EXHIBIT E

AT&T WIRELESS SERVICES

UNMANNED WIRELESS COMMUNICATION EQUIPMENT SITE
"SITE NO. 3NO-NY611"
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

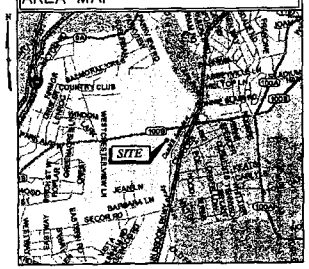
GENERAL NOTES

1. EXIST FEATURES BASED ON ZONING DRAWINGS PREPARED BY O'DEA & ASSOCIATES, PC, CONSULTING ENGINEERS DATED 11/23/98, REVISED 6/27/00.
2. WETLANDS LOCATION VERIFIED BY A FIELD SURVEY PERFORMED BY TECTONIC ENGINEERING CONSULTANTS P.C. ON 2/27/01.
3. WETLANDS DELINEATION PERFORMED BY EBS CONSULTANTS, INC. FEBRUARY 2001.
4. NORTH ORIENTATION IS BASED UPON A FIELD SURVEY REFERENCED IN NOTE 2.
5. THE PROPOSED FACILITY IS UNMANNED, AND THEREFORE WILL NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.
6. THE PROPOSED FACILITY DOES NOT INCLUDE SIGNS OF ANY TYPE.
7. THE PROPOSED FACILITY DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
8. THE PROPOSED FACILITY WILL EMIT NO OFFENSIVE DUST, DIRT, FLY ASH, OFFENSIVE ODORS OR FUMES.

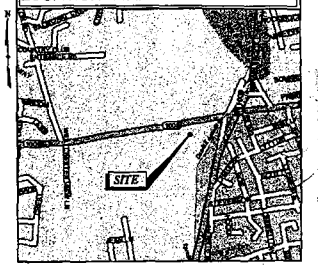
PROJECT INDEX

SITE NUMBER:	3NO-NY611
SITE ADDRESS:	DOBBS FERRY ROAD CON EDISON TOWER NO. K-49 GREENBURGH, NY 10607
APPLICANT:	AT&T WIRELESS SERVICES 70 EAST MIDLAND AVENUE PARAMUS, NEW JERSEY 07652
OWNER:	CONSOLIDATED EDISON COMPANY 4-IRVING PLACE NEW YORK, NY 10003
JURISDICTION:	TOWN OF GREENBURGH
CURRENT ZONING:	R-3D, ONE FAMILY RESIDENCE DISTRICT
USGS MAP:	WHITE PLAINS
COUNTY:	WESTCHESTER
LATITUDE (NAD 27):	N 41° 02' 05"
LONGITUDE (NAD 27):	W 73° 48' 16"
DECLINATION:	12°±

AREA MAP



LOCATION MAP



DRAWING INDEX

DWG. NO.	DESCRIPTION	REV NO	REVISION DATE
T1	TITLE SHEET	1	4/9/01
A1	PARTIAL SITE PLAN	1	4/9/01
A2	SITE DETAIL PLAN & DETAILS	1	4/9/01
A3	ELEVATIONS & DETAILS	1	4/9/01
S51	FOUNDATION PLAN, DETAILS & NOTES	1	4/9/01
S52	ELEVATION, DETAILS & NOTES	1	4/9/01
E1	ELECTRICAL PLAN, DETAILS & NOTES	1	4/9/01
E01	GROUNDING PLAN & DETAILS	1	4/9/01

THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL ITEMS OF CONCERN HAVE BEEN ADDRESSED AND EACH OF THE DRAWINGS HAS BEEN REVISED AND ISSUED "FOR CONSTRUCTION"

ANTENNA CABLE LENGTHS

SECTOR	ANTENNA CABLE LENGTH	SIZE	MODEL NO.	NO.
A	170'	1-5/8"	LDF7-50A	3
B	170'	1-5/8"	LDF7-50A	3
C	170'	1-5/8"	LDF7-50A	3

ANTENNA CABLE LENGTHS HAVE BEEN DETERMINED BASED ON THESE PLANS. CABLE LENGTHS LISTED ARE APPROXIMATE AND ARE NOT INTENDED TO BE USED FOR FABRICATION. DUE TO FIELD CONDITIONS, ACTUAL ANTENNA CABLE LENGTHS REQUIRED MAY VARY FROM LENGTHS TABULATED. CONTRACTOR MUST FIELD VERIFY ANTENNA CABLE LENGTHS PRIOR TO ORDERING.

PROJECT DESCRIPTION

INSTALLATION OF (9) NINE PANEL ANTENNAS ON AN EXISTING LATTICE UTILITY TOWER AND A 12' X 20' UNMANNED EQUIPMENT SHELTER ON GRADE.

ANTENNA DATA

SECTOR	AZIMUTH	MODEL NO.	NUMBER
A	30°	7278	3
B	150°	7278	3
C	270°	7278	3

MANUFACTURER: ALLGON TELECOM LTD.
ANTENNA DIMENSIONS: 92"x6.3"x2.2"/13.2 lbs
WIND AREA: 2.3 SQ FT

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3480

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MN	KS	DL
0	11/15/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

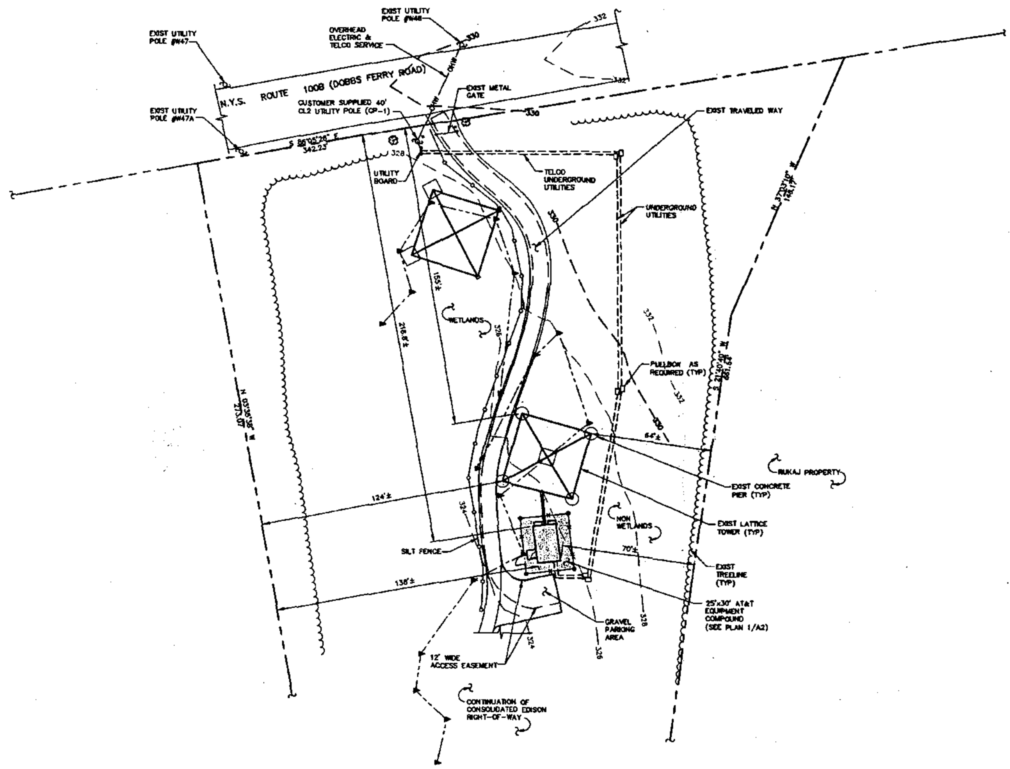
ORIGINAL SIZE IN INCHES

W.O. # 2650NY611 | DATE: 9/21/00

TECTONIC ENGINEERING CONSULTANTS P.C.

TITLE SHEET

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	T1	1



PARTIAL SITE PLAN (1/A1)
SCALE: 1" = 30'

GENERAL NOTES

1. THE CONTRACTOR SHALL CALL UTILITY COMPANIES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWING AND STIPULATED IN THE SPECIFICATION PROJECT SUMMARY.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE PCS EQUIPMENT AND TOWER AREAS.
6. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
7. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING.
9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE BUILDING OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH AS SPECIFIED IN THE SPECIFICATION LANDSCAPE WORK.
10. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

LEGEND

- PROPERTY LINE
- CHAINLINK FENCE
- SILT FENCE
- EXIST TREE LINE
- EXIST UTILITY POLE
- 326 EXIST CONTOUR
- 370 EXIST INDEX CONTOUR
- WETLAND LIMIT

SITE PLAN NOTES

1. EXISTING SITE PLAN INFORMATION TAKEN FROM "SITE PLAN AND PROJECT INFORMATION" PREPARED BY O'DEA & ASSOCIATES DATED 11/23/98, REVISED 6/27/00.
2. WETLANDS LOCATION VERIFIED BY A FIELD SURVEY PERFORMED BY TECTONIC ENGINEERING CONSULTANTS P.C. ON 2/27/01.
3. WETLANDS DELINEATION PERFORMED BY ERS CONSULTANTS, INC. FEBRUARY 2001.

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3450

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KZ	DL
0	11/6/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

STATE OF NEW YORK · DONALD L. SCHMALZLE · LICENSED PROFESSIONAL ENGINEER · No. 066866

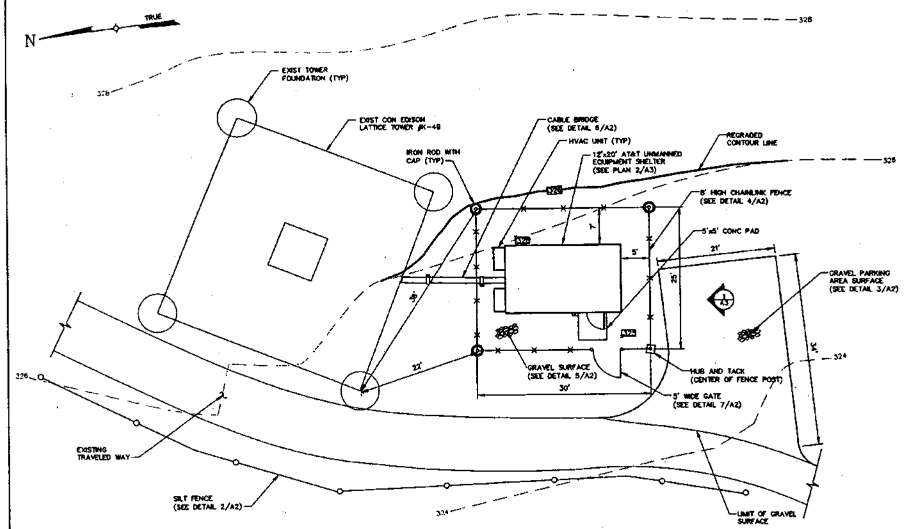
0 1 2 3 4
ORIGINAL SIZE IN INCHES

W.O. # 2650.NY611 — DATE: 9/21/00

TECTONIC ENGINEERING CONSULTANTS P.C.

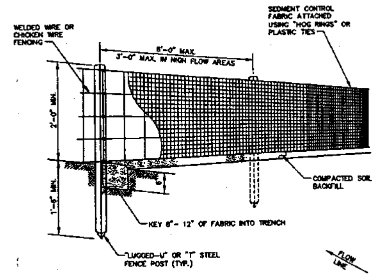
PARTIAL SITE PLAN

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	A1	1



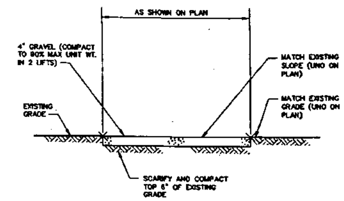
1/A2 SITE DETAIL PLAN

SCALE: 1"=10'



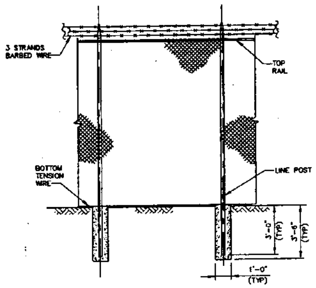
2/A2 SILT FENCE DETAIL

SCALE: NONE



3/A2 GRAVEL PARKING AREA SURFACE

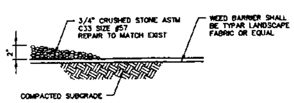
SCALE: NONE



NOTE: SEE WIRE WOVEN FENCING NOTES ON DRAWING SS1

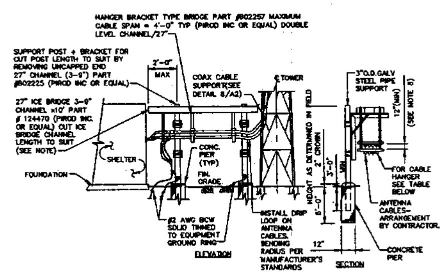
4/A2 FENCE DETAIL

SCALE: NONE



5/A2 GRAVEL SURFACING DETAIL

SCALE: 1 1/2" = 1'-0"



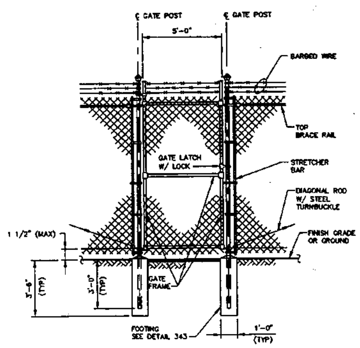
NOMINAL CABLE SIZE	CABLE TYPE NUMBER	CABLE HANGER TYPE NUMBER	MANUF. MIN. BEND RADIUS
7/8"	LDF5-50A	206706-2	10"
1 1/4"	LDF6-50	206706-3	15"
1 5/8"	LDF7-50A	206706-4	20"

NOTES :

1. WHEN USING PIROD COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 19 FEET FOR 20 FEET BRIDGE CHANNEL OR 9 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING PIROD COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING PIROD COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILIVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM MANUFACTURERS OTHER THAN PIROD, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS SHOWN ON SITE SPECIFIC DRAWINGS OR STANDARD DETAILS REQUIRE ENGINEERING APPROVAL.
8. INSTALL COAX WITH MINIMUM 12" VERTICAL SPACING TO ALLOW FOR MAINTENANCE ACCESS.

6/A2 CABLE BRIDGE DETAIL

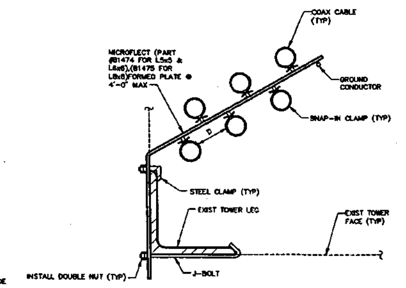
SCALE: NONE



NOTE: SEE WIRE FENCING NOTES ON DRAWING SS1

7/A2 GATE DETAIL

SCALE: NONE



NOTES:

1. INSTALL BRACKETS ON EXISTING TOWER LEG AT LOCATIONS THAT DO NOT INTERFERE WITH EXISTING BRACING MEMBERS.
2. DO NOT INSTALL COAX SUPPORTS ON CLIMBING LEG.

HELIAX COAXIAL CABLE ANDREW CAT. No.	NOMINAL CABLE SIZE	HANGER ANDREW CAT. No.	CABLE TO CABLE SPACING (D)	MAXIMUM HANGER SPACING
LDF7-50A	1 5/8"	206706-4	1/2"	4'-0"

8/A2 TYPICAL COAX CABLE SUPPORT DETAIL

SCALE: NONE

0 1 2 3 4
ORIGINAL SIZE IN INCHES

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3460

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
12 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KZ	DTL
0	11/8/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

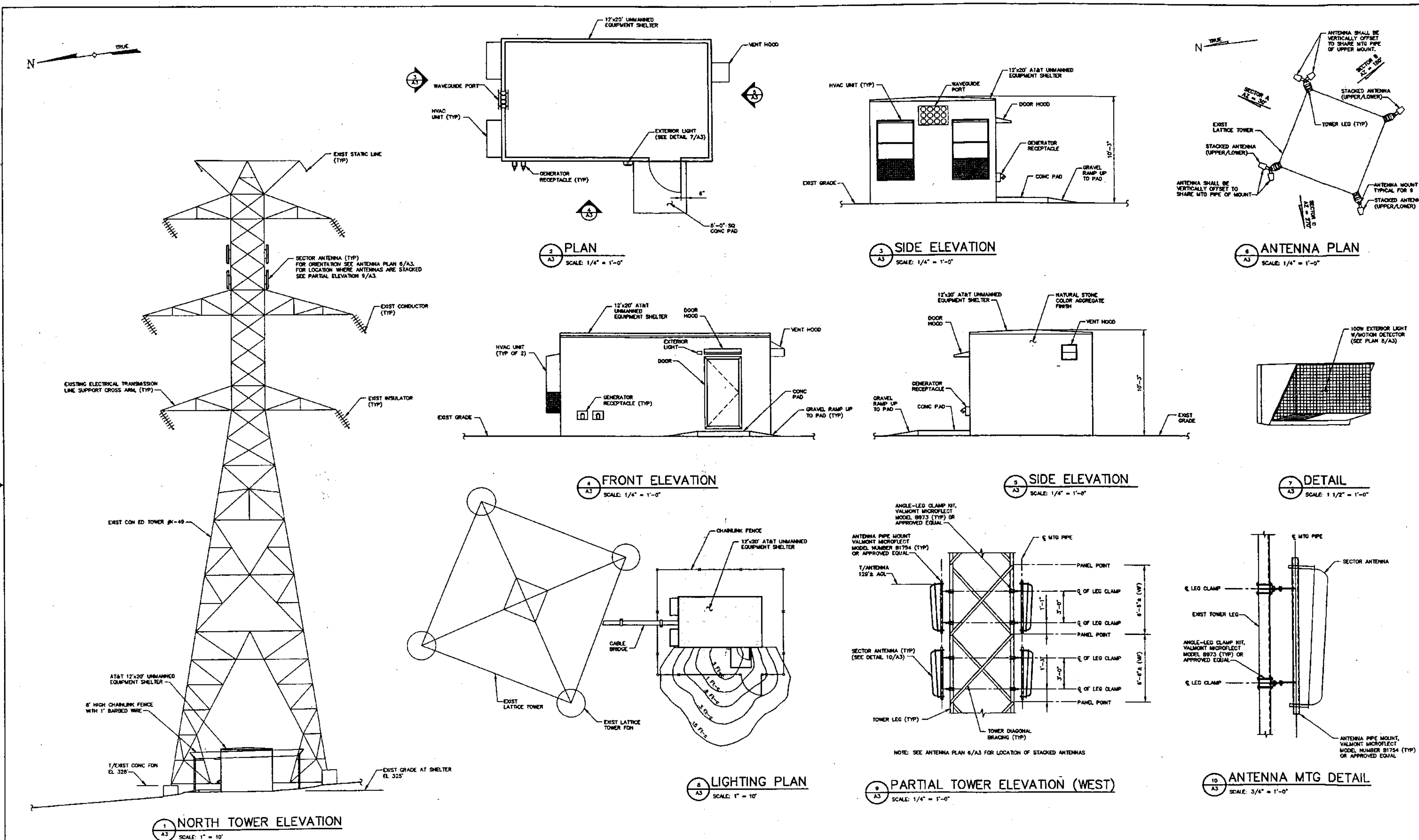
STATE OF NEW YORK — DONALD L. SCHMALTZ — LICENSED PROFESSIONAL ENGINEER

W.O. #: 2650.NY611 DATE: 9/21/00

TECTONIC ENGINEERING CONSULTANTS P.C.

SITE DETAIL PLAN & DETAILS

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	A2	1



0 1 2 3 4
ORIGINAL SIZE IN INCHES

TECTONIC ENGINEERING CONSULTANTS P.C. 2570 Route 9W Cornwall, NY 12518 (845) 534-5460	GREENBURGH II SITE NO. 3NO-NY611 CON EDISON TOWER NO. K-49 DOBBS FERRY ROAD GREENBURGH, NY 10607	AT&T WIRELESS SERVICES, INC. 15 East Midland Avenue Paramus, New Jersey 07652

UNAUTHORIZED ALTERATION OR ADDITIONS TO A PLAN BEARING A LICENSED ENGINEER'S OR SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KZ	DTZ
0	11/8/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

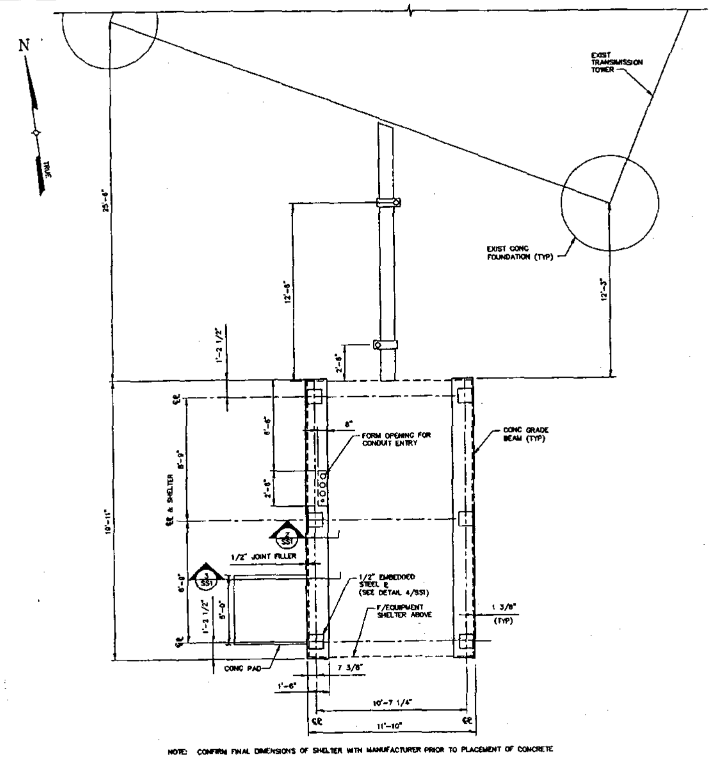
SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

W.O. #: 2650.NY611 DATE: 9/21/00

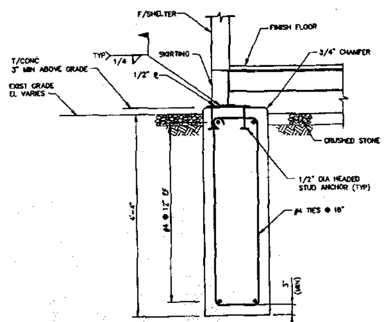
TECTONIC ENGINEERING CONSULTANTS P.C.

ELEVATIONS & DETAILS

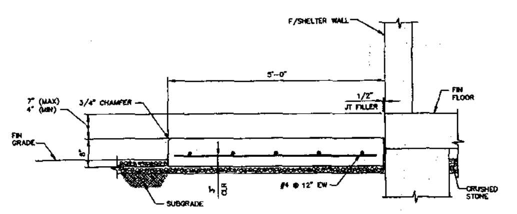
JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	A3	1



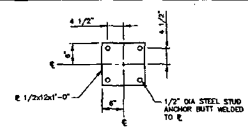
FOUNDATION PLAN (1/SS1)
SCALE: 1/4" = 1'-0"



SECTION (2/SS1)
SCALE: 3/4" = 1'-0"



SECTION (3/SS1)
SCALE: 3/4" = 1'-0"



DETAIL (4/SS1)
SCALE: 3/4" = 1'-0"

GENERAL CONDITIONS

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NYSUFP&BC AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. PROVIDE 48 HOURS WRITTEN NOTICE TO THE AT&T WIRELESS SERVICES INC. CONSTRUCTION MANAGER PRIOR TO COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
4. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
5. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
6. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
8. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE AT&T WIRELESS SERVICES INC. CONSTRUCTION MANAGER OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
9. CONTRACTOR SHALL VERIFY FINAL EQUIPMENT LOCATIONS & DIMENSIONS WITH AT&T WIRELESS PCS PRIOR TO INSTALLATION.
10. CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
11. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
12. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
13. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH ALL APPLICABLE CODES AND BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
15. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
16. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING, ANTENNA, ANTENNA CABLES AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
17. CONTRACTOR SHALL REPAIR ALL EXISTING SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND WITH ADJACENT SURFACES.
18. CONTRACTOR SHALL COORDINATE HIS WORK AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
20. CONTRACTOR SHALL PROVIDE ACCESS TO THE SITE AND ASSIST THE RADIO EQUIPMENT VENDOR AND THE ANTENNA INSTALLATION CONTRACTOR AS THEY MAY REQUIRE.
21. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS AND OTHER DOCUMENTATION SHALL BE TURNED OVER TO AT&T WIRELESS SERVICES INC. AT COMPLETION OF WORK.
22. IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS FOR CABLE RUNS, ETC., IT MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES. LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.
23. PROVIDE A PORTABLE FIRE EXTINGUISHER WITH A RATING OF NOT LESS THAN 2-A OR 2-A/10-BC WITHIN 75 FEET TRAVEL DISTANCE TO ALL PORTIONS OF THE WORK AREA DURING CONSTRUCTION.
24. CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE TO PROTECT THE PROPERTY OWNER AND AT&T WIRELESS SERVICES INC.
25. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE BY AT&T WIRELESS SERVICES INC.. ANY WORK, MATERIALS, OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST TO AT&T WIRELESS SERVICES INC.

OUTLINE SPECIFICATIONS

ANTENNAS & CABLES

1. ANTENNAS SHALL BE AS SPECIFIED ON DRAWING T-1.
2. DESIGN, FABRICATION AND ERECTION OF THE ANTENNA SUPPORTS SHALL CONFORM TO THE ANSI/EIA/TIA-222-F "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES". DESIGN WIND SPEED = 80 MPH. (70 MPH IN CONJUNCTION WITH 0.5 INCHES RADIAL ICE).
3. ANTENNA CABLES SHALL BE ANDREW COAXIAL CABLE. SIZE PER CABLE SCHEDULE ON DRAWING A2. ANDREW GROUND KITS (TYPE AS REQUIRED) AND ANDREW WEATHERPROOFING KITS (TYPE AS REQUIRED) SHALL USE 7/16" DIN CONNECTORS. TAKE CARE NOT TO EXCEED MAXIMUM TORQUE (32-36 LB-FT) VALUES WHEN ATTACHING CONNECTORS, AS PER MANUFACTURER'S SPECIFICATIONS.
4. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS AND AS SPECIFIED ON DRAWING A2.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
6. FLEXIBLE FOAM PAD SHALL BE CERAMAR EXPANSION JOINT FILLER AS MANUFACTURED BY W.R. MEADOWS, INC OR APPROVED EQUAL.
7. UNISTRUTS SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP, WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
8. CONTRACTOR TO VERIFY ALL REQUIRED LENGTHS OF MATERIAL PRIOR TO ORDERING MATERIALS.
9. CABLE ROUTING SHOWN IS DIAGRAMMATIC. ACTUAL ROUTE OF ANTENNA CABLES SHALL BE DETERMINED IN THE FIELD.

STEEL

1. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS".
2. STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 "STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
3. HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B.
4. HIGH STRENGTH BOLTS (HSB) SHALL CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS ", LATEST EDITION.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 "PIPE STEEL BLACK & HOT DIPPED, ZINC COATED, WELDED & SEAMLESS", TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF 1/2" DIAMETER STAINLESS STEEL THREADED ANCHOR ROD WITH NUTS & WASHERS A SCREEN TUBE AND AN EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI HIT HY-20 OR HY-150 SYSTEM OR ENGINEER APPROVED EQUAL. 6" MIN EMBEDMENT. (UON)
7. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATIONS FF-S-325, GROUP II, TYPE 4, CLASS 1, HILTI KWIK BOLT II OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE FOUR (4) INCHES.
8. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
9. ALL STEEL MATERIALS FOR EXTERIOR USE SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
10. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE FOR EXTERIOR USE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
11. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
12. STEEL MEMBERS THAT ARE NOT GALVANIZED SHALL BE PRIMED WITH SHERWIN WILLIAMS KROMIK METAL PRIMER SERIES E41 (DFT=3.0 MIL) AND ONE (1) COAT OF METALASTIC II ENAMEL SERIES B53 (DFT=3.0 MIL).
13. FIELD CONNECTIONS AND DAMAGED OR ABRADED AREAS OF SHOP PRIMECOAT SHALL BE TOUCH-UP PAINTED WITH COMPATIBLE FIELD PRIMER.
14. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.
15. SUBMIT SHOP DETAIL DRAWINGS OF ALL STRUCTURAL AND MISCELLANEOUS STEEL TO THE ENGINEER FOR APPROVAL, AND INCORPORATE ALL COMMENTS PRIOR TO FABRICATION.

FIRE STOPPING

1. SEAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES WITH U.L. LISTED MATERIALS.
2. ALL WALL PENETRATIONS SHALL BE FILLED WITH A USG FIRE STOP SYSTEM. SYSTEM SHALL CONSIST OF THERMAFIBER SAFING INSULATION AS INFILL, SEALED WITH FIRECODE COMPOUND ON EACH WALL FACE. MATERIALS SHALL BE AS MANUFACTURED BY UNITED STATES GYPSUM COMPANY, CHICAGO, ILLINOIS

OWNER PROTECTION

1. SPECIAL PRECAUTION SHALL BE TAKEN BY THE CONTRACTOR SO THAT THE EQUIPMENT ON THIS APPLICATION AND ITS INSTALLATION WILL NOT AFFECT THE FOLLOWING.
   - A. OWNER'S EGRESS TO AND FROM THE BUILDING.
   - B. FIRE SAFETY OR CREATE A FIRE HAZARD.
   - C. STRUCTURAL SAFETY OF THE BUILDING.
   - D. ACCUMULATION OF DUST: THE CONTRACTOR SHALL LEAVE THE WORKSITE BROOM CLEAN EACH DAY.
   - E. THERE SHALL BE NO CREATION OF NOISE OUTSIDE THE NORMAL HOURS OF 8AM TO 6PM, UNLESS OTHERWISE AGREED UPON WITH THE OWNER.
   - F. BUILDING SECURITY SHALL BE MAINTAINED IN ORDER TO PREVENT UNAUTHORIZED PERSONS FROM ENTERING THE PREMISES.
   - G. ELECTRICITY, GAS, WATER AND ANY OTHER UTILITIES WILL NOT BE INTERRUPTED DURING CONSTRUCTION.

EXISTING UTILITIES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL PUBLIC AND PRIVATE UNDERGROUND AND SURFACE UTILITIES AND STRUCTURES AT OR ADJACENT TO THE SITE OF CONSTRUCTION, IN SO FAR AS THEY MAY BE ENDANGERED BY HIS OPERATIONS. THIS SHALL HOLD TRUE WHETHER OR NOT THEY ARE SHOWN ON THE CONTRACT DRAWINGS. IF THEY ARE SHOWN ON THE DRAWINGS, THEIR LOCATIONS ARE NOT GUARANTEED EVEN THOUGH THE INFORMATION WAS OBTAINED FROM THE BEST AVAILABLE SOURCES. OTHER UTILITIES NOT SHOWN ON THESE PLANS MAY BE ENCOUNTERED. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, REPAIR OR REPLACE ANY STRUCTURE OR UTILITIES THAT HE DAMAGES, AND SHALL CONSISTENTLY PROCEED WITH CAUTION TO PREVENT UNDUE INTERRUPTION TO UTILITY SERVICE.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES WHETHER UNDERGROUND OR OVERHEAD AND SHALL MAINTAIN THE UTILITIES IN PROPER OPERATING CONDITION.

TEMPORARY UTILITIES

1. SHOULD TEMPORARY UTILITY SERVICES BE REQUIRED, THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY UTILITIES AND PAY ALL ASSOCIATED FEES AND OPERATING COSTS AT NO ADDITIONAL COST TO AT&T WIRELESS PCS AND IT SHALL BE HIS RESPONSIBILITY TO MAINTAIN SUCH TEMPORARY FACILITIES FOR THE DURATION OF THE PROJECT.

