CONNECTICUT SITING COUNCIL

PETITION OF NEW CINGULAR WIRELESS PCS, LLC ("AT&T") TO THE CONNECTICUT SITING COUNCIL FOR A DECLARATORY RULING THAT NO CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS REQUIRED TO MODIFY AN EXISTING PUBLIC UTILITY TOWER LOCATED AT 11 RIVERGATE DRIVE, WILTON, CONNECTICUT	)	**PETITION NO. _____**

PETITION FOR DECLARATORY RULING TO MODIFY AN EXISTING PUBLIC UTILITY TOWER AT 11 RIVERGATE DRIVE, WILTON, CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required pursuant to Section 16-50k of the Connecticut General Statutes ("C.G.S.")[1] to modify an existing public utility tower[2] owned by Eversource located at 11 Rivergate Drive in Wilton, Connecticut (the "Site"). Included in Attachment 1 is a January 22, 2021 letter from Eversource authorizing AT&T to file this Petition.

II. The Premises and Existing Public Utility Facility

The Site is a 5.70-acre public utility right-of-way located on the easterly side of Rivergate Drive approximately 200' north of the Rivergate Drive and West Meadow Road intersection. The Site is currently improved with electrical transmission infrastructure, including a 93'-tall steel lattice electrical transmission tower (Eversource Structure No. 935) operated by Eversource. Eversource transmission lines bisect the Site in a southwest

[1] Pursuant to C.G.S. § 16-50k(a), if a proposed facility may have a "substantial adverse environmental effect", a Certificate of Environmental Compatibility and Public Need is required. Based on the information enclosed herein, we respectfully submit that the proposed facility will not have a substantial adverse environmental effect.

[2] The Connecticut Siting Council has jurisdiction over "facilities" as defined in Connecticut General Statute ("C.G.S.") § 16-50i, which are defined to include telecommunications towers. C.G.S. § 16-50i(a)(6). The Regulations of Connecticut State Agencies ("R.C.S.A.") § 16-50j-2a(30) provides in relevant part that: "tower means a structure, whether freestanding or attached to a building . . . . that has a height greater than its diameter and that is high relative to its surroundings . . . which is . . . (B) owned or operated by . . . a public service company as defined in Section 16-1 of the Connecticut General Statutes . . . ."

to northeast direction. The Site is located within a residential district comprised of single-family homes in the immediate vicinity. Site Drawings prepared by Centek Engineering dated December 27, 2019 (last revised January 27, 2021) (the "Site Drawings"), which include a Site Location Plan (Sheet C-1) and Compilation Plan (Sheet C-2), are enclosed as Attachment 2 and a Visual Assessment and Photo-Simulations are enclosed as Attachment 3.

AT&T does not currently operate a facility on the existing tower and there are no other wireless carriers currently operating a facility on the tower.

III. AT&T's Proposed Facility

AT&T is licensed by the Federal Communications Commission ("FCC") to provide wireless services in this area of the State of Connecticut. AT&T is proposing to attach a new 107'-tall antenna mast within the center of the existing 93'-tall steel lattice electrical transmission tower known as Eversource Structure No. 935 and install 6 antennas on the antenna mast at a centerline height of approximately 103' above grade level ("AGL") with the top of the antennas extending to a height of approximately 107' AGL.

AT&T's facility will include an approximately 18' x 25' gravel equipment compound at grade level adjacent to the south of the Eversource Structure. The equipment compound will be enclosed on the southern and western sides by an 8' tall chain- link fence with sound attenuation materials installed on the interior side of the fence. The equipment compound will be bounded on the eastern side by 6'6" (3'6" AGL) steel and concrete bollards and the northern side of the compound will be bounded by the base of the existing transmission tower. The equipment compound will consist of an unmanned walk-in equipment cabinet on a 8'6" x 8'6" concrete pad. AT&T proposes a 9' ice-bridge as well as 9 remote radio units ("RRUs") and 36 diplexers mounted to the vertical posts of the proposed ice-bridge. The equipment compound will include a 15kW diesel emergency back-up generator for AT&T's facility, which will be located on a 4' x 5' concrete pad. Specifications of the generator are provided in Attachment 2 at Page C-6. The Petitioner proposes to extend the existing gravel driveway located north of the electrical transmission tower in order to provide access to the equipment compound. Access to the existing gravel driveway is currently limited by a wooden fence gate.

AT&T's proposed modification to the existing facility is detailed in the Site Drawings included as Attachment 2. Also, annexed hereto as Attachment 4 is the passing structural analysis for the proposed antenna mast and tower structure prepared by Centek Engineering, Inc., last revised January 13, 2021. The structural analysis demonstrates that the proposed modifications will be designed to support AT&T's antenna mast installation.

IV. The Proposal Will Not Have a Substantial Adverse Environmental Effect

A comparison of the existing and proposed conditions reveals no substantial or significant environmental impacts associated with AT&T's proposed modification to the existing

electrical transmission tower. The proposed antenna mast will be consistent with the existing tower design, color and material. Photosimulations depicting the existing tower and the proposed facility at 7 surrounding locations are included in Attachment 3. These photosimulations demonstrate that the most prominent view of the facility would be from Rivergate Drive where it intersects the transmission corridor and from West Meadow Road southeast of the Site. Limited views of the facility would also extend to select locations in the surrounding residential neighborhoods, though it is noted that the existing electrical transmission tower is currently visible from these locations. Due to terrain variations and the presence of mature trees along the transmission corridor, the additional height of the proposed facility would not significantly increase the area of visibility beyond where the existing transmission structure is currently visible.

AT&T submits an Environmental Sound Assessment prepared by Modeling Specialties dated January 7, 2021 ("Sound Study") as Attachment 5. The Sound Study concludes that, under the worst case scenario, the infrequent generator testing and cabinet cooling operations, which will occur only during daytime hours, will not exceed the daytime ambient levels and the facility will not generate a noise in excess of the federal, state, and local noise requirements. However, it is noted that the proposed wireless facility will produce no sound most of the time. AT&T facility also incorporates sound attenuation material on the inside of the proposed chainlink fence as demonstrated on Pages C-3 and C-7 of the Site Drawings.

Also enclosed in Attachment 6 is confirmation that the proposed modification of the existing public utility transmission tower will not require registration with the FAA.

A. Minimal Physical Impact

AT&T's proposed modification will result in limited disturbance to the site, including the clearing of approximately 1,135 square-feet of brush around the base of the existing tower. Enclosed as Attachment 7 is a Wetland Inspection Report prepared by All-Points Technology Corporation dated April 10, 2020 indicating that the proposed facility will not impact offsite wetlands. Erosion and sediment controls will be implemented in accordance with the recommendations in the Wetland Inspection Report. The facility is unmanned and requires no water or wastewater connections and generates no waste.

B. Compliance with MPE Limits

The operation of AT&T's antennas on the proposed antenna mast will not produce radio frequency electromagnetic power density at the site to a level at or above applicable standards. A power density report is included in Attachment 8. The total radio frequency power density will be 11.44% of the allowable FCC established general public limit at ground level and well within standards adopted by the Connecticut Department of Energy & Environmental Protection as set forth in C.G.S. Section 22a-162.

V. AT&T's Need for the Proposed Modification to Provide Reliable Service

Included in Attachment 9 are AT&T's radio frequency coverage maps which depict existing coverage from AT&T's facilities in the surrounding area and projected coverage from the proposed wireless facility. As shown in these maps, AT&T needs the proposed facility to provide reliable service within its network in this area of Wilton.

As such, while the Council need not find a public need for the facility as part of a ruling on this Petition, it is respectfully submitted that the enclosed information demonstrates the need for the proposed facility to provide reliable wireless services to the public.

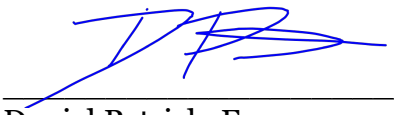
VI. Notice of Petition Filing

Pursuant to R.C.S.A. Section 16-50j-40(a), notice of AT&T's intent to file this Petition was sent to each person appearing of record as an owner of property that abuts the site, as well as the appropriate municipal officials and government agencies as listed in Section 16-50*l* of the C.G.S. Certification of such notice, a copy of the notice and the list of property owners is included in Attachment 10 along with the map from the Town's GIS website used to identify abutting property owners. Attachment 10 also includes a certification of service to municipal officials and government agencies to whom notice was sent.

VII. Conclusion

As set forth herein, AT&T's proposed modifications to the existing electrical transmission tower are wholly consistent with legislative findings outlined in C.G.S. Sections 16-50g and 16-50aa that seek to avoid the unnecessary proliferation of towers in the State. It is respectfully submitted that AT&T's proposed facility does not present any significant adverse environmental effects as listed in C.G.S. Section 16-50p. Therefore, and for the foregoing reasons, AT&T petitions the Council for a determination that the proposed wireless telecommunications facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving same.

Respectfully Submitted,



Daniel Patrick, Esq.
On behalf of the Petitioner, AT&T
Cuddy & Feder, LLP
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White Plains, New York 10601
(914) 761-1300

Cc: AT&T
Lucia Chiocchio, Esq.
Dan Bilezikian, SAI Communications

1

EVERSOURCE ENERGY

56 Prospect Street,
Hartford, CT 06103

P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

January 22, 2021

Mr. Tim Burks
SAI Communications
12 Industrial Way
Salem, NH 03079

RE: AT&T Antenna Site CT1847, Rivergate Drive, Wilton CT, Eversource Structure 935

Dear Mr. Burks:

Based on our reviews of the site drawings, the structural analysis and foundation review provided by Centek Engineering, along with a third party review performed by Paul J. Ford and Company, we accept the proposed modification.

Please work with Christopher Gelinas of Eversource Real Estate to process the site lease amendment. Please do not hesitate to contact us with questions or concerns. Christopher can be contacted at 860-665-2008, and I can be contacted at (203) 623-0409.

Sincerely,

Richard Badon

Richard Badon
Transmission Line Engineering

Ref: 19145.00 - CT1847 - Structural Analysis Rev5 21.01.13
2020-1123_19145.00 CT1847 Wilton - Rev4 CDs (S&S)

2

WIRELESS COMMUNICATIONS FACILITY
SITE ID: CT1847
SITE NAME: WILTON
EVERSOURCE STRUCTURE NO.: 935
11 RIVERGATE DRIVE WILTON, CT 06897
LTE 700/850/1900/AWS

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2018 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

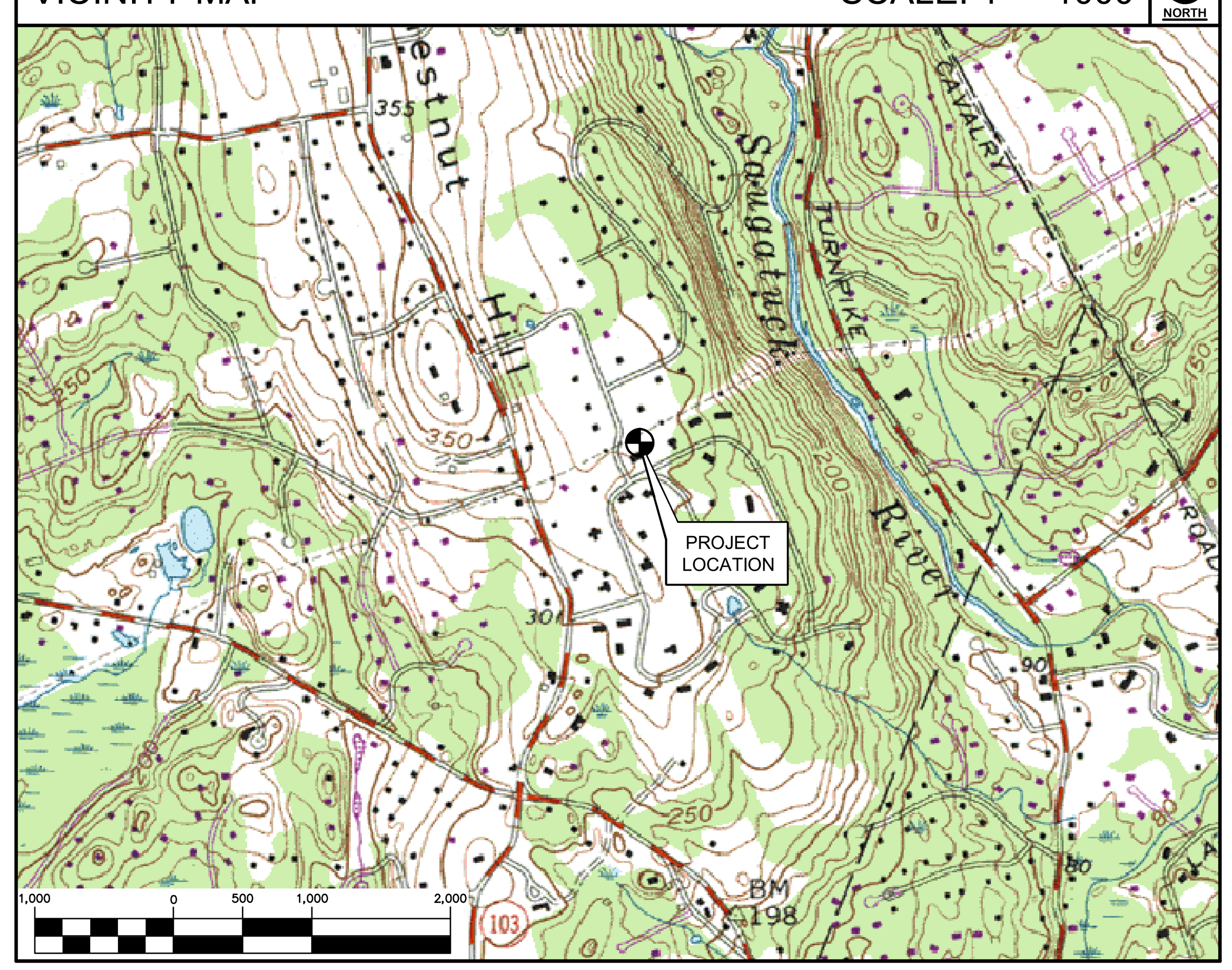
FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CT 06067
TO: 11 RIVERGATE DRIVE, WILTON, CT 06897

1. HEAD NORTHEAST ON ENTERPRISE DRIVE TOWARD CAPITAL BLVD	0.3 MI
2. TURN LEFT ONTO CAPITOL BLVD	0.3 MI
3. TURN LEFT ONTO WEST ST	0.3 MI
4. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	0.3 MI
5. MERGE ONTO I-91 S	9.4 MI
6. TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY	0.4 MI
7. MERGE ONTO CT-15 S	43.8 MI
8. TAKE EXIT 41 TOWARD CT-33 N/WILTON RD	0.1 MI
9. TURN LEFT ONTO CT-33 N/WILTON RD	1.1 MI
10. TURN RIGHT ONTO CT-53 N/CHESTNUT HILL RD	0.3 MI
11. TAKE THE 1ST RIGHT ONTO HIGH RIDGE RD	0.1 MI
12. TURN LEFT ONTO W MEADOW RD	0.2 MI
13. TAKE THE 1ST LEFT ONTO RIVERGATE DR	0.1 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A NEW UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. THE PROPOSED INSTALLATION OF (6) AT&T ANTENNAS MOUNTED TO THE TOP OF THE PROPOSED AT&T POWER MOUNT.
   B. THE PROPOSED INSTALLATION OF (1) 15 KW DIESEL BACK-UP POWER GENERATOR AND (1) PREFABRICATED W.I.C. ON (2) PROPOSED CONCRETE PADS.
   C. THE PROPOSED INSTALLATION OF ANTENNA CABLE ICE-BRIDGE AND GRIP-STRUT BRIDGE CHANNEL ABOVE THE PROPOSED (9) RRU'S AND (36) DIPLEXERS THAT ARE MOUNTED TO THE VERTICAL POSTS OF THE ANTENNA ICE-BRIDGE USING PROPOSED UNISTRUT.
   D. THE PROPOSED INSTALLATION OF (1) UTILITY BACKBOARD
   E. THE PROPOSED INSTALLATION OF A 8' TALL CHAIN LINK FENCE WITH SOUND ATTUNEMENT MATERIAL.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT1847
AT&T SITE NAME:	EVERSOURCE STRUCTURE NO. 935
SITE ADDRESS:	11 RIVERGATE DRIVE WILTON, CT 06897, CT 06032
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
AT&T PACE ID NUMBER:	PACE JOB 1 – MRCTB036755 PACE JOB 2 – MRCTB039634 PACE JOB 3 – MRCTB039635 PACE JOB 4 – MRCTB039638 PACE JOB 5 – MRCTB039637
AT&T FA LOCATION CODE:	12685512
CONTACT PERSON:	DAN BILEZIKIAN SAI COMMUNICATIONS (401) 368-0006
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-10'-55.48"N LONGITUDE: 73°-23'-27.66"W GROUND ELEVATION: ±306.39' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1-A SURVEY CERTIFICATION PREPARED BY CENTEK ENGINEERING 12/03/19.

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5	01/27/21	DMD	TJL	CONSTRUCTION DRAWINGS – SHEET INDEX UPDATE
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

EVERSOURCE STRUCTURE NO. 935

CT1847-WILTON

11 RIVERGATE DRIVE
WILTON, CT 06897

DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

TITLE SHEET

T-1

Sheet No. 1 of 20

NOTES AND SPECIFICATIONS

DESIGN BASIS:

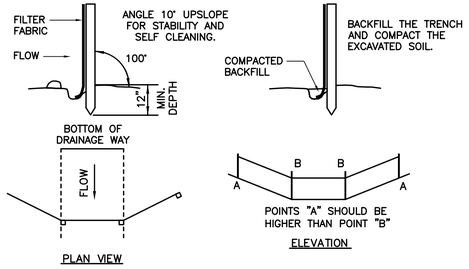
GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–110 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC APPENDIX N)
- NOMINAL DESIGN SPEED (TOWER): 93 MPH (Vasd) (EXPOSURE C/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2015 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.



SOURCE: U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, STORRS, CONNECTICUT

1 / N–1 **PLACEMENT AND CONSTRUCTION OF SILTATION FENCE**

NOT TO SCALE

GENERAL CONSTRUCTION / PRE–CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMNENT OF ANY CONSTRUCTION ACTIVITIES, A MANDITORY ON–SITE PRE–CONSTRUCTION MEETING SHALL BE CONDUCTED WITH THE AT&T CONSTRUCTION MANAGER.

GENERAL CONSTRUCTION SEQUENCE

THIS IS A GENERAL CONSTRUCTION SEQUENCE OUTLINE SOME ITEMS OF WHICH MAY NOT APPLY TO PARTICULAR SITES.

1. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
2. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
3. REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED TO PREVENT EROSION.
4. CONSTRUCT CLOSED DRAINAGE SYSTEM. PRECEPT CULVERT INLETS AND CATCH BASINS WITH SEDIMENTATION BARRIERS.
5. CONSTRUCT ROADWAYS AND PERFORM SITE GRADING, PLACING HAY BALES AND SILITATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
6. INSTALL UNDERGROUND UTILITIES.
7. BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
8. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
9. BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWERS AND PLATFORMS.
10. FINISH PAVING ALL ROADWAYS, DRIVES, AND PARKING AREAS.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGARDED AREAS.
13. AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

SOIL EROSION AND SEDIMENT CONTROL SEQUENCE

1. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, SHALL BE IN PLACE PRIOR TO ANY GRADING ACTIVITY, INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. MEASURES SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR AREA IS STABILIZED.
2. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM AND RESTABILIZATIONS WILL BE SCHEDULED AS SOON AS PRACTICAL.
3. ALL SOIL EROSION AND SEDIMENT CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL INCLUDING THE LATEST DATE FROM THE COUNCIL ON SOIL AND WATER CONSERVATION.
4. ANY ADDITIONAL EROSION/SEDIMENTATION CONTROL DEEMED NECESSARY BY TOWN STAFF DURING CONSTRUCTION, SHALL BE INSTALLED BY THE DEVELOPER. IN ADDITION, THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE TOWN STAFF.
5. IN ALL AREAS, REMOVAL OF TREES, BUSHES AND OTHER VEGETATION AS WELL AS DISTURBANCE OF THE SOIL IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE. DURING CONSTRUCTION, EXPOSE AS SMALL AN AREA OF SOIL AS POSSIBLE FOR AS SHORT A TIME AS POSSIBLE.
6. SILTATION FENCE SHALL BE PLACED AS INDICATED BEFORE A CUT SLOPE HAS BEEN CREATED. SEDIMENT DEPOSITS SHOULD BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDES OF SILTATION FENCE. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR TO BE USED IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. SILTATION FENCE IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE FENCE IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.
7. ALL FILL AREAS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
8. THE SOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
9. AFTER CONSTRUCTION IS COMPLETE AND GROUND IS STABLE, REMOVE SILTS IN THE RIP RAP ENERGY DISSIPATERS. REMOVE OTHER EROSION AND SEDIMENT DEVICES.

CONSTRUCTION SPECIFICATIONS – SILT FENCE

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID–SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BUILD UP IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE – SILT FENCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE–CONSTRUCTION		DURING CONSTRUCTION		POST–CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	X	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED SHOP DRAWINGS	X	EARTHWORK BACKFILL MATERIAL & COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
–	EOR APPROVED POST–INSTALLED ANCHOR MPII	X	REBAR & FORMWORK GEOMETRY VERIFICATION	X	PHOTOGRAPHS
–	FABRICATION INSPECTION	X	CONCRETE TESTING		
–	FABRICATOR CERTIFIED WELDER INSPECTION	X	STEEL INSPECTION		
X	MATERIAL CERTIFICATIONS	–	POST INSTALLED ANCHOR ROD VERIFICATION		
		–	BASE PLATE GROUT VERIFICATION		
		–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		X	ON–SITE COLD GALVANIZING VERIFICATION		
		X	CONTRACTOR AS–BUILT REDLINE DRAWINGS		

NOTES:
1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
3. "–" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
4. EOR = ENGINEER OF RECORD
5. MPIG = "MANUFACTURER'S PRINTED INSTALLATION GUIDELINES"

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:

   – CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   – WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:

   – PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   – DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   – POST–CONSTRUCTION: FINAL CONDITION OF THE SITE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

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WIRELESS COMMUNICATIONS FACILITY
EVERSOURCE STRUCTURE NO. 935
CT1847-WILTON
11 RIVERGATE DRIVE
WILTON, CT 06897

DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

GENERAL NOTES, INSPECTION REPORT, AND SILTATION DETAILS

N–1

NOTES AND SPECIFICATIONS

DESIGN BASIS

1. GOVERNING CODE: 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CT STATE SUPPLEMENT.

2. TIA-222-G, ASCE MANUAL NO. 10-97 – "DESIGN OF STEEL TRANSMISSION POLE STRUCTURES SECOND EDITION", NESC C2-2017 AND NORTHEAST UTILITIES DESIGN CRITERIA.

3. DESIGN CRITERIA

   WIND LOAD: (ANTENNA MAST)
   NOMINAL DESIGN WIND SPEED (V) = 93 MPH (2018 CSBC: APPENDIX 'N')

   WIND LOAD: (UTILITY POLE & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3-SECOND GUST) BASED ON NESC C2-2017 SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS AND REINFORCEMENT DESIGN PREPARED BY CENTEK ENGINEERING, INC., FOR AT&T DATED 11/02/2020.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE ORIGINAL TOWER DESIGN DOCUMENTS PREPARED BY AMERICAN BRIDGE CO. ORDER NO. J6125 CIRCA 1949.

3. THE TEMPORARY DETACHMENT AND/OR REPLACEMENT OF TOWER MEMBERS SHALL BE DONE ONE AT A TIME AND SHALL BE CONDUCTED ON DAYS WITH LESS THAN 15 MPH WIND PRESENT. NO MEMBER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY.

4. ALL STEEL REINFORCEMENT SHOWN HEREIN APPLIES TO ALL SIDES OF THE TOWER.

5. ALL REPLACEMENT STEEL MEMBERS SHALL BE INSTALLED WITH A325-N BOLTS (SIZE TO MATCH EXISTING). UNLESS OTHERWISE NOTED BELOW.

6. THE TOWER STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER REINFORCEMENTS ARE COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE & SEQUENCE AND TO INSURE THE SAFETY OF THE TOWER STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, UNDERPINNING, TEMPORARY ANCHORS, GUYING, BARRICADES, ETC. AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY. MAINTAIN EXISTING SITE OPERATIONS AND COORDINATE WORK WITH TOWER OWNER.

7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.

8. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

9. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.

10. TOWER REINFORCEMENTS SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.

11. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH THE TOWER REINFORCEMENT WORK.

12. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

13. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

14. NO DRILLING WELDING OR TAPING IS PERMITTED ON CL&P OWNED EQUIPMENT.

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.

2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.

4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.

5. 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.

6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.

8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.

2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.

3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40-70
No. 100	5-20
No. 200	4-8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90-100
½"	0-15
⅜"	0-5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".

6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 10" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.

7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

CONCRETE CONSTRUCTION

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

   ACI 211 – STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.

   ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.

   ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION

   ACI 304 – RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.

   ACI 306.1 – STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING

   ACI 318 – BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL BE AIR ENTRAINED AND SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

   ALL CONCRETE 4,000 PSI

3. REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.

4. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".

5. CONCRETE COVER OVER REINFORCING SHALL BE 3 INCHES.

6. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.

7. ALL REINFORCEMENT SHALL BE CONTINUOUS. SPLICES WILL NOT BE ALLOWED.

8. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.

9. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1 % CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.

10. TOP OF FOOTING SURFACES SHALL RECEIVE A UNIFORM FLOAT FINISH. CURE FOOTING SURFACE WITH SONNEBORN KURE-N-SEAL WB OR APPROVED EQUAL, APPLIED AS RECOMMENDED BY MANUFACTURER.

11. PREPARATION OF SURFACES WHERE NEW CONCRETE WILL INTERFACE WITH EXISTING CAISSON:
    THE PERIMETER OF THE EXISTING CONCRETE SHALL BE THOROUGHLY CLEANED OF ALL DIRT AND DELETERIOUS MATERIALS PRIOR TO APPLICATION OF BONDING AGENT. CONTRACTOR SHALL NOTIFY NORTHEAST UTILITIES 24 HOURS IN ADVANCE OF CLEANING.

    SIKADUR 32, HI-MOD OR ENGINEER APPROVED EQUAL SHALL BE APPLIED, IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, TO ALL INTERFACING SURFACES BEFORE CONCRETE IS PLACED.

    CAULK JOINT BETWEEN EXISTING CONCRETE PIER AND NEW CONCRETE WITH SIKAFLEX 1-A BY SIKA CORP. OR ENGINEER APPROVED EQUAL.

    SUBMIT MANUFACTURER'S PRODUCT SPECIFICATION DATA AND INSTALLATION INSTRUCTIONS FOR REVIEW AND APPROVAL BY OWNER.

12. NEW CONCRETE FOOTING SHALL BE ALLOWED TO CURE AT LEAST 14 DAYS BEFORE WIRELESS ANTENNA MOUNT, ANTENNAS, AND CABLES ARE INSTALLED.

13. INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY. THE INSPECTOR SHALL OBSERVE THE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.

14. THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.

15. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE OWNER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

TOWER GROUNDING SYSTEM NOTES

GENERAL

1. THE CARRIER WILL FURNISH THE WIRE, CONNECTORS, AND MISCELANEOUS MATERIAL ASSOCIATED WITH THE COUNTERPOISE GROUNDING SYSTEM.

2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE GROUNDING SYSTEM AND TO REHABILITATE THE RIGHT-OF-WAY AS CLOSE AS POSSIBLE TO ITS ORIGINAL CONDITION.

3. THE CONTRACTOR SHALL HANDLE AND TRANSPORT THE CARRIER SUPPLIED MATERIAL FROM THE STOREROOMS AND YARDS TO THE JOB SITE AND SHALL RETURN SURPLUS MATERIAL AND EMPTY REELS TO DESIGNATED STOREROOMS AND YARDS UPON COMPLETION OF THE CONTRACT.

INSTALLATION

1. UNLESS OTHERWISE DURECTED BY THE CARRIER'S REPRESENTATIVE, COUNTERPOISE SHALL BE BURIED A MINIMUM OF 24" IN CULTIVATED AREAS AND 18" IN WOODED OR OTHER AREAS. IN ROCKY AREAS OR WHERE OBSTRUCTIONS ARE ENCOUNTERED, THE COUNTERPOISE SHALL BE DIVERTED AROUND SUCH OBSTRUCTIONS. ALL INSTALLATIONS SHALL INCLUDE CONNECTIONS TO EXISTING OR PROPOSED STRUCTURES, AND SUCH CONNECTIONS SHALL BE MADE BELOW GROUND USING BOLTED PARALLEL GROVE CONNECTORS.

2. WHERE MULTIPLE STUCTURE GROUNDS EXIST AT MULTI POLE STRUCTURES, THEY SHALL BE CONNECTED TOGETHER WITH BURIED COPPERWELD WIRE, BUT ONLY IF SUCH GROUNDS HAVE METALLIC CONNECTIONS UP THE POLES TO THE SHIELD WIRE(S). AT STRUCTURES THAT HAVE PALE GROUNDS AND ALSO POLE GUY GROUNDS, CONNECTIONS SHALL BE MADE ONLY TO THE POLE GROUNDS, AND THE MINIMUM SPACING BETWEEN THE COUNTERPOISE AND ANCHOR RODS SHALL BE 10'. AT WOOD POLE STRUCTURES WHERE NO SUCH POLE GROUND EXISTS, COUNTERPOISE CONNECTIONS SHALL BE MADE TO THE POLE TOP GUYS.

3. FOR SINGLE COUNTINUOUS (TYPE A) AND SINGLE BROKEN (TYPE B) COUNTERPOISE, THE WIRE SHALL IN GENERAL BE LAYED AT THE CENTERLINE OF THE TRANSMISSION LINE. FOR DOUBLE CONTINUOUS (TYPE C) AND DOUBLE BROKEN (TYPE D) COUNTERPOISE, THE WIRES SHALL IN GENERAL SHALL BE LAYED UNDER THE OUTSIDE PHASE WIRES OF THE TRANSMISSION LINE. COUNTERPOISE SHALL NOT BE INSTALLED ACROSS BROOKS, RIVERS, HIGHWAYS, RAILROADS, OR IN THE VICINITY OF TELEPHONE CABLES OR PIPELINES.

4. AT STEEL POLE STRUCTURES, A BURIED GRADING RING AND SPOKES SHALL ALSO BE INSTALLED AROUND THE STRUCTURE UNLESS THE STRUCTURE HAS A PAD AND PIER FOUNDATION OR UNLESS A RING ALREADY EXISTS. COUNTERPOISE WIRE SHALL BE CONNECTED AT TWO PLACES TO EACH RING, AND COPPERWELD SPOKES SHALL SLOPE LINEARLY UP TO THE STRUCTURE GROUND.

5. AT WOOD POLE STRUCTURES, AN 8' LENGTH OF PLASTIC MOULDING SHALL BE STAPLED OVER THE BOTTOM WITH 8' OF DOWNLEAD.

GROUND RODS

1. WHERE GROUND RODS ARE REQUIRED, THEY SHALL BE SINGLE OR SECTIONAL WITH THE LENGTH SPECIFIED. THEY SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH WHICH WILL LEAVE THE TOP OF THE ROD AT LEAST 12" BELOW GRADE. ALL RODS SHALL BE CONNECTED TO COUNTERPOISE OR TO POLE GROUNDS USING BOLTED CONNECTORS.

REHABILITATION

1. SELECTIVE CLEARING PROCEDURES WERE USED IN THE DEVELOPMENT OF THE RIGHT-OF-WAY, AND GROWTH OF SELECTED SPECIES HAS BEEN SAVED. THE CONTRACTOR SHALL NOT VIOLATE THE OWNER'S INTENT TO SAVE SELECTIVE SPECIES AND IMPOSE THE MINIMUM ENVIRONMENTAL IMPACT ON THE RIGHT OF WAY DURING THE EXECUTION OF THE WORK. THE CONTRACTOR SHALL REVIEW THE ROUTING OF EACH SECTION OF COUNTERPOISE WITH THE OWNER'S REPRESENTATIVE PRIOR TO ITS FIELD SPECIFIED LOCATION. THE CONTRACTOR IS RESPONSIBLE TO THE OWNER FOR DAMAGES TO THE RIGHT-OF-WAY IN OTHER THAN THE FIELD SPECIFIED LOCATIONS.

2. ANY BRUSH ALONG THE FIELD SPECIFIED COUNTERPOISE ROUTES WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE INSTALLATION WORK WILL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL, NEAT PILES IN PLACE WHERE CUT.

3. IN LOCATIONS WHERE EXCAVATION FOR THE INSTALLATION OF COUNTERPOISE BRINGS TO THE SURFACE ANY SMALL BOULDERS, THEY WILL BE BACKFILLED BELOW GRADE OR DIPERSED ON THE RIGHT-OF-WAY AS THE OWNER'S REPRESENTATIVE MAY DIRECT. INSTALLATION OF THE COUNTERPOISE SHALL NOT RESULT IN A PATH OF SMALL BOULDERS ON THE FINISHED SURFACE.

4. THE OWNER ANTICIPATES THAT SEASONAL CONDITIONS MAY NOT ALLOW PERMANENT REHABILITATION OF WORK SITES AND THE RIGHT-OF-WAY UPON COMPLETION OF THE INSTALLATION OF THE COUNTERPOISE. WHERE TEMPORARY REHABILITATION HAS BEEN COMPLETED IN ADVERSE SEASON, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:

   A. WATERBARS WILL BE CONSTRUCTED ON ACCESS ROADS AND TRENCH LINES TO SHUNT WATER OFF THIS LINE OF DISTURBED SURFACES AND CONTROL EROSION ALONG THE DISTURBED SURFACE.

   B. ALL DISTURBED SURFACES OF FOUNDATION SITES OR ALONG TRENCH LINES OR ACCESS ROADS WILL BE GRADED AND COVERED WITH HAY MULCH. SUCH DISTURBED SURFACES ON SLOPES GREATER THAN ONE (VERTICAL) ON FOUR (HORIZONTAL) SHALL BE COVERED WITH WOOD CHIPS.

5. AS DRYING CONDITIONS PERMIT IN THE SPRING, FOLLOWING COMPLETION OF THE INSTALLATION OF COUNTERPOISE, PERMANENT REHABILITATION OF ALL DISTURBED OR ERODED SURFACES SHALL BE ACCOMPLISHED AS FOLLOWS:

   A. LAWNS, GOLF COURSES, CEMETARIES AND OTHER SIMILAR OCCUPANCIES SHALL BE LOAMED, GRADED, FERTILIZED, SEEDED AND WHERE APPROPRIATE, MULCHED, TO ESTABLISH A REHABILITATION CONSISTANT WITH THE USE ESTABLISHED BY THE OCCUPANT.

   B. GARDENS, OTHER CULTIVATED AREAS AND PASTURES, SHALL BE GRADED AND TOPSOILED TO RESTORE THE DEPTH OF FERTILE SOIL COMMON TO THE ADJACENT GROUND. WHERE APPROPRIATE, SEEDING SHALL BE DONE IN ACCORDANCE WITH STEP C BELOW.

   C. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS ALONG THE NEW COUNTERPOISE ROUTES. SEED SHALL BE SPREAD AT THE RATE OF 100 LBS. PER ACRE AND SHALL BE AS FOLLOWS OR APPROVED EQUAL:

	% BY WEIGHT	% BY GERMINATION	% BY PURITY
CREEPING RED FESCUE	30	85	98
DOMESTIC RYE	20	90	98
KENTUCKY TALL FESCUE	50	--	--
	100		

   D. ALL OTHER DISTURBED AREAS INCLUDING REMAINING FOUNDATION SITES, ACCESS ROADS, AND REPAIR OF EROSION OF SITUATION SHALL BE SEEDED WITH MIXED SPECIFICATION ABOVE. IN REMOTE AREAS, A CONSERVATION MIX, AS USED BY THE CONNECTICUT STATE PARKS AND FOREST COMMISION MAY BE SUBSTITUTED. ALL AREAS WHICH EXPERIENCED EROSION DAMAGE AND ALL SLOPES OVER ONE (VERTICAL) AND FOUR (HORIZONTAL) WHERE TEMPORARY REHABILITAION WORK HAS BEEN DONE SHALL BE REMULCHED.

6. IT IS IMPERATIVE THAT PERMANENT REHABILITATION BE ACCOMPLISHED IN GOOD TIME, WHICH WILL ALLOW THE OCCUPANT FULL AND UNDISTURBED USE OF THE SITE IN THE SUCCEEDING SEASON, AND TO PREVENT UNNECESSARY AND UNREASONABLE SPREADING OF CONTINUATION OF DISTURBED SURFACES.

7. ANY BRUSH ALONG THE ACCESS ROADS WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE WORK CONDUCTED, SHALL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL NEAT PILES IN PLACE WHERE CUT.

FOUNDATION CONSTRUCTION NOTES

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING ADEQUATE BEARING CAPACITY AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.

2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557-70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167-66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.

3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.

4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.

5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.

6. FOUNDATION WATERPROOFING AND DAMPPROOFING SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD).

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B. U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.

4. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

19. FABRICATE BEAMS WITH MILL CAMBER UP.

20. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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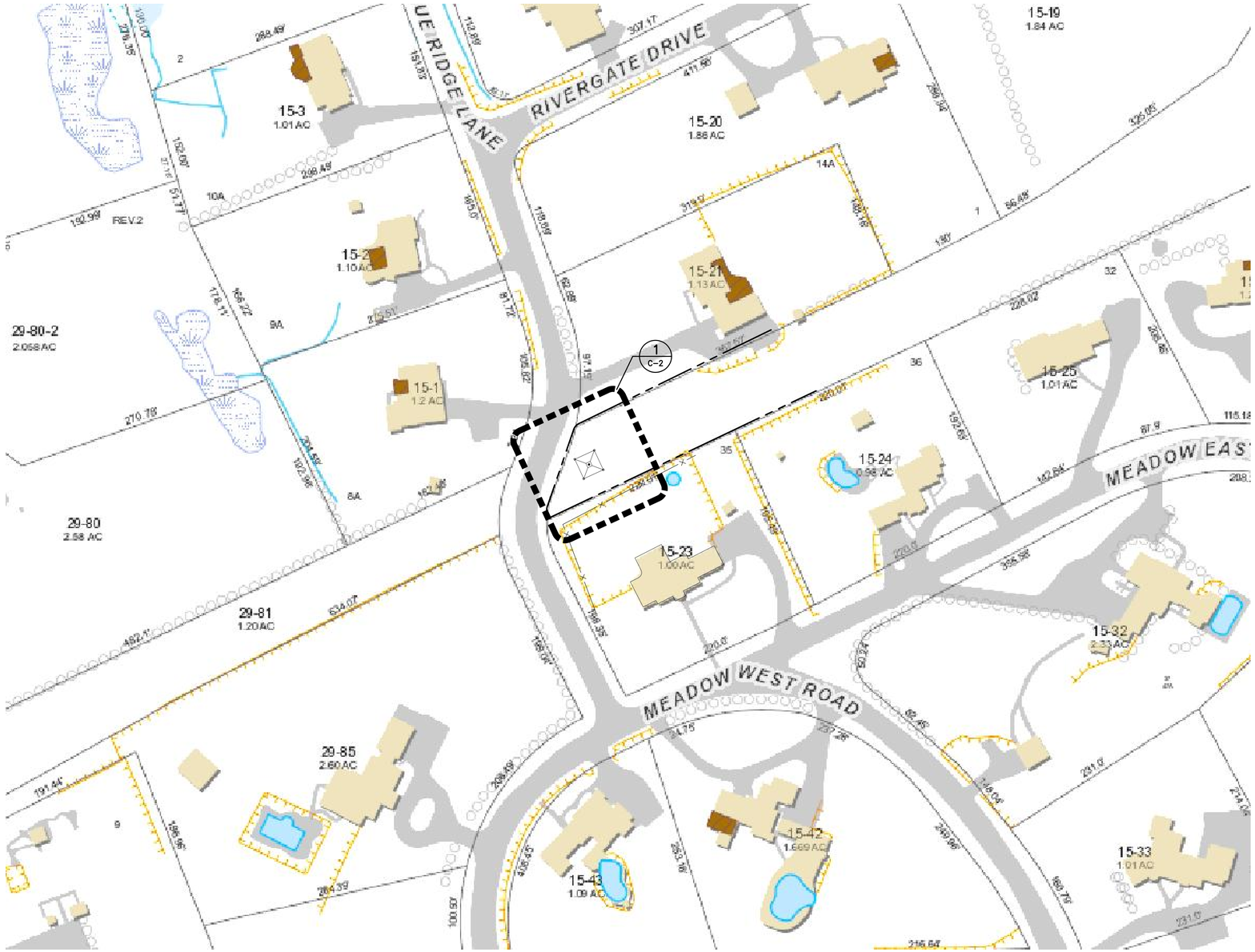
CT1847-WILTON
11 RIVERGATE DRIVE
WILTON, CT 06897

DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

STRUCTURAL NOTES, SPECIFICATIONS, AND DETAILS

N-2

Sheet No. 3 of 20



1 / C-1 **SITE LOCATION PLAN**
SCALE: 1" = 60'

APPROX. NORTH

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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SITE LOCATION PLAN

C-1

Sheet No. 4 of 20

SURVEY NOTES

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THRU 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1996. THE TOPOGRAPHIC SURVEY PORTION OF THIS PLAN CONFORMS TO A TOPOGRAPHIC ACCURACY OF CLASS T-2 AND IS INTENDED TO BE USED TO DEPICT A PROPOSED TELECOMMUNICATION SITE.

THE PROPERTY/BOUNDARY LINES DEPICTED HEREON ARE COMPILED FROM OTHER MAPS, DEEDS AND LIMITED FIELD SURVEY. THESE LINES ARE NOT TO BE CONSTRUED AS A BOUNDARY OPINION AND ARE SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. PROPERTY MAY BE SUBJECT TO ENCUMBRANCES, EASEMENTS, RIGHTS OF WAY AS A TITLE SEARCH REPORT MAY DISCLOSE. PLANIMETRIC FEATURES SUCH AS ROADWAY AND PARKING AREA ARE COMPILED FROM OTHER MAPS AND LIMITED FIELD SURVEY. NOT ALL IMPROVEMENTS SHOWN.

PORTION OF RIVERGATE DRIVE SHOWN HEREON WAS CONVEYED AS A 50' GENERAL RIGHT OF PASSWAY TO CHESTNUT HILL PROPERTIES, INC. 10/16/47 CONTRACT #8568 PER MAP REFERENCE #1 WHERE RIVERGATE DRIVE WAS SHOWN AS BLUE RIDGE LANE.

COORDINATES REFER TO NAD 83.
ELEVATIONS DATUM IS NGVD 1929

PARCEL OWNER OF RECORD: CONNECTICUT LIGHT & POWER CO.
PO BOX 270
HARTFORD, CT 06141

PARCEL IS IN THE R-2A ZONING DISTRICT.

MAP 29 LOT 81 ON THE WILTON ASSESSOR'S MAP

PARCEL IS NOT IN A FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP, FAIRFIELD COUNTY, CONNECTICUT, ALL JURISDICTIONS, PANEL 392 OF 626, COMMUNITY MAP NUMBER 09001C0392F, EFFECTIVE DATE: JUNE 18, 2010. BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

REFERENCE IS MADE TO THE FOLLOWING MAPS:

1. THE CONNECTICUT LIGHT AND POWER COMPANY BERLIN, CONNECTICUT NORWALK JCT.-DEVON JCT., DRAWING NO. 18583-2, SCALE: 1"=100', DATE: APRIL, 1975, BY: CONNECTICUT LIGHT AND POWER COMPANY.

2. MAP OF PLOT #35 AT CHESTNUT HILL, WILTON, CONN. PREPARED FOR GRACE E. OMOHUNDRO, SCALE: 1"=40', DATE: APRIL 1938, BY: SAMUEL W. HOYT, JR. CO., INC.

3. MAP OF PLOT 14A PREPARED FOR THE CHESTNUT HILL PROPERTIES, INC. CHESTNUT HILL, WILTON, CONN., SCALE: 1"=80', DATE: AUGUST 17, 1950, BY: SAMUEL W. HOYT, JR. CO., INC.

4. MAP PREPARED FOR RIVERGATE PARK, INC., WILTON, CONNECTICUT, SCALE: 1"=80', DATE: AUGUST 17, 1956. BY: HENRY F. HENRICI.

5. MAP OF PROPERTY PREPARED FOR JAMES FIORILLA WILTON, CONN., SCALE: 1"=80', DATE: MARCH 25, 1959, BY: JOHN M. FARNSWORTH.

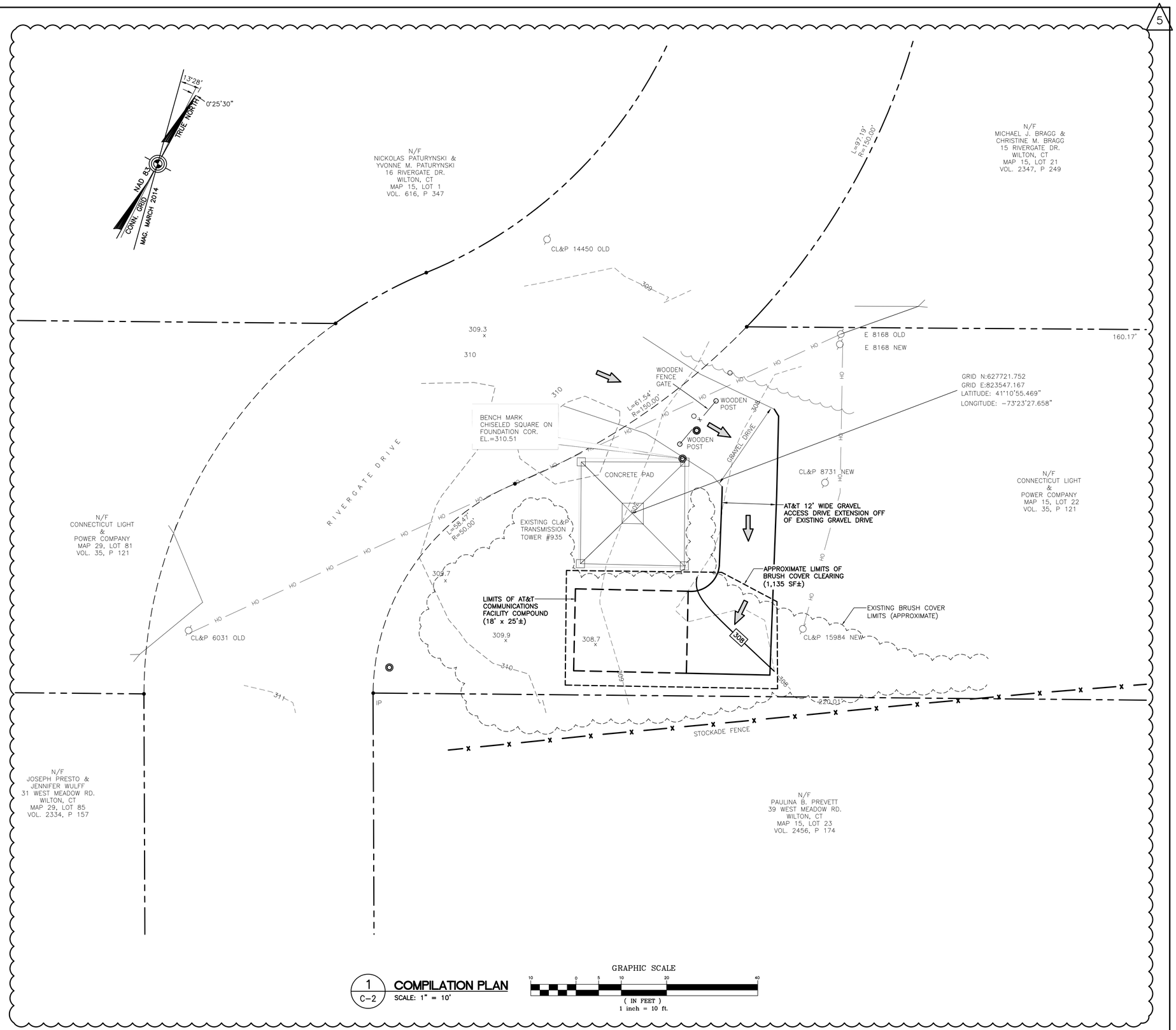
6. MAP OF PLOT 8A PREPARED FOR THE CHESTNUT HILL PROPERTIES, INC. AT CHESTNUT HILL, WILTON, CONN., SCALE: 1"=80', DATE: MAY 1947, BY: SAMUEL W. HOYT, JR. CO., INC.

NOT ALL IMPROVEMENTS SHOWN.

SYMBOLS LEGEND

- IRON PIN FOUND
- UTILITY POLE
- TREELINE
- FENCE LINE
- PROPERTY LINE
- CONTOUR
- OVERHEAD WIRE
- SPOT ELEVATION
- TOPOGRAPHY CONTOUR LINE
- BRUSH COVER LIMITS
- VEHICULAR SITE ACCESS ROUTE
- GRADING LINE

5



1 / C-2 **COMPILATION PLAN**
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	01/27/21	DMD	TJL	CONSTRUCTION DRAWINGS – SITE ACCESS AND CLEARING LIMITS ADDED
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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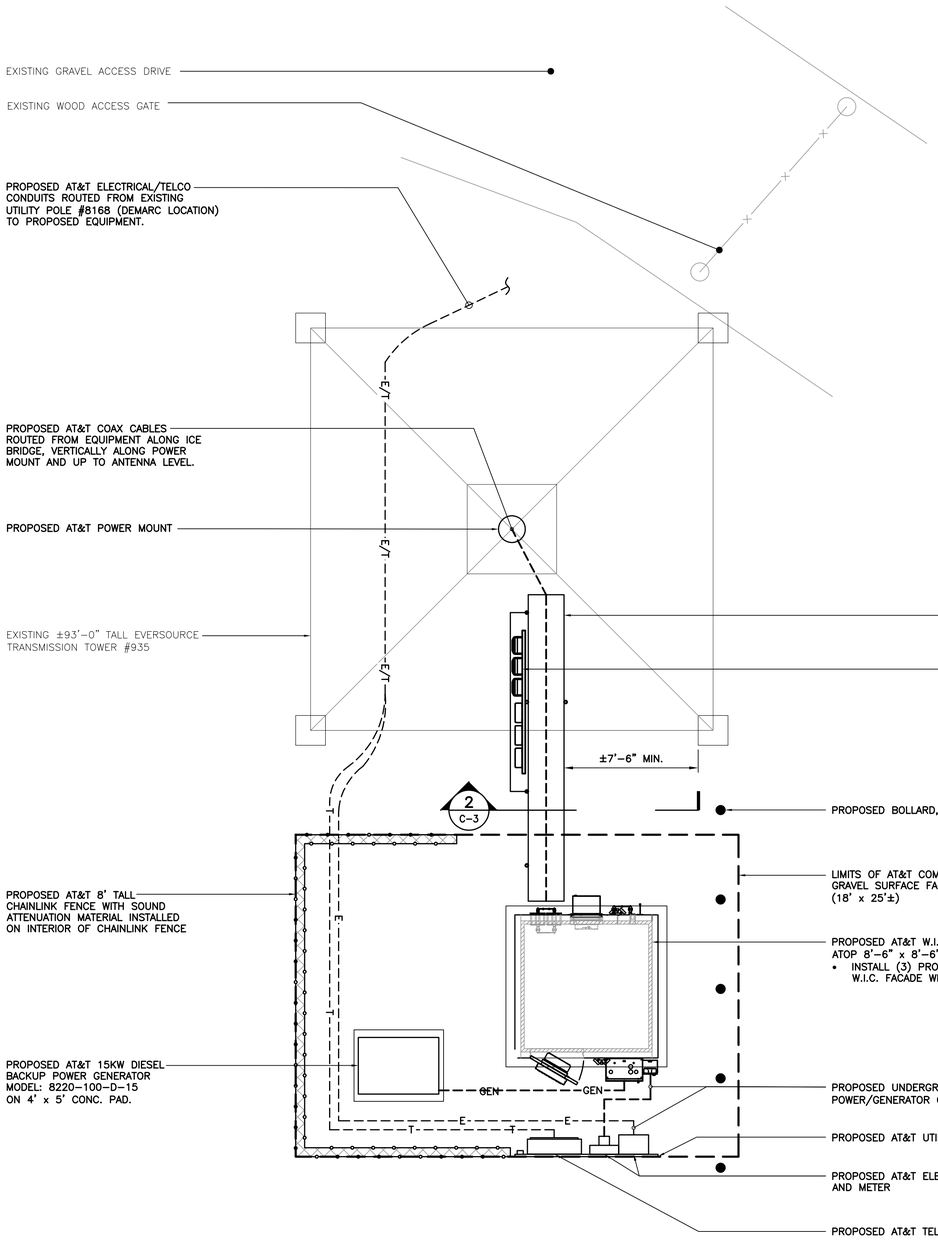
COMPILATION PLAN

C-2

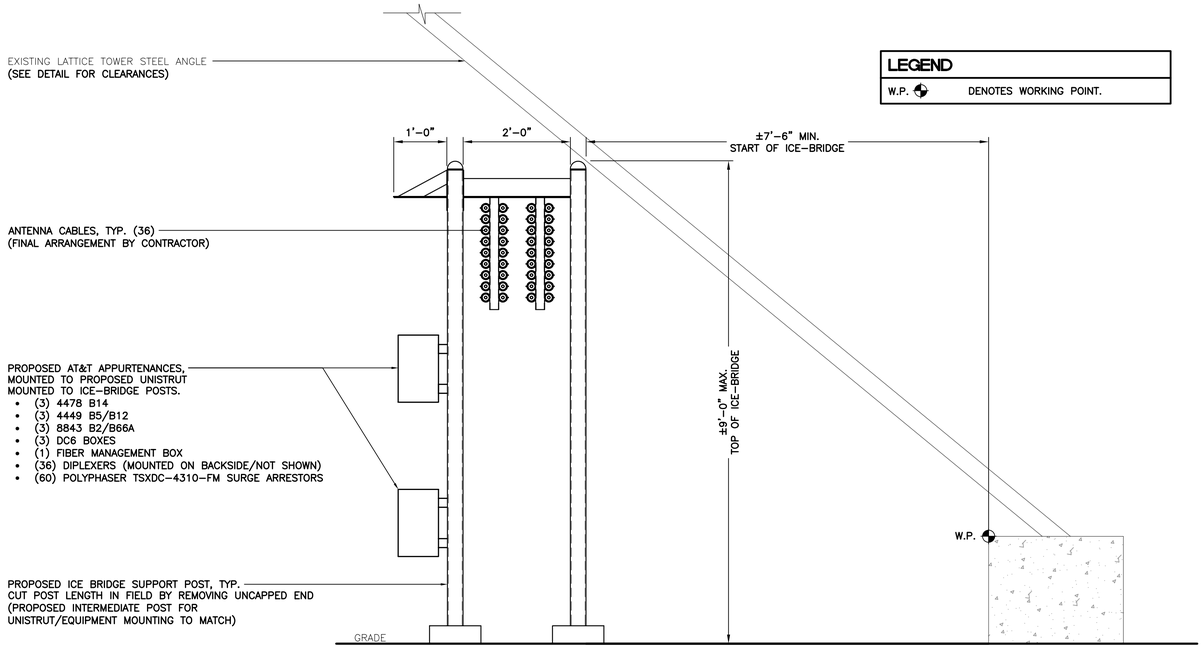
Sheet No. 5 of 20



1 C-3 **PARTIAL SITE PLAN**
SCALE: 1/4" = 1'-0"

TRUE NORTH

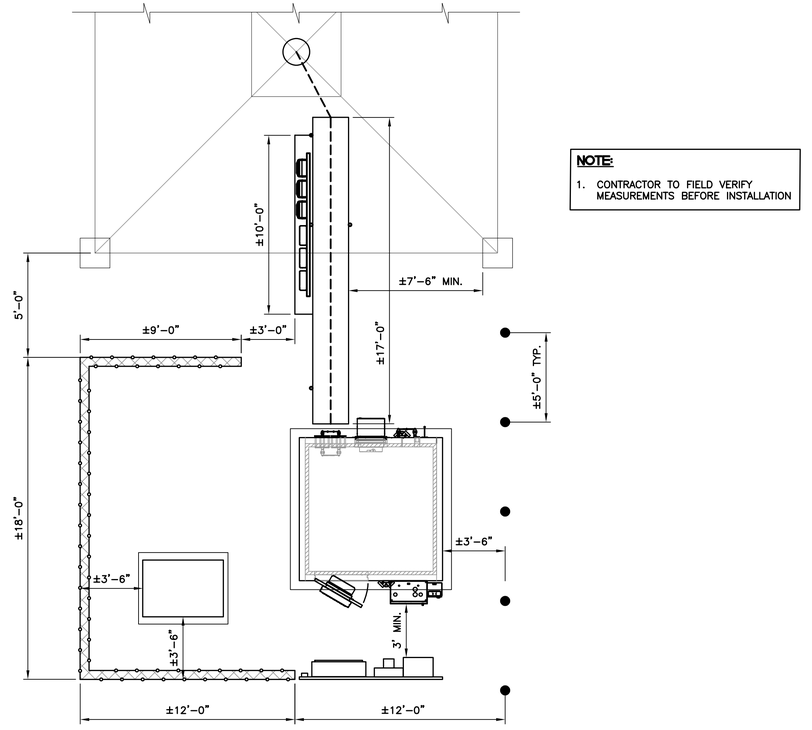
GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.



