga | M2 | 38.5/38.5/38.5 | Replacement | 70/56.5/43 | Three wood pole terminal structure/Appendix C |

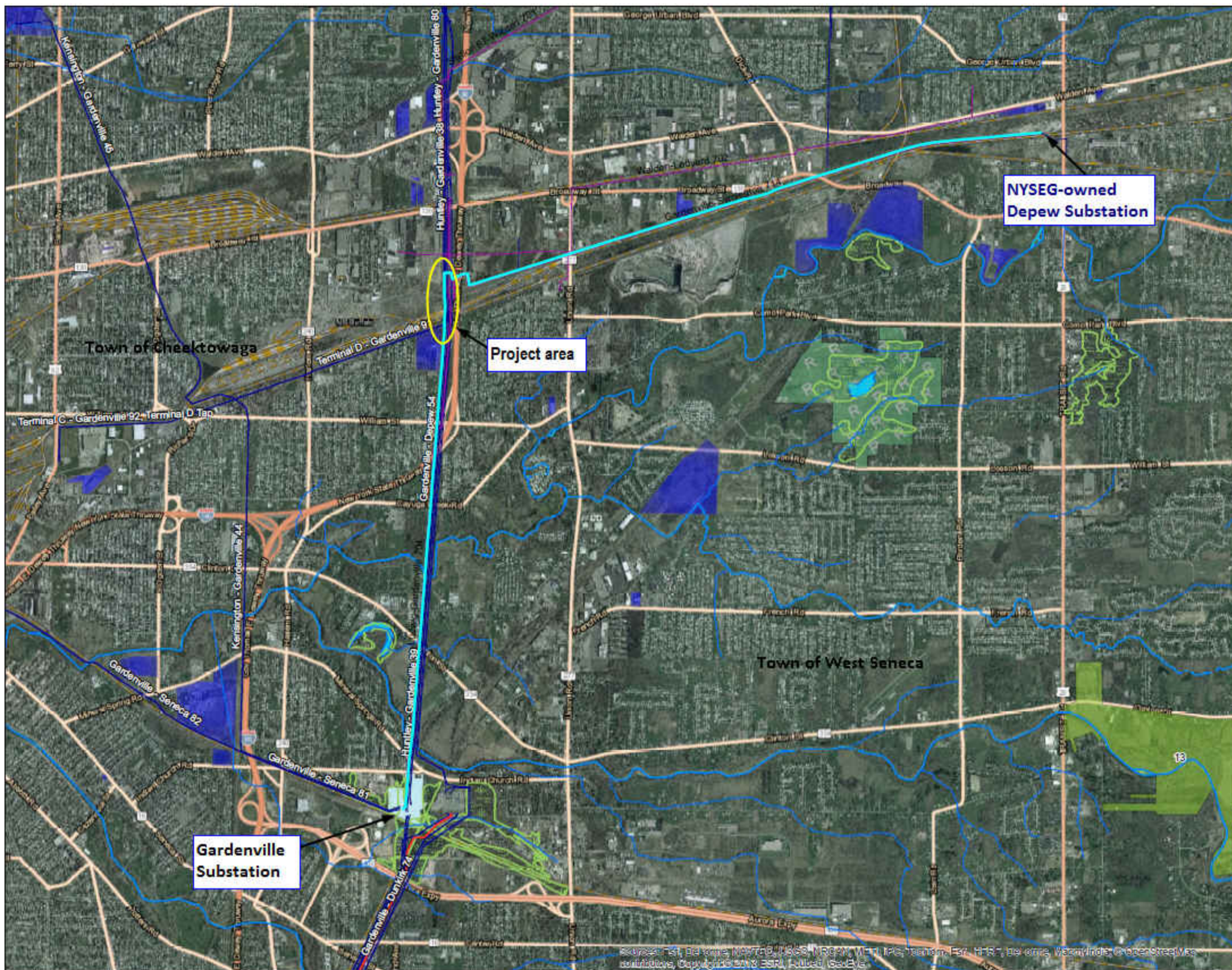
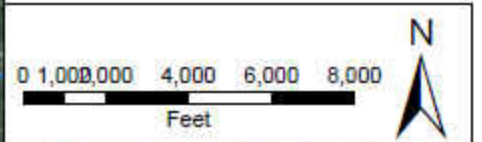
*- Includes an additional foot because the structures will sit on concrete foundation.

FIGURES

Figure 1 - Project Location Map

Legend

- Transmission Line
- Streams
- NYS Listed Hazardous Waste Site
- Agricultural Districts
- NYSDEC Lands
- Freshwater Wetlands



Source: Esri, DeLorme, NAVTEQ, USGS, Intermap, INRA, IGN, Swire, Fugro, AeroGRID, IGN, Esri, DeLorme, Garmin, Bing, Mapbox, OpenStreetMap contributors, Copernicus, CNRS, IGN, GEBCO, GeoEye

APPENDIX A

Existing Structure Detail

Str. 193 (Flex).
Tap str.

Existing Structure 193-1

APPENDIX B

Part 102 Checklist

Part 102 Checklist

Project Name: Gardenville-Erie 54-921 115kV Reconductoring Project

Date: August 2017

| Triggers: | Yes | No |
|--|------------|-----------|
| Are additional rights-of-way required? | | x |
| Are any additional structures to be added to the line? | | x |
| Will the resulting structure carry more than two circuits? | | x |
| Will there be any additional vegetative rights or trimming required? | | x |
| Will the height of the tower increase by 10' or more? | x | |

**Project Data Form
Installation of Non-Article VII Electric Transmission Facilities**

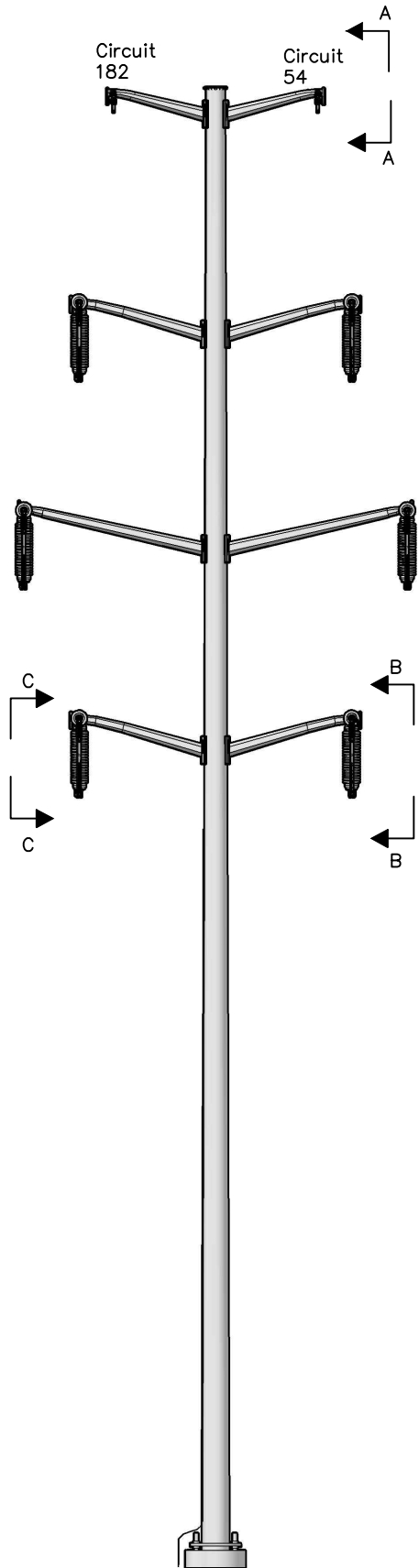
102.3 Classes of Areas

| (A) For transmission lines in the following areas, the analysis required by Section 102.4 of this Part must be included in the report of the proposed construction: | Will | Will Not |
|---|-------------|-----------------|
| 1 National and state parks, preserves, reservations, landmarks and monuments formally so designated and acquired for their natural, scenic or cultural value by appropriate state and federal agencies. (Included would be historic landmarks, national landmarks, national monuments and trails, and wild and scenic rivers). | | x |
| 2 Historic sites formally so designated by national or state agencies but without acquisition of rights or ownership sufficient for the purpose of preservation. | | x |
| 3 Central business districts in cities and villages. | | x |
| 4 Developed and partly developed residential areas with an existing density of one or more dwelling units per acre, as shown on approved subdivision maps, occupying a minimum contiguous area of 20 acres, all or a portion of which would be traversed by the proposed transmission facility right-of-way. | | x |
| (B) Other Areas for which reports, but without the analysis required by Section 102.4 of this Part, are required: | Will | Will Not |
| 1 Areas of outstanding natural or scenic value which are preserved by non-profit private agencies but which have not been formally so designated by national or state agencies. | | x |
| 2 Areas of outstanding cultural value (e.g., attractive pastoral scenes, locations of noteworthy architectural and/or social import both within and outside specific sites) that have been formally designated by the appropriate governmental authority. | | x |
| 3 Existing local (city, town, village and county) parks and open space areas that have been formally established by governmental or private authorities. | | x |
| 4 Public and semi-public facilities such as cemeteries, educational, correctional and medical facilities and military installations. | | x |
| 5 Existing light industrial and commercial areas (e.g., industrial parks, shopping centers, office building complexes). | x | |
| 6 Partially developed residential areas where the subdivision will have an eventual population density of one or more dwelling units per acre, as shown on approved subdivision maps, comprising a minimum contiguous area of 20 acres or a portion of which is traversed by the proposed transmission facility right-of-way. | | x |
| 7 Areas of outstanding cultural value (e.g., attractive pastoral scenes, locations of noteworthy architectural and/or social import both within and outside specific sites that lend attractiveness to a neighborhood or community) that have not been formally designated by a governmental or private authority. | | x |
| 8 Residential areas with less population density than those specified in preceding categories. | | x |
| 9 Planned and zoned undeveloped light industrial, commercial and residential areas. | | x |
| 10 Managed woodlands (e.g., commercial and other productive forests). | | x |
| 11 Agricultural districts established in accordance with Chapter 25-AA of the Agriculture and Markets Law, and other farmlands. | | x |
| 12 Existing and planned heavy industrial areas. | | x |
| 13 Woods and open lands other than those included within areas specified in a priority area above. | | x |

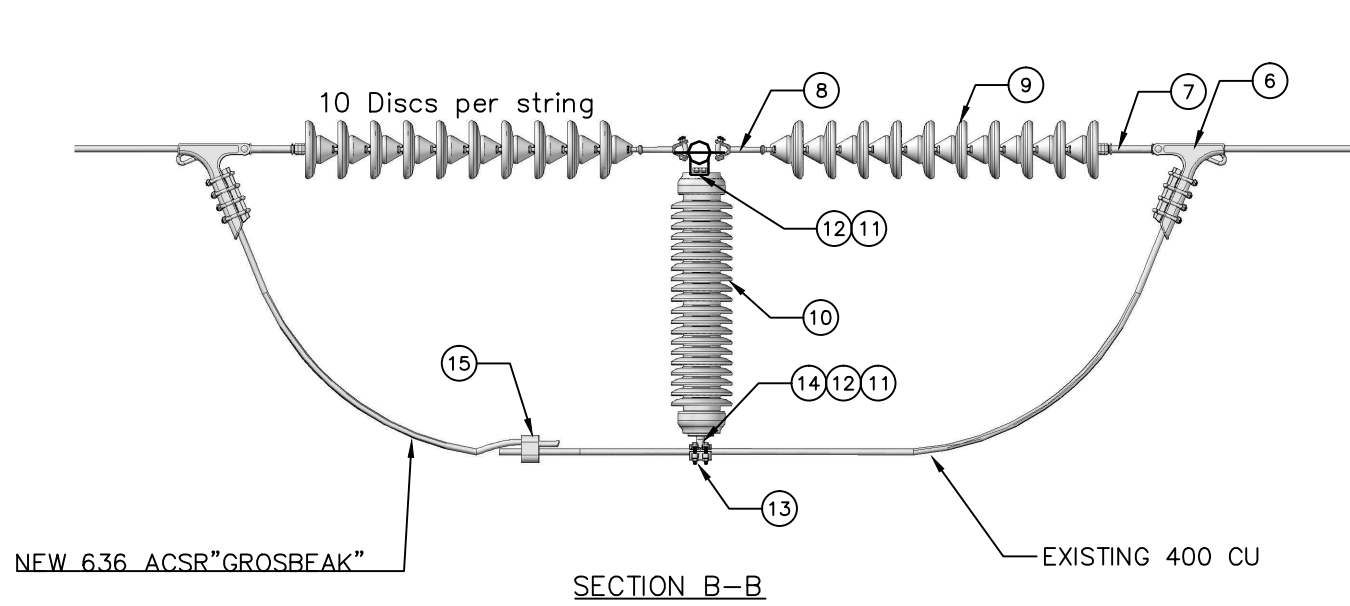
APPENDIX C

Structure, Insulator and Foundation Details

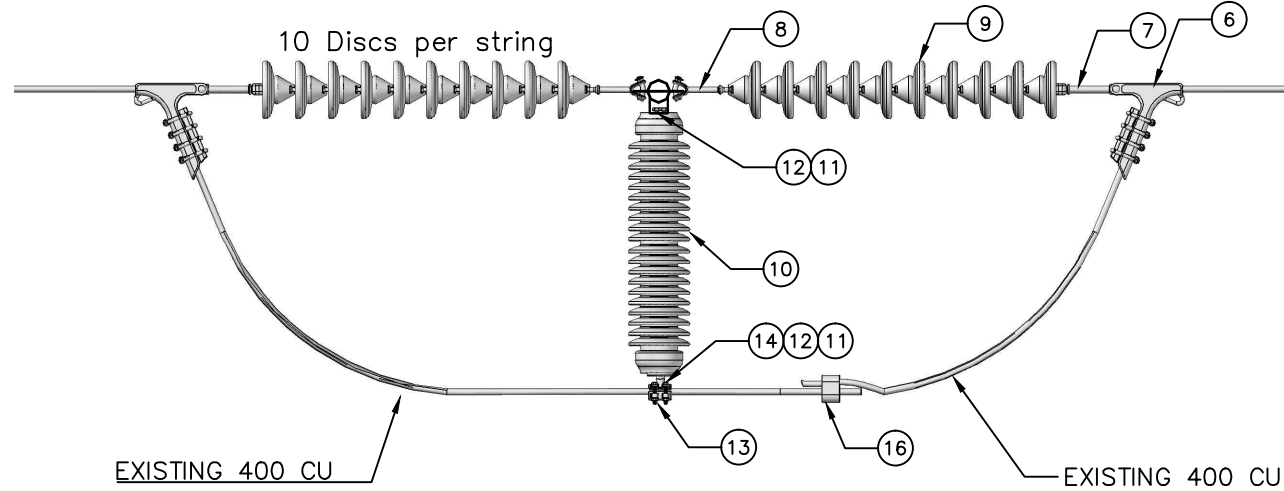
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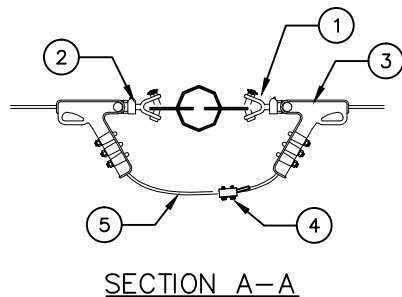
FRONT ELEVATION



SECTION B-B



SECTION C-C



SECTION A-A

WORK DONE AS SHOWN

NOTE CHANGES ON PRINT OR SKETCH

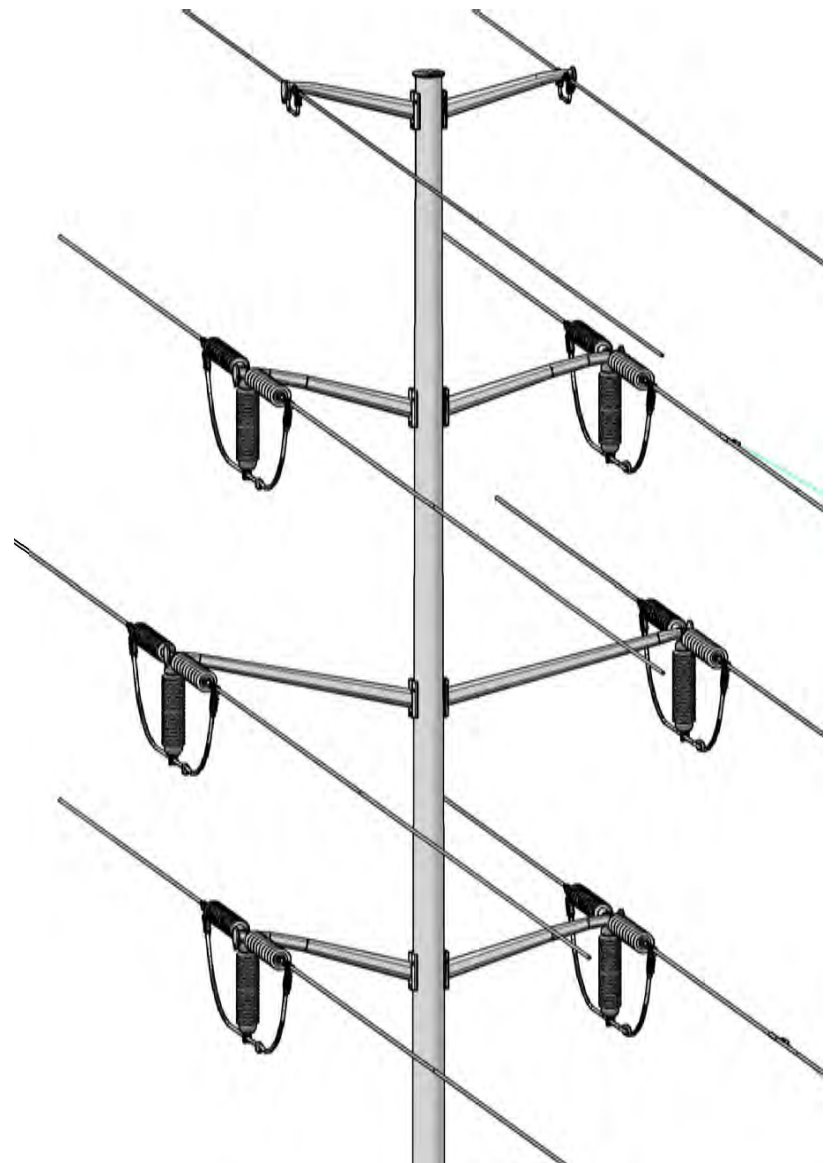
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TEST FOREMAN _____ DATE _____

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- NOTES:
- SEE SPECIFICATION SP.06.01.301 AND DRAWING SP.01.301.201 FOR SIGNAGE REQUIREMENTS.
 - SEE SPECIFICATION SP.06.01.301 AND DRAWING SP.06.01.301.101 FOR GROUNDING DETAILS.

| MATERIAL LIST | | | |
|---------------|-------|---|---------|
| TAG | QUAN. | DESCRIPTION | S&P ID |
| 1 | 4 | Y-CLEVIS BALL | 93'2426 |
| 2 | 4 | SOCKET EYE | 93'564E |
| 3 | 4 | CLAMP, QUADRANT, GALVANIZED, 0.20"-0.55" DIAMETER RANGE | 93073E3 |
| 4 | 2 | PARALLEL GROOVE CLAMP | 93066E |
| 5 | - | EXISTING S-E WIRE | FE USE |
| 6 | 12 | DEADEND QUADRANT CLAMP, ALL V. NUM. 0.70"-1.42" | 93008E4 |
| 7 | 12 | HOT LINE SOCKET EYE, 3/4" EYE | 93069E4 |
| 8 | 12 | HOT LINE Y-CLEVIS BALL | 93'2243 |
| 9 | 120 | INSULATOR, PORCELAIN, DISC, 30K GRAY | 93'1544 |
| 10 | 6 | INSULATOR, PORCELAIN, STATION POST, 115KV GRAY | 93'1962 |
| 11 | 48 | WASHER, GALVANIZED ROUND, 5/8" | 93064E5 |
| 12 | 48 | BOLT MACHINE 5/8" | 930'41E |
| 13 | 6 | STATION POST CLAMP SINGLE | 9320'6E |
| 14 | 24 | WASHER, GALVANIZED FLAT ROUND, 5/8" | 930'66E |
| 15 | 2 | IMPACT CONNECTOR 400 CU TO 400 CU | PO |
| 16 | 2 | IMPACT CONNECTOR 636 ACSR "GROSBREAK" TO 400 CU | PO |

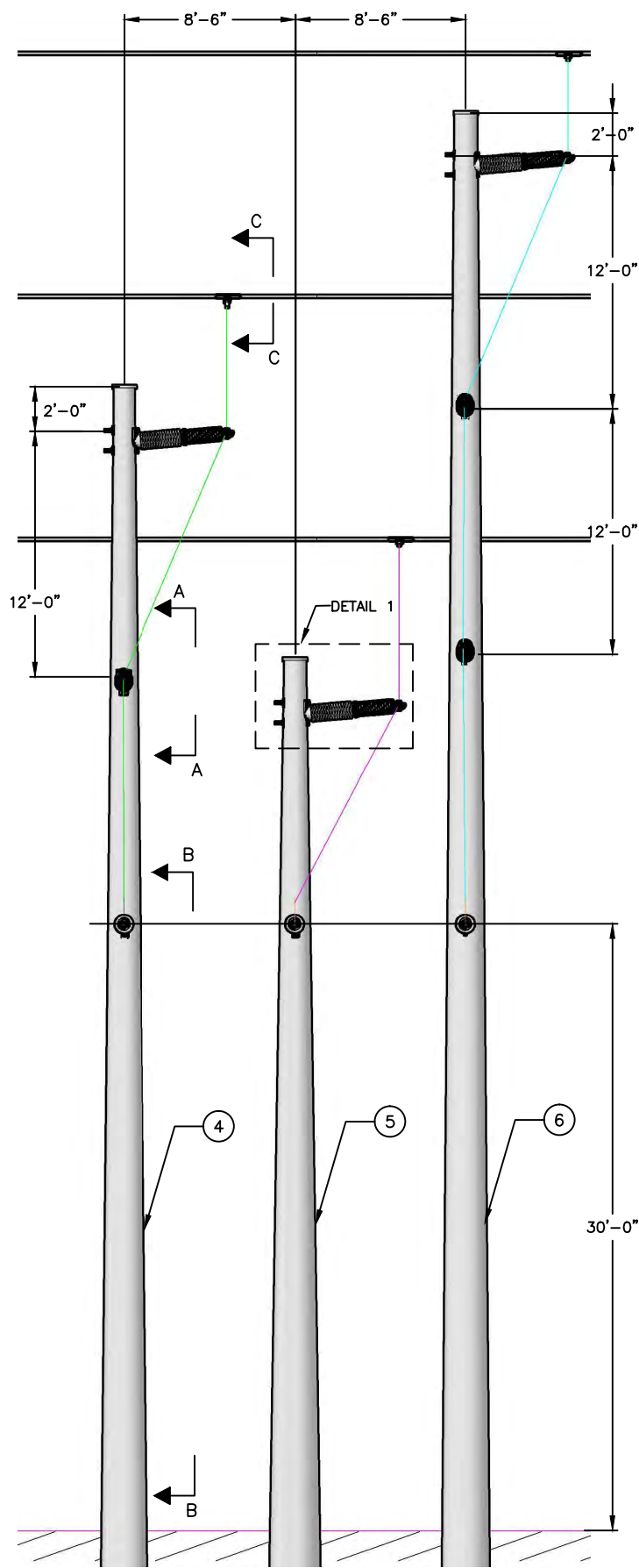


ISOMETRIC VIEW

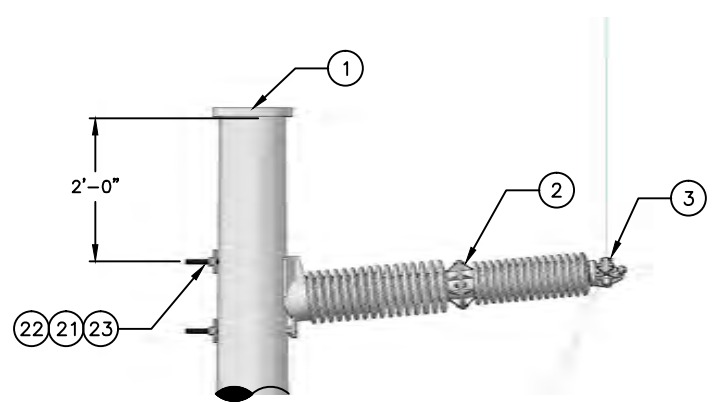
INCHES ON ORIGINAL

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|--|--|--|--------------------------------|--------------------------------|
| <p>nationalgrid</p> | <p>12/2016 INITIAL RELEASE</p> | <p>12/2016 INITIAL RELEASE</p> | <p>12/2016 INITIAL RELEASE</p> | <p>12/2016 INITIAL RELEASE</p> |
| <p>Gardenville-Erie 54-921 115kv Transmission Line DOUBLE CIRCUIT DOUBLE SHIELDWIRE (D2) STRUCTURE 193 REPLACEMENT STRUCTURE DRAWING</p> | <p>ORIGINAL NAME DATE DRAWN CHECKED XW 04/2016 REVIEWED APPROVED</p> | <p>VERSION 1 2 3 4 5 6 7</p> | <p>DATE 12/15/2016</p> | <p>1</p> |

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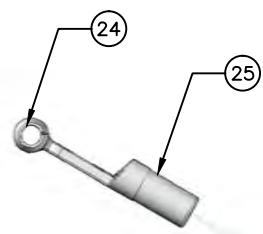