CONCRETE

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318.
2. CONCRETE WORK AND MATERIALS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301.
3. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, "DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, "WELDED STEEL WIRE FABRIC FOR CONCRETE REINFORCEMENT", UNLESS NOTED OTHERWISE. SPLICES SHALL CLASS "B" AND ALL OTHER HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER

   #6 AND LARGER....................2 IN.
   #5 AND SMALLER & WWF....1 1/2 IN.
5. JOINT FILLER SHALL BE PREFORMED RESILIENT BITUMINOUS EXPANSION JOINT FILLER CONFIRMING TO ASTM D1751.
6. READY MIX CONCRETE SHALL COMPLY WITH ACI-304 AND ASTM C-94. TIME BETWEEN INTRODUCTION OF WATER AND THE PLACEMENT OF CONCRETE SHALL NOT EXCEED 1-1/2 HOURS.
7. WELDING OF REINFORCING STEEL IS SPECIFICALLY PROHIBITED.
8. ALL EMBEDDED ITEMS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT.
9. GROUT SHALL BE NON-METALLIC, NON-SHRINK PREPACKAGED GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
10. FOR ADDITIONAL REQUIREMENTS, SEE CONCRETE REQUIREMENTS TABLE BELOW.

CONCRETE REQUIREMENTS TABLE

CRITERIA	NORMAL WEIGHT CONCRETE
UNIT WT.	147 TO 153 PCF
COMPRESSIVE STRENGTH	4000 PSI @ 28 DAYS
CEMENT	TYPE II, ASTM C-150
COURSE AGGREGATE	#67 STONE, ASTM C-33
FINE AGGREGATE	ASTM C-33
SLUMP	4"±1", ASTM C-143
WATER CEMENT RATIO	≤ 0.50
ENTRAINED AIR	4% TO 7%
CURING	LIQUID MEMBRANE (ASTM C-309, TYPE II, CLASS A)
FINISH	LIGHT BROOM
TEST CYLINDERS REQUIRED	3 PER POUR

WOVEN WIRE FENCING

(INSTALL FENCING PER ASTM F-567, SWING GATES PER ASTM F- 900)

1. GATE POST, CORNER, TERMINAL OR PULL POST 2 1/2"ø SCHEDULE 40 FOR GATE WIDTHS UP THRU 6 FEET OR 12 FEET FOR DOUBLE SWING GATE PER ASTM-F1083.
2. LINE POST: 2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
3. GATE FRAME: 1 1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
4. TOP RAIL & BRACE RAIL: 1 1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
5. FABRIC: 12 GA. CORE WIRE SIZE 2" MESH, CONFORMING TO ASTM-A392.
6. TIE WIRE: MINIMUM 11 GA. GALVANIZED STEEL AT POSTS AND RAILS A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAX 24" INTERVALS.
7. TENSION WIRE: 7 GA. GALVANIZED STEEL.
8. BARBED WIRE: DOUBLE STRAND 12-1/2" O.D. TWISTED WIRE TO MATCH W/ FABRIC 14 GA., 4 PT. BARBS SPACED ON APPROXIMATELY 5" CENTERS.
9. GATE LATCH: 1-3/8" O.D. PLUNGER ROD W/ MUSHROOM TYPE CATCH AND LOCK, KEYED ALIKE FOR ALL SITES IN A GIVEN MTA.
10. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
11. HEIGHT = 8' VERTICAL + 1' BARBED WIRE VERTICAL DIMENSION.

ORIGINAL SIZE IN INCHES

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3450

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KZ	DL
0	11/8/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

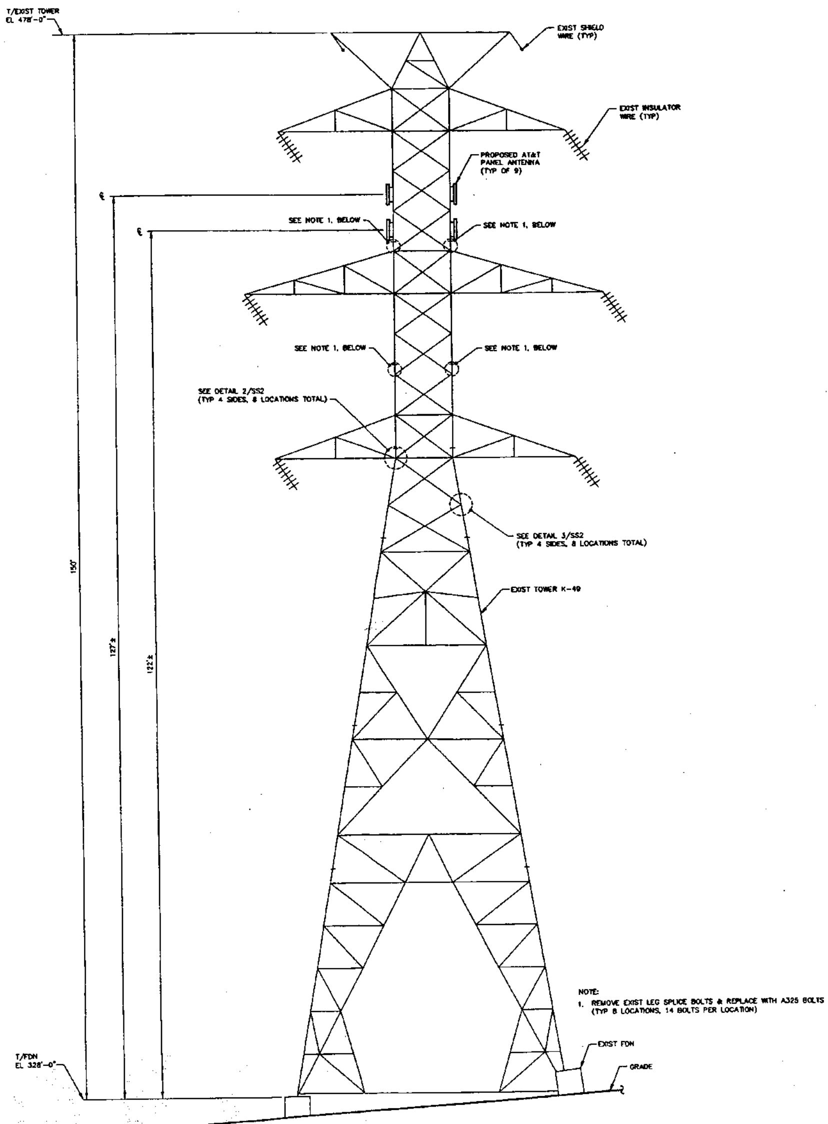
STATE OF NEW YORK · DONALD L. SCHMALZLE · LIC. No. 066988 · LICENSED PROFESSIONAL ENGINEER

W.O. #: 2650.NY611 DATE: 9/21/00

TECTONIC ENGINEERING CONSULTANTS P.C.

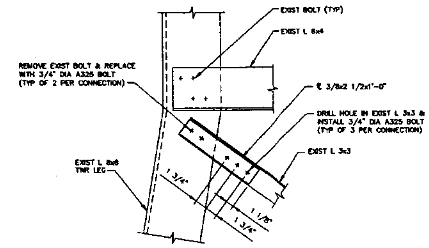
FOUNDATION PLAN, DETAILS & NOTES

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	SS1	1

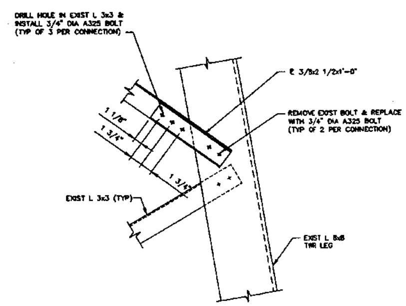


NOTE:
1. REMOVE EXIST LEG SPLICE BOLTS & REPLACE WITH A325 BOLTS (TYP 8 LOCATIONS, 14 BOLTS PER LOCATION)

1/SS2 ELEVATION
SCALE: 1/8" = 1'-0"



2/SS2 DETAIL
SCALE: 1/4" = 1'-0"



3/SS2 DETAIL
SCALE: 1/4" = 1'-0"

NOTES

1. REINFORCEMENT OF THE EXISTING TOWER HAS BEEN DESIGNED TO SUPPORT THE ANTENNAS AND CABLES LISTED IN THE REVISED STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING, DATED 11/8/00.
2. TOWER REINFORCEMENT IS DESIGNED IN CONFORMANCE TO ANSI/ASCE 10 (1991), "DESIGN OF LATTICED STEEL TRANSMISSION TOWERS", AND THE NATIONAL ELECTRIC SAFETY CODE (NESC), WITH ADDITIONAL REQUIREMENTS BY CON EDISON. SEE THE STRUCTURAL ANALYSIS REPORT REFERENCED IN NOTE 1 FOR A DETAILED DESCRIPTION OF THE DESIGN LOADS.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE CON EDISON "PURCHASE AND TEST MANUAL NO. 6" AND AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN".
4. STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 "STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
5. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. ALL REMOVED BOLTS SHALL BE REPLACED WITH NEW A325 STRUCTURAL CONNECTION BOLTS. INSTALL PALNUTS ON ALL CONNECTIONS.
6. FIELD WELDING IS NOT PERMITTED.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
10. MATCH EXISTING HOLES WHERE PRACTICAL, DRILL HOLES WHERE REQUIRED.
11. FIELD VERIFY LENGTHS OF ALL MATERIAL PRIOR TO FABRICATION.
12. ALL WORK SHALL BE PERFORMED IN CALM WEATHER, WITH WIND GUSTS LESS THAN 20 MPH.
13. REMOVE ONLY ONE PAIR OF BRACING MEMBERS FROM THE TOWER AT ANY TIME. INSTALL REPLACEMENT MEMBERS PRIOR TO REMOVAL OF ANY ADDITIONAL MEMBERS.
14. PROVIDE TEMPORARY BRACING TO MAINTAIN TOWER ALIGNMENT AND PLUMBNESS DURING REINFORCEMENT OF MEMBERS AND BOLTS.
15. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.

TECTONIC ENGINEERING CONSULTANTS P.C.
70 Pleasant Hill Road, P.O. Box 37
Mountainville, NY 10953
(845) 534-5959

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, NJ 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISE ELEVATION & TITLE BLOCK	FG		

SCALE: AS NOTED | DESIGNED BY: GFM | DRAWN BY: FG

STATE OF NEW YORK · DONALD L. SCHMALZLE · LICENSED PROFESSIONAL ENGINEER · No. 066846

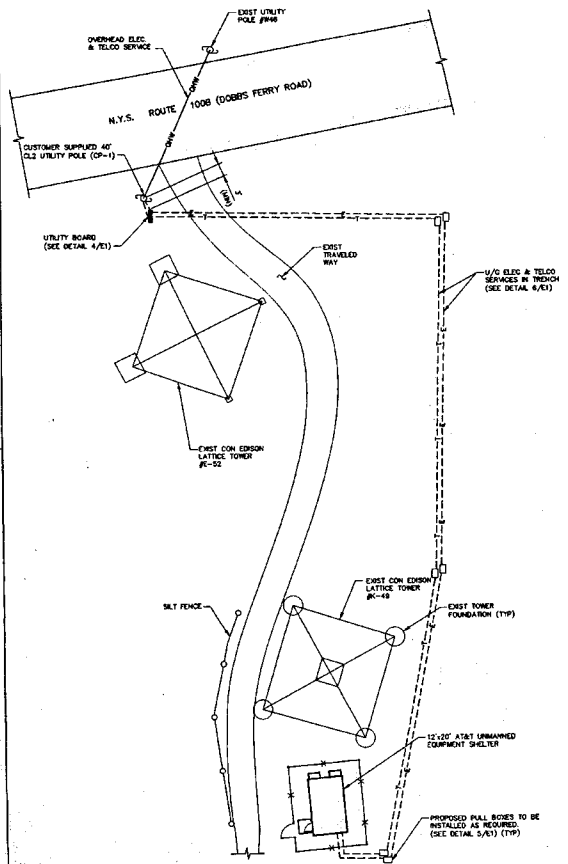
0 1 2 3 4
ORIGINAL SIZE IN INCHES

W.O. #: 2650.NY611 DATE: 11/8/00

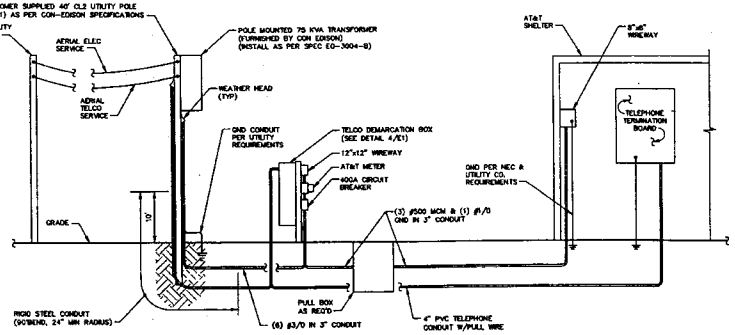
TECTONIC ENGINEERING CONSULTANTS P.C.

ELEVATION, DETAILS & NOTES

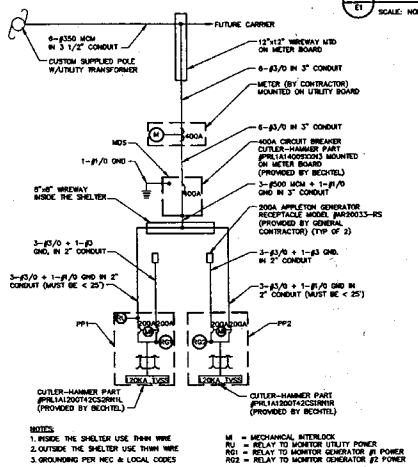
JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	SS2	1



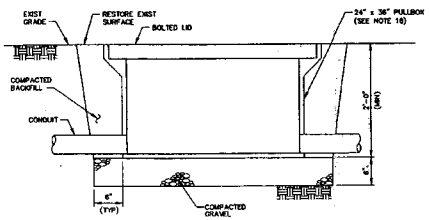
1 E1 ELECTRICAL PLAN
SCALE: 1" = 20'



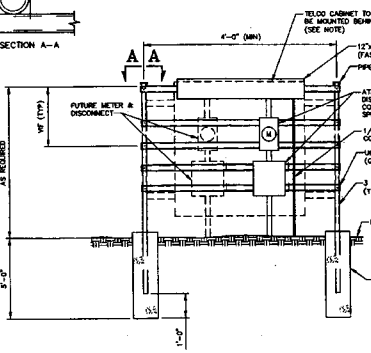
2 E1 ELECTRICAL SERVICE ELEVATION
SCALE: NONE



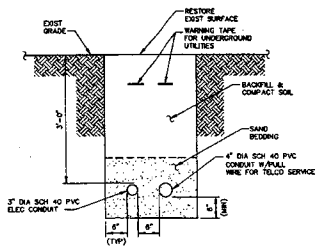
3 E1 ONE LINE DIAGRAM
SCALE: NONE



5 E1 DETAIL
SCALE: 1" = 1'-0"



4 E1 UTILITY BOARD DETAIL
SCALE: NONE



6 E1 DETAIL
SCALE: 3/4" = 1'-0"

GENERAL ELECTRICAL NOTES

1. CONTRACTOR SHALL PERFORM ALL VERIFICATION, OBSERVATION, TESTS, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES (U.L.) AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION, AND SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NMPU.
4. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND BUILDING OWNER FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE, TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
5. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
6. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
7. WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM WITH TYPE THHN/THWN DUAL RATED INSULATION, UNLESS SPECIFICALLY NOTED OTHERWISE.
8. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANELBOARD, PULLBOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.)
9. CONDUIT:
   A. RIGID CONDUIT (RGS) SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR.
   B. INTERMEDIATE METAL CONDUIT (IMC) SHALL BE U.L. LABEL. FITTINGS SHALL BE THREADED ALUMINUM OR STEEL AND SHALL BE USED FOR ALL EXTERIOR RUNS. THREADLESS COUPLINGS AND CONNECTORS SHALL NOT BE USED.
   C. ELECTRICAL METALLIC TUBING (EMT) SHALL HAVE U.L. LABEL. FITTINGS SHALL BE GLAND RING COMPRESSION TYPE, NO SET SCREW OR CRIMP TYPE FITTINGS SHALL BE USED. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
   D. FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "LIAKE" OR "SQUEEZE" TYPE. SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL HAVE FULL SIZE GROUND WIRE.
   E. PVC CONDUIT & FITTINGS SHALL HAVE U.L. LABEL AND SHALL BE SCHEDULE 40 UNLESS NOTED OTHERWISE.
   F. CONDUIT SHALL BE SIZED PER THE NEC AND AS SHOWN.
   G. CONDUIT RUNS MAY BE SURFACE MOUNTED IN CEILINGS OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH AT&T CONSTRUCTION MANAGER PRIOR TO INSTALLING.
   H. ALL CONDUIT ONLY (C.O.) RUNS SHALL HAVE A PULL WIRE OR ROPE.
10. COVER PLATES SHALL BE BRUSHED STAINLESS STEEL FOR ALL SWITCHES, RECEPTACLES, TELEPHONE AND BLANKED OUTLETS, AND SHALL HAVE ENGRAVED LETTERING WHERE INDICATED WEATHERPROOF RECEPTACLES SHALL HAVE SIERRA #WP-8 LIFT COVER PLATES.
11. REFER TO MANUFACTURER'S MANUAL FOR RECOMMENDED FUSE AND WIRE SIZES.
12. ALL FINAL CONNECTIONS TO THE EQUIPMENT ARE TO BE OF FLEXIBLE WEATHERPROOF CONDUIT TO MEET APPLICABLE CODES.
13. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES AND AT&T WIRELESS PCS.
14. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE CONSTRUCTION MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
15. PROVIDE THE AT&T CONSTRUCTION MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS, AND CIRCUITS.
16. GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER & ANNEALED, #2 UNLESS OTHERWISE NOTED. PROVIDE TEST OF EXISTING SERVICE GROUND AND CORRECT ANY DEFICIENCIES. PROVIDE EXTENSION OF THAT GROUND TO ALL NEW WORK.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH GARNING APPROVALS AND PAYING ALL FEES ASSESSED BY UTILITY COMPANY FOR ELECTRICAL SERVICE.
18. PULL BOX SHALL BE USED WHERE REQUIRED. SEPARATE PULL BOXES SHALL BE USED FOR ELECTRIC & TELCO RUNS. PULL BOXES SHALL BE QUAZITE COMPOSOLITE STYLE PG WITH HEAVY DUTY COVERS, AS MANUFACTURED BY STRONGWELL, LENOIR CITY, TN.
19. SERVICE UTILITY COMPANY: CONSOLIDATED EDISON
    CONTACT REPRESENTATIVE: PHILIP M. CHIOMTOS
    TELEPHONE NO. (914) 925-4448

ELECTRIC COMPANY NOTES

1. CONTRACTOR TO FURNISH IRY BOARD OF UNDERWRITERS CERTIFICATE.
2. CONTRACTOR TO CALL CON EDISON BEFORE STARTING WORK. SEE NOTE 19 ABOVE.
3. CONTRACTOR TO FOLLOW "REQUIREMENTS FOR ELECTRICAL SERVICE INSTALLATIONS" SERVICE RULE BOOK.

WORK BY CON EDISON

1. CON EDISON TO FURNISH & DELIVER (1) 1# 75 KVA OVERHEAD TRANSFORMER TO THE PROPERTY LINE FOR INSTALLATION BY CUSTOMER'S CONTRACTOR.
2. CON EDISON TO MAKE FINAL PRIMARY CONNECTIONS FROM POLE NYT-46 TO CP-1.

"CALL 48 HOURS BEFORE YOU DIG"
-NEW YORK-
(800)-245-2828

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3450

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KJ	DTL
0	11/8/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

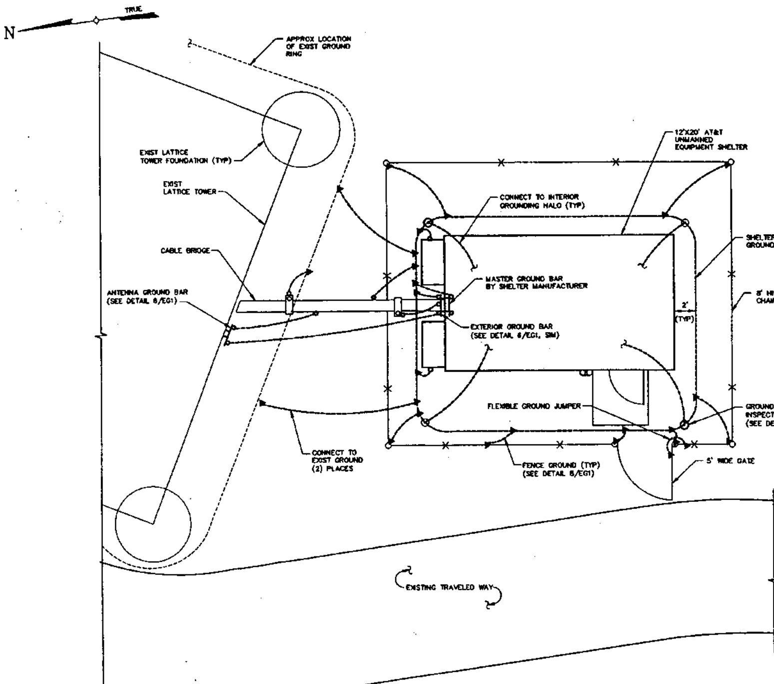
ORIGINAL SIZE IN INCHES (0 1 2 3 4)

W.O. # 2650JNY611 DATE: 9/21/00

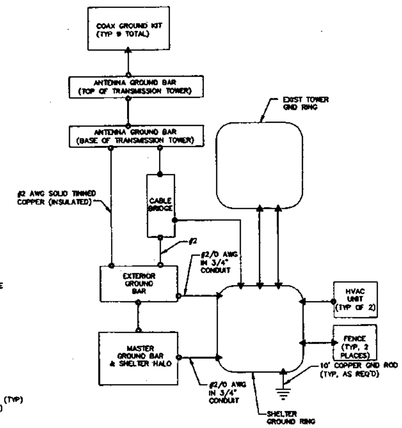
TECTONIC ENGINEERING CONSULTANTS P.C.

ELECTRICAL PLAN, DETAILS & NOTES

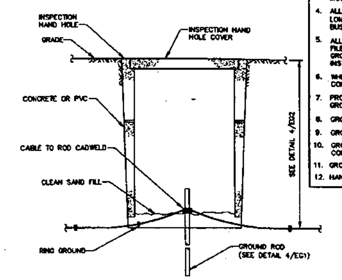
JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	E1	1



1/EG1 GROUNDING PLAN
SCALE: 1"=5'



2/EG1 GROUNDING DIAGRAM
SCALE: NONE



NOTES:
1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 8" IN WIDTH/DIAMETER
2. IF ROCK IS ENCOUNTERED WHICH PROHIBITS PROPER INSTALLATION OF GROUND RODS, SEE DETAIL 5/EG1 FOR ALTERNATIVE GROUNDING DETAILS.

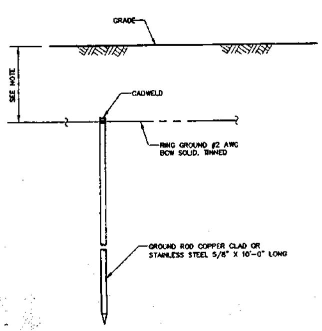
3/EG1 DETAIL
SCALE: NONE

GROUNDING NOTES

1. CONTRACTOR SHALL INSTALL ALL GROUNDING IN ACCORDANCE WITH AT&T WIRELESS PCS SITE GROUNDING SPECIFICATIONS, LATEST EDITION.
2. CONTRACTOR SHALL LOCATE AND PRESERVE INTACT THE EXISTING GROUND RING.
3. ALL ABOVE GROUND CONNECTIONS SHALL BE CADWELD, BOLT CLAMP, OR SPLIT BOLT CONNECTORS. CRIMP CONNECTORS SHALL NOT BE USED ON SOLID CONDUCTORS. CLAMPS MUST BE USED FOR FENCE AND HANDRAIL CONNECTION.
4. ALL GROUNDING CONNECTIONS TO THE GROUND BAR SHALL BE MADE WITH TWO-HOLE, LONG-BARREL TYPE COMPRESSION LUGS, (BURNDY OR EQUAL). ALL LUGS ATTACHED TO BUSSES USING BOLTS, NUTS, AND LOCK WASHERS.
5. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. NO WASHERS ARE ALLOWED BETWEEN ITEMS BEING GROUNDED. ALL CONNECTIONS ARE TO HAVE AN ANTI-OXIDIZING AGENT APPLIED PRIOR TO INSTALLATION.
6. WHERE ANY GROUNDING CONDUCTOR PASSES THROUGH METAL CONDUIT, BOTH ENDS OF CONDUIT SHALL BE GROUNDED.
7. PROVIDE GROUND BUS BAR AT ANTENNA MOUNTING LOCATIONS FOR ANTENNA CABLE GROUNDING. DOWNWARD LEADS FROM GROUNDING KITS MUST BE USED.
8. GROUNDING CLAMPS SHALL BE BURNDY GAR-TC OR EQUAL.
9. GROUND SYSTEM RESISTANCE OF 5 OHMS OR LESS SHALL BE OBTAINED.
10. GROUNDING SYSTEM SHALL BE TESTED IN THE PRESENCE OF THE AT&T CONSTRUCTION MANAGER.
11. GROUNDING CONDUCTORS SHALL BE SOLID TINNED AND ANNEALED #2 COPPER.
12. HAND EXCAVATE AND VERIFY LOCATION OF EXISTING GROUND SYSTEM PRIOR TO CONSTRUCTION.

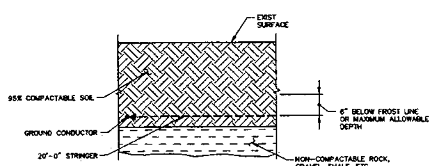
GROUNDING LEGEND

⊙	INSPECTION SLEEVE
⊙	5/8" x 10'-0" COPPER OR STAINLESS STEEL COPPER CLAD GROUND ROD
▲	CADWELD OR OTHER APPROVED EXOTHERMIC WELDING SYSTEM
●	GROUND LUG
———	GROUND CONDUCTOR

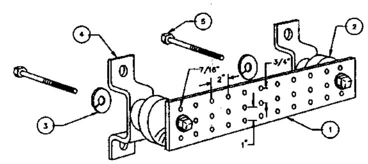


NOTE: GROUND RING TO BE PLACED 6" BELOW FROST LINE

4/EG1 DETAIL-GROUND ROD
SCALE: NONE



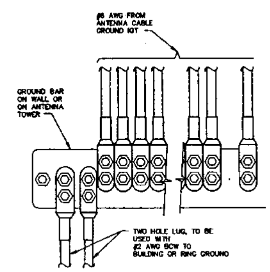
5/EG1 DETAIL
SCALE: 3/4" = 1'-0"



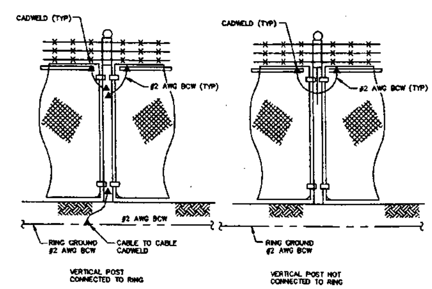
LEGEND

1- COPPER GROUND BAR, (MASTER GROUND BAR MODEL #SB476, ANTENNA GROUND BAR SB-477) MFG BY SAUNDERS OR EQUAL CAT. NO. B-6142. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2- INSULATORS, SAUNDERS SB-1155
3- 5/8" LOCKWASHERS, AS REQUIRED
4- WALL MOUNTING BRACKET, SAUNDERS
5- BOLT, FASTEN AS REQUIRED
6- FOR GROUND WIRE ATTACHMENT SEE DETAIL 7/EG1

6/EG1 DETAIL-GROUND BAR
SCALE: NONE



7/EG1 GND WIRE TO GND BAR DETAIL
SCALE: NONE



NOTES:
1. VERTICAL POSTS SHALL BE BONDED TO THE RING AT EACH CORNER AND AT EACH GATE POST. AS A MINIMUM, ONE VETICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 100 FOOT STRAIGHT RUN OF FENCE.
2. HORIZONTAL POLES SHALL BE BONDED TO EACH OTHER.
3. BOND EACH HORIZONTAL POLE / BRACE TO EACH OTHER AND TO EACH VERTICAL POLE THAT IS BONDED TO THE EXTERIOR GROUND RING

8/EG1 DETAIL
SCALE: NONE

0 1 2 3 4
ORIGINAL SIZE IN INCHES

TECTONIC ENGINEERING CONSULTANTS P.C.
2570 Route 9W
Cornwall, NY 12518
(845) 534-3450

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, New Jersey 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	4/9/01	REVISED UTILITY LAYOUT	MM	KZ	DL
0	11/8/00	FOR CONSTRUCTION	CA		
A	9/21/00	FOR COMMENT	CC	HZ	DL

SCALE: AS NOTED | DESIGNED BY: DL | DRAWN BY: CA

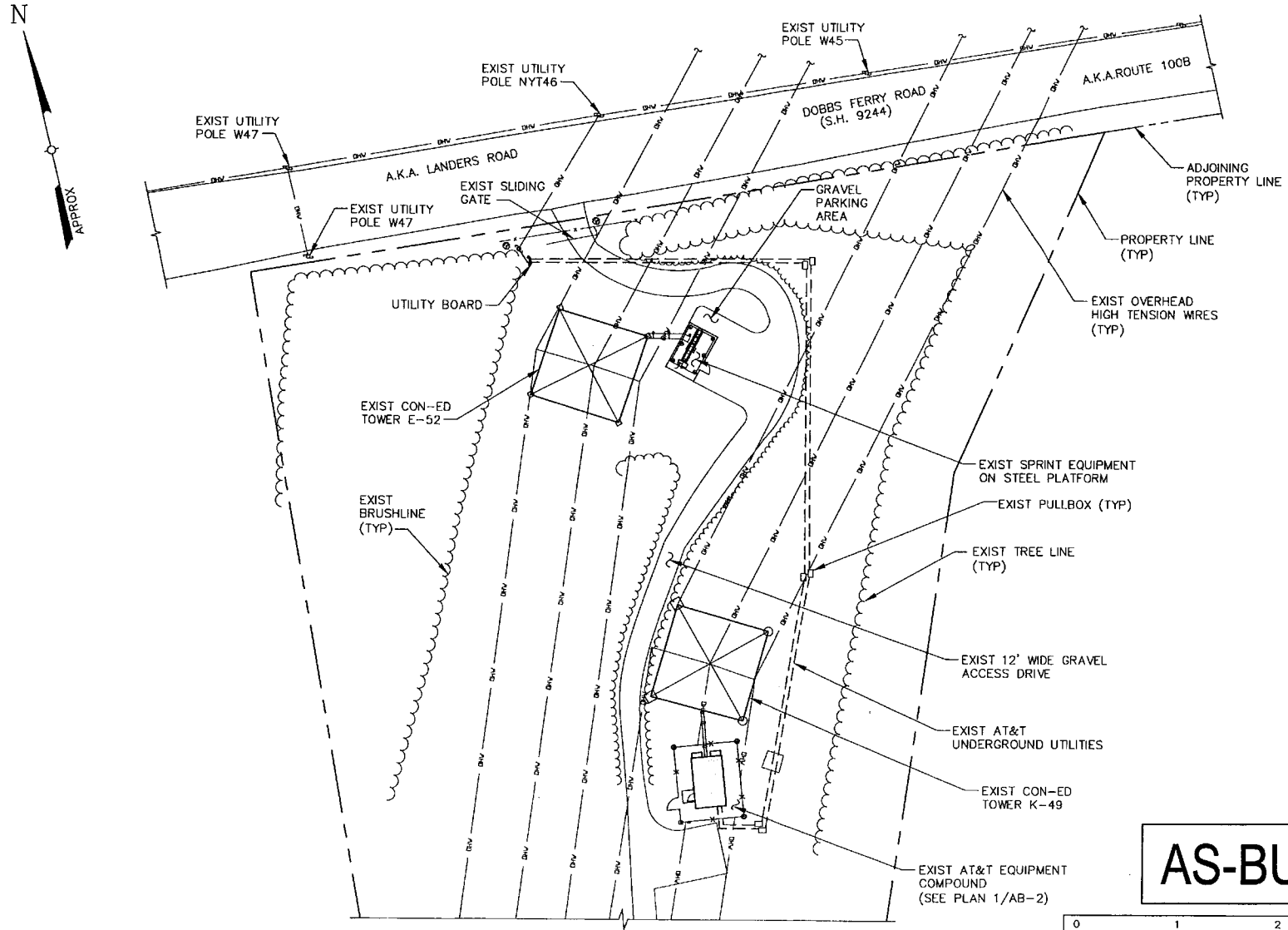
STATE OF NEW YORK · DONALD L. SCHO... · LICENSED PROFESSIONAL ENGINEER · LIC. No. 06...