LEGEND

W.P. DENOTES WORKING POINT.

2 C-3 **ICE-BRIDGE LOCATION DETAIL**
SCALE: 3/4" = 1'-0"



NOTE:

1. CONTRACTOR TO FIELD VERIFY MEASUREMENTS BEFORE INSTALLATION

3 C-3 **COMPOUND LAYOUT PLAN**
SCALE: 1/4" = 1'-0"

TRUE NORTH

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
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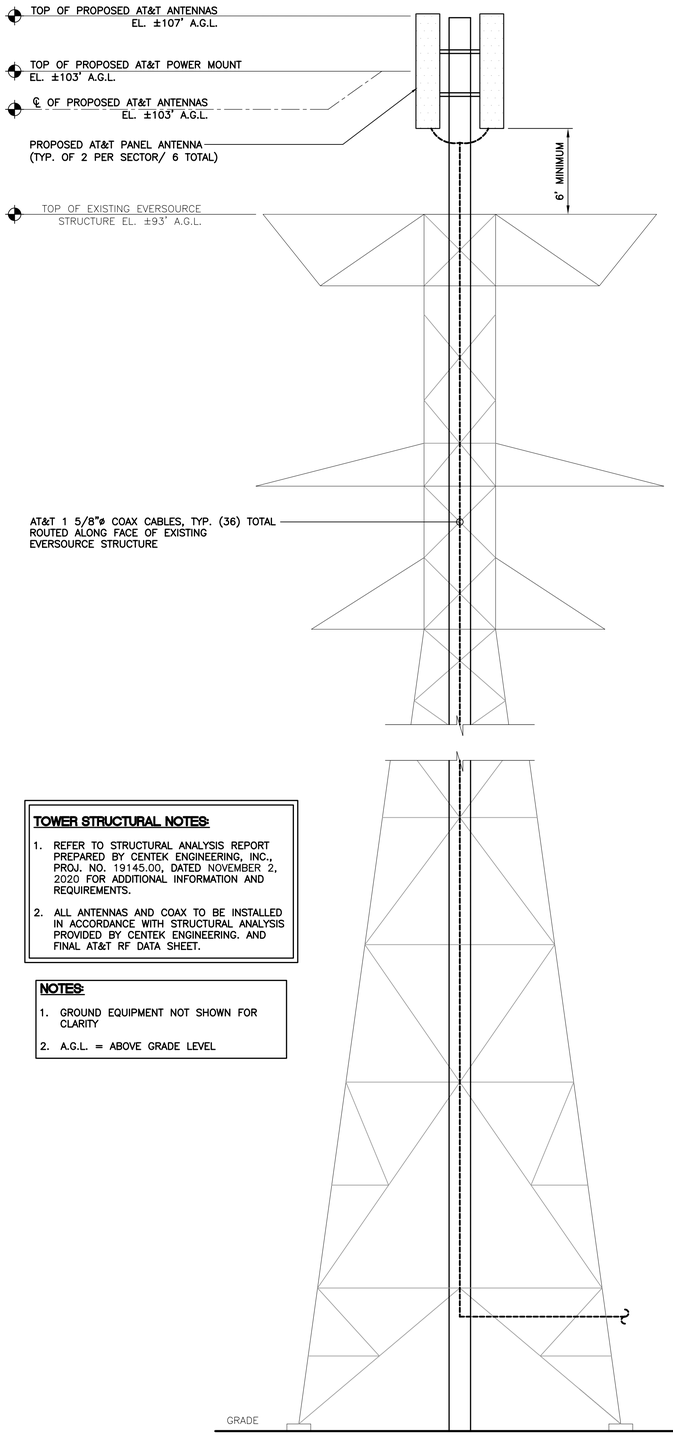
SCALE: AS NOTED
JOB NO. 19145.00

COMPOUND PLAN AND PARTIAL SITE PLAN

C-3

Sheet No. 6 of 20



TOWER STRUCTURAL NOTES:

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING, INC., PROJ. NO. 19145.00, DATED NOVEMBER 2, 2020 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CENTEK ENGINEERING. AND FINAL AT&T RF DATA SHEET.

NOTES:

1. GROUND EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

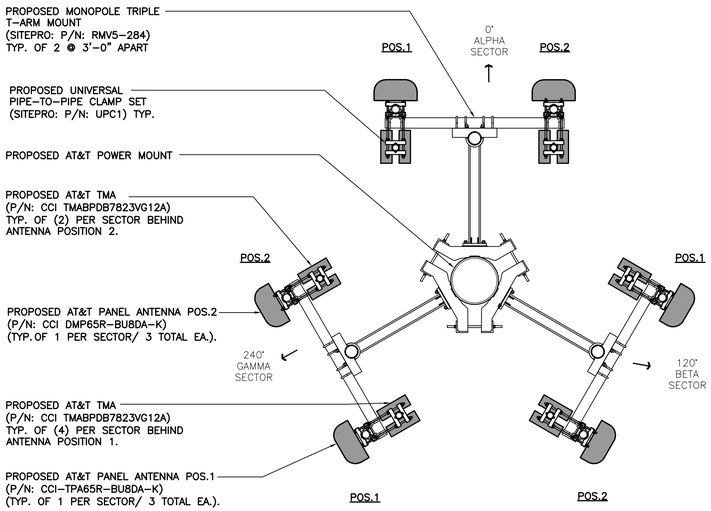
GRAPHIC SCALE

5 0 2.5 5 10 20

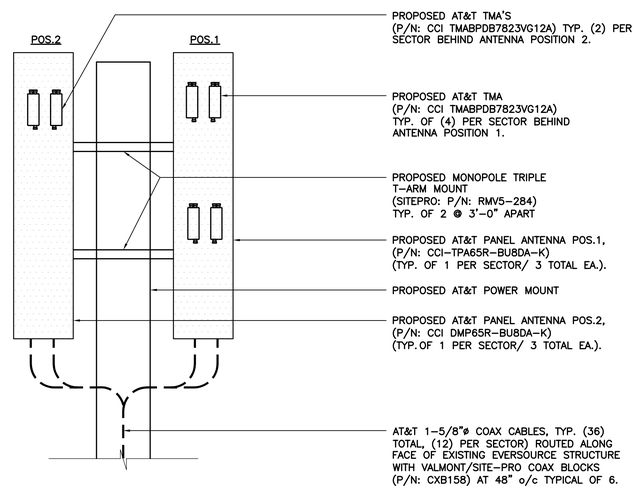
(IN FEET)

1 inch = 5 ft.

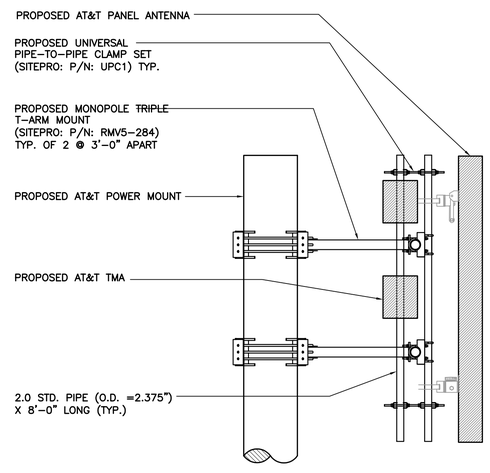
1 / C-4 **TOWER ELEVATION**
SCALE: 1" = 5' - 0"



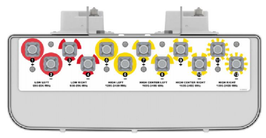
2 / C-4 **ANTENNA CONFIGURATION PLAN**
SCALE: 1/2" = 1' - 0"



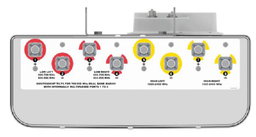
3 / C-4 **ANTENNA CONFIGURATION ELEVATION**
SCALE: 1/2" = 1' - 0"



4 / C-4 **MOUNTING DETAIL**
SCALE: 1/2" = 1' - 0"



CCI-TPA65R-BU8D-K



CCI-DMP65R-BU8D-K

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TPA65R-BU8DA-K	96"H x 21"W x 7.8"D	±87 LBS
MAKE: CCI MODEL: DMP65R-BU8DA-K	96"H x 20.7"W x 7.7"D	±95 LBS
NOTES: 1. INSTALL ANTENNA TO PROPOSED PIPE MAST USING MANUFACTURERS SUPPLIED BRACKETS AND MOUNTING HARDWARE 2. SET MECHANICAL DOWNTILT TO VALUE SPECIFIED IN LATEST RFDS		

5 / C-4 **PROPOSED ANTENNA DETAILS**
SCALE: NOT TO SCALE

TMABPDB7823VG12A

TMA (TOWER MOUNTED AMPLIFIER)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TMABPDB7823VG12A	14.2"H x 11.6"W x 4.2"D	±26 LBS
CONNECTORS: (6) 7-16 DIN FEMALE 1		

6 / C-4 **PROPOSED TMA DETAIL**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – REVISED ADDRESS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER UTILITY WALK
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	03/25/20	TJR	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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SCALE: AS NOTED
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PROPOSED ANTENNA CONFIGURATION AND DETAILS

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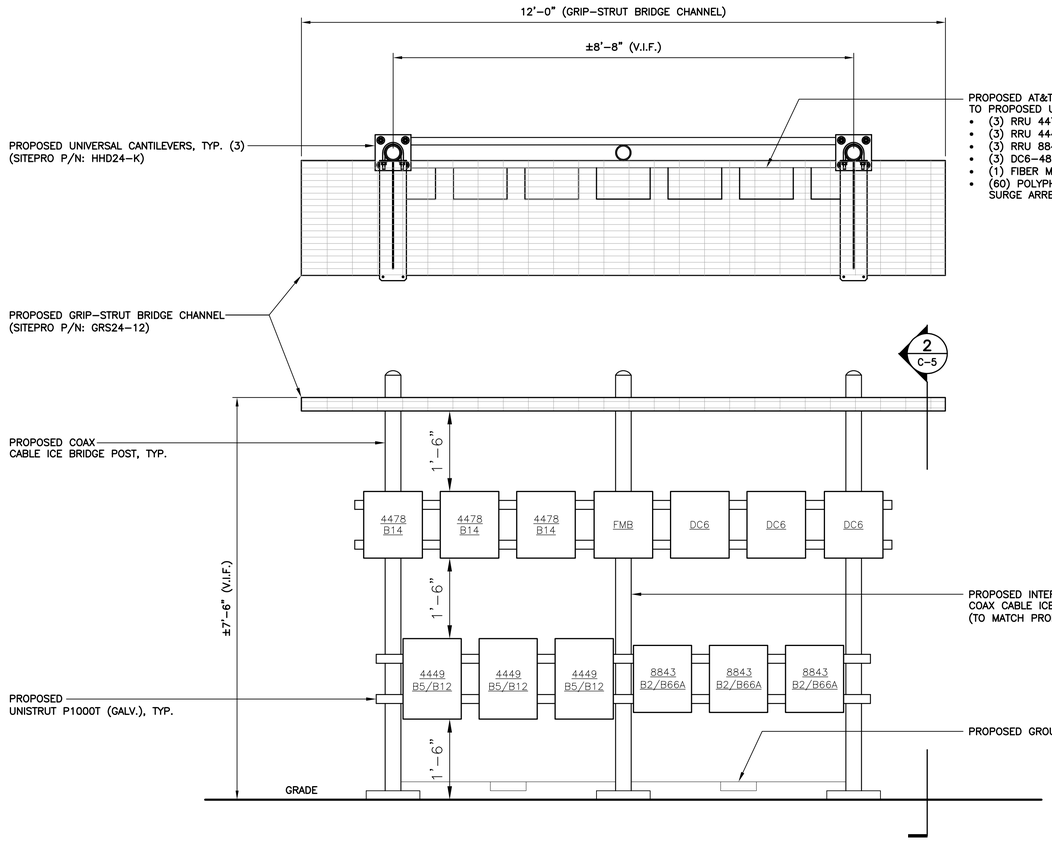
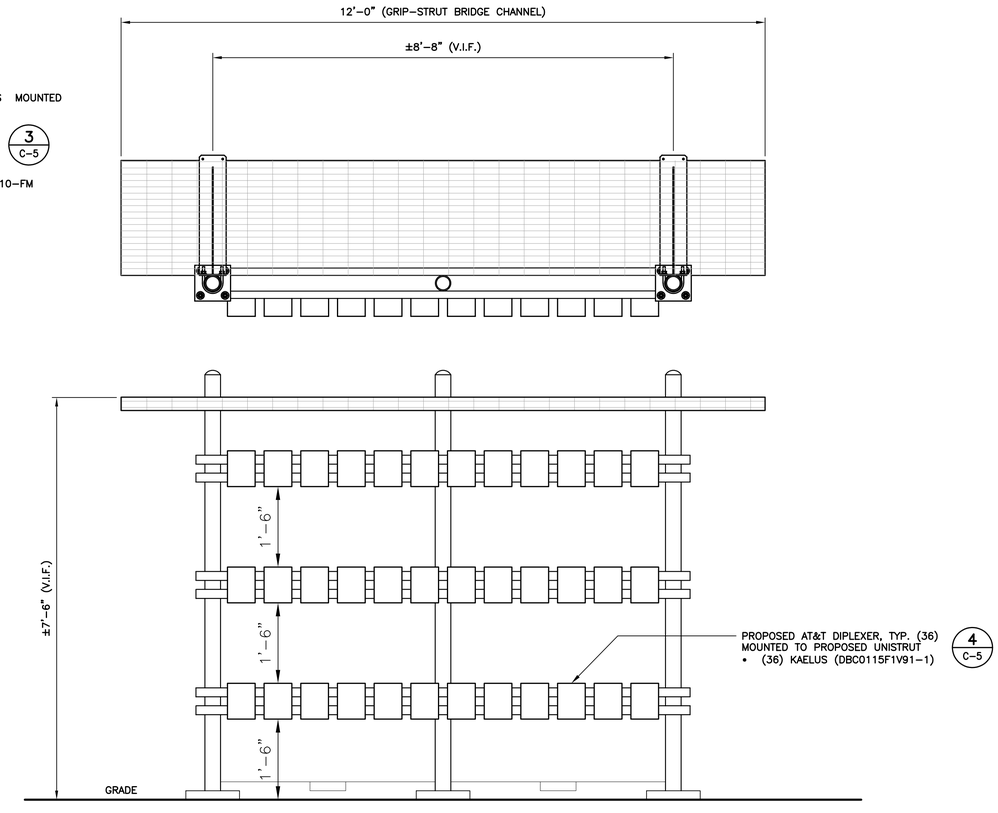
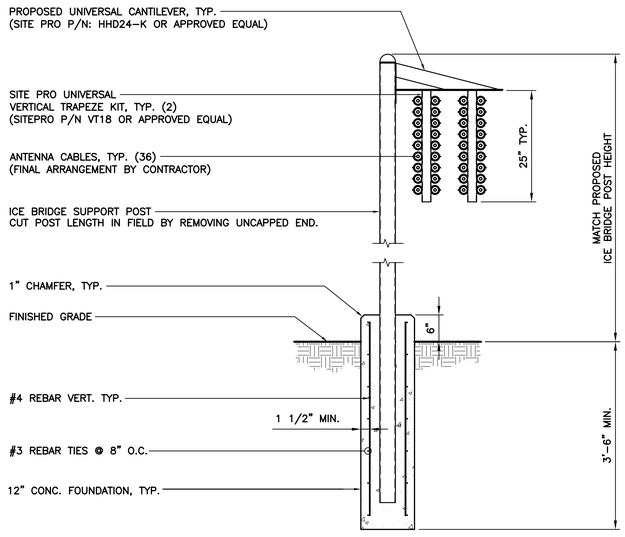


1 C-5 **EQUIPMENT ELEVATION/PLAN (FRONT)**
SCALE: 3/4" = 1'



1A C-5 **EQUIPMENT ELEVATION/PLAN (BACK)**
SCALE: 3/4" = 1'



2 C-5 **TYPICAL COAX CABLE ICE-BRIDGE DETAIL**
SCALE: NOT TO SCALE


RRU 4449 B5/B12


RRU 4478 B14


RRU 8843 B2/B66A

RRU (REMOTE RADIO UNIT)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: 4449 B5/B12	17.9"H x 13.2"W x 9.4"D	±71 LBS.
MAKE: ERICSSON MODEL: 4478 B14	14.9"H x 13.1"W x 7.3"D	±60 LBS.
MAKE: ERICSSON MODEL: 8843 B2/B66A	14.9"H x 13.2"W x 10.9"D	±72 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

3 C-5 **PROPOSED RRU DETAILS**
SCALE: NOT TO SCALE

DBC0115F1V91-1

DIPLEXER (SINGLE UNIT)		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KAELUS MODEL: DBC0115F1V91-1	4.3"H x 5.6"W x 2.6"D	±3.5 LBS
CONNECTORS: (3) LONG NECK 4.3-10 FEMALE		

4 C-5 **PROPOSED DIPLEXER DETAIL**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
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DETAILS

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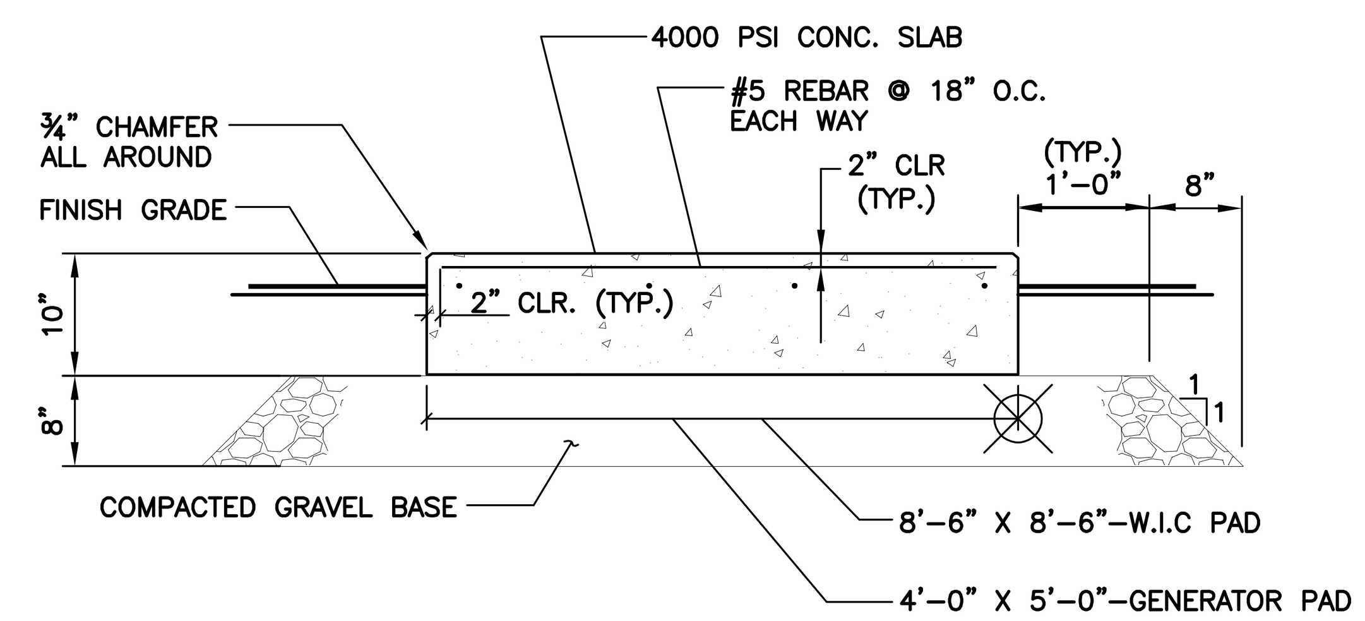
15KW DIESEL BACKUP POWER GENERATOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: POLAR POWER MODEL: 8220-100-D-15	54.0"L x 34."W x 38"H	653 LBS.

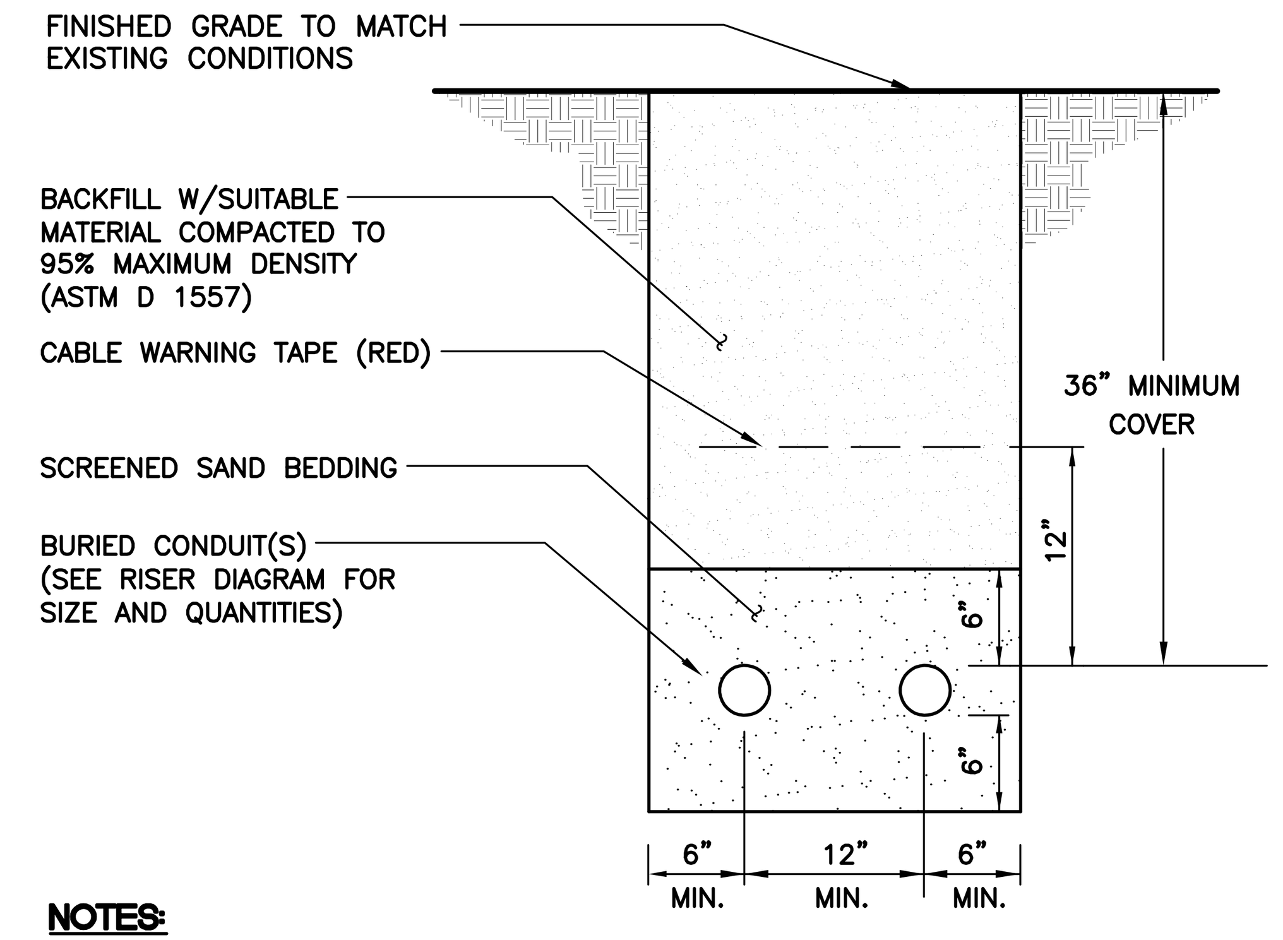
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

1 C-6 BACK-UP GENERATOR DETAIL
SCALE: NOT TO SCALE

NOTE:
REFER TO GENERATOR AND W.I.C. MANUFACTURER FOR RECOMMENDED HOLD-DOWN HARDWARE.



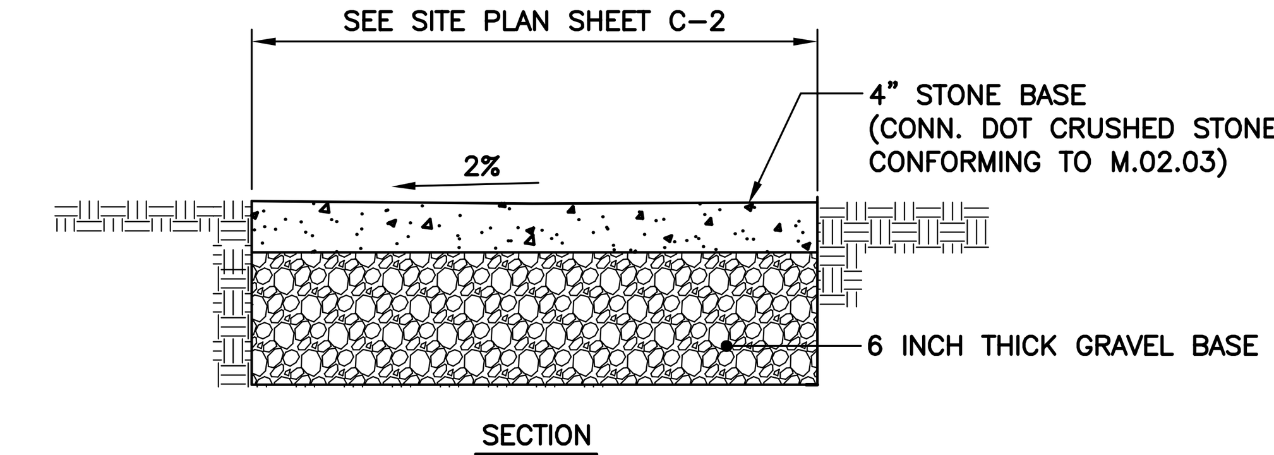
2 C-6 TYPICAL CONCRETE PAD DETAIL
SCALE: NOT TO SCALE



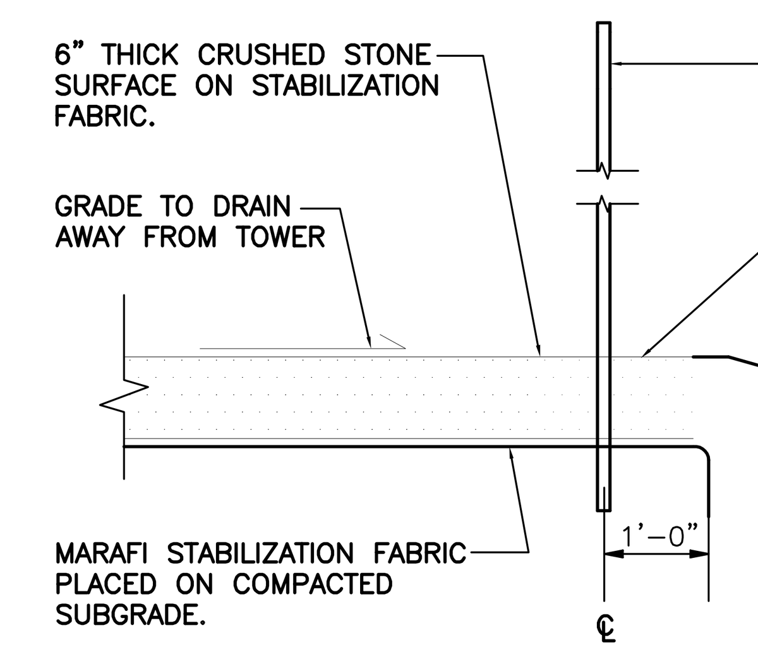
NOTES:
1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
3. WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN UTILITY SOURCE AND SERVICE EQUIPMENT, COORDINATE WITH UTILITY COMPANY FOR BURIAL DEPTH REQUIREMENTS.
4. COORDINATE WITH ELECTRICAL ENGINEER WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN SERVICE EQUIPMENT AND EQUIPMENT SHELTER.

3 C-6 TYPICAL ELECTRICAL TRENCH DETAIL
SCALE: NOT TO SCALE

5

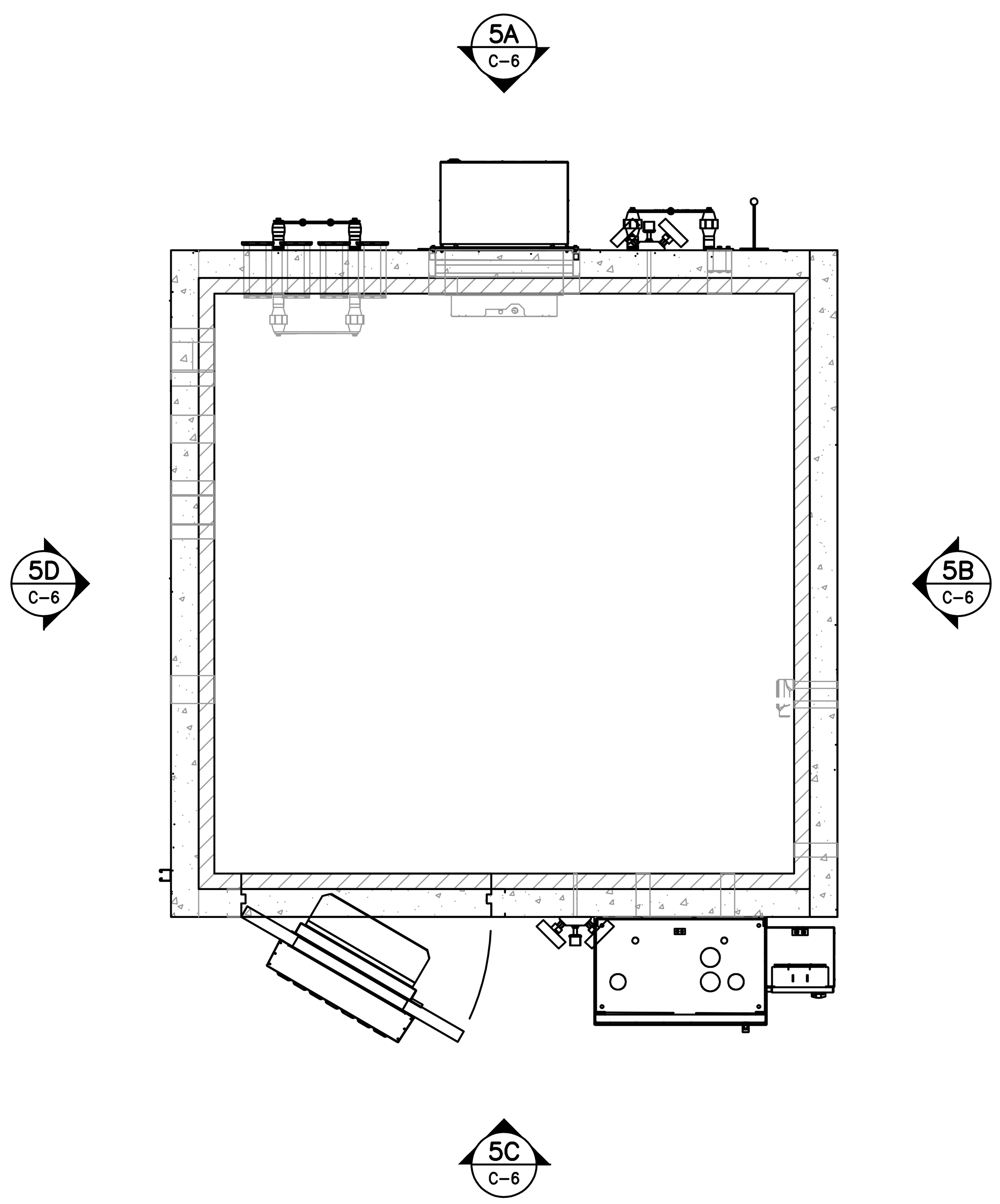


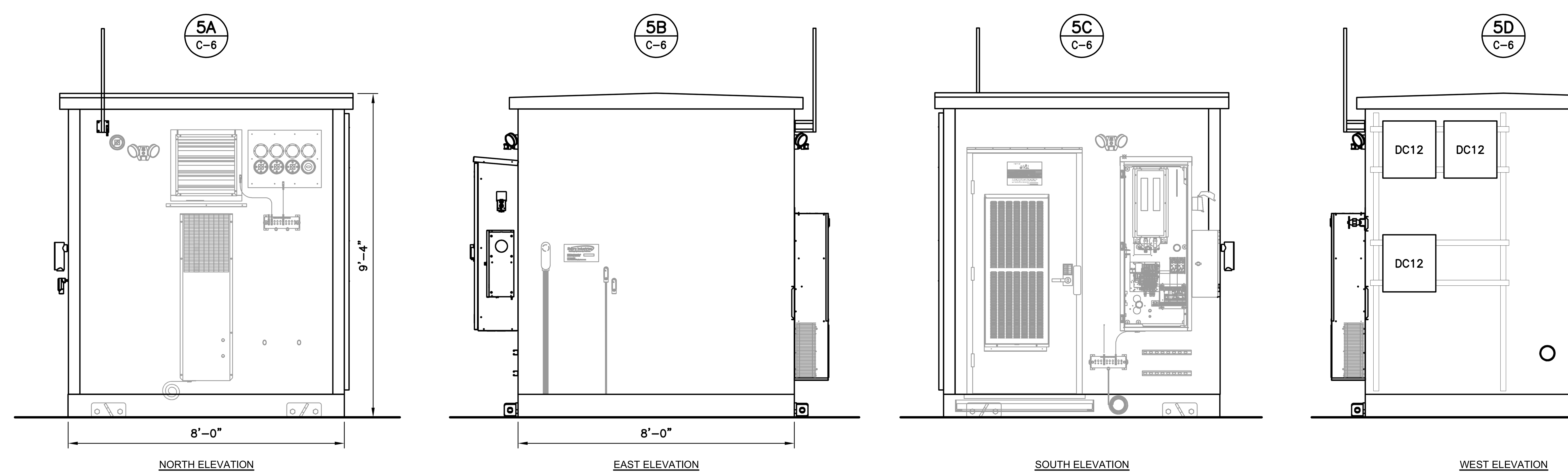
4A C-6 GRAVEL SURFACE PARKING AREA AND ACCESS DRIVE
NOT TO SCALE



GRAVEL COMPOUND LIMIT NOTE:
GRAVEL COMPOUND SURFACE SHALL EXTEND TO LIMITS OF COMPOUND AREA AS SHOWN ON PLAN 1/C-3.

4 C-6 COMPOUND SURFACING DETAIL
SCALE: NOT TO SCALE





W.I.C EQUIPMENT SHELTER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SABRE INDUSTRIES MODEL: SATN73	8'-0"L x 8'-0"W	23,500 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. INSTALL (3) PROPOSED DC-12 ON W.I.C. FACADE WITH UNISTRUT, TYP.

5 C-6 PRE-FABRICATED WALK IN CABINET (W.I.C) DETAIL
SCALE: NOT TO SCALE

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	01/27/21	DMD	TJL	CONSTRUCTION DRAWINGS – GRAVEL ACCESS DRIVE DETAIL ADDED
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAILS
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DETAILS

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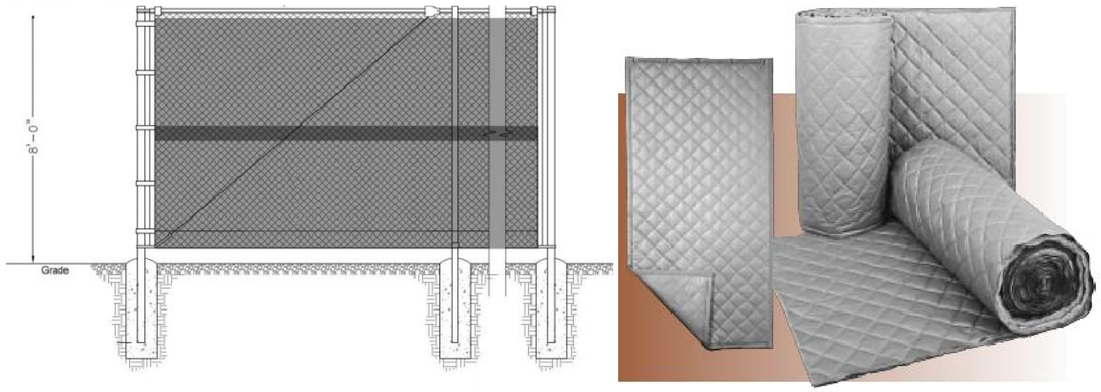
NOISE BARRIER/SOUND ABSORBER COMPOSITE SUPPORTED BY FENCE

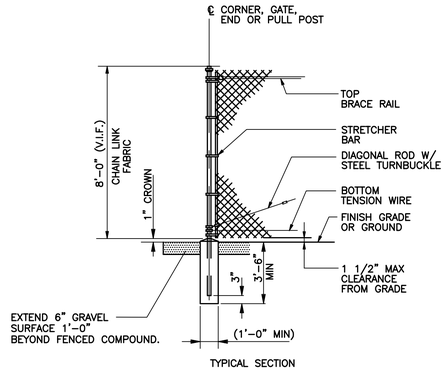
RECOMMEND SOUND SEAL BBC–EXT–R WITH BOUND EDGES 1LB/SQFT BARRIER WITH 2" PACKAGE TOW ROWS, OVERLAPPED BY 6".

NOTE:
THE MATERIAL ADDS APPROXINATELY 1.5 LBS/SQFT IN ADDITION TO WIND LOAD. ATTACH PER MANUFACTURER RECOMMENDATIONS.



1 C–7 TYPICAL SOUND ATTUNEMENT COMPOSITE DETAIL

SCALE: NOT TO SCALE

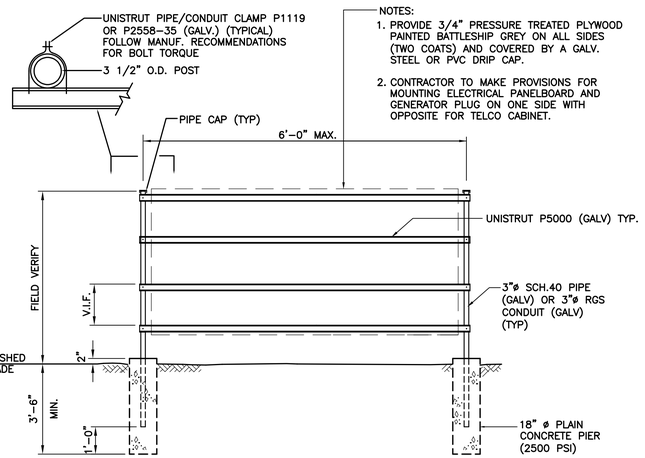


2 C–7 WOVEN WIRE FENCE DETAIL

SCALE: NOT TO SCALE

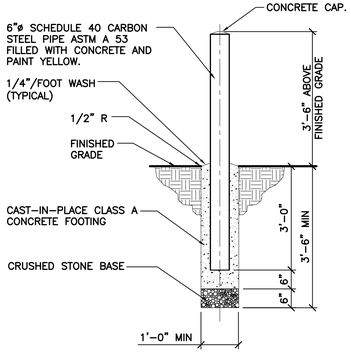
WOVEN WIRE FENCE NOTES

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: DROP DOWN LOCKABLE FORK LATCH AND LOCK, KEYED ALIKE FOR ALL SITES IN A GIVEN MTA.
10. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED WITH IF REQUIRED.
11. HEIGHT = 6' VERTICAL + 1' BARBED WIRE VERTICAL DIMENSION.



3 C–7 UTILITY SUPPORT FRAME CONSTRUCTION DETAIL (TYP)

SCALE: NOT TO SCALE



4 C–7 BOLLARD DETAIL

SCALE: NOT TO SCALE

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DETAILS

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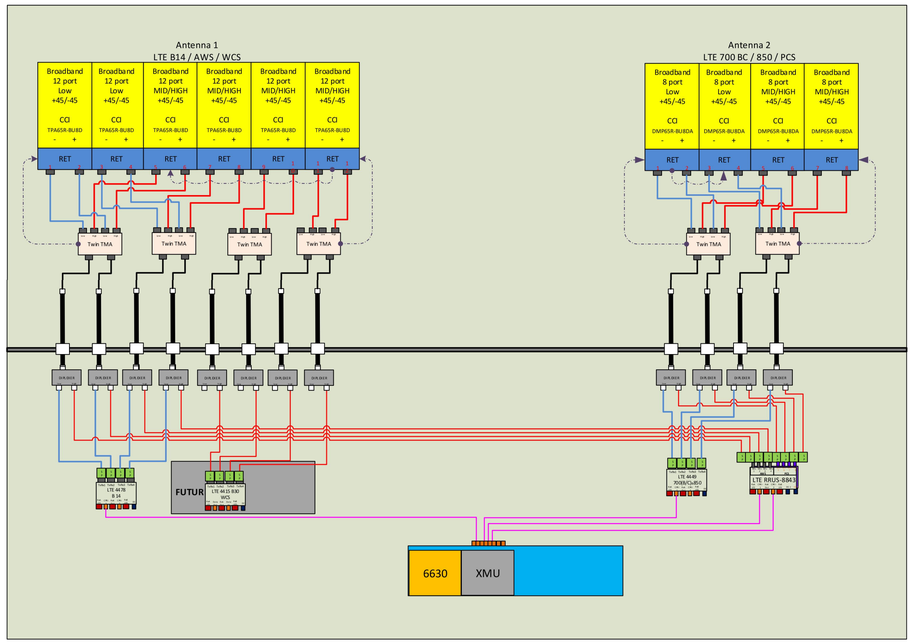
Diagram - Sector A | Diagram File Name - S1847 2ANT 5C.vsd
Atoll Site Name - CT1847 | Location Name - WILTON CT | Market - CONNECTICUT | Market Cluster - NEW ENGLAND
Comments:



1 / C-8 **PLUMBING DIAGRAM (ALPHA/BETA/GAMMA)**
SCALE: NOT TO SCALE

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) TMA (QTY)	(E/P) DIPLEXER (QTY)	(E/P) RRU (QTY)	FEEDER	(E/P) RAYCAP (QTY)
A1	PROPOSED	700/850/AWS	CCI-TPA65R-BU8DA-K	96 X 21 X 7.8	±103'	0°	(P) CCI-TMABPDB7823VG12A (4)	(P) KAELUS DBC0115F1V91-1 (8)	(P) 4478 B14 (1)	(8) 1-5/8" COAX ±140'	(P) DC6-48-60-18 (3) MOUNTED TO EQUIP. FRAME
A2	PROPOSED	850/700/1900	CCI-DMP65R-BU8DA-K	96 X 20 X 7.7	±103'	0°	(P) CCI-TMABPDB7823VG12A (2)	(P) KAELUS DBC0115F1V91-1 (4)	(P) 4449 B5/B12 (1), (P) 8843 B2/B66A (1)	(4) 1-5/8" COAX ±140'	
B1	PROPOSED	700/850/AWS	CCI-TPA65R-BU8DA-K	96 X 21 X 7.8	±103'	120°	(P) CCI-TMABPDB7823VG12A (4)	(P) KAELUS DBC0115F1V91-1 (8)	(P) 4478 B14 (1)	(8) 1-5/8" COAX ±140'	
B2	PROPOSED	850/700/1900	CCI-DMP65R-BU8DA-K	96 X 20 X 7.7	±103'	120°	(P) CCI-TMABPDB7823VG12A (2)	(P) KAELUS DBC0115F1V91-1 (4)	(P) 4449 B5/B12 (1), (P) 8843 B2/B66A (1)	(4) 1-5/8" COAX ±140'	
C1	PROPOSED	700/850/AWS	CCI-TPA65R-BU8DA-K	96 X 21 X 7.8	±103'	240°	(P) CCI-TMABPDB7823VG12A (4)	(P) KAELUS DBC0115F1V91-1 (8)	(P) 4478 B14 (1)	(8) 1-5/8" COAX ±140'	
C2	PROPOSED	850/700/1900	CCI-DMP65R-BU8DA-K	96 X 20 X 7.7	±103'	240°	(P) CCI-TMABPDB7823VG12A (2)	(P) KAELUS DBC0115F1V91-1 (4)	(P) 4449 B5/B12 (1), (P) 8843 B2/B66A (1)	(4) 1-5/8" COAX ±140'	

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PLUMBING DIAGRAM AND ANTENNA SCHEDULE

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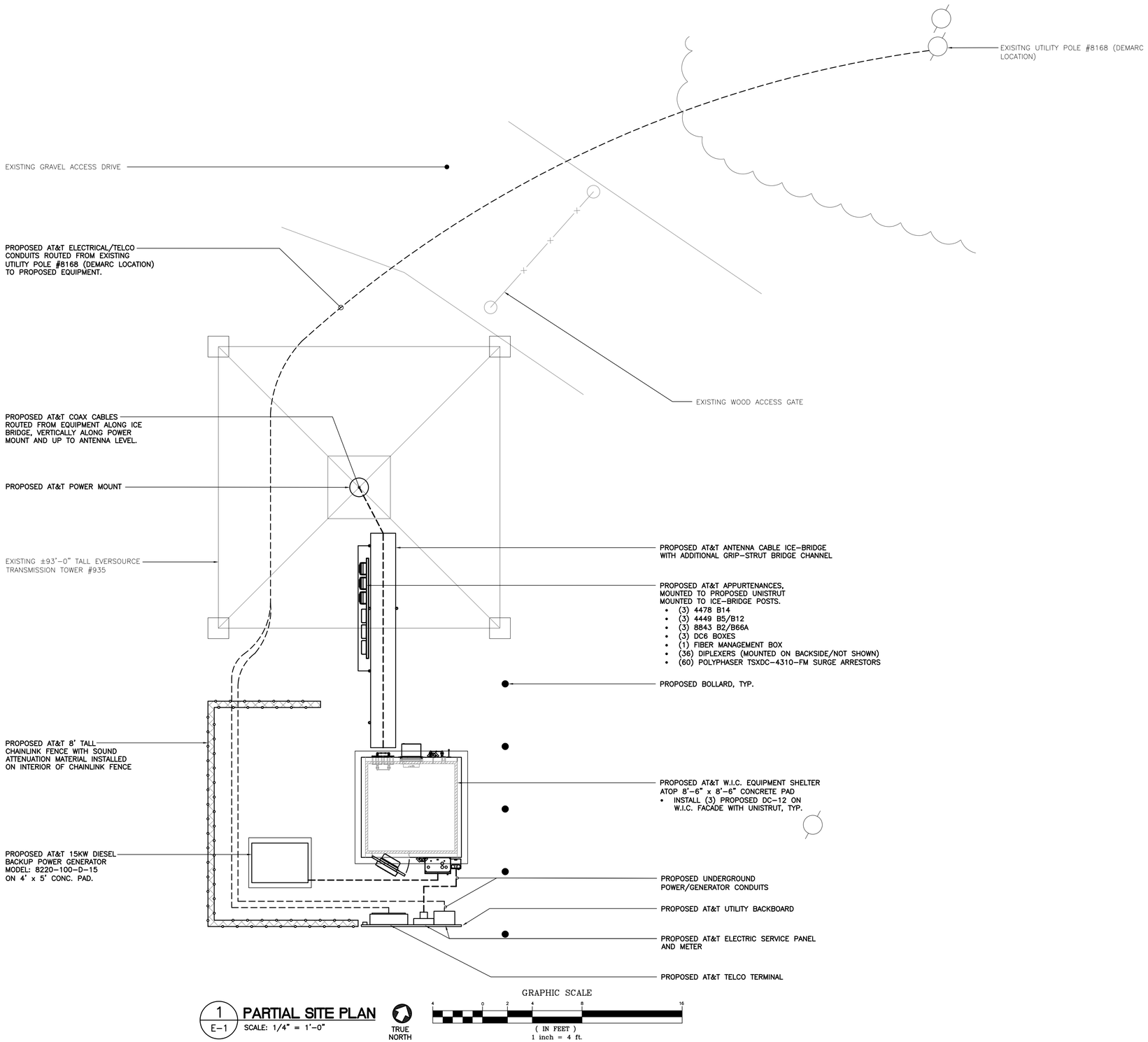

1 / E-1 **PARTIAL SITE PLAN**
SCALE: 1/4" = 1'-0"

TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
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PARTIAL SITE PLAN

E-1

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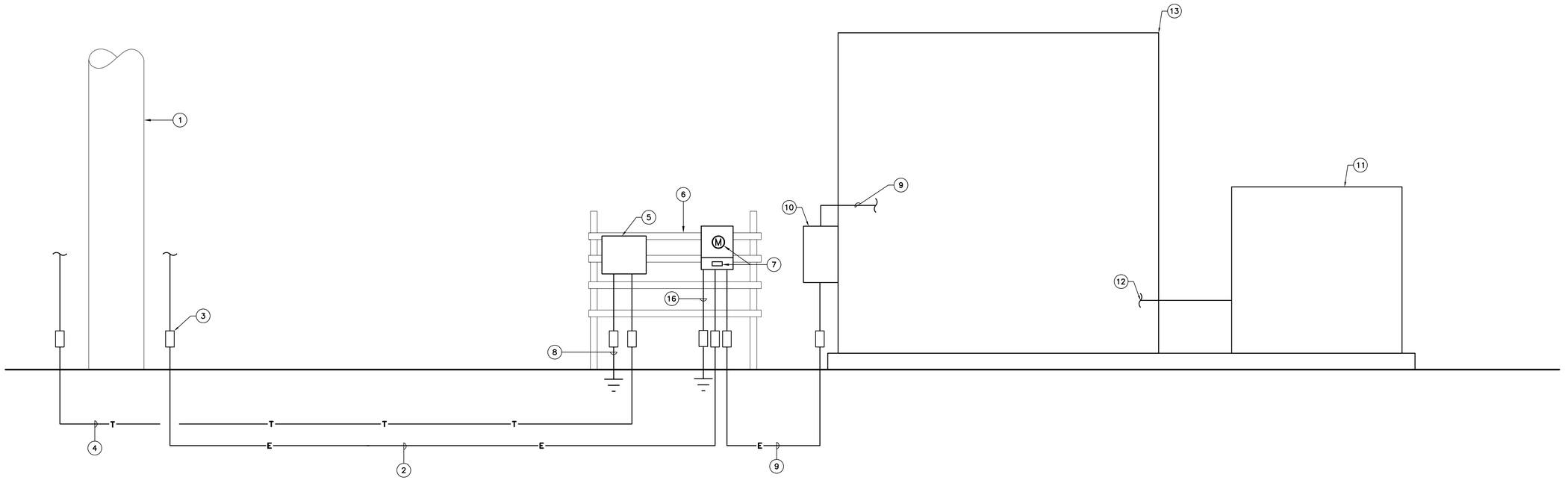
RISER NOTES

1. EXISTING UTILITY POLE TO BE USED.
2. 3" CONDUIT FOR UTILITY ELECTRIC CONDUCTORS. CONDUCTORS PROVIDED BY UTILITY COMPANY FROM UTILITY POLE TO METERING EQUIPMENT. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER UTILITY COMPANY SPECIFICATIONS.
3. EXPANSION COUPLING, TYPICAL.
4. 4" CONDUITS WITH PULL ROPES FOR TELEPHONE COMPANY CONDUCTORS. CONDUCTORS PROVIDED BY TELEPHONE COMPANY FROM UTILITY POLE TO UTILITY BOARD. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER TELEPHONE COMPANY SPECIFICATIONS.
5. 3'x4'x1' NEMA-3R TELEPHONE ENCLOSURE INSTALLED ON UTILITY BACKBOARD.
6. NEW UTILITY FRAME.
7. 200A, 120/240V RATED, SINGLE PHASE, 3 WIRE, SINGLE GANG METER ENCLOSURE WITH 200A/2P CIRCUIT BREAKER.
8. #2 AWG GROUNDING CONDUCTOR IN 3/4" PVC CONDUIT, UNLESS OTHERWISE SPECIFIED BY TELEPHONE COMPANY. BOND TO GROUNDING TRIAD.
9. (3) #3/0 AWG, (1) #6 AWG GROUND, 2" CONDUIT.
10. POWER TRANSFER LOAD CENTER.
11. 15KW DC DIESEL DRIVEN BACK-UP GENERATOR.
12. DC CONDUIT AND CONDUCTORS. CONNECT PER MANUFACTURERS SPECIFICATIONS.
13. NEW WALK-IN-CABINET



1 / E-2 **ELECTRICAL RISER DIAGRAM**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAIL
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – REVISED PER ADDRESS
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ELECTRICAL RISER DIAGRAM

E-2

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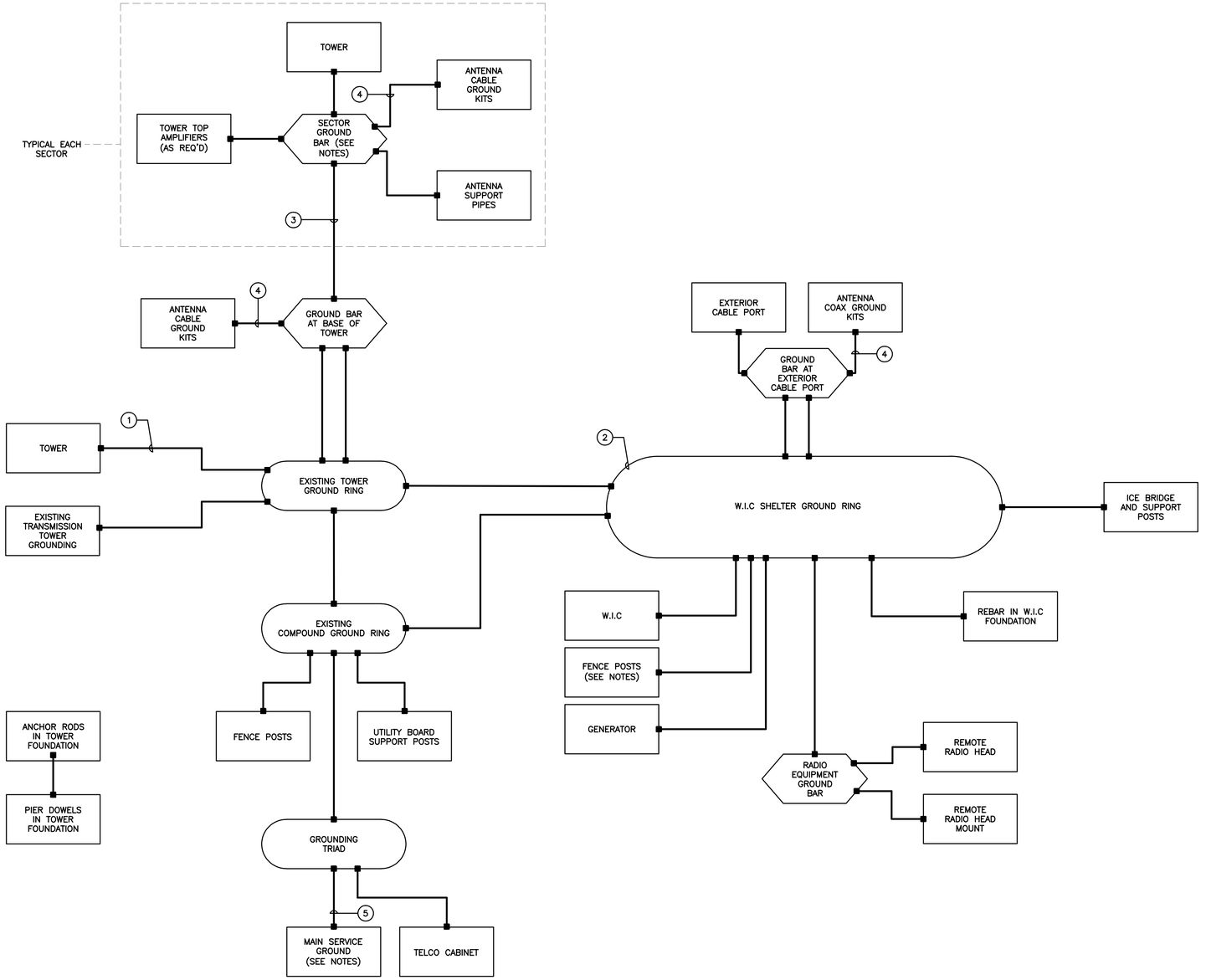

1 / E-3 **ELECTRICAL SCHEMATIC DIAGRAM**

SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

1. FOUR #2/0 GREEN INSULATED
2. GROUND RING, #2 AWG BCW
3. #2/0 GREEN INSULATED
4. #6 AWG
5. REFER TO RISER DIAGRAM FOR SPECIFICATIONS

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. BOND ICE BRIDGE SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
4. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
5. BOND ALL EQUIPMENT CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
6. ALL BONDS TO TOWER SHALL BE MADE IN STRICT ACCORDANCE WITH SPECIFICATIONS OF TOWER MANUFACTURER OR STRUCTURAL ENGINEER.
7. REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
8. REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
9. COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
10. ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
11. ALL FENCE POSTS WITHIN 6' OF EQUIPMENT SHELTER SHALL BE BONDED TO GROUND RING.
12. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
13. BOND GENERATOR TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS
14. COORDINATE WITH EVERSOURCE TRANSMISSION DEPARTMENT REPRESENTATIVE TO DETERMINE ADDITIONAL GROUNDING REQUIREMENTS. PROVIDE ALL REQUIRED ELEMENTS TO MEET CL&P APPROVAL.
15. COORDINATE WITH EVERSOURCE BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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CT1847-WILTON
11 RIVERGATE DRIVE
WILTON, CT 06897

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SCALE: AS NOTED
JOB NO. 19145.00

ELECTRICAL SCHEMATIC DIAGRAM

E-3

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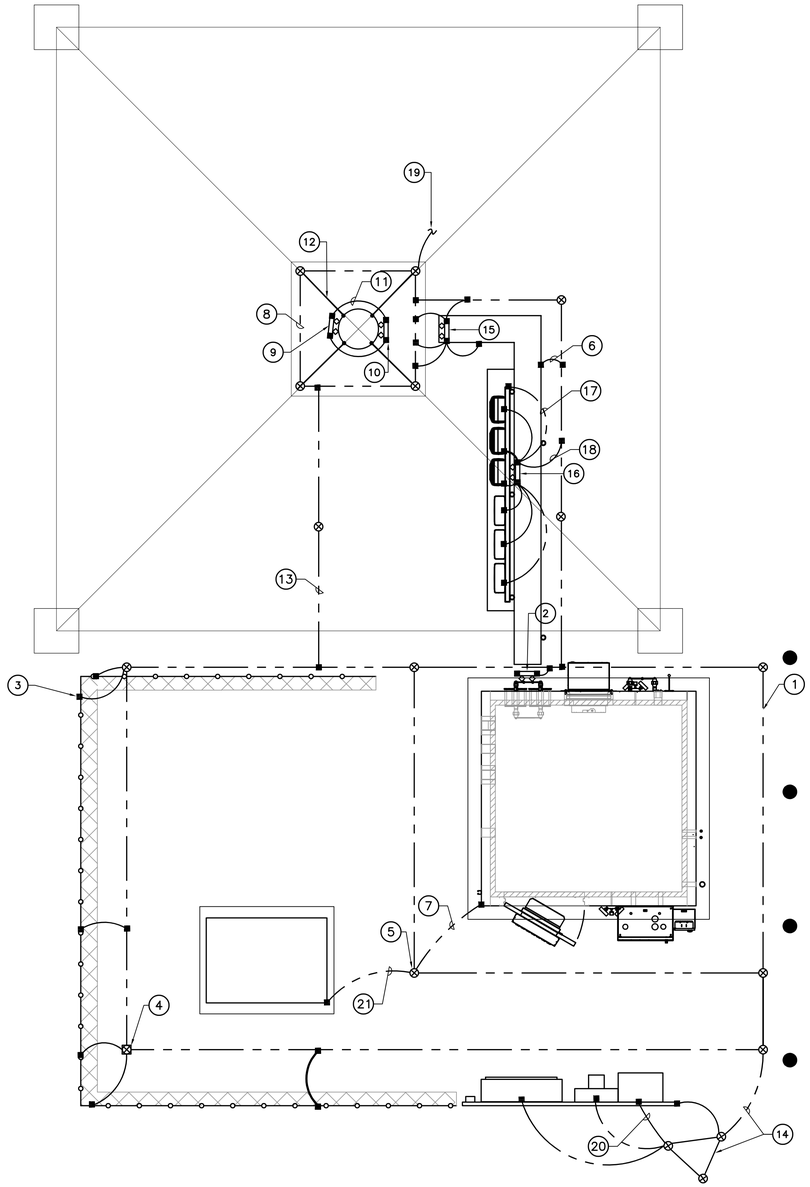
GROUNDING PLAN NOTES

1. #2 SOLID TINNED BCW GROUND RING (2'-0" FROM OUTSIDE EDGE OF W.I.C SHELTER FOUNDATION WHEN ROUTED ALONG SHELTER PERIMETER.) (TYP.).
2. CABLEPORT GROUND BAR PER DETAIL.
3. CONNECT FENCE TO COMPOUND GROUNDING RING PER FENCE DETAILS (TYP.)
4. GROUNDING ROD WITH ACCESS (TYP.) PER DETAIL.
5. GROUNDING ROD (TYP.) PER DETAIL.
6. ICE BRIDGE POST AND COVER. BOND EACH SECTION AND SUPPORT TO GROUND RING PER DETAIL.
7. CADWELD W.I.C SHELTER TO GROUND RING (1 PLACE).
8. TOWER GROUND RING. (COORDINATE WITH TOWER FOUNDATION).
9. UPPER TOWER MOUNTED GROUND BAR PER DETAIL.
10. LOWER TOWER MOUNTED GROUND BAR PER DETAIL.
11. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2 GROUND LEADS) PER DETAIL.
12. CONNECT TOWER BASE TO GROUND ROD IN TOWER GROUND RING WITH #2/0 BCW. TYPICAL FOUR PLACES. CADWELD TO TOWER BASE PLATE OR GROUNDING LUG PROVIDE BY TOWER MANUFACTURER. DO NOT CADWELD TO TOWER.
13. BOND COMPOUND GROUND RING TO TOWER GROUND RING WITH #2 AWG BCW. (TYPICAL 4).
14. GROUNDING TRIAD. BOND TO GROUND RING.
15. GROUND BAR AT THE END OF CABLE TRAY RUN.
16. RADIO EQUIPMENT GROUND BAR.
17. BOND RADIO EQUIPMENT TO GROUND BAR (TYP.).
18. BOND RADIO EQUIPMENT GROUND BAR TO COMPOUND GROUND RING.
19. BOND NEW TOWER GROUND RING TO EXISTING TRANSMISSION TOWER GROUNDING. COORDINATE WITH TOWER OWNER PRIOR TO INSTALLATION.
20. MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR. REFER TO RISER DIAGRAM FOR DETAILS.
21. BOND GENERATOR TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.