FRONT ELEVATION

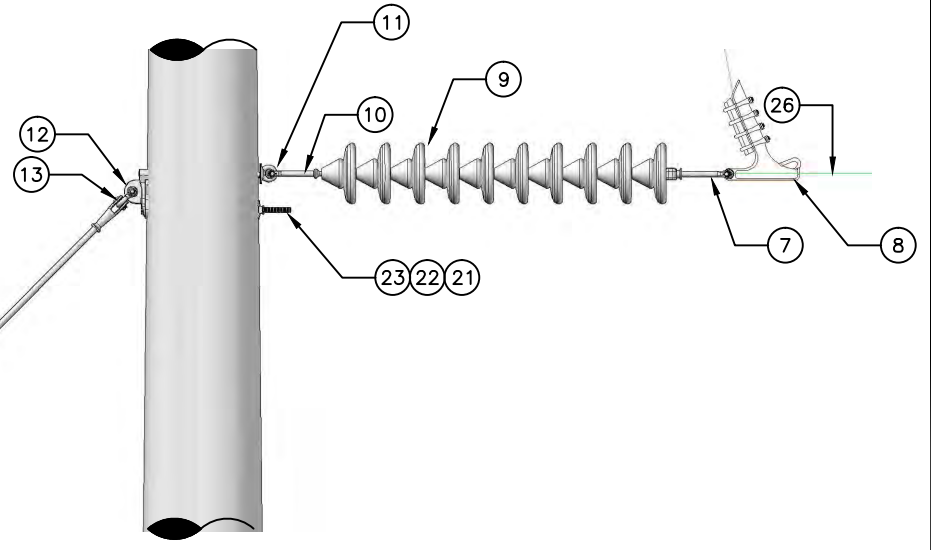
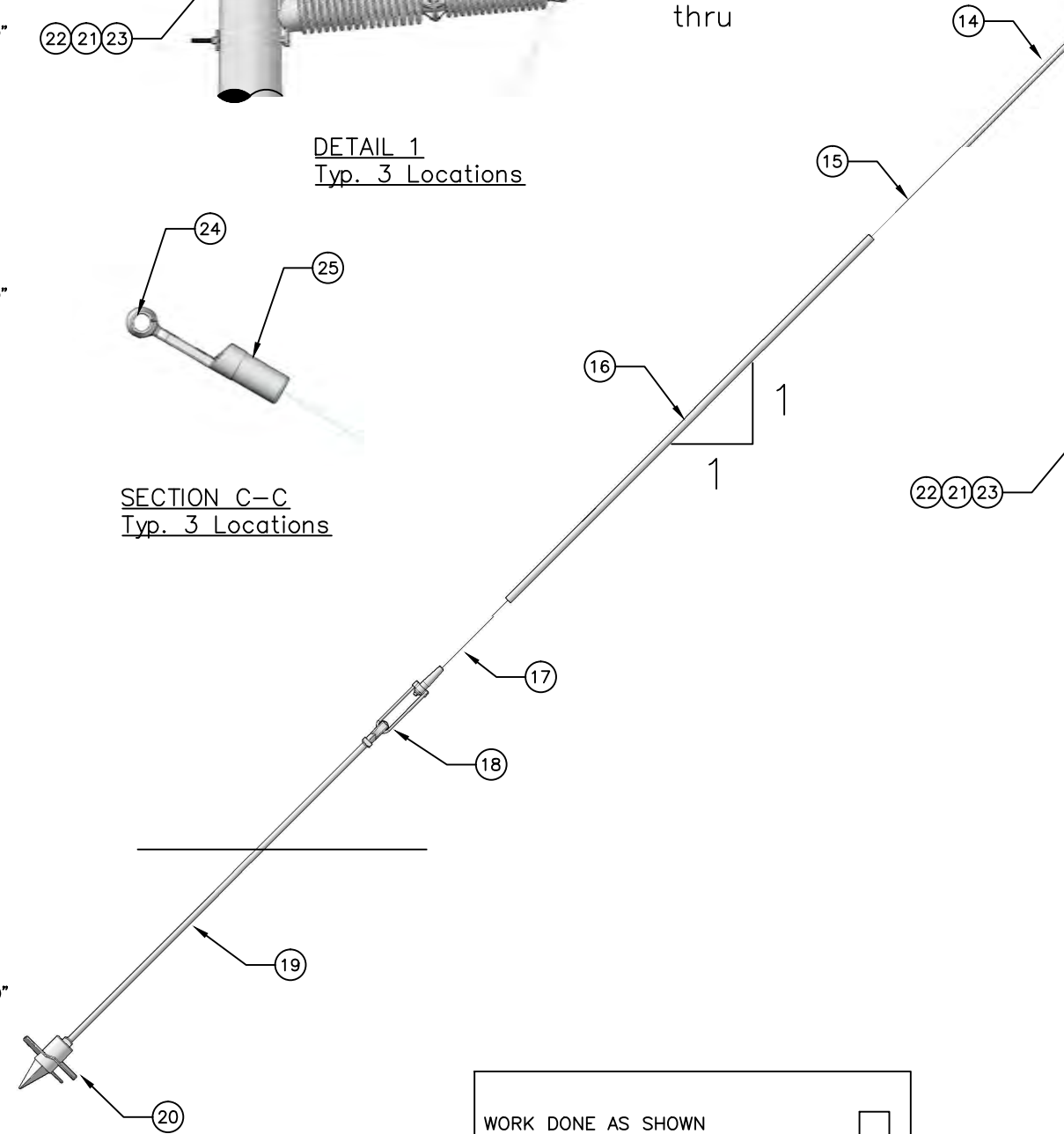


DETAIL 1
Typ. 3 Locations

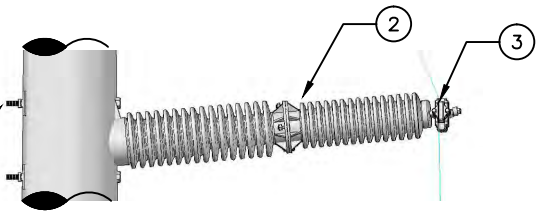
Adjust Angle for Trunnion Clamp And Post insulator to run wire smoothly thru



SECTION C-C
Typ. 3 Locations



SECTION B-B
Typ. 3 Locations



SECTION A-A
Typ. 3 Locations

Adjust Angle for Trunnion Clamp And Post insulator to run wire smoothly thru

WORK DONE AS SHOWN

NOTE CHANGES ON PRINT OR SKETCH

FOREMAN _____ DATE _____

TEST FOREMAN _____ DATE _____

THIS MUST BE FILLED IN BY FOREMAN

| MATERIAL LIST | | | |
|---------------|------|---|---------|
| TAG | QUAN | DESCRIPTION | SAP ID |
| 1 | 3 | POLE TOPPER | 9307970 |
| 2 | 6 | 115KV HORIZONTAL LINE POST W/HARDWARE, TWO PIECE BOLTED | 9314600 |
| 3 | 6 | TRUNNION CLAMPS, ALUMINUM, DIA 0.5-1.06" | 9320247 |
| 4 | 1 | WOOD POLE, 50FT CLASS 2 | 9310619 |
| 5 | 1 | WOOD POLE, 65FT CLASS 1 | 9311703 |
| 6 | 1 | WOOD POLE, 80FT CLASS 1 | 9311669 |
| 7 | 3 | HOTLINE SOCKET Y-CLEVIS | 9305140 |
| 8 | 3 | DEADEEND, QUADRANT CLAMP, ALUMINUM 0.7'-1.42" | 9320354 |
| 9 | 30 | 20KIPS BROWN DISC INSULATOR, CLASS 52-3 | 9311629 |
| 10 | 3 | HOTLINE Y-CLEVIS BALL | 9312243 |
| 11 | 3 | SHOULD EYE BOLT 3/4", 16" LG | 9320636 |
| 12 | 3 | POLE EYE PLATE, 30KIPS RATING, 13/16" DIA. HOLE | 9307178 |
| 13 | 3 | ANCHOR SHACKLE, 30KIPS RATING | 9307405 |
| 14 | 3 | 54" 30k STRAIN INSULATOR | 9313898 |
| 15 | 3 | GUY GRIP FOR 7#9 ALUMOWELD | 9314657 |
| 16 | 3 | YELLOW FIBERGLASS GUY MARKER | 9313584 |
| 17 | 200 | 7#9 ALUMOWELD | 9314658 |
| 18 | 3 | UNIVERSAL AUTOMATIC AND ADJUSTABLE | 9313523 |
| 19 | 3 | ANCHOR ROD, 1" x 8', GALV | 9319496 |
| 20 | 3 | ANCHOR HELIX ASSEMBLY, 8" DIA FOR 3/4" & 1" RODS | 9313466 |
| 21 | 15 | GALVANIZED MACHINE BOLT WITH NUT, DIA 3/4" | 9319786 |
| 22 | 15 | 4"x4" SQ. CURVED WASHER FOR 3/4" DIA BOLT | 9320428 |
| 23 | 15 | 3/4" LOCKNUT | 9322023 |
| 24 | 3 | TERMINAL PAD, ACSR KINGBIRD | PO |
| 25 | 3 | TEE CONNECTOR, ACSR GROSBEAK | PO |
| 26 | | 636 ACSR "KINGBIRD" | REUSE |

NOTES:
1. SEE SPECIFICATION SP.06.01.301 AND DRAWING SP.01.301.201 FOR SIGNAGE REQUIREMENTS.

INCHES ON ORIGINAL

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nationalgrid

Gardenville-Erie 54-921
115kv Transmission Line
3 WOOD POLE TERM STRUCTURE
STRUCTURE 193-1 REPLACEMENT
STRUCTURE DRAWING

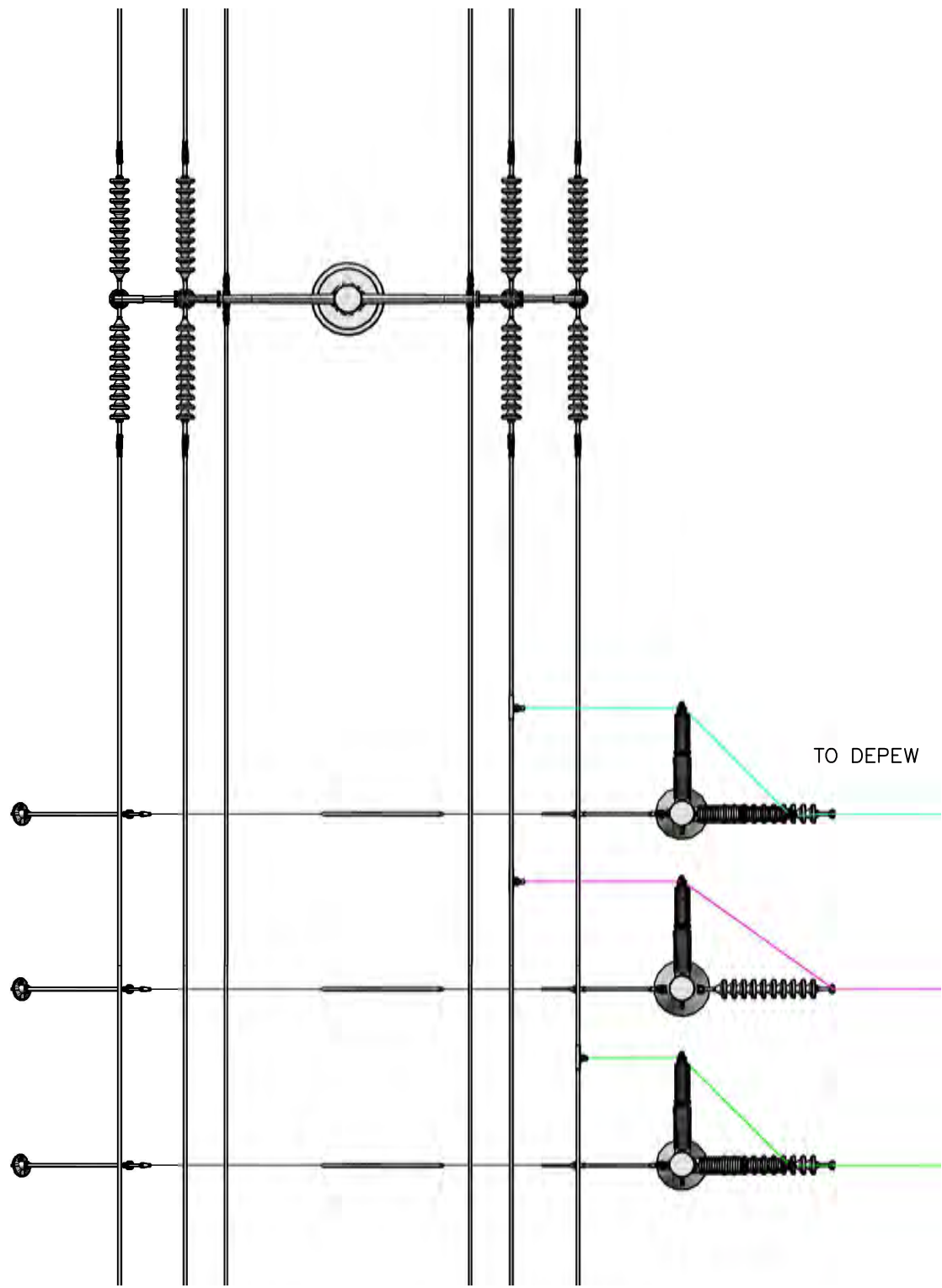
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| 1 | 04/20/16 | XW | |
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ORIGINAL NAME DATE
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APPROVED _____

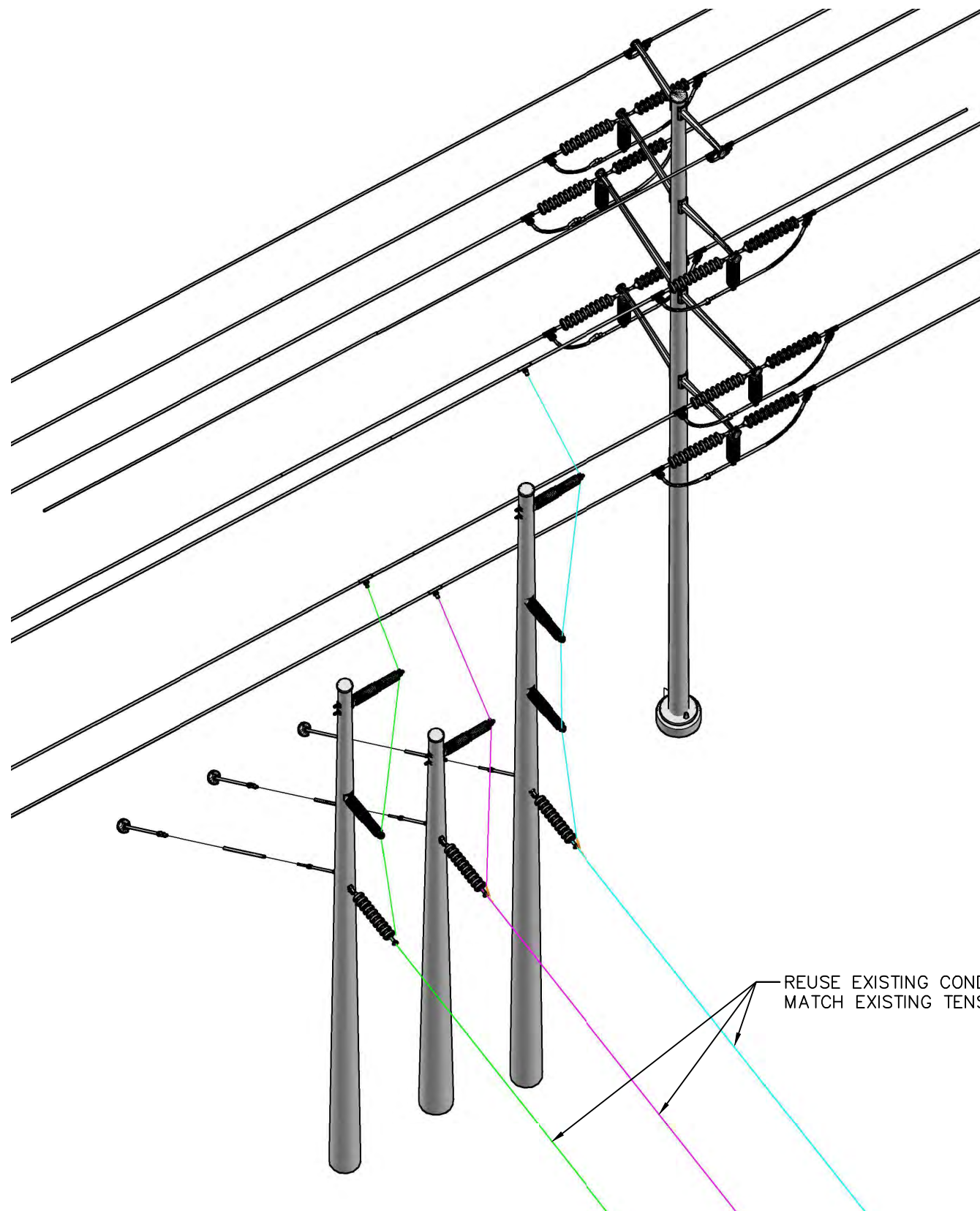
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182 MAIN LINE

54 TAP TO WALDEN



TOP VIEW

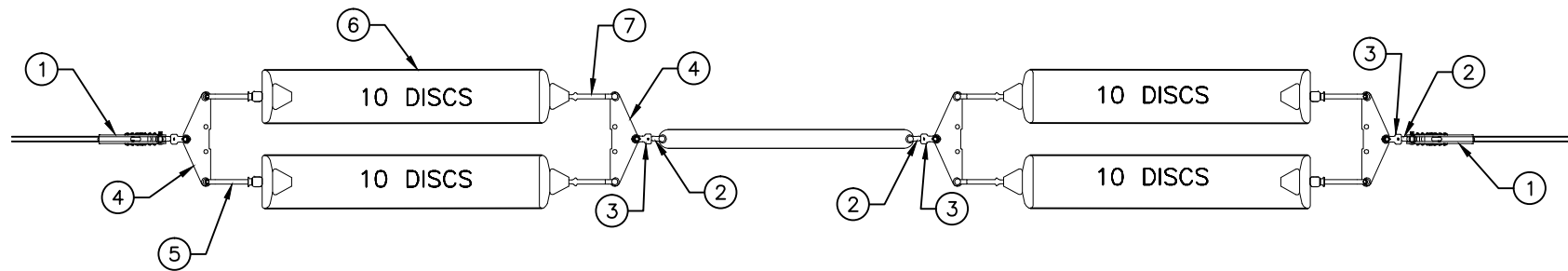


ISOMETRIC VIEW

INCHES ON ORIGINAL

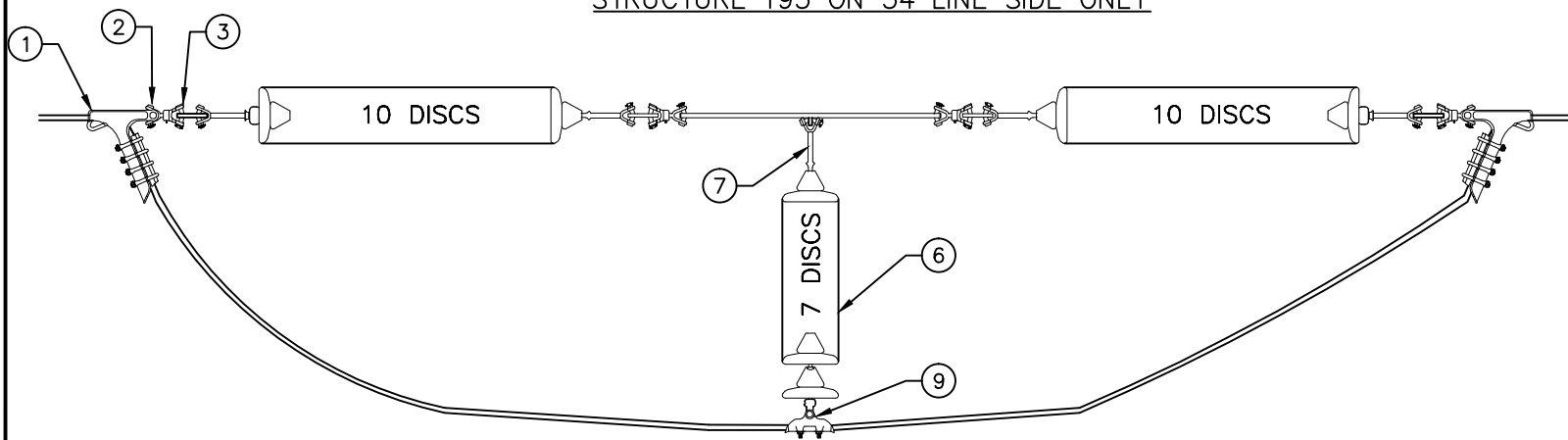
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|--|--|---------------|------|----------|---------|----------------------|--|----------------|--|---------|--|
| Gardenville-Erie 54-921 115kV Transmission Line | | nationalgrid | | VER DATE | | REVISION DESCRIPTION | | DOWN CHG APPVD | | VERSION | |
| TAPPING STRUCTURE DRAWING | | ORIGINAL NAME | DATE | 1 | 04/2016 | INITIAL RELEASE | | XW | | 1 | |
| | | DRAWN | | 2 | | | | | | | |
| | | CHECKED | | 3 | | | | | | | |
| | | REVIEWED | XW | 4 | 04/2016 | | | | | | |
| | | APPROVED | | 5 | | | | | | | |
| | | | | 6 | | | | | | | |
| | | | | 7 | | | | | | | |

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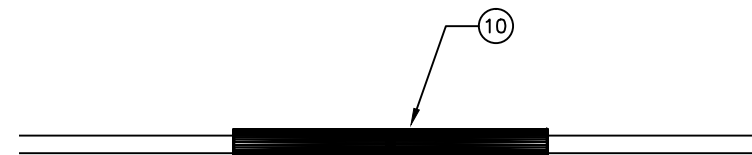
PLAN VIEW

STRUCTURE 195 ON 54 LINE SIDE ONLY



FRONT VIEW

STRUCTURE 195 ON 54 LINE SIDE ONLY

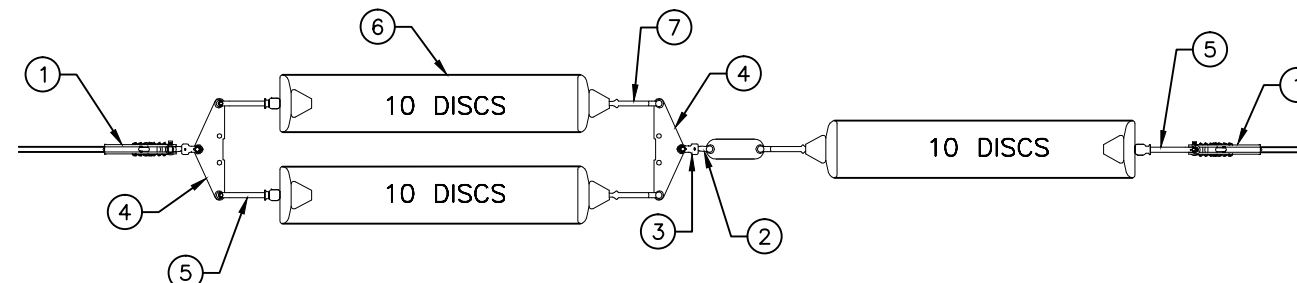


SHIELDWIRE SPLICE FOR EXISTING STRUCTURE 193 ON 54 & 182 LINES

| | |
|-----------------------------------|--------------------------|
| WORK DONE AS SHOWN | <input type="checkbox"/> |
| NOTE CHANGES ON PRINT OR SKETCH | <input type="checkbox"/> |
| FOREMAN _____ DATE _____ | |
| TEST FOREMAN _____ DATE _____ | |
| THIS MUST BE FILLED IN BY FOREMAN | |

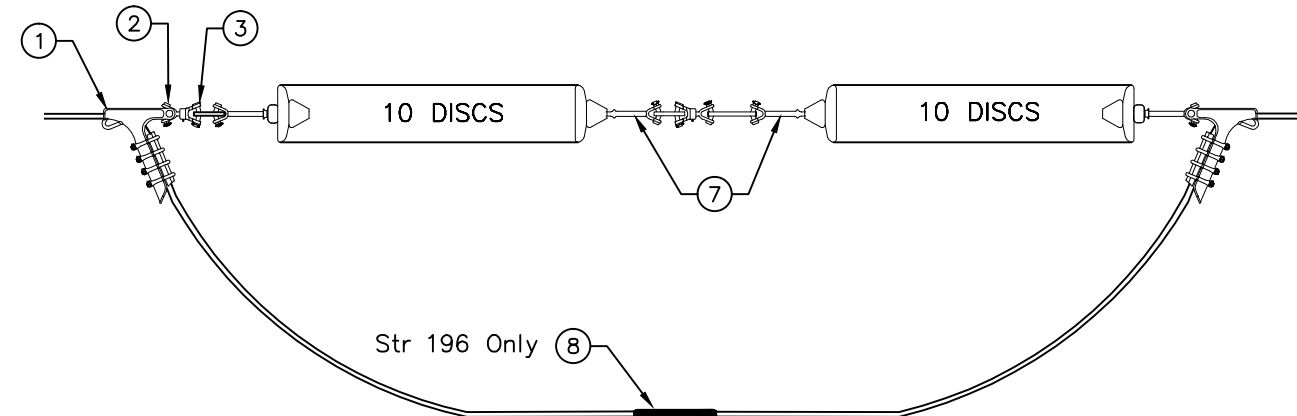
| MATERIAL LIST | | | |
|---------------|------|--|-----------|
| TAG | QUAN | DESCRIPTION | PART CODE |
| 1 | 18 | CLAMP, QUADRANT, DE, ALUMINUM, 0.70"-1.42" | 9320354 |
| 2 | 24 | Y-CLEVIS BALL | 9312426 |
| 3 | 24 | SOCKET, Y-CLEVIS | 9307402 |
| 4 | 24 | YOKE PLATE 18" | 9308342 |
| 5 | 30 | HOTLINE SOCKET Y-CLEVIS | 9305140 |
| 6 | 321 | INSULATOR, PORCELAIN DISK, 30K GRAY | 9311544 |
| 7 | 33 | HOTLINE Y-CLEVIS BALL | 9312243 |
| 8 | 3 | SPLICE, JUMPER LOOP | 9312764 |
| 9 | 3 | CLAMP, BOLTED SUSP, ALUMINUM, 0.75"-1.18" | 9312478 |
| 10 | 2 | FULL TENSION SPLICE FOR 7#8 COPPERWELD | 9313374 |

NOTE:
MATERIAL QUANTITIES LISTED ARE TOTALS FOR ALL THREE PHASES ON EXISTING STRUCTURES 193, 194, 195 & 196.