W.O. # 2650.NY611 DATE: 9/21/00

TECTONIC ENGINEERING CONSULTANTS P.C.

GROUNDING PLAN & DETAILS

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	EG1	1



1/AB-1 PARTIAL SITE PLAN

SCALE: 1" = 40"

AS-BUILT

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0656
Fax: (845) 567-0703

AT&T
AT&T WIRELESS SERVICES, INC.

APPROVALS

OMNIPOINT
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
2650.NY611	TN

REV	DATE	REVISION	DRAWN BY
1	3/5/09	AS-BUILT	LH

ISSUED BY	DATE

STATE OF NEW YORK
ANTONIO ALBERTO GUALTIERI
071249
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

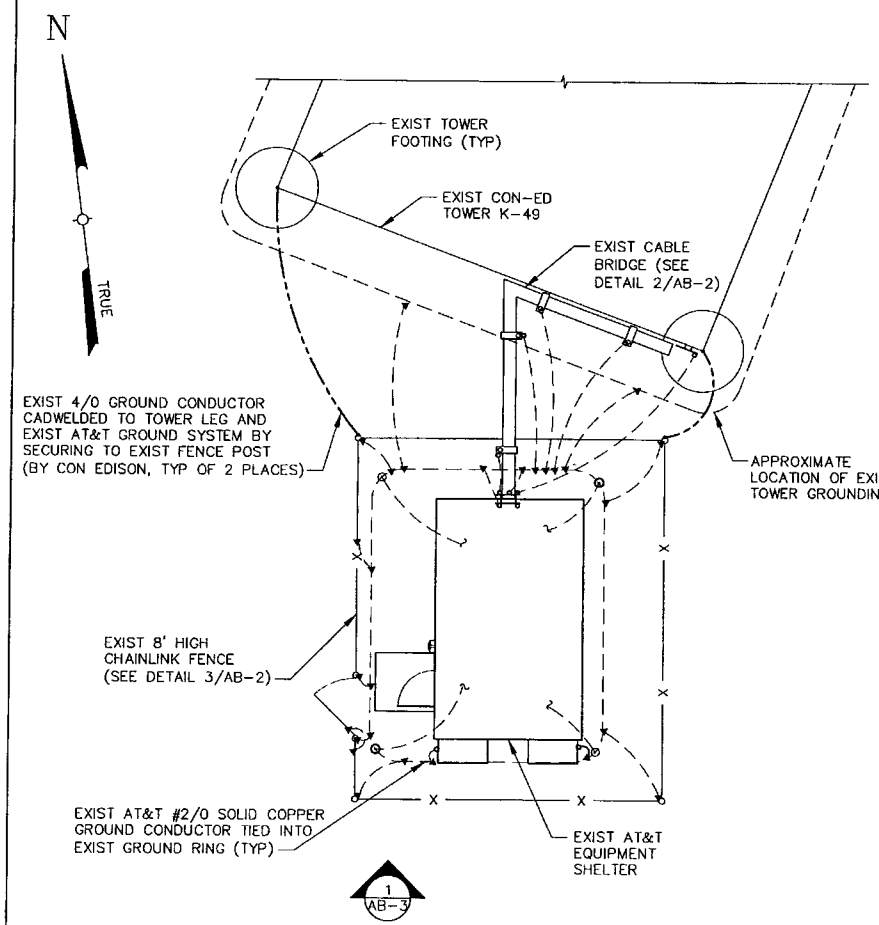
3NONY611
CON-ED TOWER K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

SHEET TITLE

PARTIAL SITE PLAN

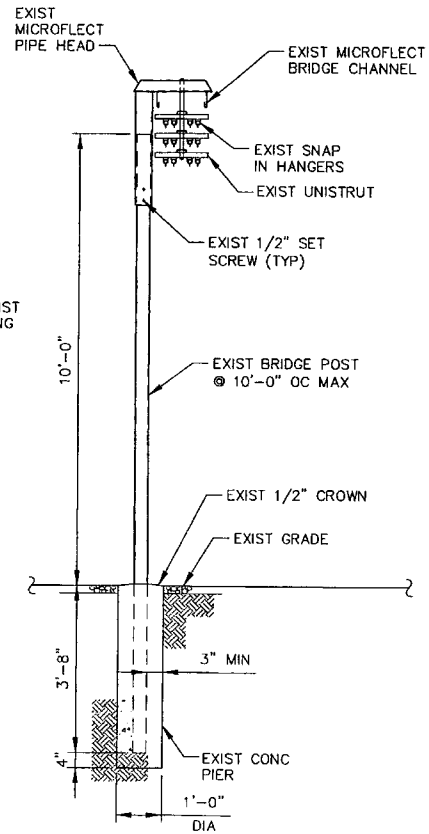
SHEET NUMBER

AB-1



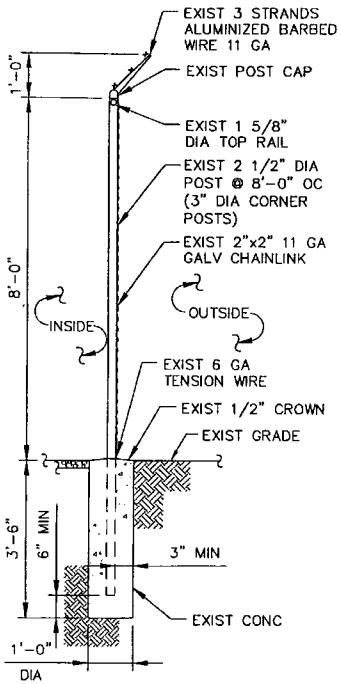
1 / AB-2 SITE DETAIL PLAN

SCALE: 1"=10'



2 / AB-2 CABLE BRIDGE (TYP)

SCALE: 3/8" = 1'-0"



3 / AB-2 FENCE DETAIL

SCALE: 3/8" = 1'-0"

AS-BUILT

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0656
Fax: (845) 567-5703

AT&T
AT&T WIRELESS SERVICES, INC.

APPROVALS

OMNIPOINT
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
2650.NY611	TN

REV	DATE	REVISION	DRAWN BY
1	3/5/09	AS-BUILT	LH

ISSUED BY	DATE

STATE OF NEW YORK
ANTONIO ALBERTO GUALTIERI
071249
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

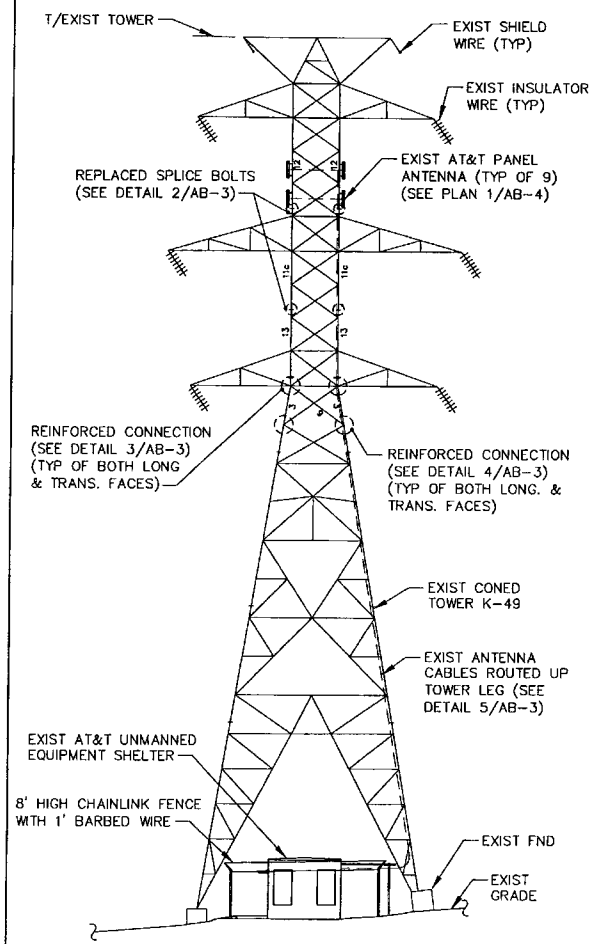
3NONY611
CON-ED TOWER K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

SHEET TITLE

SITE DETAIL PLAN & DETAILS

SHEET NUMBER

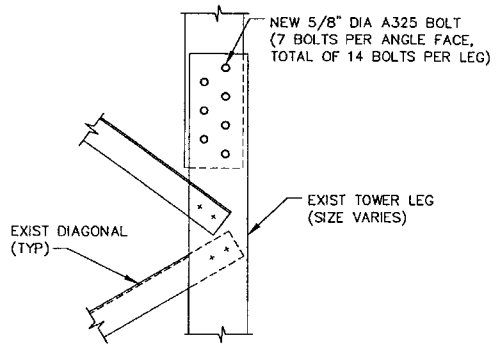
AB-2



1 AB-3 ELEVATION

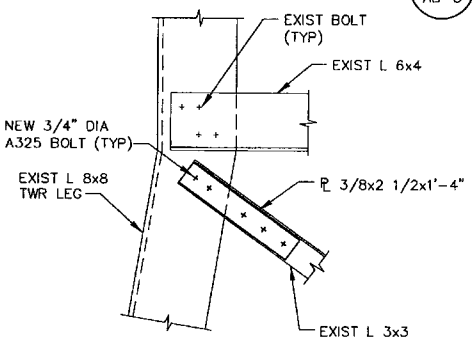
SCALE: 1" = 20'

REINFORCEMENT REQUIREMENTS SHOWN ARE BASED ON TOWER ANALYSIS COMPLETED BY TECTONIC ENGINEERING, DATED 11/81/00, REV1.



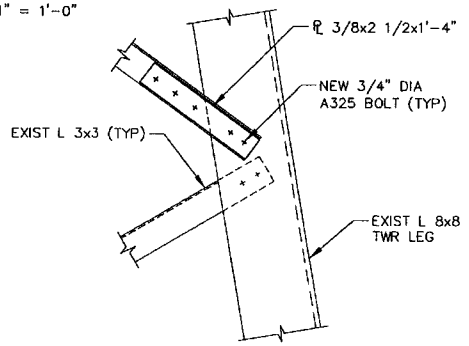
2 AB-3 DETAIL

SCALE: 1" = 1'-0"



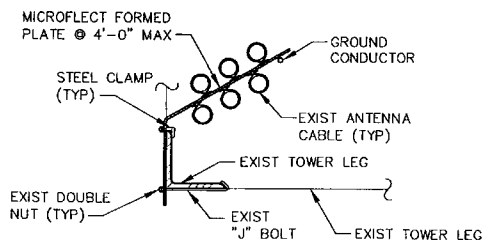
3 AB-3 DETAIL

SCALE: 1" = 1'-0"



4 AB-3 DETAIL

SCALE: 1" = 1'-0"



5 AB-3 COAX SUPPORT DETAIL

SCALE: 1" = 1'-0"

AS-BUILT

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6856
Fax: (845) 567-8703

AT&T
AT&T WIRELESS SERVICES, INC.

APPROVALS
OMNIPOINT
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
2650.NY611	TN

REV	DATE	REVISION	DRAWN BY
1	3/5/09	AS-BUILT	LH

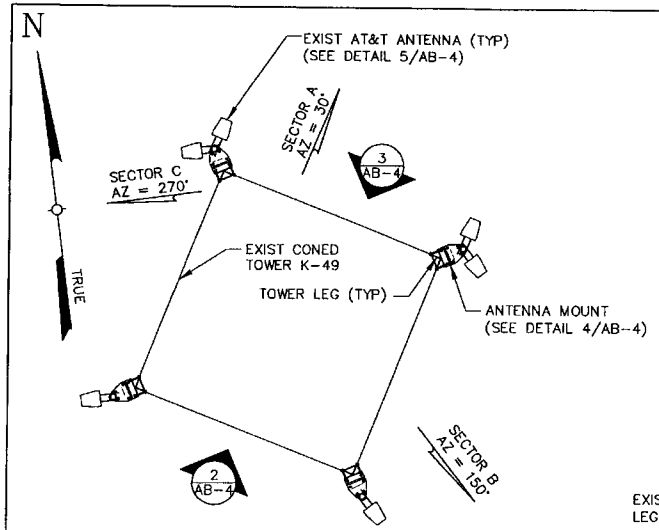
ISSUED BY	DATE

STATE OF NEW YORK ANTONIO ALBERTO GIALTIERI 071249 LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION
3NONY611
CON-ED TOWER K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

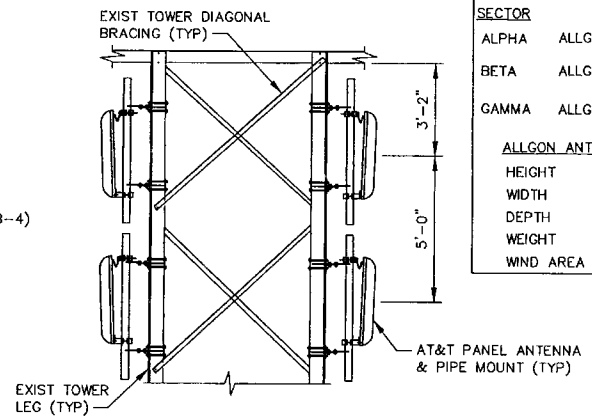
SHEET TITLE
ELEVATION & DETAILS

SHEET NUMBER
AB-3



1 AB-4 ANTENNA PLAN

SCALE: 1/4" = 1'-0"



2 AB-4 ANTENNA ELEVATION

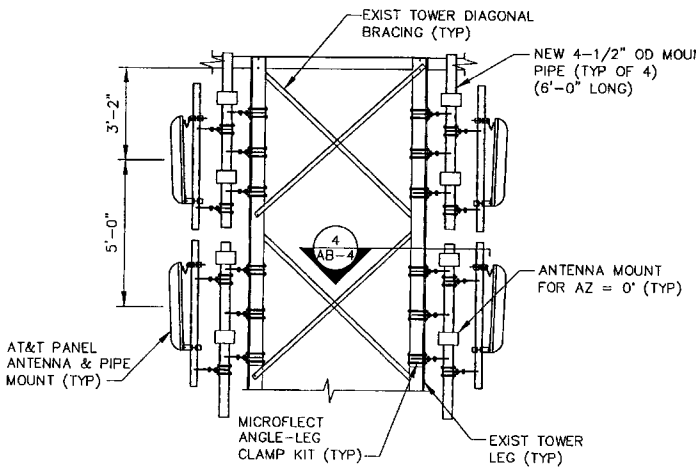
SCALE: 3" = 1'

ANTENNA DATA

ANTENNA SPECIFICATIONS

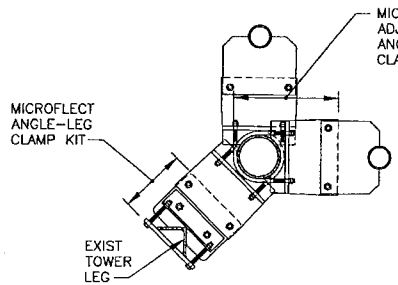
SECTOR	MODEL	ANT. QTY	CABLE SIZE	CABLE QTY	AZIMUTH
ALPHA	ALLGON 7143.23	3	7/8"	4	30°
BETA	ALLGON 7143.23	3	7/8"	4	150°
GAMMA	ALLGON 7143.23	3	7/8"	4	270°

ALLGON ANTENNA	ALLGON 7143.23
HEIGHT	35.4"
WIDTH	11.8"
DEPTH	5.1"
WEIGHT	16 LBS
WIND AREA	2.9 SF



3 AB-3 ANTENNA ELEVATION

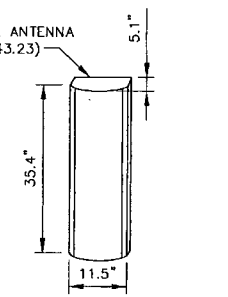
SCALE: 3" = 1'-0"



ANGLE-LEG CLAMP KIT		
FITS ANGLE SIZE	4-LEG TOWER	
	PRODUCT NUMBER	ANGLE-HEEL TO HOLE-CENTER, IN.
2 1/2x2 1/2 & 3x3	B969	4 1/8
3 1/2x3 1/2 & 4x4	B970	4 1/8
5x5	B971	4 1/8
6x6	B972	4 1/8
8x8	B973	4 1/8

4 AB-4 SECTION

SCALE: 1" = 1'-0"



5 AB-4 DETAIL

SCALE: 1/2" = 1'-0"

AS-BUILT

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0656
Fax: (845) 567-0703

AT&T
AT&T WIRELESS SERVICES, INC.

APPROVALS
OMNIPOINT
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
2650.NY611	TN

REV	DATE	REVISION	DRAWN BY
A	3/5/09	AS-BUILT	LH

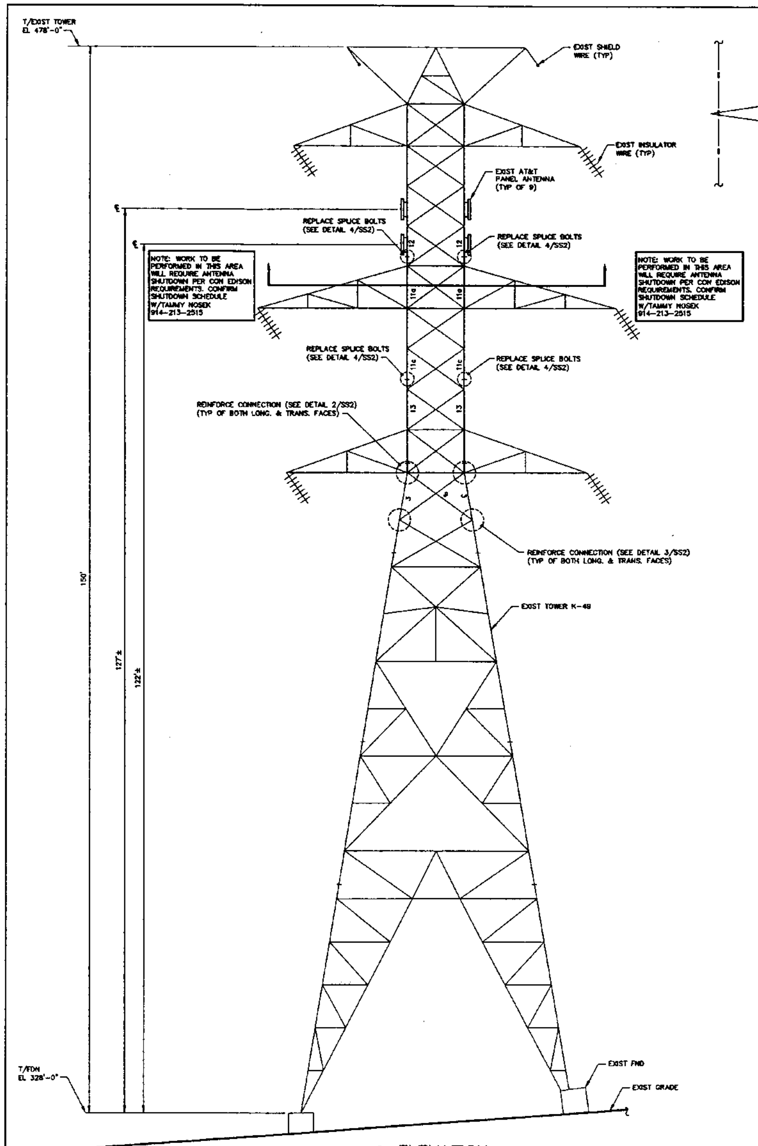
ISSUED BY	DATE

STATE OF NEW YORK
ANTONIO ALBERTO GUALTIERI
LICENSED PROFESSIONAL ENGINEER
071249

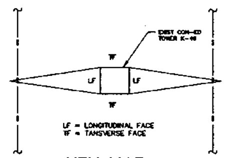
SITE INFORMATION
3NONY611
CON-ED TOWER K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

SHEET TITLE
ANTENNA PLAN
& DETAILS

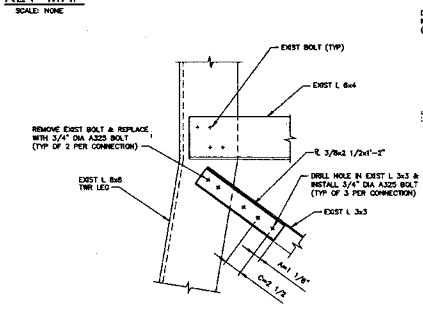
SHEET NUMBER
AB-4



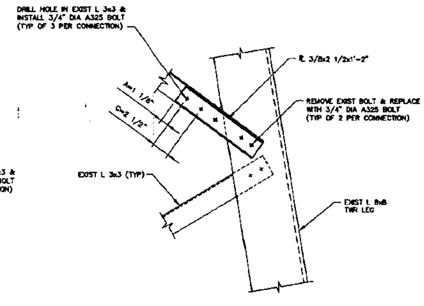
ELEVATION (1/SS2)
SCALE: 1/8" = 1'-0"



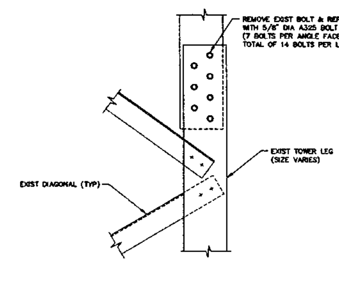
KEY MAP
SCALE: NONE



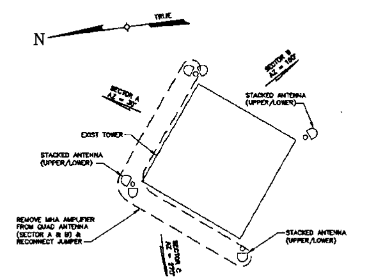
DETAIL (2/SS2)
SCALE: 1 1/2" = 1'-0"



DETAIL (3/SS2)
SCALE: 1 1/2" = 1'-0"



DETAIL (4/SS2)
SCALE: 1 1/2" = 1'-0"

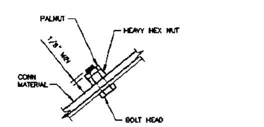


MHA REMOVAL PLAN (5/SS2)
SCALE: N.T.S.

NOTE:

ALL BOLTS SHALL BE INSTALLED "UP AND OUT" SO THAT:

- THE BOLT HEAD IS BENEATH THE CONNECTED MEMBERS AND/OR TOWARD THE INTERIOR OF THE TOWER
- THE NUT IS ON TOP OF THE CONNECTED MEMBERS AND/OR TOWARD THE EXTERIOR OF THE TOWER



DETAIL (6/SS2)
SCALE: 3" = 1'-0"

REINFORCING SCHEDULE

MEMBER TYPE	CON EDISON MEMBER GROUP NO.	EXISTING MEMBER SIZE	QTY OF MEMBERS TO BE REINFORCED	EXIST MEMBER LENGTH	REINFORCING MEMBER SIZE	BOLT SPACING A	BOLT SPACING C	BOLT QTY	MIN BOLT LENGTH
SPLICE	11a/12	L5x5x5/16 L6x6x7/16	8 (ALL FACES)	N/A-EXIST	N/A CONNECTION ONLY	N/A	N/A	56	1 3/4"
SPLICE	11c/13	L6x6x7/16 L8x8x1/2	8 (ALL FACES)	N/A-EXIST	N/A CONNECTION ONLY	N/A	N/A	58	2"
DIAGONAL LEG CON.	3/9	L3x3x3/16 L8x8x1/2	8	N/A-EXIST	℄ 3/8X2 1/2x1'-2"	1 1/8"	2 1/2"	80	1 3/4"

BILL OF MATERIALS – REINFORCING

ASSEMBLY OR MEMBER NO. (SEE NOTE BELOW)	MARK NO.	QUANTITY	SIZE	LENGTH	REMARKS
–	–	16	℄ 3/8X2 1/2	1'- 2"	A36
11c (SPLICE)	–	56	5/8" DIA H.S. BOLT	2"	A325 H.S.
11c (SPLICE)	–	56	5/8" DIA H.S. BOLT	–	HEAVY HEX
11c (SPLICE)	–	56	5/8" DIA H.S. BOLT	–	PALNUT
–	–	136	3/4" DIA H.S. BOLT	1 3/4"	A325 H.S.
–	–	136	3/4" DIA NUT	–	HEAVY HEX
–	–	136	3/4" DIA	–	PALNUT

NOTES

1. REINFORCEMENT OF THE EXISTING TOWER HAS BEEN DESIGNED TO SUPPORT THE ANTENNAS AND CABLES LISTED IN THE REVISED STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING, DATED 11/8/00.
2. TOWER REINFORCEMENT IS DESIGNED IN CONFORMANCE TO ANSI/ASCE 10 (1991), "DESIGN OF LATTICED STEEL TRANSMISSION TOWERS", AND THE NATIONAL ELECTRIC SAFETY CODE (NESC), WITH ADDITIONAL REQUIREMENTS BY CON EDISON. SEE THE STRUCTURAL ANALYSIS REPORT REFERENCED IN NOTE 1 FOR A DETAILED DESCRIPTION OF THE DESIGN LOADS.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE CON EDISON "PURCHASE AND TEST MANUAL NO. 8" AND AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS. ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN".
4. STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 "STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
5. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325 "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS", LATEST EDITION. ALL REMOVED BOLTS SHALL BE REPLACED WITH NEW A325 STRUCTURAL CONNECTION BOLTS. INSTALL PALNUTS ON ALL CONNECTIONS.
6. FIELD WELDING IS NOT PERMITTED.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
10. FIELD VERIFY LENGTHS OF ALL MATERIAL PRIOR TO FABRICATION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE ENGINEER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER APPROVAL.

CONNECTION REINFORCEMENT INSTALLATION PROCEDURE

1. REVIEW TOWER REINFORCEMENT DRAWINGS, NOTES, AND APPLICABLE CON EDISON STANDARD PROCEDURES PRIOR TO START OF THE WORK.
2. CAREFULLY INSPECT ALL OF THE EXISTING MEMBERS TO BE REINFORCED, AND DOCUMENT ANY APPARENT DISTRESS, DAMAGE, OR DETERIORATION OF EACH MEMBER, ITS CONNECTION PLATES (IF PRESENT), AND BOLTS. IMMEDIATELY NOTIFY THE ENGINEER AND AWAIT DIRECTION PRIOR TO PROCEEDING WITH THE WORK.
3. CONFIRM THAT WEATHER CONDITIONS ARE SUITABLE TO PERMIT COMPLETION OF THE REINFORCEMENT WORK. WIND GUST SPEED SHALL BE LESS THAN 20 MPH, AMBIENT TEMPERATURE SHALL BE ABOVE 40 DEGREES FAHRENHEIT, AND NO PRECIPITATION.
4. VERIFY THAT ALL MATERIALS, TOOLS, AND EQUIPMENT REQUIRED TO COMPLETE THE WORK ARE ON SITE AND READY FOR USE.
5. IF WORK MUST BE SUSPENDED FOR MORE THAN ONE (1) HOUR, SECURE ALL MATERIAL, TOOLS, AND EQUIPMENT.
6. REPLACE BOLTS ONE AT A TIME AS FOLLOWS:
   A. LOOSEN (DO NOT REMOVE) BOTH NUTS ON ONE END OF THE MEMBER WITHOUT DAMAGING THE BOLTS.
   B. REMOVE THE OUTERMOST BOLT FROM THE CONNECTION LEAVING THE INNER BOLT IN PLACE.
   C. REAM THE HOLES IN THE LEG AND BRACING MEMBERS TO THE REQUIRED SIZE REAMING FROM BOTH DIRECTIONS MAY BE REQUIRED TO AVION OVERSIZING THE HOLES.
   D. INSERT NEW BOLT AS INDICATED, AND TIGHTEN THE NUT TO SNUG TIGHT.
   E. REMOVE THE INNERMOST BOLT FROM THE CONNECTION.
   F. REAM THE HOLE TO THE REQUIRED SIZE.
   G. INSERT NEW BOLT AS INDICATED, AND TIGHTEN THE NUT TO SNUG TIGHT.
7. REPEAT STEPS 6A THROUGH 6G ABOVE FOR THE OTHER END OF THE SAME MEMBER.
8. MARK LOCATIONS OF ALL HOLES TO BE DRILLED IN EXISTING BRACING MEMBER FOR NEW PLATE.
9. DRILL ALL HOLES.
10. CONFIRM PROPER FIT OF THE REINFORCING PLATE.
11. REMOVE THE INNERMOST BOLT FROM THE LEG MEMBER, AND INSERT A DRIFT PIN (OR SPUD WRENCH) APPLY A TEMPORARY CLAMP TO MAINTAIN TIGHT CONTACT BETWEEN THE MEMBERS.
12. REMOVE THE OUTERMOST BOLT FROM THE LEG MEMBER, AND INSERT A SECOND DRIFT PIN.
13. INSTALL THE CONNECTION PLATE OVER THE DRIFT PINS.
14. REMOVE ONE DRIFT PIN, AND INSTALL ONE BOLT AND NUT, HAND TIGHT.
15. REMOVE THE SECOND DRIFT PIN, INSTALL BOLT, AND FULLY TIGHTEN BOTH NUTS.
16. INSTALL BOLTS THROUGH BRACING MEMBER AND CONNECTION PLATE, WITH NUTS HAND TIGHT.
17. TIGHTEN THE NUT CLOSEST TO THE LEG FIRST, THEN SEQUENTIALLY TIGHTEN THE CENTER NUT AND THE INNERMOST NUT (FURTHEST FROM LEG). FULLY TIGHTEN ALL NUTS.
18. REPEAT STEPS 8 THROUGH 17 ABOVE FOR THE OTHER END OF THE SAME MEMBER.
19. REPEAT STEPS 6 THROUGH 18 ABOVE FOR EACH OF THE OTHER MEMBERS TO BE REINFORCED.

0 1 2 3 4
ORIGINAL SIZE IN INCHES

TECTONIC ENGINEERING CONSULTANTS P.C.
1279 Route 300
Newburgh, NY 12550
(845) 567-6656

GREENBURGH II
SITE NO. 3NO-NY611
CON EDISON TOWER NO. K-49
DOBBS FERRY ROAD
GREENBURGH, NY 10607

AT&T
AT&T WIRELESS SERVICES, INC.
15 East Midland Avenue
Paramus, NJ 07652

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	12/5/08	REVISED STRUCTURAL	BW		
2	12/2/08	ADDED STRUCTURAL SCHEDULES	BW		
1	4/9/01	REVISE ELEVATION & TITLE BLOCK	FC		

SCALE: AS NOTED | DESIGNED BY: GFM | DRAWN BY: FC

STATE OF NEW YORK – ANTONIO ALBERTO GUALTIERI – 071249 – LICENSED PROFESSIONAL ENGINEER

W.O. # 2650.NY611 DATE: 11/8/00

TECTONIC ENGINEERING CONSULTANTS P.C.

ELEVATION, DETAILS & NOTES

JOB NO.	SITE NO.	DRAWING NUMBER	REV
24445	3NO-NY611	SS2	2

TECTONIC ENGINEERING CONSULTANTS P.C.

AT&T WIRELESS PCS: GREENBURGH II
W.O. 2650.NY611
EXISTING 150' CON EDISON TOWER K-49
GREENBURGH, NY
STRUCTURAL ANALYSIS REPORT – REVISION 1
NOVEMBER 8, 2000

AT&T WIRELESS PCS: GREENBURGH II
W.O. 2650.NY611
EXISTING 150' CON EDISON TOWER K-49
GREENBURGH, NY
STRUCTURAL ANALYSIS REPORT – REVISION 1
NOVEMBER 8, 2000

1.0 INTRODUCTION

The Consolidated Edison (Con Edison) electric transmission tower no. K-49 is located south of Dobbs Ferry Road in Greenburgh, NY. The tower was designed as a part of the 345kV double-circuit Sprain Brook Substation to Millwood Substation transmission line. AT&T Wireless PCS anticipates installing panel antennas on this tower in the near future.

Tectonic Engineering Consultants, P.C. has performed a structural analysis of the tower. The analysis was to verify the adequacy of the tower for supporting the proposed antennas in accordance with Con Edison requirements.

This revision incorporates a correction to the width of the tower at the base.