1 E-4 **ELECTRICAL GROUNDING PLAN**
SCALE: NOT TO SCALE

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ELECTRICAL GROUNDING PLAN

E-4

Sheet No. 15 of 20

EVERSOURCE - TOWER GROUNDING SYSTEM NOTES

GENERAL–

1. THE OWNER WILL FURNISH THE WIRE, CONNECTORS, AND MISCELLANEOUS MATERIAL ASSOCIATED WITH THE COUNTERPOISE GROUNDING SYSTEM.
2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE GROUNDING SYSTEM AND TO REHABILITATE THE RIGHT–OF–WAY AS CLOSE AS POSSIBLE TO ITS ORIGINAL CONDITION.
3. THE CONTRACTOR SHALL HANDLE AND TRANSPORT THE OWNER SUPPLIED MATERIAL FROM THE OWNER'S STOREROOMS AND YARDS TO THE JOB SITE AND SHALL RETURN SURPLUS MATERIAL AND EMPTY REELS TO DESIGNATED STOREROOMS AND YARDS UPON COMPLETION OF THE CONTRACT.
4. EVERSOURCE WILL BE RESPONSIBLE FOR PERFORMING TESTS FOR SURGE IMPEDANCE AND WAVE IMPENDENCE.

INSTALLATION–

1. UNLESS OTHERWISE DIRECTED BY THE OWNER'S REPRESENTATIVE, COUNTERPOISE SHALL BE BURIED A MINIMUM OF 24" IN CULTIVATED AREAS AND 18" IN WOODED OR OTHER AREAS. IN ROCKY AREAS OR WHERE OBSTRUCTIONS ARE ENCOUNTERED, THE COUNTERPOISE SHALL BE DIVERTED AROUND SUCH OBSTRUCTIONS. ALL INSTALLATIONS SHALL INCLUDE CONNECTIONS TO EXISTING OR PROPOSED STRUCTURES, AND SUCH CONNECTIONS SHALL BE MADE BELOW GROUND USING BOLTED PARALLEL GROVE CONNECTORS.
2. WHERE MULTIPLE STRUCTURE GROUNDS EXIST AT MULTI POLE STRUCTURES, THEY SHALL BE CONNECTED TOGETHER WITH BURIED COPPERWELD WIRE, BUT ONLY IF SUCH GROUNDS HAVE METALLIC CONNECTIONS UP THE POLES TO THE SHIELD WIRE(S). AT STRUCTURES THAT HAVE PALE GROUNDS AND ALSO POLE GUY GROUNDS, CONNECTIONS SHALL BE MADE ONLY TO THE POLE GROUNDS, AND THE MINIMUM SPACING BETWEEN THE COUNTERPOISE AND ANCHOR RODS SHALL BE 10'. AT WOOD POLE STRUCTURES WHERE NO SUCH POLE GROUND EXISTS, COUNTERPOISE CONNECTIONS SHALL BE MADE TO THE POLE TOP GUYS.
3. FOR SINGLE CONTINUOUS (TYPE A) AND SINGLE BROKEN (TYPE B) COUNTERPOISE, THE WIRE SHALL IN GENERAL BE LAYED AT THE CENTERLINE OF THE TRANSMISSION LINE. FOR DOUBLE CONTINUOUS (TYPE C) AND DOUBLE BROKEN (TYPE D) COUNTERPOISE, THE WIRES SHALL IN GENERAL SHALL BE LAYED UNDER THE OUTSIDE PHASE WIRES OF THE TRANSMISSION LINE. COUNTERPOISE SHALL NOT BE INSTALLED ACROSS BROOKS, RIVERS, HIGHWAYS, RAILROADS, OR IN THE VICINITY OF TELEPHONE CABLES OR PIPELINES.
4. AT STEEL POLE STRUCTURES, A BURIED GRADING RING AND SPOKES SHALL ALSO BE INSTALLED AROUND THE STRUCTURE UNLESS THE STRUCTURE HAS A PAD AND PIER FOUNDATION OR UNLESS A RING ALREADY EXISTS. COUNTERPOISE WIRE SHALL BE CONNECTED AT TWO PLACES TO EACH RING, AND COPPERWELD SPOKES SHALL SLOPE LINEARLY UP TO THE STRUCTURE GROUND.
5. AT WOOD POLE STRUCTURES, AN 8' LENGTH OF PLASTIC MOLDING SHALL BE STAPLED OVER THE BOTTOM WITH 8' OF DOWNLEAD.

GROUND RODS–

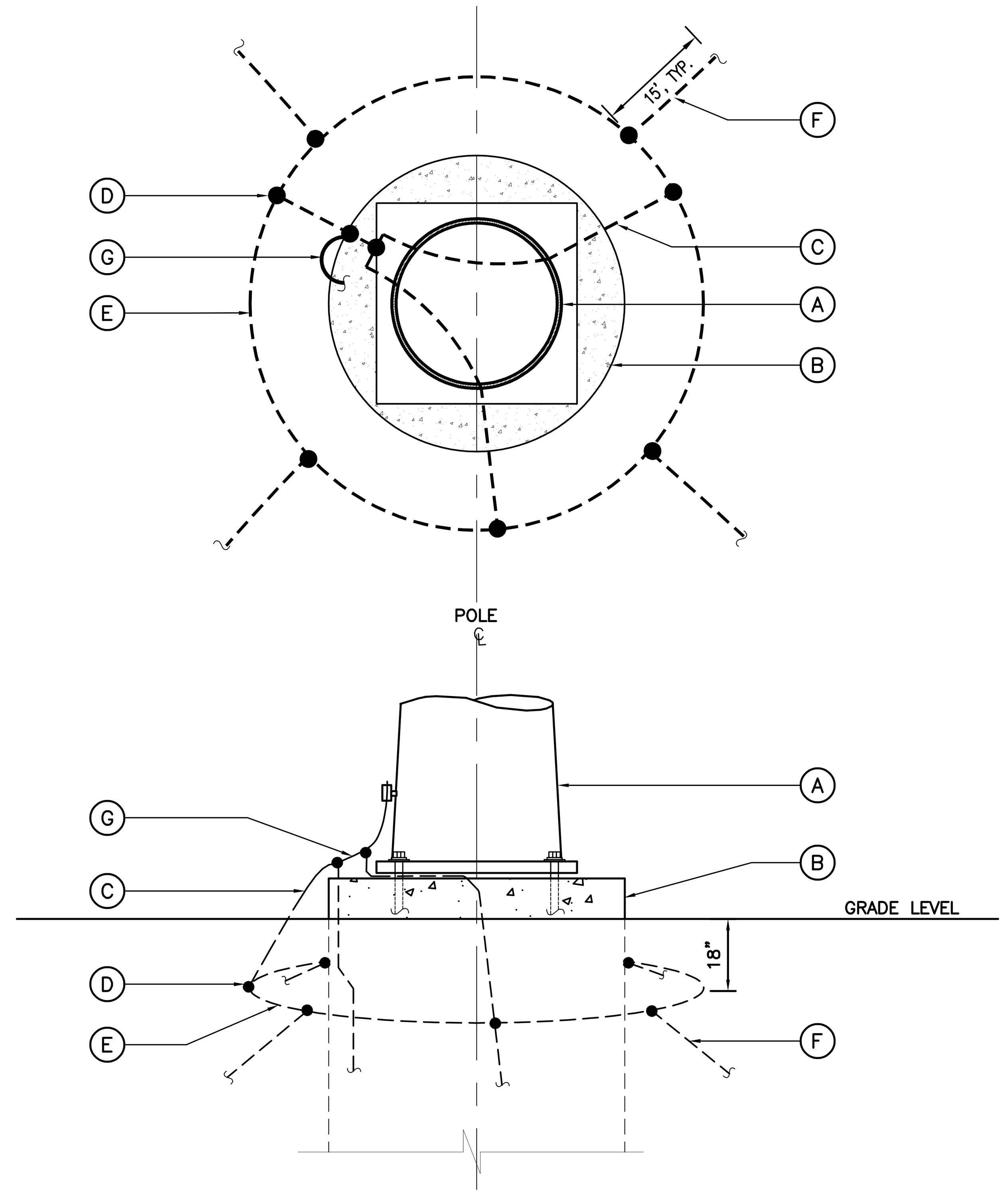
1. WHERE GROUND RODS ARE REQUIRED, THEY SHALL BE SINGLE OR SECTIONAL WITH THE LENGTH SPECIFIED. THEY SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH WHICH WILL LEAVE THE TOP OF THE ROD AT LEAST 12" BELOW GRADE. ALL RODS SHALL BE CONNECTED TO COUNTERPOISE OR TO POLE GROUNDS USING BOLTED CONNECTORS.

REHABILITATION–

1. SELECTIVE CLEARING PROCEDURES WERE USED IN THE DEVELOPMENT OF THE RIGHT–OF–WAY, AND GROWTH OF SELECTED SPECIES HAS BEEN SAVED. THE CONTRACTOR SHALL NOT VIOLATE THE OWNER'S INTENT TO SAVE SELECTIVE SPECIES AND IMPOSE THE MINIMUM ENVIRONMENTAL IMPACT ON THE RIGHT OF WAY DURING THE EXECUTION OF THE WORK. THE CONTRACTOR SHALL REVIEW THE ROUTING OF EACH SECTION OF COUNTERPOISE WITH THE OWNER'S REPRESENTATIVE PRIOR TO ITS FIELD SPECIFIED LOCATION. THE CONTRACTOR IS RESPONSIBLE TO THE OWNER FOR DAMAGES TO THE RIGHT–OF–WAY IN OTHER THAN THE FIELD SPECIFIED LOCATIONS.
2. ANY BRUSH ALONG THE FIELD SPECIFIED COUNTERPOISE ROUTES WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE INSTALLATION WORK WILL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL, NEAT PILES IN PLACE WHERE CUT.
3. IN LOCATIONS WHERE EXCAVATION FOR THE INSTALLATION OF COUNTERPOISE BRINGS TO THE SURFACE ANY SMALL BOULDERS, THEY WILL BE BACKFILLED BELOW GRADE OR DISPERSED ON THE RIGHT–OF–WAY AS THE OWNER'S REPRESENTATIVE MAY DIRECT. INSTALLATION OF THE COUNTERPOISE SHALL NOT RESULT IN A PATH OF SMALL BOULDERS ON THE FINISHED SURFACE.
4. THE OWNER ANTICIPATES THAT SEASONAL CONDITIONS MAY NOT ALLOW PERMANENT REHABILITATION OF WORK SITES AND THE RIGHT–OF–WAY UPON COMPLETION OF THE INSTALLATION OF THE COUNTERPOISE. WHERE TEMPORARY REHABILITATION HAS BEEN COMPLETED IN ADVERSE SEASON, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:
   A. WATERBARS WILL BE CONSTRUCTED ON ACCESS ROADS AND TRENCH LINES TO SHUNT WATER OFF THIS LINE OF DISTURBED SURFACES AND CONTROL EROSION ALONG THE DISTURBED SURFACE.
   B. ALL DISTURBED SURFACES OF FOUNDATION SITES OR ALONG TRENCH LINES OR ACCESS ROADS WILL BE GRADED AND COVERED WITH HAY MULCH. SUCH DISTURBED SY=URFACES ON SLOPES GREATER THAN ONE (VERTICAL) ON FOUR (HORIZONTAL) SHALL BE COVERED WITH WOOD CHIPS.
5. AS DRYING CONDITIONS PERMIT IN THE SPRING, FOLLOWING COMPLETION OF THE INSTALLATION OF COUNTERPOISE, PERMANENT REHABILITATION OF ALL DISTURBED OR ERODED SURFACES SHALL BE ACCOMPLISHED AS FOLLOWS:
   A. LAWNS, GOLF COURSES, CEMETERIES AND OTHER SIMILAR OCCUPANCIES SHALL BE LOAMED, GRADED, FERTILIZED, SEEDED AND WHERE APPROPRIATE, MULCHED, TO ESTABLISH A REHABILITATION CONSISTENT WITH THE USE ESTABLISHED BY THE OCCUPANT.
   B. GARDENS, OTHER CULTIVATED AREAS AND PASTURES, SHALL BE GRADED AND TOPSOILED TO RESTORE THE DEPTH OF FERTILE SOIL COMMON TO THE ADJACENT GROUND. WHERE APPROPRIATE, SEEDING SHALL BE DONE IN ACCORDANCE WITH STEP C BELOW.
   C. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS ALONG THE NEW COUNTERPOISE ROUTES. SEED SHALL BE SPREAD AT THE RATE OF 100 LBS. PER ACRE AND SHALL BE AS FOLLOWS OR APPROVED EQUAL:

	% BY WEIGHT	% BY GERMINATION	% BY PURITY
CREEPING RED FESCUE	30	85	98
DOMESTIC RYE	20	90	98
KENTUCKY TALL FESCUE	50	--	--
	100		

   D. ALL OTHER DISTURBED AREAS INCLUDING REMAINING FOUNDATION SITES, ACCESS ROADS, AND REPAIR OF EROSION OF SITUATION SHALL BE SEEDED WITH MIXED SPECIFICATION ABOVE. IN REMOTE AREAS, A CONSERVATION MIX, AS USED BY THE CONNECTICUT STATE PARKS AND FOREST COMMISSION MAY BE SUBSTITUTED. ALL AREAS WHICH EXPERIENCED EROSION DAMAGE AND ALL SLOPES OVER ONE (VERTICAL) AND FOUR (HORIZONTAL) WHERE TEMPORARY REHABILITATION WORK HAS BEEN DONE SHALL BE REMULCHED.
6. IT IS IMPERATIVE THAT PERMANENT REHABILITATION BE ACCOMPLISHED IN GOOD TIME, WHICH WILL ALLOW THE OCCUPANT FULL AND UNDISTURBED USE OF THE SITE IN THE SUCCEEDING SEASON, AND TO PREVENT UNNECESSARY AND UNREASONABLE SPREADING OF CONTINUATION OF DISTURBED SURFACES.
7. ANY BRUSH ALONG THE ACCESS ROADS WHICH IS LEFT IN AN UNSIGHTLY CONDITION BY THE WORK CONDUCTED, SHALL BE CUT TO THE GROUND BY THE CONTRACTOR AND LEFT IN SMALL NEAT PILES IN PLACE WHERE CUT.



1 / E–5 **EVERSOURCE TOWER GROUNDING DETAIL**
NOT TO SCALE

EVERSOURCE TOWER GROUNDING NOTES:

(EVERSOURCE REQUIREMENTS)

- (A) STEEL HYBRID POLE.
- (B) CONCRETE CAISSON TYPE FOUNDATION.
- (C) STRANDED COPPERWELD SPOKE FROM POLE GROUND TO GRADING RING. SPOKES ARE A CONTINUATION OF STRANDED COPPERWELD COUNTERPOISE CONNECTING GRADING RING TO POLE GROUND. SPOKES TO SLOPE ON STRAIGHT LINE FROM GROUND LEVEL TO GRADING RING.
- (D) PARALLEL GROVE CONNECTOR, NU SC190052.
- (E) GRADING RING @ 18" MINIMUM BELOW GRADE AND 24" TO 30" FROM TOWER FOUNDATION. GRADING RING TO BE 3 NO. 8 STRANDED ANNEALED COPPERWELD.
- (F) COUNTERPOISE, 3 NO. 8 STRANDED ANNEALED COPPERWELD (TYPICAL).
- (G) COPPERWELD POLE GROUND.

GENERAL NOTES:

1. THE INFORMATION ON THIS SHEET REPRESENTS TYPICAL EVERSOURCE GROUNDING REQUIREMENTS. CONTRACTOR MUST COORDINATE WITH EVERSOURCE SITE MANAGER FOR SPECIFIC (AND CURRENT) GROUNDING REQUIREMENTS AT THIS SITE.

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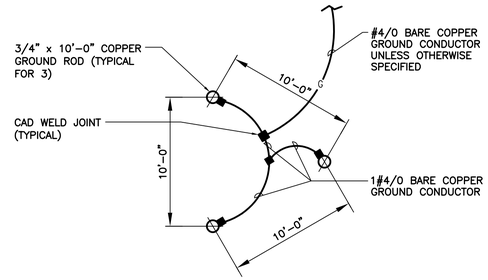
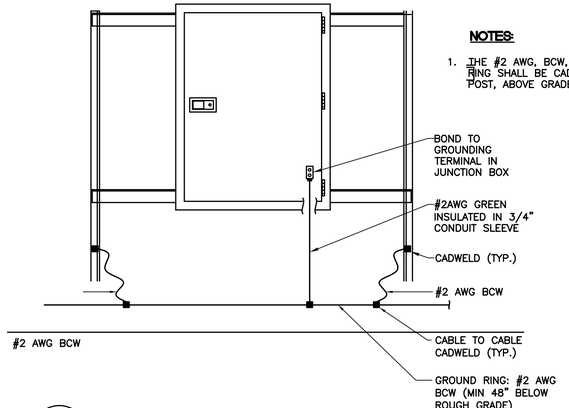
EVERSOURCE TOWER GROUNDING DETAIL

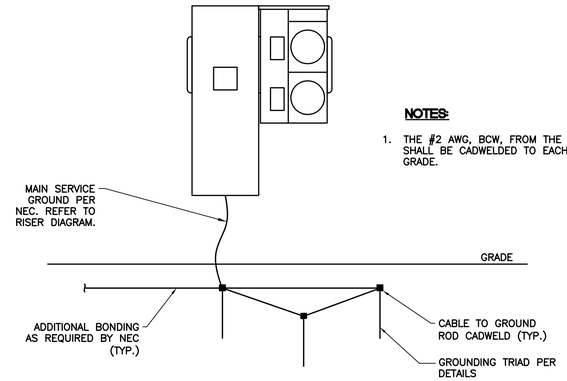
E–5



1 E-6 **GROUND TRIAD DETAIL**
NOT TO SCALE



2 E-6 **UTILITY FRAME GROUNDING DETAIL**
NOT TO SCALE



3 E-6 **UTILITY FRAME GROUNDING DETAIL**
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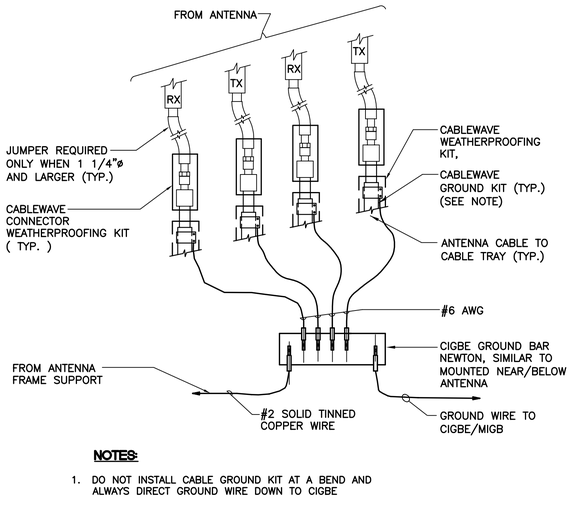
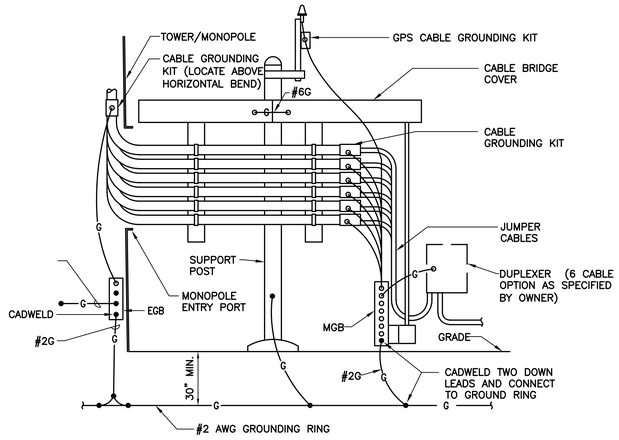
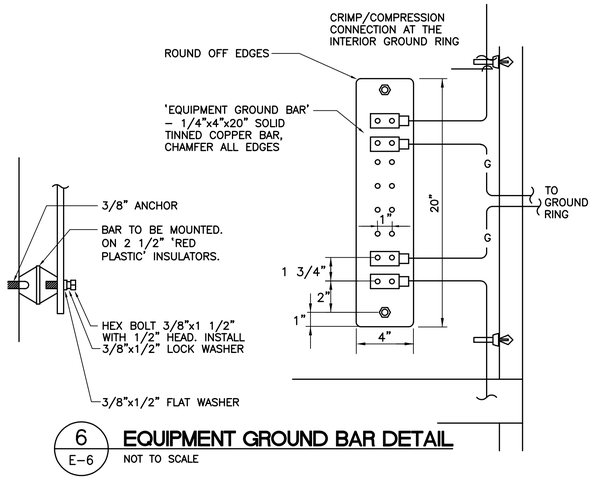


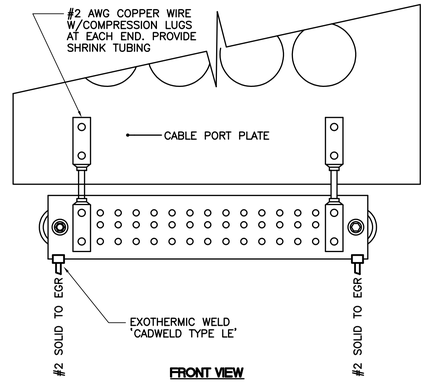
4 E-6 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



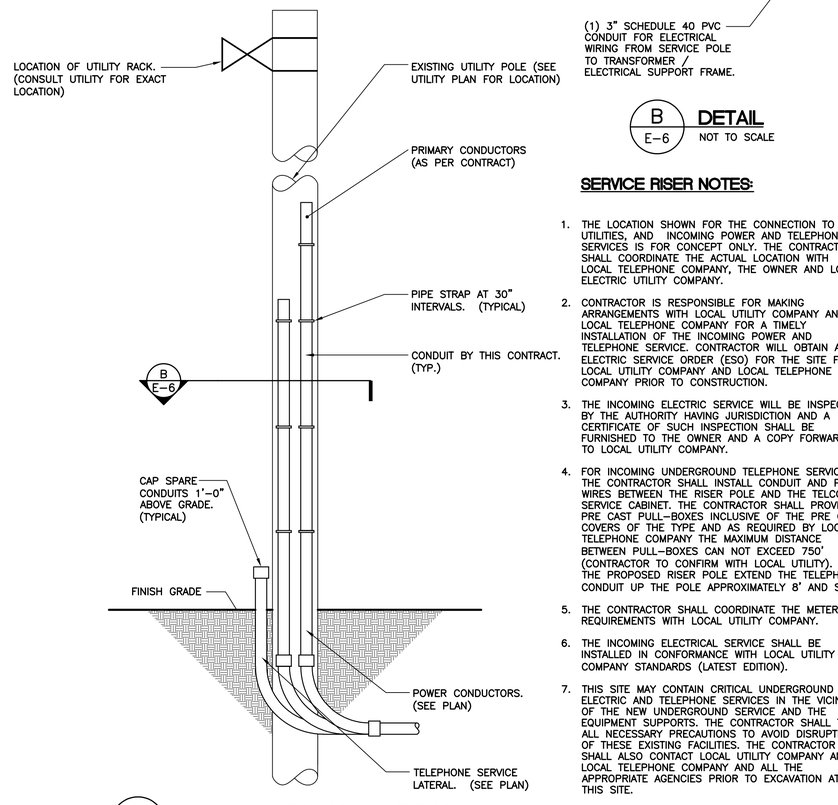
5 E-6 **CABLE BRIDGE GROUNDING DIAGRAM**
NOT TO SCALE



6 E-6 **EQUIPMENT GROUND BAR DETAIL**
NOT TO SCALE



7 E-6 **CABLEPORT GROUND BAR LUG CONNECTION**
NOT TO SCALE



8 E-6 **INCOMING SERVICE POLE RISER**
NOT TO SCALE

B E-6 **DETAIL**
NOT TO SCALE

SERVICE RISER NOTES:

1. THE LOCATION SHOWN FOR THE CONNECTION TO UTILITIES, AND INCOMING POWER AND TELEPHONE SERVICES IS FOR CONCEPT ONLY. THE CONTRACTOR SHALL COORDINATE THE ACTUAL LOCATION WITH LOCAL TELEPHONE COMPANY, THE OWNER AND LOCAL ELECTRIC UTILITY COMPANY.
2. CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS WITH LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY FOR A TIMELY INSTALLATION OF THE INCOMING POWER AND TELEPHONE SERVICE. CONTRACTOR WILL OBTAIN AN ELECTRIC SERVICE ORDER (ESO) FOR THE SITE FROM LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY PRIOR TO CONSTRUCTION.
3. THE INCOMING ELECTRIC SERVICE WILL BE INSPECTED BY THE AUTHORITY HAVING JURISDICTION AND A CERTIFICATE OF SUCH INSPECTION SHALL BE FURNISHED TO THE OWNER AND A COPY FORWARDED TO LOCAL UTILITY COMPANY.
4. FOR INCOMING UNDERGROUND TELEPHONE SERVICE, THE CONTRACTOR SHALL INSTALL CONDUIT AND PULL WIRES BETWEEN THE RISER POLE AND THE TELCO SERVICE CABINET. THE CONTRACTOR SHALL PROVIDE PRE CAST PULL–BOXES INCLUSIVE OF THE PRE CAST COVERS OF THE TYPE AND AS REQUIRED BY LOCAL TELEPHONE COMPANY THE MAXIMUM DISTANCE BETWEEN PULL–BOXES CAN NOT EXCEED 750' (CONTRACTOR TO CONFIRM WITH LOCAL UTILITY). AT THE PROPOSED RISER POLE EXTEND THE TELEPHONE CONDUIT UP THE POLE APPROXIMATELY 8' AND SEAL.
5. THE CONTRACTOR SHALL COORDINATE THE METER REQUIREMENTS WITH LOCAL UTILITY COMPANY.
6. THE INCOMING ELECTRICAL SERVICE SHALL BE INSTALLED IN CONFORMANCE WITH LOCAL UTILITY COMPANY STANDARDS (LATEST EDITION).
7. THIS SITE MAY CONTAIN CRITICAL UNDERGROUND ELECTRIC AND TELEPHONE SERVICES IN THE VICINITY OF THE NEW UNDERGROUND SERVICE AND THE EQUIPMENT SUPPORTS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DISRUPTION OF THESE EXISTING FACILITIES. THE CONTRACTOR SHALL ALSO CONTACT LOCAL UTILITY COMPANY AND LOCAL TELEPHONE COMPANY AND ALL THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION AT THIS SITE.

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ELECTRICAL DETAILS

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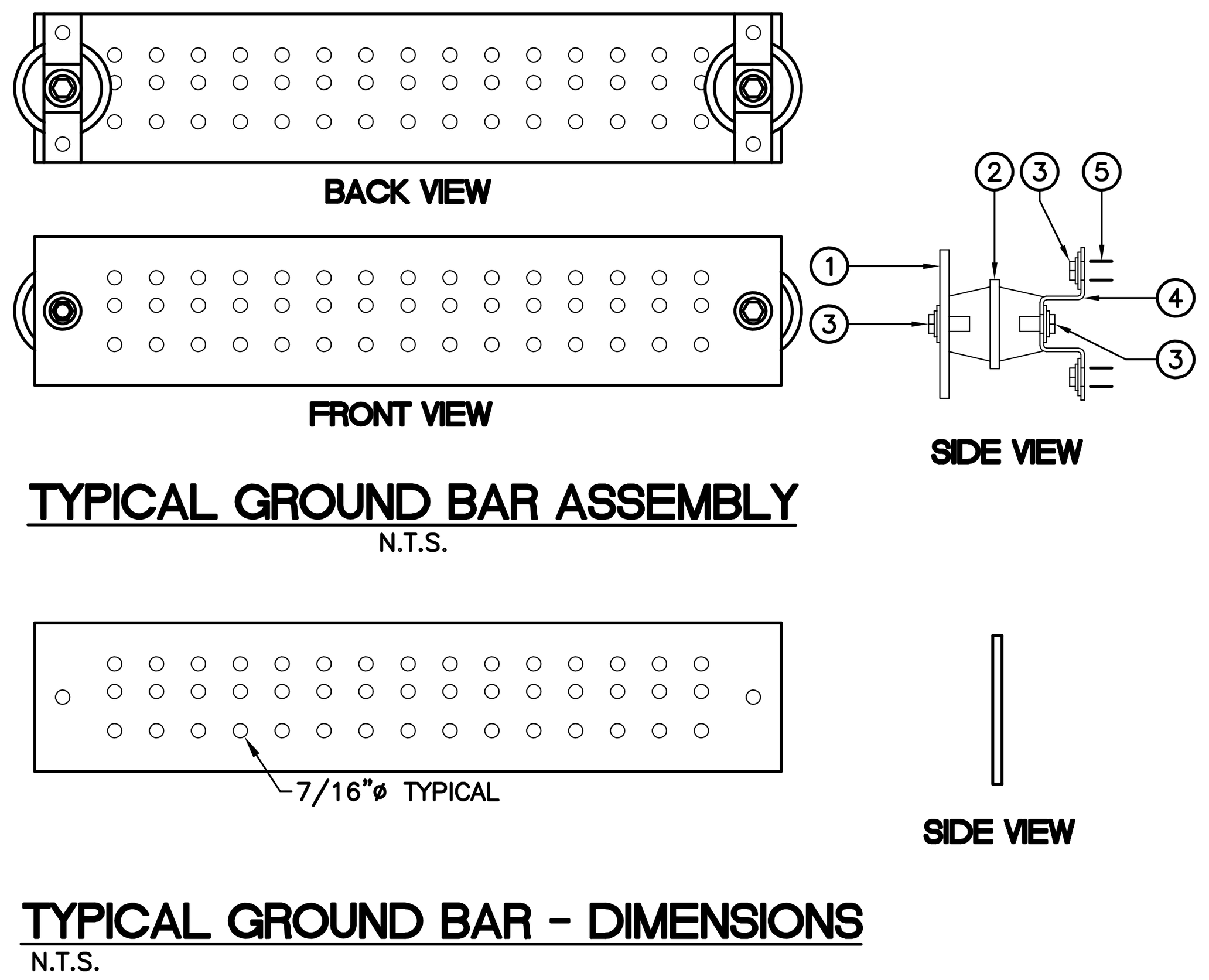
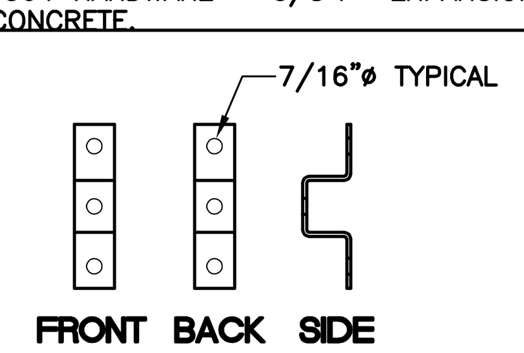


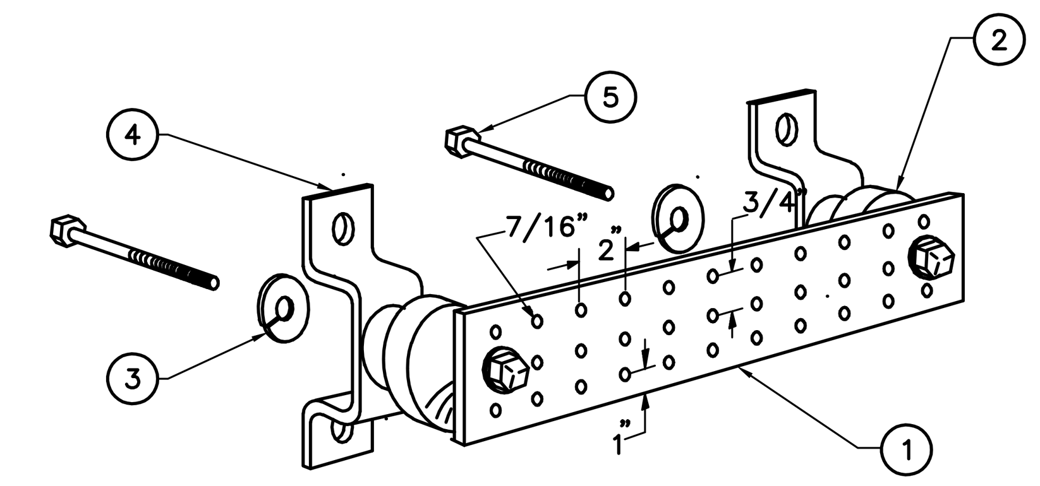
NOTES

1. HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D.
2. RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A.
3. STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
4. 1"Wx1/8"T STAINLESS STEEL TYPE 304 BRACKET.
5. STAINLESS STEEL TYPE 304 HARDWARE – 3/8"ø EXPANSION BOLT FOR CONCRETE.



BRACKET FOR GROUND BAR-DIMENSIONS
N.T.S.

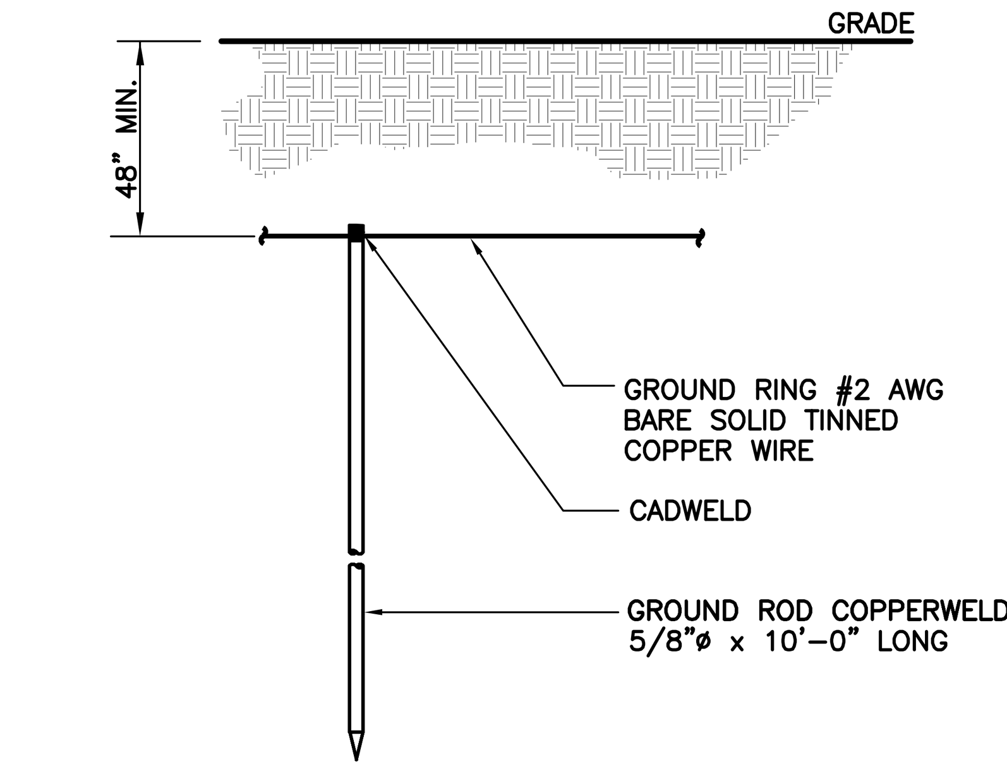
1 / E-7 **MASTER/EQUIPMENT GROUND BAR DETAILS**
NOT TO SCALE



NOTES

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4.
3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056.
5. 5/8–11 x 1" STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS.

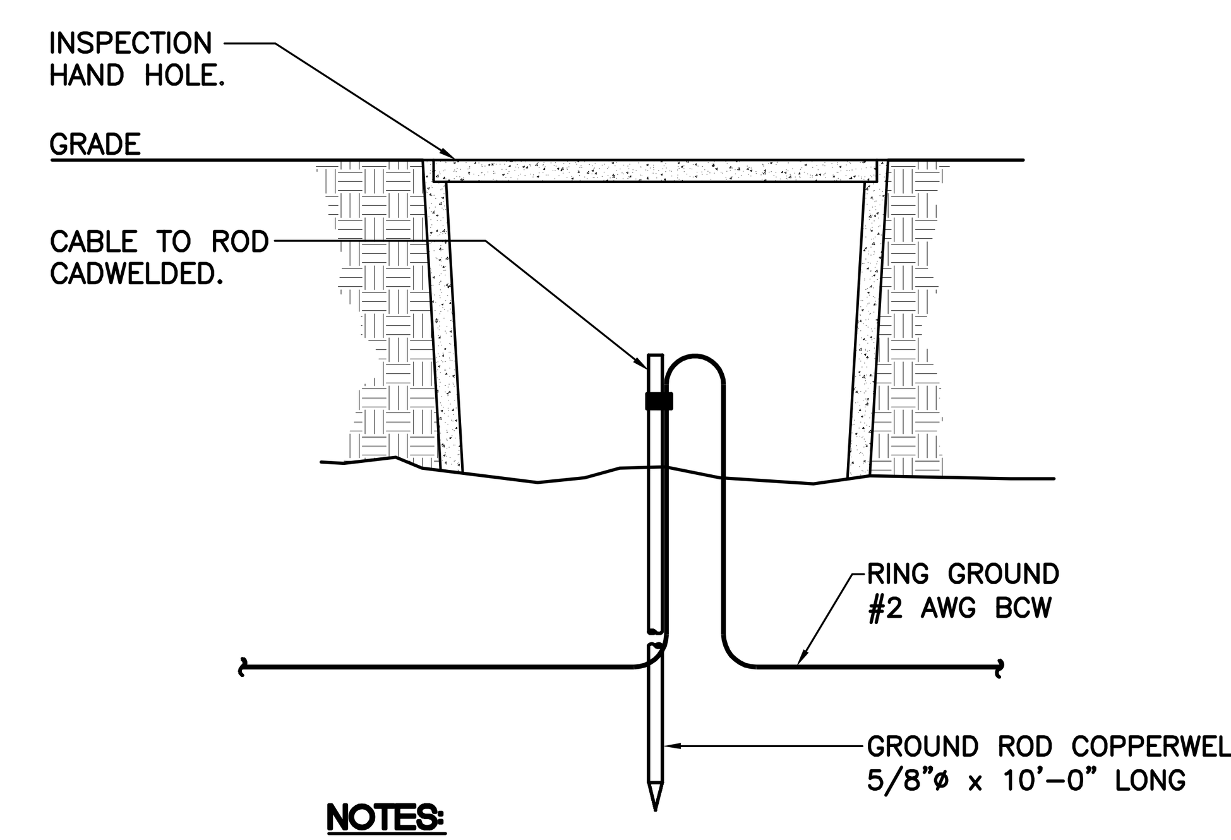
2 / E-7 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

1. USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

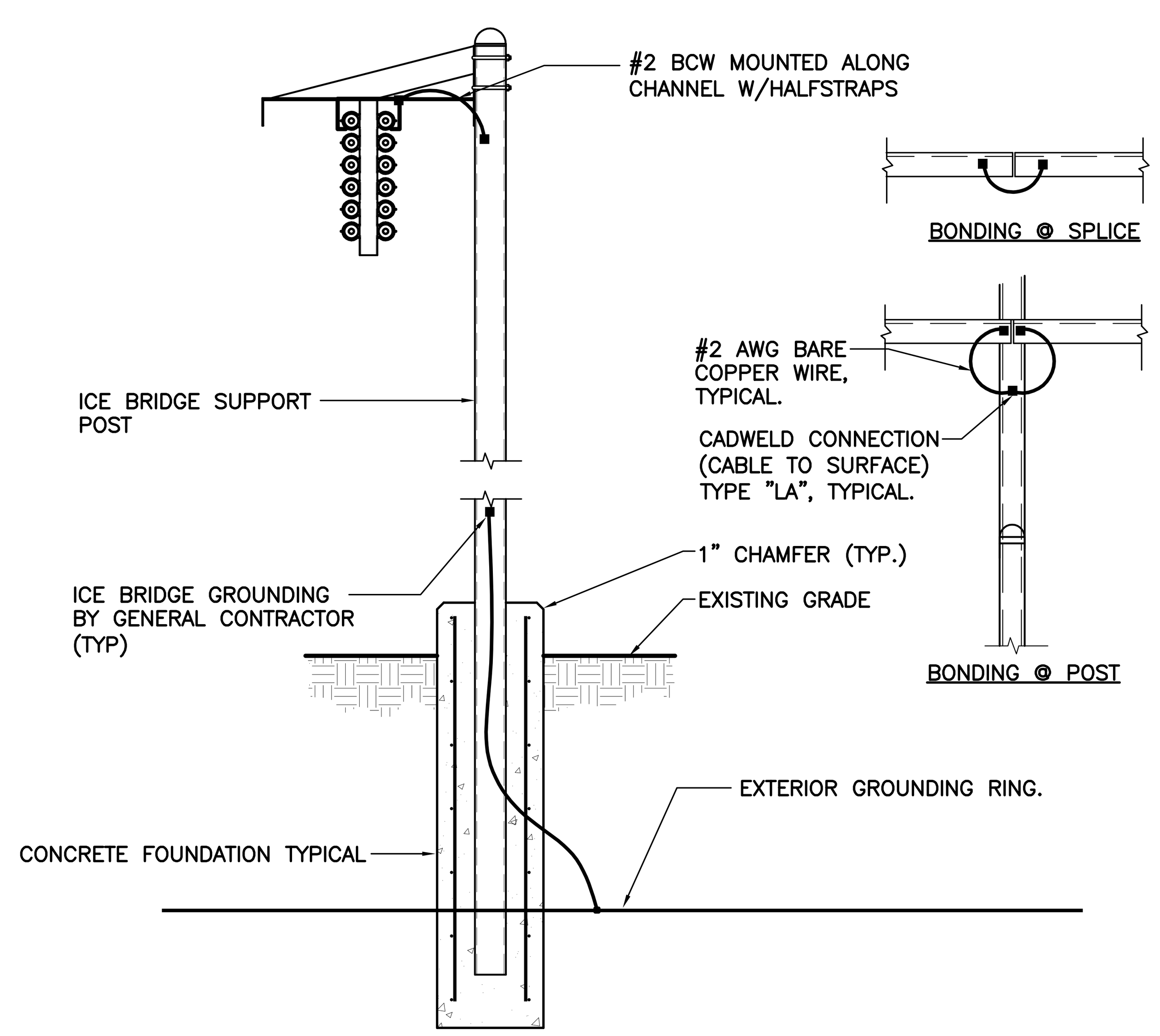
3 / E-7 **GROUND ROD DETAIL**
NOT TO SCALE



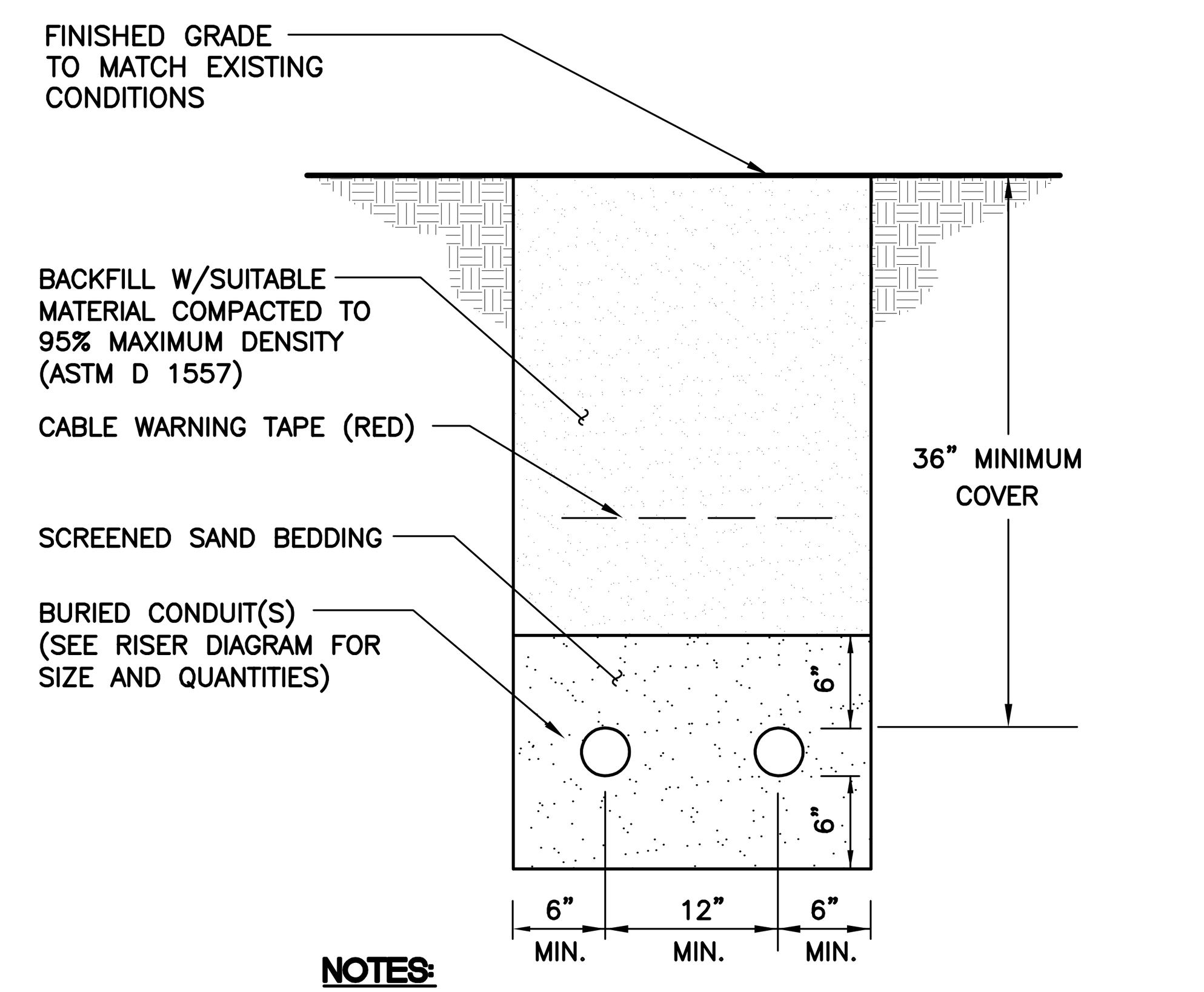
NOTES:

1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 12" DIA x 18" DEEP.

4 / E-7 **GROUND ROD WITH ACCESS DETAIL**
NOT TO SCALE



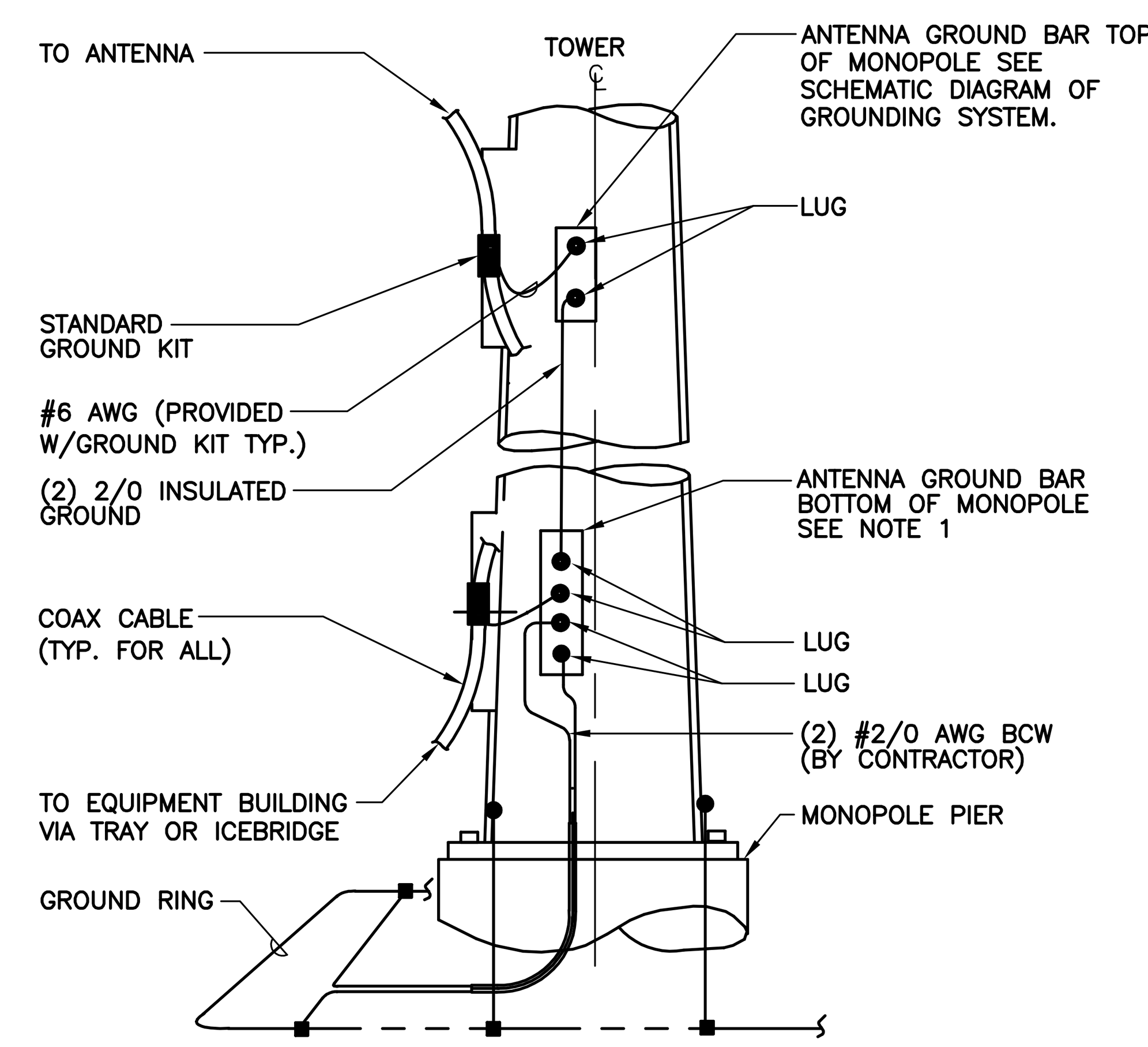
5 / E-7 **ICE BRIDGE BONDING DETAIL**
NOT TO SCALE



NOTES:

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
3. WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN UTILITY SOURCE AND SERVICE EQUIPMENT, COORDINATE WITH UTILITY COMPANY FOR BURIAL DEPTH REQUIREMENTS.
4. COORDINATE WITH ELECTRICAL ENGINEER WHERE SHALLOW BEDROCK IS ENCOUNTERED BETWEEN SERVICE EQUIPMENT AND EQUIPMENT SHELTER.