PLAN VIEW

STRUCTURE 194 & 196 ON 54 LINE SIDE ONLY

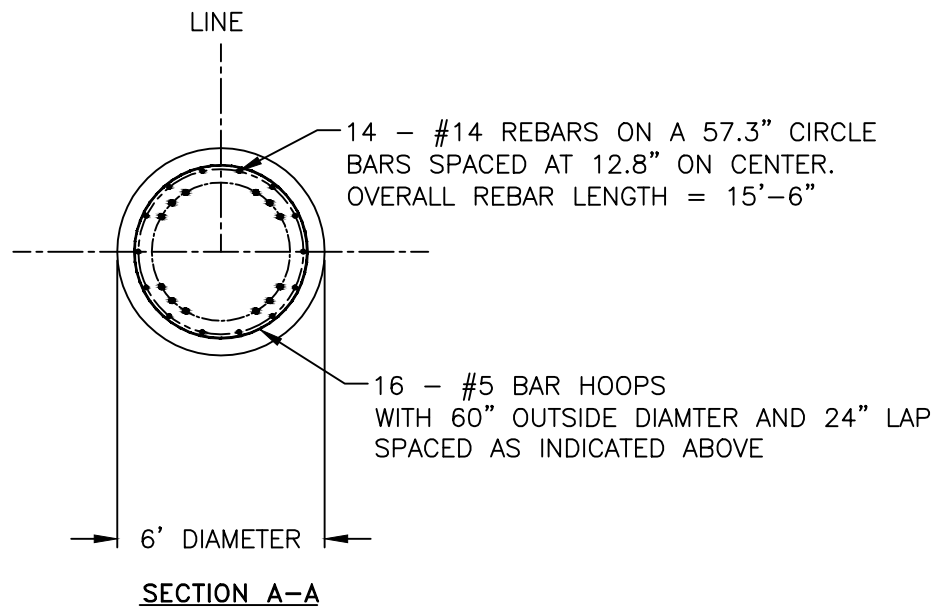
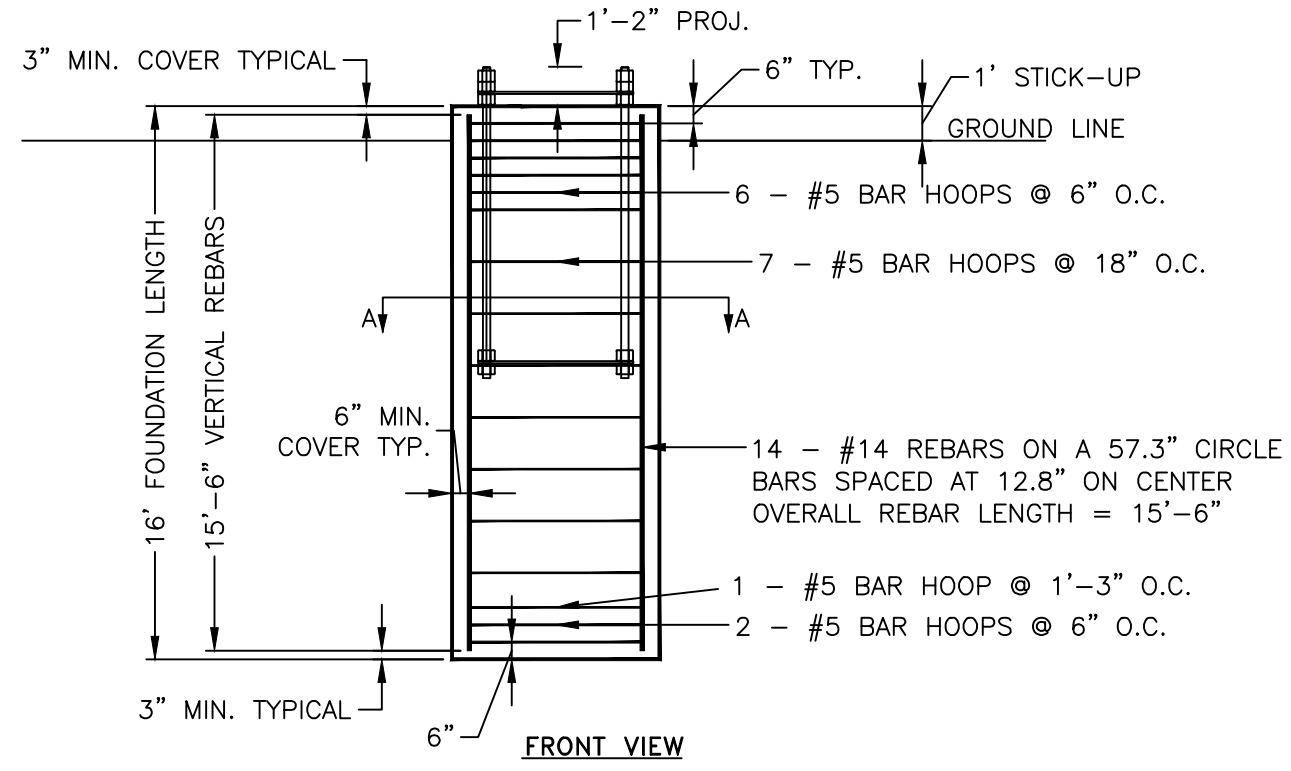


FRONT VIEW

STRUCTURE 194 & 196 ON 54 LINE SIDE ONLY

INCHES ON ORIGINAL

| | | | | | |
|---|------|---------|-----------------|-----|---|
| nationalgrid Gardenville-Erie 54-921 115kV Transmission Line HARDWARE DRAWING FOR EXISTING STRUCTURES 193, 194, 195, 196 | DATE | 10/2015 | INITIAL RELEASE | VER | 1 |
| | DATE | | | VER | 2 |
| | DATE | | | VER | 3 |
| | DATE | | | VER | 4 |
| | DATE | | | VER | 5 |
| | DATE | | | VER | 6 |
| | DATE | | | VER | 7 |
| ORIGINAL NAME | | | | | |
| DRAWN | | | | | |
| CHECKED | | | | | |
| REVIEWED | | | | | |
| APPROVED | | | | | |



ANCHOR BOLT INFORMATION

NUMBER OF BOLTS IN CLUSTER: 12
 ANCHOR BOLT CIRCLE DIAMETER: 48"
 ANCHOR BOLT LENGTH: 9'-0"
 MANUFACTURE DRAWING NO. : 18011-P01-ABT

FOUNDATION INFORMATION

FOUNDATION LENGTH: 16'-0' (INCLUDING STICK-UP)
 FOUNDATION DIAMETER: 6'-0"

REINFORCING CAGE INFORMATION

VERTICAL REBARS: 14-#14 BARS @ 12.8" O.C.
 LENGTH = 15'-6"
 BAR CIRCLE DIAMETER = 57.3"
 HOOPS: 16-#5 BAR HOOPS
 DIAMETER = 60" O.D.
 LAP = 24"

CONCRETE REQUIREMENTS

16.8 CUBIC YARDS OF CONCRETE ARE REQUIRED FOR THIS FOUNDATION. THIS CORRESPOND TO THE FOUNDATION'S "NEAT LINE", AND DOES NOT INCLUDE ANY EXTRA CONCRETE THAT MAY BE REQUIRED AS BACKFILL AROUND THE CASING.

THIS QUANTITY IS PROVIDED FOR ESTIMATING PURPOSE ONLY, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE AMOUNT OF CONCRETE NEEDED.

NOTES:

1. COMPRESSIVE STRENGTH OF CONCRETE TO BE 4000 PSI AT 28 DAYS.
2. AGGREGATE SHALL CONFORM TO ASTM C33, CEMENT SHALL CONFORM TO ASTM C150, TYPE II. CONCRETE SHALL BE PROTECTED FROM THE LOSS OF MOISTURE FOR A MINIMUM OF 7 DAYS.
3. ALL REINFORCING STEEL MUST MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
4. FORMED CONCRETE SURFACES WHICH WILL BE EXPOSED ABOVE GRADE SHALL BE CLEANED AND RUBBED TO PRODUCE A SMOOTH, UNIFORM SURFACE FREE OF MARKS, VOIDS, SURFACE GLAZE AND DISCOLORATION.
5. ALL CONCRETE SHALL BE PLACED IN A SINGLE CONTINUOUS OPERATION TO PRODUCE A MONOLITHIC FOUNDATION.
6. PRE-ASSEMBLED ANCHOR BOLT CAGES SHALL BE FURNISHED BY THE STRUCTURE FABRICATOR. CONTRACTOR SHALL VERIFY ANCHOR BOLT PROJECTION AND ORIENTATION OF ANCHOR BOLT CAGE WITH FABRICATOR'S DRAWING BEFORE CONSTRUCTION. SEE STEEL POLE MANUFACTURER DRAWINGS FOR ORIENTATION OF ANCHOR BOLT CLUSTER.
7. ALL GROUNDING INCLUDING ANCHOR BOLTS PER SP.06.01.301.101
8. ALL CLEARANCES FROM FACE OF FOUNDATION TO BARS AND HOOPS ARE CLEAR SPACING (I.E. DISTANCE FROM FACE OF FOUNDATION TO EDGE OF BAR)
9. THE STRUCTURE IS NOT DESIGNED FOR TERMINAL DEADEND CONDITION.

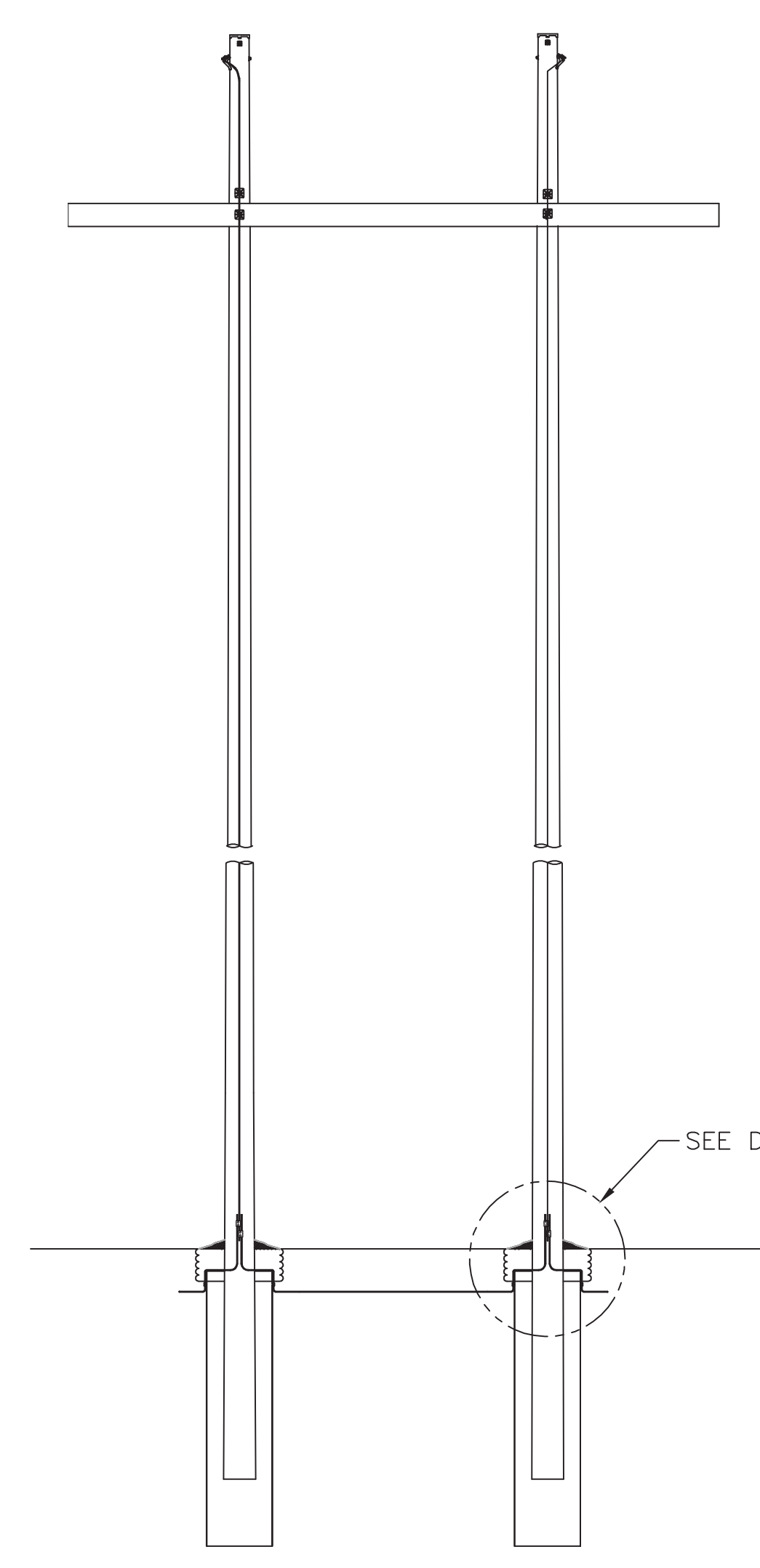
| | |
|-----------------------------------|--------------------------|
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| NOTE CHANGES ON PRINT OR SKETCH | <input type="checkbox"/> |
| FOREMAN _____ | DATE _____ |
| TEST FOREMAN _____ | DATE _____ |
| THIS MUST BE FILLED IN BY FOREMAN | |

| | | | | | | |
|---|------|-------------|----|------------|------|-------------|
| REVISION | DATE | DESCRIPTION | BY | CHECKED BY | DATE | APPROVED BY |
| | | | | | | |
| | | | | | | |
| Gardenville-Erie 54-921 FOUNDATION DRAWING REINFORCED CONCRETE FOUNDATION STR. 195 | | | | | | |

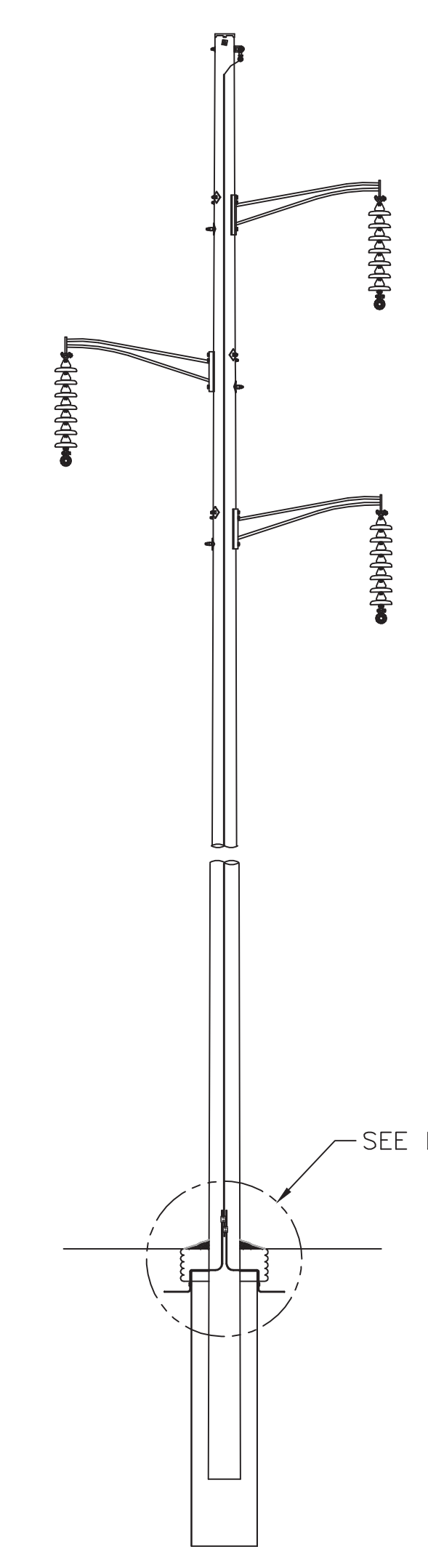
APPENDIX D

Grounding Specification

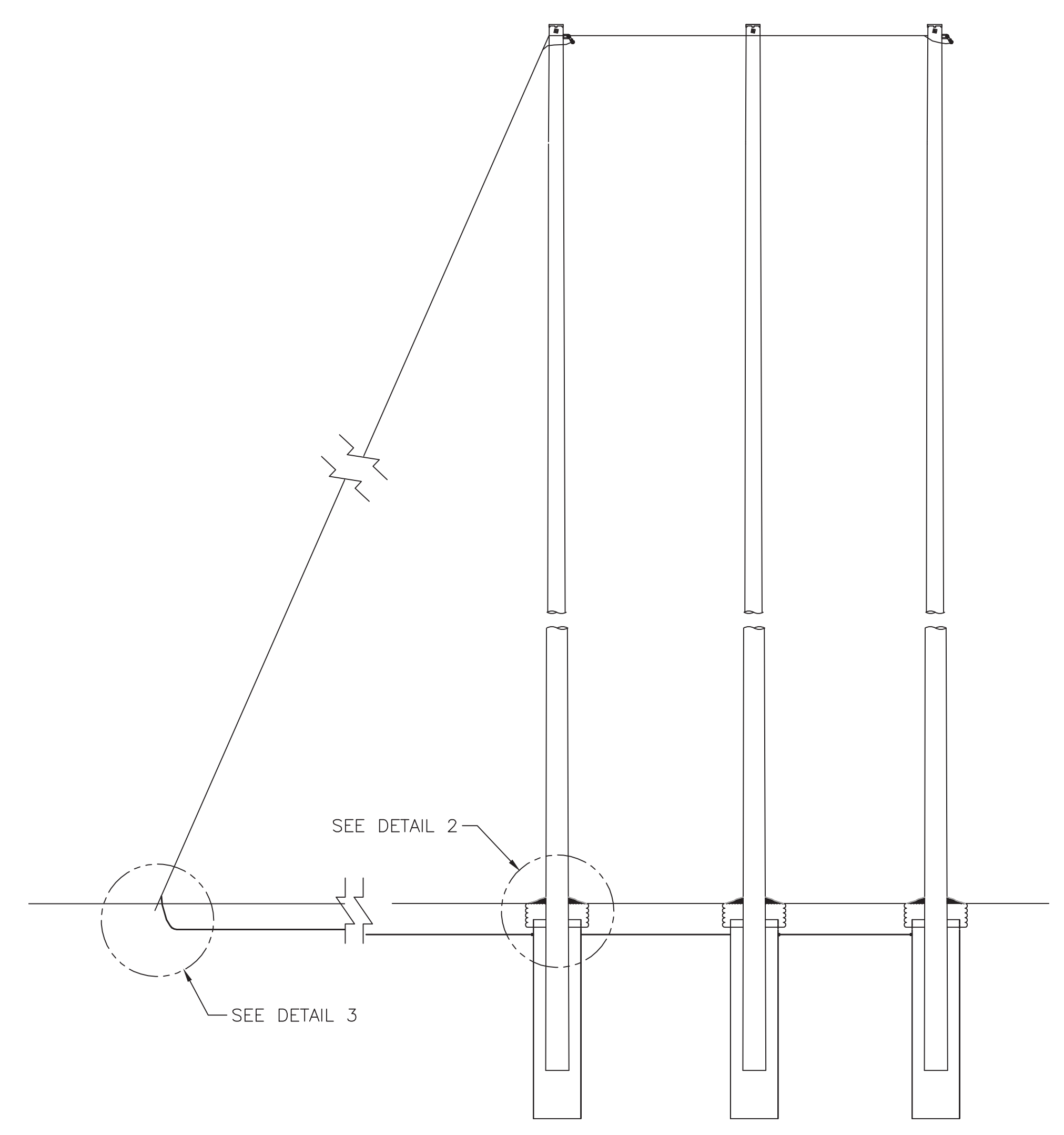
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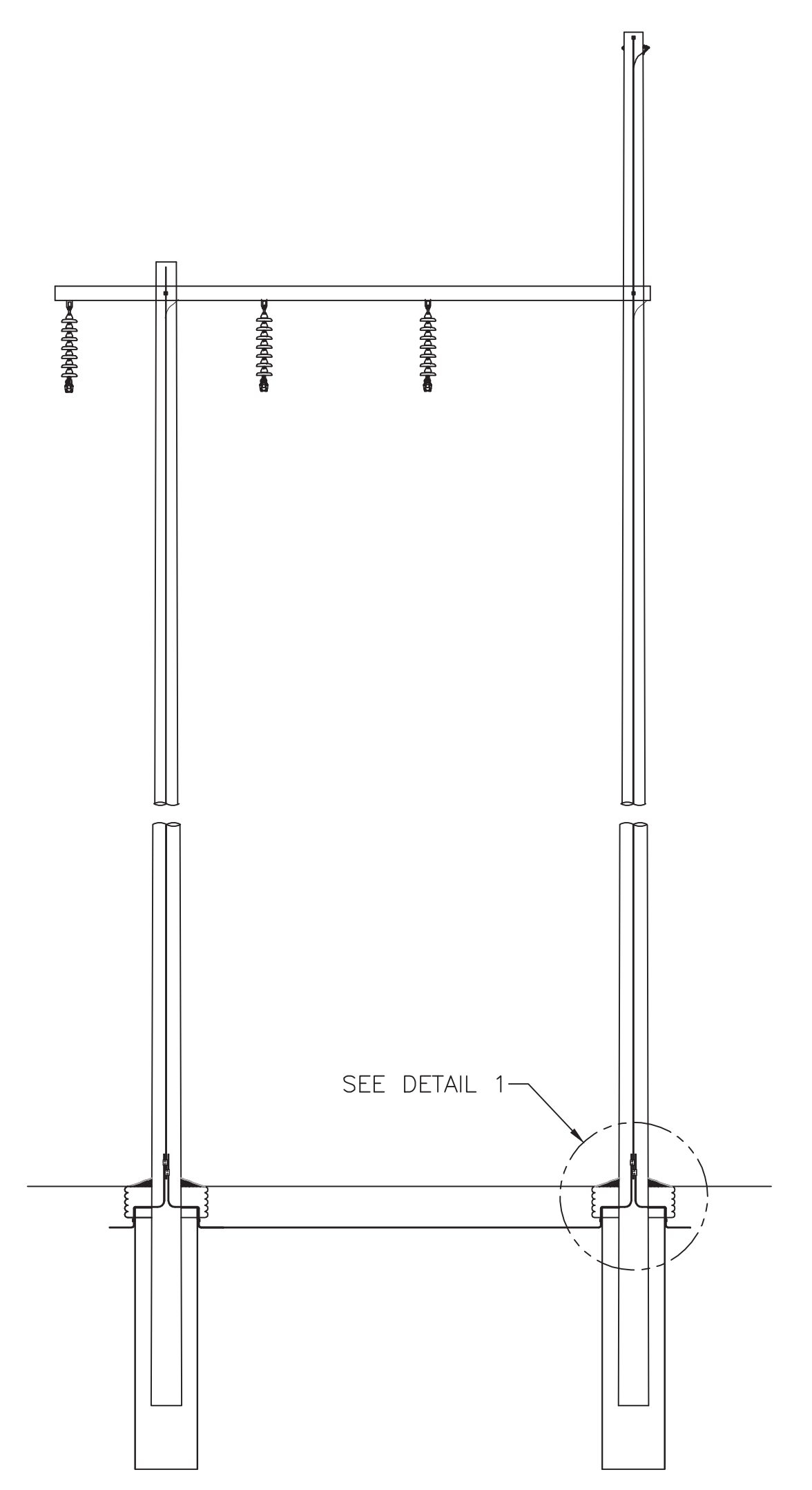
H-FRAME STRUCTURE