1.1 Information Provided

For the purpose of the analysis, Tectonic was furnished with the following Con Edison drawings:

1. "Design Outline for 345 kV Strain Towers", drawing no. EO-15170-A, rev. 4, dated 2/10/78.
2. "15°-30° Towers, Design Summary – Latest Criteria", drawing no. EO-15207-A, rev. 1, dated 8/14/75.
3. "Plan & Profile, Sprain Brook – Eastview - Millwood (from STA 221+00.48 to STA. 294+77.59", drawing no. EO-15108-A, rev. 4, dated 4/4/78.
4. "Plan & Profile, Sprain Brook – Eastview - Millwood (from STA 294+77.59 to STA. 365+41.81", drawing no. EO-15109-A, rev. 4, dated 4/4/78.
5. "Design & Construction Summary, Twr K-14 to K-139" sheet 1 of 2, drawing no. EO-15628-A, rev. 6, dated 2/11/95.
6. "Schedule of Reinforcing, 15°-30°, 30°-45°, 45°-70°, K14 thru K139", drawing no. EO-15203-A, dated 8/14/75.
7. "Reinforcing Details – SH. 1, 15°-30°, 30°-45°, K14 thru K139", drawing no. EO-15204-A, dated 8/14/75.
8. "Reinforcing Details – SH. 2, 15°-30°, 30°-45°, K14 thru K139", drawing no. EO-15236-A, dated 8/14/75.

9. Purchase and Test Manual No. 6 – Section 21, Lattice Steel Transmission Towers, EO-1018-1, dated 6/21/76.
10. Con Edison Transmission System – P.C.S. Antenna/Cellular Installation Procedure, May 2000.

We note that Item 1 listed above is for the 1932 Line reconstruction (Millwood to Pleasant Valley), whereas Items 2 to 8 are for the 1961 Line reconstruction (Sprain Brook Substation to Millwood Substation).

2.0 ORIGINAL TOWER DESIGN

2.1 Tower Structure

The tower was designed by Con Edison and designated as a Type 3 double circuit 15°-30° strain tower. It was originally built in 1961, and was upgraded in 1975 for new conductors. It is a four-legged, self-supporting square tower. The existing tower K-49 has a total height of 150'-0". It consists of a 100'-0" high body, a 20'-0" high body extension, and a 30' long extension on each leg.

The tower is 38'-0" wide at the base, and tapers uniformly to a width of 8'-0" at the bottom cross arm level, which is 90'-0" above the base. It has a uniform width of 8'-0" from the 90'-0" level to the top of the tower in the longitudinal face, and tapers from 8'-0" at the 142'-0" level to a point at the top in the transverse face. The bottom, middle and top cross arms are at the 90'-0", 113'-0" and 136'-0" levels, and extend to total widths of 42'-0", 50'-0" and 40'-0", respectively. The shield wire peak has a total width of 25'-0".

The original design utilizes single angles for all members. All connections are bolted.

A diagram of the structure is presented in Figure 1, attached.

2.2 Loading Criteria

The original design was based on Con Edison design specifications which provide tower strengths that equal or surpass the requirements of the National Electrical Safety Code for Grade "B" construction. The tower was designed to support two (2) shield wires and six (6) phase conductors. The types and sizes of the shield wires and conductors used in the original design were not identified in the Con Edison drawings. The tower was designed to withstand the

loading conditions of the original Con Edison specifications, including their appropriate overload factors.

The tower was upgraded in 1975 to support larger conductors. Several tower members were replaced, and several tower leg members on the compression side were reinforced with a combination angle section to accommodate the increased load.

2.3 Tower Foundation

The Con Edison drawings indicate that the tower is supported on an earth foundation. No specific information on the existing tower foundations was made available.

3.0 EXISTING CONFIGURATION

According to the Con Edison drawings provided, the existing tower was installed at a line angle of 22°-01', wind span of 1046', weight span of approximately 1015', and supporting the following:

Shield Wire:
9/16", 7 No. 5 AWG Alumoweld (2 positions)
Diameter = 0.546 in, Weight = 0.525 lb/ft
Conductor:
Twin bundled 2493 MCM 54/37 ACAR (6 positions)
Diameter = 1.821 in, Weight = 2.341 lb/ft

The tower was originally designed for a maximum line angle of 30°, with a maximum design wind span of 700' and a weight span of 3000'.

4.0 PROPOSED INSTALLATION

AT&T Wireless PCS is proposing to install the following items on the tower:

6 Allgon 7143.23 panel antennas, mounted on four (4) tower legs at approximately the 127' level (antenna centerline)
6 1-5/8" diameter coaxial cables strapped on Microflect brackets attached to a tower leg to the 127' level
3 Allgon 7143.23 panel antennas, mounted one per leg on three (3) tower legs at approximately the 122' level (antenna centerline)

3 1-5/8" diameter coaxial cables strapped on Microflect brackets attached to a different tower leg to the 122' level

5.0 STRUCTURAL ANALYSIS

5.1 Current Loading Criteria

The design of electrical transmission line structures is governed by the National Electrical Safety Code (NESC) and ANSI/ASCE 10 (1991) "Design of Latticed Steel Transmission Towers". Additional design constraints are imposed by the electrical utilities to account for special design considerations.

The design of antenna supports is governed by ANSI/TIA/EIA-222-F-1996 "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures". From this document, a basic wind speed of 80 mph applies to Westchester County, NY where the tower is located. Ice loads have been established based on a 0.5" radial ice thickness in accordance with industry standard practice. A reduced wind speed of 69 mph is used in conjunction with this ice load.

The loading conditions considered in our analysis of the tower include the wind perpendicular (90°) to the shield wires and the conductors. The loading conditions considered including all the applicable code requirements and the requirements stipulated by the utility, are summarized as follows:

Loading Condition (LC)	Pressure (psf)		Radial Ice (in)		Overload Factors		
	Wire	Tower	Wire	Tower	Wind	Weight	Wire Tension
A. Con Ed Standard	4	13	0.5	0	2.54	1.27	1.65
B. Con Ed Emergency Ice	8	20	1.0	0	1.00	1.00	1.00
C. Con Ed Hurricane	30	50	0	0	1.00	1.00	1.00
Note: Wind force on the tower is calculated based on 1.5 times the net projected area of one tower face.							

The Con Edison Stringing & Sagging condition and Climbing condition were not evaluated in the analysis, because they are not affected by the proposed antenna installation. Loading conditions for single circuit operation used in the original design were not considered in our analysis.

The provisions of ANSI/TIA/EIA-222-F-1996 have been used for the design of the proposed antenna installation. However, the wind and ice loads stipulated

by ANSI/TIA/EIA-222-F-1996 are overly conservative for the evaluation of the existing transmission line tower. Therefore, these loads were not considered in our analysis of the tower.

5.2 Procedure

The tower has been analyzed with a general purpose, three-dimensional structural analysis program, using the dimensions, member sizes and material properties indicated in the Con Edison drawing. The analysis included the following:

1. Analysis of the tower with the existing conductors and shield wires described in Section 3.0 along with the proposed AT&T antennas and cables, using Con Edison loading criteria summarized above.

2. Analysis of the tower with the existing conductors and shield wires described in Section 3.0, using Con Edison loading criteria summarized above.

The total loads on the tower under different load cases are listed in the following table:

LC	Conductor (lbs)			Shield Wire (lbs)			Tower (lbs)	Proposed Installation (lbs)	
	Wind	Weight	Tension	Wind	Weight	Tension	Wind	Wind	Weight
1 (1A)	26582	9799	16900	6398	1575	7500	23530	3330	2989
2 (1B)	24700	11884	25000	6764	2561	12300	14250	2868	4098
3 (1C)	24032	4752	19000	3986	533	6700	35640	8920	819
4 (2A)	26582	9799	16900	6398	1575	7500	23530	0	0
5 (2B)	24700	11884	25000	6764	2561	12300	14250	0	0
6 (2C)	24032	4752	19000	3986	533	6700	35640	0	0

The wind loads for conductors and shield wires listed include the loads due to wire tensions and the line angle. The wire tensions are as indicated in the Con Edison drawing.

5.3 Assumptions

Several assumptions were made in order to perform the analysis. Each of these is considered by Tectonic to be both reasonable and consistent with current standards of practice.

1. Redundant members which are not intended to carry loads are not included in the model.

2. Tower member sizes and material properties are as indicated on the Con Edison drawings.
3. Connections are assumed as pin connections. Details of connections are not modeled.
4. The wind loads applied to the tower due to the antenna installation are conservatively based on the full projected area of all antennas in all loading cases.
5. Member capacities are as indicated on the Con Edison drawings, except for subsequently reinforced members whose capacities have been determined using Con Edison design criteria.
6. The tower was constructed according to the approved plans, and the connection of the tower to its foundation is considered as pinned.
7. The foundation design has been verified by Con Edison to be adequate for the existing loads on the reinforced tower.

5.4 Results

The allowable member capacities are as indicated in the Con Edison drawings. Capacities for reinforced members and replaced members have been determined using the Con Edison design criteria. Details of the critical member forces in terms of their capacities are summarized in the following table:

Member Location	Con Edison Member Number	Reinforced Or Replaced	Existing Condition			Proposed Condition		
			Connection %	Comp. %	Tension %	Connection %	Comp. %	Tension %
30' Leg Ext.	64	Reinforced*	78	70	84	87	71	85
	65		49		40	73		60
20' body Ext	66	Reinforced*	77	69	93	89	71	95
	67		47		48	48		48
	68		35	50		36	51	
	69		38	59	24	57	90	37
	70		56		57	60		61
	71		85	6	47	89	6	49
100 ' body	1	Reinforced*	76	69	87	91	69	88
	3	Reinforced*	77	69	63	96	70	64
	13a	Repl. Bolts	62	95	86	63	96	87
	13		91	82	78	92	83	79
	11b&11c		102	90	93	104	91	94
	11a		60	54	48	60	54	49
	12		76	76	68	76	76	69
	12a		17	17	1	17	17	1
	25		22	18	25	22	19	25
	4		41		34	42		34
	6		32		27	33		27
	8		30	31	11	30	32	12
	9		111	40	61	113	42	62
	15		87	79	60	88	81	61
	17	Replaced	60	78	59	62	79	61
	19		67	59	60	68	61	62
	21		65	61	60	66	62	60
	23		36	16	24	36	16	24
	29		15	20	3	15	20	3
	5		65	50		66	51	

Member Location	Con Edison Member Number	Reinforced Or Replaced	Existing Condition			Proposed Condition		
			Connection %	Comp. %	Location	Connection %	Comp. %	Tension %
100 ' body	7		38	61		38	62	
	14		33	54		33	54	
	16	Replaced	33		36	33		36
	18		25	42		25	42	
	20	Replaced	41		31	41		31
	22		21	35		21	35	
	24a	Replaced	20	88	26	20	88	26
	27		3		3	3		3
Bot. X-arm	47	Reinforced	33	40	4	33	40	4
Bot. X-arm	53	Replaced	20		29	20		29
Mid. X-arm	38	Reinforced	37	30	2	37	30	2
Mid. X-arm	46	Replaced	24		27	24		27
Top X-arm	31	Reinforced	32	38	4	32	38	4
Top X-arm	37	Replaced	19		28	19		28
SW peak	26		12	21		12	21	
SW peak	28		22	10	12	22	10	12
NOTE: *The reinforcing applies to compression-side legs only.								

Details of all member forces are included in the computer output attached to this report.

The foundation reactions are summarized as follows:

	Existing	Proposed	% Increase
Maximum uplift per leg	256 kips	260 kips	2%
Maximum download per leg	312 kips	318 kips	2%
Shear per leg (transverse)	53 kips	54 kips	2%
Shear per leg (longitudinal)	52 kips	53 kips	2%

6.0 CONCLUSIONS AND RECOMMENDATIONS

As a result of our analysis, we conclude that the existing tower does not have sufficient capacity to support the proposed AT&T antennas and cables. Several member connections (Con Edison members no. 9 and 11c) below the middle cross arm level are overstressed, even under the existing condition, and will require reinforcement.

Under the proposed condition, the maximum leg member forces are increased by a maximum of 2%, but the maximum bracing member forces are increased by up to 31%. Connections of members no. 9 and 11c will be will be overloaded by 13% and 4% of their capacities, respectively. Reinforcement is required to comply with the Con Edison design specification. All other tower members are adequate for supporting the proposed installation.

Since no information on the as-built tower foundation or site soil conditions was

available, comparison of the foundation reactions from our analysis to the actual capacities of the existing tower foundation was not possible. However, based on the results of our analysis, we find that the maximum foundation reactions under the proposed condition are increased by no more than 2%. Therefore, we expect that the existing foundation is adequate for supporting the proposed installation.

The clearance requirements for the proposed installation have not been evaluated, since no information on the length of existing insulator strings and the hardware was made available. Since the proposed antennas will be flush mounted on the tower legs and the cables will be installed inside the tower legs, the proposed installation will have only a very minor effect on the clearance requirements.

Any further changes to the antenna configuration or other appurtenances should be reviewed with respect to their effect on structural loads prior to implementation.

Prepared by: _____
Quan He Fan
Staff Structural Engineer

Reviewed by: _____ Date: 11/8/00
Jeffrey B. Kirby, P.E.
Chief Structural Engineer

STATE OF NEW YORK · JEFFREY BRIAN KIRBY · NO. 070144 · LICENSED PROFESSIONAL ENGINEER

G:\Str\Tower\Quan\2650-NY611-ConEd-K49\CONED-K49-RPT-Rev1.doc

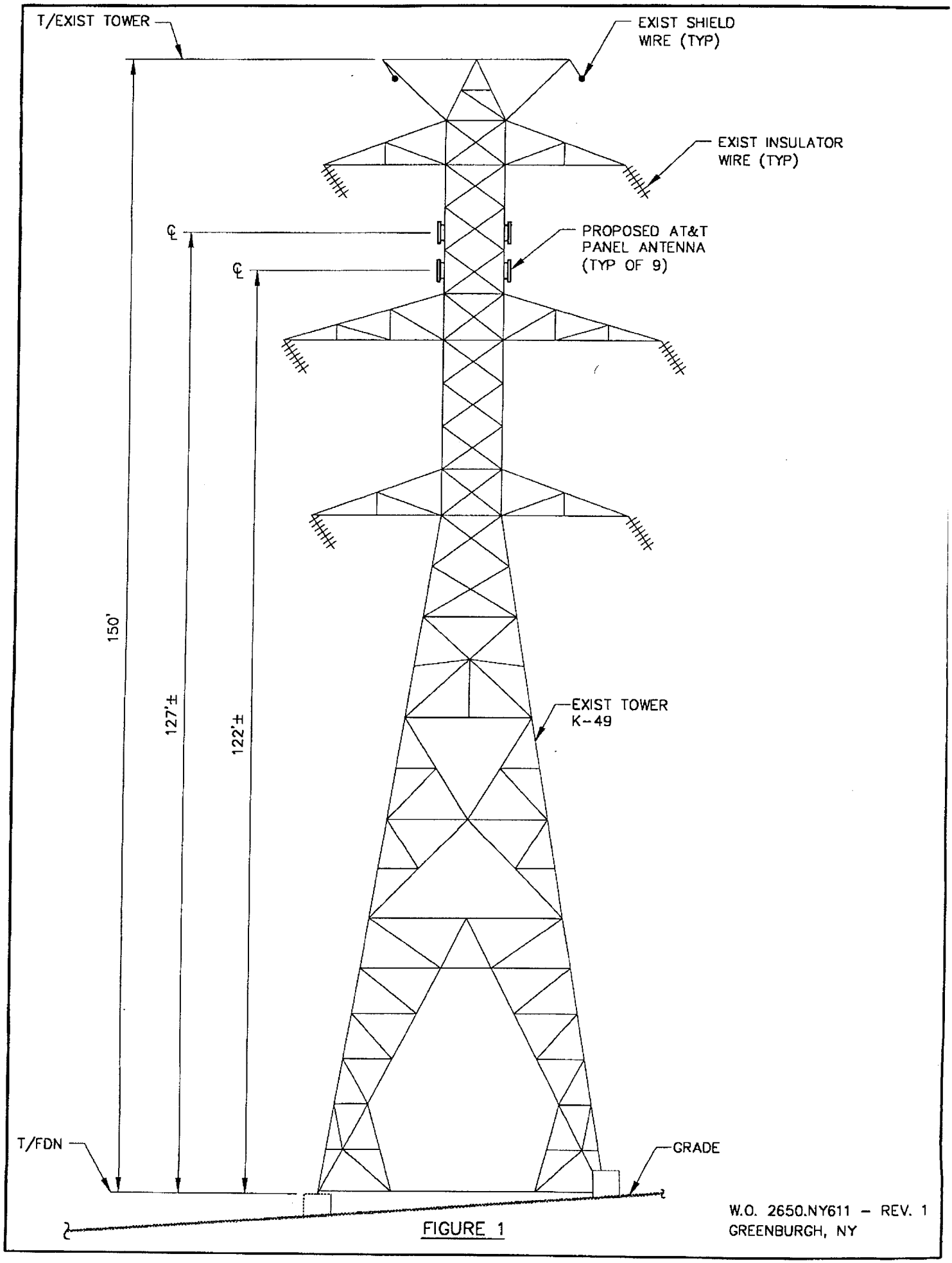


FIGURE 1

W.O. 2650.NY611 – REV. 1
GREENBURGH, NY

SUMMARY OF RESULTS

CON ED K-49
W.O 2650.NY611
BY:AMR HAFEZ
11/8/2000

SUMMARY OF MEMBER CAPACITY

Member Location	Con-Ed Mem. No.	Member Size	Modification	Steel Type	MEMBER CAPACITY (kips)			PROPOSED CONDITION					EXISTING CONDITION				
					Connection	Compression	Tension	Connection (%)	Compression (ksi)	%	Tension (ksi)	%	Connection (%)	Compression (ksi)	%	Tension (ksi)	%
30' Leg Ext.	64	L8X8X1/2	Reinforced*	A242 / A440	291.5/413.0 /S	461.3	300.0	87	326.7	71	254.8	85	78	320.6	70	251.8	84
	65	L3x3x3/16		A7	25.2 /B		30.6	73			18.5	60	49			12.4	40
20' body Ext	66	L8X8X1/2	Reinforced*	A242 / A440	291.5/413.0 /S	459.2	270.9	89	324.8	71	258.0	95	77	318.7	69	252.7	93
	67	L2 1/2X21/2X3/16		A7	25.2 /B		25.0	48			12.1	48	47			11.9	48
	68	L6X4X5/16		A7	53.0 /S	37.0	25.0	36	18.8	51			35	18.6	50		
	69	L2 1/2X21/2X3/16		A7	16.8 /B	10.7	25.0	57	9.6	90	9.3	37	38	6.4	59	6.1	24
	70	L2 1/2X21/2X3/16		A7	25.2 /B		25.0	60			15.1	61	56			14.2	57
	71	L3X3X3/16		A7	16.8 /B	19.9	30.6	89	1.3	6	14.9	49	85	1.3	6	14.3	47
100 ' body	1	L8X8X1/2	Reinforced*	A242 / A440	291.5/413.0 /S	459.2	300.0	91	319.1	69	265.3	88	76	315.6	69	262.3	87
	3	L8X8X1/2	Reinforced*	A242 / A440	291.5/413.0 /S	459.2	439.6	96	321.5	70	279.2	64	77	317.7	69	275.5	63
	13a	L8X8X1/2	Replaced Bolt	A242 / A440	450.5 /B	293.1	273.1	63	282.5	96	236.9	87	62	279.4	95	233.7	86
	13	L8X8X1/2		A242 / A440	265 /S	295.7	273.1	92	244.2	83	216.8	79	91	241.3	82	214.3	78
	11b&11c	L6X6X7/16		A242 / A440	185.5 /S	211.4	176.4	104	192.4	91	165.1	94	102	190.0	90	163.3	93
	11a	L6X6X7/16		A242 / A440	185.5 /S	206.5	176.4	60	111.6	54	85.7	49	60	110.5	54	85.4	48
	12	L5X5X5/16		A242 / A440	106.0 /B	105.4	98.9	76	80.6	76	66.4	69	76	80.1	76	66.1	68
	12a	L5X5X5/16		A242 / A440	106.0 /B	102.9	98.9	17	17.8	17	1.3	1	17	17.8	17	1.2	1
	25	L3 1/2X2 1/2X1/4		A7	33.8 /B	32.7	29.7	22	6.1	19	7.4	25	22	6.0	18	7.3	25
	4	L3X3X3/16		A7	25.2 /B		30.6	42			10.5	34	41			10.4	34
	6	L3X3X3/16		A7	25.2 /B		30.6	33			8.3	27	32			8.1	27
	8	L3X3X3/16		A7	16.8 /B	16.1	30.6	30	5.1	32	3.5	12	30	5.0	31	3.4	11
	9	L3X3X3/16		A7	16.8 /B	19.8	30.6	113	8.4	42	19.0	62	111	8.0	40	18.7	61
	15	L3 1/2X3 1/2X1/4		A242 / A440	45.0 /B	46.2	64.5	88	37.3	81	39.5	61	87	36.7	79	39.0	60
	17	L3X3X5/16	Replaced	A572 Gr. 50	67.5 /B	50.3	68.7	62	39.8	79	41.7	61	60	39.1	78	40.4	59
	19	L3X3X1/4		A7	33.8 /B	35.1	37.4	68	21.3	61	23.0	62	67	20.8	59	22.6	60
	21	L3X3X1/4		A7	33.8 /B	35.6	37.1	66	21.9	62	22.2	60	65	21.8	61	22.1	60
	23	L2 1/2X2 1/2X3/16		A7	16.8 /B	17.6	25.0	36	2.8	16	6.1	24	36	2.7	16	6.1	24
	29	L2 1/2X2 1/2X3/16		A7	16.8 /B	12.9	21.3	15	2.5	20	0.6	3	15	2.5	20	0.5	3
	5	L3 1/2x3x5/16		A7	16.8 /B	21.8		66	11.1	51			65	10.9	50		
	7	L3X2X5/16		A7	16.8 /B	10.4		38	6.5	62			38	6.4	61		
	14	6X4X5/16		A7	92.8 /S	56.5		33	30.8	54			33	30.4	54		
	16	L2X2X1/4	Replaced	A572 Gr. 50	40.0 /B		36.7	33			13.2	36	33			13.2	36
	18	L6X4X5/16		A7	92.8 /S	56.5		25	23.5	42			25	23.5	42		
	20	L2 1/2X2 1/2X5/16	Replaced	A572 Gr. 50	47.5 /B		63.1	41			19.7	31	41			19.6	31
	22	L6X4X5/16		A7	92.8 /S	56.5		21	19.6	35			21	19.6	35		
	24a	L2 1/2X2 1/2X1/4	Replaced	A572 Gr. 50	57.0 /B	6.9	44.4	20	7.8	88	11.3	26	20	7.8	88	11.3	26
	27	L2X2X3/16		A7	16.8 /B	5.4	16.2	3			0.5	3	3			0.5	3
Bot. X-arm	47	L6X4X5/16	Reinforced	A242 / A440	92.8 /S	76.4	134.6	33	30.4	40	5.3	4	33	30.4	40	5.1	4
Bot. X-arm	53	L3X3X5/16	Replaced	A572 Gr. 50	95.2 /B		63.6	20			18.8	29	20			18.7	29
Mid. X-arm	38	L6X4X3/8	Reinforced	A242 / A440	92.8 /S	113.1	161.5	37	34.3	30	3.3	2	37	34.4	30	3.1	2
Mid. X-arm	46	L31/2X31/2X5/16	Replaced	A572 Gr. 50	95.6 /B		82.6	24			22.7	27	24			22.7	27
Top X-arm	31	L6X4X5/16	Reinforced	A242 / A440	92.8 /S	76.4	134.6	32	29.4	38	5.5	4	32	29.4	38	5.5	4
Top X-arm	37	L3X3X5/16	Replaced	A572 Gr. 50	95.2 /B		63.6	19			17.8	28	19			17.7	28
SW peak	26	L21/2X21/2X3/16		A7	16.8 /B	9.8		12	2.1	21			12	2.1	21		
SW peak	28	L3 1/2X3X1/4		A7	22.5 /B	25.1	43.8	22	2.4	10	5.0	12	22	2.4	10	5.0	12

NOTE: * The reinforcing applies to compression legs only.

LOAD CALCULATIONS

Con Ed Tower K-49
W.O. 2650.NY611
By: QF
11/8/2000

CONDUCTOR LOAD CALCULATIONS

Loading Condition 1: Con-Ed Standard

Wind Pressure =	4.0 psf	Radial Ice =	0.5 inch

Overload Factors:

Vertical OLF =	1.27	Transverse OLF =	2.54
Wire Tension OLF =	1.65		

Conductor Data:

Conductor Type:	2493 KCM 54/37 ACAR		
Conductor Diameter:	1.821 in	Weight:	2.341 lb/ft
Conductor Tension:	16900 lb	Conductor Bundle:	2 c/bundle

Shield Wire Data:

Shield Wire Type:	9/16", 7/5 A.W.G Alumoweld		
Shield Wire Dia.:	0.546 in	Weight:	0.525 lb/ft
Shield Wire Tension:	7500 lb		

Design Weight and Wind Span:

Wind Span:	1046 ft	Weight Span:	1015 ft
Line Angle	22.01 degree		

Force on Conductor:

Transverse Force =	**26289** lb	OR	**25.133** lb/ft
Vertical Force =	**9691** lb	OR	**9.547** lb/ft
Resultant Force =	**26.885** lb/ft		
NESC Constant (Table 251-1, P. 152):	**0.30** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**26582** lb
Final Vertical Force (Incl. NESC Constant) =			**9799** lb

Force on Shield Wire:

Transverse Force =	**6094** lb	OR	**5.826** lb/ft
Vertical Force =	**1500** lb	OR	**1.478** lb/ft
Resultant Force =	**6.010** lb/ft		
NESC Constant (Table 251-1, P. 152):	**0.30** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**6398** lb
Final Vertical Force (Incl. NESC Constant) =			**1575** lb

Force on Tower

Wind: F = 13 psf x (1.5 x Projected Area of 1 Face) x (OLF = 2.54)
Weight: W = Self Weight x (OLF = 1.27)

Force on Antennas, Cables and Mounts

Wind: F = 4 psf x (Projected Area w/ Ice) x (Shape Factor: 1.3 for Round, 1.6 for Flat) x (OLF = 2.54)
Weight: W = Self Weight x (OLF = 1.27)

NOTE: Ice on tower need not be considered.

Con Ed Tower K-49
W.O. 2650.NY611
By: QF
11/8/2000

CONDUCTOR LOAD CALCULATIONS

Loading Condition 2: Con-Ed Emergency Ice

Wind Pressure =	8.0 psf	Radial Ice =	1.0 inch

Overload Factors:

Vertical OLF =	1.00	Transverse OLF =	1.00
Wire Tension OLF =	1.00		

Conductor Data:

Conductor Type:	2493 KCM 54/37 ACAR		
Conductor Diameter:	1.821 in	Weight:	2.341 lb/ft
Conductor Tension:	25000 lb	Conductor Bundle:	2 c/bundle

Shield Wire Data:

Shield Wire Type:	9/16", 7/5 A.W.G Alumoweld		
Shield Wire Dia.:	0.546 in	Weight:	0.525 lb/ft
Shield Wire Tension:	12300 lb		

Design Weight and Wind Span:

Wind Span:	1046 ft	Weight Span:	1015 ft
Line Angle	22.01 degree		

Force on Conductor:

Transverse Force =	**24418** lb	OR	**23.345** lb/ft
Vertical Force =	**11749** lb	OR	**11.575** lb/ft
Resultant Force =	**26.057** lb/ft		
NESC Constant (Table 251-1, P. 152):	**0.30** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**24700** lb
Final Vertical Force (Incl. NESC Constant) =			**11884** lb

Force on Shield Wire:

Transverse Force =	**6471** lb	OR	**6.187** lb/ft
Vertical Force =	**2450** lb	OR	**2.414** lb/ft
Resultant Force =	**6.641** lb/ft		
NESC Constant (Table 251-1, P. 152):	**0.30** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**6764** lb
Final Vertical Force (Incl. NESC Constant) =			**2561** lb

Force on Tower

Wind: F = 20 psf x (1.5 x Projected Area of 1 Face) x (OLF = 1.0)
Weight: W = Self Weight x (OLF = 1.0)

Force on Antennas, Cables and Mounts

Wind: F = 8 psf x (Projected Area w/ Ice) x (Shape Factor: 1.3 for Round, 1.6 for Flat) x (OLF = 1.0)
Weight: W = Self Weight x (OLF = 1.0)

NOTE: Ice on tower need not be considered.