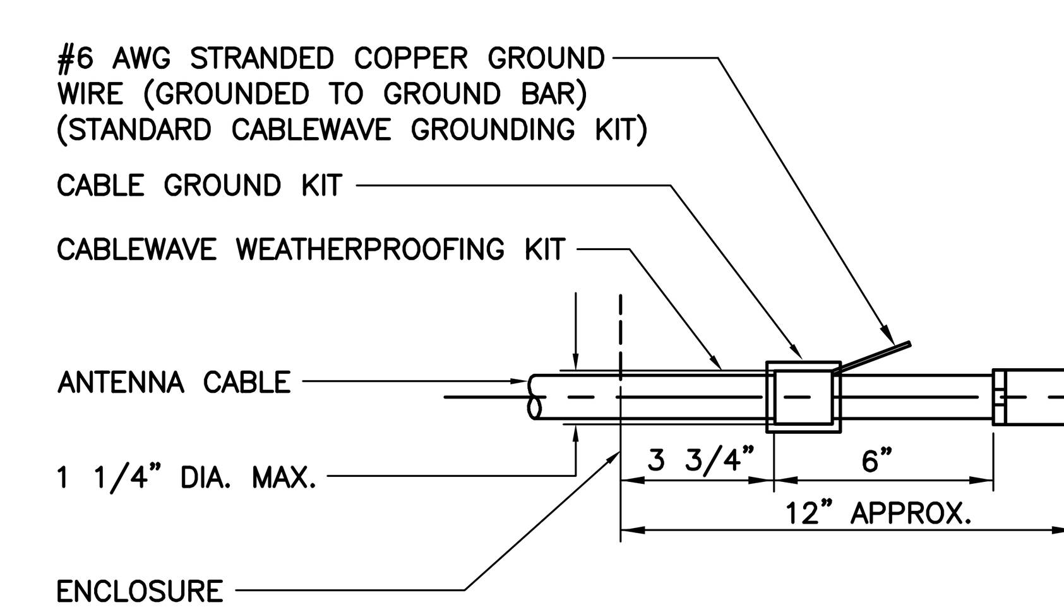
6 / E-7 **TYPICAL ELECTRICAL TRENCH DETAIL**
NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

7 / E-7 **ANTENNA CABLE GROUNDING**
NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

8 / E-7 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAIL
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – REVISED PER ADDRESS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	04/01/20	RTS	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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11 RIVERGATE DRIVE
WILTON, CT 06897

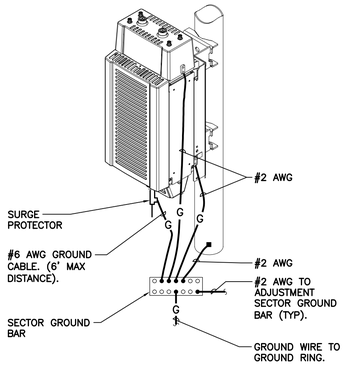
DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

ELECTRICAL DETAILS

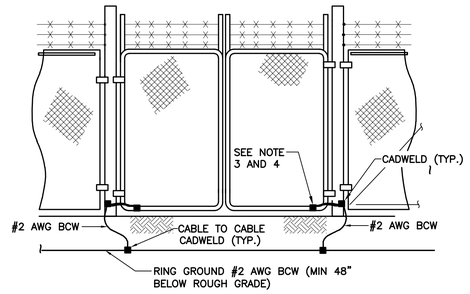
E-7

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:

1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



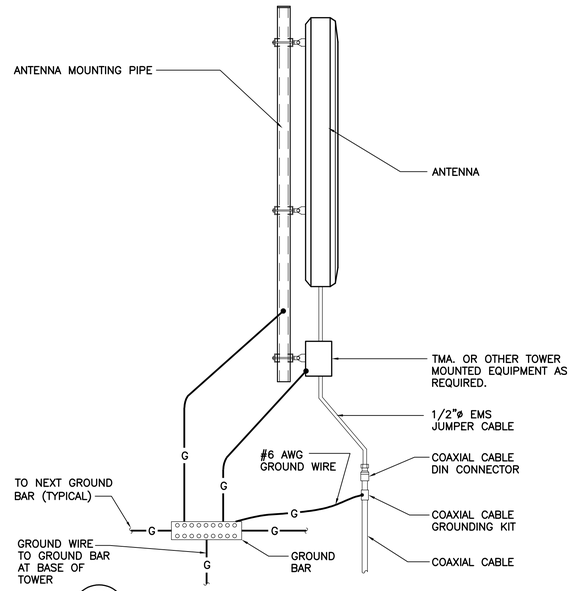
1 / E-8 **RRH POLE MOUNT GROUNDING**
NOT TO SCALE



NOTES:

1. THE #2 AWG, BCW, FROM THE RING GROUND SHALL BE CADWELDED TO THE POST, ABOVE GRADE.
2. BOND EACH HORIZONTAL POLE/BRACE TO EACH OTHER AND TO EACH VERTICAL POLE BONDED TO THE EXTERIOR GROUND RING.
3. GATE JUMPER SHALL BE #4/0 AWG WELDING CABLE OR FLEXIBLE COPPER BRAID BURNDY TYPE B WITH SLEEVES ON EACH END DESIGNED FOR EXOTHERMIC WELDING.
4. GATE JUMPER SHALL BE INSTALLED SO THAT IT WILL NOT BE SUBJECTED TO DAMAGING STRAIN WHEN GATE IS FULLY OPEN IN EITHER DIRECTION.

2 / E-8 **FENCE GATE GROUNDING**
NOT TO SCALE



3 / E-8 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAIL
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	04/01/20	RTS	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

ELECTRICAL DETAILS

E-8

Sheet No. 19 of 20

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. INSTALL NEW SINGLE METER CENTER, 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE METER AND 200A MAIN CIRCUIT BREAKER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)
2. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
3. GENERATOR.
4. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS AND EQUIPMENT AS INDICATED OR NOTED ON PLANS.
5. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, EXTERIOR GROUNDING RING, GROUND BARS, ETC.
6. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.

B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:

1. TELEPHONE CABLES.
2. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).

C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.

D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

1.02. GENERAL REQUIREMENTS

A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.

B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.

D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.

F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.

G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.

H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.

I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.

J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.

K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.

L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.

M. SHOP DRAWINGS:

1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

1.01. CONDUIT

A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED TO THE WALLS AND CEILINGS AS REQUIRED BY THE N.E.C.

CONDUIT MATERIAL SHALL BE AS FOLLOWS:

1. ELECTRIC METALLIC TUBING (EMT) – BRANCH CIRCUITS
2. GALVANIZED RIGID CONDUIT (GRC) – FEEDERS AND CIRCUITS EXPOSED TO EXTERIOR & UNDERGROUND.
3. LIQUID TIGHT FLEXIBLE METAL CONDUIT – FOR SHORT LENGTHS (MAX. 3'-0") WIRING TO VIBRATING EQUIPMENT (HVAC UNITS, MOTORS, ETC.) IN WET LOCATIONS.
4. FLEXIBLE METAL CONDUIT – FOR SHORT LENGTHS (MAX. 3'-0") WIRING TO VIBRATING EQUIPMENT IN DRY LOCATIONS.
5. PVC CONDUIT – WHERE SHOWN ON GROUNDING DETAILS.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/208/240V	277/480V
LINE	COLOR	COLOR
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16114

1.01. CABLE TRAY

A. CABLE TRAY SHALL BE SOLID SIDE BAR, 18" WIDE (NEWTON INSTRUMENT COMPANY, INC.). TRAY SHALL BE INSTALLED AS SHOWN ON CONTRACT DOCUMENTS.

B. CROSSWISE RUNS SHALL BE COORDINATED WITH THE SPECIFIC EQUIPMENT THE TRAY SHALL SERVE.

C. ALL PROTRUDING CABLE TRAY SUPPORT RODS SHALL BE FILED SMOOTH WITH NO SHARP EDGES. ALL SUPPORT RODS SHALL BE CAD-PLATED FOR RUST RESISTANCE AND A MINIMUM 1/2" DIAMETER.

SECTION 16130

1.01. BOXES

A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.

B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

1.01. WIRING DEVICES

A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.

1. 15 MINUTE TIMER SWITCH – INTERMATIC #FF15M (INTERIOR LIGHTS)
2. DUPLEX RECEPTACLE – P&S #2095 (GFCI) SPECIFICATION GRADE
3. SINGLE POLE SWITCH – P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
4. DUPLEX RECEPTACLE – P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE

B. PLATES – ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.

C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT

A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.

B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.

C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

D. PROVIDE NAMEPLATE FOR PORTABLE ENGINE/GENERATOR CONNECTION SHOWING VOLTAGE KVA/KW RATING, # PHASE, AND # OF WIRES. PLATE TO BE PLASTIC ENGRAVED, RED WITH WHITE LETTERS.

E. ALL RECEPTACLES, SWITCHES, DISCONNECT SWITCHES, ETC. SHALL BE LABELED WITH THE CORRECT BRANCH CIRCUIT NUMBER SERVED BY MEANS OF PERMANENT PRESSED TYPE BLACK 1/4" TRANSFER LETTERING. (FOR EXAMPLE: "MDP-5", ETC.).

F. PROVIDE A NAMEPLATE AT THE SERVICE EQUIPMENT INDICATING THE TYPE AND LOCATION OF THE ON SITE GENERATOR.

SECTION 16450

1.01. GROUNDING

A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.

B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

C. GROUNDING OF PANELBOARDS:

1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).

D. EQUIPMENT GROUNDING CONDUCTOR:

1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
3. REFER TO PANEL SCHEDULE "BRANCH CIRCUIT" DATA FOR EQUIPMENT GROUND CONDUCTOR SIZE FOR EACH BRANCH CIRCUIT.
4. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).

E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
3. ANTENNA GROUND CONNECTIONS AND PLATES.

F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.

G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

1.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16620
(SUPPLIED BY OWNER, INSTALLED BY CONTRACTOR)

1.01. GENERATOR SET

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16960

1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

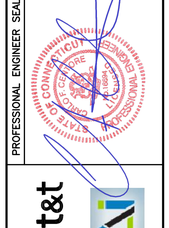
A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.

B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.

C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	11/23/20	TJL	TJR	CONSTRUCTION DRAWINGS – ADDED TMA MOUNTING DETAIL
3	11/2/20	TJL	TJR	CONSTRUCTION DRAWINGS – REVISED PER ADDRESS
2	07/27/20	RTS	TJR	CONSTRUCTION DRAWINGS – REVISED PER ADDRESS
1	07/13/20	RTS	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION
0	04/01/20	RTS	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



at&t

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
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63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

EVERSOURCE STRUCTURE NO. 935
CT1847-WILTON
11 RIVERGATE DRIVE
WILTON, CT 06897

DATE: 12/27/19
SCALE: AS NOTED
JOB NO. 19145.00

ELECTRICAL SPECIFICATIONS

E-9

Sheet No. 20 of 20

3

Visual Assessment & Photo-Simulations

CT1847
WILTON
CL&P UTILITY STRUCTURE NO. 935
RIVERGATE DRIVE
WILTON, CT 06897

Prepared in January 2020 by:
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

Prepared for AT&T

ALL-POINTS
TECHNOLOGY CORPORATION

VISUAL ASSESSMENT & PHOTO-SIMULATIONS

At the request of AT&T, All-Points Technology Corporation, P.C. ("APT") completed a visual assessment and prepared computer-generated photo-simulations depicting a proposed wireless telecommunications facility (the "Facility") located east and south of Rivergate Drive in Wilton, Connecticut.

Project Undertaking

The proposed Facility would be located within a Connecticut Light and Power, dba Eversource Energy ("CL&P") electrical transmission corridor on a parcel of land owned by CL&P (the "Host Property"). The proposed Facility would include a new ±103-foot tall, steel antenna mast installed at the center of an existing 91-foot tall CL&P steel lattice transmission structure (CL&P #935) (the "Site"). Six (6) panel antennas would be mounted on the antenna mast at centerline heights of approximately 100' above ground level ("AGL") with the tops of the antennas extending to approximately 104' AGL.

Ground-mounted equipment would be placed on a proposed 8' by 15' concrete equipment pad immediately south of the antenna mast within the footprint of the existing transmission structure. The concrete equipment pad would be covered by an ice-shield canopy. A 15-kW diesel-fueled, emergency standby generator would be located on a separate 4' by 8' concrete pad south the transmission structure, and a utility backboard and pad-mounted transformer would be located east of the generator. An 11' by 13', L-shaped 8'-tall chain-link fence, equipped with sound attenuating material, would be installed west and south of the generator.

Project Setting

The Site is located within a CL&P transmission corridor that extends generally southwest to northeast within a residential neighborhood; east and south of Rivergate Drive and north of West Meadow Road and Meadow Road. Route 53 (Chestnut Hill Road) runs approximately 700' southwest of the Site. Land use within the immediate vicinity of the Site consists primarily of residentially-developed properties and wooded, undeveloped land. A Site Location Map (Figure 1) is attached to this report.

Methodology

On December 5, 2019, APT personnel conducted a field reconnaissance to photo-document existing conditions and evaluate the extent of visibility of the existing CL&P steel lattice transmission structure and of the proposed Facility. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS

6D digital camera body[1] and Canon EF 24 to 105 millimeter ("mm") zoom lens. APT typically uses a standard focal length of 50mm to present a consistent field of view. On occasion, photos are taken at lower focal lengths to provide a greater depth of field and to provide context to the scene by including surrounding features within the photograph. During this evaluation, two (2) photographs were taken at a 35mm focal length and one (1) photo was taken at a 24mm focal length as noted in the table (Table 1 – Photo Locations) on the following page.

Photographic Documentation and Simulations

Photographic simulations were generated to portray scaled renderings of the proposed Facility from four (4) locations presented herein where the Facility may be recognizable above or through the existing trees. Using field data, site plan information and 3-dimensional (3D) modeling software, spatially referenced models of the site and Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo-simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs, which were ultimately composited and merged with the existing conditions photographs (using Photoshop image editing software). The scale of the subjects in the photograph (the existing transmission structure) and the corresponding simulation (the proposed Facility) is proportional to their surroundings.

For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format. When reproducing the images in this format size, we believe it is important to present the largest view while providing key contextual landscape elements (existing developments, street signs, utility poles, etc.) so that the viewer can determine the proportionate scale of each object within the scene. The photo-simulations are intended to provide the reader with a general understanding of the different view characteristics associated with the Facility from various locations. Photographs were taken from publicly-accessible areas and unobstructed view lines were chosen wherever possible.

The following table summarizes the photographs and simulations presented in the attachment to this report, and includes a description of each location, view orientation, distance from where the photo was taken relative to the proposed Facility, and the general characteristics of the view. The photo locations are shown on the attached photolog map.

[1] The Canon EOS 6D is a full-framed camera which includes a lens receptor of the same size as the film used in 35mm cameras. As such, the images produced are comparable to those taken with a conventional 35mm camera.

Table 1 – Photo Locations

Photo	Location	Orientation	Distance to Site	Visibility
1	West Meadow Road at Rivergate Drive*	North	± 269 Feet	Not Visible
2	West Meadow Road*	Northwest	± 281 Feet	Year-round
3	West Meadow Road	Northwest	± 482 Feet	Year-round
4	Meadow Road**	Northwest	± 323 Feet	Not Visible
5	Transmission Corridor	Southwest	± 162 Feet	Year-round
6	Blue Ridge Lane at Rivergate Drive	Southeast	± 389 Feet	Seasonal
7	Rivergate Drive	Southwest	± 0.11 Mile	Not Visible

**Photograph was taken at 35mm focal length.*
***Photograph was taken at 24mm focal length.*

Conclusions

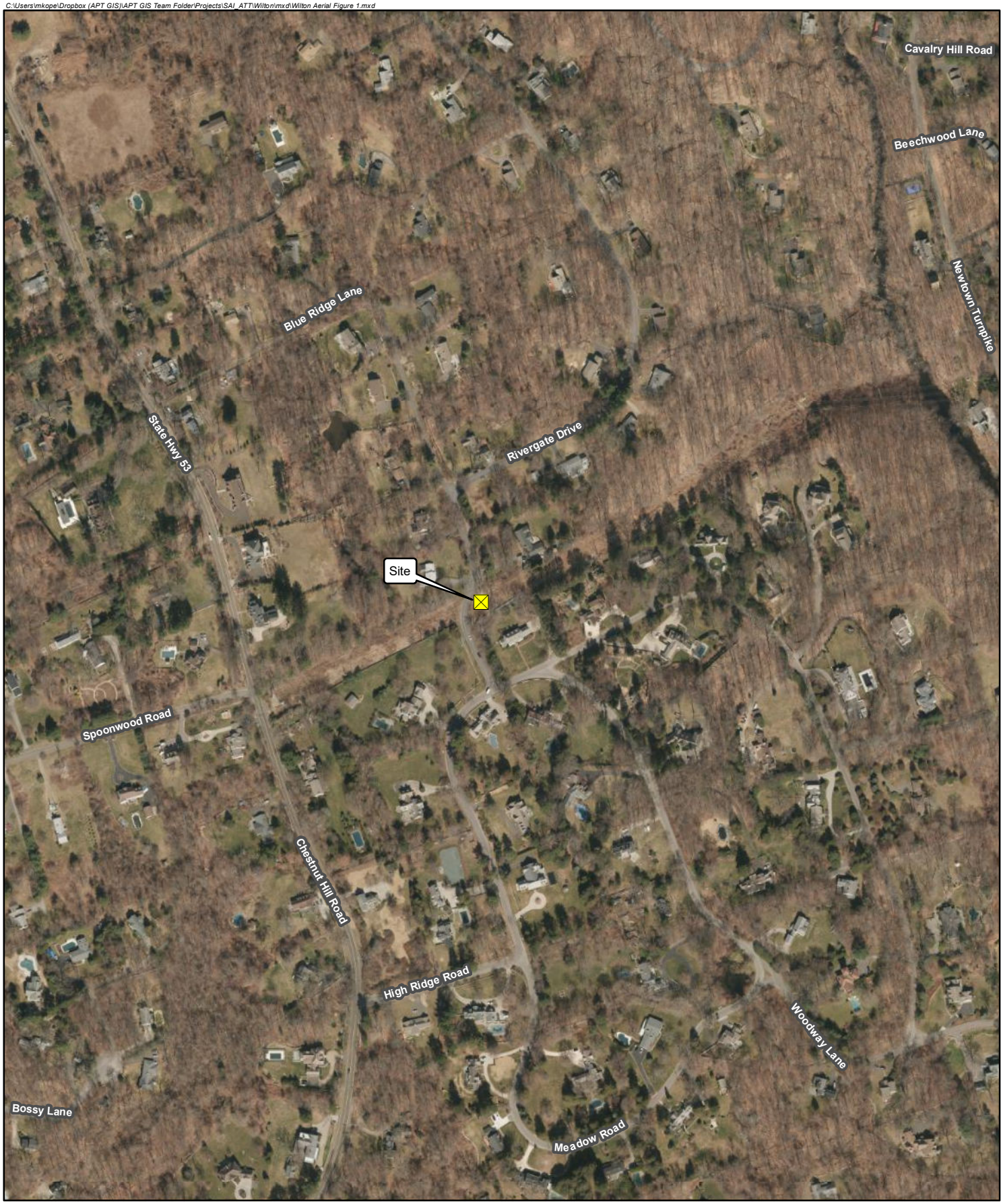
The most prominent views of the Facility would be from Rivergate Drive where it intersects the transmission corridor and from West Meadow Road (Photo 2) southeast of the Site. Limited views of the Facility (Photos 3 and 6) extend to select locations in the residential neighborhoods located to the north and south. It should be noted that visibility of the Facility is incremental, in that the existing transmission structure is currently visible from these locations. Due to terrain variations and the presence of mature trees along the transmission corridor, the additional height of the proposed Facility would not significantly increase the area of visibility beyond where the existing transmission structure is currently visible.

Proximity to Schools And Commercial Child Day Care Centers

There are no commercial child daycare centers or schools located within 250 feet of the proposed Facility. The nearest commercial child daycare center (Play Smart, LLC at 4 Ledgebrook Court, Weston) is located approximately 1.28 miles from the Site and the nearest school (Hurlbutt Elementary School at 9 School Road in Weston) is located approximately 1.5 miles from the Site.

ATTACHMENTS

C:\Users\mkope\Dropbox (APT GIS)\APT GIS Team Folder\Projects\SAI_ATT\Wilton\mxd\Wilton Aerial Figure 1.mxd



Legend

Site

Figure 1 - Site Location Map

Proposed Wireless
Telecommunications Facility
CL&P Utility Structure No. 935
Rivergate Drive
Wilton, Connecticut

N
W E
S

400 200 0 400
Feet

Map Notes:
Base Map Source: 2016 CT ECO Imagery
Map Scale:1 inch = 400 feet
Map Date: December 2019

at&t

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PHOTO LOG

Legend

Site | Year-Round | Seasonal | Not Visible

1 inch = 150 feet

150 75 0 150 Feet

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verizon

PHOTOGRAPHED ON 11/21/2019

35mm Focal Length

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**WEST MEADOW ROAD AT RIVERGATE DRIVE**	**NORTH**	**+/- 269 FEET**	**NOT VISIBLE**

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PHOTOGRAPHED ON 11/21/2019

3.5mm Focal Length

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**WEST MEADOW ROAD**	**NORTHWEST**	**+/- 281 FEET**	**YEAR-ROUND**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**WEST MEADOW ROAD**	**NORTHWEST**	**+/- 281 FEET**	**YEAR-ROUND**

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at&t

PHOTOGRAPHED ON 11/21/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**WEST MEADOW ROAD**	**NORTHWEST**	**+/- 482 FEET**	**YEAR-ROUND**

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at&t

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**WEST MEADOW ROAD**	**NORTHWEST**	**+/- 482 FEET**	**YEAR-ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

at&t

PHOTOGRAPHED ON 11/21/2019

24mm Focal Length

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**MEADOW ROAD**	**NORTHWEST**	**+/- 323 FEET**	**NOT VISIBLE**

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at&t

PHOTOGRAPHED ON 11/21/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**RIGHT-OF-WAY**	**SOUTHWEST**	**+/- 162 FEET**	**YEAR-ROUND**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**RIGHT-OF-WAY**	**SOUTHWEST**	**+/- 162 FEET**	**YEAR-ROUND**

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PHOTOGRAPHED ON 11/21/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**BLUE RIDGE LANE AT RIVERGATE DRIVE**	**SOUTHEAST**	**+/- 389 FEET**	**SEASONAL**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**BLUE RIDGE LANE AT RIVERGATE DRIVE**	**SOUTHEAST**	**+/- 389 FEET**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

at&t

PHOTOGRAPHED ON 11/21/2019

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**RIVERGATE DRIVE**	**SOUTHWEST**	**+/- 0.11 MILE**	**NOT VISIBLE**

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4

CENTEK engineering

Centered on Solutions℠

Structural Design of Antenna Mast and Analysis of Utility Tower

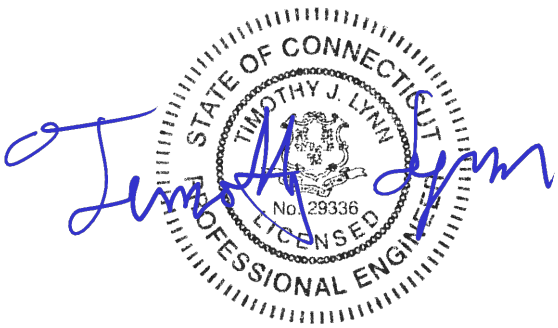
AT&T Site Ref: CT1847

Eversource Structure No. 935
91' Electric Transmission Lattice Tower

Rivergate Drive
Wilton, CT

CENTEK Project No. 19145.00

~~Date: January 22, 2020~~
Rev 5: January 13, 2021



Prepared for:
AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Table of Contents

Introduction

The purpose of this report is to design a proposed Antenna Mast and analyze the existing 91' tall utility tower located on Rivergate Drive in Wilton, CT for the proposed antenna and equipment installation by AT&T.

The proposed loads consist of the following:

- **AT&T MOBILITY (Proposed):**

  Antennas: Three (3) CCI TPA65R-BU8DA-K panel antennas, three (3) DMP65R-BU8DA-K panel antennas and eighteen (18) CCI TMABPDB7823VG12A TMAs mounted on a Site-Pro double support arm p/n:RMV5-284 with a RAD center elevation of 103-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running within the proposed Antenna Mast and twenty-four (24) 1-5/8" ∅ coax cables running on (2) legs of the existing tower as indicated in section 4 of this report.
  Antenna Mast: HSS16"x0.5" x 105-ft long pipe conforming to ASTM A500 Grade 42 (Fy = 42ksi)

Primary assumptions used in the analysis

- Design steel stresses are defined by AISC-LRFD 14th edition for design of the antenna Mast and antenna supporting elements.
- ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", defines allowable steel stresses for evaluation of the utility tower.
- All utility tower members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- All coaxial cable will be installed as indicated in Section 4 of this report.
- Antenna Mast will be properly installed and maintained.
- No residual stresses exist due to incorrect tower erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Antenna Mast and utility tower will be in plumb condition.
- Utility tower was properly installed and maintained and all members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
- Any deviation from the analyzed loading will require a new analysis for verification of structural adequacy.

Analysis

Structural design of the antenna mast was independently completed using the current version of RISA-3D computer program licensed to CENTEK Engineering, Inc. The RISA-3D program contains a library of all AISC shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The proposed Antenna Mast consisting of a HSS16"x0.5" pipe conforming to ASTM A500 Grade 42 (Fy = 42ksi) connected at four elevations to the existing tower and supported on s structural steel support frame was designed for its ability to resist loads prescribed by the TIA standard. Section 5 of this report details these gravity and lateral wind loads. Load cases and combinations used in RISA-3D for TIA loading are listed in report Section 6.

Structural analysis of the existing Eversource tower structure was completed using the current version of PLS-Tower computer program licensed to CENTEK Engineering, Inc. The NESC program contains a library of all AISC angle shapes and corresponding section properties are computed and applied directly within the program. The program's Steel Code Check option was also utilized.

The existing 91-ft tall Eversource lattice tower was analyzed for its ability to resist loads prescribed by the NESC standard. Maximum usage for the tower was calculated considering the additional forces from the Antenna Mast and associated appurtenances. Section 7 of this report details these gravity and lateral wind loads.

Design Basis

Our analysis was performed in accordance with TIA-222-G, ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures", NESC C2-2017 and Eversource Design Criteria.

- UTILITY TOWER ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility structure to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2017 ~ Construction Grade B, and ASCE Manual No. 10-97, "Design of Latticed Steel Transmission Structures".

  Load cases considered:

  Load Case 1: NESC Heavy
  Wind Pressure…….. 4.0 psf
  Radial Ice Thickness…… 0.5"
  Vertical Overload Capacity Factor……. 1.50
  Wind Overload Capacity Factor……. 2.50
  Wire Tension Overload Capacity Factor…… 1.65

  Load Case 2: NESC Extreme
  Wind Speed…… 110 mph (1)
  Radial Ice Thickness…… 0"

  Note 1: NESC C2-2017, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

- MAST ASSEMBLY ANALYSIS

  Mast, appurtenances and connections to the utility tower were analyzed and designed in accordance with the Eversource Design Criteria Table, TIA-222-G and AISC standards.

  Load cases considered:

  Load Case 1:
  Wind Speed……..... 93 mph (2018 CSBC Appendix-N)
  Radial Ice Thickness…….. 0”

  Load Case 2:
  Wind Pressure…….. 50 mph wind pressure
  2015Radial Ice Thickness…….. 0.75”

R e s u l t s

- ANTENNA MAST

  The proposed antenna mast was determined to be structurally **adequate**.

Component	Design Limit	Stress Ratio (percentage of capacity)	Result
HSS16x0.5	Bending	25.8%	**PASS**
L2.5x2.5x3/8 Brace	Bending	24.2%	**PASS**
Connection	Shear	72.6%	**PASS**

- UTILITY TOWER

  This analysis finds that the subject utility structure is adequate to support the proposed antenna mast and related appurtenances. The tower stresses meet the requirements set forth by the ASCE Manual No. 10-97, “Design of Latticed Steel Transmission Structures”, for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 8 of this report. The analysis results are summarized as follows:

  A maximum usage of **99.95%** occurs in the utility structure under the **NESC Extreme** loading condition.

  TOWER SECTION:

  The utility structure was found to be within allowable limits.

Tower Member	Stress Ratio (% of capacity)	Result
Angle g7x	99.95%	**PASS**

- FOUNDATION AND ANCHORS

The existing foundation consists of four (4) 1.67-ft square tapering to 2.33-ft square x 5.25-ft long reinforced concrete piers on four (4) 5-ft square x 2-ft thick reinforced concrete pads. The base of the tower is connected to the foundation by one (1) anchor stub per leg. Foundation information was obtained from NUSCO drawing # 01064-60003.

BASE REACTIONS:

From PLS-Tower analysis of structure based on NESC/Eversource prescribed loads.

Load Case	Shear	Uplift	Compression
NESC Heavy Wind	9.8 kips	24.3 kips	43.4 kips
NESC Extreme Wind	18.5 kips	64.9 kips	76.2 kips

Note 1 – 10% increase applied to tower base reactions per OTRM 051

FOUNDATION:

The foundation **with the reinforcements detailed in section 4 of this report was not found** to be within allowable limits.

Foundation	Design Limit	Allowable Limit	Proposed Loading (2)	Result
Concrete Pier	Uplift	1.0 FS (1)	1.37 FS (1)	**PASS**
	Overturning	1.0 FS (1)	1.1 FS (1)	**PASS**

Note 1: FS denotes Factor of Safety
Note 2: 10% increase to PLS base reactions used in foundation analysis per OTRM 051.

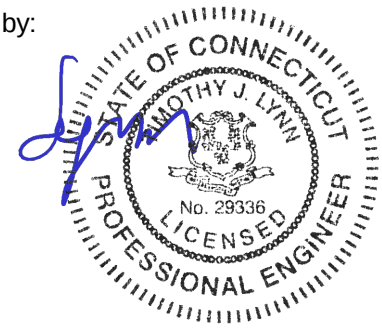
Conclusion

This analysis shows that the subject utility tower **with the reinforcements detailed in section 4 of this report is adequate** to support the proposed equipment installation.

The analysis is based, in part, on the information provided to this office by Eversource and AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.

- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.

- It is the responsibility of the client to ensure that the information provided to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.

- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222.

- All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ RISA-3D

RISA-3D Structural Analysis Program is an integrated structural analysis and design software package for buildings, bridges, tower structures, etc.

Modeling Features

- Comprehensive CAD-like drawing/editing environment: draw, generate, modify and load elements as well as snap, move, rotate, copy, mirror, scale, split, merge, mesh, delete, apply, trim, extend, etc.
- Versatile drawing grids (orthogonal, radial, skewed, DXF underlay)
- Universal snaps and object snaps allow drawing without grids
- Powerful graphic select/unselect tools including box, line, polygon, invert, criteria, spreadsheet based, save/recall selections with locking
- True spreadsheet editing with cut, paste, fill, math, sort, find, etc.
- Dynamic synchronization between spreadsheets and graphics
- Open multiple spreadsheets simultaneously
- Constant in-stream error checking and data validation
- Unlimited undo/redo capability, automatic timed backup
- Generation templates for grids, disks, cylinders, cones, arcs, trusses, tanks, hydrostatic loads, geodesic domes, etc.
- Support for all units systems & conversions at any time
- Automatic interaction with RISASection custom shape libraries
- Steel Shapes: AISC, Historic, Australian, British, Canadian, Chilean, Chinese, European, Indian, Mexican
- Light Gage Shapes: AISI, SSMA, Dale/Incor, Dietrich, Marino\WARE
- Import DXF, RISA-2D, STAAD and CIS/2 files
- Export DXF, SDNF and CIS/2 files
- Robust two-way link with Revit Structure 2019
- Link with Tekla Structures 2018

Analysis Features

- Analysis of 1D members (beams, columns, braces, etc.) using Finite Element Method
- Analysis of 2D elements (plates, walls) using Finite Element Method
- Analysis of 3D elements (solids) using Finite Element Method
- Partial fixity member end releases using rotational spring constants
- Time History Analysis
- Accelerated true sparse solver for static analysis
- Flexible modeling of P-Delta effects
- Accelerated Sparse Lanczos dynamics solver, very fast and robust
- Multiple simultaneous dynamic and response spectra analysis using Gupta, CQC or SRSS with automatic calc of scaling factors
- Automatic inclusion of mass offset (5% or user defined) for dynamics when integrated with RISAFloor
- Ritz vector dynamic solver
- True physical member modeling (members are aware of interior joints)
- Plate/shell elements with plane stress only option
- 8 node solid elements
- High end mesh generation — draw a polygon with any number of sides to create a mesh of well formed quadrilateral (NO triangular) elements
- Automatic rigid diaphragm modeling with detachable joints

- Area loads with one-way or two-way distributions with optional “blow through” distribution for loading open structures
- Plate thermal loads
- Simultaneous moving loads, AASHTO/custom for bridges, cranes…
- Torsional warping calculations for stiffness, stress and design of hot rolled steel
- Member end releases, rigid end offsets, analysis offsets
- Enforced joint displacements
- One Way members, for tension only bracing, slipping, etc.
- One Way springs, for modeling soils and other effects
- Euler members: Compression up to buckling load, then disable
- Stress calculations on any arbitrary shape
- Inactivate members, plates, solids and diaphragms without deleting them
- Story drift calculations provide relative drift and ratio to height
- Automatic self-weight calculations for members, plates and solids

Graphics Features

- Unlimited simultaneous model view windows
- “True to scale” rendering with translucency, even when drawing
- High-speed redraw algorithm for instant refreshing
- Dynamically zoom, pan, rotate, scroll, snap views
- Font and color control
- Saved views to quickly restore frequent or desired views
- Rendered or wire-frame animations of deflected model and mode shapes
- Animation of moving loads with speed control
- Distance tool for measuring between points
- Force/moment summation about any arbitrary cut line
- High quality customizable graphics printing

Design Codes

- Steel Design Codes: AISC 360-16/10/05: ASD & LRFD, AISC 2nd & 3rd: LRFD, AISC 9th: ASD, CSA S16-14/09/05/01/CSA-S16.1-94, BS 5950-1: 2000, EN 1993-1-1:2014/2005, ENV 1993-1-1:1992, IS 800: 2007/1998, AS 4100-1998, NZS 3404: 1997
- Seismic design per AISC 341-10/05, including 358 prequalified connections
- Concrete Design Codes: ACI 318-14/11/08/05/02/99, CSA A23.3-14/04/94, NTC-DF 2004, BS 8110-1: 1997, BS EN 1992-1-1: 2004+A1: 2014/2004, EN 1992-1-1:1992, IS 456: 2000, AS 3600-2001, NZS 3101: 1995, SBC 304-2007
- Cold Formed Steel Design Codes: AISI S100-16/12/10/07: ASD & LRFD, AISI NAS-04/01: ASD & LRFD, AISI 1999: ASD & LRFD, CSA S136-16/12/10/07/04/01: LSD, CANACERO 16: ASD, CANACERO 12/10/07/04/01: ASD & LRFD
- Aluminum Design Codes: AA ADM1-15/10: ASD & LRFD, AA ADM1-05: ASD
- Wood Design Codes: AWC NDS-18/15/12: ASD, AF&PA NDS-08/05/01/97/91: ASD, CSA 086-14/09 Ultimate, Structural Composite Lumber, multi-ply, full sawn, Glulam, shear walls
- Masonry Design Codes: TMS 402-16: ASD & Strength, ACI 530-13/11/08/05/02: ASD & Strength, ACI 530-99: ASD, UBC 1997: ASD & Strength
- Stainless Steel Design Code: AISC 360-10: ASD & LRFD
- Wind loads are generated automatically (ASCE 7-16/10/05/02/98/95, NBC 15/10/05, NTC 2004, & IS 875: 1987) for building-type structures, including partial wind cases
- Seismic loads are generated automatically (ASCE 7-16/10/05/02, CBC 2001, IBC 2000, UBC 1997, NBC 15/10/05, NTC 2004, & IS 1893: 2002) for building-type structures, including accidental torsion

Design Features

- Designs/optimizes concrete, hot rolled & cold formed steel, masonry, wood and aluminum

- Program selected or user-defined rebar layouts for flexure and shear
- Concrete beam detailing (Rectangular, T and L).
- Concrete column interaction diagrams
- Concrete wall design including in-plane, out-of-plane & bearing loads
- Automatic spectra generation for ASCE 7, NBC, IS 1893, NTC
- Extensive user controlled generation of load combinations
- Intelligent unbraced length calculations for physical members
- Tapered wide flange design per AISC Design Guide 25
- Masonry wall design for in-plane and out-of-plane
- Wood Shapes: Complete NDS species/grade and Glulam database
- Complete wood wall design for bearing & shear walls: Segmented, Perforated & Force Transfer Around Openings design methods
- Strap and Hold Down design for Wood Shear Walls
- Seismic design of concrete walls using ACI 318-14 Chapter 18
- Concrete seismic coupling beams for multi-story walls with diaphragms

Results Features

- Graphic presentation of color-coded results and plotted designs
- Color contours on plates, solid stresses/forces with smoothing and animation
- Spreadsheet results with sorting and filtering of: deflections, forces, stresses, optimized sizes for strength or deflection, code designs, concrete reinforcing, material takeoffs, etc.
- Standard and user-defined reports
- Graphic member detail reports with force/stress/deflection diagrams and detailed design calculations and expanded diagrams

Integrated Building Design

RISA-3D, RISAFloor, RISAFoundation and RISAConnection are so tightly integrated that they operate as one program on the same building model. Optimize the gravity system in RISAFloor, the lateral system in RISA-3D, the connection design in RISAConnection and the foundation system in RISAFoundation, with a complete flow of information both ways.

General Features

- Compatible with Windows 7/8.1/10 (64-bit Windows)
- Program technical support provided by Professional Engineers

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM ~ PLS-TOWER

PLS-TOWER is a Microsoft Windows program for the analysis and design of steel latticed towers used in electric power lines or communication facilities. Both self-supporting and guyed towers can be modeled. The program performs design checks of structures under user specified loads. For electric power structures it can also calculate maximum allowable wind and weight spans and interaction diagrams between different ratios of allowable wind and weight spans.

Modeling Features:

- Powerful graphics module (stress usages shown in different colors)
- Graphical selection of joints and members allows graphical editing and checking
- Towers can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces
- Can extract geometry and connectivity information from a DXF CAD drawing
- CAD design drawings, title blocks, drawing borders or photos can be tied to structure model
- XML based post processor interface
- Steel Detailing Neutral File (SDNF) export to link with detailing packages
- Can link directly to line design program PLS-CADD
- Automatic generation of structure files for PLS-CADD
- Databases of steel angles, rounds, bolts, guys, etc.
- Automatic generation of joints and members by symmetries and interpolations
- Automated mast generation (quickly builds model for towers that have regular repeating sections) via graphical copy/paste
- Steel angles and rounds modeled either as truss, beam or tension-only elements
- Guys are easily handled (can be modeled as exact cable elements)

Analysis Features:

- Automatic handling of tension-only members
- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Automatic calculation of tower dead, ice, and wind loads as well as drag coefficients according to:
- ASCE 74-1991, 2009
- NESC 2002, 2007, 2012, 2017
- IEC 60826:2003, 2017
- IS 802 : 1995, 2015
- ISEC-NCR-83
- EN50341-1:2001 and 2012 (CENELEC)
- EN50341-3-2:2001 (Belgium NNA)
- EN50341-3-9:2001, EN50341-2-9:2015, 2017 (UK NNA)
- EN50341-3-17:2001 (Portugal NNA)
- EN50341-2-22:2016 (Poland NNA)
- AS/NZS 7000:2010, 2016
- ESAA C(b)1-2003 (Austalia)
- TPNZ (New Zealand)
- REE (Spain)
- SP 16.13330.2011 (SNiP Russia)
- Minimization of problems caused by unstable joints and mechanisms
- Automatic bandwidth minimization and ability to solve large problems
- Design checks according to (PLS can add strength checks for other standards):
- ASCE 10
- AS 3995 (Australian Standard 3995)

- BS 8100 (British Standard 8100)
- EN50341-1 2001 and 2012 (CENELEC, both empirical and analytical methods are available)
- EN50341-2-9:2015, 2017 (UK NNA)
- ECCS 1985
- NGT-ECCS
- PN-90/B-03200
- EN50341-2-22:2016 (Poland NNA)
- SP 16.13330.2011 (SNiP Russia)
- EDF/RTE Resal
- IS 802 (India Standard 802)

Results Features:

- Design summaries printed for each group of members
- Easy to interpret text, spreadsheet and graphics design summaries
- Automatic determination of allowable wind and weight spans
- Automatic determination of interaction diagrams between allowable wind and weight spans
- Capability to batch run multiple tower configurations and consolidate the results
- Automated optimum angle member size selection and bolt quantity determination

Tool for interactive angle member sizing and bolt quantity determination.

Criteria for Design of PCS Facilities On or Extending Above Metal Electric Transmission Towers & Analysis of Transmission Towers Supporting PCS Masts (1)

Introduction

This criteria is the result from an evaluation of the methods and loadings specified by the separate standards, which are used in designing telecommunications towers and electric transmission towers. That evaluation is detailed elsewhere, but in summary; the methods and loadings are significantly different. This criteria specifies the manner in which the appropriate standard is used to design PCS facilities including masts and brackets (hereafter referred to as "masts"), and to evaluate the electric transmission towers to support PCS masts. The intent is to achieve an equivalent level of safety and security under the extreme design conditions expected in Connecticut and Massachusetts.

ANSI Standard TIA-222-G covering the design of telecommunications structures specifies a limit state design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that the design strength exceeds the required strength.

ANSI Standard C2-2017 (National Electrical Safety Code) covering the design of electric transmission metal structures is based upon an ultimate strength/yield stress design approach. This approach applies a multiplier (overload capacity factor) to the loads possible from extreme weather loading conditions, and designs the structure so that it does not exceed its ultimate strength (yield stress).

Each standard defines the details of how loads are to be calculated differently. Most of the NU effort in "unifying" both codes was to establish what level of strength each approach would provide, and then increasing the appropriate elements of each to achieve a similar level of security under extreme weather loadings.

Two extreme weather conditions are considered. The first is an extreme wind condition (hurricane) based upon a 50-year recurrence (2% annual probability). The second is a winter condition combining wind and ice loadings.

The following sections describe the design criteria for any PCS mast extending above the top of an electric transmission tower, and the analysis criteria for evaluating the loads on the transmission tower from such a mast from the lower portions of such a mast, and loads on the pre-existing electric lower portions of such a mast, and loads on the pre-existing electric transmission tower and the conductors it supports.

Note 1: Prepared from documentation provide from Northeast Utilities.

P C S M a s t

The PCS facility (mast, external cable/trays, including the initial and any planned future support platforms, antennas, etc. extending the full height above the top level of the electric transmission structure) shall be designed in accordance with the provisions of TIA 222-G:

E L E C T R I C T R A N S M I S S I O N T O W E R

The electric transmission tower shall be analyzed using yield stress theory in accordance with the attached table titled “Eversource Design Criteria”. This specifies uniform loadings (different from the TIA loadings) on the each of the following components of the installed facility:

- PCS mast for its total height above ground level, including the initial and planned future support platforms, antennas, etc. above the top of an electric transmission structure.
- Conductors are related devices and hardware.
- Electric transmission structure. The loads from the PCS facility and from the electric conductors shall be applied to the structure at conductor and PCS mast attachment points, where those load transfer to the tower.

The uniform loadings and factors specified for the above components in the table are based upon the National Electrical Safety Code 2017 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to TIA and its loads and factors with the exceptions noted above. (Note that the NESC does not require the projected wind surfaces of structures and equipment to be increased by the ice covering.)

In the event that the electric transmission tower is not sufficient to support the additional loadings of the PCS mast, reinforcement will be necessary to upgrade the strength of the overstressed members.

Attachment A
Eversource Design Criteria

		Attachment A ES Design Criteria	Basic Wind Speed	Pressure	Height Factor	Gust Factor	Load or Stress Factor	Force Coef. - Shape Factor
			V (MPH)	Q (PSF)	Kz	Gh		
Ice Condition	TIA/EIA	Antenna Mount	TIA	TIA (0.75Wi)	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Heavy	Tower/Pole Analysis with antennas extending above top of Tower/Pole (Yield Stress)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole (on two faces)	-----	4	1	1	2.5	1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
High Wind Condition	TIA/EIA	Antenna Mount	85	TIA	TIA	TIA	TIA, Section 3.1.1.1 disallowed for connection design	TIA
	NESC Extreme Wind	Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250C: Extreme Wind Loading Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
NESC Extreme Ice with Wind Condition*		Tower/Pole Analysis with antennas extending above top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load 1.25 x Gust Response Factor Apply a 1.25 x Gust Response Factor to all telecommunication equipment projected above top of tower/pole and apply a 1.0 x Gust Response Factor to the tower/pole structure					1.6 Flat Surfaces 1.3 Round Surfaces
		Tower/Pole Analysis with antennas below top of Tower/Pole	For wind speed use OTRM 060 Map 1, Rule 250D: Extreme Ice with Wind Loading 4 PSF Wind Load Height above ground is based on overall height to top of tower/pole					1.6 Flat Surfaces 1.3 Round Surfaces
		Conductors:	Conductor Loads Provided by ES					
		*Only for structures installed after 2007						

determined from NESC applied loading conditions (not TIA Loads) on the structure and mount as specified below, and shall include the wireless communication mast and antenna loads per NESC criteria)

The strength reduction factor obtained from the field investigation shall be applied to the members or connections that are showing signs of deterioration from their original condition With the written approval of Eversource Transmission Line Engineering on a case by case the existing structures may be analyzed initially using the current NESC code, then it is permitted to use the original design code with the original conductor load should the existing tower fail the current NESC code.

The structure shall be analyzed using yield stress theory in accordance with Attachment A, "Eversource Design Criteria." This specifies uniform loadings (different from the TIA loadings) on each of the following components of the installed facility:

a) Wireless communication mast for its total height above ground level, including the initial and any planned future equipment (Support Platforms, Antennas, TMA's etc.) above the top of an electric transmission structure.

b) Conductors and related devices and hardware (wire loads will be provided by Eversource).

c) Electric Transmission Structure

i) The loads from the wireless communication equipment components based on NESC and Eversource Criteria in Attachment A, and from the electric conductors shall be applied to the structure at conductor and wireless communication mast attachment points, where those loads transfer to the tower. ii)

ii) Shape Factor Multiplier:

NESC Structure Shape	Cd
Polyround (for polygonal steel poles)	1.3
Flat	1.6
Open Lattice	3.2
Pole with Coaxial Cable	See Below Table

iii) When Coaxial Cables are mounted alongside the pole structure, the shape multiplier shall be:

Mount Type	Cable Cd	Pole Cd
Coaxial Cables on outside periphery (One layer)	1.45	1.45
Coaxial Cables mounted on stand offs	1.6	1.6

d) The uniform loadings and factors specified for the above components in Attachment A, "Eversource Design Criteria" are based upon the National Electric Safety Code 2007 Edition Extreme Wind (Rule 250C) and Combined Ice and Wind (Rule 250B-Heavy) Loadings. These provide equivalent loadings compared to the TIA and its loads and factors with the exceptions noted above.

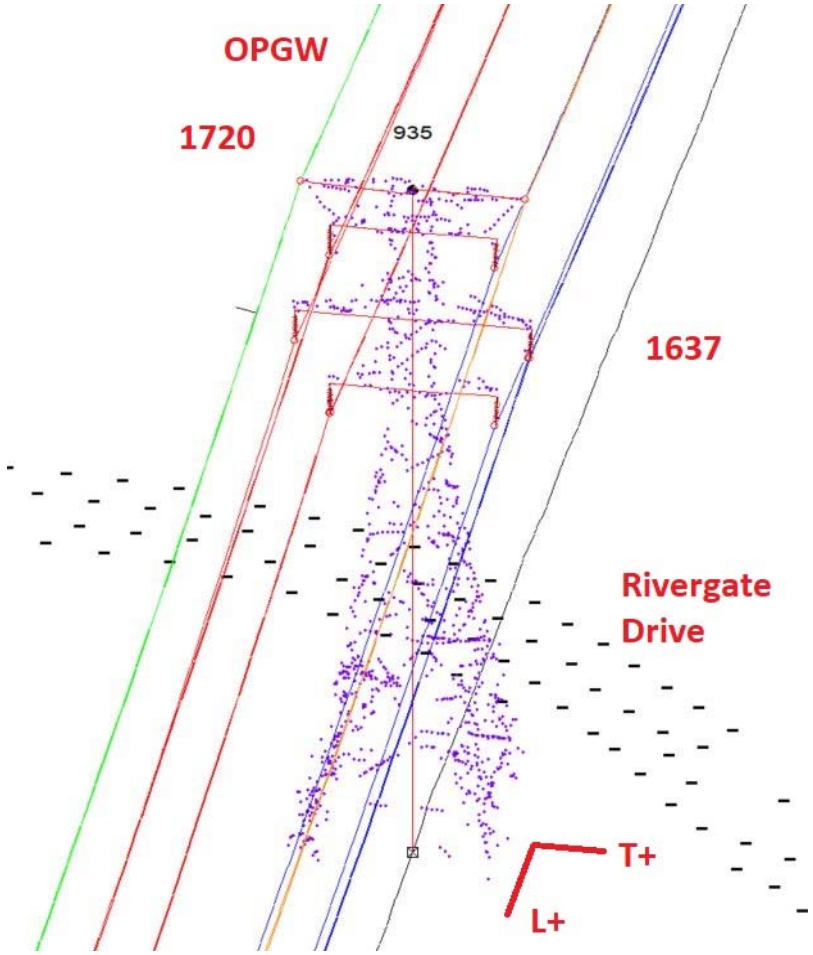
Project: *Str 935 - Wilton*
Date: *06/28/2019*
Engineer: *TG*
Checked By: *JS*
Purpose: *Wire Load Re-Check*

Shield Wire: *7#9 Copperweld*
OPGW: *Focus Skylite 738, 120F*
1637 Cond: *556 "Dove" ACSR*
1720 Cond: *556 "Dove" ACSR*

NESC 250B

	Vertical	*Transverse*	*Longitudinal*
Shield Wire	899	823	0
OPGW	1402	1031	0
1637 Cond	2062	1305	0
1720 Cond	2067	1218	0

To Structure 936



To Structure 934

Project: *Str 935 - Wilton*
Date: *06/28/2019*
Engineer: *TG*
Checked By: *JS*
Purpose: *Wire Load Re-Check*

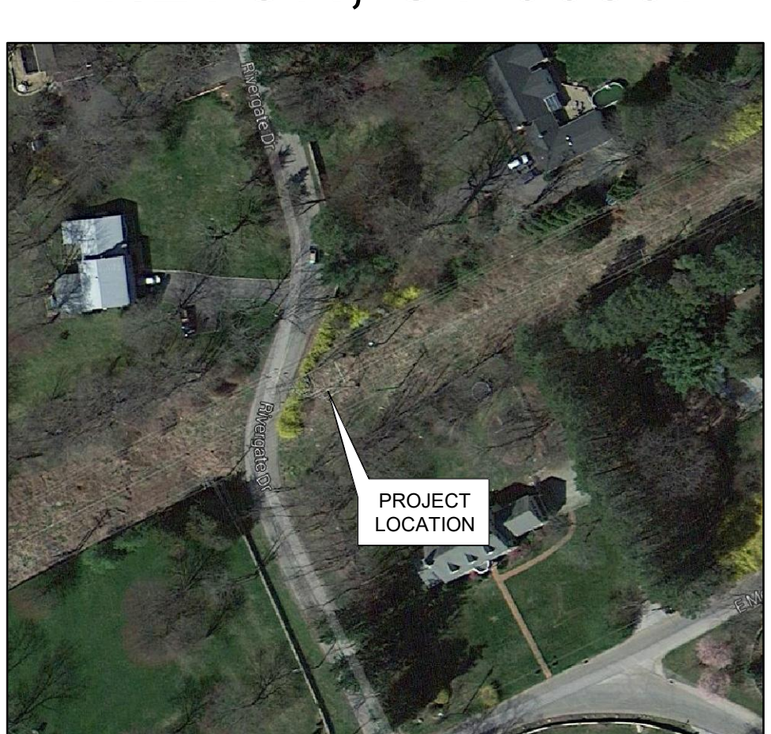
Shield Wire: *7#9 Copperweld*
OPGW: *Focus Skylite 738, 120F*
1637 Cond: *556 "Dove" ACSR*
1720 Cond: *556 "Dove" ACSR*

NESC 250C

	Vertical	***Transverse***	***Longitudinal***
Shield Wire	216	570	0
OPGW	399	1181	0
1637 Cond	757	1628	0
1720 Cond	766	1561	0

ANTENNA MAST DESIGN

EVERSOURCE STRUCT. NO. 935
AT&T SITE REF: CT1847
RIVERGATE DRIVE
WILTON, CT 06897



VICINITY MAP

NORTH

PROJECT SUMMARY

SITE ADDRESS:	RIVERGATE DRIVE WILTON, CT 06897
PROJECT COORDINATES:	LAT: 41°–10'–55.43"N LON: 73°–23'–27.76"W ELEV:±306' AMSL
EVERSOURCE STRUCT NO:	935
EVERSOURCE CONTACT:	RICH BADON 860.728.4852
AT&T SITE REF.:	CT1847
AT&T CONTACT:	DAN BILEZIKIAN (401)368–0006
ANTENNA CL HEIGHT:	103'–0" AGL/101'–0" ATB
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CENTEK CONTACT:	TIMOTHY LYNN, PE 203–433–7507

SHEET INDEX

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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
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1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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ANTENNA MAST DESIGN

CT1847
EVERSOURCE STRUCTURE 935

RIVERGATE DRIVE
WILTON, CT 06897

DATE: 01/09/20
SCALE: AS SHOWN
JOB NO. 19145.00

TITLE SHEET

SHEET NO.
T-1
Sheet No. 1 of 16

DESIGN BASIS

1. GOVERNING CODE: 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CT STATE SUPPLEMENT.

2. TIA-222-G, ASCE MANUAL NO. 10-97 – "DESIGN OF LATTICED STEEL TRANSMISSION STRUCTURES", NESC C2-2017 AND NORTHEAST UTILITIES DESIGN CRITERIA.

3. DESIGN CRITERIA

   WIND LOAD: (ANTENNA MAST)
   NOMINAL DESIGN WIND SPEED (V) = 93 MPH (2018 CSBC: APPENDIX 'N')

   WIND LOAD: (UTILITY TOWER & FOUNDATION)
   BASIC WIND SPEED (V) =110 MPH (3-SECOND GUST) BASED ON NESC C2-2017 SECTION 25 RULE 250C.

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS AND REINFORCEMENT DESIGN PREPARED BY CENTEK ENGINEERING, INC., FOR AT&T DATED 1/13/2021.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM THE ORIGINAL TOWER DESIGN DOCUMENTS PREPARED BY AMERICAN BRIDGE CO. ORDER NO. J6125 CIRCA 1949.