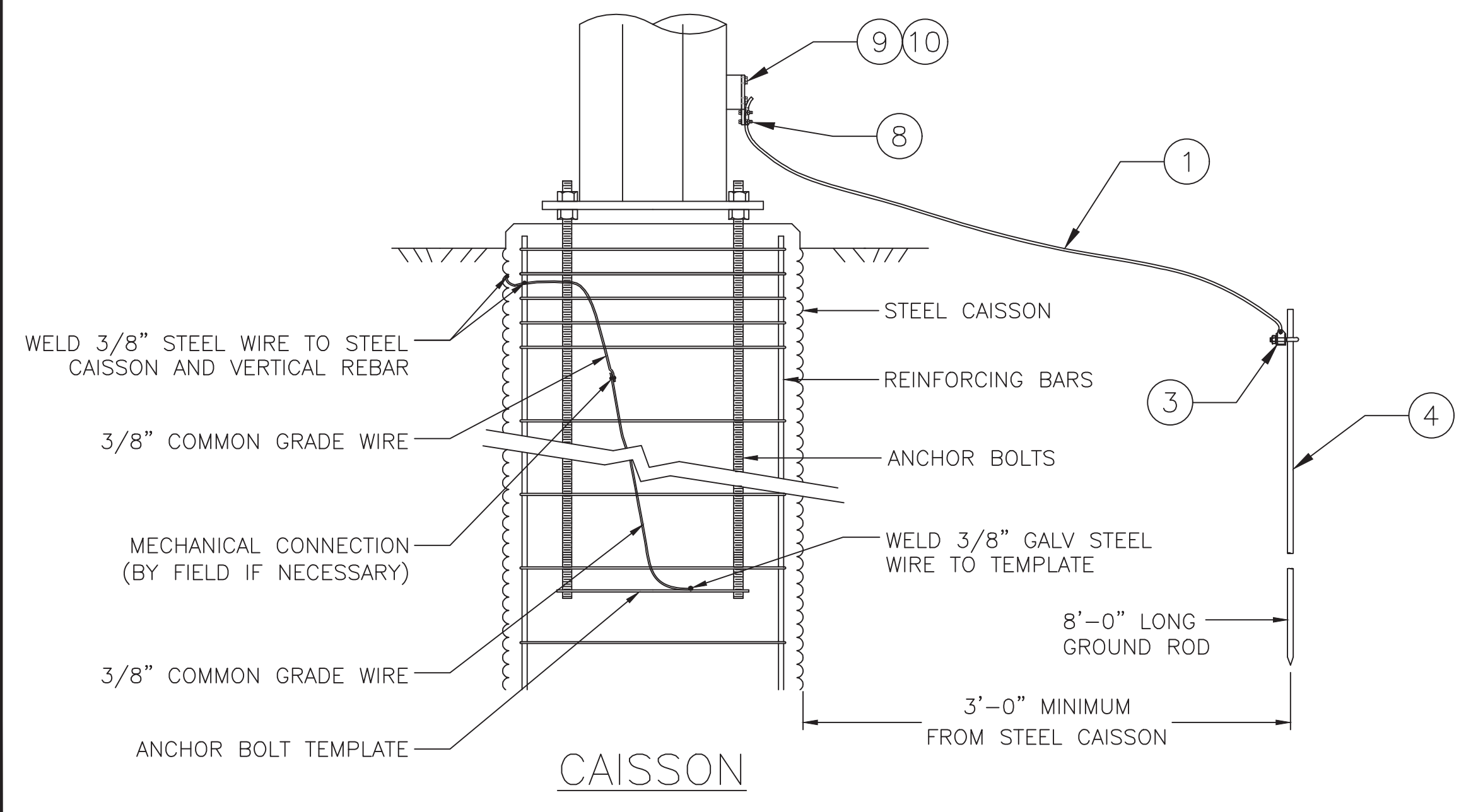
SINGLE POLE STRUCTURE



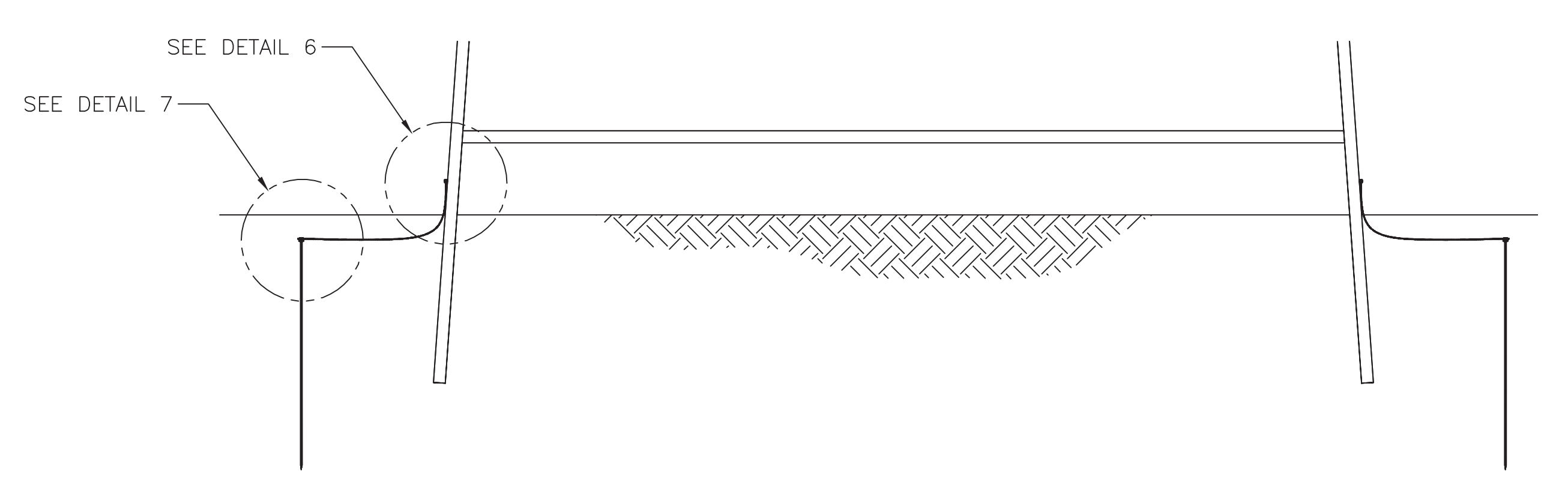
THREE POLE STRUCTURE



POLARM STRUCTURE



CAISSON

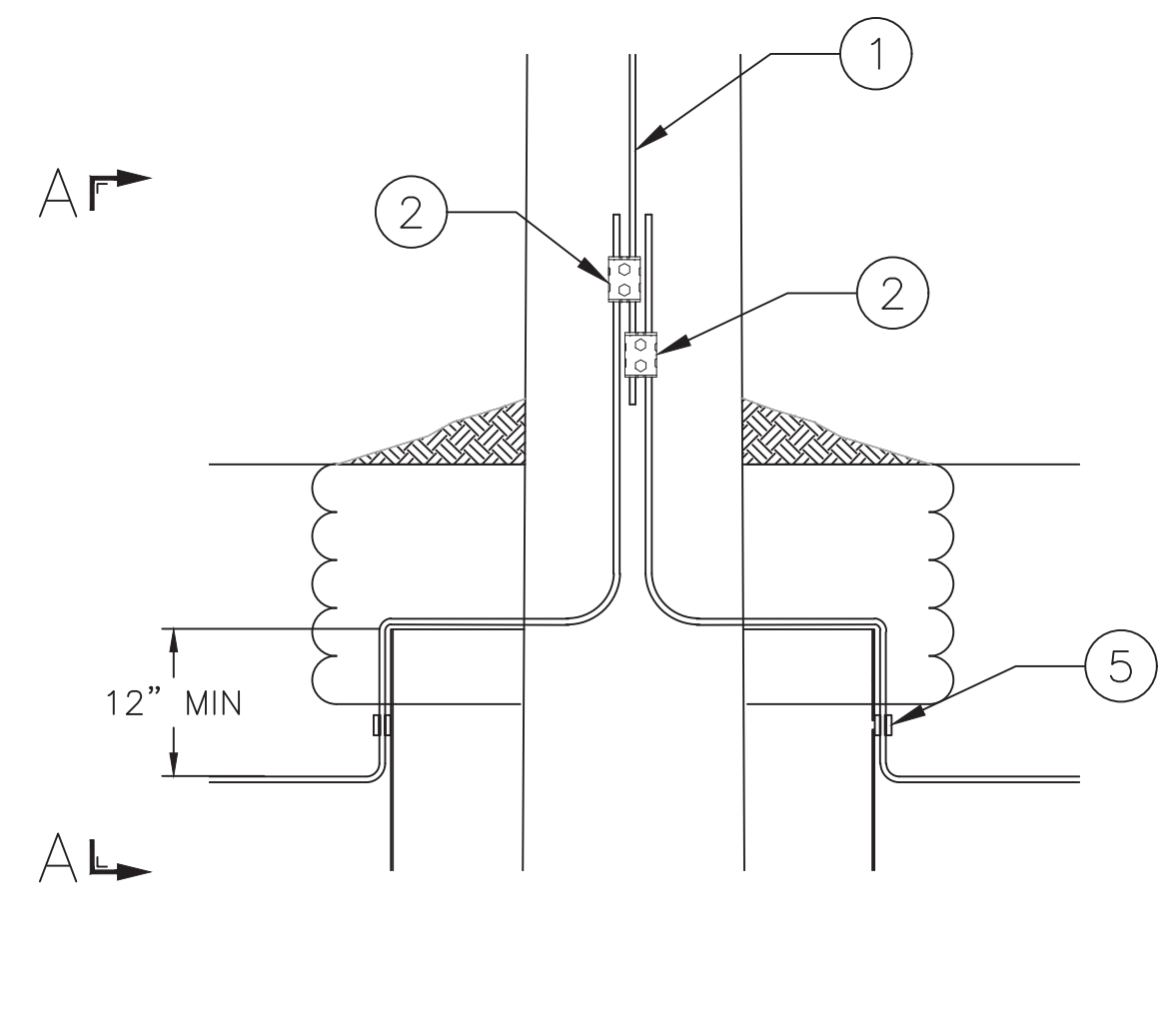


STEEL TOWER

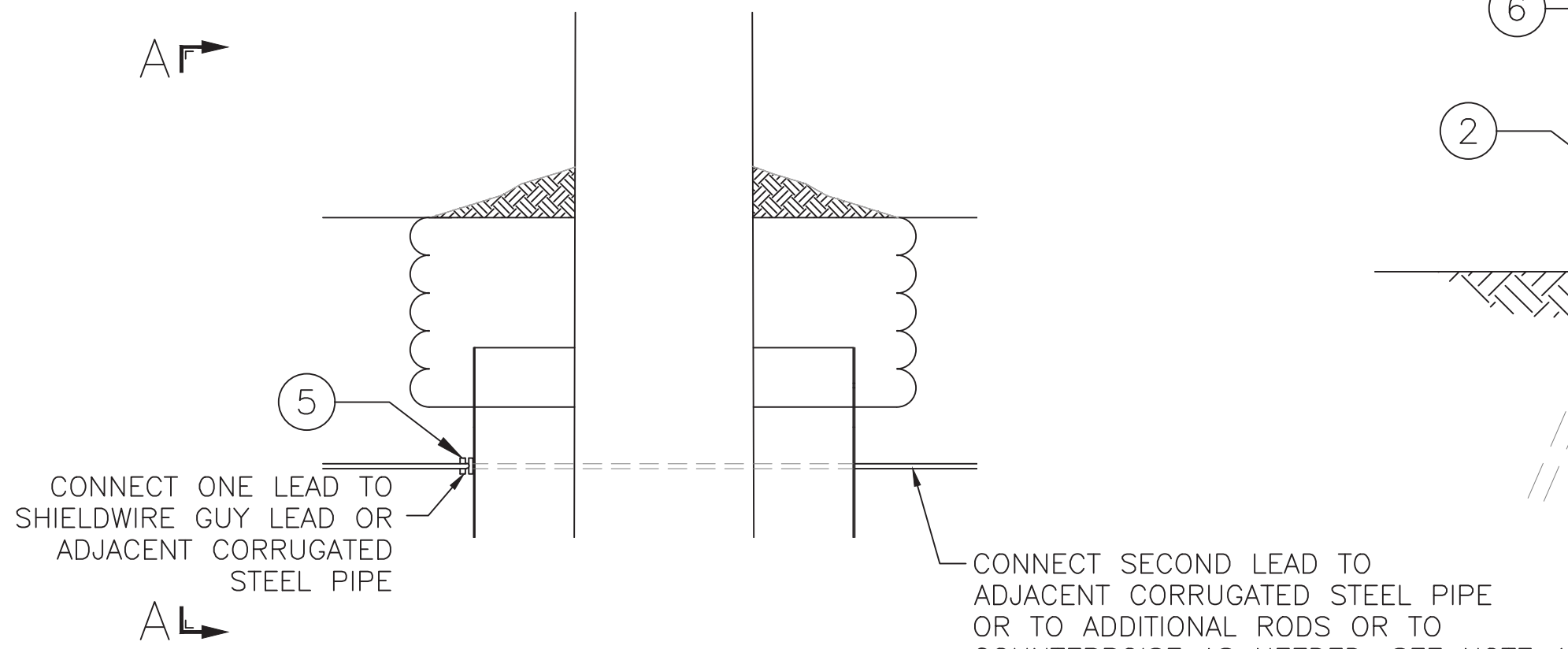
INCHES ON ORIGINAL

| | | | |
|--|--|--|--------------|
| TRANSMISSION LINE STANDARD | | PREPARED BY JLC | 02/02/10 |
| GROUNDING DETAILS FOR TRANSMISSION LINE STRUCTURES | | REVIEWED BY MSE | 02/02/10 |
| | | SCALE | NONE |
| | | SHEET | 1 OF 6 |
| | | INDEX | SP.06.01.301 |
| nationalgrid | | VERSION DESCRIPTION | VERSION |
| | | 1.1 04/25/14 ADD DETAIL DESCRIPTIONS, ADD HYPE PIPE | TEC KAD |
| | | 1.2 09/19/14 CLARIFY DETAIL 4 AND CORRECT GROUND ROD CLAMP ITEM ID ON PAGE 2 | TEC BMR KAD |
| | | 1.3 05/05/15 CHANGE POLARM GROUNDING P. ADD LOG 2, P. 2 | TEC BMR KAD |
| | | 1.4 05/05/15 CHANGE POLARM GROUNDING P. ADD LOG 2, P. 2 | TEC BMR KAD |
| | | 1.5 05/04/16 REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272 | TEC BMR KAD |
| | | 1.6 05/26/16 REMOVE STEEL POLE FLANGE CONNECTION DETAIL | TEC BMR KAD |
| | | 1.7 09/14/16 CHANGE GROUND ROD CLAMP TO PS 5106194/SAP 9.305898, PROBLEM LOG ENTRY 278 | TEC BMR |

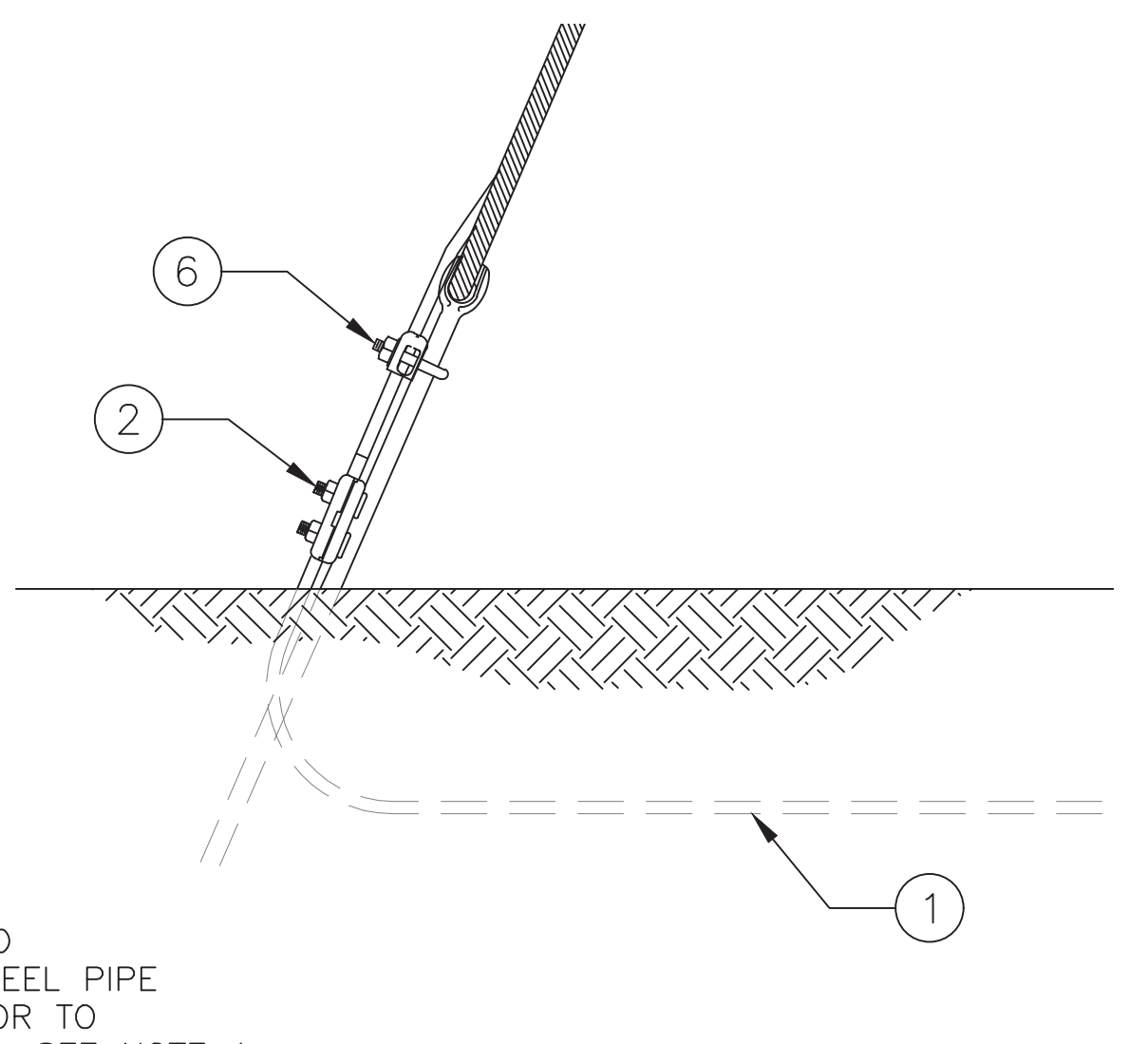
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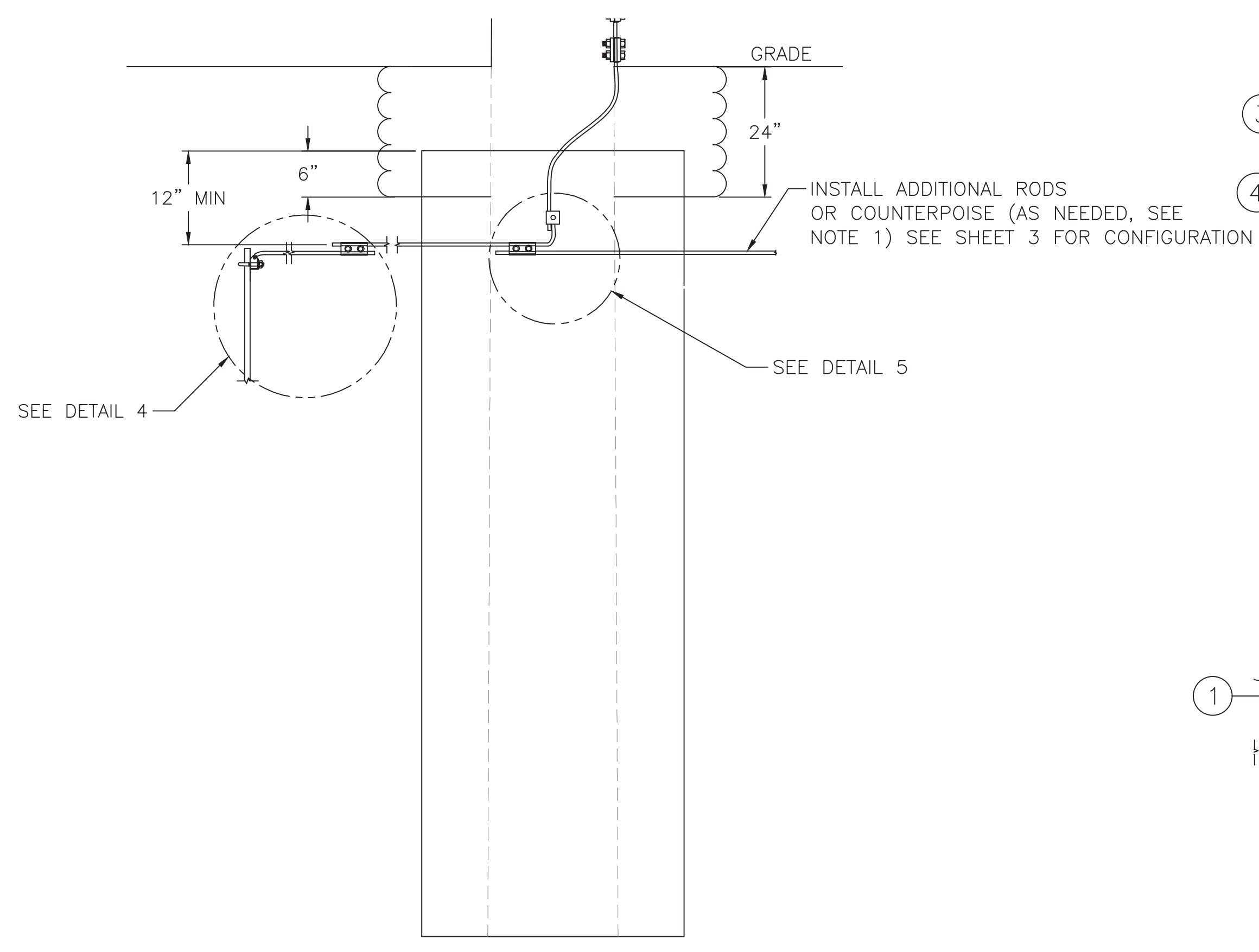
DETAIL 1
SCALE: 1" = 1'-0"
POLE W/DOWNLEAD



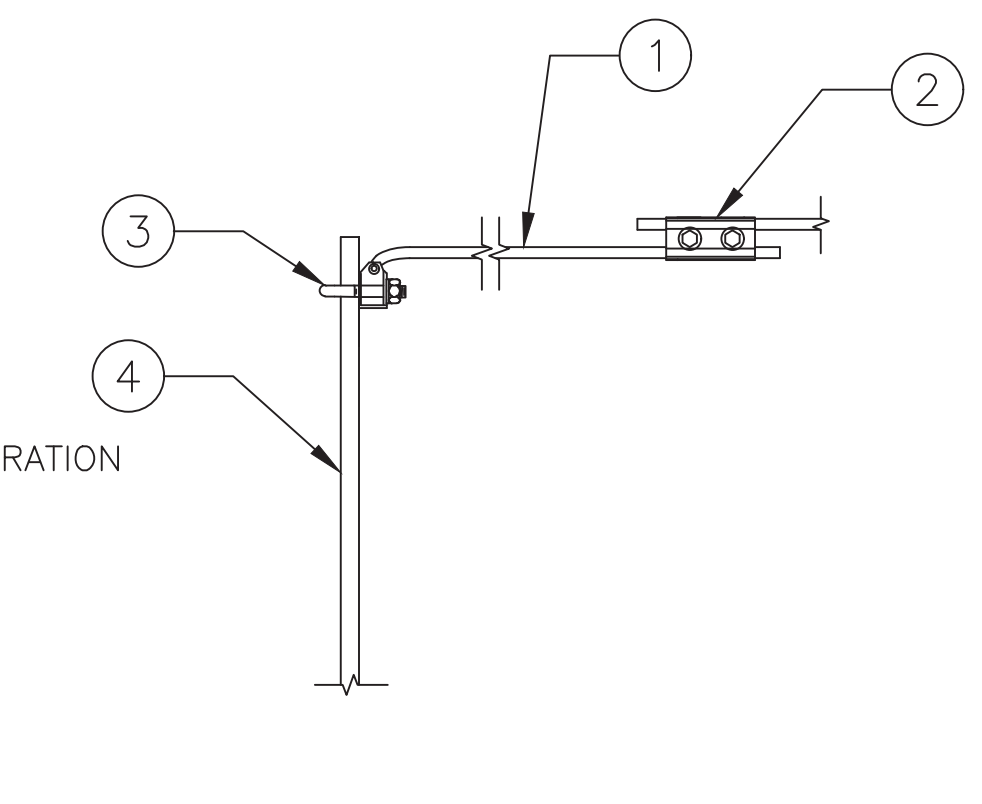
DETAIL 2
SCALE: 1" = 1'-0"
POLE W/O DOWNLEAD



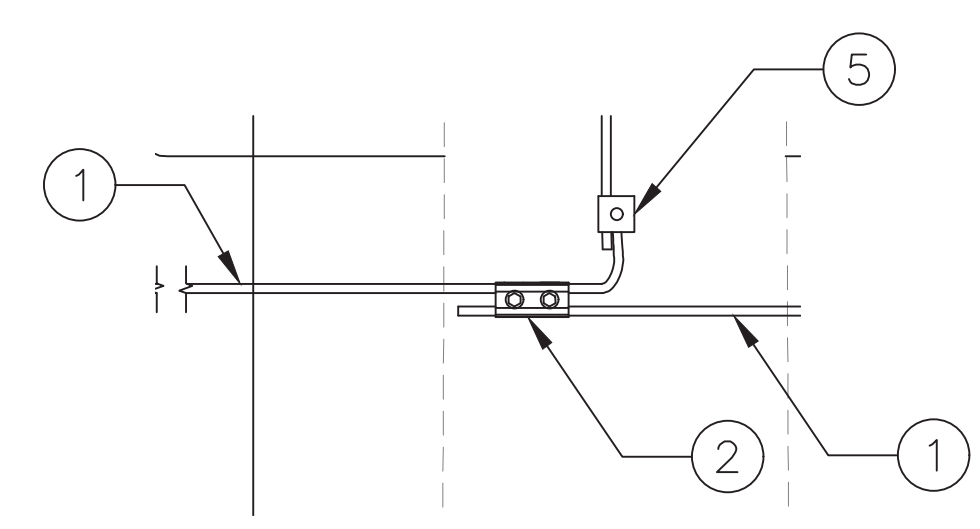
DETAIL 3
SCALE: 1/4" = 1'-0"
BONDED SW GUY



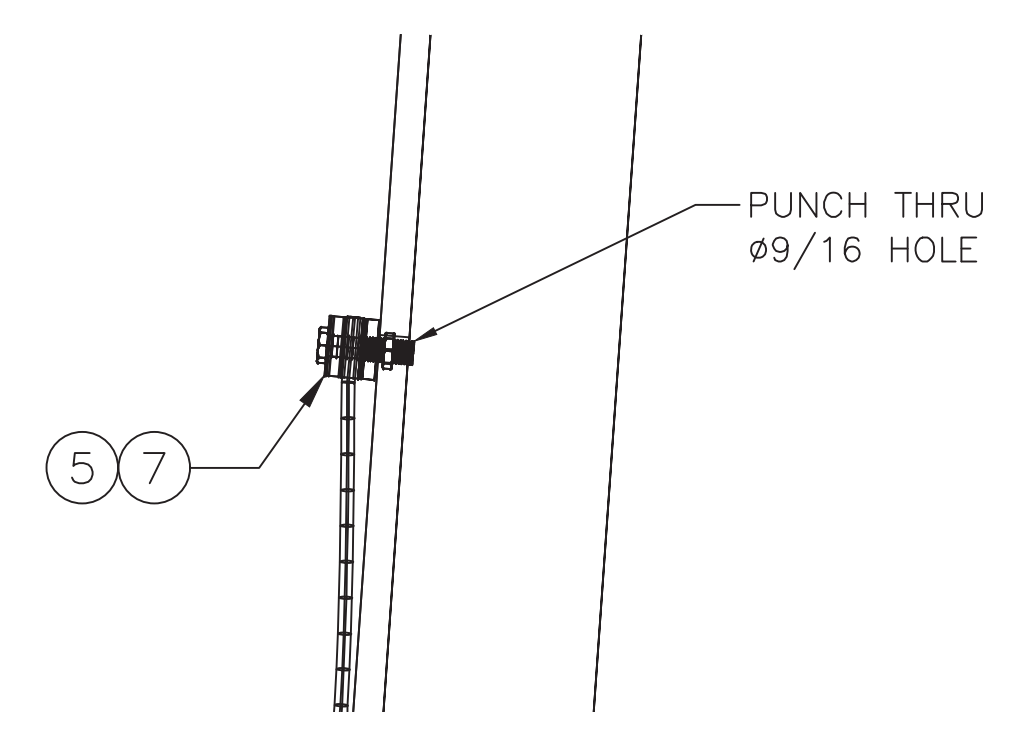
SECTION A-A
SCALE: 1" = 1'-0"
CORRUGATED STEEL PIPE
GROUNDING ATTACHMENT



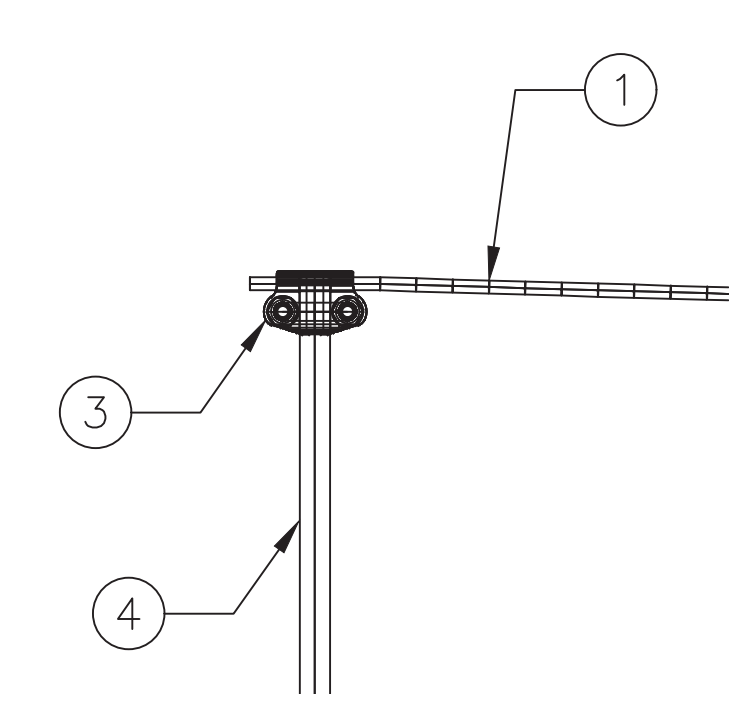
DETAIL 4
SCALE: 3" = 1'-0"
POLE GROUND ROD ATTACHMENT
DETAIL (AS NEEDED)
SEE NOTE 1



DETAIL 5
SCALE: 3" = 1'-0"
COUNTERPOISE
ATTACHMENT DETAIL



DETAIL 6
SCALE: 3" = 1'-0"
TOWER GROUNDING
DETAIL



DETAIL 7
SCALE: 3" = 1'-0"
TOWER GROUND ROD
ATTACHMENT DETAIL

| MATERIAL LIST | | | |
|---------------|---|------------|-------------|
| ITEM | DESCRIPTION | PS ITEM ID | SAP ITEM ID |
| 1 | 3/8" Common Grade Steel Wire | 5998530 | 9306353 |
| 2 | Clamp, Parallel Groove, Bronze | 5962562 | 9320554 |
| 3 | Clamp, Ground Rod, 5/8" | 5106194 | 9305898 |
| 4 | Rod, Copperweld, Ground, 5/8" x 8'-0" | 3503013 | 9313616 |
| 5 | Clamp, Bronze | 5105146 | 9309820 |
| 6 | Ground Clamp for Anchor Rod | 5986688 | 9320250 |
| 7 | Nut, Hex 1/2" SS | 7001719 | 9319754 |
| 8 | 2 BOLT BRONZE TERMINAL LUG | 5965885 | 9320350 |
| 9 | BOLT, STAINLESS STEEL, 1/2"x1" | 5624913 | 9304788 |
| 10 | WASHER, BELLEVILLE, STAINLESS STEEL, 1/2" | 7006022 | 9319830 |
| 11 | WIRE, #4, BARE, SOLID COPPER | 4015001 | 9316523 |

- NOTES:
- TESTING OF GROUND IMPEDANCE FOR WOOD POLES SHALL BE PERFORMED ON EACH POLE AS SP.06.01.301, AND THE APPROPRIATE SUPPLEMENTARY GROUND GRIDS INSTALLED BASED ON THIS DRAWING AND AS SPECIFIED IN SP.06.01.301
 - TESTING OF GROUND IMPEDANCE FOR STEEL POLES OR LATTICE TOWERS IS NOT REQUIRED PER SP.06.01.301.
 - ARRANGEMENT OF GROUND RODS AND COUNTERPOISE SHOWN IN FIGURES; CONNECTIONS SHOWN IN REFERENCED DETAIL DRAWINGS
 - STRUCTURES WHICH DO NOT REQUIRE ADDITIONAL GROUND GRID INSTALLATION SHALL HAVE EXCESS GROUNDWIRE CUT OFF 12" BELOW GROUNDLINE OR BURIED AT LEAST 12" BELOW GROUNDLINE