Con Ed Tower K-49
W.O. 2650.NY611
By: QF
11/8/2000

CONDUCTOR LOAD CALCULATIONS

Loading Condition 3: Con-Ed Hurricane

Wind Pressure =	30.0 psf	Radial Ice =	0.0 inch

Overload Factors:

Vertical OLF =	1.00	Transverse OLF =	1.00
Wire Tension OLF =	1.00		

Conductor Data:

Conductor Type:	2493 KCM 54/37 ACAR		
Conductor Diameter:	1.821 in	Weight:	2.341 lb/ft
Conductor Tension:	19000 lb	Conductor Bundle:	2 c/bundle

Shield Wire Data:

Shield Wire Type:	9/16", 7/5 A.W.G Alumoweld		
Shield Wire Dia.:	0.546 in	Weight:	0.525 lb/ft
Shield Wire Tension:	6700 lb		

Design Weight and Wind Span:

Wind Span:	1046 ft	Weight Span:	1015 ft
Line Angle	22.01 degree		

Force on Conductor:

Transverse Force =	**24032** lb	OR	**22.975** lb/ft	
Vertical Force =	**4752** lb	OR	**4.682** lb/ft	
Resultant Force =	**23.447** lb/ft			
NESC Constant (Table 251-1, P. 152):		**0.00** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**24032**	lb
Final Vertical Force (Incl. NESC Constant) =			**4752**	lb

Force on Shield Wire:

Transverse Force =	**3986** lb	OR	**3.810** lb/ft	
Vertical Force =	**533** lb	OR	**0.525** lb/ft	
Resultant Force =	**3.846** lb/ft			
NESC Constant (Table 251-1, P. 152):		**0.00** lb/ft		
Final Tranverse Force (Incl. NESC Constant) =			**3986**	lb
Final Vertical Force (Incl. NESC Constant) =			**533**	lb

Force on Tower

Wind: F = 50 psf x (1.5 x Projected Area of 1 Face) x (OLF = 1.0)
Weight: W = Self Weight x (OLF = 1.0)

Force on Antennas, Cables and Mounts

Wind: F = 30 psf x (Projected Area) x (Shape Factor: 1.3 for Round, 1.6 for Flat) x (OLF = 1.0)
Weight: W = Self Weight x (OLF = 1.0)

CON ED K49
W.O 2650. NY611
BY:AMR HAFEZ
11/8/2000

WIND FORCE ON TOWER

LC1 = STANDARD 0.5 " ICE		
WIND PRESSURE=	13	PSF
SHAPE FACTOR=	1.5	
WIND OLF=	2.54	
WT. OLF=	1.27	
Radial ice =	0.50	inch

Tower Sections:

Section	Section Height (ft.)	qz Wind Pressure (lb/ft^2)	Total Projected Area (ft ^2)	Total Fx (KIPS)	
1 (Top)	14.00	13.00	37.29	1.85	
2	23.00	13.00	64.99	3.22	
3	23.00	13.00	60.66	3.00	
4	26.67	13.00	88.09	4.36	
5	26.67	13.00	98.63	4.89	
6	36.67	13.00	125.48	6.22	
	150.00		475.15	23.53	kips

Section	Centerline Height Z (ft)	Total Fx KIPS	Num. of Joints	FX Per Joint (KIPS)	MOMENT DUE FX (K-F)
	150.00				
1 (Top)	143.00	1.85	6	0.31	264.13
2	124.50	3.22	8	0.71	400.79
3	101.50	3.00	8	0.78	304.97
4	76.67	4.36	8	0.92	334.50
5	50.00	4.89	8	1.16	244.26
6	18.33	6.22	8	1.39	113.95
				0.78	
TOTAL		23.53		23.53	1662.60

CON ED K49
W.O 2650. NY611
BY:AMR HAFEZ
11/8/2000

WIND FORCE ON TOWER

LC2 = EMERGENCY ICE		
WIND PRESSURE=	20	PSF
SHAPE FACTOR=	1.5	
WIND OLF=	1	
WT. OLF=	1	
Radial ice =	1.00	inch

Tower Sections:

Section	Section Height (ft.)	qz Wind Pressure (lb/ft^2)	Total Projected Area (ft ^2)	Total Fx (KIPS)	
1 (Top)	14.00	20.00	37.29	**1.12**	
2	23.00	20.00	64.99	**1.95**	
3	23.00	20.00	60.66	**1.82**	
4	26.67	20.00	88.09	**2.64**	
5	26.67	20.00	98.63	**2.96**	
6	36.67	20.00	125.48	**3.76**	
	150.00		475.15	**14.25**	**kips**

Section	Centerline Height Z (ft)	Total Fx KIPS	Num. of Joints	FX Per Joint (KIPS)	MOMENT DUE FX (K-F)
	150.00				
1 (Top)	143.00	1.12	6	**0.19**	**159.98**
2.0	124.50	1.95	8	**0.43**	**242.76**
3.0	101.50	1.82	8	**0.47**	**184.72**
4.0	76.67	2.64	8	**0.56**	**202.61**
5.0	50.00	2.96	8	**0.70**	**147.95**
6.0	18.33	3.76	8	**0.84**	**69.02**
0.0	0.00	0.00	8	**0.47**	**0.00**
TOTAL		**14.25**		**14.25**	**1007.03**

CON ED K49
W.O 2650. NY611
BY:AMR HAFEZ
11/8/2000

WIND FORCE ON TOWER

LC3 =HURRICANE		
WIND PRESSURE=	50	PSF
SHAPE FACTOR=	1.5	
WIND OLF=	1	
WT. OLF=	1	
Radial ice =	0.00	inch

Tower Sections:

Section	Section Height (ft.)	qz Wind Pressure (lb/ft^2)	Total Projected Area (ft ^2)	Total Fx (KIPS)	
1 (Top)	14.00	50.00	37.29	2.80	
2	23.00	50.00	64.99	4.87	
3	23.00	50.00	60.66	4.55	
4	26.67	50.00	88.09	6.61	
5	26.67	50.00	98.63	7.40	
6	36.67	50.00	125.48	9.41	
	150.00		475.15	35.64	kips

Section	Centerline Height Z (ft)	Total Fx KIPS	Num. of Joints	FX Per Joint (KIPS)	MOMENT DUE FX (K-F)
	150.00				
1 (Top)	143.00	2.80	6	0.47	399.96
2	124.50	4.87	8	1.08	606.89
3	101.50	4.55	8	1.18	461.79
4	76.67	6.61	8	1.39	506.52
5	50.00	7.40	8	1.75	369.87
6	18.33	9.41	8	2.10	172.54
				1.18	
TOTAL		35.64		35.64	2517.56

CON ED K49
W.O 2650. NY611
BY:AMR HAFEZ
11/8/2000

WIND FORCE ON ANTENNAS & MOUNT .5 " ICE

.5" ICE

LOAD CASE 1

Item Appurtenance Type	Load Condition	Z (ft.)	Wt Each (lbs.)	QTY	Wt OLF	Wind OLF	Shape Factor	Aa (sf)	qz Wind Pressure (lb/ft^2)	Total Weight (lbs.)	Total F (lbs.)	TOTAL Wt (lbs.)	TOTAL FX (lbs.)
ALLGON 7143.23	standard	127(122)	33.07	1	1.27	2.54	1.60	3.24	4.00	42.0	53	***41.99***	***52.6***
mount pipe	standard	127(122)	31.06	1	1.27	2.54	1.30	1.29	4.00	39.5	17	***39.45***	***17.0***
									Totals=	81	70	81.4	70 lbs

force per antenna&mount
6 antenna at 127
3 antenna at 122

FX	0.070	kips
FY	0.081	kips

WIND FORCE ON ANTENNAS & MOUNT 1" ICE

1 " ICE

LOAD CASE 2

Item Appurtenance Type	Load Condition	Z (ft.)	Wt Each (lbs.)	QTY	Wt OLF	Wind OLF	Shape Factor	Aa (sf)	Wind Pressure (lb/ft^2)	Total Weight (lbs.)	Total F (lbs.)	TOTAL Wt (lbs.)	TOTAL FX (lbs.)
ALLGON 7143.23	emergency ice	127(122)	59.72	1	1	1	1.60	3.58	8.00	59.7	46	***59.72***	***45.9***
mount pipe	emergency ice	127(122)	42.59	1	1	1	1.30	1.70	8.00	42.6	18	***42.59***	***17.7***
									Totals=	102	64	102.3	64 lbs

force per antenna&mount
6 antenna at 127
3 antenna at 122

FX	0.064	kips
FY	0.102	kips

WIND FORCE ON ANTENNAS & MOUNT NO ICE

0 " ICE

LOAD CASE 3

Item Appurtenance Type	Load Condition	Z (ft.)	Wt Each (lbs.)	QTY	Wt OLF	Wind OLF	Shape Factor	Aa (sf)	Wind Pressure (lb/ft^2)	Total Weight (lbs.)	Total F (lbs.)	TOTAL Wt (lbs.)	TOTAL FX (lbs.)
ALLGON 7143.23	Extreme wind	127(122)	10.00	1	1	1	1.60	2.90	30.00	10.0	139	***10.00***	***139.2***
mount pipe	Extreme wind	127(122)	22.59	1	1	1	1.30	0.89	30.00	22.6	35	***22.59***	***34.7***
									Totals=	33	174	32.6	174 lbs

force per antenna&mount
6 antenna at 127
3 antenna at 122

FX	0.174	kips
FY	0.033	kips

CON ED K49
W.O 2650. NY611
BY:AMR HAFEZ
11/8/2000

WIND FORCE ON CABLES 1/2 " ICE

.5 ICE

LOAD CASE 1

Item	Load	Z	Wt Each		Wt	Wind	Shape	Aa	qz Wind Pressure	Total Weight	Total F	TOTAL Wt PER LEG	TOTAL FX PER LEG
Appurtenance Type	Condition	(ft.)	(lbs.)	QTY	OLF	OLF	Factor	(sf)	(lb/ft^2)	(lbs.)	(lbs.)	(lbs.)	(lbs.)
CABLES	standard	64.00	1184.30	1	1.27	2.54	1.30	136.31	4.00	1504.1	1800	*1504.06*	*1800.4*
									Totals=	1504	1800	1504.1	1800 lbs

per joint /per leg

FX	0.360	kips
FY	0.301	kips
	1.504	
	1.504	OK

WIND FORCE ON CABLES 1" ICE

1 " ICE

LOAD CASE 2

Item	Load	Z	Wt Each		Wt	Wind	Shape	Aa	Wind Pressure	Total Weight	Total F	TOTAL Wt PER LEG	TOTAL FX PER LEG
Appurtenance Type	Condition	(ft.)	(lbs.)	QTY	OLF	OLF	Factor	(sf)	(lb/ft^2)	(lbs.)	(lbs.)	(lbs.)	(lbs.)
CABLES	emergency	64.00	2118.08	1	1	1	1.30	146.90	8.00	2118.1	1528	*2118.08*	*1527.7*
									Totals=	2118	1528	2118.1	1528 lbs

per joint /per leg

FX	0.306	kips
FY	0.424	kips

WIND FORCE ON CABLES 0" ICE

0 " ICE

LOAD CASE 3

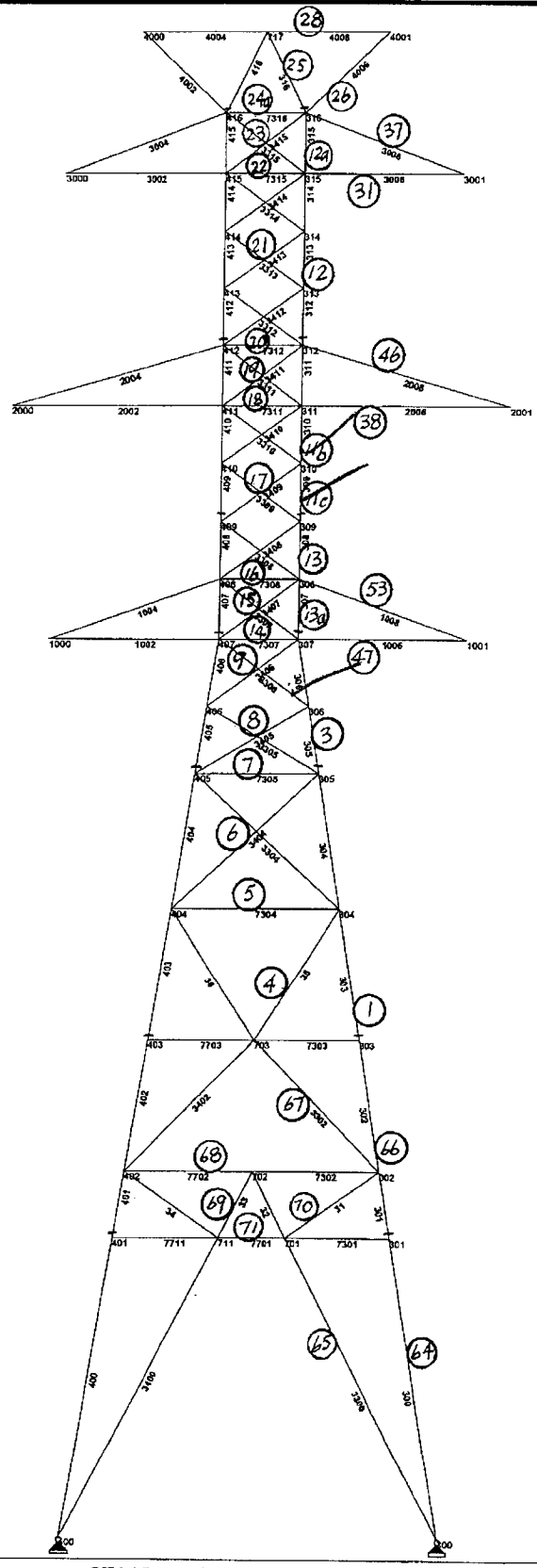
Item	Load	Z	Wt Each		Wt	Wind	Shape	Aa	Wind Pressure	Total Weight	Total F	TOTAL Wt PER LEG	TOTAL FX PER LEG
Appurtenance Type	Condition	(ft.)	(lbs.)	QTY	OLF	OLF	Factor	(sf)	(lb/ft^2)	(lbs.)	(lbs.)	(lbs.)	(lbs.)
CABLES	Extreme wind	64.00	350.52	1	1	1	1.30	125.73	30.00	350.5	4903	*350.52*	*4903.5*
									Totals=	351	4903	350.5	4903 lbs

per joint /per leg

FX	0.981	kips
FY	0.070	kips

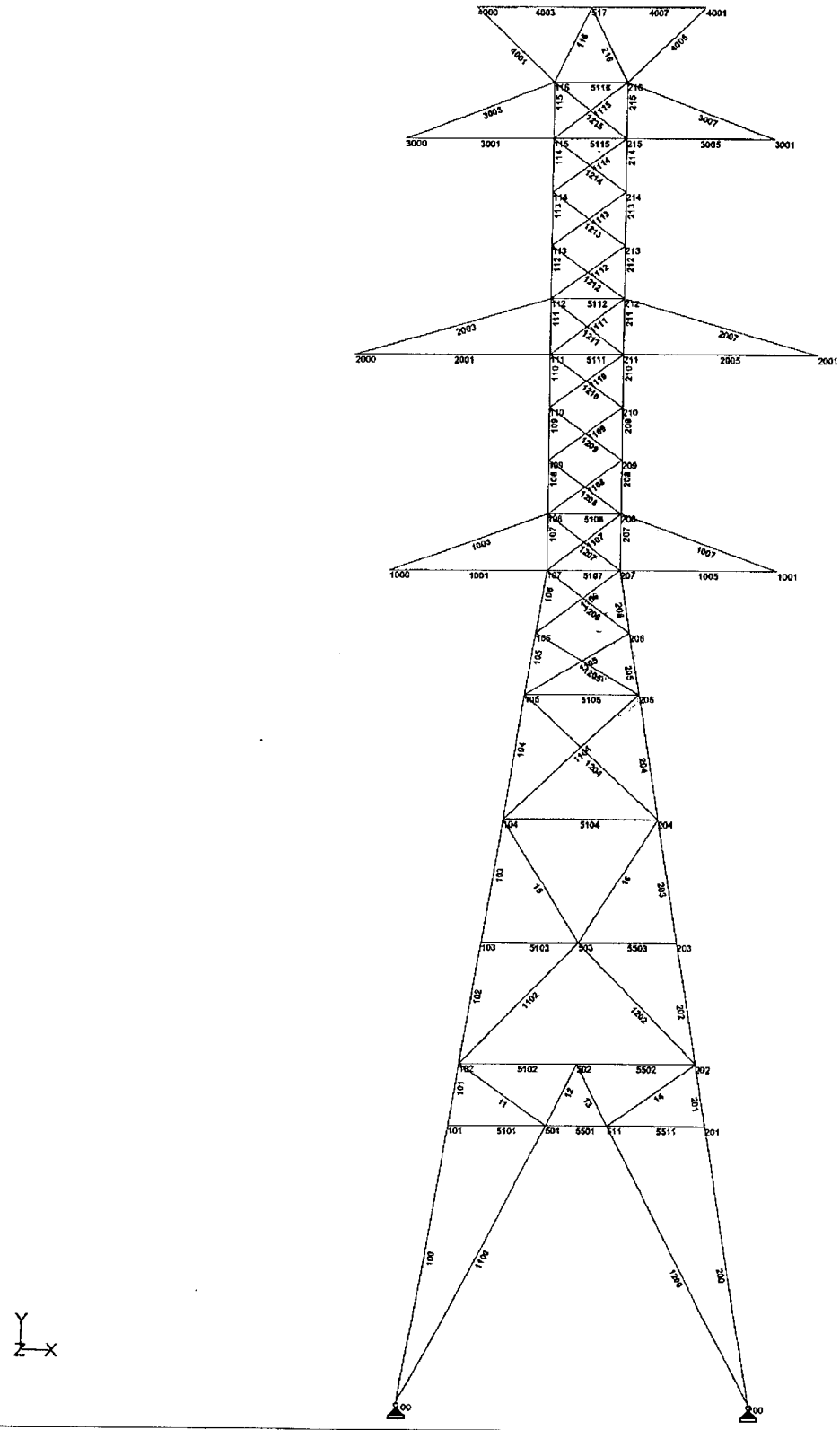
TOWER ANALYSIS MODEL AND OUTPUT

Software licensed to Tectonic Engineering	Job No 2650.NY611	Sheet No 1	Rev
	Part		
Job Title JOINT & MEMBERS (FACE 300-400)	Ref		
	By	Date September 29, 00nd	
Client AT&T	File CON ED K49.std	Date/Time 08-Nov-2000 10:10	

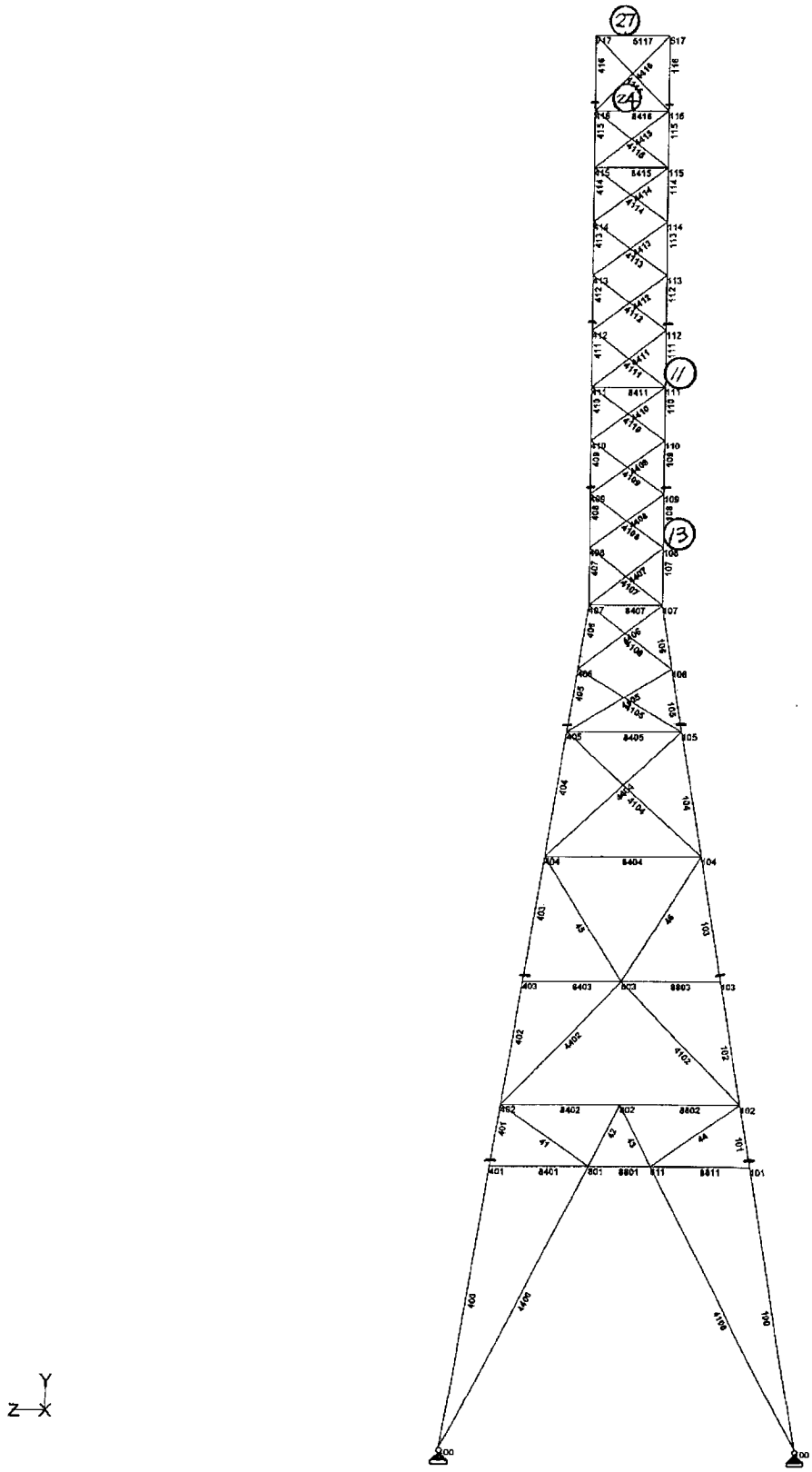


(X) — CON EDISON MEMBER NUMBER

Software licensed to Tectonic Engineering	Job No 2650.NY611	Sheet No 2	Rev
	Part		
Job Title JOINT & MEMBER NUMBERS (FACE 100 - 200)	Ref		
	By	Date September 29, 00nd	
Client AT & T	File CON ED K49.std	Date/Time 07-Nov-2000 14:59	

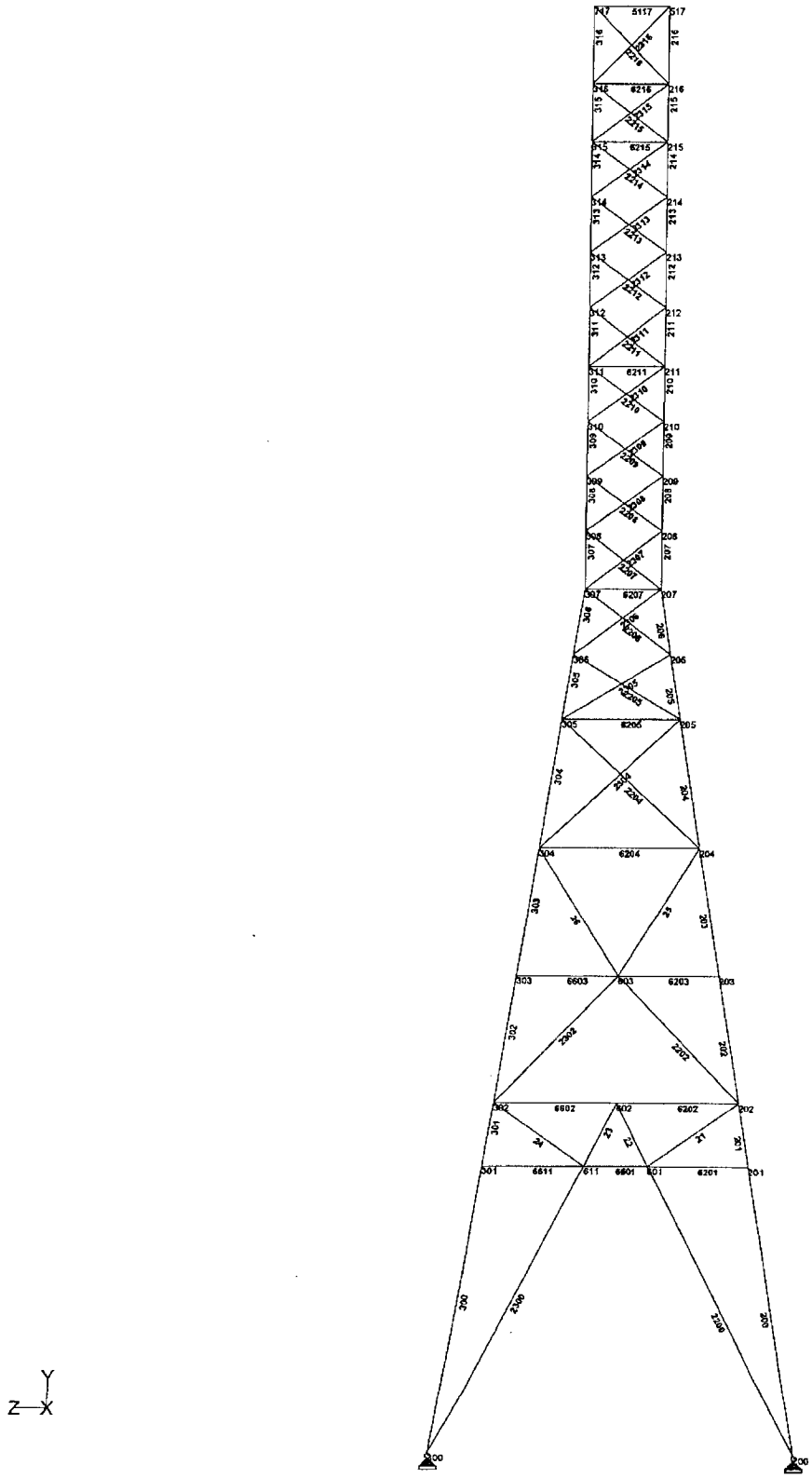


Software licensed to Tectonic Engineering	Job No 2650.NY611	Sheet No 3	Rev
	Part		
Job Title JOINT &MEMBER NUMBERS (FACE 100 - 400)	Ref		
	By AH	Date September 29, 00nd	
Client AT & T	File CON ED K49.std	Date/Time 07-Nov-2000 14:59	