3. THE TEMPORARY DETACHMENT AND/OR REPLACEMENT OF TOWER MEMBERS SHALL BE DONE ONE AT A TIME AND SHALL BE CONDUCTED ON DAYS WITH LESS THAN 15 MPH WIND PRESENT. NO MEMBER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY.

4. ALL STEEL REINFORCEMENT SHOWN HEREIN APPLIES TO ALL SIDES OF THE TOWER.

5. ALL REPLACEMENT STEEL MEMBERS SHALL BE INSTALLED WITH A325-N BOLTS (SIZE TO MATCH EXISTING). UNLESS OTHERWISE NOTED BELOW.

6. THE TOWER STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER REINFORCEMENTS ARE COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE & SEQUENCE AND TO INSURE THE SAFETY OF THE TOWER STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, UNDERPINNING, TEMPORARY ANCHORS, GUYING, BARRICADES, ETC. AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY. MAINTAIN EXISTING SITE OPERATIONS AND COORDINATE WORK WITH TOWER OWNER.

7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE GOVERNING BUILDING CODE.

8. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

9. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK. THIS INCLUDES VERIFYING ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.

10. TOWER REINFORCEMENTS SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF TRANSMISSION STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.

11. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH THE TOWER REINFORCEMENT WORK.

12. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

13. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

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SCALE:	AS SHOWN
JOB NO.	19145.00

DESIGN BASIS AND GENERAL NOTES

SHEET NO.
N-1
Sheet No. 2 of 16

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.

2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.

3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40–70
No. 100	5–20
No. 200	4–8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90–100
½"	0–15
⅜"	0–5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".

6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 10" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.

7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

FOUNDATION CONSTRUCTION NOTES

1. ALL FOOTINGS SHALL BE PLACED ON SUITABLE, COMPACTED SOIL HAVING MIN ALLOWABLE BEARING CAPACITY OF 4000 psf AND FREE OF ORGANIC CONTENT, CLAY, OR OTHER UNSUITABLE MATERIAL. ADDITIONAL EXCAVATION MAY BE REQUIRED BELOW FOOTING ELEVATIONS INDICATED IF UNSUITABLE MATERIAL IS ENCOUNTERED.

2. SUBGRADE PREPARATION: IF UNSUITABLE SOIL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIALS FROM BELOW PROPOSED STRUCTURE FOUNDATIONS AND COMPACT EXPOSED SOIL SURFACES. PLACE AND COMPACT APPROVED GRAVEL FILL. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER SUPERVISION OF AN APPROVED TESTING LABORATORY. FILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 10" BEFORE COMPACTION. DETERMINE MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557–70 AND MAKE ONE (1) FIELD DENSITY TEST IN ACCORDANCE WITH ASTM D2167–66 FOR EACH 50 CUBIC YARDS OF COMPACTED FILL. BUT NOT LESS THAN ONE (1) PER LAYER, TO INSURE COMPACTION TO 95% OF MAX. DRY DENSITY.

3. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE KEPT REASONABLY DRY AND PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION.

4. WHERE GROUNDWATER IS ENCOUNTERED, DEWATERING SHALL BE ACCOMPLISHED CONTINUOUSLY AND COMPLETELY DURING FOUNDATION CONSTRUCTION. PROVIDE CRUSHED STONE AS REQUIRED TO STABILIZE FOOTING SUBGRADE.

5. ALL FOOTINGS ARE TO REST ON FIRM SOIL, REGARDLESS OF ELEVATIONS SHOWN ON THE DRAWINGS, BUT IN NO CASE MAY FOOTING ELEVATIONS BE HIGHER THAN INDICATED ON THE FOUNDATION PLAN, UNLESS SPECIFICALLY DIRECTED BY THE ENGINEER.

6. FOUNDATION WATERPROOFING AND DAMPPROOFING SHALL COMPLY WITH BUILDING CODE REQUIREMENTS UNLESS A MORE SUBSTANTIAL SYSTEM IS INDICATED OR SPECIFIED.

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EARTHWORK AND FOUNDATION CONSTRUCTION NOTES

SHEET NO.
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CONCRETE CONSTRUCTION

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE FOLLOWING STANDARDS:

   ACI 211 – STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL AND HEAVYWEIGHT CONCRETE.

   ACI 301 – SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.

   ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION

   ACI 304 – RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE.

   ACI 306.1 – STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING

   ACI 318 – BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.

2. CONCRETE SHALL BE AIR ENTRAINED AND SHALL DEVELOP COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

   ALL CONCRETE 4,500 PSI

   COMPLY WITH A MAXIMUM WATER/CEMENT RATIO OF 0.45

3. REINFORCING STEEL SHALL BE 60,000 PSI YIELD STRENGTH.

4. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE LATEST ACI CODE AND LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".

5. CONCRETE COVER OVER REINFORCING SHALL BE 3 INCHES.

6. NO STEEL WIRE, METAL FORM TIES, OR ANY OTHER METAL SHALL REMAIN WITHIN THE REQUIRED COVER OF ANY CONCRETE SURFACE.

7. ALL REINFORCEMENT SHALL BE CONTINUOUS. SPLICES WILL NOT BE ALLOWED.

8. NO TACK WELDING OF REINFORCING WILL BE PERMITTED.

9. NO CALCIUM CHLORIDE OR ADMIXTURES CONTAINING MORE THAN 1 % CHLORIDE BY WEIGHT OF ADMIXTURE SHALL BE USED IN THE CONCRETE.

10. TOP OF FOOTING SURFACES SHALL RECEIVE A UNIFORM FLOAT FINISH. CURE FOOTING SURFACE WITH SONNEBORN KURE–N–SEAL WB OR APPROVED EQUAL, APPLIED AS RECOMMENDED BY MANUFACTURER.

11. PREPARATION OF SURFACES WHERE NEW CONCRETE WILL INTERFACE WITH EXISTING CAISSON:
    THE PERIMETER OF THE EXISTING CAISSON SHALL BE THOROUGHLY CLEANED OF ALL DIRT AND DELETERIOUS MATERIALS PRIOR TO APPLICATION OF BONDING AGENT. CONTRACTOR SHALL NOTIFY NORTHEAST UTILITIES 24 HOURS IN ADVANCE OF CLEANING.

    SIKADUR 32, HI–MOD OR ENGINEER APPROVED EQUAL SHALL BE APPLIED, IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, TO ALL INTERFACING SURFACES BEFORE CONCRETE IS PLACED.

    CAULK JOINT BETWEEN EXISTING CONCRETE PIER AND NEW CONCRETE WITH SIKAFLEX 1–A BY SIKA CORP. OR ENGINEER APRROVED EQUAL.

    SUBMIT MANUFACTURER'S PRODUCT SPECIFICATION DATA AND INSTALLATION INSTRUCTIONS FOR REVIEW AND APPROVAL BY OWNER.

12. NEW CONCRETE FOOTING SHALL BE ALLOWED TO CURE AT LEAST 14 DAYS BEFORE WIRELESS ANTENNA MOUNT, ANTENNAS, AND CABLES ARE INSTALLED.

13. INSPECTION AND TESTING OF CONCRETE WORK SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY, APPROVED AND PAID BY THE CARRIER. THE INSPECTOR SHALL OBSERVE THE CONDITION OF SOILS AND FORMWORK BEFORE FOOTINGS ARE PLACED, SIZE, SPACING AND LOCATION OF REINFORCEMENT, AND PLACEMENT OF CONCRETE.

14. THE TESTING COMPANY SHALL ALSO OBTAIN A MINIMUM OF THREE (3) COMPRESSIVE STRENGTH TEST SPECIMENS FOR EACH CONCRETE MIX DESIGN. ONE SPECIMEN TESTED AT 7 DAYS, ONE AT 28 DAYS, AND ONE HELD IN RESERVE FOR FUTURE TESTING, IF NEEDED.

15. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE OWNER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

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CONCRETE CONSTRUCTION NOTES

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STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY LOAD RESISTANCE FACTOR DESIGN (LRFD).

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B. U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.

4. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 14TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

19. FABRICATE BEAMS WITH MILL CAMBER UP.

20. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

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STRUCTURAL STEEL NOTES

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TOWER GROUNDING SYSTEM NOTES

GENERAL

1. THE CARRIER WILL FURNISH THE WIRE, CONNECTORS, AND MISCELANEOUS MATERIAL ASSOCIATED WITH THE COUNTERPOISE GROUNDING SYSTEM.

2. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL THE GROUNDING SYSTEM AND TO REHABILITATE THE RIGHT-OF-WAY AS CLOSE AS POSSIBLE TO ITS ORIGINAL CONDITION.

3. THE CONTRACTOR SHALL HANDLE AND TRANSPORT THE OWNER SUPPLIED MATERIAL FROM THE OWNER'S STOREROOMS AND YARDS TO THE JOB SITE AND SHALL RETURN SURPLUS MATERIAL AND EMPTY REELS TO DESIGNATED STOREROOMS AND YARDS UPON COMPLETION OF THE CONTRACT.

4. THE CARRIER WILL BE RESPONSIBLE FOR PERFORMING TESTS FOR SURGE IMPEDANCE AND WAVE IMPEDENCE.

INSTALLATION

1. UNLESS OTHERWISE DURECTED BY THE OWNER'S REPRESENTATIVE, COUNTERPOISE SHALL BE BURIED A MINIMUM OF 24" IN CULTIVATED AREAS AND 18" IN WOODED OR OTHER AREAS. IN ROCKY AREAS OR WHERE OBSTRUCTIONS ARE ENCOUNTERED, THE COUNTERPOISE SHALL BE DIVERTED AROUND SUCH OBSTRUCTIONS. ALL INSTALLATIONS SHALL INCLUDE CONNECTIONS TO EXISTING OR PROPOSED STRUCTURES, AND SUCH CONNECTIONS SHALL BE MADE BELOW GROUND USING BOLTED PARALLEL GROVE CONNECTORS.

2. WHERE MULTIPLE STUCTURE GROUNDS EXIST AT MULTI POLE STRUCTURES, THEY SHALL BE CONNECTED TOGETHER WITH BURIED COPPERWELD WIRE, BUT ONLY IF SUCH GROUNDS HAVE METALLIC CONNECTIONS UP THE POLES TO THE SHIELD WIRE(S). AT STRUCTURES THAT HAVE PALE GROUNDS AND ALSO POLE GUY GROUNDS, CONNECTIONS SHALL BE MADE ONLY TO THE POLE GROUNDS, AND THE MINIMUM SPACING BETWEEN THE COUNTERPOISE AND ANCHOR RODS SHALL BE 10'. AT WOOD POLE STRUCTURES WHERE NO SUCH POLE GROUND EXISTS, COUNTERPOISE CONNECTIONS SHALL BE MADE TO THE POLE TOP GUYS.

3. FOR SINGLE COUNTINUOUS (TYPE A) AND SINGLE BROKEN (TYPE B) COUNTERPOISE, THE WIRE SHALL IN GENERAL BE LAYED AT THE CENTERLINE OF THE TRANSMISSION LINE. FOR DOUBLE CONTINUOUS (TYPE C) AND DOUBLE BROKEN (TYPE D) COUNTERPOISE, THE WIRES SHALL IN GENERAL SHALL BE LAYED UNDER THE OUTSIDE PHASE WIRES OF THE TRANSMISSION LINE. COUNTERPOISE SHALL NOT BE INSTALLED ACROSS BROOKS, RIVERS, HIGHWAYS, RAILROADS, OR IN THE VICINITY OF TELEPHONE CABLES OR PIPELINES.

4. AT STEEL POLE STRUCTURES, A BURIED GRADING RING AND SPOKES SHALL ALSO BE INSTALLED AROUND THE STRUCTURE UNLESS THE STRUCTURE HAS A PAD AND PIER FOUNDATION OR UNLESS A RING ALREADY EXISTS. COUNTERPOISE WIRE SHALL BE CONNECTED AT TWO PLACES TO EACH RING, AND COPPERWELD SPOKES SHALL SLOPE LINEARLY UP TO THE STRUCTURE GROUND.

5. AT WOOD POLE STRUCTURES, AN 8' LENGTH OF PLASTIC MOULDING SHALL BE STAPLED OVER THE BOTTOM WITH 8' OF DOWNLEAD.

GROUND RODS

1. WHERE GROUND RODS ARE REQUIRED, THEY SHALL BE SINGLE OR SECTIONAL WITH THE LENGTH SPECIFIED. THEY SHALL BE DRIVEN VERTICALLY INTO THE GROUND TO A DEPTH WHICH WILL LEAVE THE TOP OF THE ROD AT LEAST 12" BELOW GRADE. ALL RODS SHALL BE CONNECTED TO COUNTERPOISE OR TO POLE GROUNDS USING BOLTED CONNECTORS.

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GROUNDING NOTES

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MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	X	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED SHOP DRAWINGS	X	EARTHWORK: BACKFILL MATERIAL & COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
–	EOR APPROVED POST–INSTALLED ANCHOR MPII	X	REBAR & FORMWORK GEOMETRY VERIFICATION	X	PHOTOGRAPHS
–	FABRICATION INSPECTION	X	CONCRETE TESTING		
–	FABRICATOR CERTIFIED WELDER INSPECTION	X	STEEL INSPECTION		
X	MATERIAL CERTIFICATIONS	–	POST INSTALLED ANCHOR ROD VERIFICATION		
		–	BASE PLATE GROUT VERIFICATION		
		–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		X	ON–SITE COLD GALVANIZING VERIFICATION		
		X	CONTRACTOR AS–BUILT REDLINE DRAWINGS		

NOTES:
1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
3. "–" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
4. EOR – ENGINEER OF RECORD
4. MPII – "MANUFACTURER'S PRINTED INSTALLATION GUIDELINES"

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.

3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.

4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.

5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:

   – REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   – WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   – DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.

2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:

   – CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   – WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:

   – PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   – DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   – POST–CONSTRUCTION: FINAL CONDITION OF THE SITE

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MODIFICATION INSPECTION REQUIREMENTS

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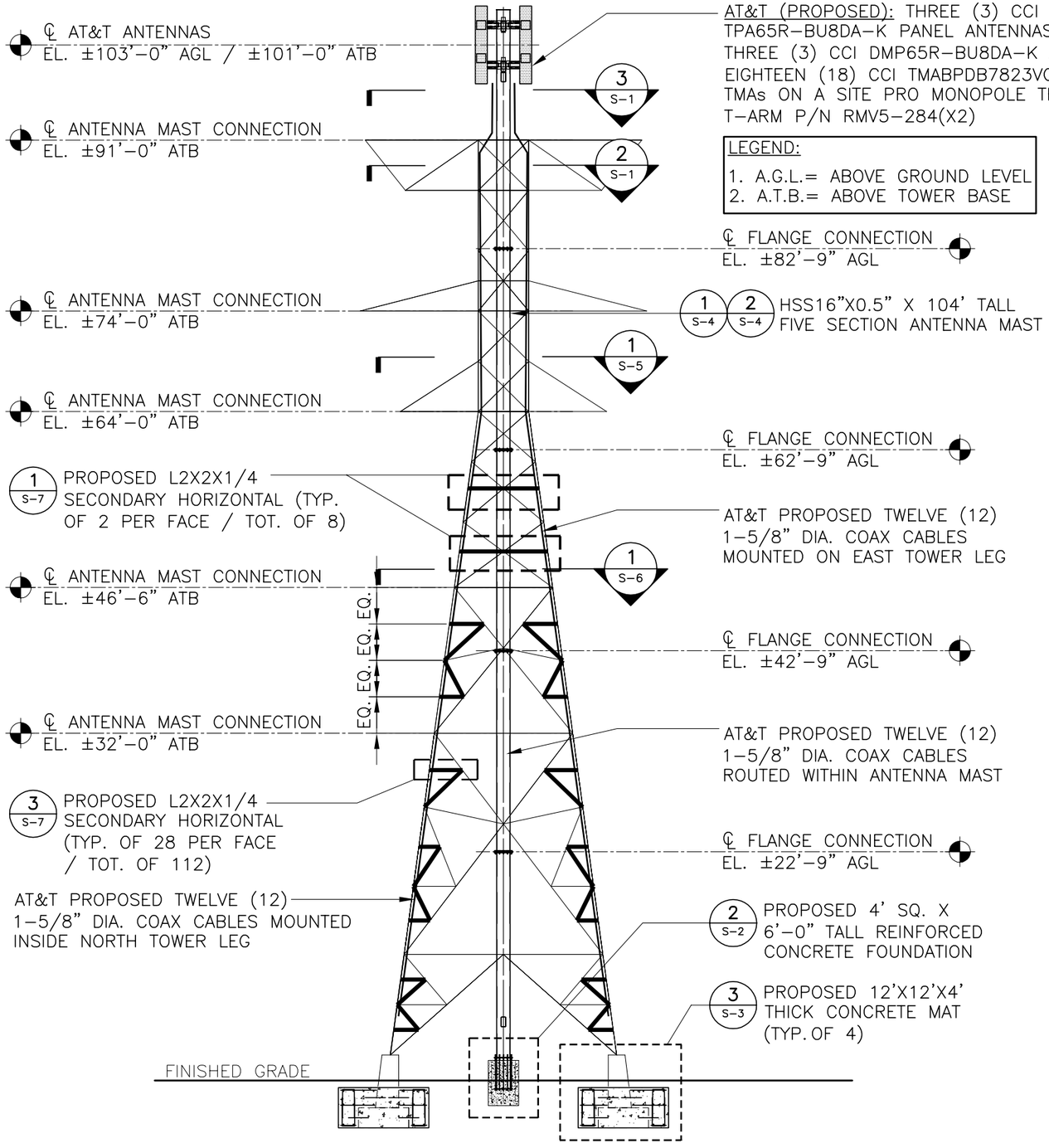
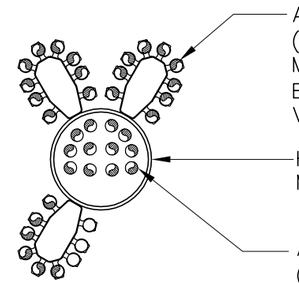


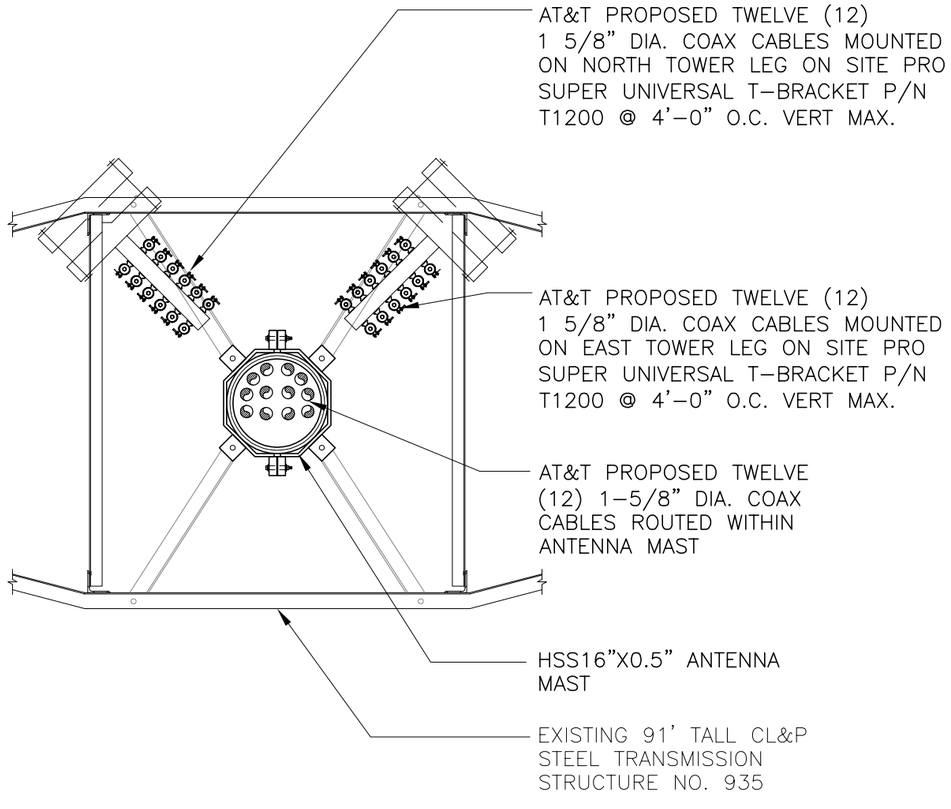
1 S–1 TOWER & ANTENNA MAST ELEVATION

SCALE: NOT TO SCALE



3 S–1 FEEDLINE PLAN (ABOVE TOWER TOP)

SCALE: NOT TO SCALE



2 S–1 FEEDLINE PLAN

SCALE: NOT TO SCALE

TRUE NORTH

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TOWER ELEVATION AND FEEDLINE PLAN

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S–1
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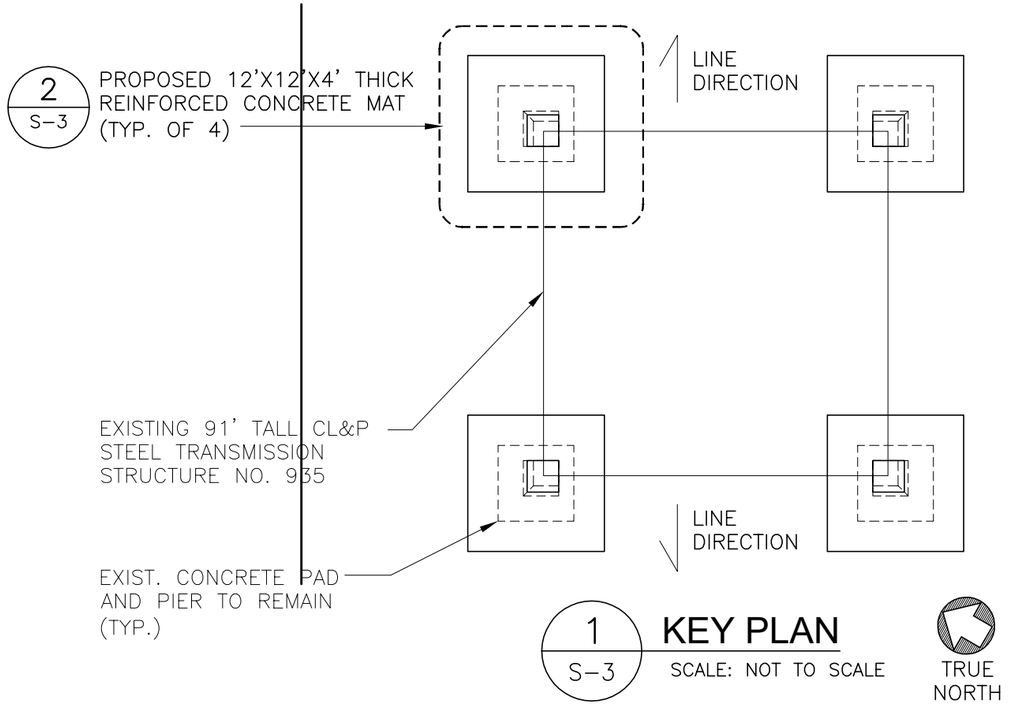
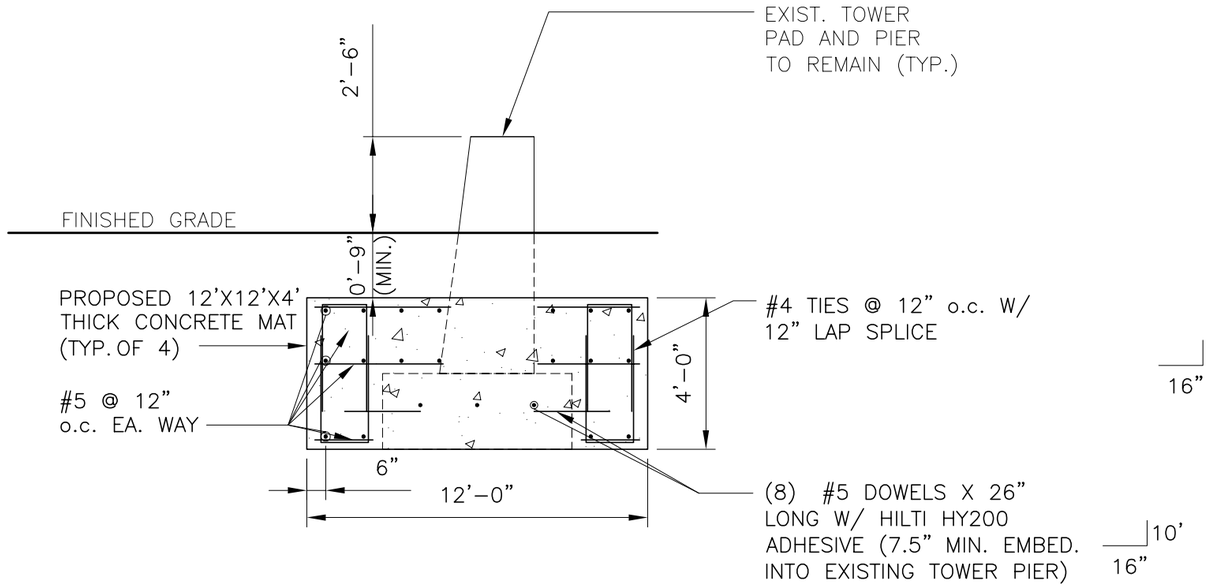
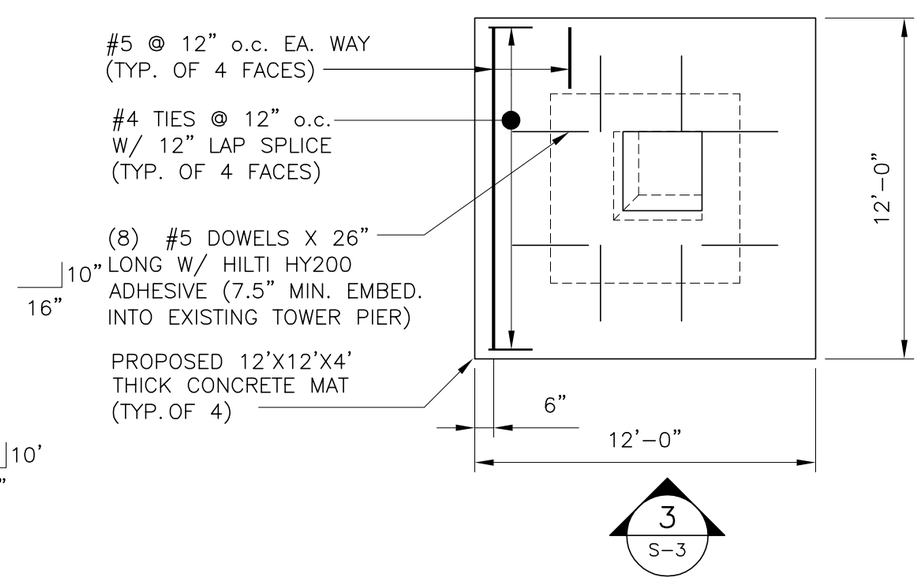
FOUNDATION PLAN NOTES:

1. TOWER FOUNDATION SHALL BE CHECKED AND/OR TEMPORARY SHORING SHALL BE PROVIDED TO ENSURE TOWER STABILITY DURING CONSTRUCTION. LIMIT CONSTRUCTION DURATION TO MINIMIZE RISK. CONSTRUCTION SHALL BE CONDUCTED IN WIND SPEEDS LESS THAN 15 MPH AND IN LOW ICE ACCUMULATION PERIODS.
2. CONTRACTOR SHALL USE EXTREME CAUTION DURING EXCAVATION OF EXISTING FOUNDATION STRUCTURE. IMPLEMENT HAND DIGGING WHERE PRACTICABLE.
3. PROTECT EXISTING TOWER GROUND WIRE(S) FROM DAMAGE DUE TO NEW CONSTRUCTION. CONTRACTOR SHALL NOTIFY EVERSOURCE IF GROUNDING SYSTEM BECOMES DAMAGED OR DISCONNECTED.
4. NOTIFY EVERSOURCE REPRESENTATIVE TO BE PRESENT UPON COMPLETION OF REBAR PLACEMENT.
5. 0'–9' MIN SOIL COVER ABOVE MODIFIED FOUNDATION PAD.
6. FOUNDATION EXCAVATION AND REINFORCEMENT SHALL BE COMPLETED ONE LEG AT A TIME. PREVIOUS LEG FOUNDATION REINFORCEMENT SHALL BE BACKFILLED PRIOR TO EXCAVATION OF NEXT LEG.





3 S-3 **FOUNDATION REINFORCEMENT DETAIL**
SCALE: 1/4" = 1'–0"



2 S-3 **FOUNDATION REINFORCEMENT PLAN**
SCALE: 1/4" = 1'–0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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TOWER FOUNDATION REINFORCEMENT DETAILS

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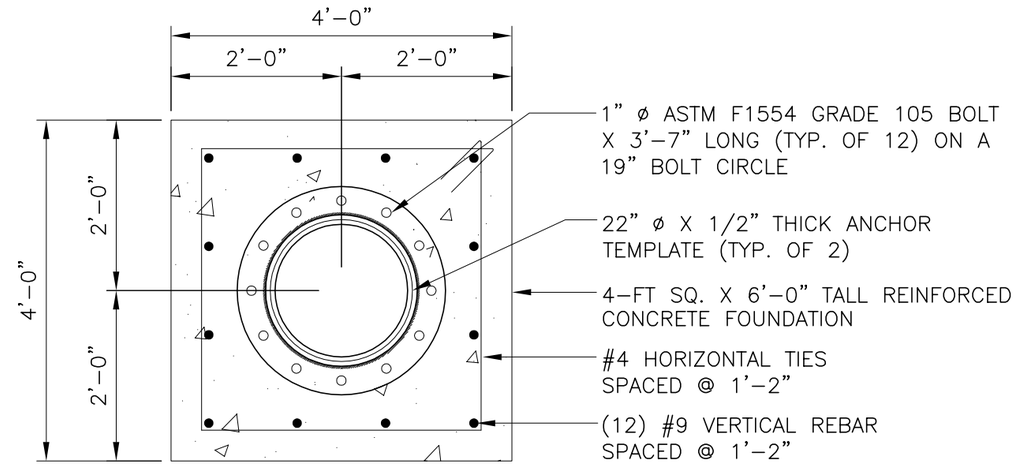
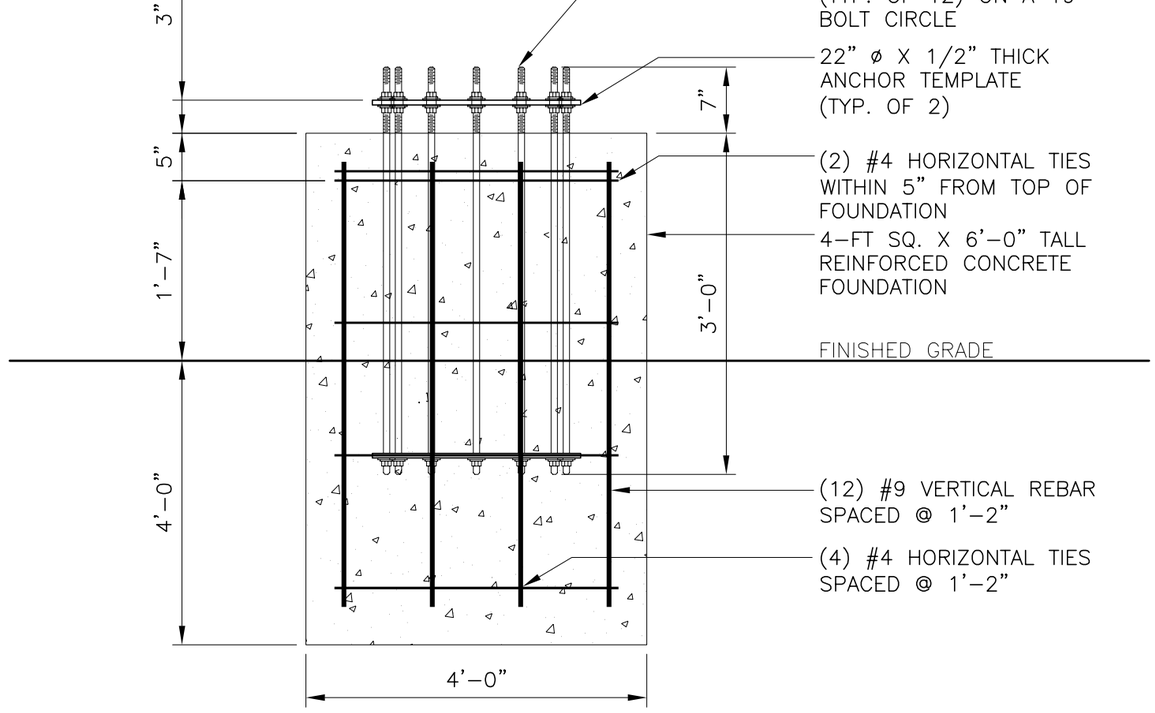


1 / S–2 **FOUNDATION PLAN**

SCALE: 3/4" = 1'–0"



2 / S–2 **FOUNDATION ELEVATION**

SCALE: 3/4" = 1'–0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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ANTENNA MAST FOUNDATION DETAILS

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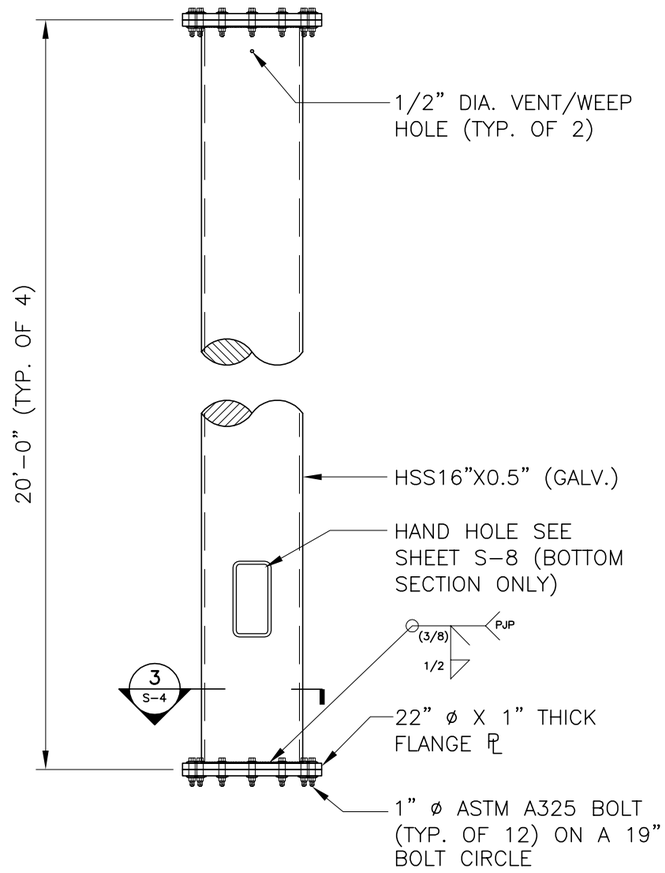
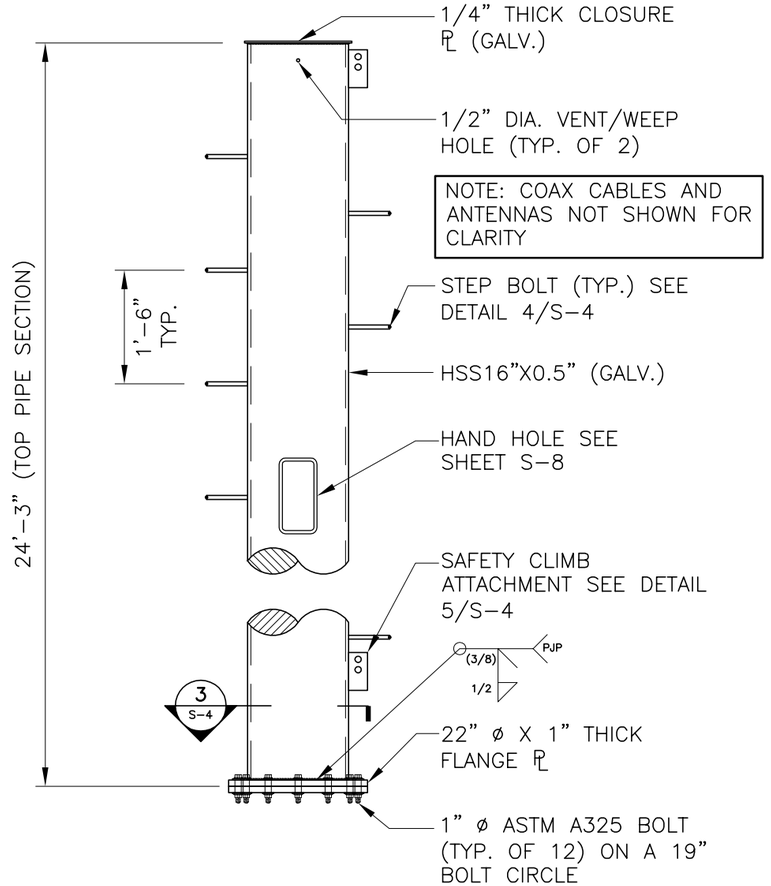


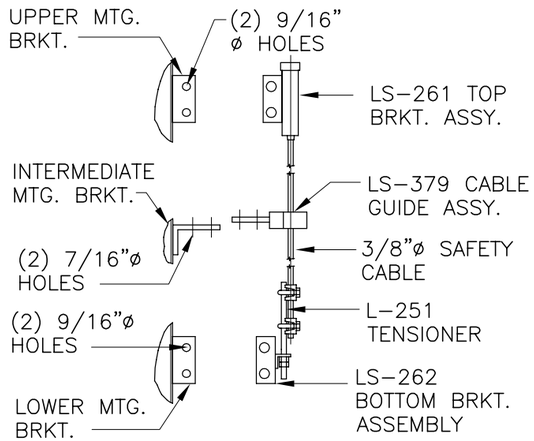
2 S-4 TYP. PIPE ELEVATION

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



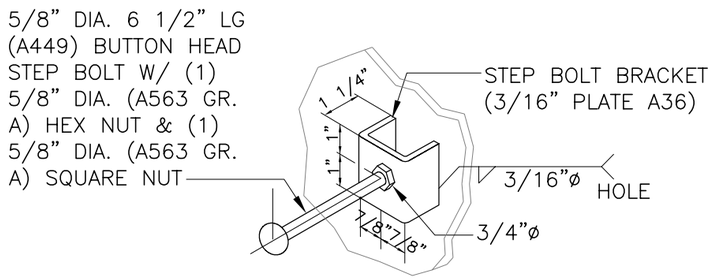
1 S-4 TOP PIPE ELEVATION

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



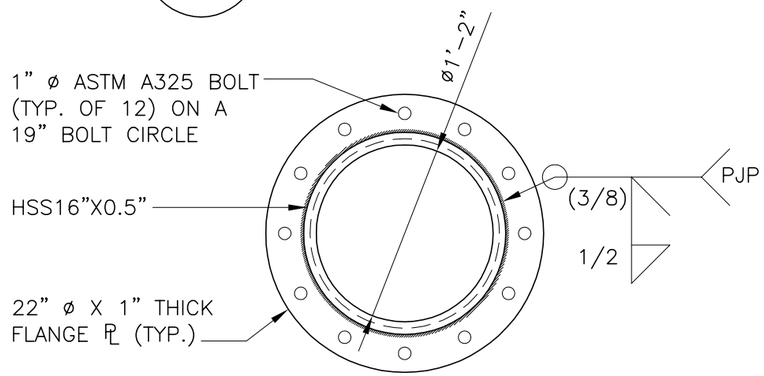
5 S-4 SAFETY CLIMB DETAIL

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



4 S-4 STEP BOLT DETAIL

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



3 S-4 FLANGE PL DETAIL

SCALE: 1" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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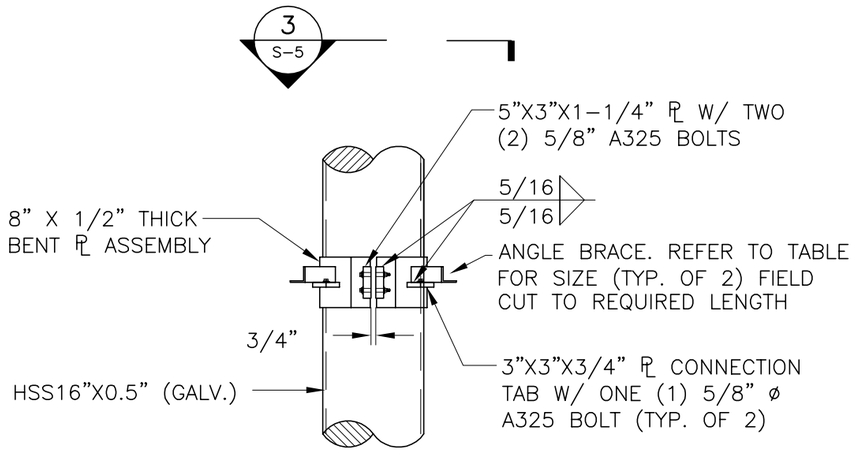
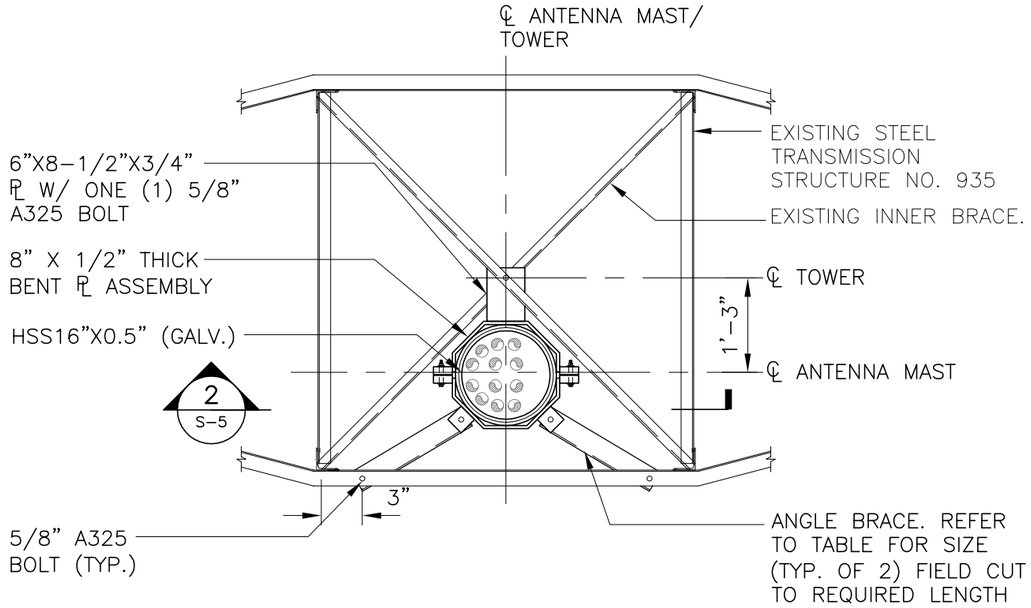




2 S-5 BRACKET ELEVATION

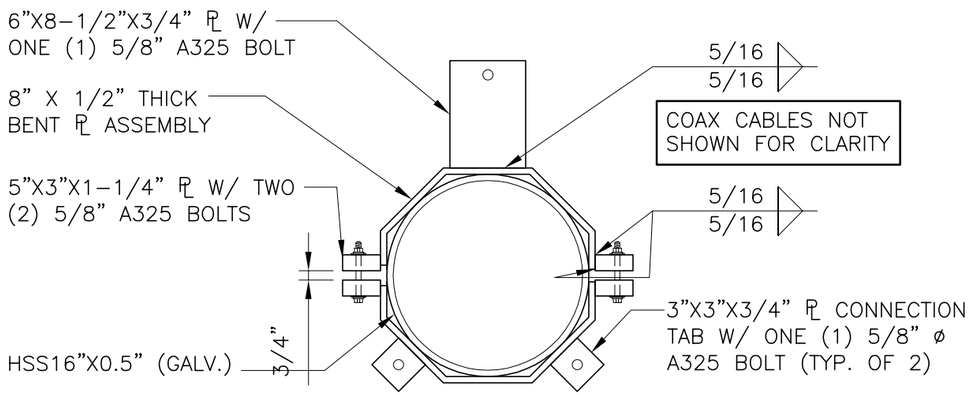
SCALE: 1/2" = 1'-0"

CONNECTION ELEVATION	ANGLE BRACE SIZE
91-FT (ATB)	L2-1/2X2-1/2-3/8
74-FT (ATB)	L2-1/2X2-1/2-3/8
64-FT (ATB)	L2-1/2X2-1/2-3/8
32-FT (ATB)	L2-1/2X2-1/2-3/8

FOR ALL BOLT HOLES IN NEW AND EXISTING STEEL MEMBERS MAINTAIN A MIN. 7/8" EDGE / END DISTANCE FOR 5/8" ø BOLTS

1 S-5 BRACKET PLAN

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



3 S-5 BRACKET DETAIL

SCALE: 1" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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ANTENNA MAST CONNECTION DETAILS

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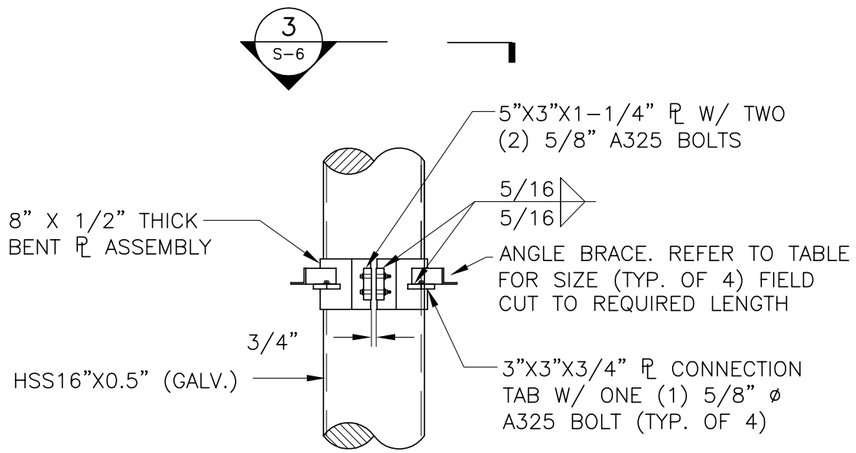
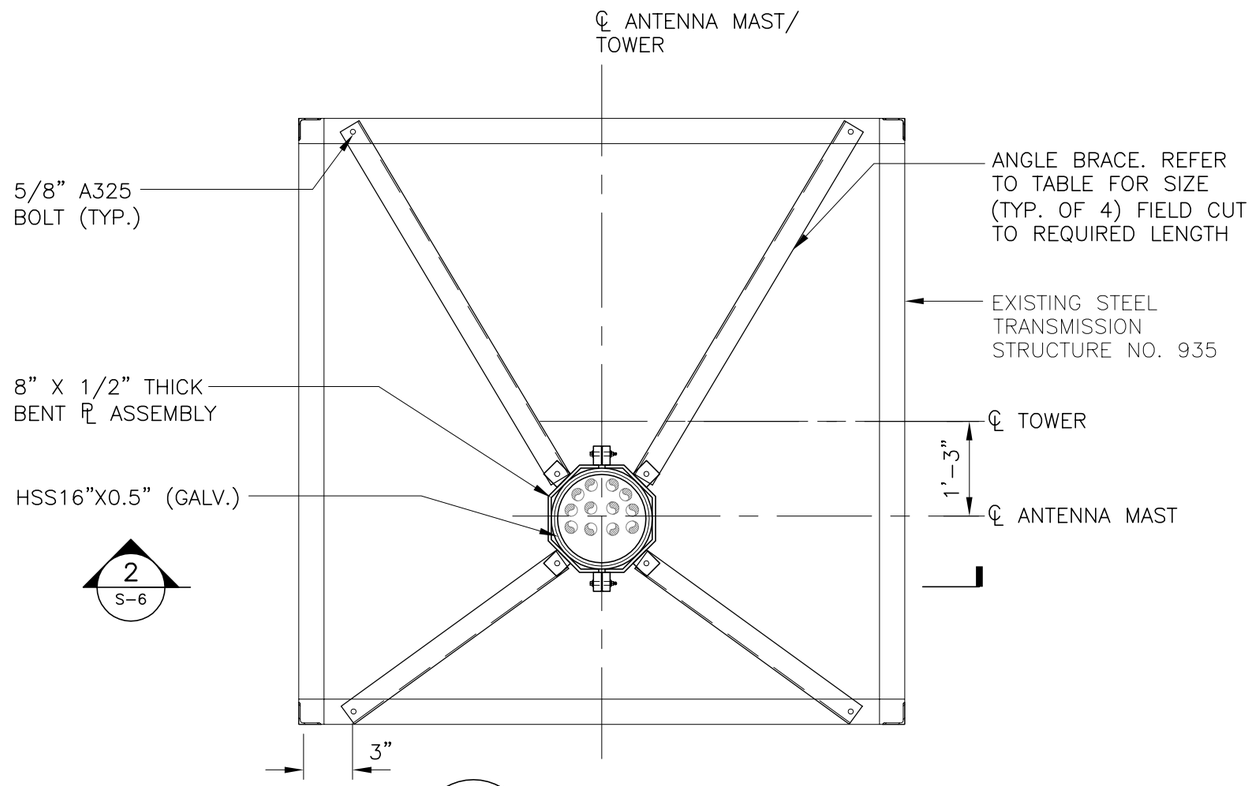


2 S-6 BRACKET ELEVATION

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

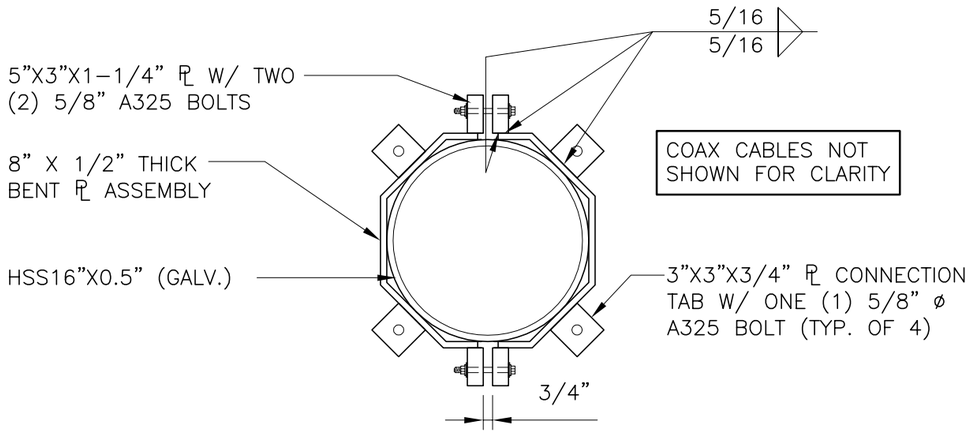
CONNECTION ELEVATION	ANGLE BRACE SIZE
46.5-FT (ATB)	L2-1/2X2-1/2-3/8

FOR ALL BOLT HOLES IN NEW AND EXISTING STEEL MEMBERS
MAINTAIN A MIN. 7/8" EDGE / END DISTANCE FOR 5/8" ø BOLTS



1 S-6 BRACKET PLAN

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



3 S-6 BRACKET DETAIL

SCALE: 1" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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ANTENNA MAST CONNECTION DETAILS

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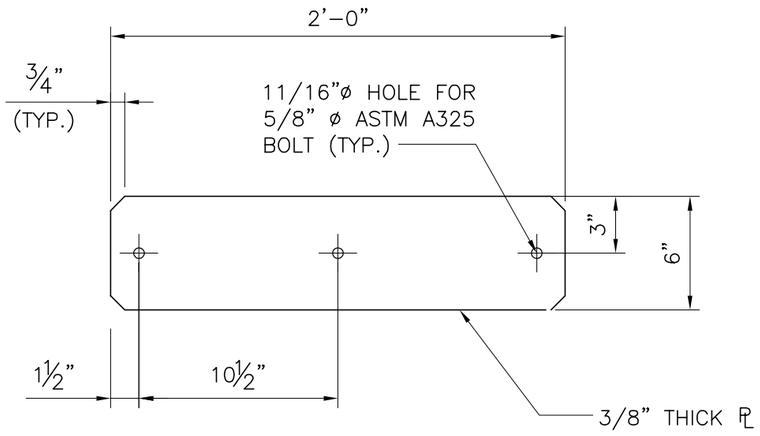
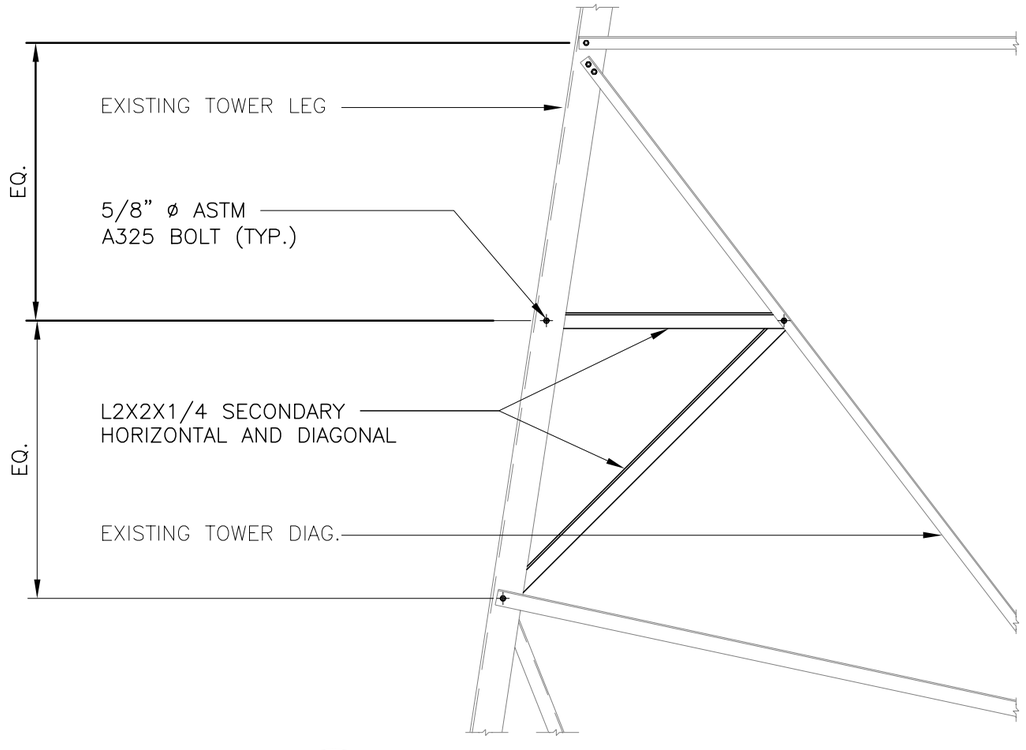
1. APPLY COLD GALVANIZING TO ALL FIELD DRILLED BOLT HOLES IN EXISTING STEEL PRIOR TO INSTALLATION OF BOLTS

2. FOR ALL BOLT HOLES IN NEW AND EXISTING STEEL MEMBERS MAINTAIN A MIN. 7/8" EDGE / END DISTANCE FOR 5/8" ø BOLTS



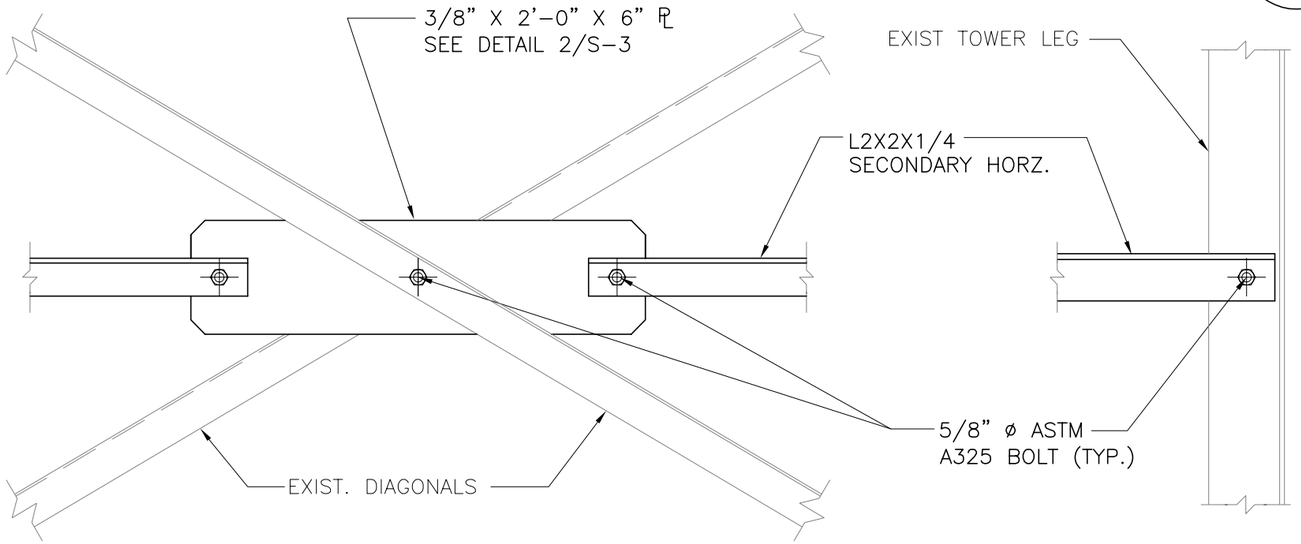
2 S-7 PLATE P1 DETAIL

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



3 S-7 SECONDARY HORIZONTAL ELEVATION

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



1 S-7 SECONDARY HORIZONTAL ELEVATION

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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TOWER REINFORCEMENT DETAILS

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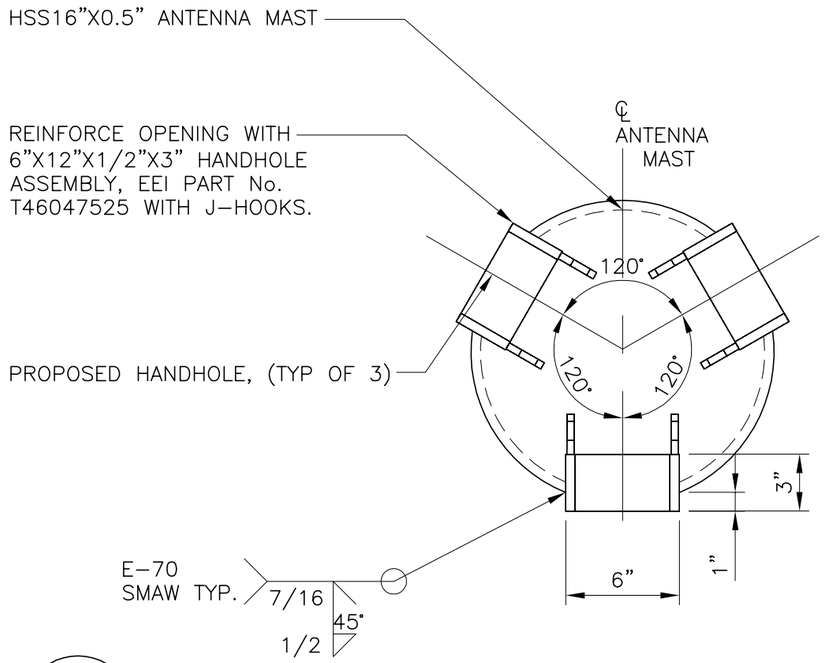
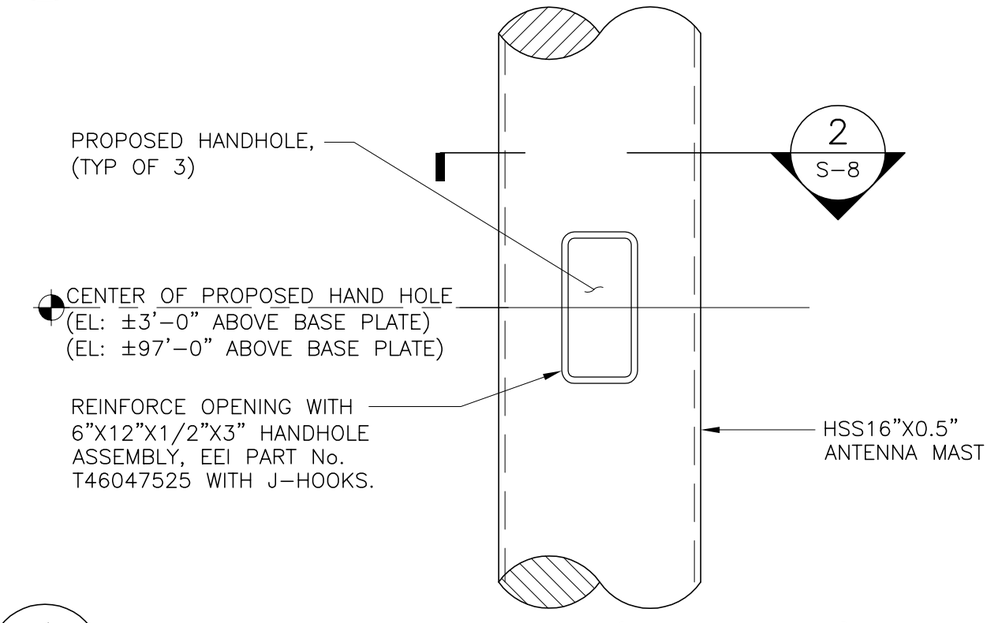


2 / S-8 **PROPOSED HAND HOLE (SECTION)**

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



1 / S-8 **PROPOSED HAND HOLE (ELEVATION)**

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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HAND HOLE DETAILS

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PROPOSED MONOPOLE TRIPLE
T-ARM MOUNT
(SITEPRO: P/N: RMV5-284)
TYP. OF 2 @ 3'-0" APART

PROPOSED UNIVERSAL
PIPE-TO-PIPE CLAMP SET
(SITEPRO: P/N: UPC1) TYP.