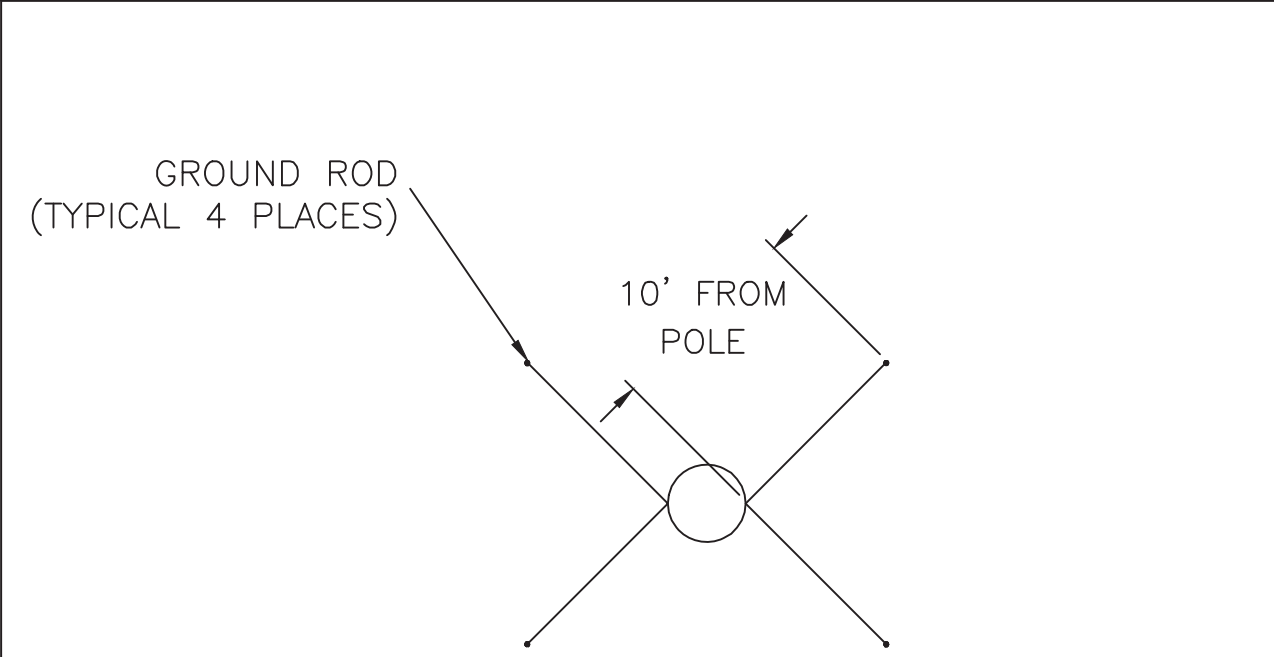
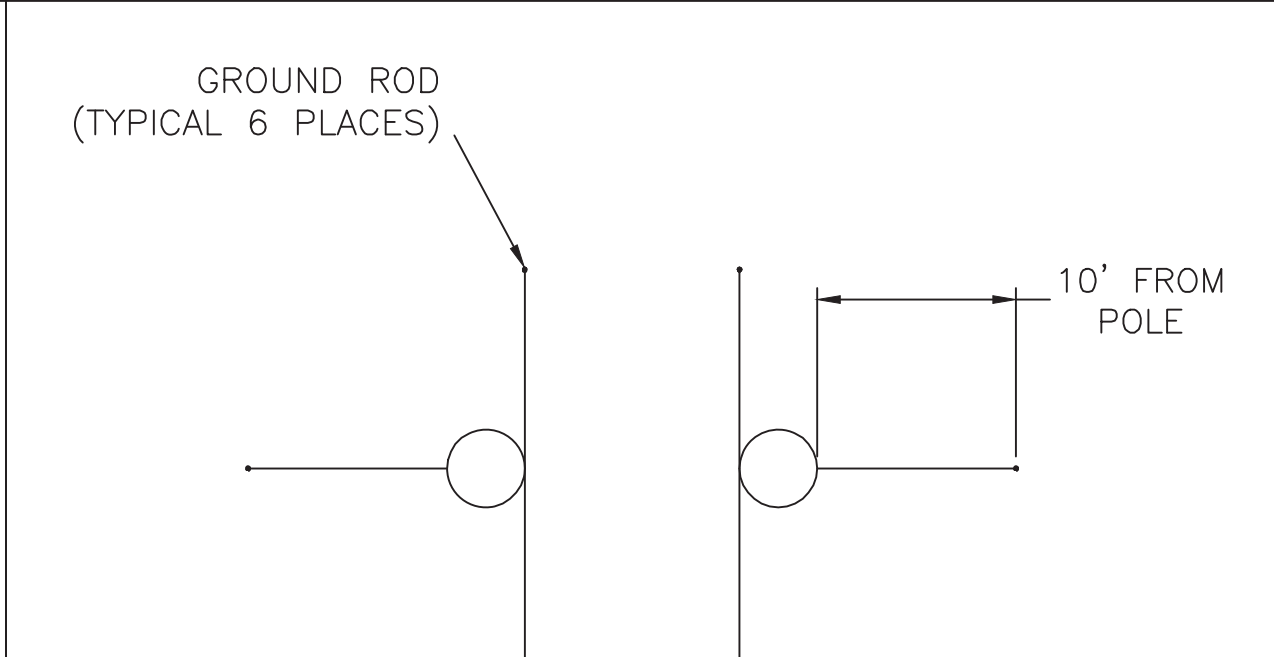
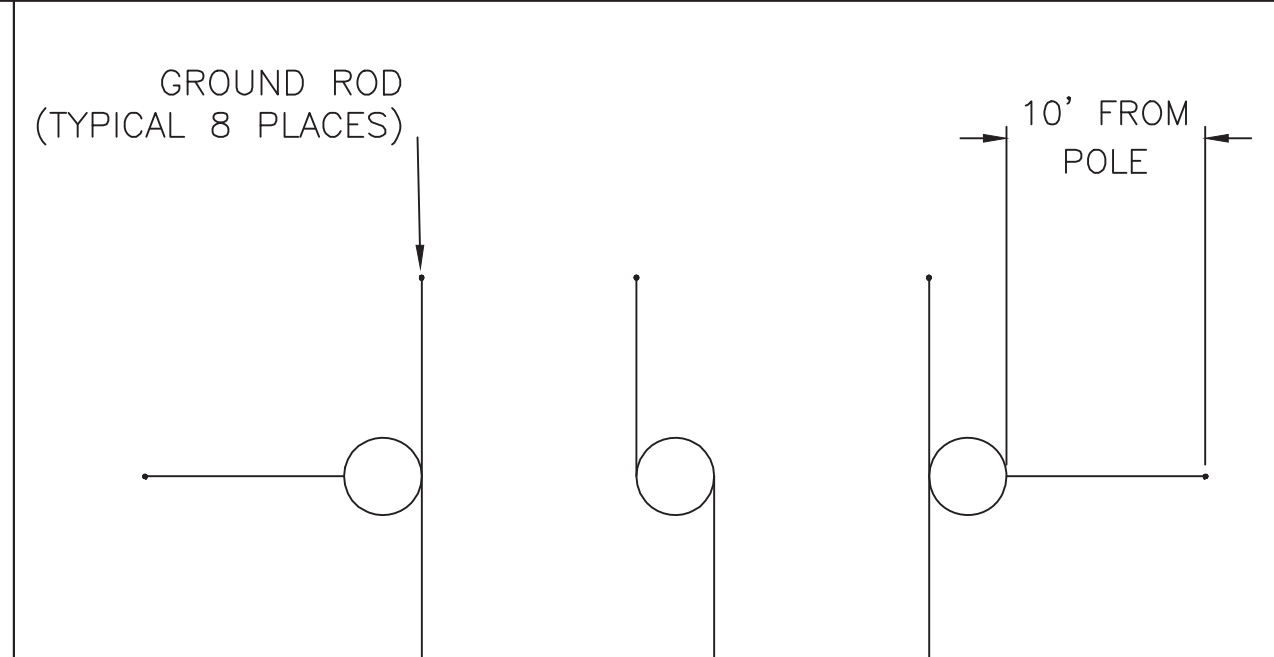
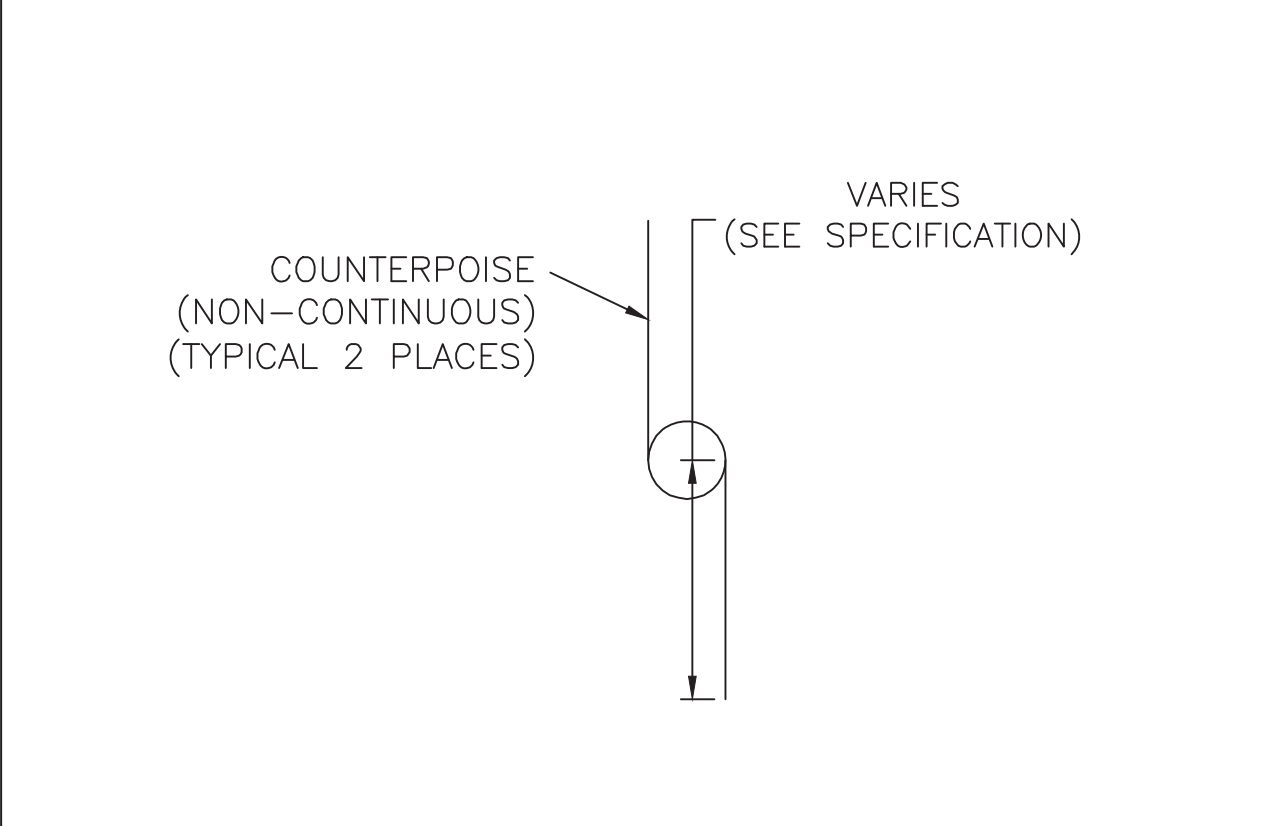
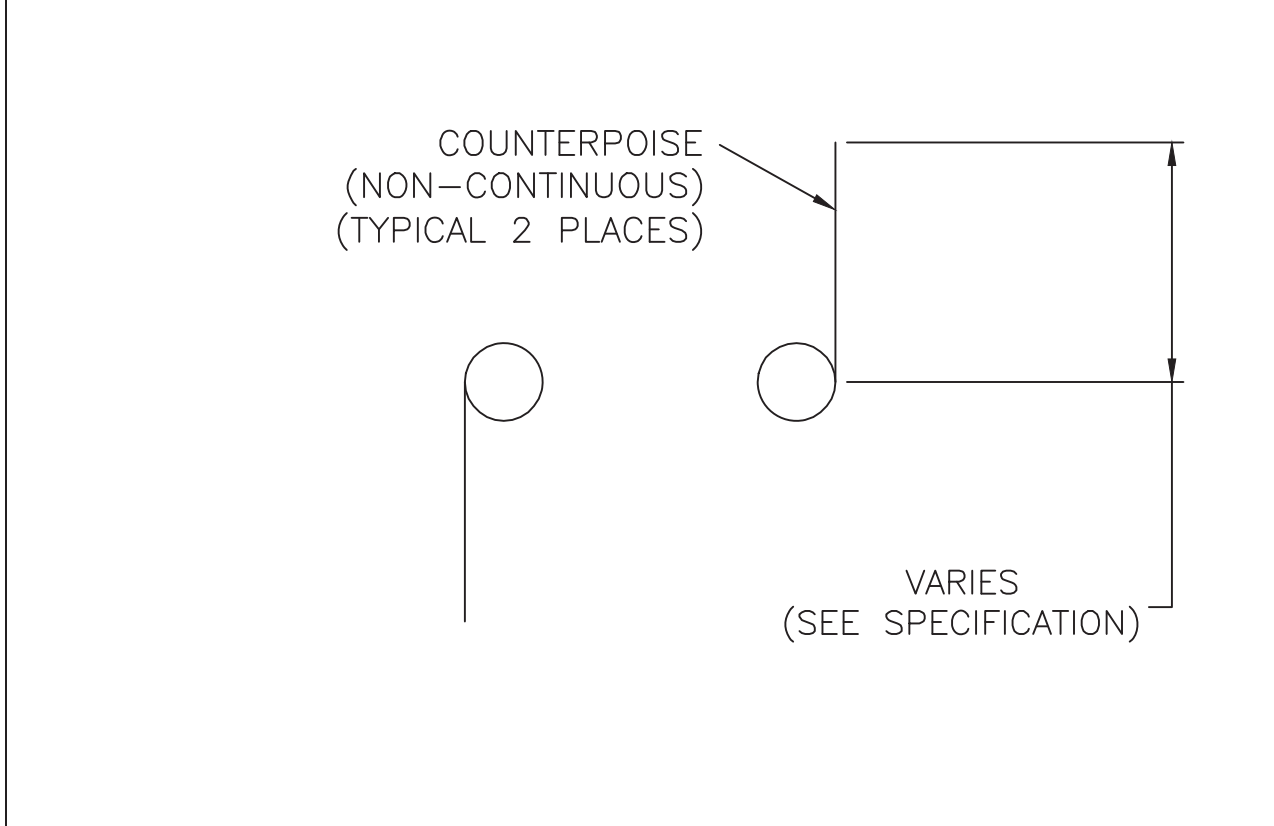
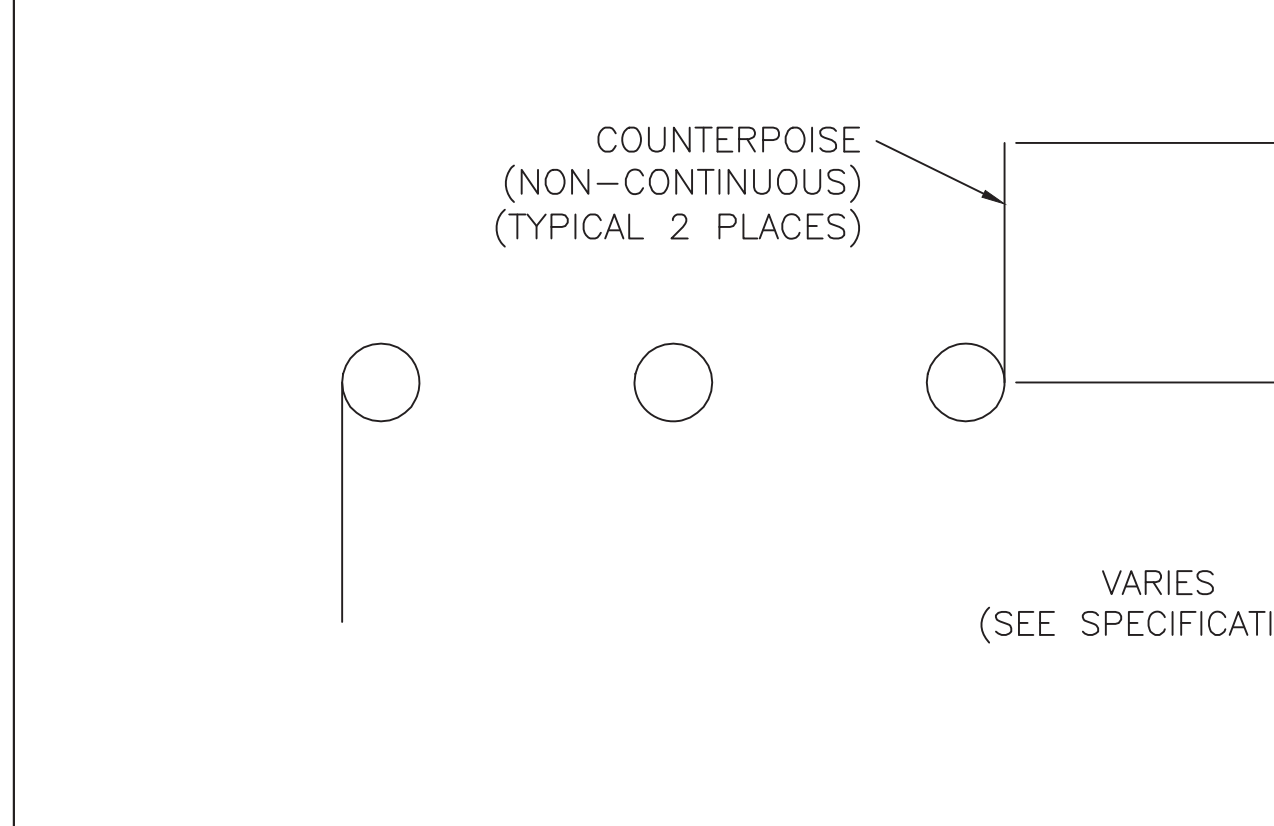
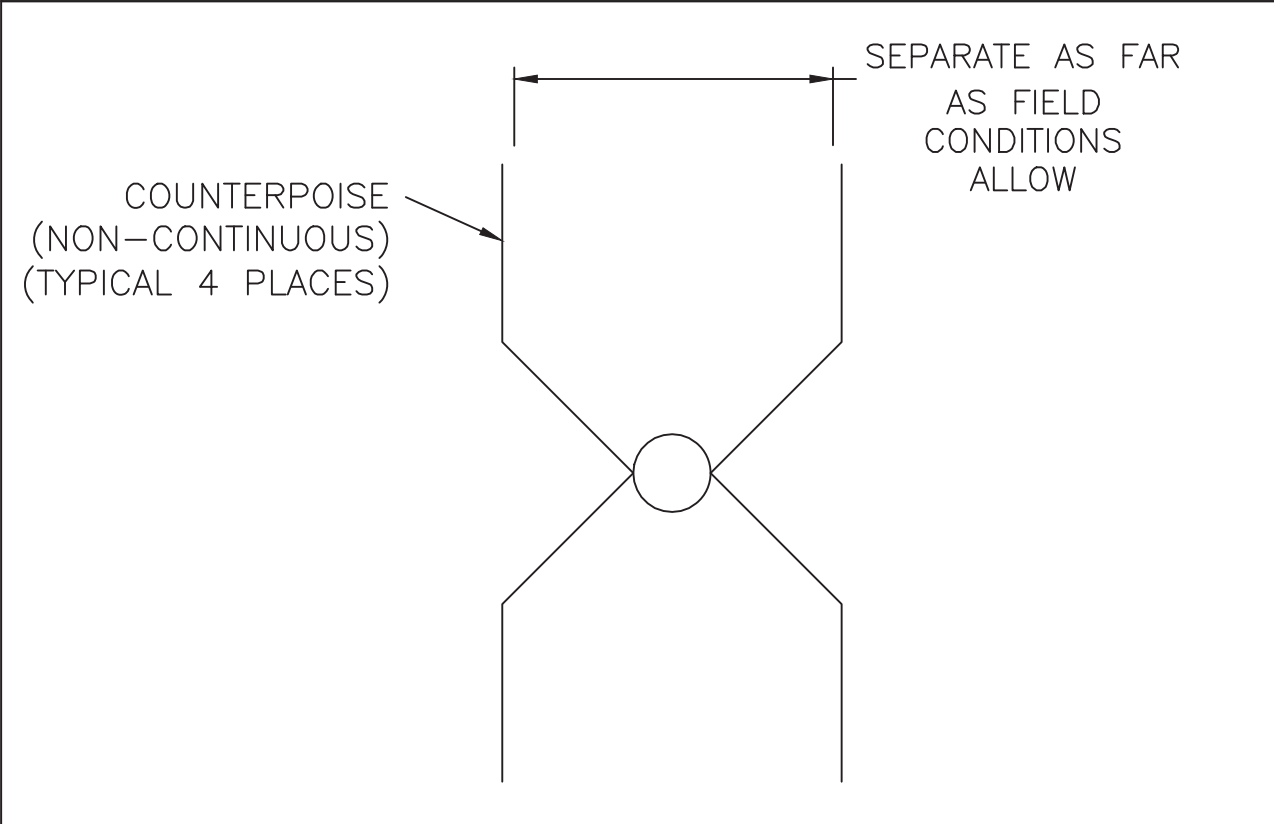
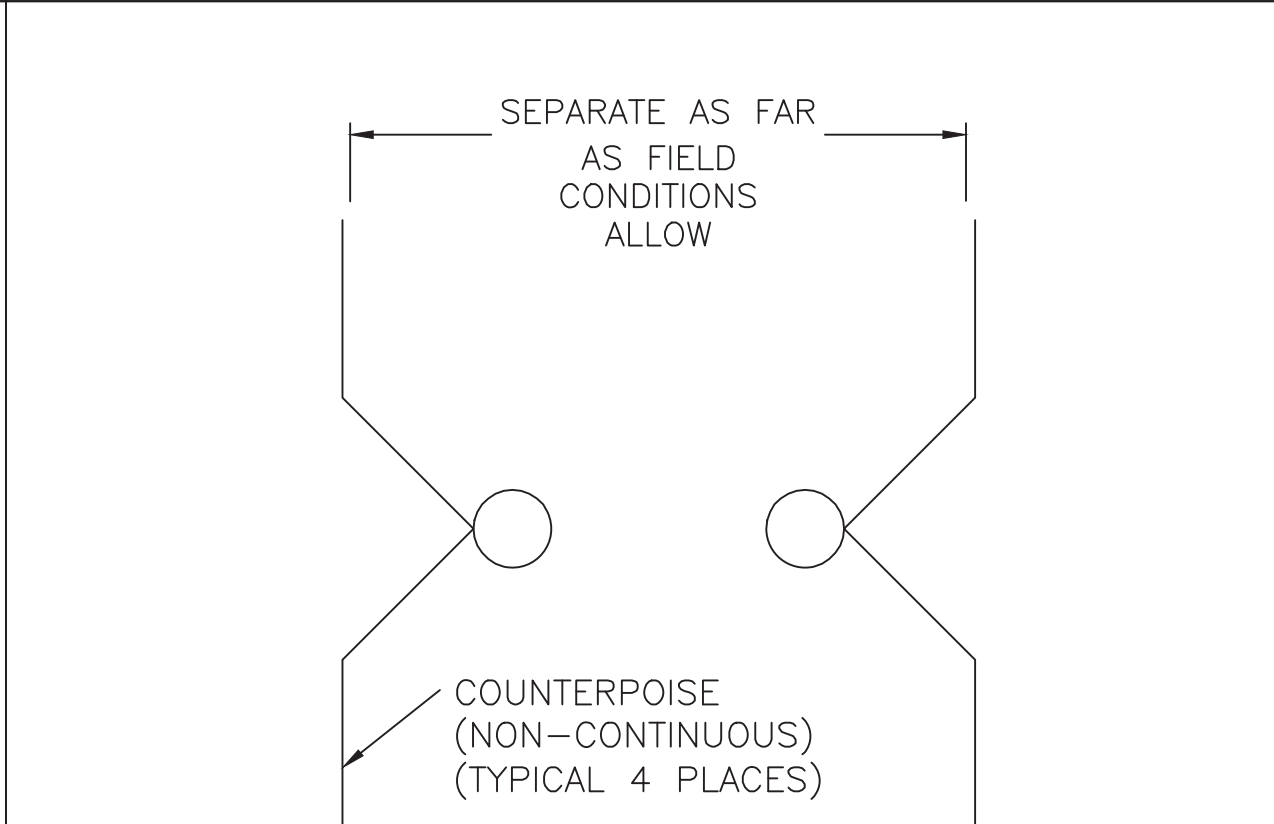
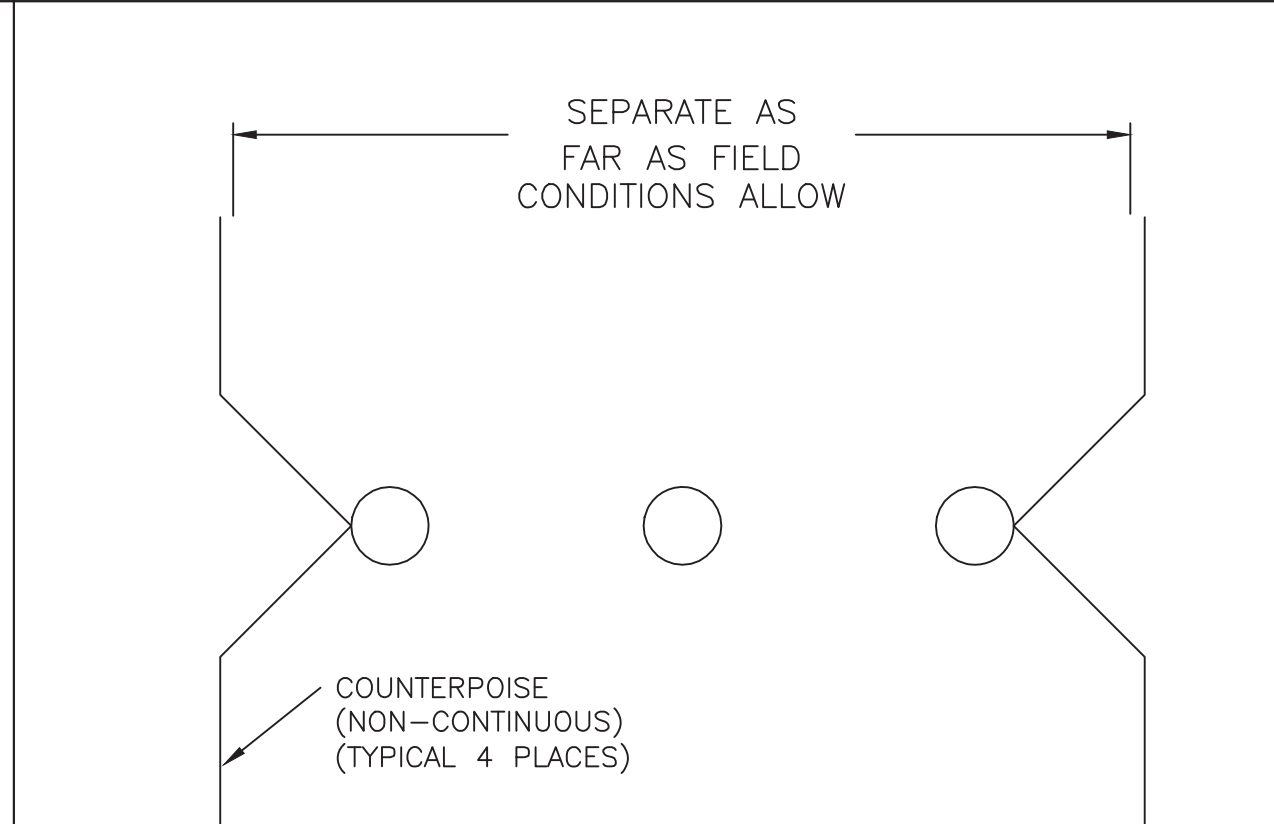
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| TRANSMISSION LINE STANDARD | PREPARED BY | JLC | 02/02/10 |
| | REVIEWED BY | JME | 02/02/10 |
| GROUNDING DETAILS FOR TRANSMISSION LINE STRUCTURES | APPROVED BY | MSE | 02/02/10 |
| | SCALE | NONE | |
| | SHEET | 2 | OF 6 |
| | INDEX | | SP.06.01.301 |

nationalgrid

VERSION DESCRIPTION

| VER | DATE | DESCRIPTION |
|-----|----------|--|
| 1.1 | 04/25/14 | ADD DETAIL DESCRIPTIONS, ADD HOPE PIPE |
| 1.2 | 09/19/14 | CLARIFY DETAIL 4 AND CORRECT GROUND ROD CLAMP ITEM ID ON PAGE 2 |
| 1.3 | 09/19/14 | CHANGE POLARITY GROUNDING PILE AND GUY |
| 1.4 | 05/05/16 | REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272 |
| 1.5 | 05/04/16 | REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272 |
| 1.6 | 05/26/16 | REMOVE STEEL POLE FLANGE CONNECTION DETAIL |
| 1.7 | 09/14/16 | CHANGE GROUND ROD CLAMP TO PS 5106194/SAP 9305898, PROBLEM LOG ENTRY 278 |