(X) – CON EDISON MEMBER NUMBER

Software licensed to Tectonic Engineering	Job No 2650.NY611	Sheet No 4	Rev
	Part		
Job Title JOINT & MEMBER NUMBERS (FACE 200 - 300)	Ref		
	By AH	Date September 29, 00	
Client AT & T	File CON ED K49.std	Date/Time 07-Nov-2000 14:59	



```
**************************************************
*                                                *
*           STAAD/Pro                            *
*           Version  2000    Build 1007          *
*           Proprietary Program of               *
*           RESEARCH ENGINEERS, Inc.             *
*           Date=    NOV  7, 2000                *
*           Time=    14:59:56                    *
*                                                *
*      USER ID: Tectonic Engineering             *
**************************************************
```

```
  1. STAAD SPACE (TRUSS)
  2. START JOB INFORMATION
  3. ENGINEER DATE SEPTEMBER 29, 00
  4. END JOB INFORMATION
  5. *W.O 265.NY611
  6. *CON-ED K-49
  7. *ADDED TENSION ONLY MEMBERS
  8. INPUT WIDTH 72
  9. *BY AMR HAFEZ
 10. SET NL 6
 11. UNIT FEET KIP
 12. JOINT COORDINATE
 13. *LEG100
 14. JOINT COORDINATE
 15. JOINT COORDINATE
 16. 100 -19.001 0 -19.001
 17. 101 -14 30 -14
 18. 102 -12.889 36.667 -12.889
 19. 103 -10.667 50.001 -10.667
 20. 104 -8.445 63.335 -8.445
 21. 105 -6.222 76.669 -6.222
 22. 106 -5.111 83.336 -5.111
 23. 107 -4 90.003 -4
 24. 108 -4 96.003 -4
 25. 109 -4 101.67 -4
 26. 110 -4 107.336 -4
 27. 111 -4 113.003 -4
 28. 112 -4 119.003 -4
 29. 113 -4 124.67 -4
 30. 114 -4 130.336 -4
 31. 115 -4 136.003 -4
 32. 116 -4 142.003 -4
 33. *
 34. 501 -3.334 30 -14
 35. 511 3.334 30 -14
 36. 502 0 36.667 -12.889
 37. 503 0 50.001 -10.667
 38. 517 0 150 -4
 39. *LEG 2
 40. *
 41. 200 19.001 0 -19.001
```

```
 42. 201 14 30 -14
 43. 202 12.889 36.667 -12.889
 44. 203 10.667 50.001 -10.667
 45. 204 8.445 63.335 -8.445
 46. 205 6.222 76.669 -6.222
 47. 206 5.111 83.336 -5.111
 48. 207 4 90.003 -4
 49. 208 4 96.003 -4
 50. 209 4 101.67 -4
 51. 210 4 107.336 -4
 52. 211 4 113.003 -4
 53. 212 4 119.003 -4
 54. 213 4 124.67 -4
 55. 214 4 130.336 -4
 56. 215 4 136.003 -4
 57. 216 4 142.003 -4
 59. 601 14 30 -3.334
 60. 611 14 30 3.334
 61. 602 12.889 36.667 0
 62. 603 10.667 50.001 0
 65. *LEG 3
 66. *
 67. 300 19.001 0 19.001
 68. 301 14 30 14
 69. 302 12.889 36.667 12.889
 70. 303 10.667 50.001 10.667
 71. 304 8.445 63.335 8.445
 72. 305 6.222 76.669 6.222
 73. 306 5.111 83.336 5.111
 74. 307 4 90.003 4
 75. 308 4 96.003 4
 76. 309 4 101.67 4
 77. 310 4 107.336 4
 78. 311 4 113.003 4
 79. 312 4 119.003 4
 80. 313 4 124.67 4
 81. 314 4 130.336 4
 82. 315 4 136.003 4
 83. 316 4 142.003 4
 84. *
 85. 701 3.334 30 14
 86. 711 -3.334 30 14
 87. 702 0 36.667 12.889
 88. 703 0 50.001 10.667
 89. 717 0 150 4
 90. *
 91. *LEG 4
 92. *
 93. 400 -19.001 0 19.001
 94. 401 -14 30 14
 95. 402 -12.889 36.667 12.889
 96. 403 -10.667 50.001 10.667
 97. 404 -8.445 63.335 8.445
 98. 405 -6.222 76.669 6.222
 99. 406 -5.111 83.336 5.111
100. 407 -4 90.003 4
```

```
101. 408 -4 96.003 4
102. 409 -4 101.67 4
103. 410 -4 107.336 4
104. 411 -4 113.003 4
105. 412 -4 119.003 4
106. 413 -4 124.67 4
107. 414 -4 130.336 4
108. 415 -4 136.003 4
109. 416 -4 142.003 4
110. *
111. 801 -14 30 3.334
112. 811 -14 30 -3.334
113. 802 -12.889 36.667 0
114. 803 -10.667 50.001 0
116. *
117. 1000 -21. 90 0
118. 1001 21. 90 0
119. *
120. 2000 -25.0 113.003 0
121. 2001 25.0 113.003 0
122. *
123. 3000 -20.0 136.003 0
124. 3001 20.0 136.003 0
125. *
126. 4000 -12.5 150 0
127. 4001 12.5 150 0
128. *
129. MEMBER INCIDENCES
130. *LEGS
131. 100 100 101
132. 101 101 102
133. 102 102 103
134. 103 103 104
135. 104 104 105
136. 105 105 106
137. 106 106 107
138. 107 107 108
139. 108 108 109
140. 109 109 110
141. 110 110 111
142. 111 111 112
143. 112 112 113
144. 113 113 114
145. 114 114 115
146. 115 115 116
147. 116 116 517
148. *
149. *
150. 200 200 201
151. 201 201 202
152. 202 202 203
153. 203 203 204
154. 204 204 205
155. 205 205 206
156. 206 206 207
157. 207 207 208
```

```
158. 208 208 209
159. 209 209 210
160. 210 210 211
161. 211 211 212
162. 212 212 213
163. 213 213 214
164. 214 214 215
165. 215 215 216
166. 216 216 517
167. *
168. *
169. 300 300 301
170. 301 301 302
171. 302 302 303
172. 303 303 304
173. 304 304 305
174. 305 305 306
175. 306 306 307
176. 307 307 308
177. 308 308 309
178. 309 309 310
179. 310 310 311
180. 311 311 312
181. 312 312 313
182. 313 313 314
183. 314 314 315
184. 315 315 316
185. 316 316 717
186. *
187. 400 400 401
188. 401 401 402
189. 402 402 403
190. 403 403 404
191. 404 404 405
192. 405 405 406
193. 406 406 407
194. 407 407 408
195. 408 408 409
196. 409 409 410
197. 410 410 411
198. 411 411 412
199. 412 412 413
200. 413 413 414
201. 414 414 415
202. 415 415 416
203. 416 416 717
204. *
205. 11 102 501
206. 12 501 502
207. 13 502 511
208. 14 511 202
209. 15 104 503
210. 16 503 204
211. *
212. 21 202 601
213. 22 601 602
```

```
214. 23 602 611
215. 24 611 302
216. 25 204 603
217. 26 603 304
218. *
219. 31 302 701
220. 32 701 702
221. 33 702 711
222. 34 711 402
223. 35 304 703
224. 36 703 404
225. *
226. 41 402 801
227. 42 801 802
228. 43 802 811
229. 44 811 102
230. 45 404 803
231. 46 803 104
232. *
233. 1100 100 501
234. 1102 102 503
235. 1104 104 205
236. 1105 105 206
237. 1106 106 207
238. 1107 107 208
239. 1108 108 209
240. 1109 109 210
241. 1110 110 211
242. 1111 111 212
243. 1112 112 213
244. 1113 113 214
245. 1114 114 215
246. 1115 115 216
247. *
248. 1200 200 511
249. 1202 202 503
250. 1204 204 105
251. 1205 205 106
252. 1206 206 107
253. 1207 207 108
254. 1208 208 109
255. 1209 209 110
256. 1210 210 111
257. 1211 211 112
258. 1212 212 113
259. 1213 213 114
260. 1214 214 115
261. 1215 215 116
262. *
263. 2200 200 601
264. 2202 202 603
265. 2204 204 305
266. 2205 205 306
267. 2206 206 307
268. 2207 207 308
269. 2208 208 309
```

```
270. 2209 209 310
271. 2210 210 311
272. 2211 211 312
273. 2212 212 313
274. 2213 213 314
275. 2214 214 315
276. 2215 215 316
277. 2216 216 717
278. *
279. 2300 300 611
280. 2302 302 603
281. 2304 304 205
282. 2305 305 206
283. 2306 306 207
284. 2307 307 208
285. 2308 308 209
286. 2309 309 210
287. 2310 310 211
288. 2311 311 212
289. 2312 312 213
290. 2313 313 214
291. 2314 314 215
292. 2315 315 216
293. 2316 316 517
294. *
295. 3300 300 701
296. 3302 302 703
297. 3304 304 405
298. 3305 305 406
299. 3306 306 407
300. 3307 307 408
301. 3308 308 409
302. 3309 309 410
303. 3310 310 411
304. 3311 311 412
305. 3312 312 413
306. 3313 313 414
307. 3314 314 415
308. 3315 315 416
309. *
310. 3400 400 711
311. 3402 402 703
312. 3404 404 305
313. 3405 405 306
314. 3406 406 307
315. 3407 407 308
316. 3408 408 309
317. 3409 409 310
318. 3410 410 311
319. 3411 411 312
320. 3412 412 313
321. 3413 413 314
322. 3414 414 315
323. 3415 415 316
324. *
325. 4100 100 811
```

```
326. 4102 102 803
327. 4104 104 405
328. 4105 105 406
329. 4106 106 407
330. 4107 107 408
331. 4108 108 409
332. 4109 109 410
333. 4110 110 411
334. 4111 111 412
335. 4112 112 413
336. 4113 113 414
337. 4114 114 415
338. 4115 115 416
339. 4116 116 717
340. *
341. 4400 400 801
342. 4402 402 803
343. 4404 404 105
344. 4405 405 106
345. 4406 406 107
346. 4407 407 108
347. 4408 408 109
348. 4409 409 110
349. 4410 410 111
350. 4411 411 112
351. 4412 412 113
352. 4413 413 114
353. 4414 414 115
354. 4415 415 116
355. 4416 416 517
356. *
357. *FACE 1 HORIZ
358. 5101 101 501
359. 5501 501 511
360. 5511 511 201
361. 5102 102 502
362. 5502 502 202
363. 5103 103 503
364. 5503 503 203
365. *
366. 5104 104 204
367. 5105 105 205
368. 5107 107 207
369. 5108 108 208
370. 5111 111 211
371. 5112 112 212
372. 5115 115 215
373. 5116 116 216
374. *
375. 5117 517 717
376. *FACE 2 HORIZ
377. 6201 201 601
378. 6601 601 611
379. 6611 611 301
380. 6202 202 602
381. 6602 602 302
```

```
382. 6203 203 603
383. 6603 603 303
384. *
385. 6204 204 304
386. 6205 205 305
387. 6207 207 307
388. *6208 208 308
389. 6211 211 311
390. *6212 212 312
391. 6215 215 315
392. 6216 216 316
393. *
394. *FACE 3 HORIZ
395. 7301 301 701
396. 7701 701 711
397. 7711 711 401
398. 7302 302 702
399. 7702 702 402
400. 7303 303 703
401. 7703 703 403
402. *
403. 7304 304 404
404. 7305 305 405
405. 7307 307 407
406. 7308 308 408
407. 7311 311 411
408. 7312 312 412
409. 7315 315 415
410. 7316 316 416
411. *
412. *FACE 4 HORIZ
413. 8401 401 801
414. 8801 801 811
415. 8811 811 101
416. 8402 402 802
417. 8802 802 102
418. 8403 403 803
419. 8803 803 103
420. *
421. 8404 404 104
422. 8405 405 105
423. 8407 407 107
424. *8408 408 108
425. 8411 411 111
426. *8412 412 112
427. 8415 415 115
428. 8416 416 116
429. *
430. *SECTION A-A
431. 1001 1000 107
432. 1002 1000 407
433. 1003 1000 108
434. 1004 1000 408
435. 1005 1001 207
436. 1006 1001 307
437. 1007 1001 208
```

```
438. 1008 1001 308
440. *SECTION B-B
441. 2001 2000 111
442. 2002 2000 411
443. 2003 2000 112
444. 2004 2000 412
445. 2005 2001 211
446. 2006 2001 311
447. 2007 2001 212
448. 2008 2001 312
450. *SECTION C-C
451. 3001 3000 115
452. 3002 3000 415
453. 3003 3000 116
454. 3004 3000 416
455. 3005 3001 215
456. 3006 3001 315
457. 3007 3001 216
458. 3008 3001 316
460. *SECTION F-F
461. 4001 4000 116
462. 4002 4000 416
463. 4003 4000 517
464. 4004 4000 717
465. 4005 4001 216
466. 4006 4001 316
467. 4007 4001 517
468. 4008 4001 717
469. *
470. *DUMMY MEMBER
471. 50 502 702
472. 51 602 802
473. 52 502 602
474. 53 602 702
475. 54 702 802
476. 55 802 502
477. 56 503 703
478. 57 603 803
479. 58 503 603
480. 59 603 703
481. 60 703 803
482. 61 803 503
483. 62 511 601
484. 63 611 701
485. 64 711 801
486. 65 811 501
487. 66 711 511
488. 67 701 511
489. 68 711 501
490. 69 611 801
491. 70 601 811
492. 71 611 811
493. 72 104 304
494. 73 204 404
495. 74 105 305
496. 75 205 405
```

```
497. *#32
498. 76 115 315
499. 77 215 415
500. *#30
501. 78 116 316
502. 79 416 216
503. *#39
504. 80 211 411
505. 81 311 111
506. *#48
507. 82 207 407
508. 83 307 107
510. *
511. START USER TABLE
512. TABLE 1
513. UNIT INCH
514. ANGLE
515. L1751752
516. 1.75 1.75 .125 .343 0 0
517. L1751753
518. 1.75 1.75 .125 .537 0 0
519. L60354
520. 6 3.5 .25 .772 0 0
521. TABLE 2
522. UNIT INCH
523. DOUBLE ANGLE
524. L15152
525. 1.5 1.5 .125 .1 .1 .1 .1 .1 .1 .1
526. END
527. UNITS INCHES KIP
528. MEMBER PROPERTY AMERICAN
529. 50 TO 75 UPTABLE 1 L1751752
530. *LEGS
531. *64
532. 100 200 300 400 PRISM AX 11.5 IY 97.84 IX 97.84 IZ 107.1
533. *66
534. 101 201 301 401 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
535. 102 202 302 402 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
536. *1
537. 103 203 303 403 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
538. 104 204 304 404 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
539. *3
540. 105 205 305 405 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
541. 106 206 306 406 PRISM AX 11.5 IY 97.84 IZ 107.1 IX 97.84
542. *13A
543. 107 207 307 407 TABLE ST L80808
545. 108 208 308 408 TABLE ST L808010
546. *11C
547. 109 209 309 409 TABLE ST L60607
548. *11B
549. 110 210 310 410 TABLE ST L60607
550. *11A
551. 111 211 311 411 TABLE ST L60607
552. *12
553. 112 212 312 412 TABLE ST L50505
554. 113 213 313 413 TABLE ST L50505
```

```
555. 114 214 314 414 TABLE ST L50505
556. *12A
557. 115 215 315 415 TABLE ST L50505
558. *25
559. 116 216 316 416 TABLE ST L35254
560. *
561. *DIAGONALS
562. *70
563. 11 21 31 41 TABLE ST L25253
564. 14 24 34 44 TABLE ST L25253
565. *69
566. 12 22 32 42 TABLE ST L25253
567. 13 23 33 43 TABLE ST L25253
568. *4
569. 15 25 35 45 TABLE ST L30303
570. 16 26 36 46 TABLE ST L30303
571. *
572. *65
573. 1100 1200 2200 2300 3300 3400 4400 4100 TABLE ST L30303
574. *67
575. 1102 1202 2202 2302 3302 3402 4402 4102 TABLE ST L25253
576. *6
577. 1104 1204 2204 2304 3304 3404 4404 4104 TABLE ST L30303
578. *8
579. 1105 1205 2205 2305 3305 3405 4405 4105 TABLE ST L30303
580. *9
581. 1106 1206 2206 2306 3306 3406 4406 4106 TABLE ST L30303
582. *15
583. 1107 1207 2207 2307 3307 3407 4407 4107 TABLE ST L35354
584. *17
585. 1108 1208 2208 2308 3308 3408 4408 4108 TABLE ST L30305
586. 1109 1209 2209 2309 3309 3409 4409 4109 TABLE ST L30305
587. 1110 1210 2210 2310 3310 3410 4410 4110 TABLE ST L30305
588. *19
589. 1111 1211 2211 2311 3311 3411 4411 4111 TABLE ST L30304
590. *21
591. 1112 1212 2212 2312 3312 3412 4412 4112 TABLE ST L30304
592. 1113 1213 2213 2313 3313 3413 4413 4113 TABLE ST L30304
593. 1114 1214 2214 2314 3314 3414 4414 4114 TABLE ST L30304
594. *23
595. 1115 1215 2215 2315 3315 3415 4415 4115 TABLE ST L25253
596. *29
597. 2216 2316 4416 4116 TABLE ST L25203
598. ********************************************
599. *HORIZONTAL
600. *71
601. 5101 6201 7301 8401 TABLE ST L30303
602. 5501 6601 7701 8801 TABLE ST L30303
603. 5511 6611 7711 8811 TABLE ST L30303
604. *68
605. 5102 6202 7302 8402 TABLE ST L60405
606. 5502 6602 7702 8802 TABLE ST L60405
607. *
608. 5103 6203 7303 8403 TABLE ST L30303
609. 5503 6603 7703 8803 TABLE ST L30303
610. *5
```

```
611. 5104 6204 7304 8404 TABLE ST L35305
612. *7
613. 5105 6205 7305 8405 TABLE ST L30203
614. *14
615. 5107 6207 7307 8407 TABLE ST L60405
616. *16
617. 5108 7308 TABLE ST L20204
618. *18
619. 5111 6211 7311 8411 TABLE ST L60405
620. *20
621. 5112 7312 TABLE ST L25255
622. *22
623. 5115 6215 7315 8415 TABLE ST L60405
624. *24A
625. 5116 6216 7316 8416 TABLE ST L20203
626. *27
627. 5117 TABLE ST L20203
628. *CONDUCTOR
629. *47
630. 1001 TABLE ST L60405
631. 1002 TABLE ST L60405
632. 1005 TABLE ST L60405
633. 1006 TABLE ST L60405
634. *53
635. 1003 TABLE ST L30305
636. 1004 TABLE ST L30305
637. 1007 TABLE ST L30305
638. 1008 TABLE ST L30305
639. *38
640. 2001 TABLE ST L60406
641. 2002 TABLE ST L60406
642. 2005 TABLE ST L60406
643. 2006 TABLE ST L60406
644. *46
645. 2003 TABLE ST L35355
646. 2004 TABLE ST L35355
647. 2007 TABLE ST L35355
648. 2008 TABLE ST L35355
649. *31
650. 3001 TABLE ST L60405
651. 3002 TABLE ST L60405
652. 3005 TABLE ST L60405
653. 3006 TABLE ST L60405
654. *37
655. 3003 TABLE ST L30305
656. 3004 TABLE ST L30305
657. 3007 TABLE ST L30305
658. 3008 TABLE ST L30305
659. *26
660. 4001 TABLE ST L25253
661. 4002 TABLE ST L25253
662. 4005 TABLE ST L25253
663. 4006 TABLE ST L25253
664. *28
665. 4003 TABLE ST L35354
666. 4004 TABLE ST L35354
```

```
667. 4007 TABLE ST L35354
668. 4008 TABLE ST L35354
669. *
670. *#32
671. 76 77 TABLE ST L20203
672. *#30
673. 78 79 TABLE ST L20203
674. *#39
675. 80 81 TABLE ST L25253
676. *#48
677. 82 83 TABLE ST L20203
678. SUPPORT
679. 100 200 300 400 PINNED
680. ************************************************
681. *65
682. MEMBER TRUSS
683. 1100 1200 2200 2300 3300 3400 4400 4100
684. *67
685. MEMBER TRUSS
686. 1102 1202 2202 2302 3302 3402 4402 4102
687. *70
688. MEMBER TRUSS
689. 11 21 31 41 14 24 34 44
690. *4
691. MEMBER TRUSS
692. 15 25 35 45 16 26 36 46
693. *6
694. MEMBER TRUSS
695. 1104 1204 2204 2304 3304 3404 4404 4104
696. *71
697. *MEMBER TRUSS
698. *5101 6201 7301 8401 5501 6601 7701 8801 -
699. *5511 6611 7711 8811
700. *68
701. MEMBER TRUSS
702. 5102 6202 7302 8402 5502 6602 7702 8802
703. *5
704. MEMBER TRUSS
705. 5104 6204 7304 8404
706. *7
707. MEMBER TRUSS
708. 5105 6205 7305 8405
709. *14
710. MEMBER TRUSS
711. 5107 6207 7307 8407
712. *18
713. MEMBER TRUSS
714. 5111 6211 7311 8411
715. *22
716. MEMBER TRUSS
717. 5115 6215 7315 8415
718. ****************************
719. *65
720. MEMBER TENSION
721. 1100 1200 2200 2300 3300 3400 4400 4100
722. *67
```

```
MEMBER TENSION
1102 1202 2202 2302 3302 3402 4402 4102
*70
MEMBER TENSION
11 21 31 41 14 24 34 44
*4
MEMBER TENSION
15 25 35 45 16 26 36 46
*6
MEMBER TENSION
1104 1204 2204 2304 3304 3404 4404 4104
**71
*MEMBER COMPRESSION
*5101 6201 7301 8401 5501 6601 7701 8801 -
*5511 6611 7711 8811
*68
MEMBER COMPRESSION
5102 6202 7302 8402 5502 6602 7702 8802
*5
MEMBER COMPRESSION
5104 6204 7304 8404
*7
MEMBER COMPRESSION
5105 6205 7305 8405
*14
MEMBER COMPRESSION
5107 6207 7307 8407
*18
MEMBER COMPRESSION
5111 6211 7311 8411
*22
MEMBER COMPRESSION
5115 6215 7315 8415
**************************
CONSTANT
E STEEL ALL
POISSON STEEL ALL
DENSITY STEEL ALL
UNIT FEET KIP
*******************************
*LOAD 1 / SELFWEIGHT
*SELFWEIGHT Y -1
*PERFORM ANALYSIS
*LOAD LIST 1
*PRINT SUPPORT REACTION
*FINISH
************************************************
LOAD 1  / CONED STANDARD / DIRECTION A
SELFWEIGHT Y -1.524
* WIND ON TOWER
JOINT LOAD
517 717 FX 0.31
115 215 315 415 FX 0.71
111 211 311 411 FX 0.78
107 207 307 407 FX 0.92
104 204 304 404 FX 1.16
```

```
779. 102 202 302 402 FX 1.39
780. 100 200 300 400 FX 0.78
781. *
782. *JOINT LOAD
783. 4000 4001 FX 6.4 FY -1.58
784. 3000 3001 FX 26.58 FY -9.8
785. 2000 2001 FX 26.58 FY -9.8
786. 1000 1001 FX 26.58 FY -9.8
787. *
788. *WIND ON ANTENNA
789. 114 414 FX 0.07 FY -0.081
790. 214 314 FX 0.139 FY -0.163
791. 112 212 312 FX 0.07 FY -0.081
792. *
793. *CABLES
794. 102 FX 0.36 FY -0.301
795. 104 FX 0.36 FY -0.301
796. 107 FX 0.36 FY -0.301
797. 111 FX 0.36 FY -0.301
798. 113 FX 0.36 FY -0.301
799. *
800. 202 FX 0.18 FY -0.15
801. 204 FX 0.18 FY -0.15
802. 207 FX 0.18 FY -0.15
803. 211 FX 0.18 FY -0.15
804. 213 FX 0.18 FY -0.15
806. *
807. PERFORM ANALYSIS
```

P R O B L E M S T A T I S T I C S

```
NUMBER OF JOINTS/MEMBER+ELEMENTS/SUPPORTS =    94/  331/    4
ORIGINAL/FINAL BAND-WIDTH =   83/   16
TOTAL PRIMARY LOAD CASES  =    1, TOTAL DEGREES OF FREEDOM =   552
SIZE OF STIFFNESS MATRIX =   56304 DOUBLE PREC. WORDS
REQRD/AVAIL. DISK SPACE =  12.75/ 1612.7 MB,  EXMEM =  121.6 MB

++ Processing Element Stiffness Matrix.            14:59:57
++ Processing Global Stiffness Matrix.             14:59:57
++ Processing Triangular Factorization.            14:59:57
++ Calculating Joint Displacements.                14:59:57
++ Processing Element Stiffness Matrix.            14:59:57
++ Processing Global Stiffness Matrix.             14:59:58
++ Processing Triangular Factorization.            14:59:58
++ Calculating Joint Displacements.                14:59:58
++ Calculating Member  Forces.                     14:59:58

 808. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.            14:59:58
++ Processing Global Stiffness Matrix.             14:59:58
++ Processing Triangular Factorization.            14:59:58
++ Calculating Joint Displacements.                14:59:58
++ Processing Element Stiffness Matrix.            14:59:58
```

```
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Calculating Member  Forces.                  14:59:58


 809. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Calculating Member  Forces.                  14:59:58


 810. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Calculating Member  Forces.                  14:59:58


 811. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Calculating Member  Forces.                  14:59:58


 812. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Processing Element Stiffness Matrix.         14:59:58
++ Processing Global Stiffness Matrix.          14:59:58
++ Processing Triangular Factorization.         14:59:58
++ Calculating Joint Displacements.             14:59:58
++ Calculating Member  Forces.                  14:59:58


 813. CHANGE
 814. *65
 815. MEMBER TENSION
 816. 1100 1200 2200 2300 3300 3400 4400 4100
 817. *67
 818. MEMBER TENSION
 819. 1102 1202 2202 2302 3302 3402 4402 4102
 820. *70
```

```
821. MEMBER TENSION
822. 11 21 31 41 14 24 34 44
823. *4
824. MEMBER TENSION
825. 15 25 35 45 16 26 36 46
826. *6
827. MEMBER TENSION
828. 1104 1204 2204 2304 3304 3404 4404 4104
829. *71
830. *MEMBER COMPRESSION
831. *5101 6201 7301 8401 5501 6601 7701 8801 -
832. *5511 6611 7711 8811
833. *68
834. MEMBER COMPRESSION
835. 5102 6202 7302 8402 5502 6602 7702 8802
836. *5
837. MEMBER COMPRESSION
838. 5104 6204 7304 8404
839. *7
840. MEMBER COMPRESSION
841. 5105 6205 7305 8405
842. *14
843. MEMBER COMPRESSION
844. 5107 6207 7307 8407
845. *18
846. MEMBER COMPRESSION
847. 5111 6211 7311 8411
848. *22
849. MEMBER COMPRESSION
850. 5115 6215 7315 8415
851. LOAD 2 /CON ED EMERGENCY ICE /DIRECTION A
852. SELFWEIGHT Y -1.2
853. * WIND ON TOWER
854. JOINT LOAD
855. 517 717 FX 0.19
856. 115 215 315 415 FX 0.43
857. 111 211 311 411 FX 0.47
858. 107 207 307 407 FX 0.56
859. 104 204 304 404 FX 0.7
860. 102 202 302 402 FX 0.84
861. 100 200 300 400 FX 0.47
862. *
863. *JOINT LOAD
864. 4000 4001 FX 6.76 FY -2.56
865. 3000 3001 FX 24.7 FY -11.88
866. 2000 2001 FX 24.7 FY -11.88
867. 1000 1001 FX 24.7 FY -11.88
868. *WIND ON ANTENNA
869. 114 414 FX 0.064 FY -0.102
870. 214 314 FX 0.127 FY -0.205
871. 112 212 312 FX 0.064 FY -0.102
872. *
873.  *CABLES
874. 102 FX 0.306 FY -0.424
875. 104 FX 0.306 FY -0.424
876. 107 FX 0.306 FY -0.424
```

```
 877. 111 FX 0.306 FY -0.424
 878. 113 FX 0.306 FY -0.424
 879. *
 880. 202 FX 0.153 FY -0.212
 881. 204 FX 0.153 FY -0.212
 882. 207 FX 0.153 FY -0.212
 883. 211 FX 0.153 FY -0.212
 884. 213 FX 0.153 FY -0.212
 886. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Calculating Member  Forces.                   14:59:59

 887. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Calculating Member  Forces.                   14:59:59

 888. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Calculating Member  Forces.                   14:59:59

 889. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Calculating Member  Forces.                   14:59:59

 890. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
```

```
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Calculating Member  Forces.                   14:59:59


 891. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          14:59:59
++ Processing Global Stiffness Matrix.           14:59:59
++ Processing Triangular Factorization.          14:59:59
++ Calculating Joint Displacements.              14:59:59
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Calculating Member  Forces.                   15: 0: 0


 892. CHANGE
 893. *65
 894. MEMBER TENSION
 895. 1100 1200 2200 2300 3300 3400 4400 4100
 896. *67
 897. MEMBER TENSION
 898. 1102 1202 2202 2302 3302 3402 4402 4102
 899. *70
 900. MEMBER TENSION
 901. 11 21 31 41 14 24 34 44
 902. *4
 903. MEMBER TENSION
 904. 15 25 35 45 16 26 36 46
 905. *6
 906. MEMBER TENSION
 907. 1104 1204 2204 2304 3304 3404 4404 4104
 908. *71
 909. *MEMBER COMPRESSION
 910. *5101 6201 7301 8401 5501 6601 7701 8801 -
 911. *5511 6611 7711 8811
 912. *68
 913. MEMBER COMPRESSION
 914. 5102 6202 7302 8402 5502 6602 7702 8802
 915. *5
 916. MEMBER COMPRESSION
 917. 5104 6204 7304 8404
 918. *7
 919. MEMBER COMPRESSION
 920. 5105 6205 7305 8405
 921. *14
 922. MEMBER COMPRESSION
 923. 5107 6207 7307 8407
 924. *18
 925. MEMBER COMPRESSION
 926. 5111 6211 7311 8411
 927. *22
 928. MEMBER COMPRESSION
 929. 5115 6215 7315 8415
```

```
930. LOAD 3 /CON-ED HURRICANE / DIRECTION A
931. SELFWEIGHT Y -1.2
932. *WIND ON TOWER
933. JOINT LOAD
934. 517 717 FX 0.47
935. 115 215 315 415 FX 1.08
936. 111 211 311 411 FX 1.18
937. 107 207 307 407 FX 1.39
938. 104 204 304 404 FX 1.75
939. 102 202 302 402 FX 2.1
940. 100 200 300 400 FX 1.18
941. *
942. *JOINT LOAD
943. 4000 4001 FX 3.99 FY -0.53
944. 3000 3001 FX 24.03 FY -4.75
945. 2000 2001 FX 24.03 FY -4.75
946. 1000 1001 FX 24.03 FY -4.75
947. *WIND ON ANTENNA
948. 114 414 FX 0.174 FY -0.033
949. 214 314 FX 0.348 FY -0.065
950. 112 212 312 FX 0.174 FY -0.033
951. *CABLES
952. 102 FX 0.981 FY -0.07
953. 104 FX 0.981 FY -0.07
954. 107 FX 0.981 FY -0.07
955. 111 FX 0.981 FY -0.07
956. 113 FX 0.981 FY -0.07
957. *
958. 202 FX 0.49 FY -0.035
959. 204 FX 0.49 FY -0.035
960. 207 FX 0.49 FY -0.035
961. 211 FX 0.49 FY -0.035
962. 213 FX 0.49 FY -0.035
964. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Calculating Member  Forces.                   15: 0: 0


965. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Calculating Member  Forces.                   15: 0: 0


966. PERFORM ANALYSIS
```

```
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Calculating Member  Forces.                   15: 0: 0


 967. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Calculating Member  Forces.                   15: 0: 0


 968. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 0
++ Processing Element Stiffness Matrix.          15: 0: 0
++ Processing Global Stiffness Matrix.           15: 0: 0
++ Processing Triangular Factorization.          15: 0: 0
++ Calculating Joint Displacements.              15: 0: 1
++ Calculating Member  Forces.                   15: 0: 1


 969. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 1
++ Processing Global Stiffness Matrix.           15: 0: 1
++ Processing Triangular Factorization.          15: 0: 1
++ Calculating Joint Displacements.              15: 0: 1
++ Processing Element Stiffness Matrix.          15: 0: 1
++ Processing Global Stiffness Matrix.           15: 0: 1
++ Processing Triangular Factorization.          15: 0: 1
++ Calculating Joint Displacements.              15: 0: 1
++ Calculating Member  Forces.                   15: 0: 1


 970. CHANGE
 971. *65
 972. MEMBER TENSION
 973. 1100 1200 2200 2300 3300 3400 4400 4100
 974. *67
 975. MEMBER TENSION
 976. 1102 1202 2202 2302 3302 3402 4402 4102
 977. *70
 978. MEMBER TENSION
 979. 11 21 31 41 14 24 34 44
 980. *4
 981. MEMBER TENSION
 982. 15 25 35 45 16 26 36 46
```

```
 983. *6
 984. MEMBER TENSION
 985. 1104 1204 2204 2304 3304 3404 4404 4104
 986. *71
 987. *MEMBER COMPRESSION
 988. *5101 6201 7301 8401 5501 6601 7701 8801 -
 989. *5511 6611 7711 8811
 990. *68
 991. MEMBER COMPRESSION
 992. 5102 6202 7302 8402 5502 6602 7702 8802
 993. *5
 994. MEMBER COMPRESSION
 995. 5104 6204 7304 8404
 996. *7
 997. MEMBER COMPRESSION
 998. 5105 6205 7305 8405
 999. *14
1000. MEMBER COMPRESSION
1001. 5107 6207 7307 8407
1002. *18
1003. MEMBER COMPRESSION
1004. 5111 6211 7311 8411
1005. *22
1006. MEMBER COMPRESSION
1007. 5115 6215 7315 8415
1008. ********************************************************
1009. *EXISTING CONDITION
1010. LOAD 4  / CONED STANDARD / DIRECTION A
1011. SELFWEIGHT Y -1.524
1012. * WIND ON TOWER
1013. JOINT LOAD
1014. 517 717 FX 0.31
1015. 115 215 315 415 FX 0.71
1016. 111 211 311 411 FX 0.78
1017. 107 207 307 407 FX 0.92
1018. 104 204 304 404 FX 1.16
1019. 102 202 302 402 FX 1.39
1020. 100 200 300 400 FX 0.78
1021. *
1022. *JOINT LOAD
1023. 4000 4001 FX 6.4 FY -1.58
1024. 3000 3001 FX 26.58 FY -9.8
1025. 2000 2001 FX 26.58 FY -9.8
1026. 1000 1001 FX 26.58 FY -9.8
1028. *
1029. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 1
++ Processing Global Stiffness Matrix.           15: 0: 1
++ Processing Triangular Factorization.          15: 0: 1
++ Calculating Joint Displacements.              15: 0: 1
++ Processing Element Stiffness Matrix.          15: 0: 1
++ Processing Global Stiffness Matrix.           15: 0: 1
++ Processing Triangular Factorization.          15: 0: 1
++ Calculating Joint Displacements.              15: 0: 1
++ Calculating Member  Forces.                   15: 0: 1
```

1030. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 1
++ Processing Triangular Factorization. 15: 0: 1
++ Calculating Joint Displacements. 15: 0: 1
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 1
++ Processing Triangular Factorization. 15: 0: 1
++ Calculating Joint Displacements. 15: 0: 1
++ Calculating Member Forces. 15: 0: 1

1031. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 1
++ Processing Triangular Factorization. 15: 0: 1
++ Calculating Joint Displacements. 15: 0: 1
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 1
++ Processing Triangular Factorization. 15: 0: 1
++ Calculating Joint Displacements. 15: 0: 1
++ Calculating Member Forces. 15: 0: 1

1032. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 1
++ Processing Triangular Factorization. 15: 0: 1
++ Calculating Joint Displacements. 15: 0: 1
++ Processing Element Stiffness Matrix. 15: 0: 1
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 2

1033. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 2

1034. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 2

1035. CHANGE

```
1036. *65
1037. MEMBER TENSION
1038. 1100 1200 2200 2300 3300 3400 4400 4100
1039. *67
1040. MEMBER TENSION
1041. 1102 1202 2202 2302 3302 3402 4402 4102
1042. *70
1043. MEMBER TENSION
1044. 11 21 31 41 14 24 34 44
1045. *4
1046. MEMBER TENSION
1047. 15 25 35 45 16 26 36 46
1048. *6
1049. MEMBER TENSION
1050. 1104 1204 2204 2304 3304 3404 4404 4104
1051. *71
1052. *MEMBER COMPRESSION
1053. *5101 6201 7301 8401 5501 6601 7701 8801 -
1054. *5511 6611 7711 8811
1055. *68
1056. MEMBER COMPRESSION
1057. 5102 6202 7302 8402 5502 6602 7702 8802
1058. *5
1059. MEMBER COMPRESSION
1060. 5104 6204 7304 8404
1061. *7
1062. MEMBER COMPRESSION
1063. 5105 6205 7305 8405
1064. *14
1065. MEMBER COMPRESSION
1066. 5107 6207 7307 8407
1067. *18
1068. MEMBER COMPRESSION
1069. 5111 6211 7311 8411
1070. *22
1071. MEMBER COMPRESSION
1072. 5115 6215 7315 8415
1073. LOAD 5 /CON ED EMERGENCY ICE /DIRECTION A
1074. SELFWEIGHT Y -1.2
1075. * WIND ON TOWER
1076. JOINT LOAD
1077. 517 717 FX 0.19
1078. 115 215 315 415 FX 0.43
1079. 111 211 311 411 FX 0.47
1080. 107 207 307 407 FX 0.56
1081. 104 204 304 404 FX 0.7
1082. 102 202 302 402 FX 0.84
1083. 100 200 300 400 FX 0.47
1084. *
1085. *JOINT LOAD
1086. 4000 4001 FX 6.76 FY -2.56
1087. 3000 3001 FX 24.7 FY -11.88
1088. 2000 2001 FX 24.7 FY -11.88
1089. 1000 1001 FX 24.7 FY -11.88
1091. PERFORM ANALYSIS
```

++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 2

1092. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 2

1093. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Processing Element Stiffness Matrix. 15: 0: 2
++ Processing Global Stiffness Matrix. 15: 0: 2
++ Processing Triangular Factorization. 15: 0: 2
++ Calculating Joint Displacements. 15: 0: 2
++ Calculating Member Forces. 15: 0: 3

1094. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 3
++ Processing Global Stiffness Matrix. 15: 0: 3
++ Processing Triangular Factorization. 15: 0: 3
++ Calculating Joint Displacements. 15: 0: 3
++ Processing Element Stiffness Matrix. 15: 0: 3
++ Processing Global Stiffness Matrix. 15: 0: 3
++ Processing Triangular Factorization. 15: 0: 3
++ Calculating Joint Displacements. 15: 0: 3
++ Calculating Member Forces. 15: 0: 3

1095. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 3
++ Processing Global Stiffness Matrix. 15: 0: 3
++ Processing Triangular Factorization. 15: 0: 3
++ Calculating Joint Displacements. 15: 0: 3
++ Processing Element Stiffness Matrix. 15: 0: 3
++ Processing Global Stiffness Matrix. 15: 0: 3
++ Processing Triangular Factorization. 15: 0: 3
++ Calculating Joint Displacements. 15: 0: 3
++ Calculating Member Forces. 15: 0: 3