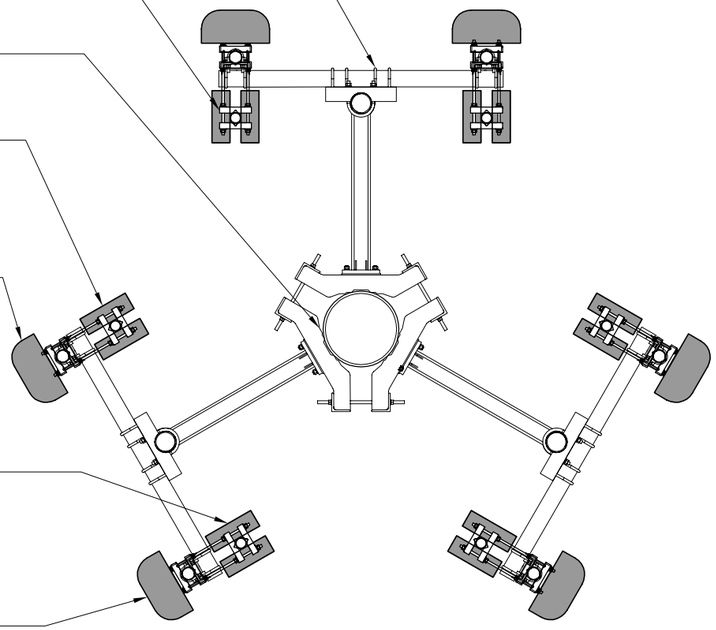
PROPOSED AT&T POWER MOUNT

PROPOSED AT&T TMA
(P/N: CCI TMABPDB7823VG12A)
TYP. OF (2) PER SECTOR BEHIND
ANTENNA POSITION 2.

PROPOSED AT&T PANEL ANTENNA POS.2
(P/N: CCI DMP65R-BU8DA-K)
(TYP. OF 1 PER SECTOR/ 3 TOTAL EA.).

PROPOSED AT&T TMA
(P/N: CCI TMABPDB7823VG12A)
TYP. OF (4) PER SECTOR BEHIND
ANTENNA POSITION 1.

PROPOSED AT&T PANEL ANTENNA POS.1
(P/N: CCI-TPA65R-BU8DA-K)
(TYP. OF 1 PER SECTOR/ 3 TOTAL EA.).



1 / S-9 **ANTENNA CONFIGURATION PLAN**
SCALE: 1/2" = 1' - 0"

PROPOSED AT&T PANEL ANTENNA

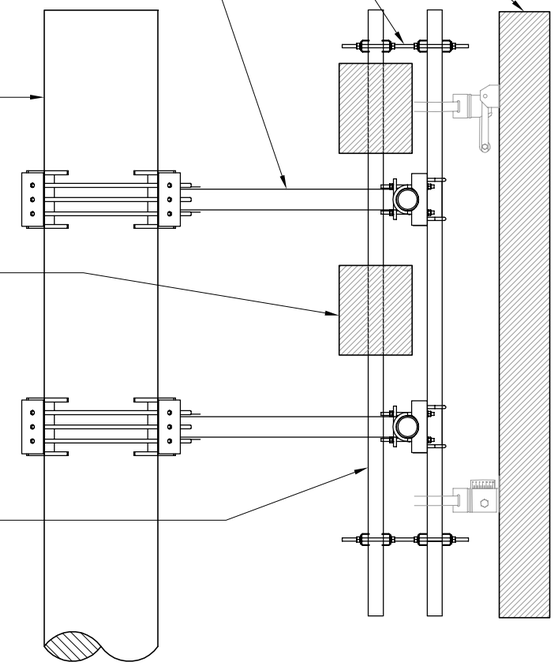
PROPOSED UNIVERSAL
PIPE-TO-PIPE CLAMP SET
(SITEPRO: P/N: UPC1) TYP.

PROPOSED MONOPOLE TRIPLE
T-ARM MOUNT
(SITEPRO: P/N: RMV5-284)
TYP. OF 2 @ 3'-0" APART

PROPOSED AT&T
POWER MOUNT

PROPOSED AT&T TMA

2.0 STD. PIPE (O.D.
=2.375") X 8'-0"
LONG (TYP.)



2 / S-9 **MOUNTING DETAIL**
SCALE: 1/2" = 1' - 0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
5	1/13/21	TJL	CFC	ISSUED FOR CONSTRUCTION
4	11/2/20	TJL	CFC	ISSUED FOR CONSTRUCTION
3	08/26/20	TJL	CFC	ISSUED FOR CONSTRUCTION
2	04/01/20	FJP	TJL	ISSUED FOR REVIEW
1	02/03/20	FJP	TJL	ISSUED FOR REVIEW
0	01/22/20	FJP	TJL	ISSUED FOR REVIEW

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EQUIPMENT MOUNTING DETAILS

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Subject: Loads on AT&T Equipment Structure #935

Location: Wilton, CT

Rev. 5: 01/13/2021

Prepared by: F.J.P Checked by: T.J.L.
Job No. 19145.00

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed =	$V := 93$	mph	(User Input - 2018 CSBC Appendix N)
Basic Wind Speed with Ice =	$V_i := 50$	mph	(User Input per Annex B of TIA-222-G)
Basic Wind Speed Service Loads =	$V_{Ser} := 60$	mph	(User Input - TIA-222-G Section 2.8.3)

Input

Structure Type =	$Structure\_Type := Lattice$		(User Input)	
Structure Category =	$SC := III$		(User Input)	
Exposure Category =	$Exp := C$		(User Input)	
Structure Height =	$h := 91$	ft	(User Input)	
Height to Center of Antennas =	$z_{ant} := 103$	ft	(User Input)	
Height to Center of Mast =	$z_{Mast5} := 90$	ft	(User Input)	
Height to Center of Mast =	$z_{Mast4} := 70$	ft	(User Input)	Mast Based on Max 20-ft Section per 2.6.9.1.3
Height to Center of Mast =	$z_{Mast3} := 50$	ft	(User Input)	
Height to Center of Mast =	$z_{Mast2} := 30$	ft	(User Input)	
Height to Center of Mast =	$z_{Mast1} := 10$	ft	(User Input)	
Radial Ice Thickness =	$t_i := 0.75$	in	(User Input per Annex B of TIA-222-G)	
Radial Ice Density =	$Id := 56.00$	pcf	(User Input)	
Topographic Factor =	$K_{zt} := 1.0$		(User Input)	
	$K_a := 1.0$		(User Input)	
Gust Response Factor =	$G_H := 1.35$		(User Input)	

Output

Wind Direction Probability Factor = $K_d :=$ if Structure_Type = Pole 0.95; if Structure_Type = Lattice 0.85 $= 0.85$ (Per Table 2-2 of TIA-222-G)

Importance Factors = $I_{Wind} :=$ if SC = 1 0.87; if SC = 2 1.00; if SC = 3 1.15 $= 1.15$ (Per Table 2-3 of TIA-222-G)

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$$I_{Wind\_w\_Ice} := \begin{cases} \text{if } SC = 1 \\ \quad 0 \\ \text{if } SC = 2 \\ \quad 1.00 \\ \text{if } SC = 3 \\ \quad 1.00 \end{cases} = 1$$

$$I_{ice} := \begin{cases} \text{if } SC = 1 \\ \quad 0 \\ \text{if } SC = 2 \\ \quad 1.00 \\ \text{if } SC = 3 \\ \quad 1.25 \end{cases} = 1.25$$ (Per Section 2.8.3 of TIA-222-G)

Wind Direction Probability Factor (Service) =

$$K_{dSer} := \begin{cases} \text{if } Structure\_Type = Pole \\ \quad 0.95 \\ \text{if } Structure\_Type = Lattice \\ \quad 0.85 \end{cases} = 0.85$$ (Per Section 2.8.3 of TIA-222-G)

Importance Factor (Service) = $I_{Ser} := 1$

$K_{iz} := \left(\frac{z_{ant}}{33}\right)^{0.1} = 1.121$ $t_{izAT\&T} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 2.101$

Velocity Pressure Coefficient Antennas = $Kz_{AT\&T} := 2.01 \cdot \left(\left(\frac{z_{ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.274$

Velocity Pressure w/o Ice Antennas = $qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V^2 \cdot I_{Wind} = 27.563$

Velocity Pressure with Ice Antennas = $qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.928$

Velocity Pressure Service = $qz_{AT\&T.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{AT\&T} \cdot V_{Ser}^2 \cdot I_{Ser} = 9.976$

$K_{izMast5} := \left(\frac{z_{Mast5}}{33}\right)^{0.1} = 1.106$ $t_{izMast5} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast5} \cdot K_{zt}^{0.35} = 2.073$

Velocity Pressure Coefficient Mast = $Kz_{Mast5} := 2.01 \cdot \left(\left(\frac{z_{Mast5}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.238$

Velocity Pressure w/o Ice Mast = $qz_{Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V^2 \cdot I_{Wind} = 26.791$

Velocity Pressure with Ice Mast = $qz_{ice.Mast5} := 0.00256 \cdot K_d \cdot Kz_{Mast5} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.734$

Velocity Pressure Service = $qz_{Mast5.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast5} \cdot V_{Ser}^2 \cdot I_{Ser} = 9.697$

$K_{izMast4} := \left(\frac{z_{Mast4}}{33}\right)^{0.1} = 1.078$ $t_{izMast4} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast4} \cdot K_{zt}^{0.35} = 2.021$

Velocity Pressure Coefficient Mast = $Kz_{Mast4} := 2.01 \cdot \left(\left(\frac{z_{Mast4}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.174$

Velocity Pressure w/o Ice Mast = $qz_{Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V^2 \cdot I_{Wind} = 25.411$

Velocity Pressure with Ice Mast = $qz_{ice.Mast4} := 0.00256 \cdot K_d \cdot Kz_{Mast4} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 6.387$

Velocity Pressure Service = $qz_{Mast4.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast4} \cdot V_{Ser}^2 \cdot I_{Ser} = 9.197$

$K_{izMast3} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.042$ $t_{izMast3} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast3} \cdot K_{zt}^{0.35} = 1.955$

Velocity Pressure Coefficient Mast = $Kz_{Mast3} := 2.01 \cdot \left(\left(\frac{z_{Mast3}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.094$

Velocity Pressure Coefficient Mast = $Kz_{Mast3} := 2.01 \cdot \left(\left(\frac{z_{Mast3}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.094$

Velocity Pressure w/o Ice Mast = $qz_{Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V^2 \cdot I_{Wind} = 23.673$

Velocity Pressure with Ice Mast = $qz_{ice.Mast3} := 0.00256 \cdot K_d \cdot Kz_{Mast3} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.95$

Velocity Pressure Service = $qz_{Mast3.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast3} \cdot V_{Ser}^2 \cdot I_{Ser} = 8.568$

$K_{izMast2} := \left(\frac{z_{Mast3}}{33}\right)^{0.1} = 1.042$ $t_{izMast2} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast2} \cdot K_{zt}^{0.35} = 1.955$

Velocity Pressure Coefficient Mast = $Kz_{Mast2} := 2.01 \cdot \left(\left(\frac{z_{Mast2}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.982$

Velocity Pressure w/o Ice Mast = $qz_{Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V^2 \cdot I_{Wind} = 21.259$

Velocity Pressure with Ice Mast = $qz_{ice.Mast2} := 0.00256 \cdot K_d \cdot Kz_{Mast2} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 5.343$

Velocity Pressure Service = $qz_{Mast2.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast2} \cdot V_{Ser}^2 \cdot I_{Ser} = 7.695$

$K_{izMast1} := \left(\frac{z_{Mast1}}{33}\right)^{0.1} = 0.887$ $t_{izMast1} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{izMast1} \cdot K_{zt}^{0.35} = 1.664$

Velocity Pressure Coefficient Mast = $Kz_{Mast1} := 2.01 \cdot \left(\left(\frac{z_{Mast1}}{zg}\right)\right)^{\frac{2}{\alpha}} = 0.779$

Velocity Pressure w/o Ice Mast = $qz_{Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V^2 \cdot I_{Wind} = 16.869$

Velocity Pressure with Ice Mast = $qz_{ice.Mast1} := 0.00256 \cdot K_d \cdot Kz_{Mast1} \cdot V_i^2 \cdot I_{Wind\_w\_Ice} = 4.24$

Velocity Pressure Service = $qz_{Mast1.Ser} := 0.00256 \cdot K_{dSer} \cdot Kz_{Mast1} \cdot V_{Ser}^2 \cdot I_{Ser} = 6.106$

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Subject: Loads on AT&T Equipment Structure #935

Location: Wilton, CT

Rev. 5: 01/13/2021

Prepared by: F.J.P Checked by: T.J.L.
Job No. 19145.00

Development of Wind & Ice Load on Mast

Mast Data:	(HSS16X0.5)		(User Input)	
Mast Shape =	Round		(User Input)	
Mast Diameter =	$D_{mast} := 16$	in	(User Input)	
Mast Length =	$L_{mast} := 103$	ft	(User Input)	
Mast Thickness =	$t_{mast} := 0.5$	in	(User Input)	
Velocity Coefficient =	$C := \sqrt{I \cdot Kz_{Mast1}} \cdot V \cdot \frac{D_{mast}}{12} = 109$			
Mast Force Coefficient =	$CF_{mast} = 0.6$			

Wind Load (without ice)

Mast Projected Surface Area =	$A_{mast} := \frac{D_{mast}}{12} = 1.333$	sf/ft		
Total Mast Wind Force =	$qz_{Mast5} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 29$	plf	**BLC 5,8**	
Total Mast Wind Force =	$qz_{Mast4} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 27$	plf	**BLC 5,8**	
Total Mast Wind Force =	$qz_{Mast3} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 26$	plf	**BLC 5,8**	
Total Mast Wind Force =	$qz_{Mast2} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 23$	plf	**BLC 5,8**	
Total Mast Wind Force =	$qz_{Mast1} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 18$	plf	**BLC 5,8**	

Wind Load (with ice)

Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast5})}{12} = 1.679$	sf/ft		
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast5} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 9$	plf	**BLC 4,7**	
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast4})}{12} = 1.67$	sf/ft		
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast4} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 9$	plf	**BLC 4,7**	
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast3})}{12} = 1.659$	sf/ft		
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast3} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 8$	plf	**BLC 4,7**	
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast2})}{12} = 1.659$	sf/ft		
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast2} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 7$	plf	**BLC 4,7**	
Mast Projected Surface Area w/ Ice =	$AICE_{mast} := \frac{(D_{mast} + 2 \cdot t_{izMast1})}{12} = 1.611$	sf/ft		
Total Mast Wind Force w/ Ice =	$qz_{ice.Mast1} \cdot G_H \cdot CF_{mast} \cdot AICE_{mast} = 6$	plf	**BLC 4,7**	

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Wind Load (Service)

Total Mast Wind Force Service Loads =	$qz_{Mast5.Ser} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 10$	plf	**BLC 6,9**
Total Mast Wind Force Service Loads =	$qz_{Mast4.Ser} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 10$	plf	**BLC 6,9**
Total Mast Wind Force Service Loads =	$qz_{Mast3.Ser} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 9$	plf	**BLC 6,9**
Total Mast Wind Force Service Loads =	$qz_{Mast2.Ser} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 8$	plf	**BLC 6,9**
Total Mast Wind Force Service Loads =	$qz_{Mast1.Ser} \cdot G_H \cdot CF_{mast} \cdot A_{mast} = 7$	plf	**BLC 6,9**

Gravity Loads (without ice)

Weight of the mast =	Self Weight **(Computed internally by Risa-3D)**	plf	**BLC 1**

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4} \cdot \left((D_{mast} + t_{izMast5} \cdot 2)^2 - D_{mast}^2 \right) = 117.7$	sq in	
Weight of Ice on Mast =	$W_{ICEmast5} := Id \cdot \frac{Ai_{mast}}{144} = 46$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4} \cdot \left((D_{mast} + t_{izMast4} \cdot 2)^2 - D_{mast}^2 \right) = 114.4$	sq in	
Weight of Ice on Mast =	$W_{ICEmast4} := Id \cdot \frac{Ai_{mast}}{144} = 45$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4} \cdot \left((D_{mast} + t_{izMast3} \cdot 2)^2 - D_{mast}^2 \right) = 110.2$	sq in	
Weight of Ice on Mast =	$W_{ICEmast3} := Id \cdot \frac{Ai_{mast}}{144} = 43$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4} \cdot \left((D_{mast} + t_{izMast2} \cdot 2)^2 - D_{mast}^2 \right) = 110.2$	sq in	
Weight of Ice on Mast =	$W_{ICEmast2} := Id \cdot \frac{Ai_{mast}}{144} = 43$	plf	**BLC 3**
Ice Area per Linear Foot =	$Ai_{mast} := \frac{\pi}{4} \cdot \left((D_{mast} + t_{izMast1} \cdot 2)^2 - D_{mast}^2 \right) = 92.3$	sq in	
Weight of Ice on Mast =	$W_{ICEmast1} := Id \cdot \frac{Ai_{mast}}{144} = 36$	plf	**BLC 3**

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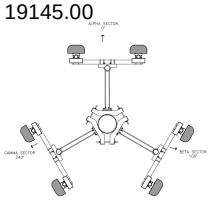
Subject: Loads on AT&T Equipment Structure #935

Location: Wilton, CT

Rev. 5: 01/13/2021

Prepared by: F.J.P Checked by: T.J.L.
Job No. 19145.00



Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI TPA65R-BU8DA-K		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96$	in	(User Input)
Antenna Width =	$W_{ant} := 21$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$		
Antenna Force Coefficient =	$Ca_{ant} = 1.29$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 14$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 42$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 2019$	lbs	**BLC 5,8**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T})}{144} = 17.5$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 52.6$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 636$	lbs	**BLC 4,7**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{AT\&T.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 731$	lbs	**BLC 6,9**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 261$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T}) \cdot (T_{ant} + 2 \cdot t_{izAT\&T}) - V_{ant} = 1 \cdot 10^4$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 473$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1418$	lbs	**BLC 3**

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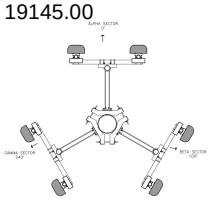

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI DMP65R-BU8DA-K		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96$	in	(User Input)
Antenna Width =	$W_{ant} := 20.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 95$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$		
Antenna Force Coefficient =	$Ca_{ant} = 1.3$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 13.8$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 41.4$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 1995$	lbs	**BLC 5,8**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T})}{144} = 17.3$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 52$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 630$	lbs	**BLC 4,7**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{AT\&T.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 722$	lbs	**BLC 6,9**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 285$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \cdot 10^4$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T}) \cdot (T_{ant} + 2 \cdot t_{izAT\&T}) - V_{ant} = 1 \cdot 10^4$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 467$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1400$	lbs	**BLC 3**

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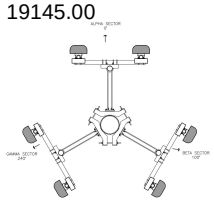

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI TMABPDB7823VG12A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 14.22$	in	(User Input)
Antenna Width =	$W_{ant} := 11.56$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.24$	in	(User Input)
Antenna Weight =	$WT_{ant} := 26$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 18$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.2$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 1.1$	sf	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 20.5$	sf	
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 918$	lbs	**BLC 5,8**

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := \frac{(L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T})}{144} = 2$	sf	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 36.3$	sf	
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ICEant} = 407$	lbs	**BLC 4,7**

Wind Load (Service)

Total Antenna Wind Force Service Loads =	$F_{ant.Ser} := qz_{AT\&T.Ser} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot A_{ant} = 332$	lbs	**BLC 6,9**

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 468$	lbs	**BLC 2**

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 697$	cu in	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{izAT\&T}) \cdot (W_{ant} + 2 \cdot t_{izAT\&T}) \cdot (T_{ant} + 2 \cdot t_{izAT\&T}) - V_{ant} = 1754$	cu in	
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 57$	lbs	
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 1023$	lbs	**BLC 3**

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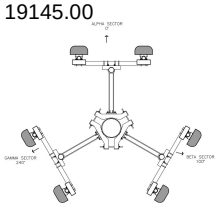
Development of Wind & Ice Load on Mounts



Mount Data:

Platform Model =	SitePro Double Support Arm RDS-284 (x2)		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 7$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 11$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 1080$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1250$	lbs	(User Input)

Wind Load (without ice)

Total Mount Wind Force =	$F_{mnt} := qz_{AT\&T} \cdot G_H \cdot CdAa = 260$	lbs	**BLC 5,8**

Wind Load (with ice)

Total Mount Wind Force w/ Ice =	$Fi_{mnt} := qz_{ice.AT\&T} \cdot G_H \cdot CdAa_{ice} = 103$	lbs	**BLC 4,7**

Wind Load (Service)

Total Mount Wind Force Service Loads =	$F_{mnt.Ser} := qz_{AT\&T.Ser} \cdot G_H \cdot CdAa = 94$	lbs	**BLC 6,9**

Gravity Load (without ice)

Weight of Each Pipe Mount=	$WT_{mnt} = 1 \cdot 10^3$	lbs	**BLC 2**

Gravity Loads (ice only)

Weight of Ice on All Antennas =	$WT_{mnt.ice} - WT_{mnt} = 170$	lbs	**BLC 3**

Development of Wind & Ice Load on Coax Cables (Bellow Tower)

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 100$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 12$		(User Input)
Total Number of Exterior Coax =	$Ne_{coax} := 0$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 0$		(User Input)
Coax aspect ratio =	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 606.1$		
Coax Cable Force Factor Coefficient =	$Ca_{coax} = 1.2$		

Wind Load (without ice)

Coax projected surface area =	$A_{coax} := \frac{(NP_{coax} \cdot D_{coax})}{12} = 0$	sf/ft	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 5,8**

Wind Load (with ice)

Coax projected surface area w/ Ice =	$AICE_{coax} := 0 = 0$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 0$	plf	**BLC 4,7**

Wind Load (Service)

Total Coax Wind Force Service Loads =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1.Ser} \cdot G_H \cdot A_{coax} = 0$	plf	**BLC 6,9**

Gravity Loads (without ice)

Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 12$	plf	**BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{coax} := 0 = 0$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 0$	plf	**BLC 3**

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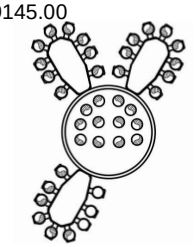
Subject: Loads on AT&T Equipment Structure #935

Location: Wilton, CT

Rev. 5: 01/13/2021

Prepared by: F.J.P Checked by: T.J.L.
Job No. 19145.00



Development of Wind & Ice Load on Coax Cables (Above Tower)

Coax Cable Data:

Coax Type =	HELIAX 1-5/8"		
Shape =	Round		(User Input)
Coax Outside Diameter =	$D_{coax} := 1.98$	in	(User Input)
Coax Cable Length =	$L_{coax} := 9$	ft	(User Input)
Weight of Coax per foot =	$Wt_{coax} := 1.04$	plf	(User Input)
Total Number of Coax =	$N_{coax} := 36$		(User Input)
Total Number of Exterior Coax =	$Ne_{coax} := 24$		(User Input)
No. of Coax Projecting Outside Face of PCS Mast =	$NP_{coax} := 8$		(User Input)
Coax aspect ratio =	$Ar_{coax} := \frac{(L_{coax} \cdot 12)}{D_{coax}} = 54.5$		
Coax Cable Force Factor Coefficient =	$Ca_{coax} = 1.2$		

Wind Load (without ice)

Coax projected surface area =	$A_{coax} := \frac{(NP_{coax} \cdot D_{coax})}{12} = 1.3$	sf/ft	
Total Coax Wind Force =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1} \cdot G_H \cdot A_{coax} = 36$	plf	**BLC 5,8**

Wind Load (with ice)

Coax projected surface area w/ Ice =	$AICE_{coax} := \frac{(NP_{coax} \cdot D_{coax} + 2 \cdot t_{izMast1})}{12} = 1.6$	sf/ft	
Total Coax Wind Force w/ Ice =	$Fi_{coax} := Ca_{coax} \cdot qz_{ice.Mast1} \cdot G_H \cdot AICE_{coax} = 11$	plf	**BLC 4,7**

Wind Load (Service)

Total Coax Wind Force Service Loads =	$F_{coax} := Ca_{coax} \cdot qz_{Mast1.Ser} \cdot G_H \cdot A_{coax} = 13$	plf	**BLC 6,9**

Gravity Loads (without ice)

Weight of all cables w/o ice	$WT_{coax} := Wt_{coax} \cdot N_{coax} = 37$	plf	**BLC 2**

Gravity Loads (ice only)

Ice Area per Linear Foot =	$Ai_{coax} := \frac{\pi}{4} \cdot \left((D_{coax} + 2 \cdot t_{izAT\&T})^2 - D_{coax}^2 \right) = 26.9$	sq in	
Ice Weight All Coax per foot =	$WTi_{coax} := N_{coax} \cdot Id \cdot \frac{Ai_{coax}}{144} = 377$	plf	**BLC 3**

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Development of Wind & Ice Load on Brace Member

Member Data: L2.5x2.5x3/8

Member Shape =	Flat		(User Input)
Height =	$H_{mem} := 2.5$	in	(User Input)
Width =	$W_{mem} := 2.5$	in	(User Input)
Thickness =	$t_{mem} := 0.375$	in	(User Input)
Length =	$L_{mem} := 41$	in	(User Input)
Member Aspect Ratio =	$Ar_{mem} := \frac{L_{mem}}{W_{mem}} = 16.4$		
Member Force Coefficient =	$Ca_{mem} = 2$		

Wind Load (without ice)

Member Projected Surface Area =	$A_{mem} := \frac{H_{mem}}{12} = 0.2$	sf/ft	
Total Member Wind Force =	$F_{mem} := qz_{Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 15$	plf	**BLC 5,8**

Wind Load (with ice)

Member Projected Surface Area w/ Ice =	$A_{ICEmem} := \frac{(H_{mem} + 2 \cdot t_{izMast5})}{12} = 0.6$	sf/ft	
Total Member Wind Force w/ Ice =	$Fi_{mem} := qz_{ice.Mast5} \cdot G_H \cdot Ca_{mem} \cdot A_{ICEmem} = 10$	plf	**BLC 4,7**

Wind Load (Service)

Total Member Wind Force w/ Ice =	$qz_{Mast5.Ser} \cdot G_H \cdot Ca_{mem} \cdot A_{mem} = 5$	plf	**BLC 6,9**

Gravity Load (without ice)

Weight of Member =	Self Weight	plf	**BLC 1**

Gravity Loads (ice only)

Ice Area per Linear foot =

$$Ai_{mem} := \left(\left(H_{mem} + 2 \cdot t_{izMast5}\right) + \left(W_{mem} - t_{mem}\right)\right) \cdot \left(t_{mem} + 2 \cdot t_{izMast5}\right) - \left(H_{mem} + \left(W_{mem} - t_{mem}\right)\right) \cdot t_{mem} = 38 \text{ sq in}$$

Weight of Ice on Member =	$W_{ICE.mem} := Id \cdot \frac{Ai_{mem}}{144} = 15$	plf	**BLC 3**

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI 1999: ASD
Wood Code	AF&PA NDS-91/97: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-02
Masonry Code	ACI 530-05: ASD
Aluminum Code	AA ADM1-05: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	PCA Load Contour
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	UBC 1997
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ca	.36
Cv	.54
Nv	1
Occupancy Category	4
Seismic Zone	3
Om Z	1
Om X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1.5
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	0
Footing Concrete f'c (ksi)	3
Footing Concrete Ec (ksi)	4000
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	3.5
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	58	1.2
7	A500 Gr. 50	29000	11154	.3	.65	.49	50	1.1	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Mast	HSS16x0.5	Column	HSS Pipe	A500 Gr.42	Typical	22.7	685	685	1370
2	Brace 1	L2.5x2.5x6	Beam	Single Angle	A36 Gr.36	Typical	1.73	.972	.972	.083
3	Plate	Plate 6"x3/4"	Beam	RECT	A36 Gr.36	Typical	4.5	.211	13.5	.777

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Antenna Mast	104	Segment	Segment	Lbyy						Lateral
2	M4	Brace 1	8.883			Lbyy						Lateral
3	M5	Brace 1	8.883			Lbyy						Lateral
4	M6	Brace 1	7.854			Lbyy						Lateral
5	M7	Brace 1	7.854			Lbyy						Lateral
6	M8	Brace 1	6.1			Lbyy						Lateral
7	M9	Brace 1	6.1			Lbyy						Lateral
8	M12	Brace 1	2.795			Lbyy						Lateral
9	M13	Brace 1	2.795			Lbyy						Lateral
10	M16	Brace 1	2.795			Lbyy						Lateral
11	M17	Brace 1	2.795			Lbyy						Lateral
12	M24	Brace 1	2.795			Lbyy						Lateral
13	M25	Brace 1	2.795			Lbyy						Lateral
14	M18	Plate	1.25			Lbyy						Lateral
15	M19	Plate	1.25			Lbyy						Lateral
16	M22	Plate	1.25			Lbyy						Lateral
17	M26	Plate	1.25			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N8			Antenna Mast	Column	HSS Pipe	A500 Gr....	Typical
2	M4	N2	N12			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
3	M5	N2	N11			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
4	M6	N3	N13			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
5	M7	N3	N14			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
6	M8	N3	N15			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
7	M9	N3	N16			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
8	M12	N4	N19			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
9	M13	N4	N20			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
10	M16	N5	N23			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
11	M17	N5	N24			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
12	M24	N7	N31			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
13	M25	N7	N32			Brace 1	Beam	Single Angle	A36 Gr.36	Typical
14	M18	N2	N25		90	Plate	Beam	RECT	A36 Gr.36	Typical
15	M19	N4	N26		90	Plate	Beam	RECT	A36 Gr.36	Typical
16	M22	N5	N29		90	Plate	Beam	RECT	A36 Gr.36	Typical
17	M26	N7	N33		90	Plate	Beam	RECT	A36 Gr.36	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	-1.25	0	0	0	
2	N2	-1.25	32	0	0	
3	N3	-1.25	46.5	0	0	
4	N4	-1.25	64	0	0	
5	N5	-1.25	74	0	0	
6	N7	-1.25	91	0	0	
7	N8	-1.25	104	0	0	
8	N11	-6.875	32	6.875	0	
9	N12	-6.875	32	-6.875	0	
10	N13	4.893	46.5	4.893	0	
11	N14	4.893	46.5	-4.893	0	
12	N15	-4.893	46.5	4.893	0	
13	N16	-4.893	46.5	-4.893	0	
14	N19	-2.5	64	2.5	0	
15	N20	-2.5	64	-2.5	0	
16	N23	-2.5	74	2.5	0	
17	N24	-2.5	74	-2.5	0	
18	N31	-2.5	91	2.5	0	
19	N32	-2.5	91	-2.5	0	
20	N25	0	32	0	0	
21	N26	0	64	0	0	
22	N29	0	74	0	0	
23	N33	0	91	0	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N3						
3	N4						
4	N5						
5	N8						
6	N12	Reaction	Reaction	Reaction			
7	N11	Reaction	Reaction	Reaction			
8	N15	Reaction	Reaction	Reaction			
9	N16	Reaction	Reaction	Reaction			
10	N14	Reaction	Reaction	Reaction			
11	N13	Reaction	Reaction	Reaction			
12	N19	Reaction	Reaction	Reaction			
13	N23	Reaction	Reaction	Reaction			
14	N31	Reaction	Reaction	Reaction			
15	N32	Reaction	Reaction	Reaction			
16	N20	Reaction	Reaction	Reaction			
17	N24	Reaction	Reaction	Reaction			
18	N26	Reaction		Reaction			
19	N29	Reaction		Reaction			
20	N25	Reaction		Reaction			
21	N33	Reaction		Reaction			
22	N7						

Member Point Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.261	101
2	M1	Y	-.285	101
3	M1	Y	-.468	101
4	M1	Y	-1.08	101

Member Point Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-1.418	101
2	M1	Y	-1.4	101
3	M1	Y	-1.023	101
4	M1	Y	-.17	101

Member Point Loads (BLC 4 : (x) TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.636	101
2	M1	X	.63	101
3	M1	X	.407	101
4	M1	X	.103	101

Member Point Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	2.019	101
2	M1	X	1.995	101
3	M1	X	.918	101
4	M1	X	.26	101

Member Point Loads (BLC 6 : (x)Service Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.731	101
2	M1	X	.722	101
3	M1	X	.332	101
4	M1	X	.094	101

Member Point Loads (BLC 7 : (z) TIA Wind with Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	X	.636	101
2	M1	X	.63	101
3	M1	X	.407	101
4	M1	X	.103	101

Member Point Loads (BLC 8 : (z) TIA Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	2.019	101
2	M1	Z	1.995	101
3	M1	Z	.918	101
4	M1	Z	.26	101

Member Point Loads (BLC 9 : (z)Service Wind)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Z	.731	101
2	M1	Z	.722	101
3	M1	Z	.332	101
4	M1	Z	.094	101

Member Distributed Loads (BLC 2 : Weight of Appurtenances)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.025	-.025	0	91
2	M1	Y	-.037	-.037	91	101

Member Distributed Loads (BLC 3 : Weight of Ice Only)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.377	-.377	91	101
2	M1	Y	-.043	-.043	20	40
3	M1	Y	-.043	-.043	40	60
4	M1	Y	-.045	-.045	60	80
5	M1	Y	-.046	-.046	80	105
6	M1	Y	-.036	-.036	0	20
7	M4	Y	-.015	-.015	0	%100
8	M5	Y	-.015	-.015	0	%100
9	M6	Y	-.015	-.015	0	%100
10	M7	Y	-.015	-.015	0	%100
11	M8	Y	-.015	-.015	0	%100
12	M9	Y	-.015	-.015	0	%100
13	M12	Y	-.015	-.015	0	%100
14	M13	Y	-.015	-.015	0	%100
15	M16	Y	-.015	-.015	0	%100
16	M17	Y	-.015	-.015	0	%100
17	M24	Y	-.015	-.015	0	%100
18	M25	Y	-.015	-.015	0	%100

Member Distributed Loads (BLC 4 : (x) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.007	.007	20	40
2	M1	X	.008	.008	40	60
3	M1	X	.009	.009	60	80
4	M1	X	.009	.009	80	105
5	M1	X	.011	.011	91	101
6	M1	X	.006	.006	0	20
7	M4	X	.01	.01	0	%100
8	M5	X	.01	.01	0	%100
9	M6	X	.01	.01	0	%100
10	M7	X	.01	.01	0	%100
11	M8	X	.01	.01	0	%100
12	M9	X	.01	.01	0	%100
13	M12	X	.01	.01	0	%100
14	M13	X	.01	.01	0	%100
15	M16	X	.01	.01	0	%100
16	M17	X	.01	.01	0	%100

Member Distributed Loads (BLC 4 : (x) TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
17	M24	X	.01	.01	0	%100
18	M25	X	.01	.01	0	%100

Member Distributed Loads (BLC 5 : (x) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.018	.018	0	20
2	M1	X	.023	.023	20	40
3	M1	X	.026	.026	40	60
4	M1	X	.027	.027	60	80
5	M1	X	.029	.029	80	105
6	M1	X	.036	.036	91	101
7	M4	X	.015	.015	0	%100
8	M5	X	.015	.015	0	%100
9	M6	X	.015	.015	0	%100
10	M7	X	.015	.015	0	%100
11	M8	X	.015	.015	0	%100
12	M9	X	.015	.015	0	%100
13	M12	X	.015	.015	0	%100
14	M13	X	.015	.015	0	%100
15	M16	X	.015	.015	0	%100
16	M17	X	.015	.015	0	%100
17	M24	X	.015	.015	0	%100
18	M25	X	.015	.015	0	%100

Member Distributed Loads (BLC 6 : (x)Service Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	.007	.007	0	20
2	M1	X	.008	.008	20	40
3	M1	X	.009	.009	40	60
4	M1	X	.01	.01	60	80
5	M1	X	.01	.01	80	105
6	M1	X	.013	.013	91	101
7	M4	X	.005	.005	0	%100
8	M5	X	.005	.005	0	%100
9	M6	X	.005	.005	0	%100
10	M7	X	.005	.005	0	%100
11	M8	X	.005	.005	0	%100
12	M9	X	.005	.005	0	%100
13	M12	X	.005	.005	0	%100
14	M13	X	.005	.005	0	%100
15	M16	X	.005	.005	0	%100
16	M17	X	.005	.005	0	%100
17	M24	X	.005	.005	0	%100
18	M25	X	.005	.005	0	%100

Member Distributed Loads (BLC 7 : (z) TIA Wind with Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.007	.007	20	40
2	M1	Z	.008	.008	40	60
3	M1	Z	.009	.009	60	80

Member Distributed Loads (BLC 7 : (z) TIA Wind with Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
4	M1	Z	.009	.009	80	105
5	M1	Z	.011	.011	91	101
6	M1	Z	.006	.006	0	20
7	M4	Z	.01	.01	0	%100
8	M5	Z	.01	.01	0	%100
9	M6	Z	.01	.01	0	%100
10	M7	Z	.01	.01	0	%100
11	M8	Z	.01	.01	0	%100
12	M9	Z	.01	.01	0	%100
13	M12	Z	.01	.01	0	%100
14	M13	Z	.01	.01	0	%100
15	M16	Z	.01	.01	0	%100
16	M17	Z	.01	.01	0	%100
17	M24	Z	.01	.01	0	%100
18	M25	Z	.01	.01	0	%100

Member Distributed Loads (BLC 8 : (z) TIA Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.018	.018	0	20
2	M1	Z	.023	.023	20	40
3	M1	Z	.026	.026	40	60
4	M1	Z	.027	.027	60	80
5	M1	Z	.029	.029	80	105
6	M1	Z	.036	.036	91	101
7	M4	Z	.015	.015	0	%100
8	M5	Z	.015	.015	0	%100
9	M6	Z	.015	.015	0	%100
10	M7	Z	.015	.015	0	%100
11	M8	Z	.015	.015	0	%100
12	M9	Z	.015	.015	0	%100
13	M12	Z	.015	.015	0	%100
14	M13	Z	.015	.015	0	%100
15	M16	Z	.015	.015	0	%100
16	M17	Z	.015	.015	0	%100
17	M24	Z	.015	.015	0	%100
18	M25	Z	.015	.015	0	%100

Member Distributed Loads (BLC 9 : (z)Service Wind)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.007	.007	0	20
2	M1	Z	.008	.008	20	40
3	M1	Z	.009	.009	40	60
4	M1	Z	.01	.01	60	80
5	M1	Z	.01	.01	80	105
6	M1	Z	.013	.013	91	101
7	M4	Z	.005	.005	0	%100
8	M5	Z	.005	.005	0	%100
9	M6	Z	.005	.005	0	%100
10	M7	Z	.005	.005	0	%100
11	M8	Z	.005	.005	0	%100
12	M9	Z	.005	.005	0	%100

Member Distributed Loads (BLC 9 : (z)Service Wind) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
13	M12	Z	.005	.005	0	%100
14	M13	Z	.005	.005	0	%100
15	M16	Z	.005	.005	0	%100
16	M17	Z	.005	.005	0	%100
17	M24	Z	.005	.005	0	%100
18	M25	Z	.005	.005	0	%100

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib...	Area(...	Surfa...
1	Self Weight (Antenna Mast)	None		-1						
2	Weight of Appurtenances	None					4	2		
3	Weight of Ice Only	None					4	18		
4	(x) TIA Wind with Ice	None					4	18		
5	(x) TIA Wind	None					4	18		
6	(x)Service Wind	None					4	18		
7	(z) TIA Wind with Ice	None					4	18		
8	(z) TIA Wind	None					4	18		
9	(z)Service Wind	None					4	18		

Load Combinations

	Description	Solve	P...	S...	B...	Fa...	BLC	Fact...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2D + 1.6W (X-dir...	Yes	Y		1	1.2	2	1.2	5	1.6														
2	0.9D + 1.6W (X-dir...	Yes	Y		1	.9	2	.9	5	1.6														
3	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	4	1												
4	1.0D+1.0W Service...	Yes	Y		1	1	2	1	6	1														
5	1.2D + 1.6W (Z-dire...	Yes	Y		1	1.2	2	1.2	8	1.6														
6	0.9D + 1.6W (Z-dire...	Yes	Y		1	.9	2	.9	8	1.6														
7	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	7	1												
8	1.0D+1.0W Service...	Yes	Y		1	1	2	1	9	1														

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	.002	7	28.332	7	0	4	0	4	0	4	2.828	2
2		min	-.497	2	11.729	2	-.509	6	-2.999	6	-.269	5	-.023	7
3	N12	max	-.028	4	.098	7	-.007	4	0	8	0	8	0	8
4		min	-.383	5	.024	2	-.574	5	0	1	0	1	0	1
5	N11	max	.383	5	.098	3	.031	2	0	8	0	8	0	8
6		min	-.132	2	.023	6	-.574	5	0	1	0	1	0	1
7	N15	max	.135	6	.067	3	.119	2	0	8	0	8	0	8
8		min	-.161	2	.016	6	-.254	6	0	1	0	1	0	1
9	N16	max	-.027	8	.067	7	-.023	4	0	8	0	8	0	8
10		min	-.161	2	.016	2	-.254	6	0	1	0	1	0	1
11	N14	max	.106	6	.087	7	.094	2	0	8	0	8	0	8
12		min	-.212	2	.021	2	-.179	6	0	1	0	1	0	1
13	N13	max	-.022	8	.087	7	-.018	4	0	8	0	8	0	8
14		min	-.212	2	.021	2	-.179	6	0	1	0	1	0	1
15	N19	max	.957	5	.031	3	.277	1	0	8	0	8	0	8

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
16		min	-.172	1	.007	6	-1.947	5	0	1	0	1	0	1
17	N23	max	.272	1	.031	3	3.948	5	0	8	0	8	0	8
18		min	-1.99	5	.007	2	-.611	1	0	1	0	1	0	1
19	N31	max	3.925	5	.031	3	1.083	1	0	8	0	8	0	8
20		min	-.575	1	.003	6	-7.882	5	0	1	0	1	0	1
21	N32	max	-.129	4	.031	7	-.23	3	0	8	0	8	0	8
22		min	-3.924	5	.008	2	-7.883	5	0	1	0	1	0	1
23	N20	max	-.038	4	.031	7	-.059	3	0	8	0	8	0	8
24		min	-.957	5	.008	2	-1.947	5	0	1	0	1	0	1
25	N24	max	1.991	5	.031	7	3.948	5	0	8	0	8	0	8
26		min	.051	3	.006	6	.095	7	0	1	0	1	0	1
27	N26	max	.001	5	0	8	.007	7	0	8	0	8	0	8
28		min	-4.021	1	0	1	-.203	5	0	1	0	1	0	1
29	N29	max	8.886	1	0	8	1.266	5	0	8	0	8	0	8
30		min	0	5	0	1	0	1	0	1	0	1	0	1
31	N25	max	0	5	0	8	0	4	0	8	0	8	0	8
32		min	-1.162	2	0	1	-.218	5	0	1	0	1	0	1
33	N33	max	-.001	8	0	8	0	4	0	8	0	8	0	8
34		min	-15.749	1	0	1	-1.06	5	0	1	0	1	0	1
35	Totals:	max	0	8	29.021	7	0	4						
36		min	-14.503	1	11.895	2	-14.503	5						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	0	8	0	8	0	8	0	8	0	8	0	8
2		min	0	1	0	1	0	1	0	1	0	1	0	1
3	N2	max	0	2	-.007	2	.002	5	0	4	8.1e-05	6	3.801e-05	2
4		min	0	5	-.019	7	0	1	-4.806e-05	5	0	1	-3.397e-06	7
5	N3	max	0	2	-.01	2	0	6	3.408e-06	7	8.049e-05	6	2.762e-05	1
6		min	0	7	-.026	7	0	1	-2.323e-05	5	0	1	1.144e-07	6
7	N4	max	0	1	-.013	2	.002	5	1.808e-04	5	7.988e-05	6	-1.736e-07	6
8		min	0	5	-.033	7	0	1	-1.8e-06	7	0	1	-2.073e-04	1
9	N5	max	0	5	-.014	2	0	7	0	4	5.564e-05	6	7.807e-04	1
10		min	-.001	1	-.037	7	-.004	5	-7.936e-04	5	0	1	-5.139e-08	5
11	N7	max	.002	1	-.015	2	.008	5	3.989e-03	5	2.679e-04	5	-4.085e-07	6
12		min	0	8	-.043	7	0	1	0	1	0	1	-3.923e-03	1
13	N8	max	1.09	1	-.016	2	1.106	5	8.005e-03	5	2.679e-04	5	-4.09e-07	6
14		min	0	6	-.045	7	0	1	0	1	0	1	-7.939e-03	1
15	N11	max	0	8	0	8	0	8	-1.776e-03	8	-1.893e-03	8	-1.444e-03	8
16		min	0	1	0	1	0	1	-6.016e-03	3	-6.485e-03	1	-4.916e-03	3
17	N12	max	0	8	0	8	0	8	5.824e-03	7	4.412e-03	2	9.942e-04	2
18		min	0	1	0	1	0	1	-1.169e-03	2	-5.533e-03	5	-4.778e-03	7
19	N13	max	0	8	0	8	0	8	6.237e-04	6	3.092e-03	6	4.186e-03	3
20		min	0	1	0	1	0	1	-3.329e-03	3	-3.787e-03	3	-8.121e-04	6
21	N14	max	0	8	0	8	0	8	2.429e-03	3	3.092e-03	6	3.056e-03	3
22		min	0	1	0	1	0	1	-6.521e-04	6	-1.328e-03	3	-7.895e-04	6
23	N15	max	0	8	0	8	0	8	-6.92e-04	8	-5.967e-04	8	-5.112e-04	8
24		min	0	1	0	1	0	1	-2.273e-03	3	-2.168e-03	1	-1.686e-03	3
25	N16	max	0	8	0	8	0	8	2.187e-03	7	1.497e-03	2	2.67e-04	2
26		min	0	1	0	1	0	1	-3.217e-04	2	-1.754e-03	7	-1.615e-03	7

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
27	N19	max	0	8	0	8	0	8	-3.958e-04	6	-5.672e-05	8	-2.339e-04	8
28		min	0	1	0	1	0	1	-1.093e-03	3	-2.439e-04	1	-5.91e-04	3
29	N20	max	0	8	0	8	0	8	1.071e-03	7	1.793e-04	2	-1.439e-04	6
30		min	0	1	0	1	0	1	1.987e-04	2	-1.594e-04	5	-5.828e-04	7
31	N23	max	0	8	0	8	0	8	-5.058e-04	8	-3.82e-05	8	3.673e-04	2
32		min	0	1	0	1	0	1	-1.277e-03	3	-1.944e-04	1	-4.718e-04	3
33	N24	max	0	8	0	8	0	8	1.252e-03	7	1.299e-04	2	4.676e-04	2
34		min	0	1	0	1	0	1	3.05e-04	6	-1.628e-04	7	-6.183e-04	5
35	N31	max	0	8	0	8	0	8	1.014e-03	2	-7.535e-05	8	-6.181e-04	8
36		min	0	1	0	1	0	1	-1.021e-03	3	-2.888e-04	1	-3.492e-03	1
37	N32	max	0	8	0	8	0	8	1.453e-03	5	2.242e-04	2	1.342e-03	6
38		min	0	1	0	1	0	1	-1.215e-03	2	-2.42e-04	5	-3.391e-03	1
39	N25	max	0	8	-.008	2	0	8	0	4	1.593e-04	5	-9.566e-05	2
40		min	0	1	-.021	7	0	1	-4.806e-05	5	0	1	-1.795e-04	7
41	N26	max	0	8	-.014	6	0	8	1.808e-04	5	1.528e-04	5	-1.322e-04	6
42		min	0	1	-.036	7	0	1	-1.8e-06	7	0	1	-4.167e-04	1
43	N29	max	0	8	-.005	2	0	8	0	4	0	4	5.259e-04	2
44		min	0	1	-.037	7	0	1	-7.936e-04	5	-3.992e-04	5	-1.761e-04	5
45	N33	max	0	8	-.017	6	0	8	3.989e-03	5	6.487e-04	5	-1.324e-04	6
46		min	0	1	-.101	1	0	1	0	1	0	1	-6.029e-03	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	Cb	Eqn
1	M1	HSS16x0.5	.258	91	1	.041	91		5	788....	858.06	352.8	352.8	4.9...	H1-...
2	M4	L2.5x2.5x6	.168	4....	7	.005	8....	y	7	7.958	56.052	1.512	3.144	1.1...	H2-1
3	M5	L2.5x2.5x6	.197	4....	5	.005	8....	y	7	7.958	56.052	1.512	3.144	1.1...	H2-1
4	M6	L2.5x2.5x6	.134	4....	3	.005	7....	y	7	10.181	56.052	1.512	3.226	1.1...	H2-1
5	M7	L2.5x2.5x6	.110	4....	3	.005	7....	y	7	10.181	56.052	1.512	3.226	1.1...	H2-1
6	M8	L2.5x2.5x6	.085	3.05	7	.004	6.1	y	7	16.874	56.052	1.512	3.381	1.1...	H2-1
7	M9	L2.5x2.5x6	.078	3.05	7	.004	6.1	y	7	16.874	56.052	1.512	3.381	1.1...	H2-1
8	M12	L2.5x2.5x6	.058	1....	5	.002	0	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
9	M13	L2.5x2.5x6	.047	1....	5	.002	0	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
10	M16	L2.5x2.5x6	.088	1....	5	.002	0	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
11	M17	L2.5x2.5x6	.111	1....	5	.002	0	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
12	M24	L2.5x2.5x6	.211	1....	5	.002	0	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
13	M25	L2.5x2.5x6	.165	1....	5	.002	2....	y	7	43.393	56.052	1.512	3.537	1.1...	H2-1
14	M18	Plate 6"x3/4"	.021	0	5	.004	0	y	5	113....	145.8	2.278	18.225	1.6...	H1-...
15	M19	Plate 6"x3/4"	.036	0	1	.003	0	y	5	113....	145.8	2.278	17.807	1	H1-...
16	M22	Plate 6"x3/4"	.093	0	5	.022	0	y	5	113....	145.8	2.278	18.225	1.6...	H1-...
17	M26	Plate 6"x3/4"	.139	0	1	.018	0	y	5	113....	145.8	2.278	17.807	1	H1-...