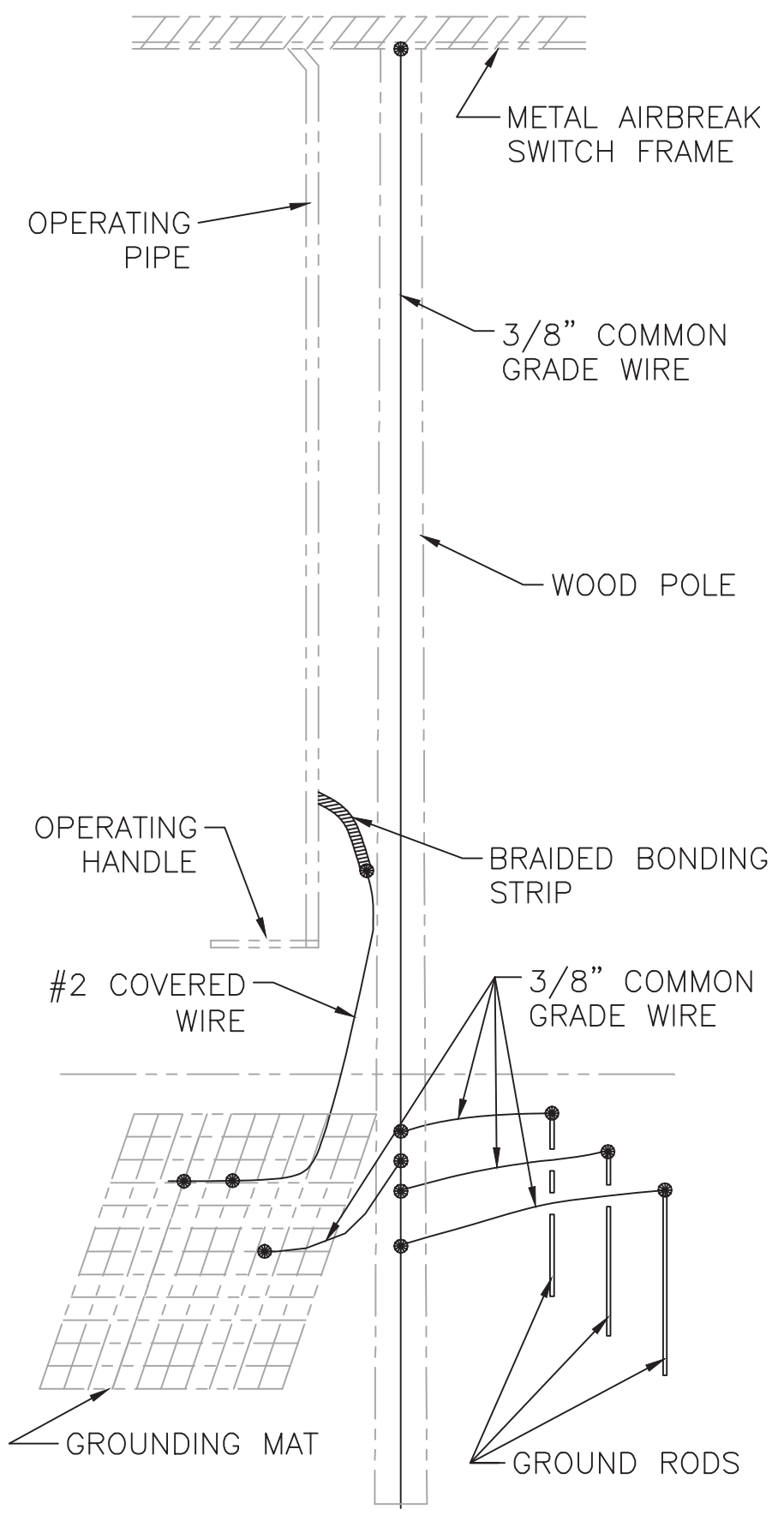
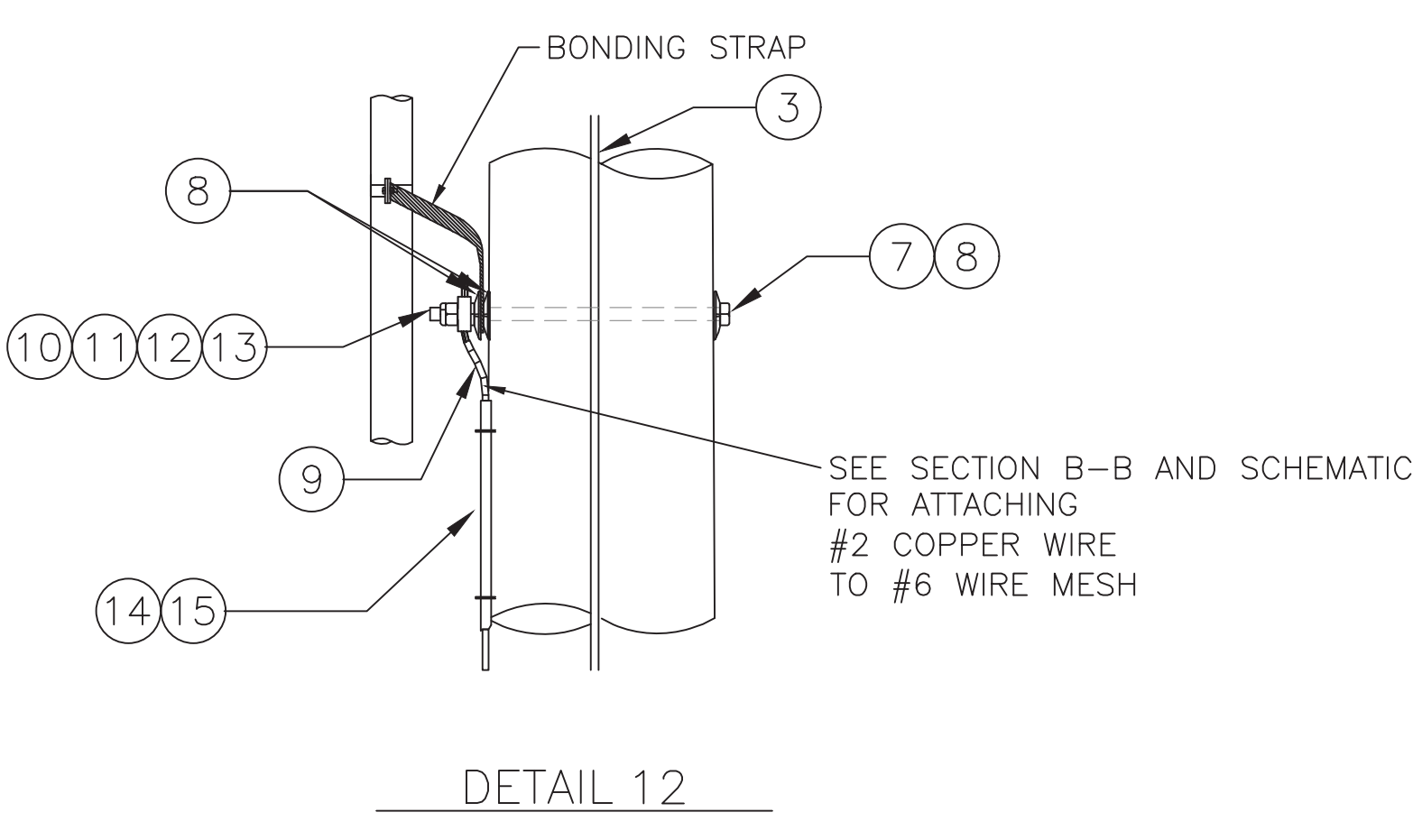
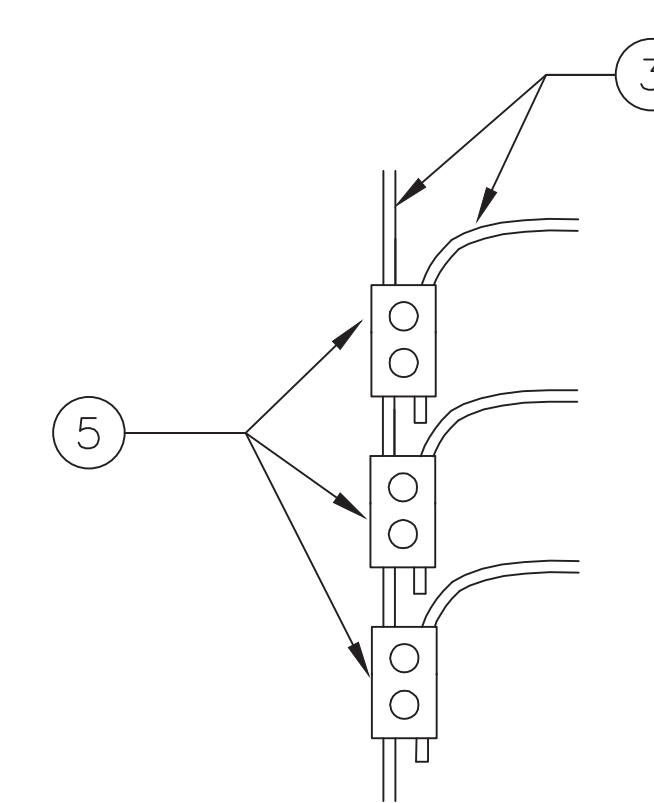
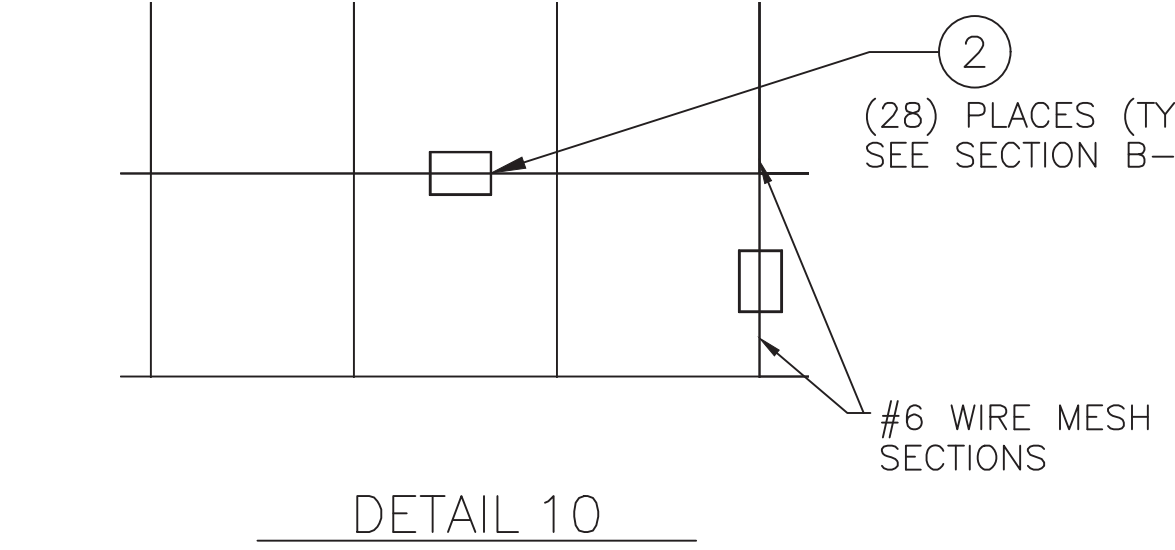
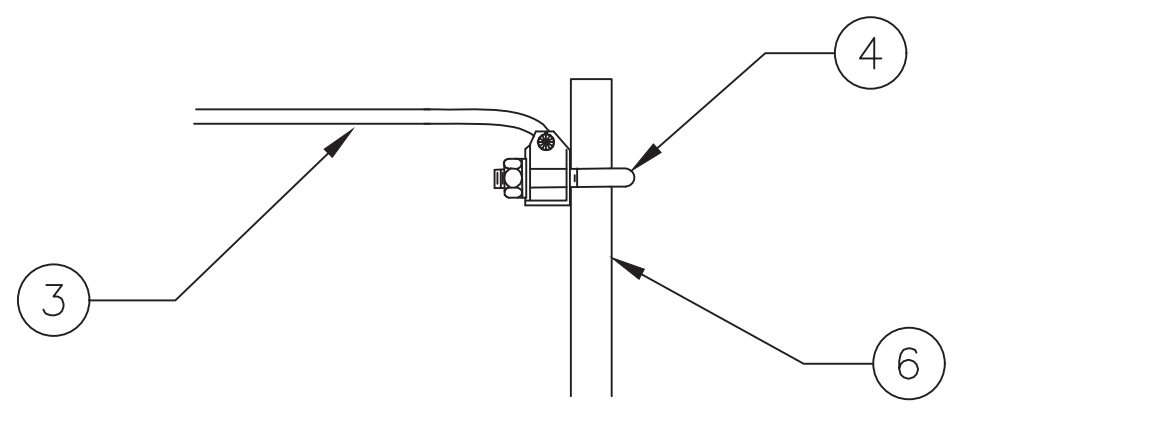
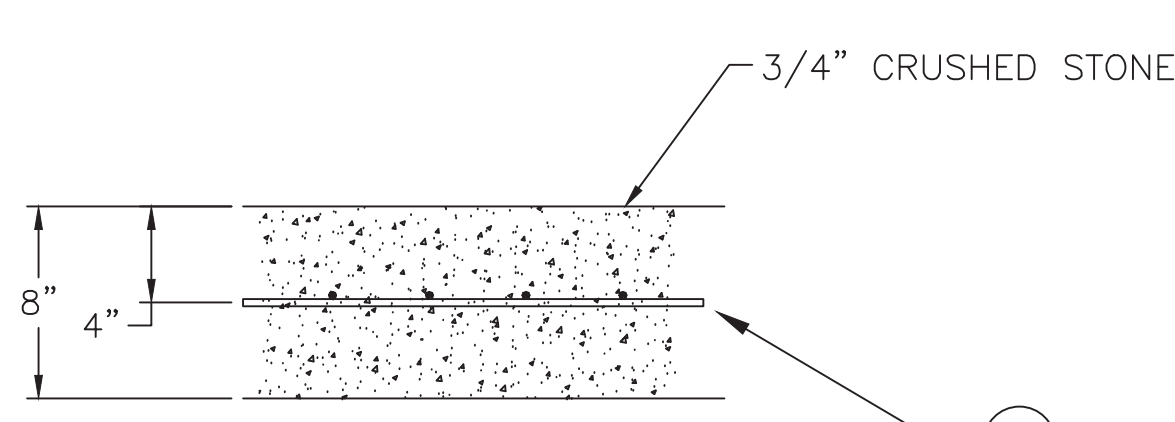
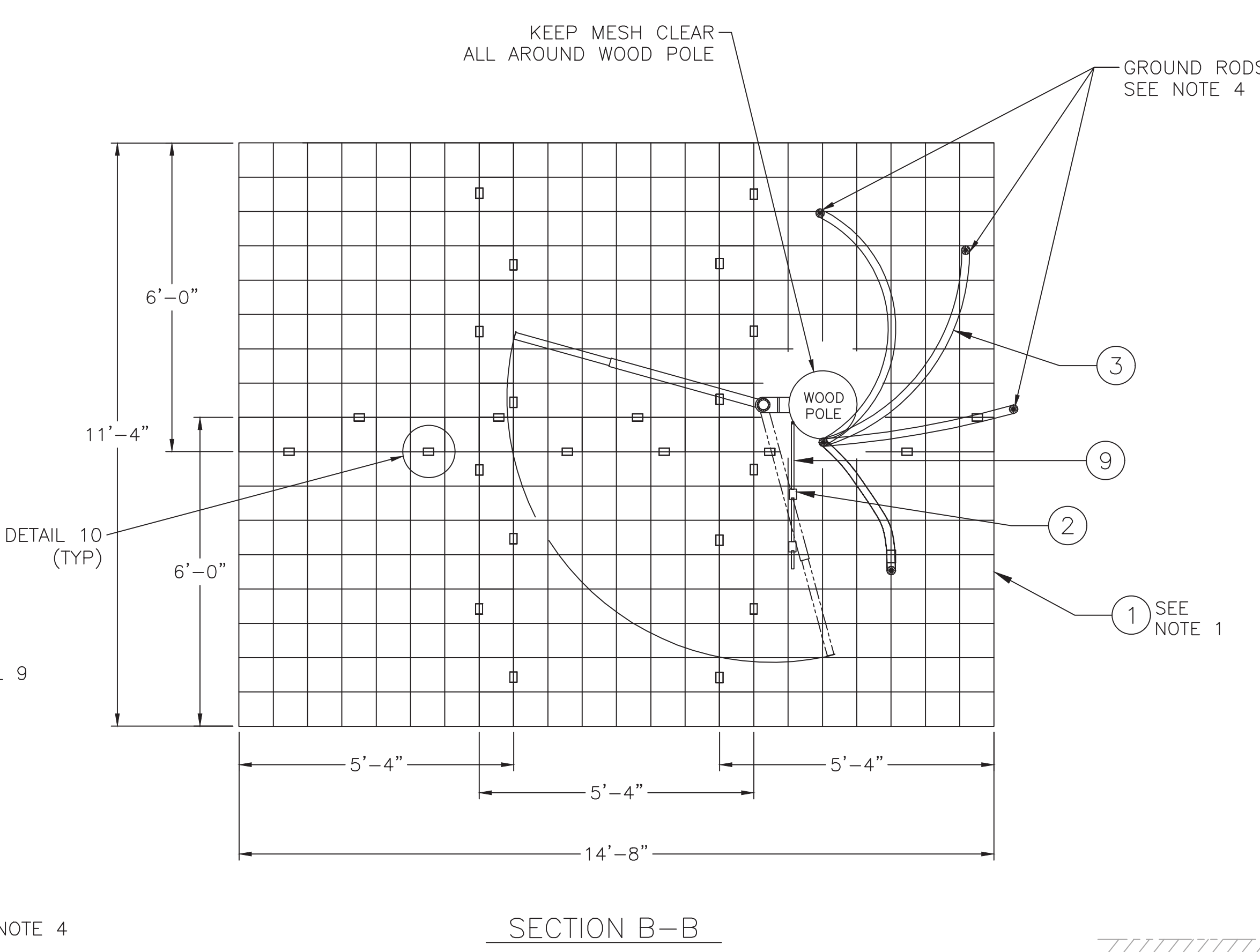
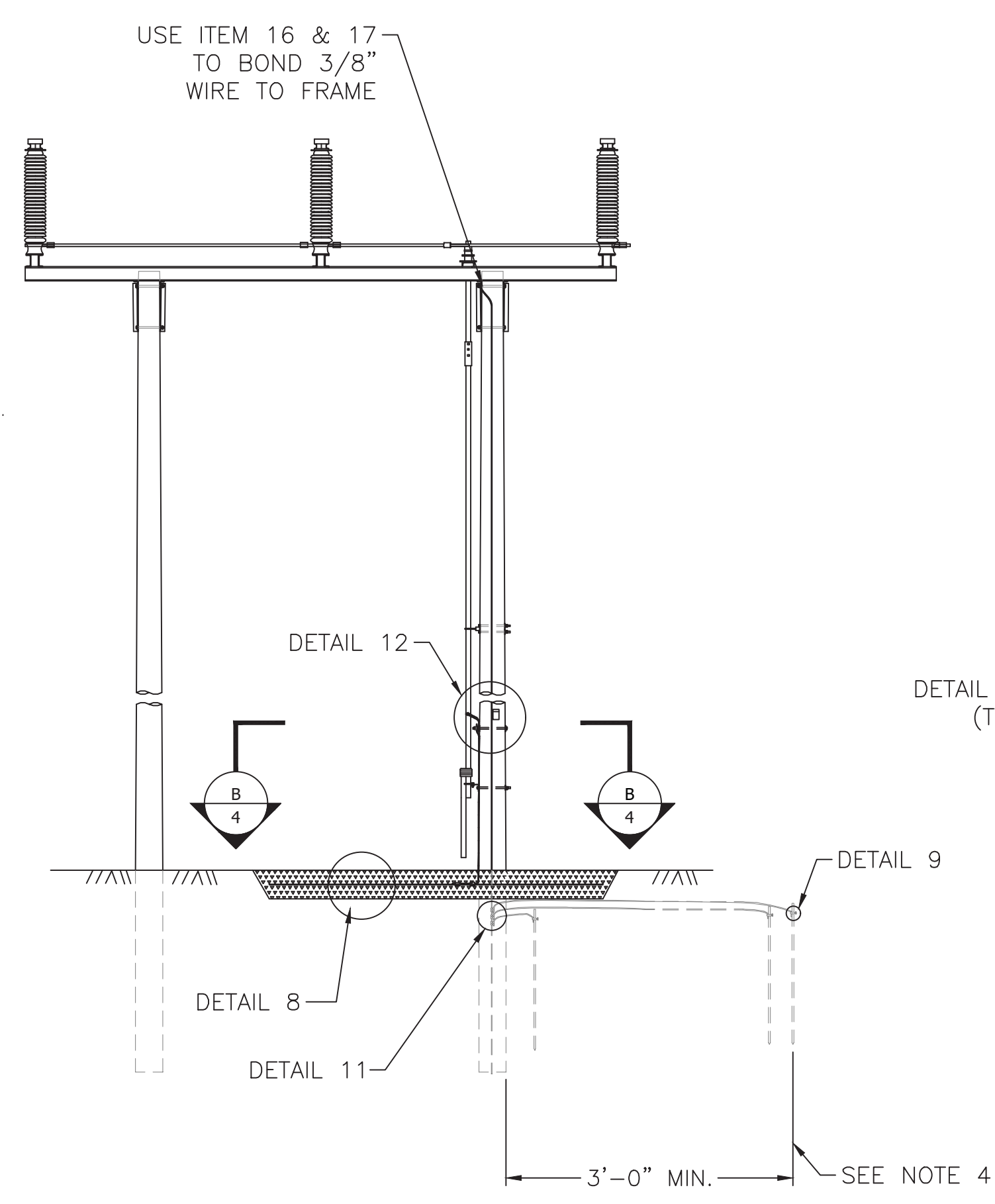
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| TRANSMISSION STRUCTURE GROUND GRID CONFIGURATION PLAN VIEWS | | |
|--|---|---|
| SINGLE POLE STRUCTURE | TWO POLE STRUCTURE | THREE POLE STRUCTURE |
|  <p>GROUND ROD (TYPICAL 4 PLACES)</p> <p>10' FROM POLE</p> <p>INSTALL 4 GROUND RODS</p> |  <p>GROUND ROD (TYPICAL 6 PLACES)</p> <p>10' FROM POLE</p> <p>INSTALL 6 GROUND RODS</p> |  <p>GROUND ROD (TYPICAL 8 PLACES)</p> <p>10' FROM POLE</p> <p>INSTALL 8 GROUND RODS</p> |
|  <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 2 PLACES)</p> <p>VARIES (SEE SPECIFICATION)</p> <p>INSTALL 2 STRIPS COUNTERPOISE</p> |  <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 2 PLACES)</p> <p>VARIES (SEE SPECIFICATION)</p> <p>INSTALL 2 STRIPS COUNTERPOISE</p> |  <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 2 PLACES)</p> <p>VARIES (SEE SPECIFICATION)</p> <p>INSTALL 2 STRIPS COUNTERPOISE</p> |
|  <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 4 PLACES)</p> <p>SEPARATE AS FAR AS FIELD CONDITIONS ALLOW</p> <p>INSTALL 4 STRIPS COUNTERPOISE</p> |  <p>SEPARATE AS FAR AS FIELD CONDITIONS ALLOW</p> <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 4 PLACES)</p> <p>INSTALL 4 STRIPS COUNTERPOISE</p> |  <p>SEPARATE AS FAR AS FIELD CONDITIONS ALLOW</p> <p>COUNTERPOISE (NON-CONTINUOUS) (TYPICAL 4 PLACES)</p> <p>INSTALL 4 STRIPS COUNTERPOISE</p> |

INCHES ON ORIGINAL

| | | | | | |
|---|---|---------------------------|--|---|-----------|
| <p>TRANSMISSION LINE STANDARD</p> <p>GROUNDING DETAILS FOR TRANSMISSION LINE STRUCTURES</p> | <p>PREPARED BY: JLC 02/02/10</p> <p>APPROVED BY: JME 02/02/10</p> <p>SCALE: NONE</p> <p>SHEET: 3 OF 6</p> <p>INDEX: SP.06.01.301</p> | <p>nationalgrid</p> | <p>VERSION DESCRIPTION</p> <p>1.1 04/25/14 ADD DETAIL DESCRIPTIONS, ADD HDPE PIPE</p> <p>1.2 09/19/14 CLARIFY DETAIL 4 AND CORRECT GROUND ROD CLAMP ITEM ID ON PAGE 2</p> <p>1.3 07/15/15 CHANGE POLARITY OF DETAIL 4</p> <p>1.4 05/04/16 REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272</p> <p>1.5 05/04/16 REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272</p> <p>1.6 05/28/16 REMOVE STEEL POLE FLANGE CONNECTION DETAIL</p> <p>1.7 09/14/16 CHANGE GROUND ROD CLAMP TO PS 5106194/SAP 9.305898, PROBLEM LOG ENTRY 278</p> | <p>REVISIONS</p> <p>TEC KAD</p> <p>TEC EBR KAD</p> <p>TEC EBR KAD</p> <p>TEC EBR KAD</p> <p>TEC EBR KAD</p> <p>TEC EBR KAD</p> <p>TEC EBR KAD</p> | <p>17</p> |
| | <p>PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR THE LATEST AUTHORIZED VERSION PLEASE REFER TO THE ENGINEERING DEPARTMENT DOCUMENTS CABINET IN DOCUMENTUM</p> | <p>9/14/2016 10:33 AM</p> | | | |

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| MATERIAL LIST | | | | |
|---------------|------|--|--------------------|--------------------|
| ITEM | QUAN | DESCRIPTION | PS ITEM ID | SAP ITEM ID |
| 1 | 6 | #6 WIRE MESH, 8" SQUARES, 40% Cu CLAD 5'-4"x6'-0" FLAT MAT | 9202952 | 9307626 |
| 2 | 29 | COPPER CRIMPIT ("C" TYPE) | 5105243 | 9309996 |
| 3 | 40 | 3/8" COMMON GRADE STEEL WIRE (FEET) | 5998530 | 9306353 |
| 4 | 3 | CLAMP, GROUND ROD | 5106194 | 9305898 |
| 5 | 4 | CLAMP, PARALLEL BRONZE | 5962562 | 9320554 |
| 6 | 3 | ROD, GROUND GALV 5/8" x 8'-0" LG | 3503013 | 9313616 |
| 7 | 1 | BOLT, MACHINE GALV 5/8" x 14" OR 16" | 7001503 7001505 | 9309119 9320015 |
| 8 | 3 | WASHER, CURVED 2 1/4" SQUARE | 5997810 | |
| 9 | 10 | WIRE, #2 7 STRAND SD COPPER, COVERED | 4001042 | 9312556 |
| 10 | 1 | CLIP, BONDING FOR 5/8" BOLT | 5987955 | 9320450 |
| 11 | 1 | NUT, SQUARE GALVANIZED 5/8" | 5993400 | 9319911 |
| 12 | 1 | PALNUT, GALVANIZED 5/8" | 7024158 | 9322021 |
| 13 | 1 | WASHER, SPRING CLIP FOR 5/8" BOLT | 5997480 | 9319582 |
| 14 | 1 | MOLDING, PLASTIC | 3503053 | 9313613 |
| 15 | 5 | STAPLES, 2" GALVANIZED | 0811201 | 9314525 |
| 16 | 1 | CLIP, BONDING FOR 3/4" BOLT | 5987950 | 9313173 |
| 17 | 1 | NUT, GALVANIZED 3/4" | 5993410 | 9307167 |

- NOTES:
1. PLACE SIX SECTIONS OF WIRE MESH AS SHOWN IN RELATION TO THE FULL HANDLE SWING.
 2. JOIN EACH GRID SECTION WITH COPPER CRIMPITS, ITEM 2.
 3. DOWNLEAD WIRE AND GROUND RODS SHOULD NOT TOUCH WIRE MESH.
 4. GROUND RODS TO BE PLACED AS SHOWN IN SECTION B-B.
 5. STRIP ENOUGH OF THE #2 COPPER COVERED WIRE TO MAKE A GOOD CONNECTION.