1096. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 3

```
 ++ Processing Global Stiffness Matrix.              15: 0: 3
 ++ Processing Triangular Factorization.             15: 0: 3
 ++ Calculating Joint Displacements.                 15: 0: 3
 ++ Processing Element Stiffness Matrix.             15: 0: 3
 ++ Processing Global Stiffness Matrix.              15: 0: 3
 ++ Processing Triangular Factorization.             15: 0: 3
 ++ Calculating Joint Displacements.                 15: 0: 3
 ++ Calculating Member  Forces.                      15: 0: 3


1097. CHANGE
1098. *65
1099. MEMBER TENSION
1100. 1100 1200 2200 2300 3300 3400 4400 4100
1101. *67
1102. MEMBER TENSION
1103. 1102 1202 2202 2302 3302 3402 4402 4102
1104. *70
1105. MEMBER TENSION
1106. 11 21 31 41 14 24 34 44
1107. *4
1108. MEMBER TENSION
1109. 15 25 35 45 16 26 36 46
1110. *6
1111. MEMBER TENSION
1112. 1104 1204 2204 2304 3304 3404 4404 4104
1113. *71
1114. *MEMBER COMPRESSION
1115. *5101 6201 7301 8401 5501 6601 7701 8801 -
1116. *5511 6611 7711 8811
1117. *68
1118. MEMBER COMPRESSION
1119. 5102 6202 7302 8402 5502 6602 7702 8802
1120. *5
1121. MEMBER COMPRESSION
1122. 5104 6204 7304 8404
1123. *7
1124. MEMBER COMPRESSION
1125. 5105 6205 7305 8405
1126. *14
1127. MEMBER COMPRESSION
1128. 5107 6207 7307 8407
1129. *18
1130. MEMBER COMPRESSION
1131. 5111 6211 7311 8411
1132. *22
1133. MEMBER COMPRESSION
1134. 5115 6215 7315 8415
1136. LOAD 6 /CON-ED HURRICANE / DIRECTION A
1137. SELFWEIGHT Y -1.2
1138. * WIND ON TOWER
1139. JOINT LOAD
1140. 517 717 FX 0.47
1141. 115 215 315 415 FX 1.08
1142. 111 211 311 411 FX 1.18
1143. 107 207 307 407 FX 1.39
1144. 104 204 304 404 FX 1.75
1145. 102 202 302 402 FX 2.1
```

```
1146. 100 200 300 400 FX 1.18
1147. *
1148. *JOINT LOAD
1149. 4000 4001 FX 3.99 FY -0.53
1150. 3000 3001 FX 24.03 FY -4.75
1151. 2000 2001 FX 24.03 FY -4.75
1152. 1000 1001 FX 24.03 FY -4.75
1154. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 3
++ Processing Global Stiffness Matrix.           15: 0: 3
++ Processing Triangular Factorization.          15: 0: 3
++ Calculating Joint Displacements.              15: 0: 3
++ Processing Element Stiffness Matrix.          15: 0: 3
++ Processing Global Stiffness Matrix.           15: 0: 3
++ Processing Triangular Factorization.          15: 0: 3
++ Calculating Joint Displacements.              15: 0: 3
++ Calculating Member  Forces.                   15: 0: 3

1155. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 3
++ Processing Global Stiffness Matrix.           15: 0: 3
++ Processing Triangular Factorization.          15: 0: 3
++ Calculating Joint Displacements.              15: 0: 3
++ Processing Element Stiffness Matrix.          15: 0: 3
++ Processing Global Stiffness Matrix.           15: 0: 3
++ Processing Triangular Factorization.          15: 0: 4
++ Calculating Joint Displacements.              15: 0: 4
++ Calculating Member  Forces.                   15: 0: 4

1156. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 4
++ Processing Global Stiffness Matrix.           15: 0: 4
++ Processing Triangular Factorization.          15: 0: 4
++ Calculating Joint Displacements.              15: 0: 4
++ Processing Element Stiffness Matrix.          15: 0: 4
++ Processing Global Stiffness Matrix.           15: 0: 4
++ Processing Triangular Factorization.          15: 0: 4
++ Calculating Joint Displacements.              15: 0: 4
++ Calculating Member  Forces.                   15: 0: 4

1157. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 4
++ Processing Global Stiffness Matrix.           15: 0: 4
++ Processing Triangular Factorization.          15: 0: 4
++ Calculating Joint Displacements.              15: 0: 4
++ Processing Element Stiffness Matrix.          15: 0: 4
++ Processing Global Stiffness Matrix.           15: 0: 4
++ Processing Triangular Factorization.          15: 0: 4
++ Calculating Joint Displacements.              15: 0: 4
++ Calculating Member  Forces.                   15: 0: 4

1158. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix.          15: 0: 4
++ Processing Global Stiffness Matrix.           15: 0: 4
++ Processing Triangular Factorization.          15: 0: 4
```

```
 ++ Calculating Joint Displacements.                15: 0: 4
 ++ Processing Element Stiffness Matrix.            15: 0: 4
 ++ Processing Global Stiffness Matrix.             15: 0: 4
 ++ Processing Triangular Factorization.            15: 0: 4
 ++ Calculating Joint Displacements.                15: 0: 4
 ++ Calculating Member  Forces.                     15: 0: 4


 1159. PERFORM ANALYSIS
 ++ Processing Element Stiffness Matrix.            15: 0: 4
 ++ Processing Global Stiffness Matrix.             15: 0: 4
 ++ Processing Triangular Factorization.            15: 0: 4
 ++ Calculating Joint Displacements.                15: 0: 4
 ++ Processing Element Stiffness Matrix.            15: 0: 4
 ++ Processing Global Stiffness Matrix.             15: 0: 4
 ++ Processing Triangular Factorization.            15: 0: 4
 ++ Calculating Joint Displacements.                15: 0: 4
 ++ Calculating Member  Forces.                     15: 0: 4


 1160. CHANGE
 1161. *65
 1162. MEMBER TENSION
 1163. 1100 1200 2200 2300 3300 3400 4400 4100
 1164. *67
 1165. MEMBER TENSION
 1166. 1102 1202 2202 2302 3302 3402 4402 4102
 1167. *70
 1168. MEMBER TENSION
 1169. 11 21 31 41 14 24 34 44
 1170. *4
 1171. MEMBER TENSION
 1172. 15 25 35 45 16 26 36 46
 1173. *6
 1174. MEMBER TENSION
 1175. 1104 1204 2204 2304 3304 3404 4404 4104
 1176. *71
 1177. *MEMBER COMPRESSION
 1178. *5101 6201 7301 8401 5501 6601 7701 8801 -
 1179. *5511 6611 7711 8811
 1180. *68
 1181. MEMBER COMPRESSION
 1182. 5102 6202 7302 8402 5502 6602 7702 8802
 1183. *5
 1184. MEMBER COMPRESSION
 1185. 5104 6204 7304 8404
 1186. *7
 1187. MEMBER COMPRESSION
 1188. 5105 6205 7305 8405
 1189. *14
 1190. MEMBER COMPRESSION
 1191. 5107 6207 7307 8407
 1192. *18
 1193. MEMBER COMPRESSION
 1194. 5111 6211 7311 8411
 1195. *22
 1196. MEMBER COMPRESSION
 1197. 5115 6215 7315 8415
 1198. ********************************
```

1199. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 4
++ Processing Global Stiffness Matrix. 15: 0: 4
++ Processing Triangular Factorization. 15: 0: 4
++ Calculating Joint Displacements. 15: 0: 4
++ Processing Element Stiffness Matrix. 15: 0: 4
++ Processing Global Stiffness Matrix. 15: 0: 4
++ Processing Triangular Factorization. 15: 0: 4
++ Calculating Joint Displacements. 15: 0: 4
++ Calculating Member Forces. 15: 0: 4

1200. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Calculating Member Forces. 15: 0: 5

1201. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Calculating Member Forces. 15: 0: 5

1202. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Calculating Member Forces. 15: 0: 5

1203. PERFORM ANALYSIS
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Processing Element Stiffness Matrix. 15: 0: 5
++ Processing Global Stiffness Matrix. 15: 0: 5
++ Processing Triangular Factorization. 15: 0: 5
++ Calculating Joint Displacements. 15: 0: 5
++ Calculating Member Forces. 15: 0: 5

1204. PERFORM ANALYSIS

```
++ Processing Element Stiffness Matrix.          15: 0: 5
++ Processing Global Stiffness Matrix.           15: 0: 5
++ Processing Triangular Factorization.          15: 0: 5
++ Calculating Joint Displacements.              15: 0: 5
++ Processing Element Stiffness Matrix.          15: 0: 5
++ Processing Global Stiffness Matrix.           15: 0: 5
++ Processing Triangular Factorization.          15: 0: 5
++ Calculating Joint Displacements.              15: 0: 5
++ Calculating Member  Forces.                   15: 0: 5


1205. ********************************
1206. LOAD LIST 1 TO 6
1207. PRINT SUPPORT REACTION
```

SUPPORT REACTIONS -UNIT KIP FEET STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
100	1	-46.77	-260.02	-46.23	0.00	0.00	0.00
	2	-40.79	-234.46	-41.74	0.00	0.00	0.00
	3	-50.23	-258.96	-45.84	0.00	0.00	0.00
	4	-45.31	-255.91	-45.49	0.00	0.00	0.00
	5	-39.53	-231.05	-41.09	0.00	0.00	0.00
	6	-46.07	-245.68	-43.60	0.00	0.00	0.00
200	1	-53.63	317.99	52.85	0.00	0.00	0.00
	2	-49.47	294.99	49.04	0.00	0.00	0.00
	3	-50.19	294.03	48.85	0.00	0.00	0.00
	4	-52.62	312.11	51.90	0.00	0.00	0.00
	5	-48.46	289.11	48.09	0.00	0.00	0.00
	6	-47.85	280.37	46.64	0.00	0.00	0.00
300	1	-53.21	315.66	-52.53	0.00	0.00	0.00
	2	-48.96	292.09	-48.62	0.00	0.00	0.00
	3	-49.23	288.74	-48.11	0.00	0.00	0.00
	4	-52.62	312.11	-51.90	0.00	0.00	0.00
	5	-48.47	289.12	-48.09	0.00	0.00	0.00
	6	-47.84	280.36	-46.64	0.00	0.00	0.00
400	1	-45.59	-258.43	45.91	0.00	0.00	0.00
	2	-39.64	-232.62	41.32	0.00	0.00	0.00
	3	-47.10	-253.79	45.11	0.00	0.00	0.00
	4	-45.31	-255.92	45.49	0.00	0.00	0.00
	5	-39.53	-231.07	41.10	0.00	0.00	0.00
	6	-46.06	-245.67	43.60	0.00	0.00	0.00