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N1	-.497	15.638	0	0	0	2.828
2	1	N12	-.132	.031	-.031	0	0	0
3	1	N11	-.132	.031	.031	0	0	0
4	1	N15	-.161	.022	.118	0	0	0
5	1	N16	-.161	.022	-.118	0	0	0
6	1	N14	-.212	.028	.094	0	0	0
7	1	N13	-.212	.028	-.094	0	0	0
8	1	N19	-.172	.01	.277	0	0	0
9	1	N23	.272	.009	-.611	0	0	0
10	1	N31	-.575	.011	1.083	0	0	0
11	1	N32	-.575	.011	-1.083	0	0	0
12	1	N20	-.172	.01	-.277	0	0	0
13	1	N24	.272	.009	.611	0	0	0
14	1	N26	-4.021	0	0	0	0	0
15	1	N29	8.886	0	0	0	0	0
16	1	N25	-1.162	0	0	0	0	0
17	1	N33	-15.749	0	0	0	0	0
18	1	Totals:	-14.503	15.86	0			
19	1	COG (ft):	X: -1.262	Y: 59.908	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	2	N1	-.497	11.729	0	0	0	2.828
2	2	N12	-.132	.024	-.031	0	0	0
3	2	N11	-.132	.024	.031	0	0	0
4	2	N15	-.161	.016	.119	0	0	0
5	2	N16	-.161	.016	-.119	0	0	0
6	2	N14	-.212	.021	.094	0	0	0
7	2	N13	-.212	.021	-.094	0	0	0
8	2	N19	-.172	.008	.276	0	0	0
9	2	N23	.272	.007	-.611	0	0	0
10	2	N31	-.575	.008	1.083	0	0	0
11	2	N32	-.575	.008	-1.083	0	0	0
12	2	N20	-.172	.008	-.276	0	0	0
13	2	N24	.272	.007	.611	0	0	0
14	2	N26	-4.019	0	0	0	0	0
15	2	N29	8.88	0	0	0	0	0
16	2	N25	-1.162	0	0	0	0	0
17	2	N33	-15.746	0	0	0	0	0
18	2	Totals:	-14.503	11.895	0			
19	2	COG (ft):	X: -1.262	Y: 59.908	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	3	N1	-.102	28.332	0	0	0	.573
2	3	N12	-.05	.098	-.007	0	0	0
3	3	N11	-.05	.098	.007	0	0	0
4	3	N15	-.061	.067	.041	0	0	0
5	3	N16	-.061	.067	-.041	0	0	0
6	3	N14	-.08	.087	.032	0	0	0
7	3	N13	-.08	.087	-.032	0	0	0
8	3	N19	-.044	.031	.059	0	0	0
9	3	N23	.051	.031	-.13	0	0	0
10	3	N31	-.129	.031	.23	0	0	0
11	3	N32	-.129	.031	-.23	0	0	0
12	3	N20	-.044	.031	-.059	0	0	0
13	3	N24	.051	.031	.13	0	0	0
14	3	N26	-.864	0	0	0	0	0
15	3	N29	1.885	0	0	0	0	0
16	3	N25	-.274	0	0	0	0	0
17	3	N33	-3.346	0	0	0	0	0
18	3	Totals:	-3.326	29.021	0			
19	3	COG (ft):	X: -1.274	Y: 69.084	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	4	N1	-.119	13.032	0	0	0	.672
2	4	N12	-.028	.026	-.007	0	0	0
3	4	N11	-.028	.026	.007	0	0	0
4	4	N15	-.033	.018	.023	0	0	0
5	4	N16	-.033	.018	-.023	0	0	0
6	4	N14	-.043	.023	.018	0	0	0
7	4	N13	-.043	.023	-.018	0	0	0
8	4	N19	-.038	.008	.062	0	0	0
9	4	N23	.062	.008	-.138	0	0	0
10	4	N31	-.129	.008	.244	0	0	0
11	4	N32	-.129	.008	-.244	0	0	0
12	4	N20	-.038	.008	-.062	0	0	0
13	4	N24	.062	.008	.138	0	0	0
14	4	N26	-.905	0	0	0	0	0
15	4	N29	2.003	0	0	0	0	0
16	4	N25	-.256	0	0	0	0	0
17	4	N33	-3.548	0	0	0	0	0
18	4	Totals:	-3.241	13.216	0			
19	4	COG (ft):	X: -1.262	Y: 59.908	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	5	N1	0	15.639	-.509	-2.999	-.269	-.003
2	5	N12	-.383	.031	-.574	0	0	0
3	5	N11	.383	.031	-.574	0	0	0
4	5	N15	.135	.022	-.254	0	0	0
5	5	N16	-.135	.022	-.254	0	0	0
6	5	N14	.106	.028	-.179	0	0	0
7	5	N13	-.107	.028	-.179	0	0	0
8	5	N19	.957	.009	-1.947	0	0	0
9	5	N23	-1.99	.012	3.948	0	0	0
10	5	N31	3.925	.004	-7.882	0	0	0
11	5	N32	-3.924	.015	-7.883	0	0	0
12	5	N20	-.957	.011	-1.947	0	0	0
13	5	N24	1.991	.007	3.948	0	0	0
14	5	N26	.001	0	-.203	0	0	0
15	5	N29	0	0	1.266	0	0	0
16	5	N25	0	0	-.218	0	0	0
17	5	N33	-.003	0	-1.06	0	0	0
18	5	Totals:	0	15.86	-14.503			
19	5	COG (ft):	X: -1.262	Y: 59.908	Z: 0			

Joint Reactions (By Combination)

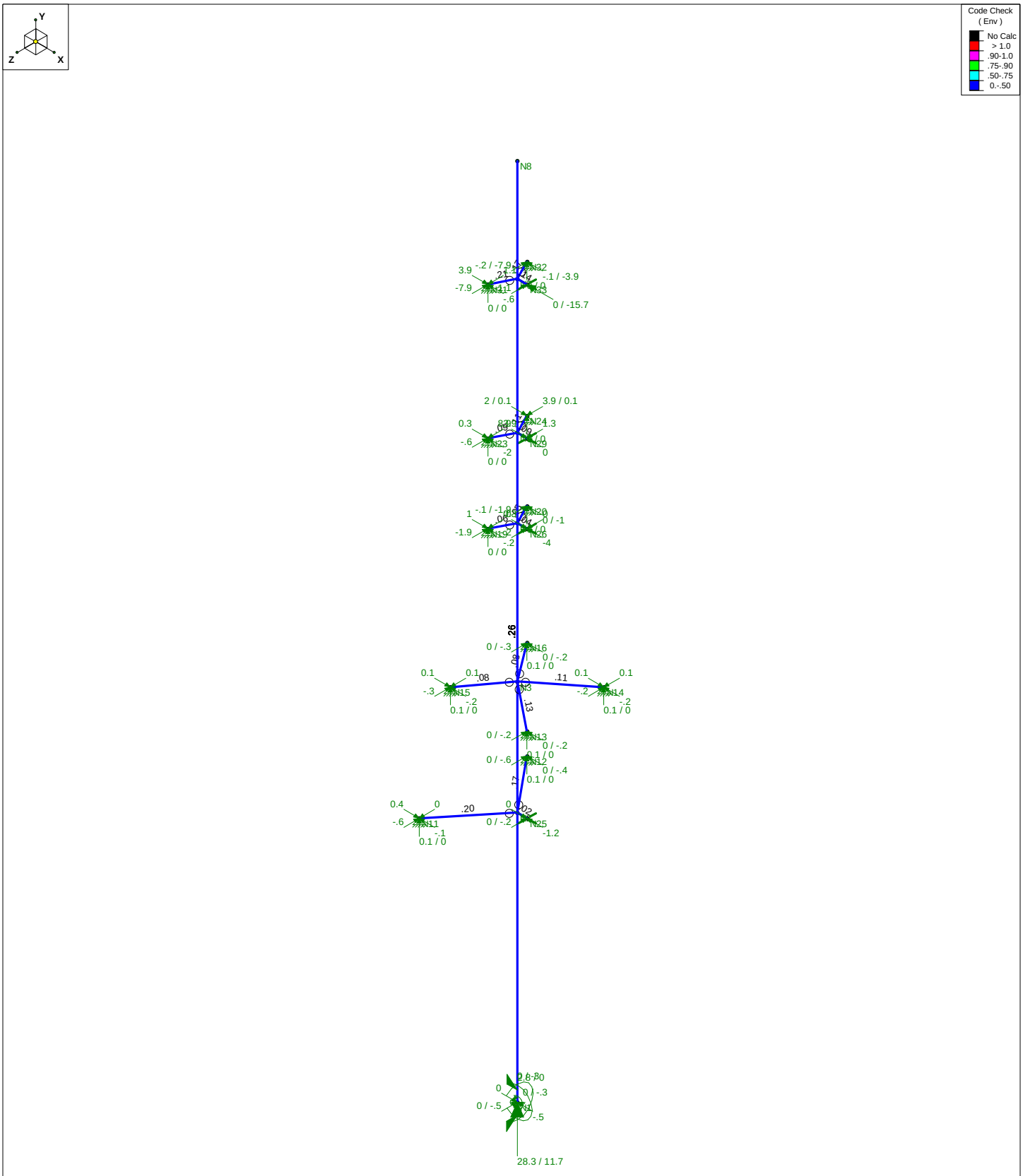
	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	6	N1	0	11.729	-.509	-2.999	-.269	-.002
2	6	N12	-.383	.024	-.574	0	0	0
3	6	N11	.383	.023	-.574	0	0	0
4	6	N15	.135	.016	-.254	0	0	0
5	6	N16	-.135	.016	-.254	0	0	0
6	6	N14	.106	.021	-.179	0	0	0
7	6	N13	-.107	.021	-.179	0	0	0
8	6	N19	.956	.007	-1.946	0	0	0
9	6	N23	-1.989	.009	3.945	0	0	0
10	6	N31	3.925	.003	-7.88	0	0	0
11	6	N32	-3.923	.011	-7.882	0	0	0
12	6	N20	-.956	.008	-1.946	0	0	0
13	6	N24	1.99	.006	3.945	0	0	0
14	6	N26	0	0	-.203	0	0	0
15	6	N29	0	0	1.266	0	0	0
16	6	N25	0	0	-.218	0	0	0
17	6	N33	-.003	0	-1.06	0	0	0
18	6	Totals:	0	11.895	-14.503			
19	6	COG (ft):	X: -1.262	Y: 59.908	Z: 0			

Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	7	N1	.002	28.332	-.106	-.628	-.049	-.023
2	7	N12	-.082	.098	-.145	0	0	0
3	7	N11	.081	.098	-.144	0	0	0
4	7	N15	.081	.067	-.139	0	0	0
5	7	N16	-.042	.067	-.087	0	0	0
6	7	N14	.074	.087	-.098	0	0	0
7	7	N13	-.023	.087	-.057	0	0	0
8	7	N19	.027	.031	-.068	0	0	0
9	7	N23	.076	.031	-.167	0	0	0
10	7	N31	0	.031	-.014	0	0	0
11	7	N32	-.203	.031	-.42	0	0	0
12	7	N20	-.073	.031	-.161	0	0	0
13	7	N24	.054	.031	.095	0	0	0
14	7	N26	-.674	0	.007	0	0	0
15	7	N29	1.899	0	.023	0	0	0
16	7	N25	-.021	0	-.056	0	0	0
17	7	N33	-2.952	0	-.014	0	0	0
18	7	Totals:	-1.776	29.021	-1.55			
19	7	COG (ft):	X: -1.274	Y: 69.084	Z: 0			

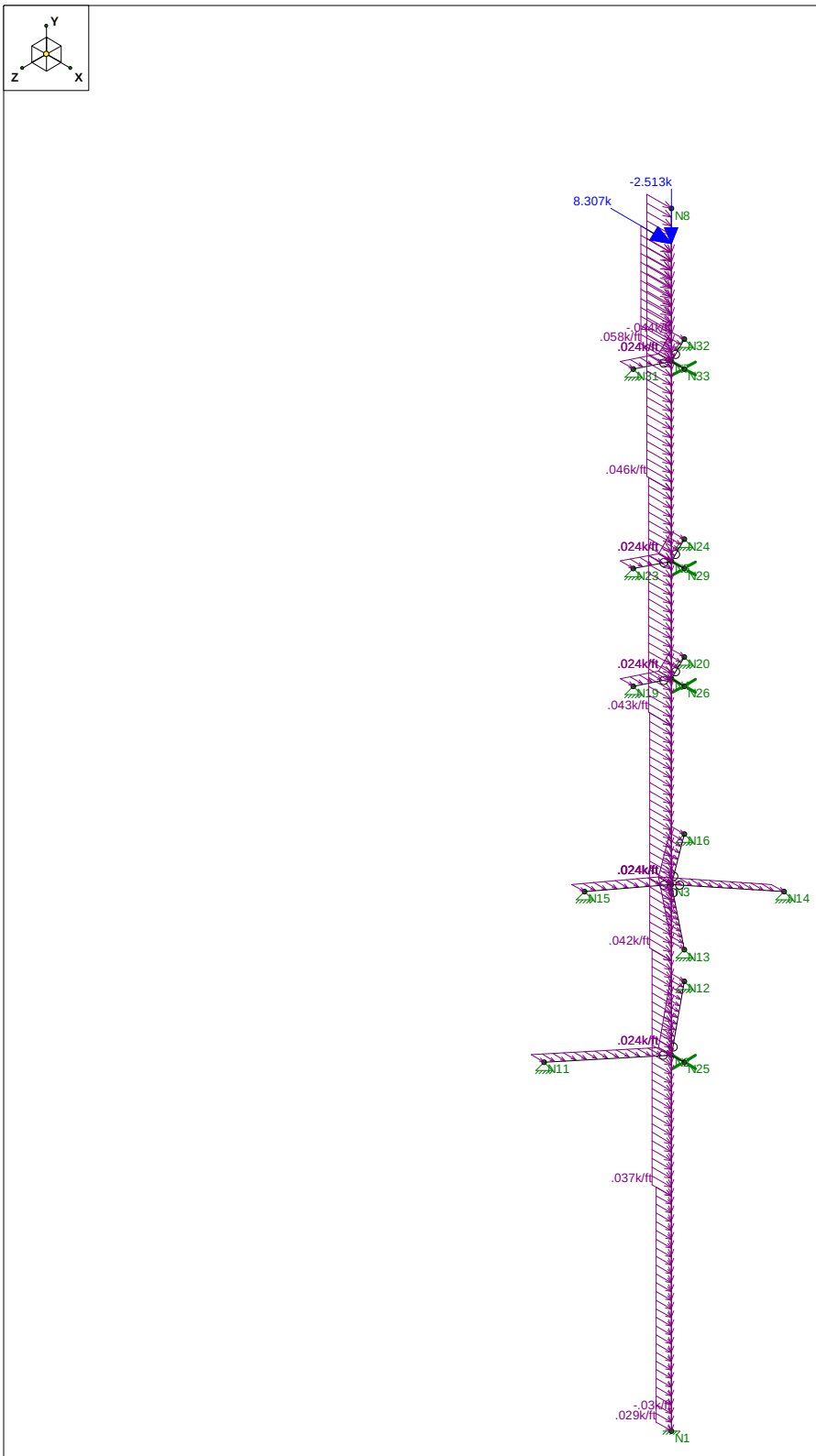
Joint Reactions (By Combination)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	8	N1	0	13.033	-.122	-.711	-.06	-.002
2	8	N12	-.085	.026	-.126	0	0	0
3	8	N11	.085	.026	-.126	0	0	0
4	8	N15	.027	.018	-.052	0	0	0
5	8	N16	-.027	.018	-.052	0	0	0
6	8	N14	.021	.023	-.037	0	0	0
7	8	N13	-.022	.023	-.037	0	0	0
8	8	N19	.216	.008	-.438	0	0	0
9	8	N23	-.449	.009	.892	0	0	0
10	8	N31	.884	.007	-1.775	0	0	0
11	8	N32	-.884	.009	-1.775	0	0	0
12	8	N20	-.216	.008	-.438	0	0	0
13	8	N24	.449	.008	.892	0	0	0
14	8	N26	.001	0	-.046	0	0	0
15	8	N29	0	0	.285	0	0	0
16	8	N25	0	0	-.048	0	0	0
17	8	N33	-.001	0	-.239	0	0	0
18	8	Totals:	0	13.216	-3.241			
19	8	COG (ft):	X: -1.262	Y: 59.908	Z: 0			



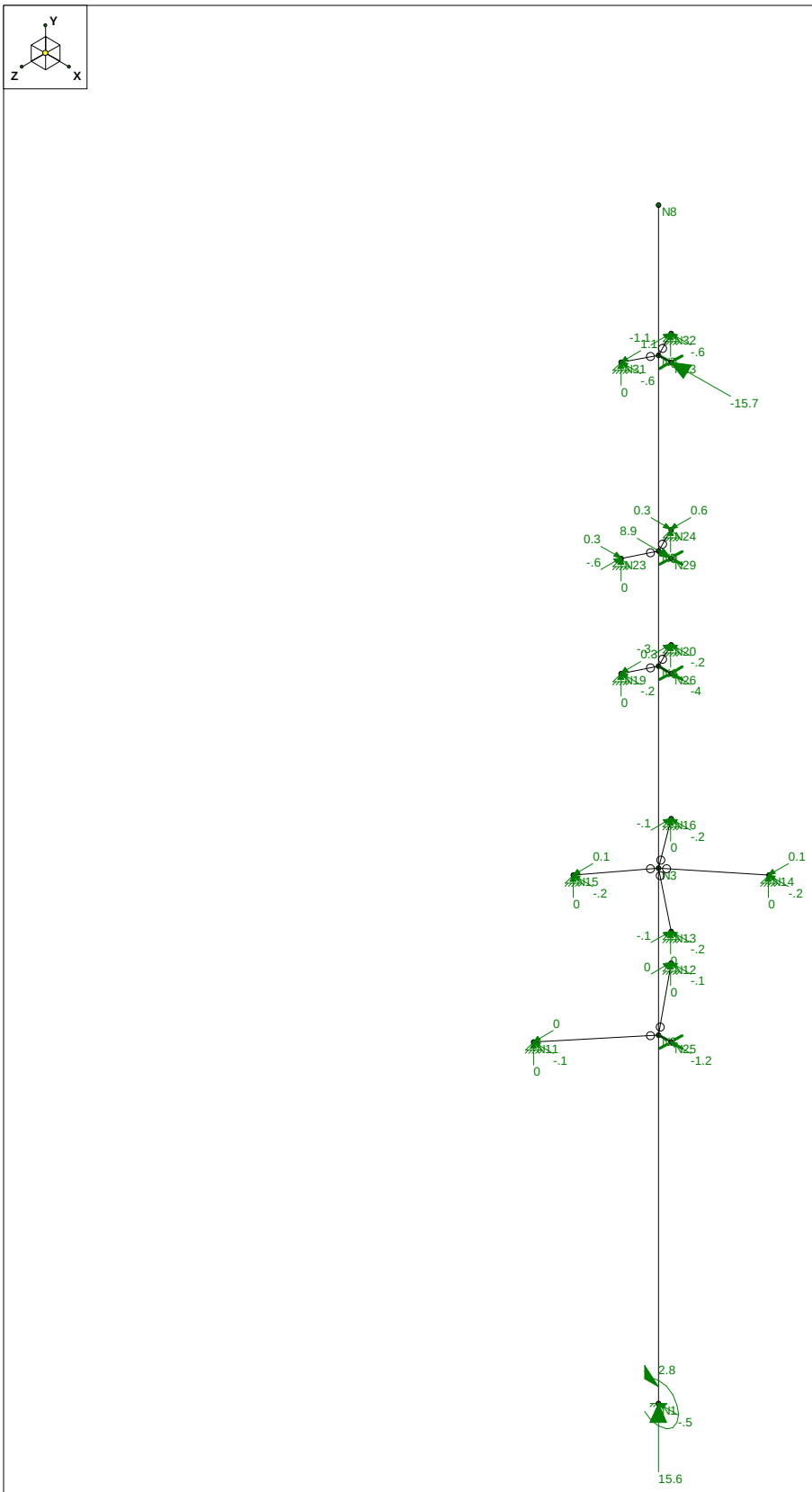
Member Code Checks Displayed (Enveloped)
Envelope Only Solution
Reaction and Moment Units are k and k-ft (Enveloped)

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:13 PM
19145.00- CT1847	Unity Check	Antenna Mast.r3d



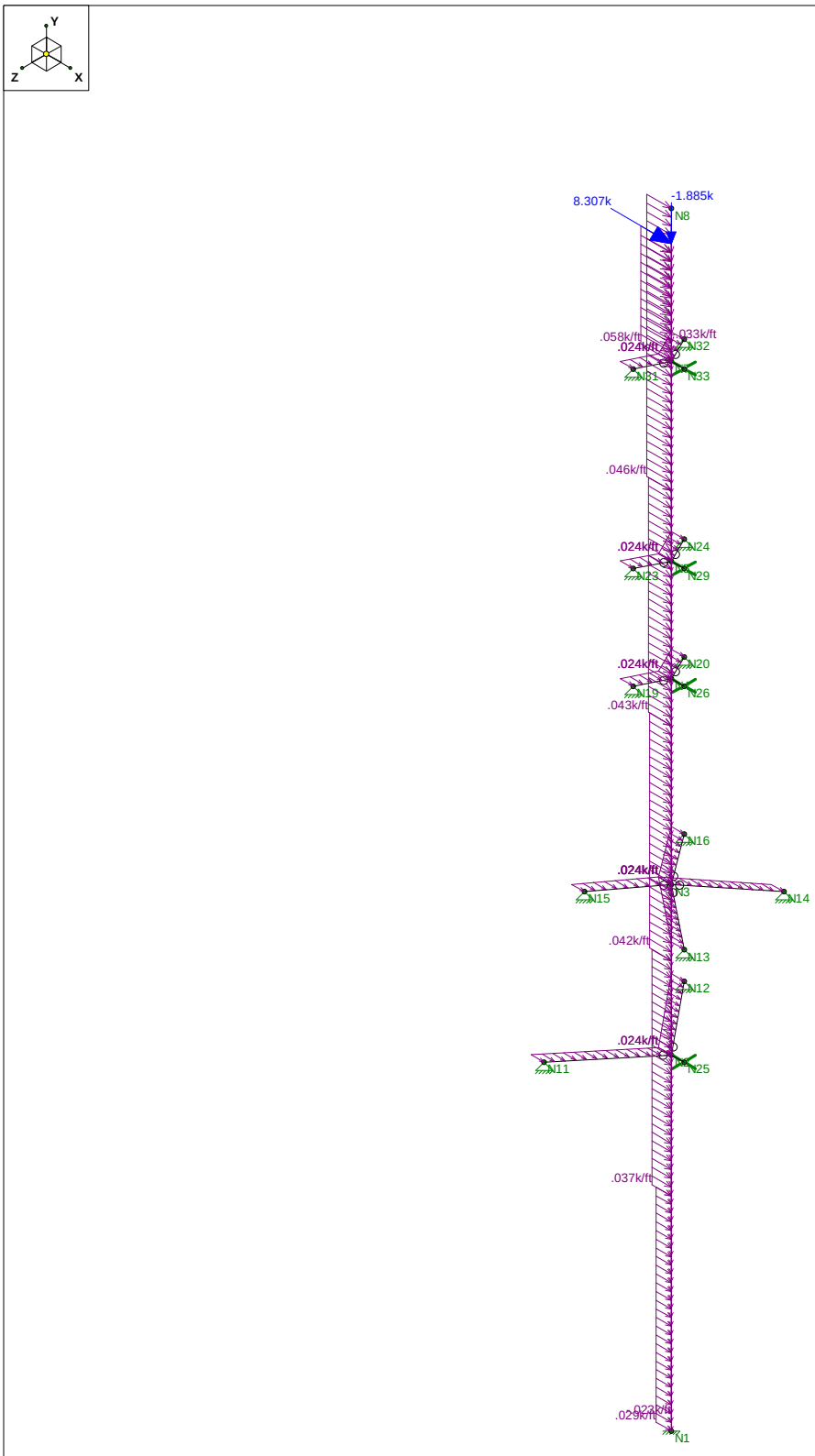
Loads: LC 1, 1.2D + 1.6W (X-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:43 AM
19145.00- CT1847	LC #1 Loads	Antenna Mast.r3d



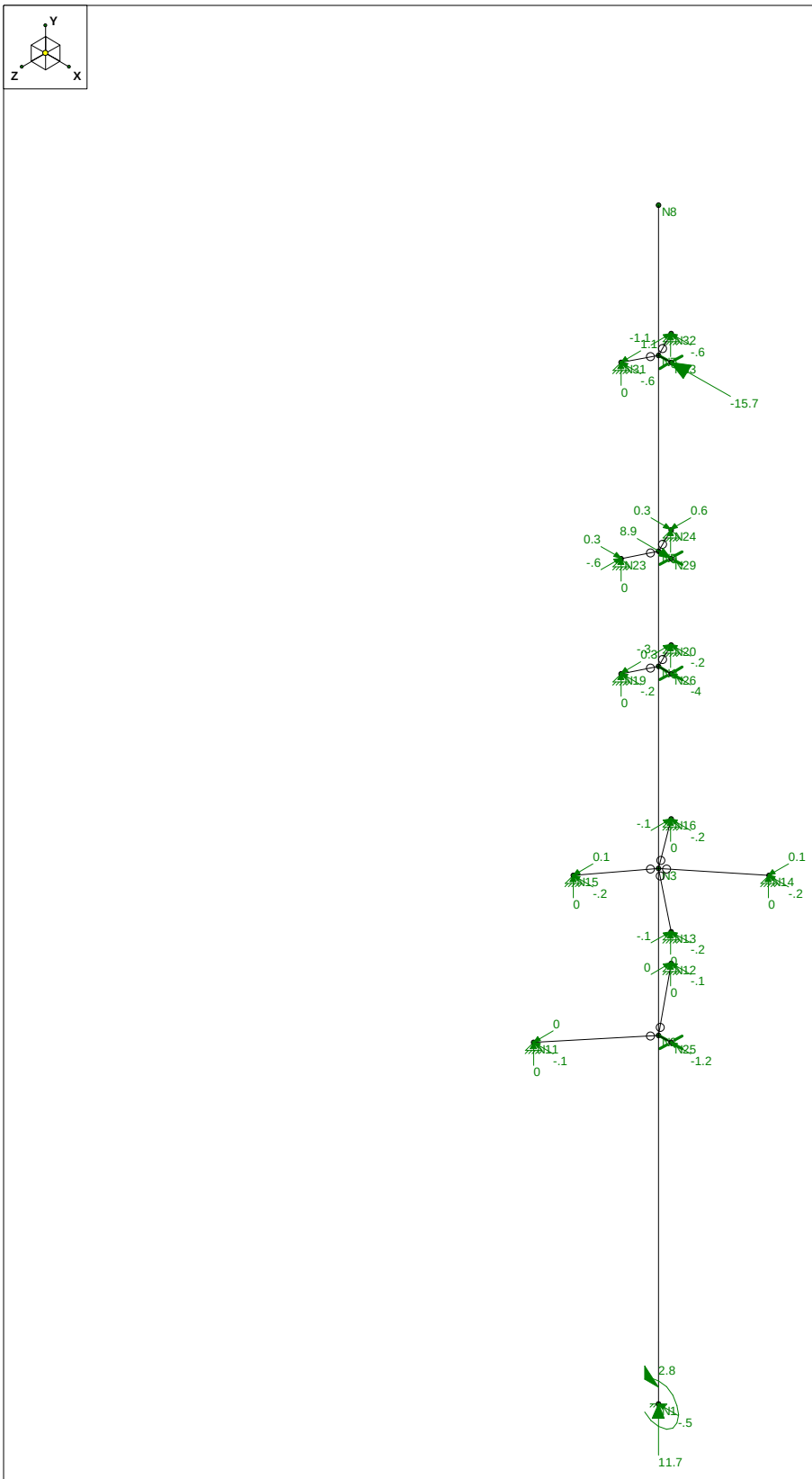
Results for LC 1, 1.2D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:08 PM
19145.00- CT1847	LC #1 Reactions	Antenna Mast.r3d



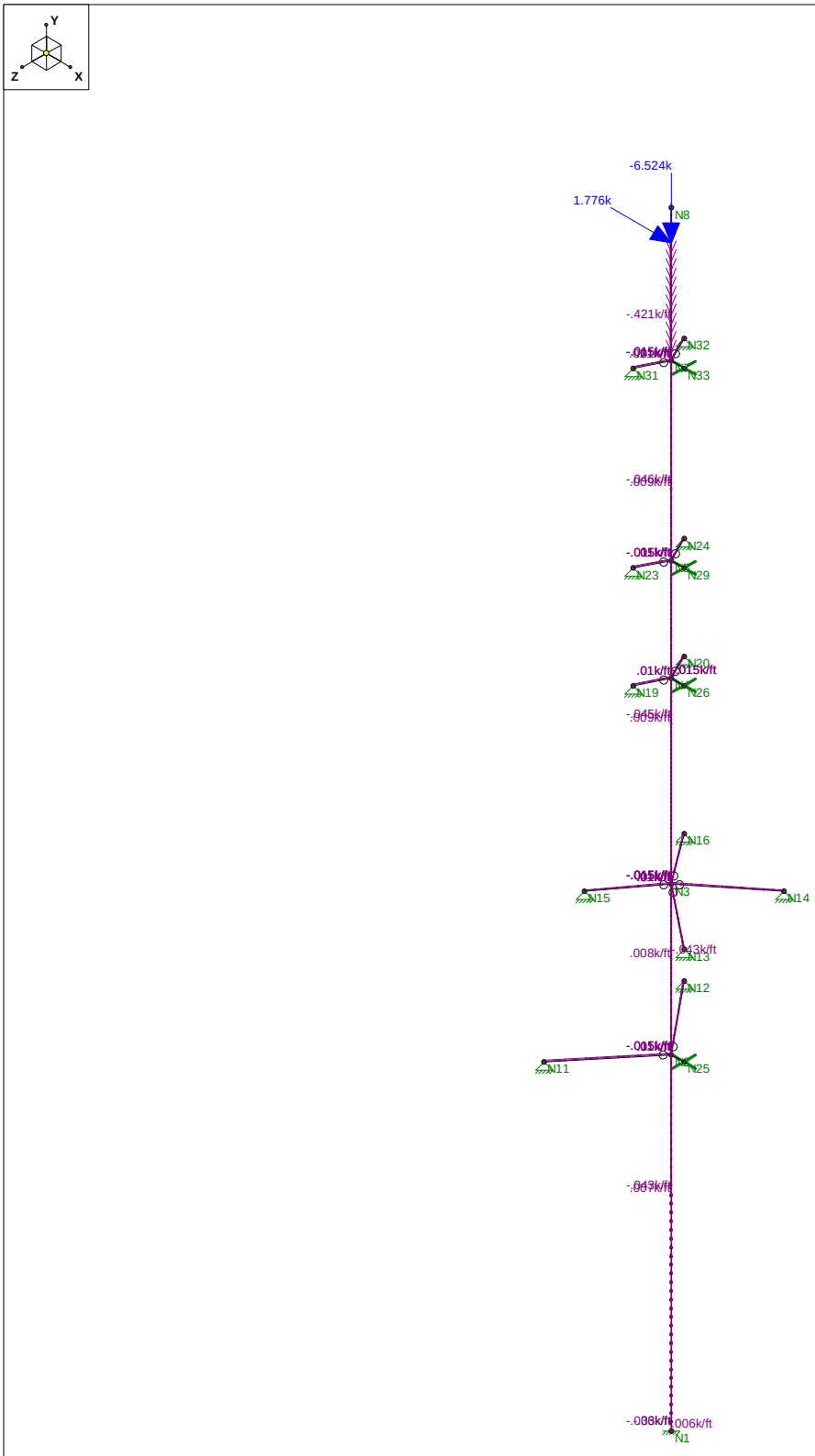
Loads: LC 2, 0.9D + 1.6W (X-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:43 AM
19145.00- CT1847	LC #2 Loads	Antenna Mast.r3d



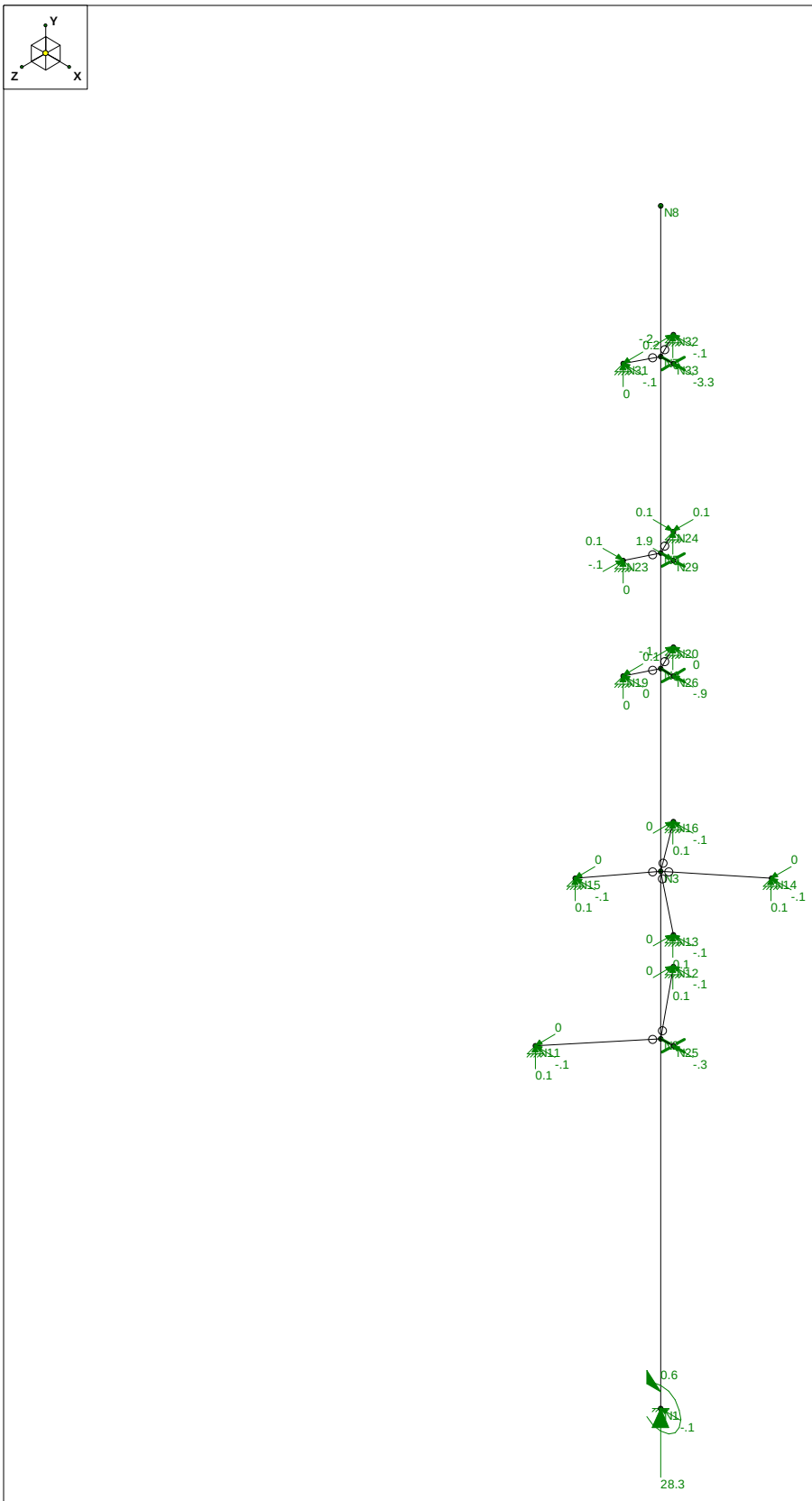
Results for LC 2, 0.9D + 1.6W (X-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:09 PM
19145.00- CT1847	LC #2 Reactions	Antenna Mast.r3d



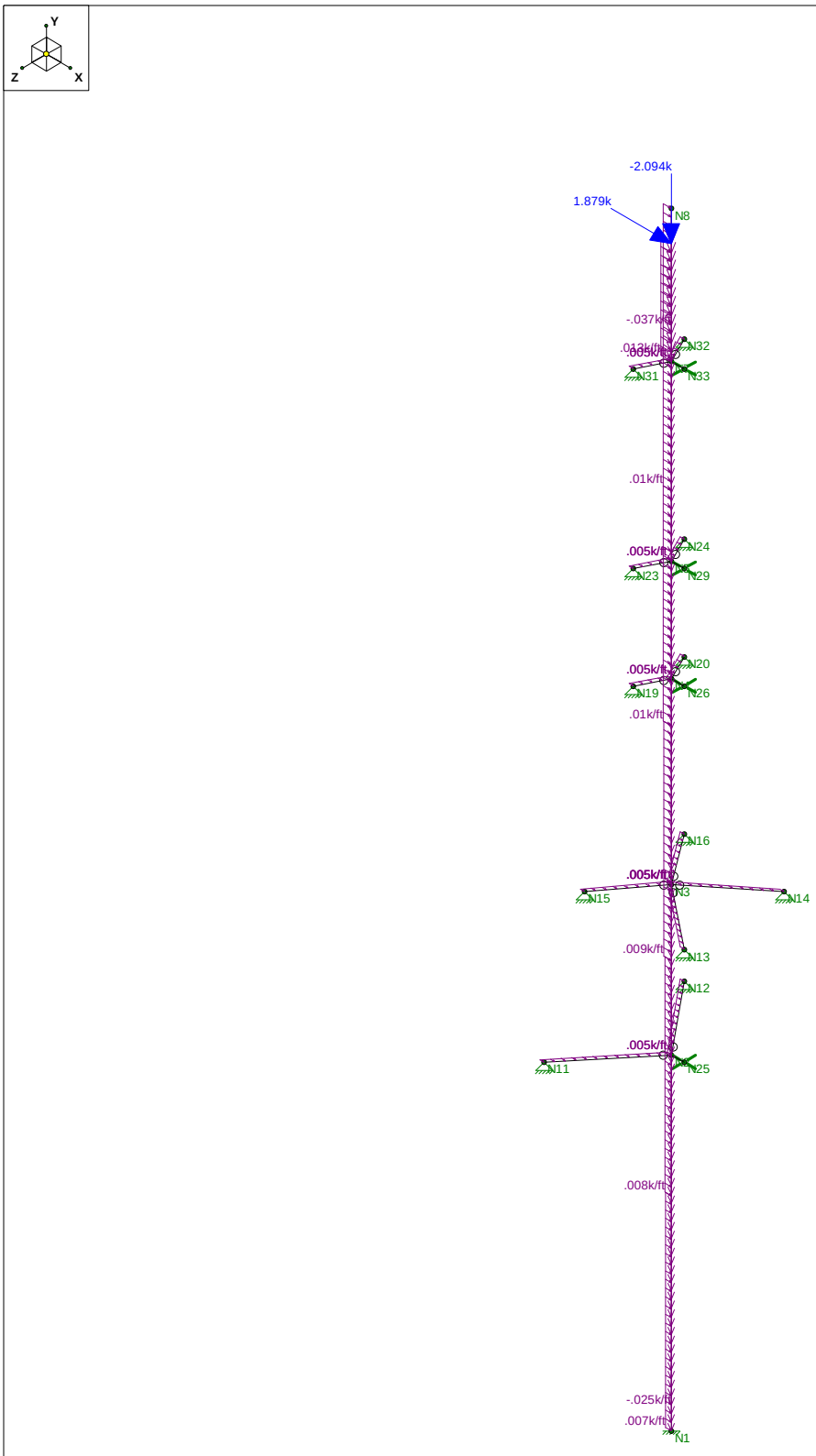
Loads: LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:43 AM
19145.00- CT1847	LC #3 Loads	Antenna Mast.r3d



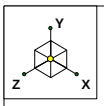
Results for LC 3, 1.2D + 1.0Di + 1.0Wi (X-direction)
Reaction and Moment Units are k and k-ft

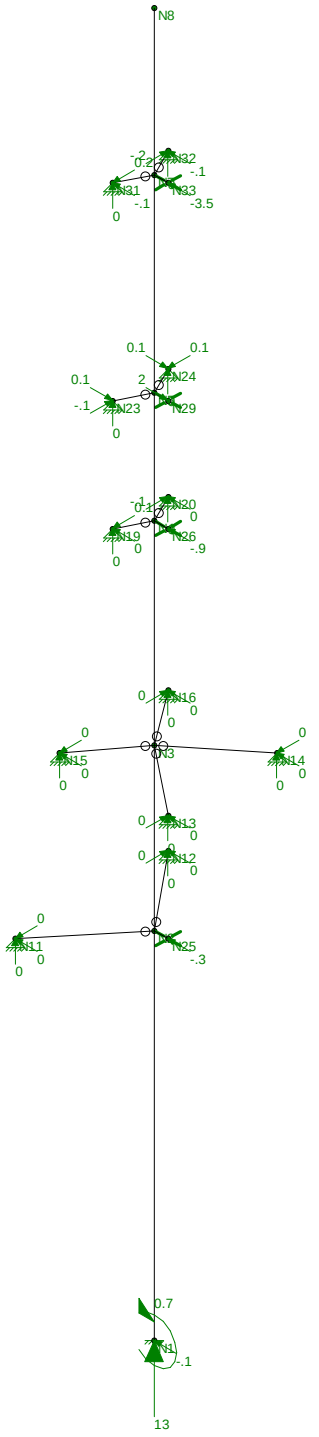
CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:10 PM
19145.00- CT1847	LC #3 Reactions	Antenna Mast.r3d



Loads: LC 4, 1.0D+1.0W Service (X-Direction)
Envelope Only Solution

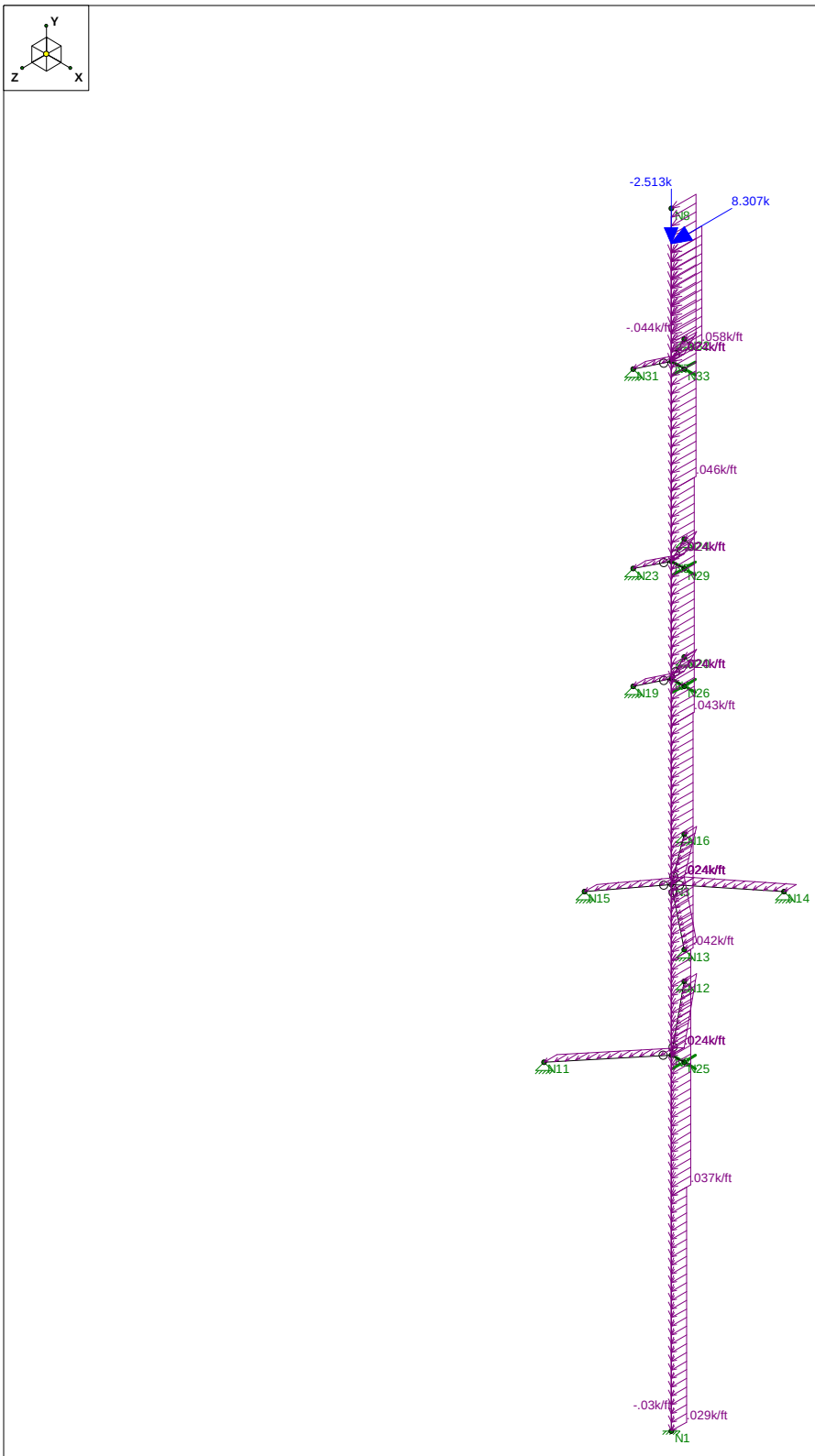
CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:44 AM
19145.00- CT1847	LC #4 Loads	Antenna Mast.r3d





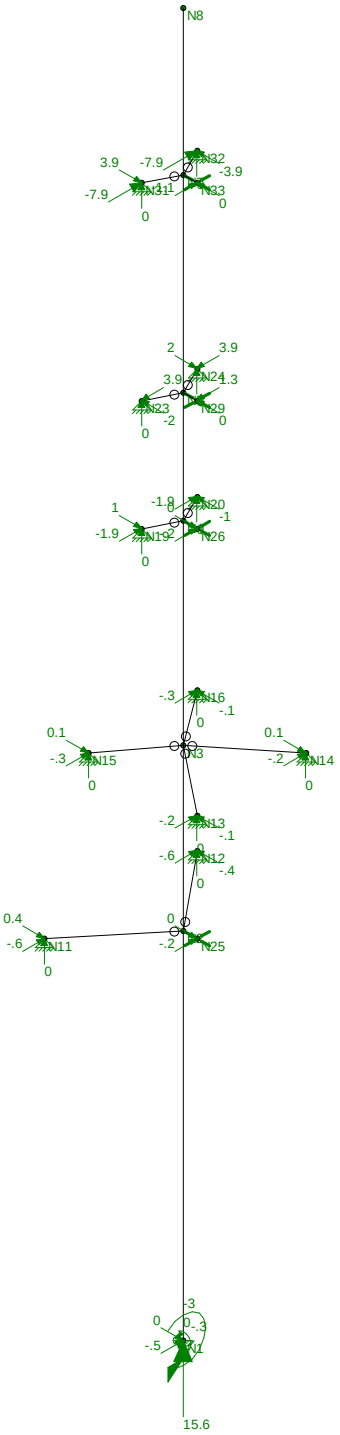
Results for LC 4, 1.0D+1.0W Service (X-Direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:10 PM
19145.00- CT1847	LC #4 Reactions	Antenna Mast.r3d



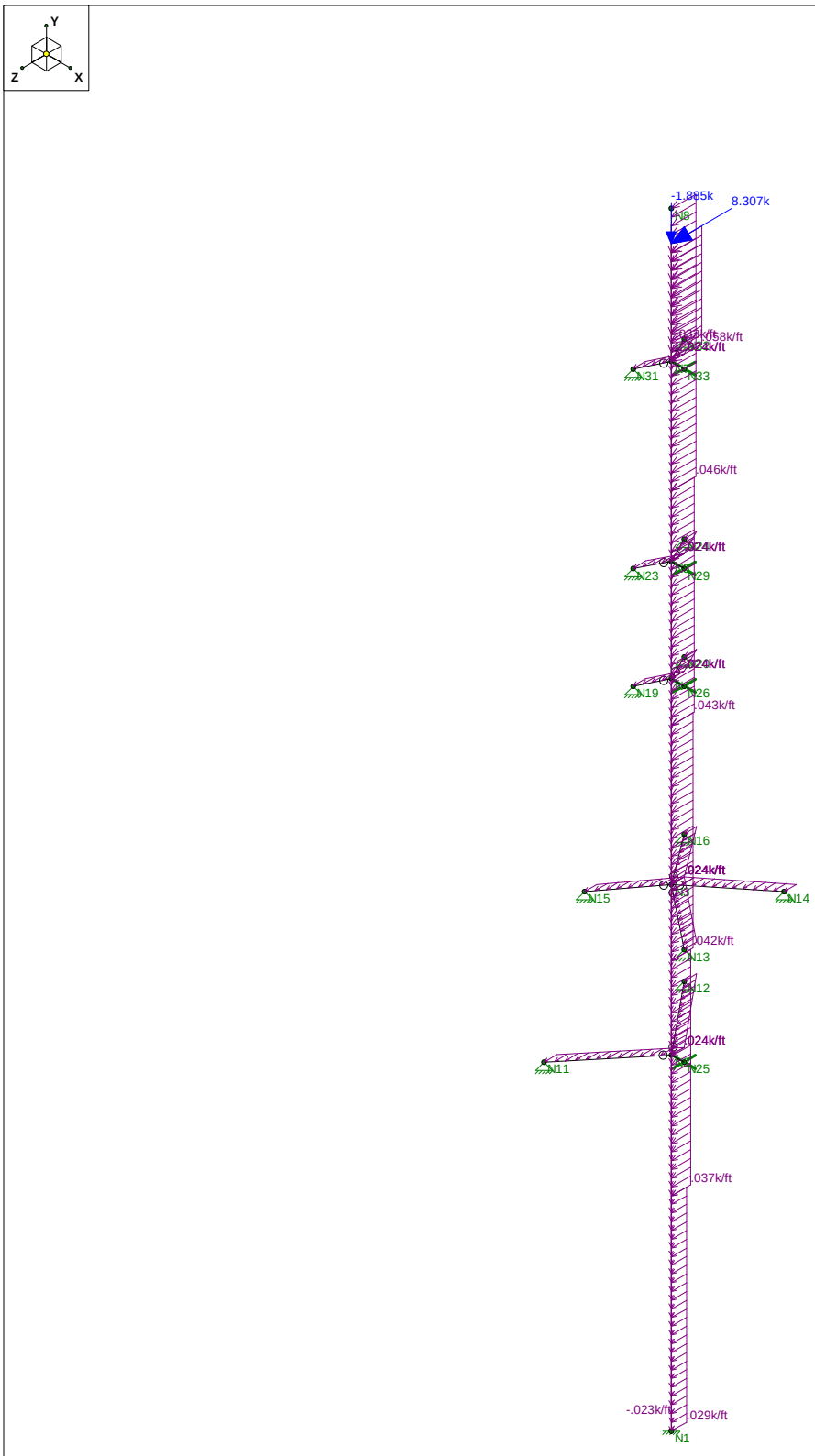
Loads: LC 5, 1.2D + 1.6W (Z-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:44 AM
19145.00- CT1847	LC #5 Loads	Antenna Mast.r3d



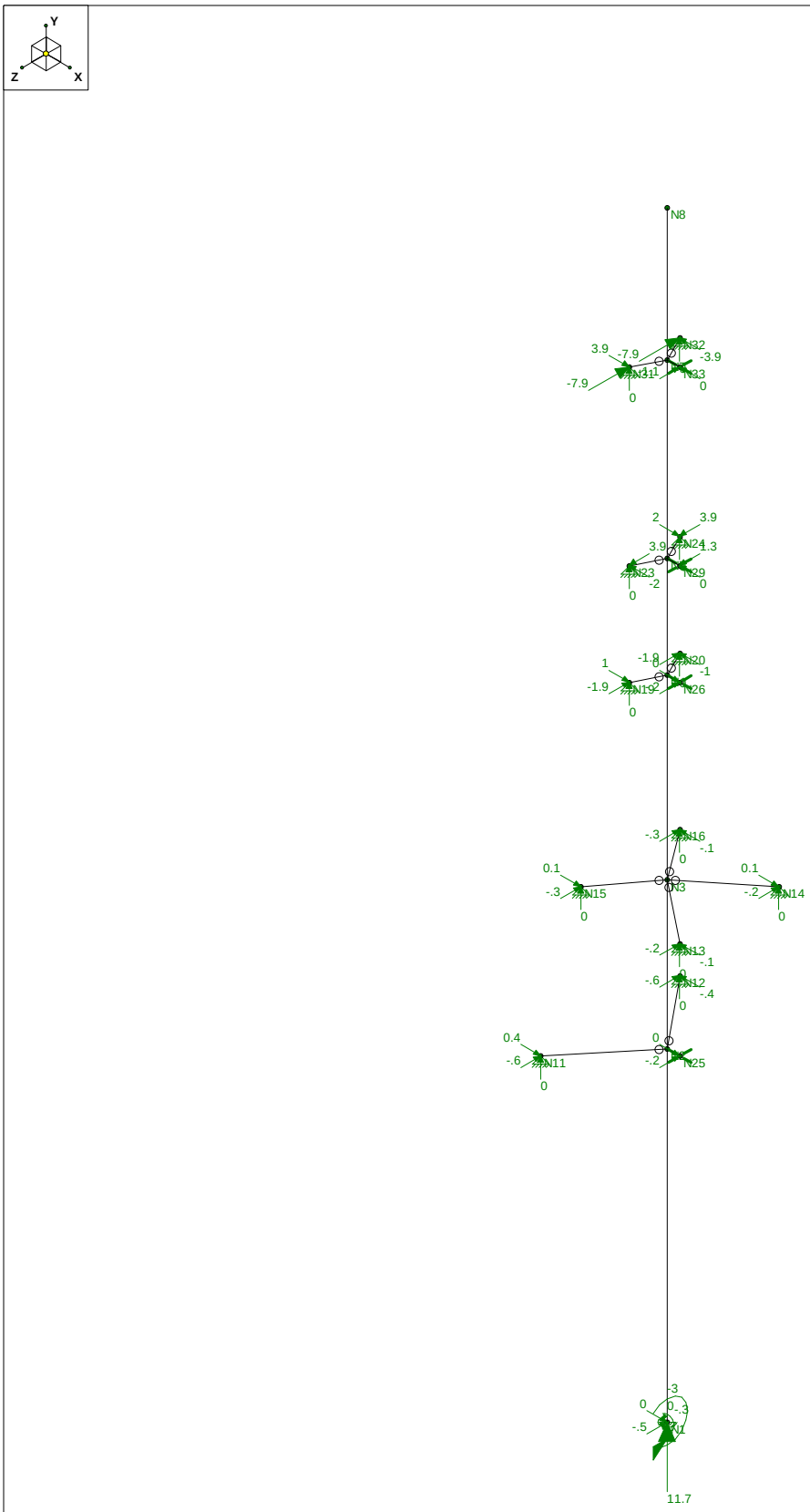
Results for LC 5, 1.2D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:11 PM
19145.00- CT1847	LC #5 Reactions	Antenna Mast.r3d