TRANSMISSION LINE STANDARD

GROUNDING DETAILS FOR WOOD SWITCH STRUCTURES

SP.06.01.301

PREPARED BY: JLC 02/02/10

REVIEWED BY: JME 02/02/10

APPROVED BY: MSE 02/02/10

SCALE: NONE

SHEET: 4 OF 6

INDEX: SP.06.01.301

VERSION DESCRIPTION

1.1 04/25/14 ADD DETAIL DESCRIPTIONS, ADD HOPE PIPE

1.2 09/19/14 CLARIFY DETAIL 4 AND CORRECT GROUND ROD CLAMP ITEM ID ON PAGE 2

1.3 09/19/14 CHANGE POLARITY BONDING P. 2, P. 2, REMOVE STANDARD BRACKET DETAILS P. 5

1.4 05/04/16 REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272

1.5 05/04/16 REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272

1.6 05/26/16 REMOVE STEEL POLE FLANGE CONNECTION DETAIL

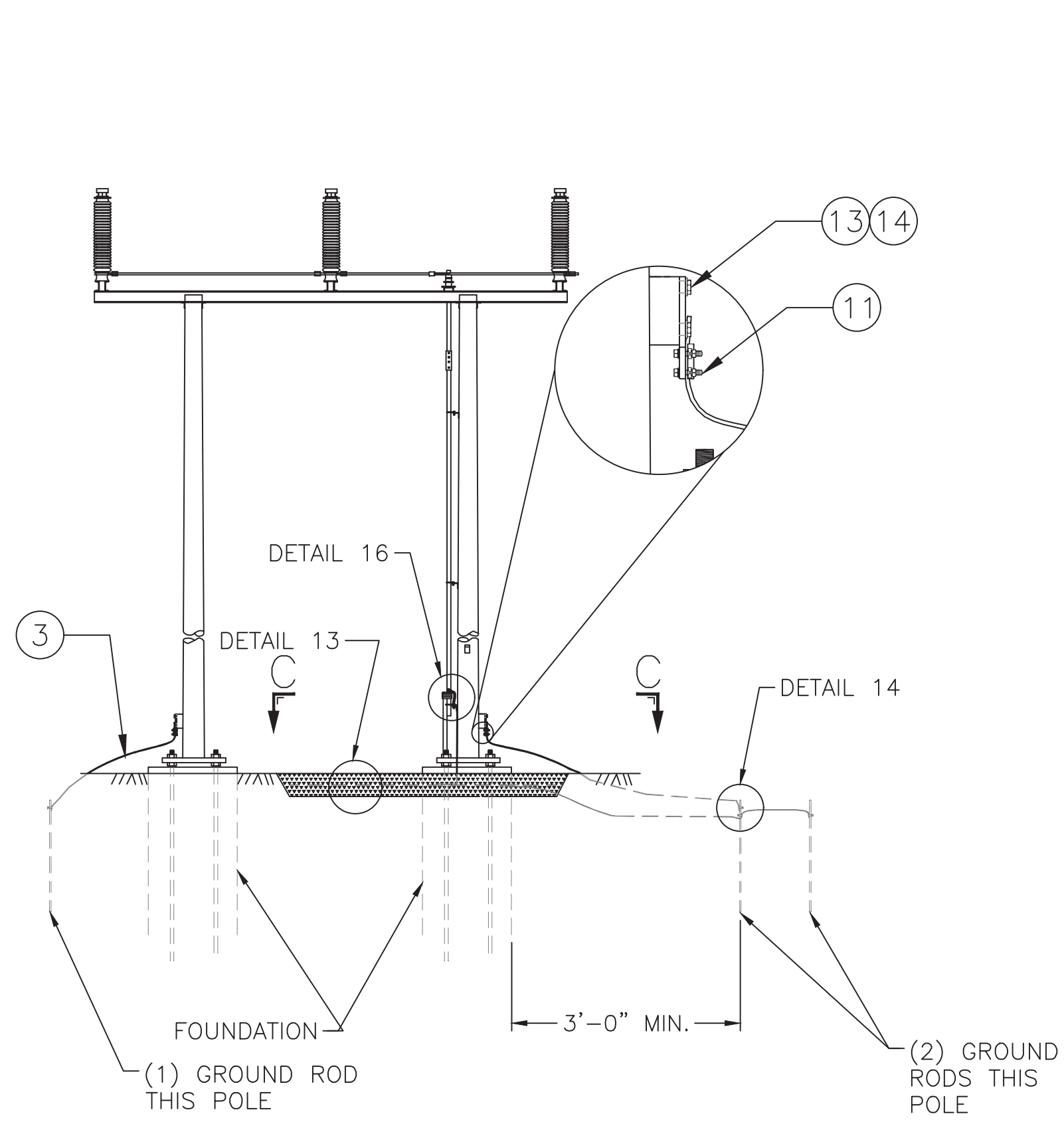
1.7 09/14/16 CHANGE GROUND ROD CLAMP TO PS 5106194/SAP 9305898, PROBLEM LOG ENTRY 278

INCHES ON ORIGINAL

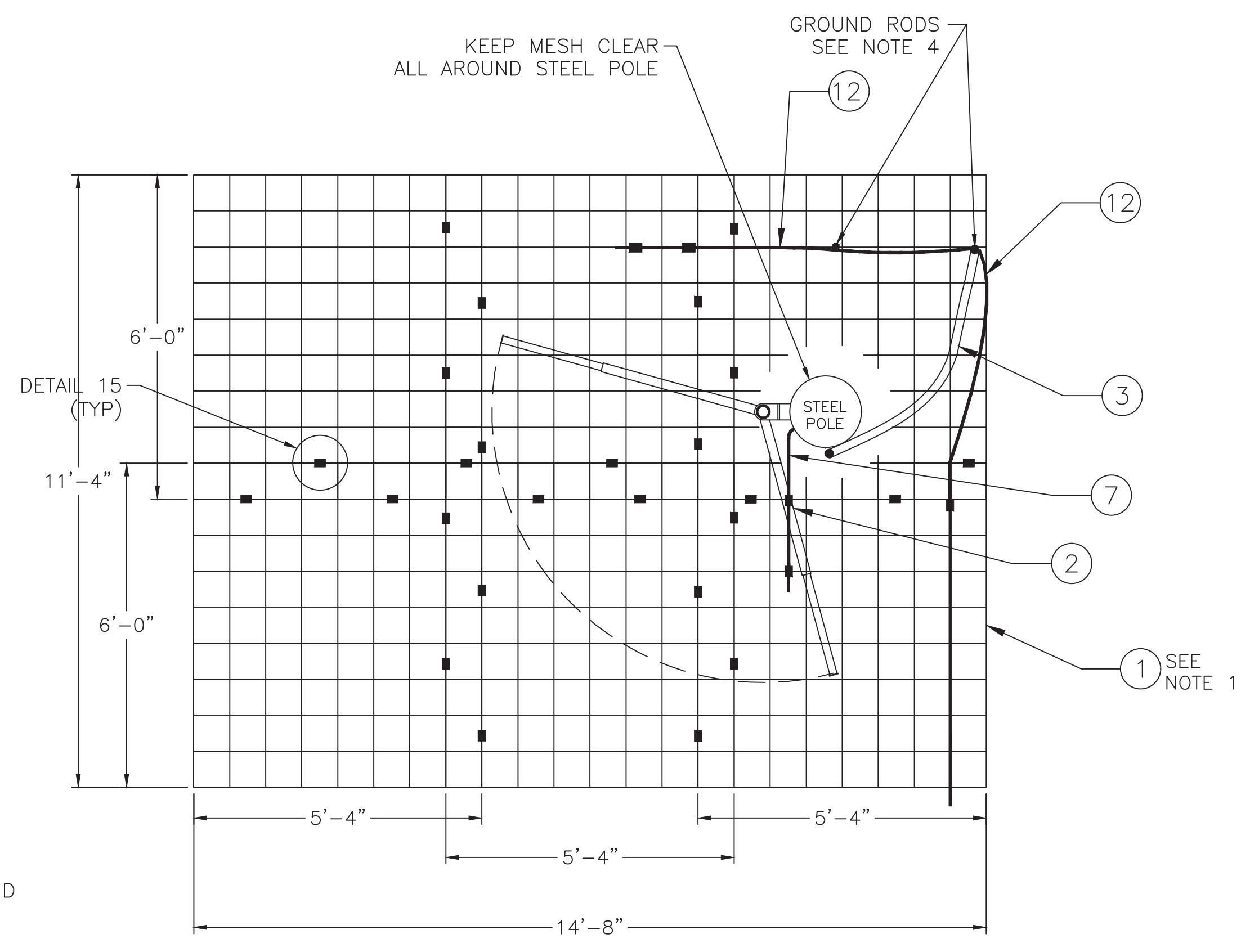
SP.06.01.301.101

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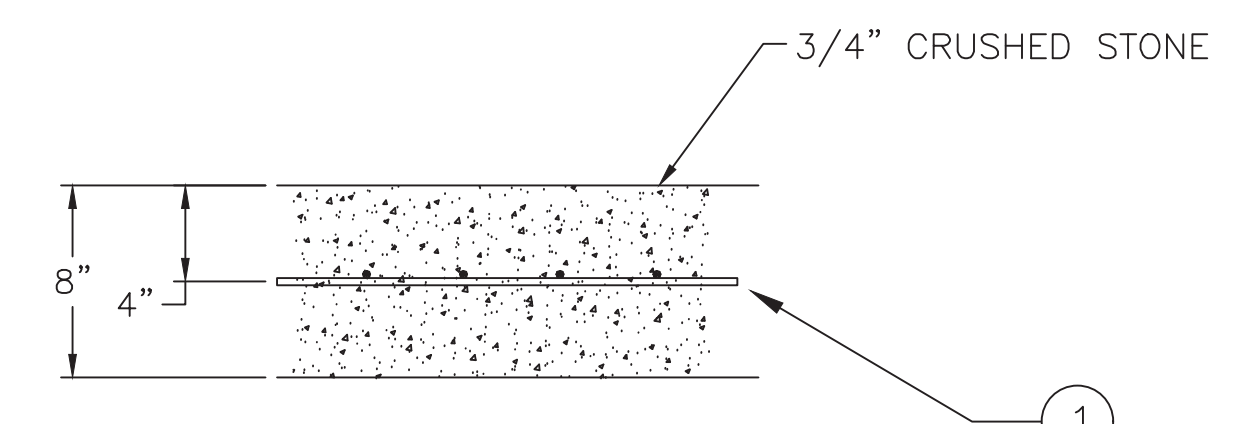
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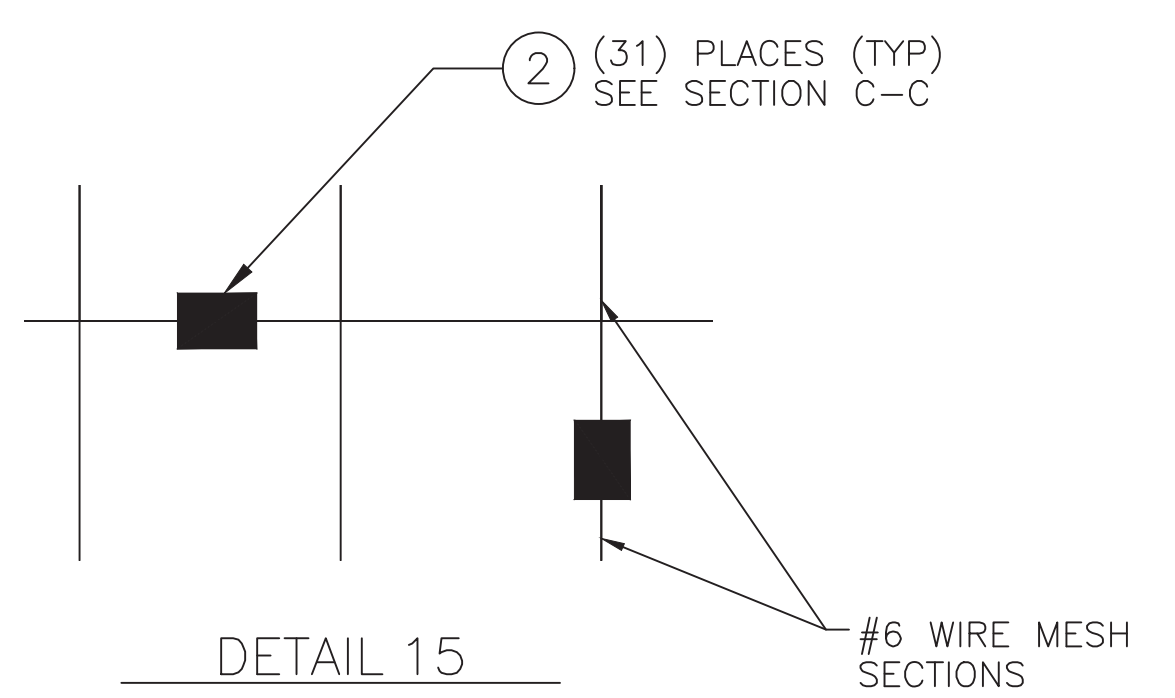
FRONT ELEVATION



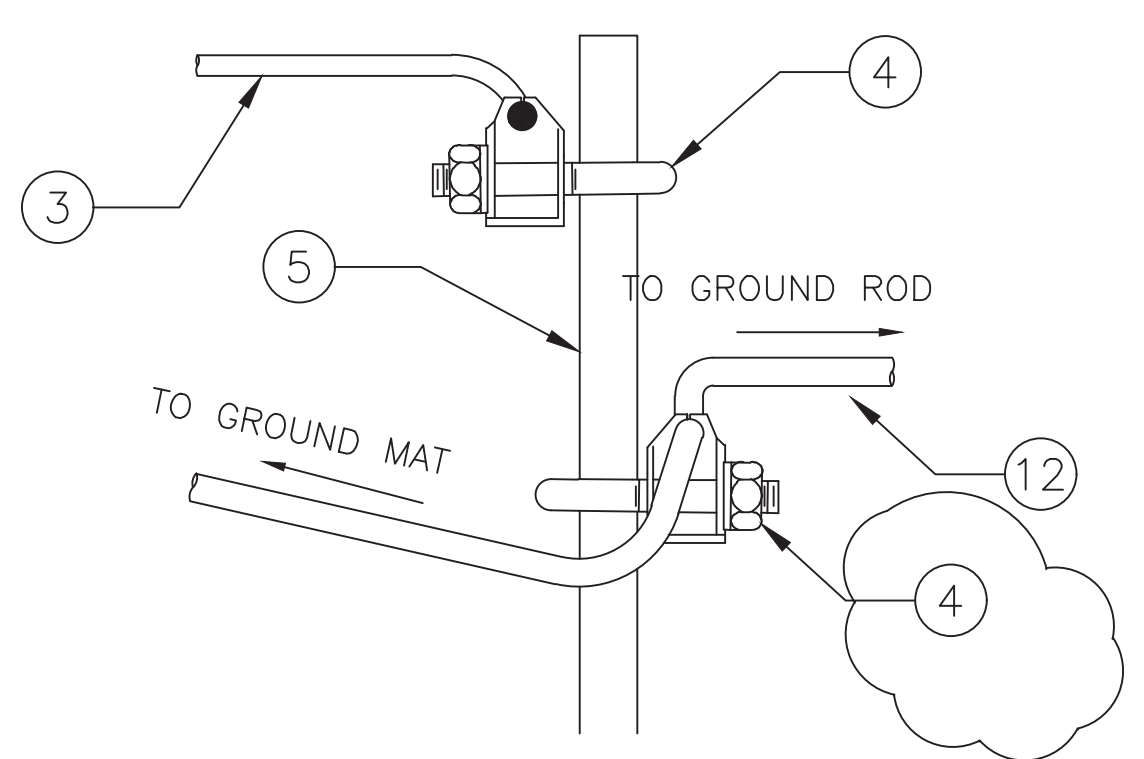
SECTION C-C



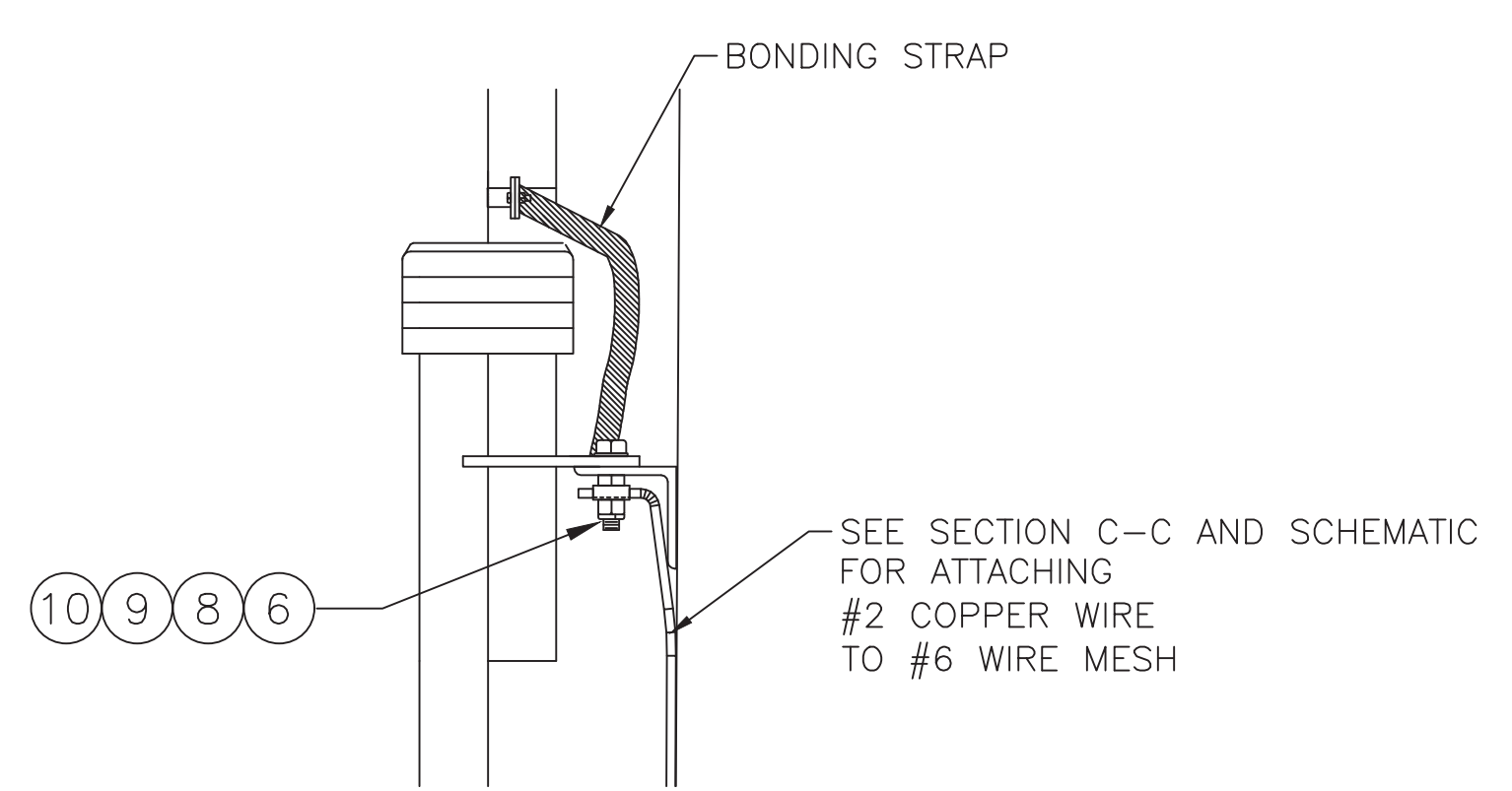
DETAIL 13



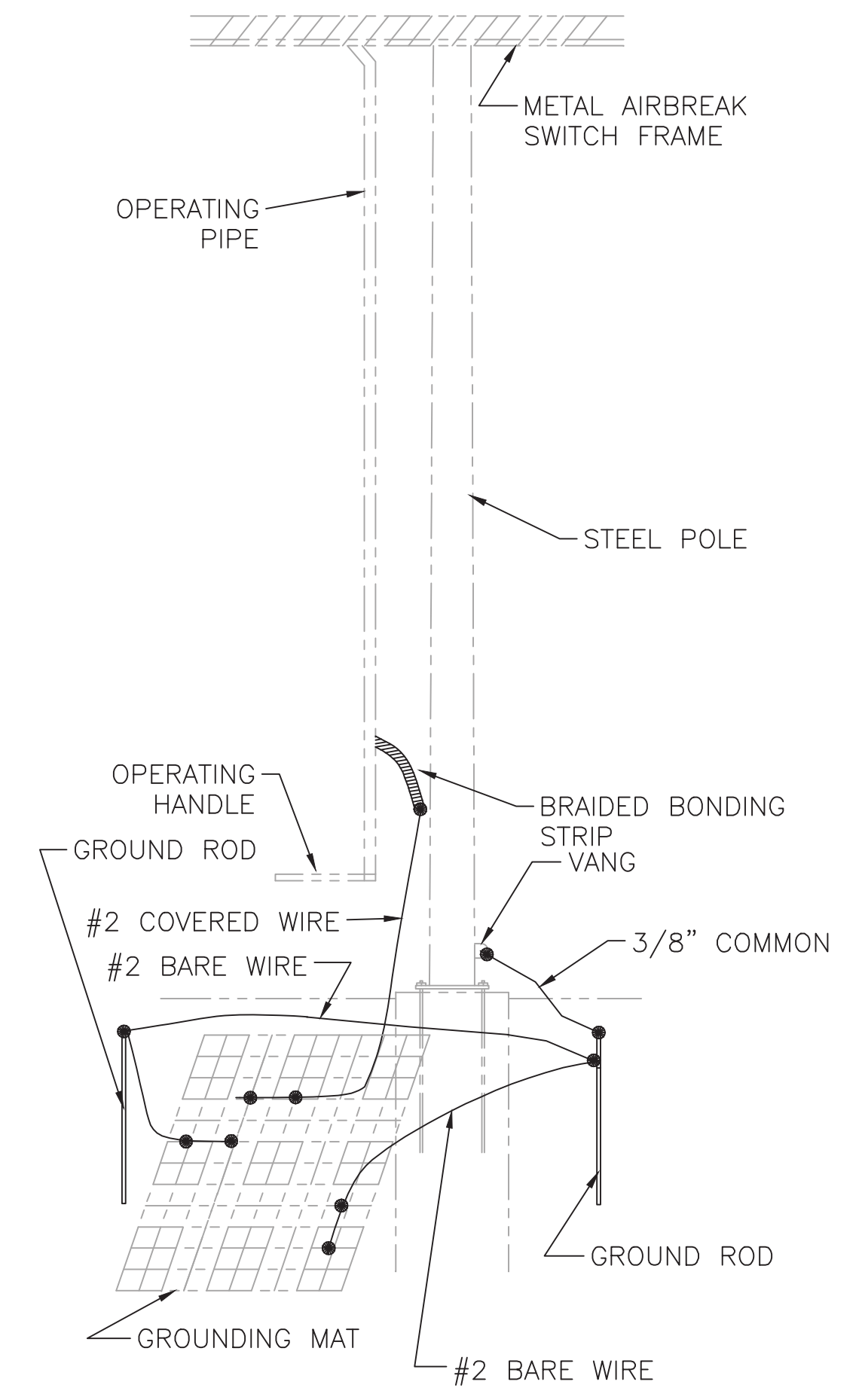
DETAIL 15



DETAIL 14



DETAIL 16



SCHEMATIC VIEW

| MATERIAL LIST | | | | |
|---------------|------|--|------------|-------------|
| ITEM | QUAN | DESCRIPTION | PS ITEM ID | SAP ITEM ID |
| 1 | 6 | #6 WIRE MESH, 8" SQUARES, 40% Cu CLAD 5'-4"x6'-0" FLAT MAT | 9202952 | 9307626 |
| 2 | 31 | COPPER CRIMPIT ("C" TYPE) | 5105243 | 9309996 |
| 3 | 15 | 3/8" COMMON GRADE STEEL WIRE (FEET) | 5998530 | 9306353 |
| 4 | 4 | CLAMP, GROUND ROD | 3503390 | 9313417 |
| 5 | 3 | ROD, GROUND GALV 5/8" x 8'-0" LG | 5106194 | 9305898 |
| 6 | 2 | BOLT, MACHINE GALV 5/8" x 3" | 5981388 | 9307344 |
| 7 | 10' | WIRE, #2 7 STRAND SD COPPER, COVERED | 4001042 | 9312556 |
| 8 | 1 | CLIP, BONDING FOR 5/8" BOLT | 5987955 | 9320450 |
| 9 | 1 | NUT, SQUARE GALVANIZED 5/8" | 5993400 | 9319911 |
| 10 | 1 | PALNUT, GALVANIZED 5/8" | 7024158 | 9322021 |
| 11 | 2 | 2 BOLT BRONZE TERMINAL LUG | 5965885 | 9320350 |
| 12 | 25 | WIRE, #2 7 STRAND BARE SD COPPER | 4015032 | 9315672 |
| 13 | 4 | BOLT, STAINLESS STEEL, 1/2"x1" | 5624913 | 9304788 |
| 14 | 4 | WASHER, BELLEVILLE, STAINLESS STEEL, 1/2" | 7006022 | 9319830 |

- NOTES:
1. PLACE SIX SECTIONS OF WIRE MESH AS SHOWN IN RELATION TO THE FULL HANDLE SWING.
 2. JOIN EACH GRID SQUARE WITH COPPER CRIMPITS, ITEM 2.
 3. GROUNDING WIRE FROM STEEL POLE VANG SHOULD NOT TOUCH WIRE MESH.
 4. STRIP ENOUGH OF THE #2 COPPER COVERED WIRE TO MAKE A GOOD CONNECTION.