********** END OF LATEST ANALYSIS RESULT **********

```
1208. *LEGS
1209. *64
1210. LOAD LIST 1 TO 3
1211. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1212. 100 200 300 400										
100	MAX	0.12	0.00	3	4.12	30.82	2			
		0.04	0.00	3	1.31	30.82	3	230.09 T	0.00	2
	MIN	-0.34	30.82	1	-0.63	10.27	3			
		-0.04	30.82	2	-1.18	30.82	2	253.73 T	30.82	1
200	MAX	0.22	0.00	1	1.54	30.82	3			
		0.11	0.00	3	3.51	30.82	3	326.65 C	0.00	1
	MIN	-0.22	30.82	3	-2.14	20.55	2			
		-0.03	30.82	2	-0.97	30.82	2	300.66 C	30.82	3
300	MAX	0.20	0.00	1	2.87	30.82	3			
		0.09	0.00	2	2.92	30.82	2	324.27 C	0.00	1
	MIN	-0.26	30.82	3	-1.69	17.98	2			
		0.05	30.82	3	0.00	0.00	3	295.23 C	30.82	3
400	MAX	0.07	0.00	3	4.71	30.82	2			
		0.05	0.00	2	1.59	30.82	2	230.90 T	0.00	2
	MIN	-0.36	30.82	1	-0.25	7.71	3			
		0.00	30.82	3	-0.04	30.82	3	254.78 T	30.82	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1213. *66
1214. LOAD LIST 1 TO 3
1215. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1216. 101 201 301 401 102 202 302 402										
101	MAX	1.17	0.00	2	4.04	0.00	2			
		0.10	0.00	2	1.32	0.00	3	231.89 T	0.00	2
	MIN	0.76	6.85	3	-4.03	6.85	3			
		-0.26	6.85	3	-1.20	0.00	2	254.53 T	6.85	1
201	MAX	0.47	0.00	3	1.44	0.00	3			
		0.19	0.00	2	3.49	0.00	3	324.77 C	0.00	1
	MIN	-0.41	6.85	2	-1.59	0.00	2			
		-0.85	6.85	3	-2.32	6.85	3	300.12 C	6.85	3
301	MAX	0.64	0.00	3	2.77	0.00	3			
		-0.15	0.00	3	2.92	0.00	2	322.32 C	0.00	1
	MIN	-0.26	6.85	2	-1.34	6.85	3			
		-0.58	6.85	2	-1.47	6.85	1	294.64 C	6.85	3
401	MAX	1.30	0.00	1	4.63	0.00	2			
		0.12	0.00	3	1.63	0.00	2	232.72 T	0.00	2
	MIN	0.90	6.85	3	-4.18	6.85	1			
		-0.14	6.85	2	-0.01	0.00	3	255.64 T	6.85	1
102	MAX	-0.52	0.00	2	5.34	13.70	3			
		-0.06	0.00	1	-0.48	0.00	3	233.51 T	0.00	2
	MIN	-0.76	13.70	3	-4.03	0.00	3			
		-0.12	13.70	3	-2.15	13.70	3	258.34 T	13.70	1
202	MAX	0.33	0.00	1	0.95	0.00	2			
		0.03	0.00	3	0.36	0.00	2	319.87 C	0.00	1
	MIN	-0.04	13.70	3	-2.73	13.70	1			
		-0.20	13.70	2	-2.36	13.70	2	290.49 C	13.70	3
302	MAX	0.30	0.00	2	0.68	0.00	2			
		0.30	0.00	1	2.61	13.70	1	319.11 C	0.00	1
	MIN	0.00	13.70	3	-2.59	13.70	1			
		0.12	13.70	3	-1.47	0.00	1	288.10 C	13.70	3
402	MAX	-0.49	0.00	2	5.03	13.70	1			
		0.09	0.00	1	1.69	13.70	1	232.87 T	0.00	2
	MIN	-0.77	13.70	1	-4.18	0.00	1			
		0.03	13.70	2	0.50	0.00	1	258.02 T	13.70	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1217. *1
1218. LOAD LIST 1 TO 3
1219. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1220. 103 203 303 403 104 204 304 404										
103	MAX	0.62	0.00	3	5.28	0.00	3			
		0.16	0.00	3	-0.04	13.70	3	234.44 T	0.00	2
	MIN	0.30	13.70	2	-2.23	13.70	3			
		0.00	13.70	2	-2.17	0.00	3	259.51 T	13.70	1
203	MAX	-0.11	0.00	2	1.22	13.70	3			
		0.25	0.00	1	1.03	13.70	1	319.08 C	0.00	1
	MIN	-0.35	13.70	1	-2.84	0.00	1			
		0.15	13.70	2	-2.34	0.00	1	289.84 C	13.70	3
303	MAX	-0.13	0.00	2	1.28	13.70	3			
		-0.06	0.00	2	2.56	0.00	1	318.31 C	0.00	1
	MIN	-0.37	13.70	1	-2.69	0.00	1			
		-0.16	13.70	3	-0.31	13.70	3	287.46 C	13.70	3
403	MAX	0.55	0.00	3	4.95	0.00	1			
		0.05	0.00	2	1.77	13.70	2	233.79 T	0.00	2
	MIN	0.25	13.70	2	-1.81	13.70	3			
		-0.09	13.70	3	0.44	13.70	3	259.18 T	13.70	1
104	MAX	-0.40	0.00	2	6.40	13.70	1			
		0.15	0.00	2	0.58	13.70	2	240.19 T	0.00	2
	MIN	-0.70	13.70	1	-2.31	0.00	3			
		0.03	13.70	3	-1.50	0.00	2	265.14 T	13.70	1
204	MAX	0.54	0.00	1	1.14	0.00	3			
		-0.07	0.00	3	1.03	0.00	1	319.24 C	0.00	1
	MIN	0.31	13.70	2	-5.51	13.70	1			
		-0.23	13.70	1	-2.17	13.70	1	283.99 C	13.70	3
304	MAX	0.52	0.00	1	1.20	0.00	3			
		0.25	0.00	3	3.09	13.70	3	319.85 C	0.00	1
	MIN	0.28	13.70	3	-4.84	13.70	1			
		0.13	13.70	2	-0.31	0.00	3	286.54 C	13.70	3
404	MAX	-0.38	0.00	2	6.36	13.70	1			
		-0.04	0.00	3	1.77	0.00	2	241.18 T	0.00	2
	MIN	-0.65	13.70	3	-1.90	0.00	3			
		-0.17	13.70	2	-0.57	13.70	2	265.28 T	13.70	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1221. *3
1222. LOAD LIST 1 TO 3
1223. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1224. 105 205 305 405 106 206 306 406										
105	MAX	2.06	0.00	1	6.24	0.00	1			
		-1.84	0.00	3	0.62	0.00	2	253.04 T	0.00	2
	MIN	1.78	6.85	2	-7.56	6.85	1			
		-2.12	6.85	1	-14.24	6.85	1	277.62 T	6.85	1
205	MAX	-1.22	0.00	3	4.61	6.85	1			
		-0.37	0.00	2	-0.43	0.00	3	321.47 C	0.00	1
	MIN	-1.55	6.85	1	-5.67	0.00	1			
		-0.76	6.85	3	-5.63	6.85	3	285.51 C	6.85	3
305	MAX	-1.01	0.00	3	4.59	6.85	1			
		0.32	0.00	1	5.02	6.85	3	321.86 C	0.00	1
	MIN	-1.45	6.85	1	-5.01	0.00	1			
		0.23	6.85	2	2.70	0.00	2	288.00 C	6.85	3
405	MAX	2.04	0.00	1	6.20	0.00	1			
		2.17	0.00	1	14.36	6.85	1	255.16 T	0.00	2
	MIN	1.79	6.85	2	-7.43	6.85	1			
		1.80	6.85	3	-0.62	0.00	2	279.17 T	6.85	1
106	MAX	-3.63	0.00	3	19.66	6.85	1			
		4.01	0.00	1	13.08	6.85	1	243.70 T	0.00	2
	MIN	-4.07	6.85	1	-7.90	0.00	1			
		3.41	6.85	3	-14.40	0.00	1	266.93 T	6.85	1
206	MAX	2.62	0.00	1	4.63	0.00	2			
		1.04	0.00	3	1.40	6.85	3	315.61 C	0.00	1
	MIN	2.15	6.85	3	-13.04	6.85	1			
		0.67	6.85	2	-5.75	0.00	3	279.25 C	6.85	3
306	MAX	2.62	0.00	1	4.59	0.00	2			
		-0.62	0.00	2	5.13	0.00	3	316.05 C	0.00	1
	MIN	2.13	6.85	3	-13.07	6.85	1			
		-0.91	6.85	3	-1.11	6.85	3	281.64 C	6.85	3
406	MAX	-3.64	0.00	3	19.75	6.85	1			
		-3.39	0.00	3	14.51	0.00	1	245.88 T	0.00	2
	MIN	-4.07	6.85	1	-7.78	0.00	1			
		-4.03	6.85	1	-13.08	6.85	1	268.56 T	6.85	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1225. *13A
1226. LOAD LIST 1 TO 3
1227. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1228. 107 207 307 407 108 208 308 408										
107	MAX	0.80	0.00	3	5.17	0.00	1			
		-6.26	0.00	3	22.56	0.00	1	215.24 T	0.00	2
	MIN	0.53	6.00	2	0.32	6.00	3			
		-7.20	6.00	1	-20.64	6.00	1	235.59 T	6.00	1
207	MAX	1.65	0.00	2	7.71	0.00	1			
		2.89	0.00	1	7.35	6.00	1	282.51 C	0.00	1
	MIN	1.21	6.00	3	-2.20	6.00	2			
		2.59	6.00	2	-9.99	0.00	1	248.25 C	6.00	3
307	MAX	1.66	0.00	2	7.78	0.00	1			
		-2.57	0.00	2	9.94	0.00	1	282.87 C	0.00	1
	MIN	1.24	6.00	3	-2.22	6.00	2			
		-2.88	6.00	1	-7.33	6.00	1	250.04 C	6.00	3
407	MAX	0.83	0.00	3	5.24	0.00	3			
		7.21	0.00	1	20.63	6.00	1	216.85 T	0.00	2
	MIN	0.54	6.00	2	0.27	6.00	3			
		6.25	6.00	3	-22.65	0.00	1	236.85 T	6.00	1
108	MAX	0.43	0.00	2	1.85	0.00	2			
		5.09	0.00	1	8.24	5.67	1	198.53 T	0.00	2
	MIN	0.13	5.67	3	-0.58	5.67	2			
		4.29	5.67	3	-20.59	0.00	1	215.85 T	5.67	1
208	MAX	-0.36	0.00	3	1.84	5.67	2			
		-1.31	0.00	2	6.87	0.00	3	244.20 C	0.00	1
	MIN	-0.70	5.67	2	-2.15	0.00	2			
		-1.67	5.67	3	-2.58	5.67	3	214.33 C	5.67	3
308	MAX	-0.37	0.00	3	1.84	5.67	2			
		1.65	0.00	3	2.57	5.67	3	244.19 C	0.00	1
	MIN	-0.71	5.67	2	-2.16	0.00	2			
		1.31	5.67	2	-6.79	0.00	3	215.24 C	5.67	3
408	MAX	0.42	0.00	2	1.84	0.00	2			
		-4.28	0.00	3	20.58	0.00	1	199.81 T	0.00	2
	MIN	0.12	5.67	3	-0.57	5.67	2			
		-5.09	5.67	1	-8.24	5.67	1	216.81 T	5.67	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1229. *11C
1230. LOAD LIST 1 TO 3
1231. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1232. 109 209 309 409										
109	MAX	-0.11	0.00	3	1.23	5.67	2			
		-1.84	0.00	3	7.80	0.00	1	151.16 T	0.00	2
	MIN	-0.30	5.67	2	-0.48	0.00	2			
		-2.32	5.67	2	-5.39	5.67	2	164.28 T	5.67	1
209	MAX	0.46	0.00	2	1.91	0.00	2			
		0.75	0.00	3	1.72	5.67	3	192.35 C	0.00	1
	MIN	0.26	5.67	3	-0.68	5.67	2			
		0.40	5.67	2	-2.54	0.00	3	167.17 C	5.67	3
309	MAX	0.46	0.00	2	1.91	0.00	2			
		-0.40	0.00	2	2.54	0.00	3	192.15 C	0.00	1
	MIN	0.26	5.67	3	-0.68	5.67	2			
		-0.75	5.67	3	-1.71	5.67	3	167.59 C	5.67	3
409	MAX	-0.11	0.00	3	1.23	5.67	2			
		2.32	0.00	2	5.38	5.67	2	152.22 T	0.00	2
	MIN	-0.30	5.67	2	-0.48	0.00	2			
		1.84	5.67	3	-7.81	0.00	1	165.07 T	5.67	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1233. *11B
1234. LOAD LIST 1 TO 3
1235. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1236. 110 210 310 410										
110	MAX	0.40	0.00	2	1.29	0.00	2			
		1.81	0.00	2	4.88	5.67	2	109.07 T	0.00	2
	MIN	0.25	5.67	3	-1.00	5.67	2			
		1.33	5.67	3	-5.39	0.00	2	119.38 T	5.67	1
210	MAX	-0.10	0.00	3	1.09	5.67	2			
		-0.03	0.00	2	1.57	0.00	3	150.24 C	0.00	1
	MIN	-0.27	5.67	2	-0.43	0.00	2			
		-0.44	5.67	3	-0.92	5.67	3	127.19 C	5.67	3
310	MAX	-0.10	0.00	3	1.08	5.67	2			
		0.42	0.00	3	0.86	5.67	3	149.88 C	0.00	1
	MIN	-0.27	5.67	2	-0.43	0.00	2			
		0.02	5.67	2	-1.54	0.00	3	127.18 C	5.67	3
410	MAX	0.40	0.00	2	1.28	0.00	2			
		-1.31	0.00	3	5.38	0.00	2	109.90 T	0.00	2
	MIN	0.25	5.67	3	-0.99	5.67	2			
		-1.81	5.67	2	-4.86	5.67	2	119.98 T	5.67	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1237. *11A
1238. LOAD LIST 1 TO 3
1239. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1240. 111 211 311 411										
111	MAX	0.04	0.00	3	0.27	0.00	3			
		-0.80	0.00	3	4.47	0.00	2	78.32 T	0.00	2
	MIN	-0.04	6.00	2	0.00	0.00	2			
		-1.24	6.00	2	-2.95	6.00	2	85.72 T	6.00	1
211	MAX	0.06	0.00	2	0.32	0.00	2			
		0.24	0.00	3	0.34	6.00	3	111.60 C	0.00	1
	MIN	-0.04	6.00	3	-0.03	6.00	2			
		-0.14	6.00	2	-1.12	0.00	3	92.38 C	6.00	3
311	MAX	0.06	0.00	2	0.32	0.00	2			
		0.14	0.00	2	1.06	0.00	3	111.39 C	0.00	1
	MIN	-0.04	6.00	3	-0.03	6.00	2			
		-0.23	6.00	3	-0.33	6.00	3	92.38 C	6.00	3
411	MAX	0.04	0.00	3	0.28	0.00	3			
		1.23	0.00	2	2.95	6.00	2	78.68 T	0.00	2
	MIN	-0.04	6.00	2	0.00	0.00	2			
		0.79	6.00	3	-4.46	0.00	2	86.01 T	6.00	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1241. *12
1242. LOAD LIST 1 TO 3
1243. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1244. 112 212 312 412 113 213 313 413 -										
1245. 114 214 314 414										
112	MAX	0.17	0.00	2	0.68	0.00	2			
		0.93	0.00	2	2.25	5.67	2	58.81 T	0.00	3
	MIN	0.10	5.67	3	-0.29	5.67	2			
		0.57	5.67	3	-3.02	0.00	2	66.04 T	5.67	1
212	MAX	-0.03	0.00	3	0.38	5.67	2			
		0.30	0.00	2	0.85	5.67	2	80.63 C	0.00	1
	MIN	-0.11	5.67	2	-0.24	0.00	2			
		-0.02	5.67	3	-0.88	0.00	2	66.37 C	5.67	3
312	MAX	-0.03	0.00	3	0.38	5.67	2			
		0.01	0.00	3	0.88	0.00	2	80.61 C	0.00	1
	MIN	-0.11	5.67	2	-0.24	0.00	2			
		-0.31	5.67	2	-0.85	5.67	2	66.85 C	5.67	3
412	MAX	0.17	0.00	2	0.68	0.00	2			
		-0.57	0.00	3	3.01	0.00	2	59.17 T	0.00	3
	MIN	0.09	5.67	3	-0.29	5.67	2			
		-0.93	5.67	2	-2.25	5.67	2	66.38 T	5.67	1
113	MAX	-0.07	0.00	3	0.43	5.67	2			
		-0.42	0.00	3	2.11	0.00	2	37.05 T	0.00	3
	MIN	-0.12	5.67	2	-0.28	0.00	2			
		-0.72	5.67	2	-1.94	5.67	2	42.17 T	5.67	1
213	MAX	0.15	0.00	2	0.51	0.00	2			
		0.00	0.00	3	0.81	0.00	2	56.22 C	0.00	1
	MIN	0.08	5.67	3	-0.32	5.67	2			
		-0.25	5.67	2	-0.62	5.67	2	44.37 C	5.67	3
313	MAX	0.15	0.00	2	0.51	0.00	2			
		0.25	0.00	2	0.62	5.67	2	56.35 C	0.00	1
	MIN	0.08	5.67	3	-0.32	5.67	2			
		0.00	5.67	3	-0.81	0.00	2	44.87 C	5.67	3
413	MAX	-0.06	0.00	3	0.43	5.67	2			
		0.72	0.00	2	1.94	5.67	2	37.44 T	0.00	3
	MIN	-0.12	5.67	2	-0.27	0.00	2			
		0.42	5.67	3	-2.11	0.00	2	42.28 T	5.67	1

114	MAX	0.18	0.00	2	0.43	0.00	2			
		0.66	0.00	2	1.73	5.67	2	13.99 T	0.00	3
	MIN	0.12	5.67	3	-0.56	5.67	1			
		0.42	5.67	3	-2.03	0.00	2	15.80 T	5.67	1
214	MAX	-0.02	0.00	3	0.29	5.67	2			
		0.19	0.00	2	0.45	5.67	2	31.74 C	0.00	2
	MIN	-0.08	5.67	2	-0.17	0.00	2			
		-0.01	5.67	3	-0.62	0.00	2	21.95 C	5.67	3
314	MAX	-0.02	0.00	3	0.29	5.67	2			
		0.01	0.00	3	0.62	0.00	2	31.69 C	0.00	2
	MIN	-0.08	5.67	2	-0.17	0.00	2			
		-0.19	5.67	2	-0.45	5.67	2	21.87 C	5.67	3
414	MAX	0.18	0.00	2	0.43	0.00	2			
		-0.41	0.00	3	2.02	0.00	2	14.00 T	0.00	2
	MIN	0.12	5.67	3	-0.56	5.67	1			
		-0.66	5.67	2	-1.73	5.67	2	15.79 T	5.67	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1246. *12A
1247. LOAD LIST 1 TO 3
1248. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1249. 115 215 315 415										
115	MAX	0.03	0.00	1	0.04	0.00	3			
		-0.15	0.00	3	1.43	0.00	2	0.96 C	0.00	2
	MIN	0.01	6.00	2	-0.14	6.00	1			
		-0.27	6.00	2	-0.16	6.00	2	1.32 T	6.00	3
215	MAX	-0.03	0.00	2	0.14	6.00	1			
		0.06	0.00	3	0.26	0.00	2	17.81 C	0.00	2
	MIN	-0.05	6.00	3	-0.18	0.00	3			
		-0.03	6.00	2	-0.20	0.00	3	9.11 C	6.00	3
315	MAX	-0.03	0.00	2	0.14	6.00	1			
		0.03	0.00	2	0.19	0.00	3	17.73 C	0.00	2
	MIN	-0.05	6.00	3	-0.18	0.00	3			
		-0.06	6.00	3	-0.27	0.00	2	8.90 C	6.00	3
415	MAX	0.03	0.00	1	0.04	0.00	3			
		0.26	0.00	2	0.16	6.00	2	1.03 C	0.00	2
	MIN	0.01	6.00	2	-0.14	6.00	1			
		0.15	6.00	3	-1.43	0.00	2	1.11 T	6.00	3

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1250. *25
1251. LOAD LIST 1 TO 3
1252. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1253. 116 216 316 416										
116	MAX	0.02	0.00	1	0.07	0.00	1			
		0.04	0.00	1	0.15	8.94	1	4.57 T	0.00	3
	MIN	-0.01	8.94	3	-0.01	7.45	2			
		0.03	8.94	3	-0.22	0.00	1	7.36 T	8.94	2
216	MAX	0.02	0.00	1	0.06	0.00	1			
		-0.01	0.00	3	0.08	0.00	2	6.05 C	0.00	2
	MIN	-0.01	8.94	3	-0.02	7.45	2			
		-0.02	8.94	1	-0.08	8.94	1	4.14 C	8.94	3
316	MAX	0.02	0.00	1	0.06	0.00	1			
		0.02	0.00	1	0.08	8.94	1	6.01 C	0.00	2
	MIN	-0.01	8.94	3	-0.02	7.45	2			
		0.01	8.94	3	-0.08	0.00	2	4.03 C	8.94	3
416	MAX	0.02	0.00	1	0.07	0.00	1			
		-0.03	0.00	3	0.22	0.00	1	4.46 T	0.00	3
	MIN	-0.01	8.94	3	-0.01	7.45	2			
		-0.04	8.94	1	-0.15	8.94	1	7.33 T	8.94	2

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1254. *
1255. *DIAGONALS
1256. *70
1257. LOAD LIST 1 TO 3
1258. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1259. 11 21 31 41 14 24 34 44										
11	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	4.13 T	11.70	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	14.18 T	0.00	3
21	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	3
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	0.22 T	0.00	2
31	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.65 T	11.70	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	9.12 T	0.00	3
41	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	12.99 T	11.70	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	14.30 T	0.00	1
14	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	2.82 T	0.00	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	15.14 T	11.70	3
24	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.63 T	0.00	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	0.93 T	11.70	1
34	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	2.24 T	0.00	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	9.30 T	11.70	3
44	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	12.99 T	0.00	2
	MIN	-0.02	11.70	1	0.00	11.70	3			
		0.00	11.70	3	0.00	11.70	3	14.34 T	11.70	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1260. *69
1261. LOAD LIST 1 TO 3
1262. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1263. 12 22 32 42 13 23 33 43										
12	MAX	0.00	0.00	1	0.02	7.54	1			
		0.04	0.00	1	0.09	7.54	1	1.39 T	0.00	2
	MIN	-0.01	7.54	1	-0.01	1.88	1			
		0.03	7.54	3	-0.20	0.00	1	9.34 T	7.54	3
22	MAX	0.00	0.00	3	0.02	7.54	1			
		0.04	0.00	1	0.09	7.54	1	0.02 C	0.00	2
	MIN	-0.01	7.54	1	-0.02	1.26	1			
		0.03	7.54	2	-0.20	0.00	1	0.12 T	7.54	3
32	MAX	0.00	0.00	1	0.02	7.54	1			
		0.04	0.00	1	0.09	7.54	1	5.76 C	0.00	3
	MIN	-0.01	7.54	1	-0.02	0.63	3			
		0.03	7.54	3	-0.20	0.00	1	0.29 C	7.54	2
42	MAX	0.00	0.00	1	0.02	7.54	1			
		0.04	0.00	1	0.09	7.54	1	0.34 C	0.00	2
	MIN	-0.01	7.54	1	-0.02	1.26	1			
		0.03	7.54	2	-0.19	0.00	1	0.04 T	7.54	3
13	MAX	0.02	0.00	1	0.04	0.00	1			
		-0.05	0.00	3	0.14	0.00	1	9.62 C	7.54	3
	MIN	0.00	7.54	2	-0.06	7.54	3			
		-0.06	7.54	1	-0.34	7.54	1	1.67 C	0.00	2
23	MAX	0.02	0.00	1	0.04	0.00	1			
		-0.05	0.00	2	0.14	0.00	1	0.42 C	7.54	1
	MIN	0.00	7.54	3	-0.05	7.54	1			
		-0.06	7.54	1	-0.35	7.54	1	0.26 C	0.00	2
33	MAX	0.02	0.00	1	0.03	0.00	1			
		-0.05	0.00	3	0.14	0.00	1	0.01 T	7.54	2
	MIN	0.00	7.54	2	-0.04	7.54	1			
		-0.06	7.54	1	-0.35	7.54	1	5.48 T	0.00	3
43	MAX	0.02	0.00	1	0.03	0.00	1			
		-0.05	0.00	2	0.13	0.00	1	0.32 C	7.54	3
	MIN	0.00	7.54	2	-0.05	7.54	1			
		-0.06	7.54	1	-0.34	7.54	1	0.06 T	0.00	2

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1264. *4
1265. LOAD LIST 1 TO 3
1266. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1267. 15 25 35 45 16 26 36 46										
15	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	3
	MIN	-0.02	15.94	1	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	2.12 T	0.00	2
25	MAX	0.02	0.00	2	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	1
	MIN	-0.02	15.94	2	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	0.16 T	0.00	2
35	MAX	0.02	0.00	3	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	1
	MIN	-0.02	15.94	3	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	1.60 T	0.00	3
45	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	9.60 T	15.94	2
	MIN	-0.02	15.94	1	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	10.43 T	0.00	1
16	MAX	0.02	0.00	3	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	2
	MIN	-0.02	15.94	3	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	5.70 T	15.94	3
26	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	2
	MIN	-0.02	15.94	1	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	0.22 T	15.94	1
36	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.79 T	0.00	3
	MIN	-0.02	15.94	1	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	3.99 T	15.94	2
46	MAX	0.02	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	9.22 T	0.00	2
	MIN	-0.02	15.94	1	0.00	15.94	3			
		0.00	15.94	3	0.00	15.94	3	10.53 T	15.94	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1268. *65
1269. LOAD LIST 1 TO 3
1270. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1271. 1100 1200 2200 2300 3300 3400 4400 4100										
1100	MAX	0.05	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	3.82 T	0.00	2
	MIN	-0.05	34.21	1	0.00	34.21	3			
		0.00	34.21	3	0.00	34.21	3	18.47 T	34.21	3
3400	MAX	0.05	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	1.19 T	0.00	2
	MIN	-0.05	34.21	1	0.00	34.21	3			
		0.00	34.21	3	0.00	34.21	3	11.39 T	34.21	3
4400	MAX	0.05	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	7.84 T	0.00	2
	MIN	-0.05	34.21	1	0.00	34.21	3			
		0.00	34.21	3	0.00	34.21	3	8.84 T	34.21	1
4100	MAX	0.05	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	8.20 T	0.00	2
	MIN	-0.05	34.21	1	0.00	34.21	3			
		0.00	34.21	3	0.00	34.21	3	9.00 T	34.21	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1272. *67
1273. LOAD LIST 1 TO 3
1274. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1275. 1102 1202 2202 2302 3302 3402 4402 4102										
1102	MAX	0.03	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	1.27 T	0.00	2
	MIN	-0.03	18.68	1	0.00	18.68	3			
		0.00	18.68	3	0.00	18.68	3	6.45 T	18.68	3
3402	MAX	0.03	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	1.31 T	0.00	1
	MIN	-0.03	18.68	1	0.00	18.68	3			
		0.00	18.68	3	0.00	18.68	3	2.56 T	18.68	3
4402	MAX	0.03	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	10.73 T	0.00	2
	MIN	-0.03	18.68	1	0.00	18.68	3			
		0.00	18.68	3	0.00	18.68	3	12.11 T	18.68	1
4102	MAX	0.03	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	11.01 T	0.00	2
	MIN	-0.03	18.68	1	0.00	18.68	3			
		0.00	18.68	3	0.00	18.68	3	12.01 T	18.68	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1276. *6
1277. LOAD LIST 1 TO 3
1278. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1279. 1104 1204 2204 2304 3304 3404 4404 4104										
1204	MAX	0.04	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	0.00	0.00	3
	MIN	-0.04	19.95	1	0.00	19.95	3			
		0.00	19.95	3	0.00	19.95	3	3.73 T	19.95	2
3304	MAX	0.04	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	2.25 T	0.00	3
	MIN	-0.04	19.95	1	0.00	19.95	3			
		0.00	19.95	3	0.00	19.95	3	4.99 T	19.95	2
4404	MAX	0.04	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	7.32 T	0.00	2
	MIN	-0.04	19.95	1	0.00	19.95	3			
		0.00	19.95	3	0.00	19.95	3	8.11 T	19.95	1
4104	MAX	0.04	0.00	1	0.00	0.00	1			
		0.00	0.00	1	0.00	0.00	1	7.51 T	0.00	2
	MIN	-0.04	19.95	1	0.00	19.95	3			
		0.00	19.95	3	0.00	19.95	3	8.29 T	19.95	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1280. *8
1281. LOAD LIST 1 TO 3
1282. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1283. 1105 1205 2205 2305 3305 3405 4405 4105										
1105	MAX	0.04	0.00	1	0.10	0.00	1			
		0.00	0.00	2	0.03	0.00	1	2.69 C	0.00	2
	MIN	-0.03	13.20	1	-0.03	7.70	1			
		0.00	13.20	3	0.00	13.20	3	0.52 C	13.20	3
1205	MAX	0.03	0.00	1	0.07	13.20	1			
		-0.01	0.00	3	0.01	0.00	3	1.12 T	0.00	3
	MIN	-0.03	13.20	1	-0.04	6.60	1			
		-0.01	13.20	1	-0.08	13.20	1	3.34 T	13.20	2
2205	MAX	0.04	0.00	1	0.10	0.00	1			
		0.01	0.00	1	0.03	13.20	3	2.20 T	0.00	2
	MIN	-0.03	13.20	1	-0.04	7.70	1			
		0.00	13.20	3	-0.04	0.00	2	2.56 T	13.20	3
2305	MAX	0.04	0.00	1	0.10	0.00	1			
		-0.01	0.00	2	0.06	0.00	1	1.00 T	0.00	3
	MIN	-0.03	13.20	1	-0.04	7.70	1			
		-0.01	13.20	1	-0.04	13.20	1	1.71 T	13.20	1
3305	MAX	0.03	0.00	1	0.07	13.20	1			
		0.00	0.00	2	0.07	13.20	2	1.99 T	0.00	3
	MIN	-0.03	13.20	1	-0.04	6.60	1			
		0.00	13.20	3	0.01	0.00	2	3.54 T	13.20	2
3405	MAX	0.03	0.00	1	0.10	0.00	1			
		0.00	0.00	2	0.00	0.00	3	3.11 C	0.00	2
	MIN	-0.03	13.20	1	-0.03	7.70	1			
		0.00	13.20	1	-0.03	13.20	1	1.72 C	13.20	3
4405	MAX	0.02	0.00	1	0.12	13.20	1			
		-0.01	0.00	2	0.04	0.00	3	4.91 C	0.00	1
	MIN	-0.04	13.20	1	-0.04	5.50	1			
		-0.01	13.20	1	-0.15	13.20	1	3.98 C	13.20	3
4105	MAX	0.02	0.00	1	0.12	13.20	1			
		0.01	0.00	1	0.14	13.20	1	5.09 C	0.00	1
	MIN	-0.04	13.20	1	-0.04	5.50	1			
		0.01	13.20	3	-0.02	0.00	2	4.75 C	13.20	2

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1284. *9
1285. LOAD LIST 1 TO 3
1286. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1287. 1106 1206 2206 2306 3306 3406 4406 4106										
1106	MAX	0.03	0.00	1	0.08	0.00	1			
		-0.03	0.00	2	0.23	0.00	1	4.88 C	0.00	2
	MIN	-0.02	11.34	1	-0.01	6.62	1			
		-0.03	11.34	1	-0.12	11.34	1	1.21 C	11.34	3
1206	MAX	0.02	0.00	1	0.06	11.34	1			
		-0.05	0.00	3	0.24	0.00	1	1.15 C	0.00	3
	MIN	-0.03	11.34	1	-0.04	4.73	1			
		-0.05	11.34	1	-0.35	11.34	1	0.46 T	11.34	2
2206	MAX	0.03	0.00	1	0.06	0.00	1			
		0.00	0.00	3	0.02	11.34	3	7.86 C	0.00	1
	MIN	-0.02	11.34	1	-0.03	6.62	1			
		0.00	11.34	2	-0.02	0.00	1	6.74 C	11.34	3
2306	MAX	0.03	0.00	1	0.06	0.00	1			
		0.00	0.00	2	0.03	0.00	3	8.36 C	0.00	1
	MIN	-0.02	11.34	1	-0.03	6.62	1			
		-0.01	11.34	3	-0.02	11.34	3	7.81 C	11.34	2
3306	MAX	0.02	0.00	1	0.06	11.34	1			
		0.05	0.00	1	0.34	11.34	1	0.10 T	0.00	3
	MIN	-0.03	11.34	1	-0.04	4.73	1			
		0.04	11.34	3	-0.23	0.00	1	0.92 T	11.34	2
3406	MAX	0.03	0.00	1	0.08	0.00	1			
		0.03	0.00	1	0.11	11.34	1	5.15 C	0.00	2
	MIN	-0.02	11.34	1	-0.01	6.62	1			
		0.03	11.34	3	-0.22	0.00	1	2.25 C	11.34	3
4406	MAX	0.03	0.00	1	0.07	0.00	1			
		-0.01	0.00	3	0.01	0.00	3	17.36 T	0.00	3
	MIN	-0.02	11.34	1	-0.02	6.62	1			
		-0.02	11.34	1	-0.18	11.34	1	19.04 T	11.34	1
4106	MAX	0.03	0.00	1	0.07	0.00	1			
		0.01	0.00	2	0.17	11.34	1	16.11 T	0.00	3
	MIN	-0.02	11.34	1	-0.02	6.62	1			
		0.01	11.34	3	0.01	0.00	2	18.75 T	11.34	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

1288. *15
1289. LOAD LIST 1 TO 3
1290. PRINT MAXFORCE ENVELOPE LIST -

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1291. 1107 1207 2207 2307 3307 3407 4407 4107										
1107	MAX	0.04	0.00	1	0.14	0.00	1			
		-0.09	0.00	3	0.67	0.00	1	36.07 T	0.00	3
	MIN	-0.03	10.00	1	0.04	5.00	3			
		-0.11	10.00	1	-0.40	10.00	1	39.49 T	10.00	1
1207	MAX	0.04	0.00	1	0.01	0.00	1			
		-0.02	0.00	2	0.11	0.00	3	37.30 C	0.00	1
	MIN	-0.03	10.00	1	-0.10	5.83	1			
		-0.03	10.00	1	-0.19	10.00	1	33.84 C	10.00	2
2207	MAX	0.04	0.00	1	0.11	0.00	1			
		0.04	0.00	2	0.03	10.00	2	15.26 C	0.00	1
	MIN	-0.03	10.00	1	-0.03	6.67	1			
		0.02	10.00	3	-0.35	0.00	2	12.32 C	10.00	3
2307	MAX	0.04	0.00	1	0.11	0.00	1			
		-0.03	0.00	3	0.37	0.00	2	15.66 C	0.00	1
	MIN	-0.03	10.00	1	-0.03	6.67	1			
		-0.04	10.00	2	-0.04	10.00	2	13.43 C	10.00	3
3307	MAX	0.04	0.00	1	0.01	0.00	1			
		0.03	0.00	1	0.19	10.00	1	37.17 C	0.00	1
	MIN	-0.03	10.00	1	-0.10	5.83	1			
		0.02	10.00	2	-0.10	0.00	3	33.75 C	10.00	2
3407	MAX	0.04	0.00	1	0.14	0.00	1			
		0.11	0.00	1	0.40	10.00	1	35.81 T	0.00	3
	MIN	-0.03	10.00	1	0.05	5.00	3			
		0.09	10.00	3	-0.66	0.00	1	39.44 T	10.00	1
4407	MAX	0.03	0.00	1	0.07	10.00	1			
		0.03	0.00	2	0.15	10.00	2	21.25 T	0.00	2
	MIN	-0.04	10.00	1	-0.05	4.17	1			
		0.02	10.00	3	-0.19	0.00	2	23.18 T	10.00	1
4107	MAX	0.03	0.00	1	0.06	10.00	1			
		-0.02	0.00	3	0.20	0.00	2	20.89 T	0.00	2
	MIN	-0.04	10.00	1	-0.05	4.17	1			
		-0.04	10.00	2	-0.16	10.00	2	22.79 T	10.00	1

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1292. *17
1293. LOAD LIST 1 TO 3
1294. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1295. 1108 1208 2208 2308 3308 3408 4408 4108 -										
1296. 1109 1209 2209 2309 3309 3409 4409 4109 -										
1297. 1110 1210 2210 2310 3310 3410 4410 4110										
1108	MAX	0.02	0.00	1	0.13	9.80	1			
		0.02	0.00	3	0.12	9.80	3	37.72 T	0.00	3
	MIN	-0.05	9.80	1	-0.04	3.27	1			
		0.02	9.80	2	-0.12	0.00	3	41.02 T	9.80	1
1208	MAX	0.06	0.00	1	0.16	0.00	1			
		0.04	0.00	1	0.19	9.80	1	37.73 C	0.00	1
	MIN	-0.01	9.80	1	-0.07	8.17	2			
		0.03	9.80	3	-0.21	0.00	1	34.44 C	9.80	2
2208	MAX	0.05	0.00	1	0.14	0.00	1			
		0.01	0.00	1	0.09	9.80	1	5.31 T	0.00	2
	MIN	-0.02	9.80	1	-0.05	7.35	1			
		0.01	9.80	3	-0.04	0.00	1	5.84 T	9.80	1
2308	MAX	0.05	0.00	1	0.14	0.00	1			
		-0.01	0.00	3	0.05	0.00	1	4.64 T	0.00	3
	MIN	-0.02	9.80	1	-0.05	7.35	1			
		-0.01	9.80	1	-0.09	9.80	1	5.41 T	9.80	1
3308	MAX	0.06	0.00	1	0.16	0.00	1			
		-0.03	0.00	3	0.20	0.00	1	37.46 C	0.00	1
	MIN	-0.01	9.80	1	-0.07	8.17	2			
		-0.04	9.80	1	-0.18	9.80	1	34.23 C	9.80	2
3408	MAX	0.02	0.00	1	0.13	9.80	1			
		-0.02	0.00	2	0.11	0.00	1	36.99 T	0.00	3
	MIN	-0.05	9.80	1	-0.04	3.27	1			
		-0.02	9.80	1	-0.10	9.80	1	40.76 T	9.80	1
4408	MAX	0.01	0.00	1	0.19	9.80	1			
		0.00	0.00	1	-0.02	9.80	2	11.35 C	0.00	1
	MIN	-0.06	9.80	1	-0.07	1.63	1			
		0.00	9.80	3	-0.05	0.00	1	9.53 C	9.80	3
4108	MAX	0.01	0.00	1	0.19	9.80	1			
		0.00	0.00	3	0.06	0.00	1	11.78 C	0.00	1
	MIN	-0.06	9.80	1	-0.07	1.63	1			
		0.00	9.80	2	0.01	9.80	2	10.68 C	9.80	3

1109	MAX	0.02	0.00	1	0.16	9.80	1			
		-0.02	0.00	3	0.13	0.00	1	35.33 T	0.00	2
	MIN	-0.05	9.80	1	-0.03	2.45	1			
		-0.02	9.80	1	-0.03	9.80	1	38.45 T	9.80	1
1209	MAX	0.05	0.00	1	0.09	0.00	1			
		-0.01	0.00	3	0.07	0.00	1	39.75 C	0.00	1
	MIN	-0.02	9.80	1	-0.07	6.54	1			
		-0.01	9.80	1	-0.07	9.80	1	36.83 C	9.80	2
2209	MAX	0.05	0.00	1	0.11	0.00	1			
		0.01	0.00	2	0.00	9.80	2	2.88 C	0.00	2
	MIN	-0.03	9.80	1	-0.04	6.54	1			
		0.00	9.80	3	-0.08	0.00	2	1.71 C	9.80	3
2309	MAX	0.05	0.00	1	0.11	0.00	1			
		-0.01	0.00	3	0.09	0.00	2	3.28 C	0.00	2
	MIN	-0.03	9.80	1	-0.04	6.54	1			
		-0.01	9.80	2	-0.01	9.80	2	2.87 C	9.80	3
3309	MAX	0.05	0.00	1	0.09	0.00	1			
		0.01	0.00	1	0.07	9.80	1	39.49 C	0.00	1
	MIN	-0.02	9.80	1	-0.07	6.54	1			
		0.01	9.80	3	-0.07	0.00	1	36.22 C	9.80	3
3409	MAX	0.02	0.00	1	0.16	9.80	1			
		0.02	0.00	1	0.05	9.80	3	35.12 T	0.00	2
	MIN	-0.05	9.80	1	-0.03	2.45	1			
		0.02	9.80	2	-0.13	0.00	1	38.17 T	9.80	1
4409	MAX	0.03	0.00	1	0.08	9.80	1			
		0.01	0.00	2	0.03	9.80	1	2.32 T	0.00	2
	MIN	-0.04	9.80	1	-0.02	4.90	1			
		0.00	9.80	3	-0.05	0.00	2	3.26 T	9.80	3
4109	MAX	0.03	0.00	1	0.08	9.80	1			
		0.00	0.00	3	0.05	0.00	2	1.92 T	0.00	2
	MIN	-0.04	9.80	1	-0.02	4.90	1			
		-0.01	9.80	2	-0.03	9.80	1	2.33 T	9.80	1
1110	MAX	0.02	0.00	1	0.16	9.80	1			
		0.02	0.00	1	0.12	9.80	1	35.95 T	0.00	2
	MIN	-0.05	9.80	1	-0.03	2.45	1			
		0.01	9.80	3	-0.05	0.00	1	38.97 T	9.80	1
1210	MAX	0.05	0.00	1	0.11	0.00	1			
		0.01	0.00	3	0.07	9.80	3	39.27 C	0.00	1
	MIN	-0.03	9.80	1	-0.05	6.54	1			
		0.01	9.80	2	-0.06	0.00	1	36.25 C	9.80	2
2210	MAX	0.05	0.00	1	0.13	0.00	1			
		-0.01	0.00	3	0.03	0.00	2	1.40 T	0.00	3
	MIN	-0.02	9.80	1	-0.05	6.54	1			
		-0.01	9.80	2	-0.09	9.80	1	2.75 T	9.80	2

(TRUSS) -- PAGE NO. 65

2310	MAX	0.05	0.00	1	0.13	0.00	1			
		0.01	0.00	2	0.09	9.80	1	0.27 T	0.00	3
	MIN	-0.02	9.80	1	-0.05	6.54	1			
		0.01	9.80	3	-0.02	0.00	2	2.36 T	9.80	2
3310	MAX	0.05	0.00	1	0.11	0.00	1			
		-0.01	0.00	3	0.06	0.00	1	38.98 C	0.00	1
	MIN	-0.03	9.80	1	-0.05	6.54	1			
		-0.01	9.80	1	-0.05	9.80	3	35.93 C	9.80	3
3410	MAX	0.02	0.00	1	0.16	9.80	1			
		-0.01	0.00	3	0.05	0.00	1	35.76 T	0.00	2
	MIN	-0.05	9.80	1	-0.03	2.45	1			
		-0.02	9.80	1	-0.11	9.80	1	38.70 T	9.80	1
4410	MAX	0.03	0.00	1	0.11	9.80	1			
		0.00	0.00	3	0.01	0.00	2	1.76 T	0.00	3
	MIN	-0.05	9.80	1	-0.04	3.27	1			
		-0.01	9.80	2	-0.06	9.80	1	3.15 T	9.80	2
4110	MAX	0.03	0.00	1	0.11	9.80	1			
		0.01	0.00	2	0.06	9.80	1	0.64 T	0.00	3
	MIN	-0.05	9.80	1	-0.04	3.27	1			
		0.00	9.80	3	0.00	0.00	2	2.76 T	9.80	2

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1298. *19
1299. LOAD LIST 1 TO 3
1300. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1301. 1111 1211 2211 2311 3311 3411 4411 4111										
1111	MAX	0.02	0.00	1	0.10	10.00	1			
		-0.01	0.00	3	0.05	0.00	2	20.75 T	0.00	3
	MIN	-0.04	10.00	1	-0.01	4.17	1			
		-0.01	10.00	2	-0.04	10.00	2	23.04 T	10.00	1
1211	MAX	0.04	0.00	1	0.10	0.00	1			
		0.00	0.00	2	0.00	0.00	3	21.30 C	0.00	1
	MIN	-0.02	10.00	1	-0.03	6.67	1			
		0.00	10.00	3	-0.03	10.00	1	19.65 C	10.00	2
2211	MAX	0.03	0.00	1	0.07	0.00	1			
		0.00	0.00	2	0.01	0.00	3	2.72 C	0.00	2
	MIN	-0.03	10.00	1	-0.03	5.83	1			
		0.00	10.00	3	-0.01	10.00	1	1.62 C	10.00	3
2311	MAX	0.03	0.00	1	0.07	0.00	1			
		0.00	0.00	1	0.01	0.00	2	2.76 C	0.00	2
	MIN	-0.03	10.00	1	-0.03	5.83	1			
		0.00	10.00	2	0.00	0.00	3	1.78 C	10.00	3
3311	MAX	0.04	0.00	1	0.10	0.00	1			
		0.00	0.00	3	0.04	10.00	3	21.09 C	0.00	1
	MIN	-0.02	10.00	1	-0.03	6.67	1			
		0.00	10.00	2	-0.01	0.00	3	19.41 C	10.00	3
3411	MAX	0.02	0.00	1	0.10	10.00	1			
		0.01	0.00	2	0.04	10.00	2	20.29 T	0.00	3
	MIN	-0.04	10.00	1	-0.01	4.17	1			
		0.01	10.00	3	-0.06	0.00	2	22.88 T	10.00	1
4411	MAX	0.03	0.00	1	0.05	10.00	1			
		-0.01	0.00	2	0.05	0.00	3	0.85 C	0.00	2
	MIN	-0.03	10.00	1	-0.03	5.00	1			
		-0.01	10.00	1	-0.06	10.00	1	0.30 T	10.00	3
4111	MAX	0.03	0.00	1	0.05	10.00	1			
		0.01	0.00	1	0.06	10.00	1	0.90 C	0.00	2
	MIN	-0.03	10.00	1	-0.03	5.00	1			
		0.01	10.00	2	-0.04	0.00	1	0.12 T	10.00	3

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1302. *21
1303. LOAD LIST 1 TO 3
1304. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1305. 1112 1212 2212 2312 3312 3412 4412 4112 -										
1306. 1113 1213 2213 2313 3313 3413 4413 4113 -										
1307. 1114 1214 2214 2314 3314 3414 4414 4114										
1112	MAX	0.03	0.00	1	0.08	9.80	1			
		0.01	0.00	2	0.05	9.80	1	20.03 T	0.00	3
	MIN	-0.03	9.80	1	-0.01	4.08	1			
		0.01	9.80	3	-0.09	0.00	2	22.41 T	9.80	1
1212	MAX	0.04	0.00	1	0.10	0.00	1			
		0.01	0.00	3	0.03	9.80	3	20.94 C	0.00	1
	MIN	-0.02	9.80	1	-0.05	6.54	1			
		0.00	9.80	2	-0.02	0.00	3	19.36 C	9.80	2
2212	MAX	0.04	0.00	1	0.09	0.00	1			
		0.00	0.00	1	0.02	9.80	1	1.79 C	0.00	2
	MIN	-0.02	9.80	1	-0.03	6.54	1			
		0.00	9.80	2	0.00	0.00	3	0.62 C	9.80	3
2312	MAX	0.04	0.00	1	0.09	0.00	1			
		0.00	0.00	2	0.01	0.00	3	1.84 C	0.00	2
	MIN	-0.02	9.80	1	-0.03	6.54	1			
		0.00	9.80	3	-0.02	9.80	3	0.83 C	9.80	3
3312	MAX	0.04	0.00	1	0.10	0.00	1			
		0.00	0.00	2	0.01	0.00	3	20.59 C	0.00	1
	MIN	-0.02	9.80	1	-0.05	6.54	1			
		0.00	9.80	3	-0.02	9.80	1	18.76 C	9.80	3
3412	MAX	0.03	0.00	1	0.08	9.80	1			
		-0.01	0.00	3	0.08	0.00	2	19.54 T	0.00	3
	MIN	-0.03	9.80	1	-0.01	4.08	1			
		-0.01	9.80	2	-0.04	9.80	2	22.23 T	9.80	1
4412	MAX	0.02	0.00	1	0.11	9.80	1			
		-0.01	0.00	3	0.06	0.00	2	1.45 C	0.00	2
	MIN	-0.04	9.80	1	-0.04	2.45	1			
		-0.01	9.80	2	-0.02	9.80	3	0.45 C	9.80	3
4112	MAX	0.02	0.00	1	0.11	9.80	1			
		0.01	0.00	2	0.01	9.80	2	1.50 C	0.00	2
	MIN	-0.04	9.80	1	-0.04	2.45	1			
		0.00	9.80	3	-0.06	0.00	2	0.66 C	9.80	3

1113	MAX	0.02	0.00	1	0.09	9.80	1			
		0.00	0.00	1	0.03	9.80	1	18.65 T	0.00	3
	MIN	-0.04	9.80	1	-0.02	3.27	1			
		0.00	9.80	2	0.00	0.00	3	20.83 T	9.80	1
1213	MAX	0.04	0.00	1	0.08	0.00	1			
		0.00	0.00	3	0.01	0.00	1	21.93 C	0.00	1
	MIN	-0.02	9.80	1	-0.04	6.54	1			
		0.00	9.80	1	0.00	9.80	2	19.30 C	9.80	3
2213	MAX	0.04	0.00	1	0.08	0.00	1			
		0.00	0.00	3	0.01	0.00	2	0.83 T	0.00	3
	MIN	-0.02	9.80	1	-0.03	5.72	1			
		0.00	9.80	2	-0.02	9.80	2	1.16 T	9.80	1
2313	MAX	0.04	0.00	1	0.08	0.00	1			
		0.00	0.00	2	0.01	9.80	2	0.63 T	0.00	3
	MIN	-0.02	9.80	1	-0.03	5.72	1			
		0.00	9.80	3	-0.01	0.00	2	1.10 T	9.80	1
3313	MAX	0.04	0.00	1	0.08	0.00	1			
		0.00	0.00	3	0.01	9.80	3	21.96 C	0.00	1
	MIN	-0.02	9.80	1	-0.04	6.54	1			
		0.00	9.80	2	-0.02	0.00	3	19.41 C	9.80	3
3413	MAX	0.02	0.00	1	0.09	9.80	1			
		0.00	0.00	3	-0.01	0.00	1	18.95 T	0.00	3
	MIN	-0.04	9.80	1	-0.02	3.27	1			
		0.00	9.80	1	-0.03	9.80	1	20.92 T	9.80	1
4413	MAX	0.03	0.00	1	0.07	9.80	1			
		0.00	0.00	1	0.00	9.80	1	0.63 C	0.00	1
	MIN	-0.03	9.80	1	-0.02	4.08	1			
		0.00	9.80	2	-0.01	0.00	1	0.50 C	9.80	2
4113	MAX	0.03	0.00	1	0.07	9.80	1			
		0.00	0.00	2	0.02	0.00	3	0.74 C	0.00	3
	MIN	-0.03	9.80	1	-0.02	4.08	1			
		0.00	9.80	3	-0.01	9.80	3	0.55 C	9.80	2
1114	MAX	0.02	0.00	1	0.10	9.80	1			
		0.00	0.00	2	0.05	9.80	2	18.86 T	0.00	3
	MIN	-0.04	9.80	1	-0.03	3.27	1			
		0.00	9.80	3	0.00	0.00	2	21.48 T	9.80	1
1214	MAX	0.03	0.00	1	0.07	0.00	1			
		0.00	0.00	3	0.04	0.00	2	20.91 C	0.00	1
	MIN	-0.03	9.80	1	-0.02	5.72	1			
		-0.01	9.80	2	-0.04	9.80	2	18.35 C	9.80	3
2214	MAX	0.03	0.00	1	0.06	0.00	1			
		0.00	0.00	3	0.00	0.00	2	0.78 C	0.00	1
	MIN	-0.03	9.80	1	-0.03	4.90	1			
		-0.01	9.80	2	-0.05	9.80	2	0.51 C	9.80	2

(TRUSS) -- PAGE NO. 70

2314	MAX	0.03	0.00	1	0.06	0.00	1			
		0.01	0.00	2	0.05	9.80	2	0.88 C	0.00	3
	MIN	-0.03	9.80	1	-0.03	4.90	1			
		0.00	9.80	3	0.00	0.00	2	0.56 C	9.80	2
3314	MAX	0.03	0.00	1	0.07	0.00	1			
		0.01	0.00	2	0.04	9.80	2	21.00 C	0.00	1
	MIN	-0.03	9.80	1	-0.02	5.72	1			
		0.01	9.80	3	-0.04	0.00	2	18.64 C	9.80	3
3414	MAX	0.02	0.00	1	0.10	9.80	1			
		0.00	0.00	3	0.00	0.00	2	18.96 T	0.00	3
	MIN	-0.04	9.80	1	-0.03	3.27	1			
		0.00	9.80	2	-0.05	9.80	2	21.52 T	9.80	1
4414	MAX	0.03	0.00	1	0.07	9.80	1			
		-0.01	0.00	3	0.01	0.00	2	1.72 T	0.00	3
	MIN	-0.03	9.80	1	-0.02	4.08	1			
		-0.01	9.80	1	-0.10	9.80	1	2.28 T	9.80	2
4114	MAX	0.03	0.00	1	0.07	9.80	1			
		0.01	0.00	1	0.10	9.80	1	1.53 T	0.00	3
	MIN	-0.03	9.80	1	-0.02	4.08	1			
		0.01	9.80	3	-0.01	0.00	2	2.23 T	9.80	2

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

```
1308. *23
1309. LOAD LIST 1 TO 3
1310. PRINT MAXFORCE ENVELOPE LIST -
```

MEMBER FORCE ENVELOPE

ALL UNITS ARE KIP FEET

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1311. 1115 1215 2215 2315 3315 3415 4415 4115										
1115	MAX	0.02	0.00	1	0.04	10.00	1			
		-0.01	0.00	3	0.05	0.00	2	3.60 T	0.00	3
	MIN	-0.02	10.00	1	-0.01	5.00	1			
		-0.01	10.00	1	-0.02	10.00	1	6.09 T	10.00	2
1215	MAX	0.02	0.00	1	0.05	0.00	1			
		-0.01	0.00	2	0.02	0.00	3	2.75 C	0.00	1
	MIN	-0.02	10.00	1	-0.01	5.00	1			
		-0.01	10.00	1	-0.05	10.00	1	2.08 C	10.00	3
2215	MAX	0.02	0.00	1	0.04	0.00	1			
		0.00	0.00	2	0.02	0.00	1	1.37 C	0.00	1
	MIN	-0.02	10.00	1	-0.02	5.00	1			
		-0.01	10.00	1	-0.03	10.00	1	1.00 C	10.00	2
2315	MAX	0.02	0.00	1	0.04	0.00	1			
		0.01	0.00	1	0.03	10.00	1	1.36 C	0.00	1
	MIN	-0.02	10.00	1	-0.02	5.00	1			
		0.00	10.00	2	-0.02	0.00	1	1.00 C	10.00	2
3315	MAX	0.02	0.00	1	0.05	0.00	1			
		0.01	0.00	1	0.05	10.00	1	2.72 C	0.00	1
	MIN	-0.02	10.00	1	-0.01	5.00	1			
		0.01	10.00	2	-0.02	0.00	3	2.01 C	10.00	3
3415	MAX	0.02	0.00	1	0.04	10.00	1			
		0.01	0.00	1	0.02	10.00	3	3.54 T	0.00	3
	MIN	-0.02	10.00	1	-0.01	5.00	1			
		0.01	10.00	3	-0.05	0.00	2	6.06 T	10.00	2
4415	MAX	0.02	0.00	1	0.05	0.00	1			
		0.00	0.00	3	0.01	0.00	1	2.21 T	0.00	3
	MIN	-0.01	10.00	1	-0.02	5.83	1			
		0.00	10.00	1	-0.03	10.00	1	2.94 T	10.00	2
4115	MAX	0.02	0.00	1	0.05	0.00	1			
		0.00	0.00	1	0.03	10.00	1	2.22 T	0.00	3
	MIN	-0.01	10.00	1	-0.02	5.83	1			
		0.00	10.00	3	-0.01	0.00	1	2.95 T	10.00	2