TRANSMISSION LINE STANDARD

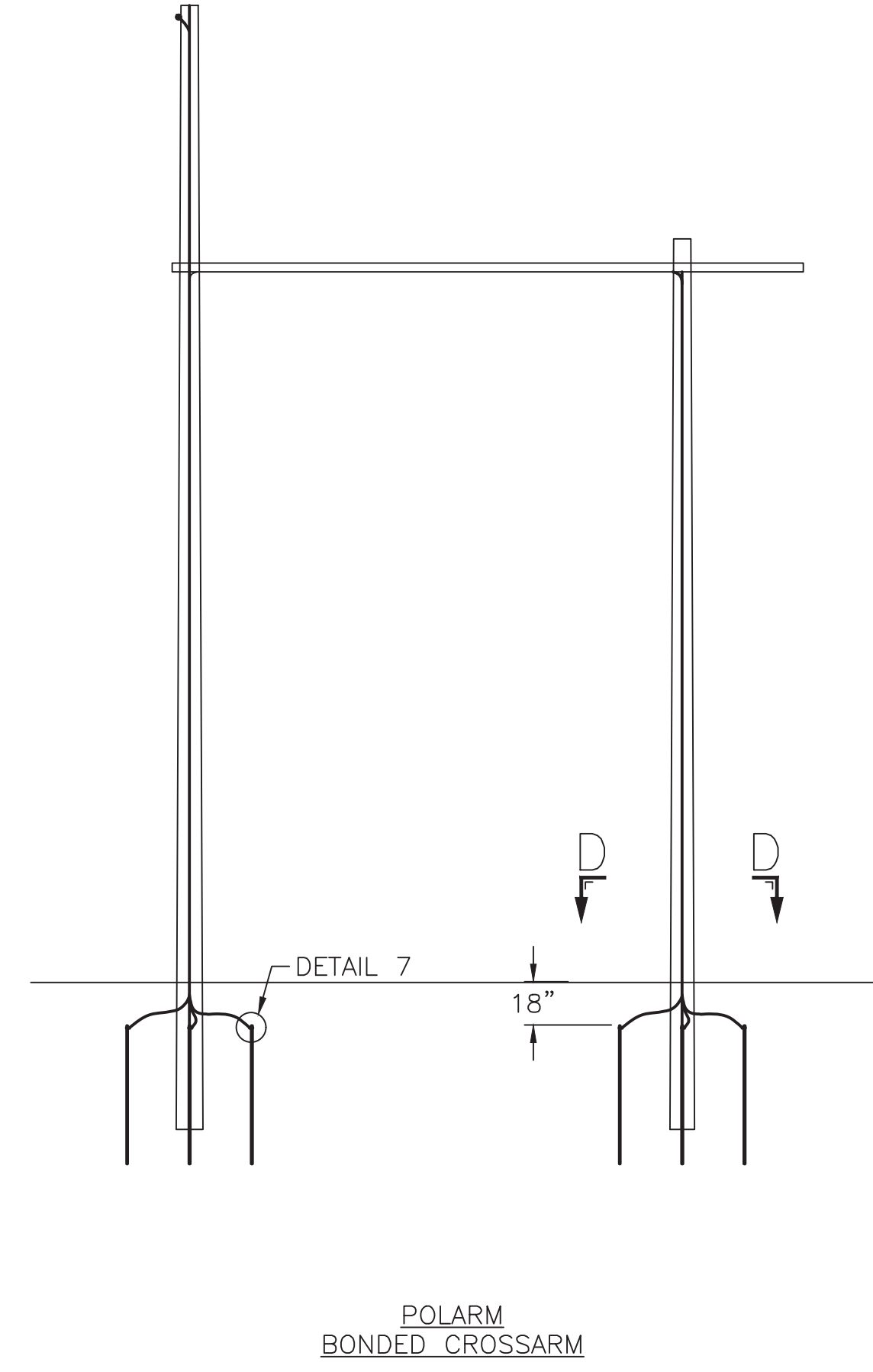
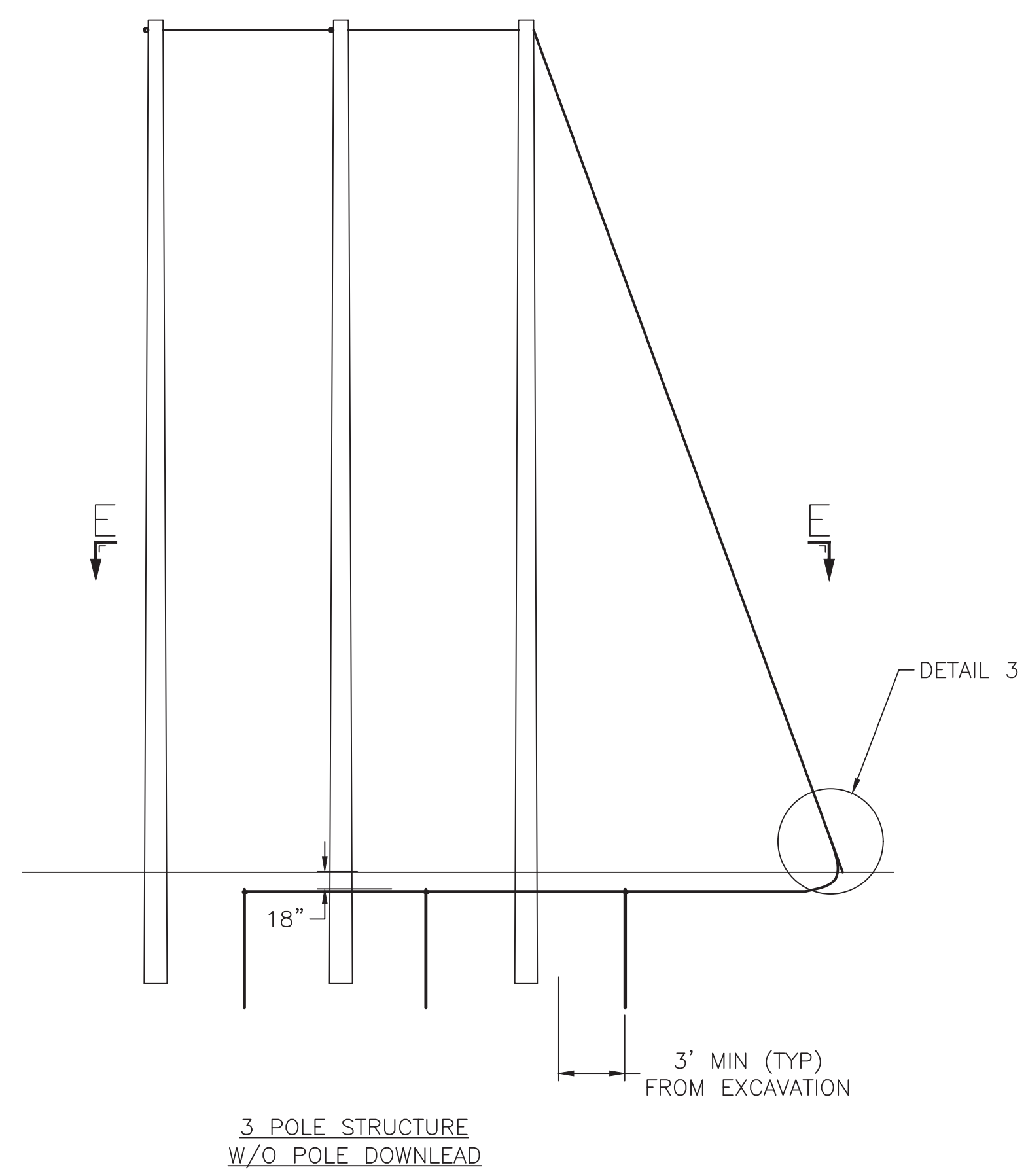
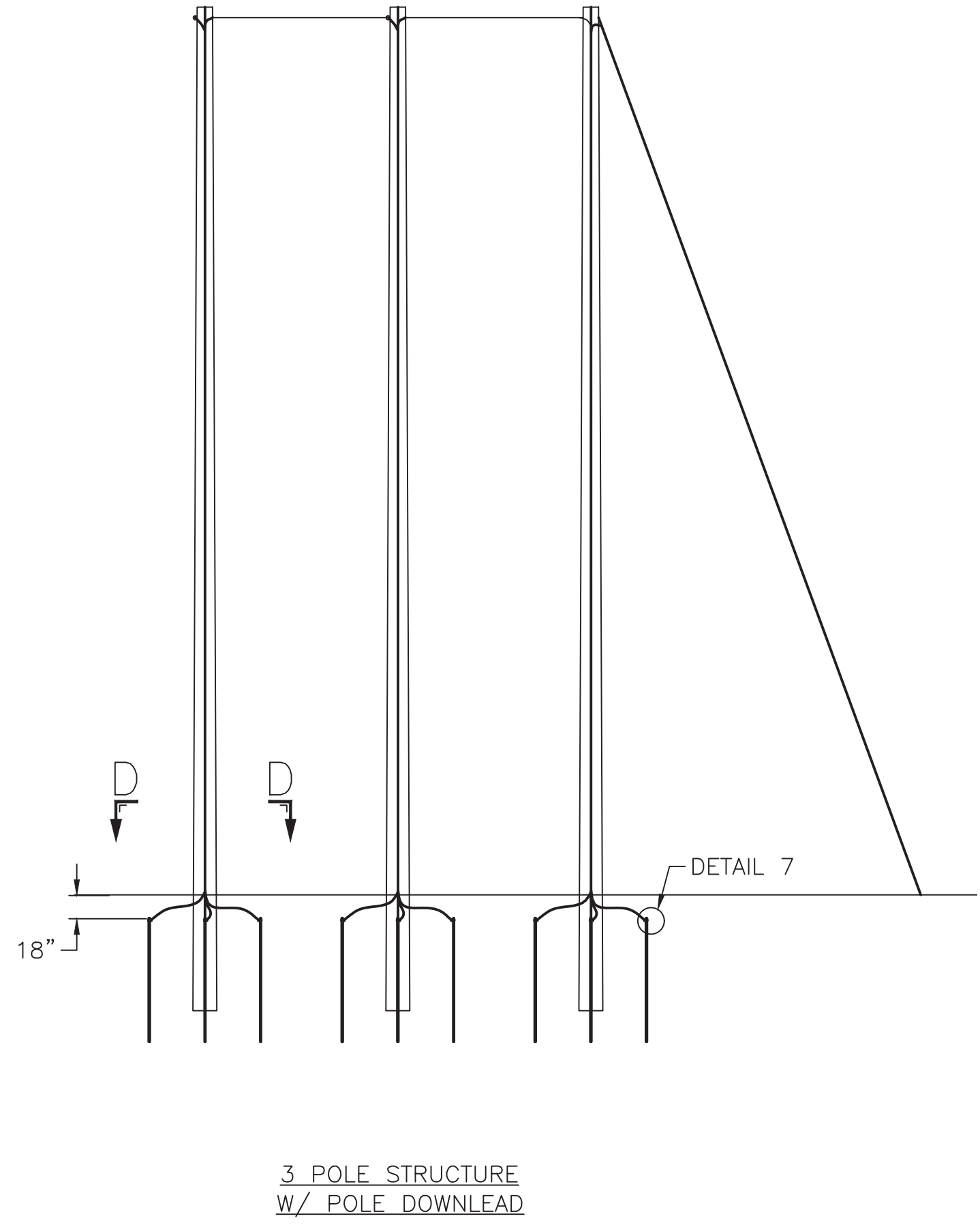
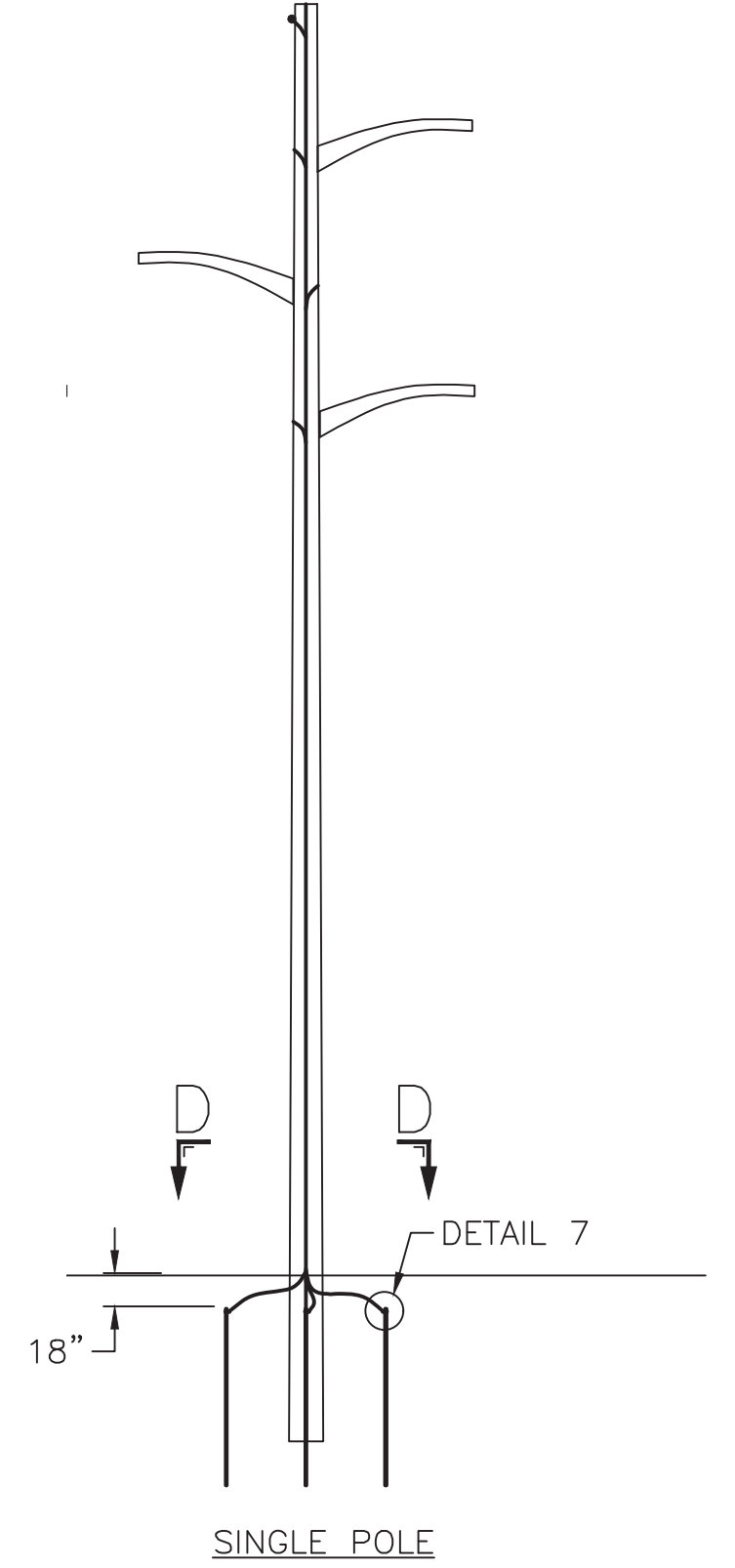
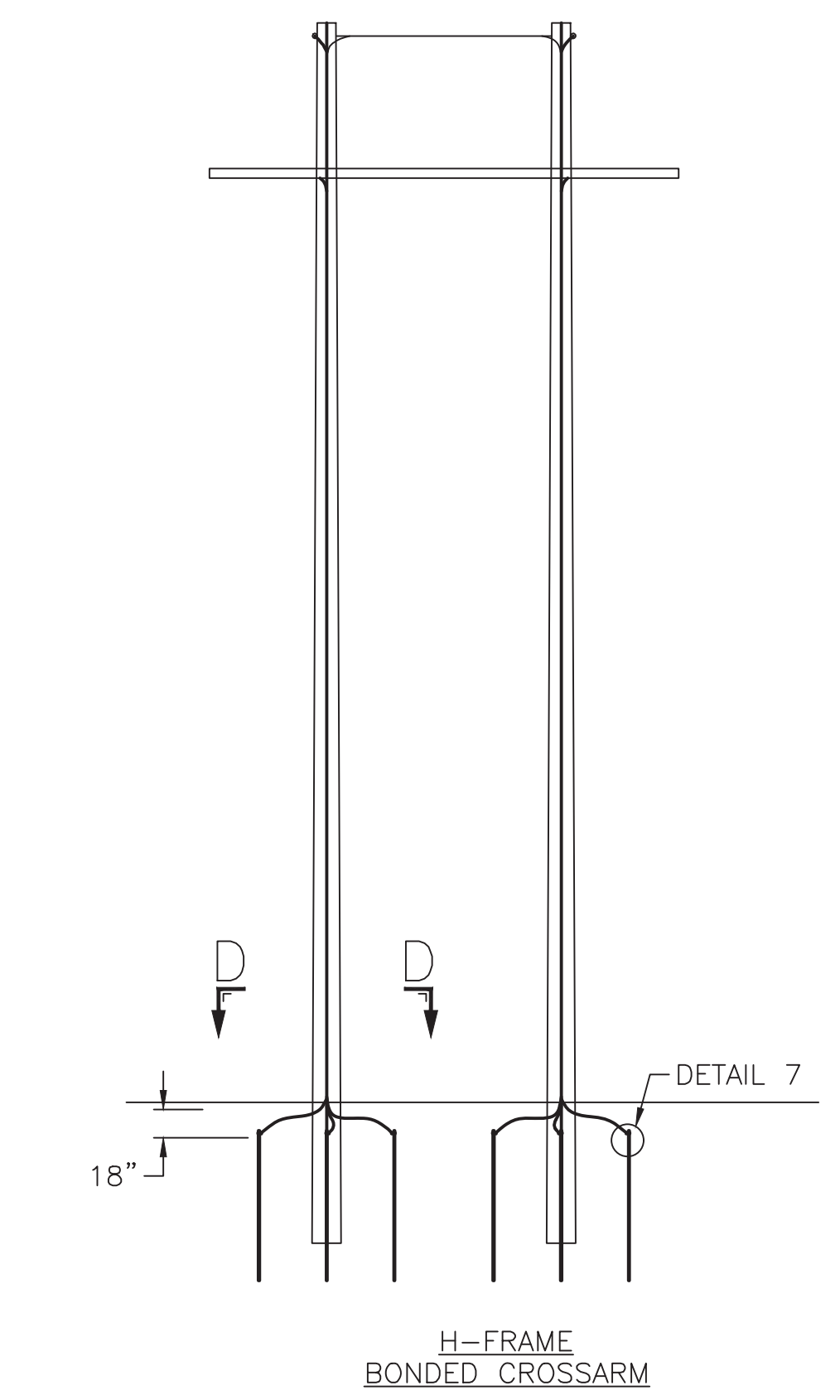
GROUNDING DETAILS FOR STEEL SWITCH STRUCTURES

VERSION 1.7

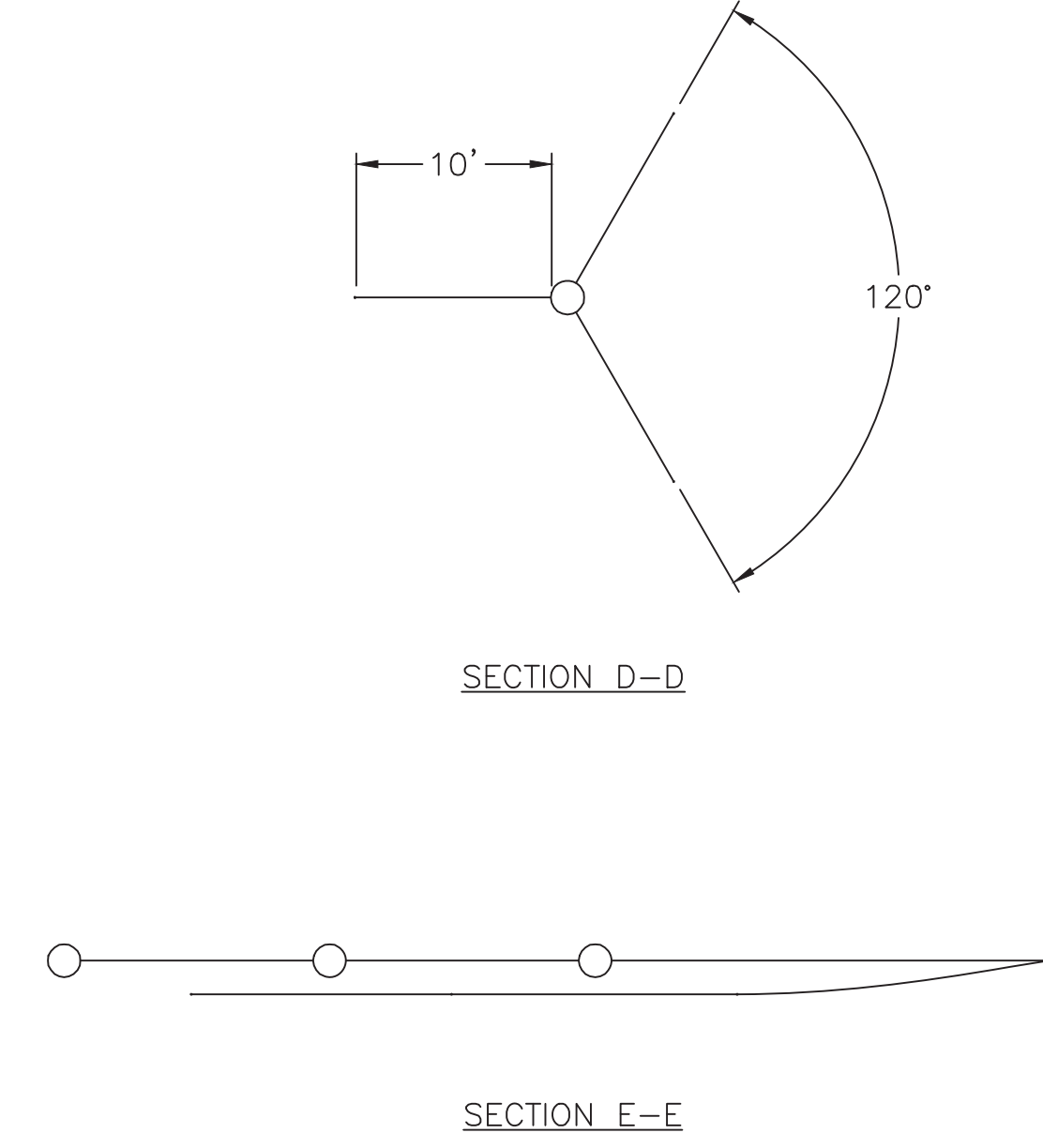
| VER | DATE | DESCRIPTION |
|-----|----------|--|
| 1.1 | 04/25/14 | ADD DETAIL DESCRIPTIONS, ADD HOPE PIPE |
| 1.2 | 09/19/14 | CLARIFY DETAIL 4 AND CORRECT GROUND ROD CLAMP ITEM ID ON PAGE 2 |
| 1.3 | 09/19/14 | CHANGE POLARITY OF GROUND ROD CLAMP TO 2 |
| 1.4 | 09/19/14 | REMOVE STAINLESS BRACKET DETAILS P.6 |
| 1.5 | 05/04/16 | REPLACE GROUNDING LUG WITH 2 HOLE BRONZE TERMINAL CONNECTOR, SPL 272 |
| 1.6 | 05/26/16 | REMOVE STEEL POLE FLANGE CONNECTION DETAIL |
| 1.7 | 09/14/16 | CHANGE GROUND ROD CLAMP TO PS 5106194/SAP 9305898, PROBLEM LOG ENTRY 278 |

| | | |
|-------------|------|--------------|
| PREPARED BY | JLC | 02/02/10 |
| REVIEWED BY | JME | 02/02/10 |
| APPROVED BY | MSE | 02/02/10 |
| SCALE | NONE | |
| SHEET | 5 | OF 6 |
| INDEX | | SP.06.01.301 |

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- NOTES
1. ALL WOOD POLES SHALL BE INSTALLED IN CORRUGATED METAL PIPES UNLESS STATED OTHERWISE IN THE CONSTRUCTION FIELD ISSUE, OR WHERE APPROVED ON A SITE SPECIFIC BASIS BY THE ENGINEER
 2. WHERE WOOD POLES ARE NOT INSTALLED IN CORRUGATED METAL PIPE, THE ALTERNATE GROUNDING CONFIGURATIONS IDENTIFIED IN THIS SHEET SHALL BE USED
 3. IF THESE ALTERNATE DETAILS ARE USED, TESTING OF GROUND RESISTANCE SHALL PROCEED AS NORMAL. THE INSTALLER SHALL USE THE SAME PROCEDURE AS FOR POLES INSTALLED IN CORRUGATED METAL PIPES.



INCHES ON ORIGINAL

| | | | |
|-------------------------------------|--------------|-----------------|----------|
| TRANSMISSION LINE STANDARD | | PREPARED BY JLC | 02/02/10 |
| ALTERNATE GROUNDING DETAILS | | REVIEWED BY JME | 02/02/10 |
| INSTALLATIONS WITHOUT STEEL CULVERT | | APPROVED BY MSE | 02/02/10 |
| SCALE | NONE | SHEET | 6 OF 6 |
| INDEX | SP.06.01.301 | VERSION | 17 |

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APPENDIX E

Agency Correspondence

**State Historic Preservation Office
Correspondence**



Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

July 20, 2017

Mrs. Mary Bitka
144 Kensington Avenue
Buffalo, NY 14214

Re: USACE
Gardenville-Erie 54-921 Reconductoring
2851 Broadway Street, Cheektowaga, Erie County, NY
17PR04561

Dear Mrs. Bitka:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO has determined that no historic properties will be affected by this undertaking. This recommendation pertains only to the Area of Potential Effects (APE) examined during the above-referenced investigation. It is not applicable to any other portion of the project property. Should the project design be changed SHPO recommends further consultation with this office.

If further correspondence is required regarding this project, please refer to the project number (PR) noted above. If you have any questions, I can be reached at 518-268-2218 or via e-mail at Josalyn.Ferguson@parks.ny.gov.

Sincerely,

Josalyn Ferguson (B.A., M.A.)
Historic Preservation Specialist/Archaeology

via e-mail only

Division for Historic Preservation

P.O. Box 189, Waterford, New York 12188-0189 • (518) 237-8643 • www.nysparks.com

USFWS
IPaC Species List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Erie County, New York



Local office

New York Ecological Services Field Office

☎ (607) 753-9334

📠 (607) 753-9699

3817 Luker Road
Cortland, NY 13045-9349

<http://www.fws.gov/northeast/nyfo/es/section7.htm>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

Mammals

| NAME | STATUS |
|---|------------|
| Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045 | Threatened |

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

| NAME | SEASON(S) |
|---|------------|
| American Bittern <i>Botaurus lentiginosus</i> https://ecos.fws.gov/ecp/species/6582 | Breeding |
| Bald Eagle <i>Haliaeetus leucocephalus</i> https://ecos.fws.gov/ecp/species/1626 | Year-round |
| Black Tern <i>Chlidonias niger</i> https://ecos.fws.gov/ecp/species/3093 | Breeding |
| Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> https://ecos.fws.gov/ecp/species/9399 | Breeding |

| | |
|---|-----------|
| Black-crowned Night-heron <i>Nycticorax nycticorax</i> https://ecos.fws.gov/ecp/species/6487 | Breeding |
| Blue-winged Warbler <i>Vermivora pinus</i> | Breeding |
| Canada Warbler <i>Wilsonia canadensis</i> | Breeding |
| Cerulean Warbler <i>Dendroica cerulea</i> https://ecos.fws.gov/ecp/species/2974 | Breeding |
| Common Tern <i>Sterna hirundo</i> https://ecos.fws.gov/ecp/species/4963 | Breeding |
| Golden-winged Warbler <i>Vermivora chrysoptera</i> https://ecos.fws.gov/ecp/species/8745 | Breeding |
| Least Bittern <i>Ixobrychus exilis</i> https://ecos.fws.gov/ecp/species/6175 | Breeding |
| Olive-sided Flycatcher <i>Contopus cooperi</i> https://ecos.fws.gov/ecp/species/3914 | Breeding |
| Peregrine Falcon <i>Falco peregrinus</i> https://ecos.fws.gov/ecp/species/8831 | Breeding |
| Pied-billed Grebe <i>Podilymbus podiceps</i> | Breeding |
| Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> | Breeding |
| Short-eared Owl <i>Asio flammeus</i> https://ecos.fws.gov/ecp/species/9295 | Wintering |
| Upland Sandpiper <i>Bartramia longicauda</i> https://ecos.fws.gov/ecp/species/9294 | Breeding |
| Willow Flycatcher <i>Empidonax traillii</i> https://ecos.fws.gov/ecp/species/3482 | Breeding |
| Wood Thrush <i>Hylocichla mustelina</i> | Breeding |

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAA/NCCOS models: the models were developed as part of the NOAA/NCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAAANCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

Facilities

Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1E](#)

A full description for each wetland code can be found at the National Wetlands Inventory website: <https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.