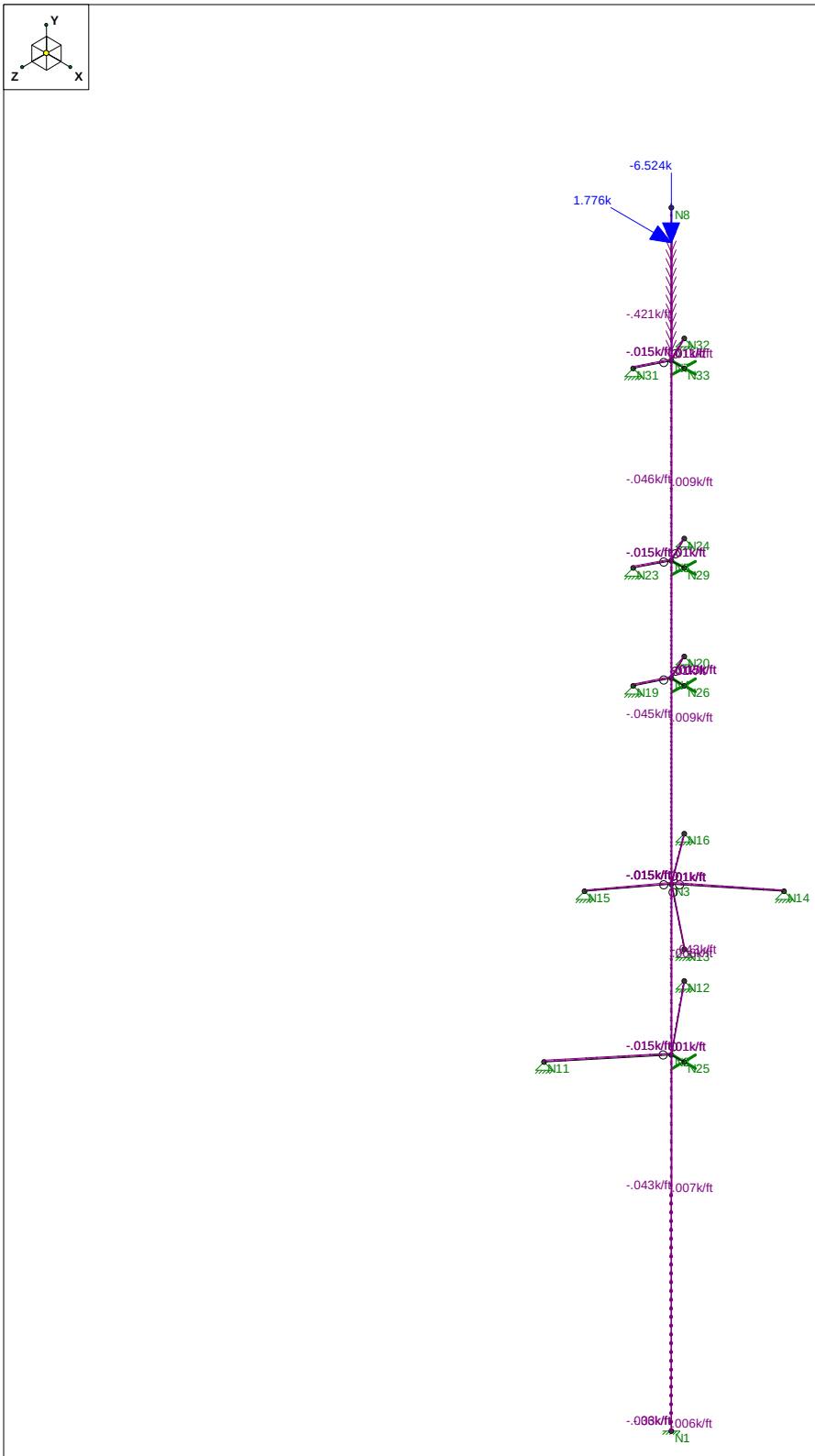
Loads: LC 6, 0.9D + 1.6W (Z-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:45 AM
19145.00- CT1847	LC #6 Loads	Antenna Mast.r3d



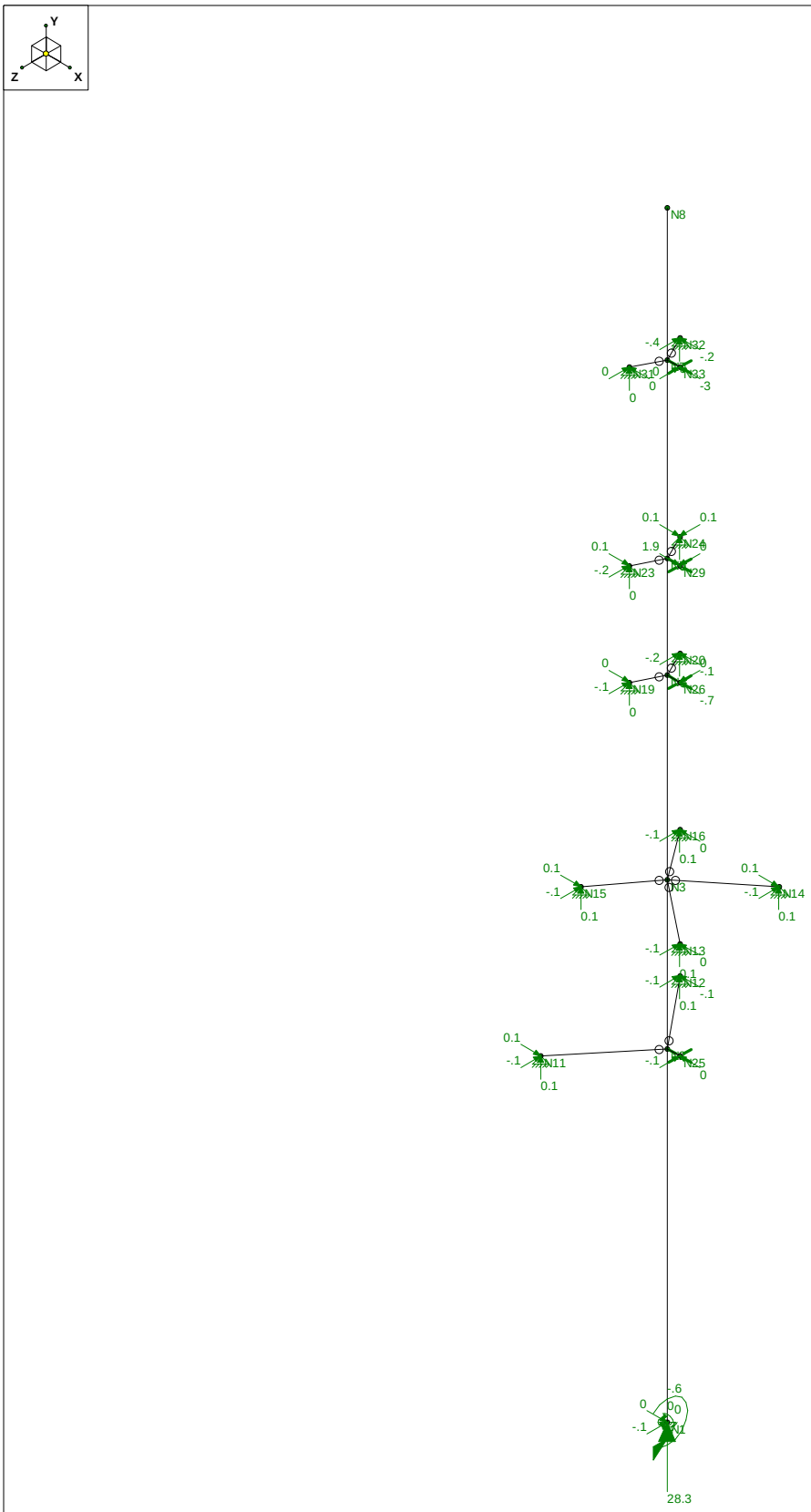
Results for LC 6, 0.9D + 1.6W (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:11 PM
19145.00- CT1847	LC #6 Reactions	Antenna Mast.r3d



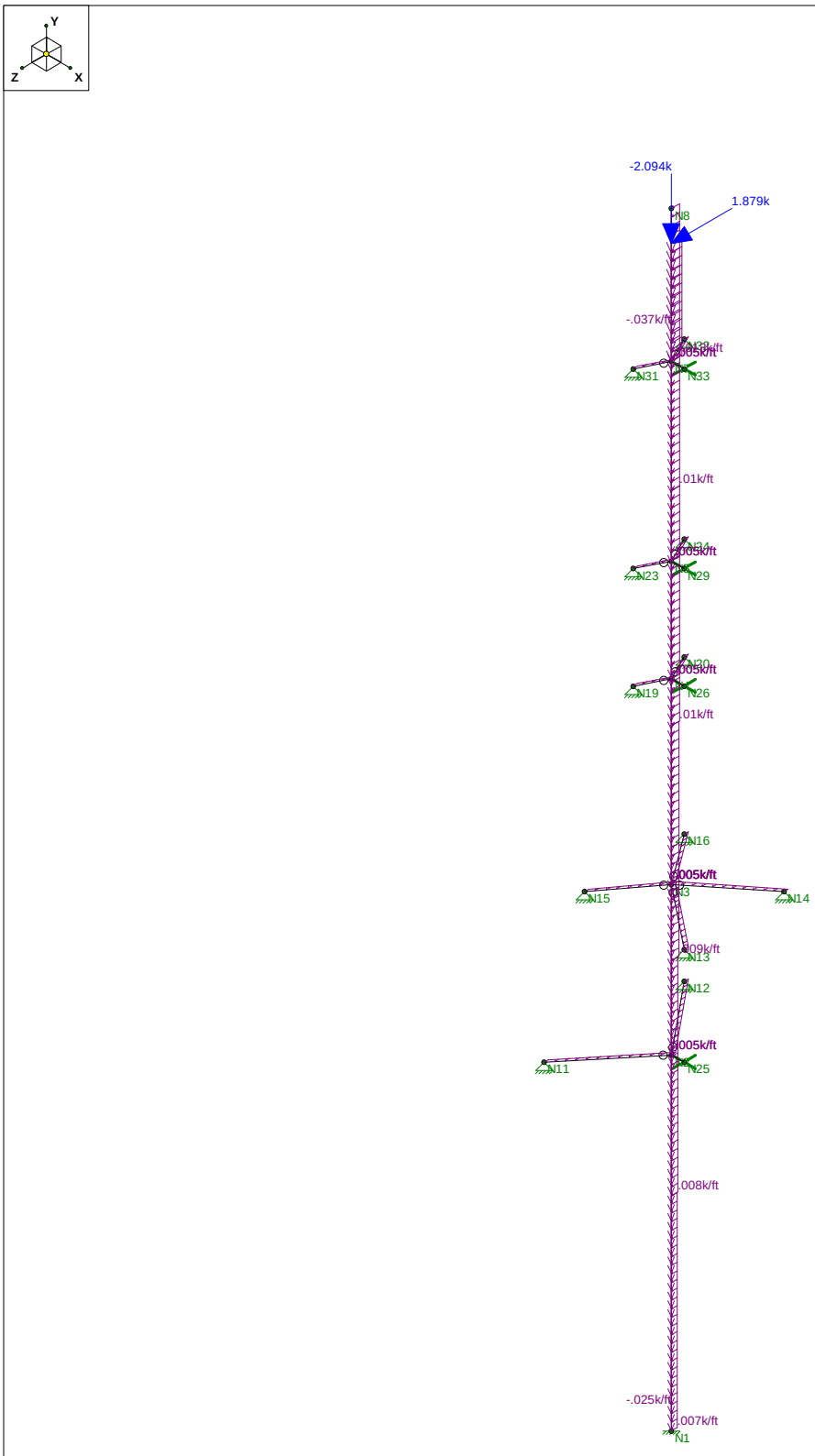
Loads: LC 7, 1.2D + 1.0Di + 1.0Wi (Z-direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:45 AM
19145.00- CT1847	LC #7 Loads	Antenna Mast.r3d



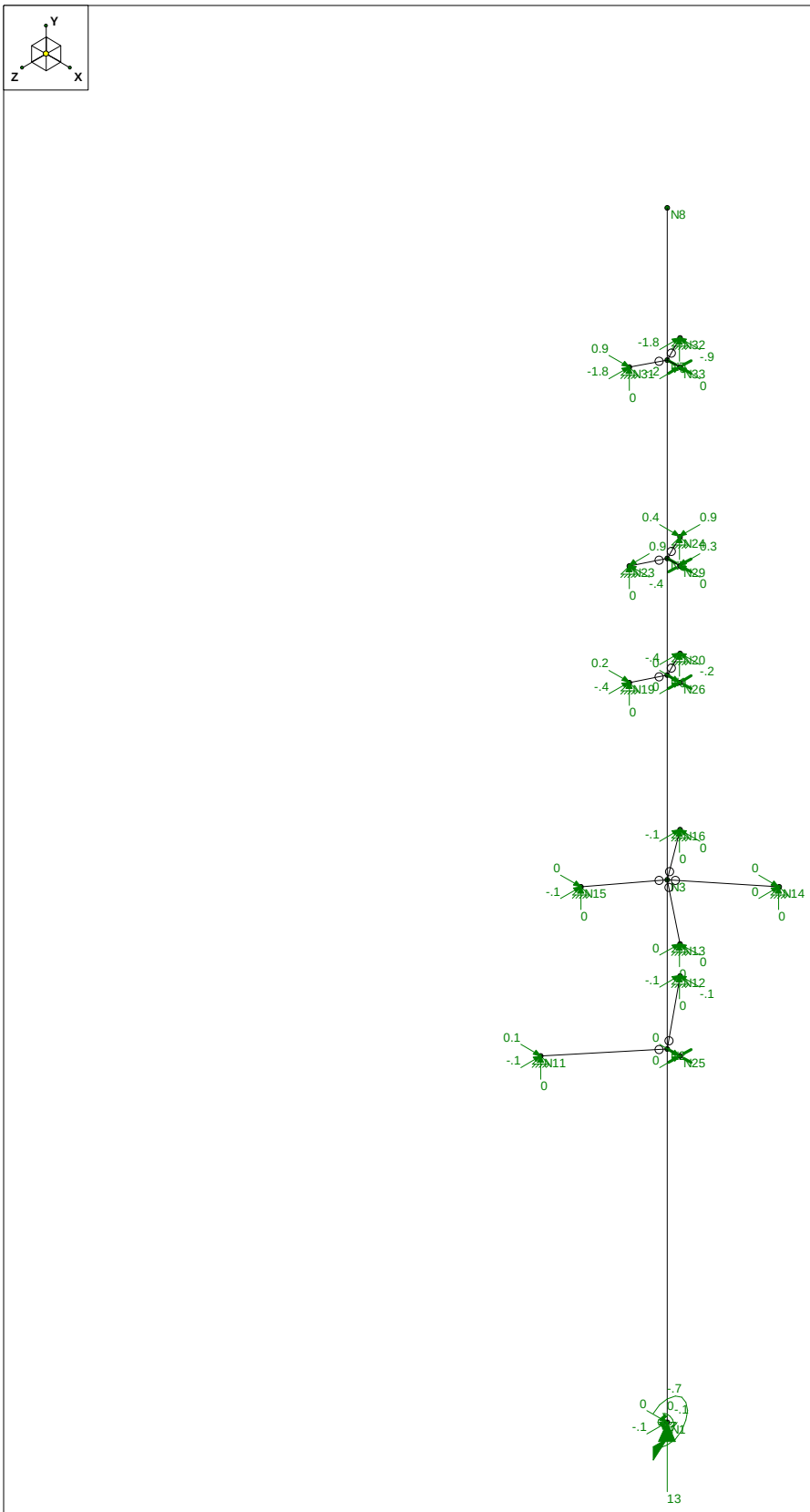
Results for LC 7, 1.2D + 1.0Di + 1.0Wi (Z-direction)
Reaction and Moment Units are k and k-ft

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:11 PM
19145.00- CT1847	LC #7 Reactions	Antenna Mast.r3d



Loads: LC 8, 1.0D+1.0W Service (Z-Direction)
Envelope Only Solution

CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 11:46 AM
19145.00- CT1847	LC #8 Loads	Antenna Mast.r3d

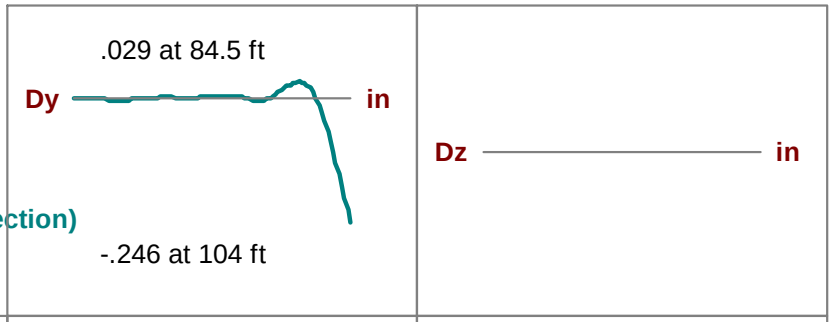


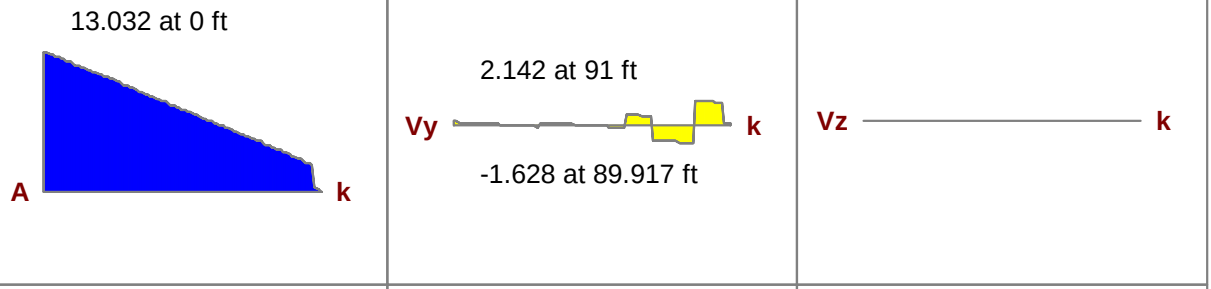
Results for LC 8, 1.0D+1.0W Service (Z-Direction)
Reaction and Moment Units are k and k-ft

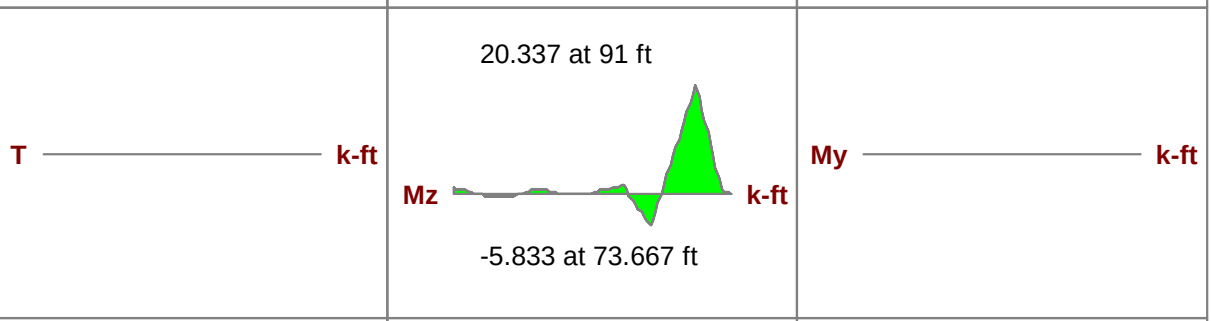
CENTEK Engineering, INC.		
FJP	Struct. #935 - Antenna Mast	Jan 13, 2021 at 12:12 PM
19145.00- CT1847	LC #8 Reactions	Antenna Mast.r3d

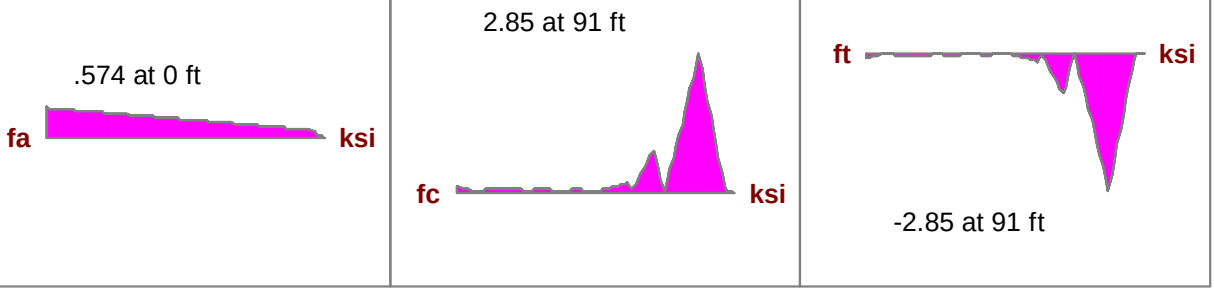
Column: ***M1***

Shape: **HSS16x0.5**
Material: **A500 Gr.42**
Length: **104 ft**
I Joint: **N1**
J Joint: **N8**
LC 4: 1.0D+1.0W Service (X-Direction)
Code Check: **0.060 (bending)**
Report Based On 97 Sections









AISC 14th(360-10): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.060**	Max Shear Check	**0.008 (s)**
Location	**91 ft**	Location	**91 ft**
Equation	**H1-1b**	Max Defl Ratio	**L/5074**

Bending	**Compact**	Compression	**Non-Slender**

			y-y	z-z
Fy	**42 ksi**	Lb	**17 ft**	**17 ft**
phi*Pnc	**788.373 k**	KL/r	**37.136**	**37.136**
phi*Pnt	**858.06 k**			
phi*Mny	**352.8 k-ft**	L Comp Flange	**104 ft**	
phi*Mnz	**352.8 k-ft**	L-torque	**104 ft**	
phi*Vny	**257.418 k**	Tau_b	**1**	
phi*Vnz	**257.418 k**			
phi*Tn	**333.163 k-ft**			
Cb	**4.951**			

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Connection of Antenna Mast to Tower # 935
Location:	Wilton, CT
Rev. 3: 8/26/20	Prepared by: T.J.L. Checked by: C.F.C. Job No. 19145.00

Antenna Mast Connection to Tower:

Reactions:

Horz = $Horz := 17.1 \cdot kips$ (User Input)

Pipe Collar:

Bolt Data:

Bolt Type = ASTMA325 (User Input)

Bolt Diameter = $D := 0.625 \cdot in$ (User Input)

Number of Bolts = $N_b := 4$ (User Input)

Design Tensile Strength = $F_t := 20.7 \cdot kips$ (User Input)

Design Shear Strength = $F_v := 12.4 \cdot kips$ (User Input)

Plate Data:

Plate Width = $W_{plt} := 5 \cdot in$ (User Input)

Plate Thickness = $t_{plt} := 1.25 \cdot in$ (User Input)

Distance from Bolt to Collar = $d_{st} := 1.75 \cdot in$ (User Input)

Plate Gap = $gap := 0.75 \cdot in$ (User Input)

Yield Strength = $F_y := 36 \cdot ksi$ (User Input)

Weld Data:

Weld Size = $sw := \frac{5}{16} \cdot in$ (User Input)

Weld Length = $l_w := 5 \cdot in$ (User Input)

Number of Welds = $n_w := 2$ (User Input)

Weld Strength = $F_w := 70 \cdot ksi$ (User Input)

Check Pipe Collar Bolts:

Tension Force = $f_t := \frac{Horz}{N_b} = 4.3 \cdot kips$

Bolt Tenison % of Capacity = $\frac{f_t}{F_t} = 20.65 \cdot \%$

Check Bolt Tension = $Bolt\_Tension := if\left(\frac{f_t}{F_t} \le 1.00, "OK", "Overstressed"\right)$

$Bolt\_Tension = "OK"$

Check Pipe Collar Plate:

Design Bending Strength = $F_b := 0.9F_y = 32.4 \cdot ksi$

Plate Section Modulus = $Z_{plt} := \frac{1}{4} \cdot W_{plt} \cdot t_{plt}^{2} = 1.953 \cdot in^3$

Plate Bending Moment = $M := \frac{Horz}{2} \cdot d_{st} = 14.962 \cdot in \cdot kips$

Plate Bending Stress = $f_b := \frac{M}{Z_{plt}} = 7.661 \cdot ksi$

$Plate\_Bending := if\left(f_b < F_b, "OK", "Overstressed"\right)$

$Plate\_Bending = "OK"$

Check Pipe Collar Weld:

Design Weld Strength = $F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$

Weld Section Modulus = $S_w := \frac{1}{6} \cdot .707 \cdot sw \cdot l_w^{2} = 0.921 \cdot in^3$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 1.105 \cdot in^2$

Weld Stress = $f_w := \frac{Horz}{A_w \cdot n_w} + \frac{M}{\left(t_{plt} - sw\right) \cdot A_w} = 22.187 \cdot ksi$

$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$

$Weld = "OK"$

Reactions:

Force =	Fab := 9·kips	(User Input)

Angle Plate:

Bolt Data:

Bolt Type =	ASTMA325	(User Input)
Bolt Diameter =	D := 0.625·in	(User Input)
Number of Bolts =	$N_b := 1$	(User Input)
Design Tensile Strength =	$F_t := 20.7 \cdot kips$	(User Input)
Design Shear Strength =	$F_v := 12.4 \cdot kips$	(User Input)

Plate Data:

Plate Width =	$W_{plt} := 3 \cdot in$	(User Input)
Plate Thickness =	$t_{plt} := 0.75 \cdot in$	(User Input)
Distance from Bolt to Collar =	$d_{st} := 1.5 \cdot in$	(User Input)
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)
Tensile Strength =	$F_u := 58 \cdot ksi$	(User Input)
Hole Diamter =	$Hole_d := .8125 \cdot in$	(User Input)

Weld Data:

Weld Size =	$sw := \frac{5}{16} \cdot in$	(User Input)
Weld Length =	$l_w := 3 \cdot in$	(User Input)
Number of Welds =	$n_w := 2$	(User Input)
Weld Strength =	$F_w := 70 \cdot ksi$	(User Input)

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 9 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 72.58 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, "OK", "Overstressed"\right)$

$Bolt\_Shear = "OK"$

Check Angle Connection Plate:

Plate Gross Area = $A_g := W_{plt} \cdot t_{plt} = 2.25 \cdot in^2$

Plate Net Area = $A_n := \left[W_{plt} - \left(Hole_d + .0625 \cdot in\right)\right] \cdot t_{plt} = 1.594 \cdot in^2$

Shear Lag Factor = $U := 1.0$

Plate Effective Net Area = $A_e := A_n \cdot U = 1.594 \cdot in^2$

Yielding Factor = $\phi_t := 0.9$

Rupture Factor = $\phi_r := 0.75$

Bearing Strength Factor = $\phi_b := 0.75$

Clear Distance = $l_c := d_{st} - \frac{Hole_d}{2} = 1.094 \cdot in$

Tensile Yielding = $P_{at} := \phi_t \cdot F_y \cdot A_g = 72.9 \cdot kips$

Tensile Rupture = $P_{ar} := \phi_r \cdot F_u \cdot A_e = 69.328 \cdot kips$

Bearing Strength = $R_a := \phi_b \cdot 1.2 \cdot l_c \cdot t_{plt} \cdot F_u = 42.82 \cdot kips$

$Pa := \min\left(P_{at}, P_{ar}, R_a\right) = 42.82 \cdot kips$

$Plate := if\left(Fab < Pa, "OK", "Overstressed"\right)$

$Plate = "OK"$

Check Angle Connection Plate Weld:

Design Weld Strength = $F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 0.663 \cdot in^2$

Plate Stress = $f_w := \frac{Fab}{A_w \cdot n_w} = 6.789 \cdot ksi$

$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$

$Weld = "OK"$

Reactions:

Force =	Fab := 16·kips	(User Input)	

Center Plate:

Bolt Data:

Bolt Type =	ASTMA325	(User Input)	
Bolt Diameter =	D := 0.625·in	(User Input)	
Number of Bolts =	$N_b := 1$	(User Input)	
Design Tensile Strength =	$F_t := 20.7 \cdot kips$	(User Input)	
Design Shear Strength =	$F_v := 24.9 \cdot kips$	(User Input)	Double Shear

Plate Data:

Plate Width =	$W_{plt} := 6 \cdot in$	(User Input)	
Plate Thickness =	$t_{plt} := 0.75 \cdot in$	(User Input)	
Distance from Bolt to Collar =	$d_{st} := 7 \cdot in$	(User Input)	
Yield Strength =	$F_y := 36 \cdot ksi$	(User Input)	
Tensile Strength =	$F_u := 58 \cdot ksi$	(User Input)	
Hole Diamter =	$Hole_d := .8125 \cdot in$	(User Input)	

Weld Data:

Weld Size =	$sw := \frac{5}{16} \cdot in$	(User Input)	
Weld Length =	$l_w := 6 \cdot in$	(User Input)	
Number of Welds =	$n_w := 2$	(User Input)	
Weld Strength =	$F_w := 70 \cdot ksi$	(User Input)	

Check Angle Brace Bolts:

Shear Force = $f_v := \frac{Fab}{N_b} = 16 \cdot kips$

Bolt Shear % of Capacity = $\frac{f_v}{F_v} = 64.26 \cdot \%$

Check Bolt Shear = $Bolt\_Shear := if\left(\frac{f_v}{F_v} \le 1.00, "OK", "Overstressed"\right)$

$Bolt\_Shear = "OK"$

Check Angle Connection Plate:

Plate Gross Area = $A_g := W_{plt} \cdot t_{plt} = 4.5 \cdot in^2$

Plate Net Area = $A_n := \left[W_{plt} - \left(Hole_d + .0625 \cdot in\right)\right] \cdot t_{plt} = 3.844 \cdot in^2$

Shear Lag Factor = $U := 1.0$

Plate Effective Net Area = $A_e := A_n \cdot U = 3.844 \cdot in^2$

Yielding Factor = $\phi_t := 0.9$

Rupture Factor = $\phi_r := 0.75$

Bearing Strength Factor = $\phi_b := 0.75$

Clear Distance = $l_c := d_{st} - \frac{Hole_d}{2} = 6.594 \cdot in$

Tensile Yielding = $P_{at} := \phi_t \cdot F_y \cdot A_g = 145.8 \cdot kips$

Tensile Rupture = $P_{ar} := \phi_r \cdot F_u \cdot A_e = 167.203 \cdot kips$

Bearing Strength = $R_a := \phi_b \cdot 1.2 \cdot l_c \cdot t_{plt} \cdot F_u = 258.145 \cdot kips$

$Pa := \min\left(P_{at}, P_{ar}, R_a\right) = 145.8 \cdot kips$

$Plate := if\left(Fab < Pa, "OK", "Overstressed"\right)$

$Plate = "OK"$

Check Angle Connection Plate Weld:

Design Weld Strength = $F_w := 0.45 \cdot F_w = 31.5 \cdot ksi$

Weld Area = $A_w := .707 \cdot sw \cdot l_w = 1.326 \cdot in^2$

Plate Stress = $f_w := \frac{Fab}{A_w \cdot n_w} = 6.035 \cdot ksi$

$Weld := if\left(f_w < F_w, "OK", "Overstressed"\right)$

$Weld = "OK"$

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Subject:	Flange Bolts and Flangeplate Analysis
Location:	Wilton, CT
Rev. 0: 4/2/20	Prepared by: T.J.L. Checked by: C.A.G. Job No. 19145.00

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 36·ft·kips	(Input From RisaTower)
Shear Force =	Shear := 7·kips	(Input From RisaTower)
Axial Force =	Axial := 16·kips	(Input From RisaTower)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 12	(User Input)
Diameter of Bolt Circle =	D_{bc} := 19·in	(User Input)
Bolt Minimum Tensile Strength =	F_{ub} := 120·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 1.00·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

Use AST MA36

Plate Yield Strength =	Fy_{bp} := 36·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1·in	(User Input)
Flange Plate Diameter =	D_{bp} := 22·in	(User Input)
Outer Pole Diameter =	D_{pole} := 16·in	(User Input)

Base Plate Data:

Weld Grade	E70XX	(User Input)
Weld Yield Stress =	F_{yw} := 70·ksi	(User Input)
Weld Size =	sw := 0.375·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 9.5 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left\| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 4.75 \cdot in$ $d_7 = -4.75 \cdot in$

$d_2 = 8.23 \cdot in$ $d_8 = -8.23 \cdot in$

$d_3 = 9.50 \cdot in$ $d_9 = -9.50 \cdot in$

$d_4 = 8.23 \cdot in$ $d_{10} = -8.23 \cdot in$

$d_5 = 4.75 \cdot in$ $d_{11} = -4.75 \cdot in$

$d_6 = 0.00 \cdot in$ $d_{12} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 8 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.23 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 1.50 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.23 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 12.1 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 541.5 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 6.2 \cdot kips$

Maximum Shear Force = $V_{Max} := \frac{Shear}{N} = 0.6 \cdot kips$

Design Tensile Strength = $\Phi R_{nt} := \left(0.75 \cdot F_{ub} \cdot 0.75 \cdot A_g\right) = 53 \cdot kips$

Bolt Tension % of Capacity = $\frac{T_{Max}}{\Phi R_{nt}} = 11.78 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{\Phi R_{nt}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Design Shear Strength = $\Phi R_{nv} := \left(0.75 \cdot 0.45 \cdot F_{ub} \cdot A_g\right) = 31.8 \cdot kips$

Condition2 = $Condition2 := if\left[\left(\frac{V_{Max}}{\Phi R_{nv}}\right)^2 + \left(\frac{T_{Max}}{\Phi R_{nt}}\right)^2 \le 1.00, "OK", "Overstressed"\right]$

Condition2 = "OK"

Flange Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 5.1 \cdot kips$ $C_7 = -2.5 \cdot kips$

$C_2 = 7.9 \cdot kips$ $C_8 = -5.2 \cdot kips$

$C_3 = 8.9 \cdot kips$ $C_9 = -6.2 \cdot kips$

$C_4 = 7.9 \cdot kips$ $C_{10} = -5.2 \cdot kips$

$C_5 = 5.1 \cdot kips$ $C_{11} = -2.5 \cdot kips$

$C_6 = 1.3 \cdot kips$ $C_{12} = 1.3 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{4 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^2\right)} = 5.6 \cdot ksi$$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot Fy_{bp} = 32.4 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 17.3 \cdot \%$

Condition3 = $Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Condition3 = "Ok"

Base Plate to Mast Weld Check:

Allowable Weld Stress =

$$F_w := 0.45 \cdot F_{yw} = 31.5 \cdot ksi$$

Weld Area =

$$A_w := \frac{\pi}{4} \cdot \left[\left(D_{pole} + 2sw \cdot 0.707 \right)^2 - D_{pole}^2 \right] = 13.55 \cdot in^2$$

Weld Moment of Inertia =

$$I_w := \frac{\pi}{64} \cdot \left[\left(D_{pole} + 2sw \cdot 0.707 \right)^4 - D_{pole}^4 \right] = 448.12 \cdot in^4$$

$$c := \frac{D_{pole}}{2} + sw \cdot 0.707 = 8.27 \cdot in$$

Section Modulus of Weld =

$$S_w := \frac{I_w}{c} = 54.22 \cdot in^3$$

Weld Stress =

$$f_w := \frac{OM}{S_w} + \frac{Shear}{A_w} = 8.48 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_w}{F_w} = 26.9 \cdot \%$$

$$Condition4 := if\left(f_w < F_w, "OK", "Overstressed" \right)$$

$$Condition4 = "OK"$$

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Subject: Anchor Bolt and Baseplate Analysis

Location: Wilton, CT

Rev. 0: 4/2/20

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 19145.00

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	$M_u := 5.9 \cdot ft \cdot kips$	(Input From RisaTower)
Shear Force =	$Shear := 1 \cdot kips$	(Input From RisaTower)
Axial Force =	$R_u := 51.2 \cdot kips$	(Input From RisaTower)

Anchor Bolt Data:

ASTM F1554 Grade 105

Number of Anchor Bolts =	$N := 12$	(User Input)
Diameter of Bolt Circle =	$D_{BC} := 19 \cdot in$	(User Input)
Bolt "Column" Distance =	$l := 3.0 \cdot in$	(User Input)
Bolt Ultimate Strength =	$F_u := 125 \cdot ksi$	(User Input)
Bolt Yield Strength =	$F_y := 94 \cdot ksi$	(User Input)
Bolt Modulus =	$E := 29000 \cdot ksi$	(User Input)
Diameter of Anchor Bolts =	$D := 1 \cdot in$	(User Input)
Threads per Inch =	$n := 8$	(User Input)
Top of Concrete to Bot Leveling Nut =	$l_{ar} := 2 \cdot in$	(User Input)
Anchor Rod Force Correction Factor =	$n_c = 1.02$	Table 2-1 Addendum 3

Base Plate Data:

Use AST MA36

Plate Yield Strength =	$F_{yf} := 36 \cdot ksi$	(User Input)
Base Plate Thickness =	$t_{TP} := 1 \cdot in$	(User Input)
Base Plate Diameter =	$D_{OD} := 22 \cdot in$	(User Input)
Outer Pole Diameter =	$D_T := 16 \cdot in$	(User Input)
Pole Wall Thickness =	$t_T := 0.5 \cdot in$	(User Input)
Pole Design Yield Strength =	$F_{yp} := 42 \cdot ksi$	(User Input)
	$\eta := 0.5$	For Ungrouted Base Plate per TIA-222-G Section 4.9.9

Anchor Bolt Analysis:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 0.606 \cdot in^2$

Tensile Root Diameter = $d_{rt} := D - \frac{0.9743 \cdot in}{n} = 0.878 \cdot in$

Plastic Section Modulus = $Z := \frac{d_{rt}^3}{6} = 0.113 \cdot in^3$

Maximum Anchor Rod Force = $P_u := \frac{n_c \cdot \pi \cdot M_u}{N \cdot D_{BC}} + \frac{R_u}{N} = 5.3 \cdot kips$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 0.1 \cdot kips$

Design Tensile Strength = $\Phi R_{nt} := 0.8 \cdot F_u \cdot A_n = 60.574 \cdot k$

Bolt % of Capacity = $\frac{\left(P_u + \frac{V_u}{\eta} \right)}{\Phi R_{nt}} \cdot 100 = 9$

Condition1 = $Condition1 := if\left[\frac{\left(P_u + \frac{V_u}{\eta} \right)}{\Phi R_{nt}} \le 1.00, "OK", "Overstressed" \right]$

Condition1 = "OK"

Design Shear Strength = $\Phi R_{nv} := 0.75 \cdot 0.45 \cdot F_u \cdot A_g = 33.134 \cdot k$

Design Flexural Strength = $\Phi R_{nm} := 0.9 \cdot F_y \cdot Z = 9.55 \cdot in \cdot k$

$M_u := \begin{cases} 0 & \text{if } l_{ar} < D \\ 0.65 \cdot l_{ar} \cdot V_u & \text{otherwise} \end{cases} = 0.108 \cdot in \cdot k$

Bolt % of Capacity = $\left[\left(\frac{V_u}{\Phi R_{nv}} \right)^2 + \left(\frac{P_u}{\Phi R_{nt}} + \frac{M_u}{\Phi R_{nm}} \right)^2 \right] \cdot 100 = 1$

Condition2 = $Condition2 := if\left[\left(\frac{V_u}{\Phi R_{nv}} \right)^2 + \left(\frac{P_u}{\Phi R_{nt}} + \frac{M_u}{\Phi R_{nm}} \right)^2 \le 1.00, "OK", "Overstressed" \right]$

Condition2 = "OK"

Base Plate Analysis:

Strength Resistance Factor for Yielding due to Bending = $\phi_b := 0.9$

Strength Resistance Factor for Yielding due to Shear = $\phi_v := 1.0$

Outside Fillet Horizontal Leg Dimension = $w_1 := 0.25 \cdot in$

Effective Pole Outside Diameter = $D_e := D_T + w_1 = 16.25 \cdot in$

Effective Base Plate Outside Diameter = $D_{oe} := \begin{cases} D_{OD} & \text{if } D_{OD} \le \left(D_{BC} + 6 \cdot t_{TP}\right) \\ \left(D_{BC} + 6 \cdot t_{TP}\right) & \text{otherwise} \end{cases} = 22 \cdot in$

Half-Angle Between Radial Lines Extending from Pole Centerline Through Midpoints Between Adjacent Anchor Rods = $\theta_1 := \frac{\pi}{N} = 0.262$

Angle Defining Limiting Effective Base Plate Width Based on Plate Thickness = $\theta_2 := \operatorname{asin}\left(\frac{12 \cdot t_{TP}}{D_{BC}}\right) = 0.684$

Angle Defining Limiting Effective Base Plate Width Based on Distance Between Anchor Rod Bolt Circle and Effective Pole Outside Diameter = $\theta_3 := \operatorname{acos}\left(\frac{D_{BC} + D_e}{2 \cdot D_{BC}}\right) = 0.383$

Governing Angle Defining Effective Base Plate Width Resisting Bending = $\theta := \min\left(\theta_1, \theta_2, \theta_3\right) = 0.262$

Effective Moment Arm of Anchor Rod Force = $x := 0.5 \cdot \left(D_{BC} - D_e\right) = 1.375 \cdot in$

Effective Base Plate Width Resisting Bending from Transverse Bend Line = $B_{et} := D_{BC} \cdot \sin(\theta) = 4.918 \cdot in$

Effective Base Plate Width Resisting Bending from Radial Bend Lines = $B_{er} := \left(D_{oe} - D_e\right) \cdot \sin(\theta) = 1.488 \cdot in$

Total Effective Base Plate Width Resisting Bending = $B_{eff} := B_{et} + B_{er} = 6.406 \cdot in$

Required Base Plate Thickness = $t_{TP.Req} := \sqrt{\frac{4 \cdot P_u \cdot x}{\phi_b \cdot F_{yf} \cdot B_{eff}}} = 0.373 \cdot in$

Plate Bending Stress % of Capacity = $\frac{t_{TP.Req}}{t_{TP}} = 37.3 \cdot \%$

Condition2 = $Condition3 := \text{if}\left(\frac{t_{TP.Req}}{t_{TP}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$

Condition3 = "Ok"

Required Base Plate Thickness = $t_{TP.Req} := \frac{\phi_b \cdot t_T \cdot F_{yp}}{\phi_v \cdot 0.6 \cdot F_{yf}} = 0.875 \cdot in$

Plate Bending Stress % of Capacity = $\frac{t_{TP.Req}}{t_{TP}} = 87.5 \cdot \%$

Condition2 = $Condition4 := \text{if}\left(\frac{t_{TP.Req}}{t_{TP}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$

Condition4 = "Ok"

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Subject:	Mast Foundation Analysis
Location:	Wilton, CT
Rev. 3: 8/26/20	Prepared by: T.J.L. Checked by: C.A.G. Job No. 19145.00

Mast Foundation:

Input Data:

Tower Data

Shear Force =	Shear := 1·kip	(User Input)	
Axial Force Min. =	$Axial_{min} := 11.7 \cdot kip$	(User Input)	
Axial Force Max. =	$Axial_{max} := 51.2 \cdot kip$	(User Input)	
Moment =	Moment := 5.9·kip·ft	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 4 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 6 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 2 \cdot ft$	(User Input)	
Width of Pier =	$W_p := 4 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 4500 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Ultimate Soil Bearing Capacity =	$q_s := 8000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	Bouyancy := 0	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	n := 0·ft	(User Input)	
Cohesion of Clay Type Soil =	c := 0·ksf	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	Z := 2	(User Input)	
Coefficient of Friction Between Concrete =	μ := 0.45	(User Input)	

Calculated Factors:

Coefficient of Lateral Soil Pressure = $K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := \text{if}(\text{Bouyancy} = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := \text{if}(\text{Bouyancy} = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

Weight of Concrete = $WT_c := \left(W_p^2 L_p\right) \cdot \gamma_c = 14.4 \cdot kip$

Resisting Moment = $M_r := \left(0.9 \cdot WT_c + 0.75 \cdot Axial_{min}\right) \cdot \frac{W_p}{2} = 43 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := Moment + Shear \cdot L_p = 11.9 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 3.65$

Factor of Safety Required = $FS_{req} := 1$

$OverTurning\_Moment\_Check := \text{if}(FS \geq FS_{req}, \text{"Okay"}, \text{"No Good"})$

$OverTurning\_Moment\_Check = \text{"Okay"}$

Bearing Pressure Caused by Footing:

Total Weight = $WT_{tot} := WT_c + Axial_{max} = 65.6 \cdot kip$

Area of the Pier = $A_{pier} := W_p^2 = 16 \cdot ft^2$

Section Modulus of the Pier = $S_{pier} := \frac{1}{6} \cdot W_p^3 = 10.667 \cdot ft^2$

Maximum Pressure in Pier = $P_{max} := \frac{WT_{tot}}{A_{pier}} + \frac{M_{ot}}{S_{pier}} = 5.22 \cdot ksf$

$Max\_Pressure\_Check := \text{if}(P_{max} < 0.75 q_s, \text{"Okay"}, \text{"No Good"})$

$Max\_Pressure\_Check = \text{"Okay"}$

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Subject: Load Analysis of Antenna Mast Structure # 935

Location: Wilton, CT

Rev. 3: 8/26/20

Prepared by: T.J.L Checked by: C.F.C.
Job No. 19145.00

Basic Components

Heavy Wind Pressure =	p := 4.00	psf	(User Input NESC 2017 Figure 250-1 & Table 250-1)
Basic Windspeed =	V := 110	mph	(User Input NESC 2017 Figure 250-2(e))
Radial Ice Thickness =	Ir := 0.50	in	(User Input)
Radial Ice Density =	Id := 57.0	pcf	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of PCS Mast Above Grade =	TME := 105	ft	(User Input)
Multiplier Gust Response Factor =	m := 1.25		(User Input - Only for NESC Extreme wind case)
NESC Factor =	kv := 1.43		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	I := 1.0		(User Input from NESC 2017 Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.279$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.311$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.848$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.867$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 34.3$ psf (NESC 2017 Section 250.C.2)

Shape Factors

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

Overload Factors for Wind Loads:

NESC Heavy Loading =	**2.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	(User Input)	Apply in Risa-3D Analysis
NESC Extreme Loading =	**1.0**	(User Input)	Apply in Risa-3D Analysis

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Subject:	Load Analysis of Antenna Mast Structure # 935
Location:	Wilton, CT
Rev. 3: 8/26/20	Prepared by: T.J.L Checked by: C.F.C. Job No. 19145.00

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI TPA65R-BU8DA-K		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96$	in	(User Input)
Antenna Width =	$W_{ant} := 21$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.8$	in	(User Input)
Antenna Weight =	$WT_{ant} := 87$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 261$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 3054$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 101$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 302$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 14.8$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 44.5$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 285$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 14$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 42$ sf

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2883$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI DMP65R-BU8DA-K		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 96$	in	(User Input)
Antenna Width =	$W_{ant} := 20.7$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 95$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 3$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := WT_{ant} \cdot N_{ant} = 285$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 3011$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 99$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 298$ lbs

Wind Load (NESC Heavy)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \frac{\left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right)}{144} = 14.6$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 43.9$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 281$ lbs

Wind Load (NESC Extreme)

Assumes Maximum Possible Wind Pressure Applied to all Antennas Simultaneously

Surface Area for One Antenna = $SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 13.8$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 41.4$ sf

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2842$ lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	CCI DTMABPDB7823VG12A		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 14.22$	in	(User Input)
Antenna Width =	$W_{ant} := 11.56$	in	(User Input)
Antenna Thickness =	$T_{ant} := 4.24$	in	(User Input)
Antenna Weight =	$WT_{ant} := 26$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 18$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 468$ lbs

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 697$ cu in

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 305$ cu in

Weight of Ice on Each Antenna = $W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 10$ lbs

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 181$ lbs

Wind Load (NESC Heavy)

TMAs shielded by antennas

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := 0$ sf

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 0$ sf

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 0$ lbs

Wind Load (NESC Extreme)

TMAs shielded by antennas

Surface Area for One Antenna = $SA_{ant} := 0$ sf

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 0$ sf

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 0$ lbs

Development of Wind & Ice Load on Platform

Platform Data:

Platform Model =	SitePro Triple T-Arm RMV5-284 (x2)		
Mount Shape =	Flat		
Mount Projected Surface Area =	$CdAa := 7$	sf	(User Input)
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 11$	sf	(User Input)
Mount Weight =	$WT_{mnt} := 1080$	lbs	(User Input)
Mount Weight w/ Ice =	$WT_{mnt.ice} := 1250$	lbs	(User Input)

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := WT_{mnt} = 1080$ lbs

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := \left(WT_{mnt.ice} - WT_{mnt}\right) = 170$ lbs

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 44$ lbs

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 300$ lbs

Total Equipment Loads:

NESC Heavy Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ice.ant1} + Wt_{ant2} + Wt_{ice.ant2} + Wt_{ant3} + Wt_{ice.ant3} + Wt_{mnt1} + Wt_{ice.mnt1}\right)\cdot 1.5 = 4568$$

NESC Heavy Wind Trasnsverse =

$$\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{mnt1}\right)\cdot 2.5 = 1523$$

NESC Extreme Wind Vertical =

$$\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{mnt1}\right) = 2094$$

NESC Extreme Wind Trasnsverse =

$$\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{mnt1}\right) = 6026$$

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Subject: Coax Cable on Antenna Mast Tower # 935

Location: Wilton, CT

Prepared by: T.J.L Checked by: C.F.C.
Job No. 19145.00

Rev. 3: 8/26/20

Coax Cable on Antenna Mast

Basic Components

Heavy Wind Pressure =	$p := 4.00 \cdot psf$		(User Input NESC 2017 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2017 Figure 250-2(e))
Radial Ice Thickness =	$Ir := 0.50in$		(User Input)
Radial Ice Density =	$Id := 57.0 \cdot pcf$		(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Cables Above Grade =	$TME := 103$	ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.25$		(User Input - Only for NESC Extreme wind case)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017 Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017 Section 250.C.2)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{0.67TME}{900}\right)^{\frac{2}{9.5}} = 1.171$		(NESC 2017 Table 250-2)
Exposure Factor =	$Es := 0.346 \left[\frac{33}{(0.67 \cdot TME)}\right]^{\frac{1}{7}} = 0.311$		(NESC 2017 Table 250-3)
Response Term =	$Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.851$		(NESC 2017 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right]}{kv^2} = 0.868$		(NESC 2017 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31.5$	psf	(NESC 2017 Section 250.C.

Shape Factors

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

Overload Factor for NESC Heavy Wind Transverse Load =	$OF_{HWT} := 2.5$	*(User Input)*
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	*(User Input)*
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	*(User Input)*
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	*(User Input)*

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Subject: Coax Cable on Antenna Mast Tower # 935

Location: Wilton, CT

Prepared by: T.J.L Checked by: C.F.C.
Job No. 19145.00

Rev. 3: 8/26/20

Below Top of Tower

Distance Between Coax Cable Attach Points =

$Coax_{Span} := \begin{pmatrix} 8.5 \\ 13.5 \\ 13.75 \\ 16 \\ 39.25 \end{pmatrix} \cdot ft$ *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.98 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 1.04 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 12$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 0$ *(User Input)*

Number of External Coax Cables = $NX_{coax} := 0$ *(User Input)*

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 0 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 1 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.027\,ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot NX_{coax} = 0 \cdot plf$

Heavy Wind Vertical Load =

$\overrightarrow{Heavy\_WInd_{Vert} := \left[\left(N_{coax} \cdot W_{coax} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HWV}\right]}$

Heavy Wind Transverse Load =

$\overrightarrow{Heavy\_Wind_{Trans} := \left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT}\right)}$

$Heavy\_WInd_{Vert} = \begin{pmatrix} 159 \\ 253 \\ 257 \\ 300 \\ 735 \end{pmatrix} lb$ $Heavy\_Wind_{Trans} = \begin{pmatrix} 11 \\ 18 \\ 18 \\ 21 \\ 52 \end{pmatrix} lb$

Extreme Wind Vertical Load =

$\overrightarrow{Extreme\_Wind_{Vert} := \left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$

Extreme Wind Transverse Load =

$\overrightarrow{Extreme\_Wind_{Trans} := \left[\left(qz \cdot psf \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EWT}\right]}$

$Extreme\_Wind_{Vert} = \begin{pmatrix} 106 \\ 168 \\ 172 \\ 200 \\ 490 \end{pmatrix} lb$ $Extreme\_Wind_{Trans} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$

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Subject: Coax Cable on Antenna Mast Tower # 935

Location: Wilton, CT

Prepared by: T.J.L Checked by: C.F.C.
Job No. 19145.00

Rev. 3: 8/26/20

Above Top of Tower

Distance Between Coax Cable Attach Points = $Coax_{Span} := 12 \cdot ft$ *(User Input)*

Diameter of Coax Cable = $D_{coax} := 1.98 \cdot in$ *(User Input)*

Weight of Coax Cable = $W_{coax} := 1.04 \cdot plf$ *(User Input)*

Number of Coax Cables = $N_{coax} := 36$ *(User Input)*

Number of Projected Coax Cables = $NP_{coax} := 8$ *(User Input)*

Number of External Coax Cables = $NX_{coax} := 24$ *(User Input)*

Wind Area without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 15.84 \cdot in$

Wind Area with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 16.84 \cdot in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir\right)^2 - D_{coax}^2\right] = 0.027\,ft^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot NX_{coax} = 37.008 \cdot plf$

Heavy Wind Vertical Load =

$Heavy\_WInd_{Vert} := \overrightarrow{\left[\left(N_{coax} \cdot W_{coax} + W_{ice}\right) \cdot Coax_{Span} \cdot OF_{HWV}\right]}$

Heavy Wind Transverse Load =

$Heavy\_Wind_{Trans} := \overrightarrow{\left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT}\right)}$ $Heavy\_WInd_{Vert} = 1340\,lb$ $Heavy\_Wind_{Trans} = 269\,lb$

Extreme Wind Vertical Load =

$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV}\right)}$

Extreme Wind Transverse Load =

$Extreme\_Wind_{Trans} := \overrightarrow{\left[\left(qz \cdot psf \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EWT}\right]}$ $Extreme\_Wind_{Vert} = 449\,lb$ $Extreme\_Wind_{Trans} = 798\,lb$

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Subject: Coax Cable on Tower # 935

Location: Wilton, CT

Rev. 0: 01/22/2020

Prepared by: F.J.P. Checked by: T.J.L.
Job No. 19045.00

Coax Cable on Tower

Basic Components

Heavy Wind Pressure =	$p := 4.00 \cdot psf$		(User Input NESC 2017Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$	mph	(User Input NESC 2017Figure 250-2(e))
Radial Ice Thickness =	$Ir := 0.50 \cdot in$		(User Input)
Radial Ice Density =	$Id := 56.0 \cdot pcf$		(User Input)

Factors for Extreme Wind Calculation

Elevation of Cables Above Grade =	$TME := 91$	ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.25$		(User Input - Only for NESC Extreme wind case)
NESC Factor =	$kv := 1.43$		(User Input from NESC 2017Table 250-3 equation)
Importance Factor =	$I := 1.0$		(User Input from NESC 2017Section 250.C.2)

Velocity Pressure Coefficient = $Kz := 2.01 \cdot \left(\frac{0.67 \cdot TME}{900}\right)^{\frac{2}{9.5}} = 1.14$ (NESC 2017 Table 250-2)

Exposure Factor = $Es := 0.346 \cdot \left(\frac{33}{(0.67 \cdot TME)}\right)^{\frac{1}{7}} = 0.317$ (NESC 2017 Table 250-3)

Response Term = $Bs := \frac{1}{\left(1 + 0.375 \cdot \frac{TME}{220}\right)} = 0.866$ (NESC 2017 Table 250-3)

Gust Response Factor = $Grf := \frac{\left(1 + \left(2.7 \cdot Es \cdot Bs^{\frac{1}{2}}\right)\right)}{kv^2} = 0.878$ (NESC 2017 Table 250-3)

Wind Pressure = $qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot I = 31$ psf (NESC 2017Section 250.C.2)

Shape Factors

Shape Factor for Round Members =	$Cd_R := 1.3$	(User Input)
Shape Factor for Flat Members =	$Cd_F := 1.6$	(User Input)
Shape Factor for Coax Cables Attached to Outside of Pole =	$Cd_{coax} := 1.6$	(User Input)

Overload Factors

Overload Factor for NESC Heavy Wind Transverse Load =	$OF_{HWT} := 2.5$	(User Input)
Overload Factor for NESC Heavy Wind Vertical Load =	$OF_{HWV} := 1.5$	(User Input)
Overload Factor for NESC Extreme Wind Transverse Load =	$OF_{EWT} := 1.0$	(User Input)
Overload Factor for NESC Extreme Wind Vertical Load =	$OF_{EWV} := 1.0$	(User Input)

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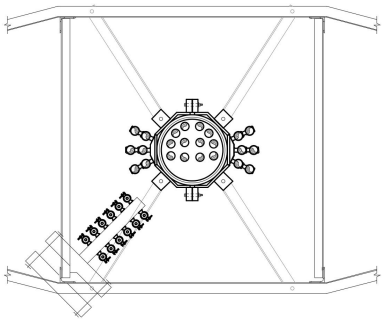
Subject: Coax Cable on Tower # 935

Location: Wilton, CT

Rev. 0: 01/22/2020

Prepared by: F.J.P. Checked by: T.J.L.
Job No. 19045.00

Distance Between Coax Cable Attach Points = $Coax_{Span} := \begin{bmatrix} 6.75 \\ 11 \\ 16.92 \\ 18.67 \\ 18.46 \\ 16.31 \end{bmatrix} \cdot ft$ (User Input)



Diameter of Coax Cable = $D_{coax} := 1.98 \cdot in$ (User Input)

Weight of Coax Cable = $W_{coax} := 1.04 \cdot plf$ (User Input)

Number of Coax Cables = $N_{coax} := 12$ (User Input)

Number of Projected Coax Cables = $NP_{coax} := 6$ (User Input)

Number of External Coax Cables = $NX_{coax} := 12$ (User Input)

Wind Area without Ice = $A := (NP_{coax} \cdot D_{coax}) = 11.88\ in$

Wind Area with Ice = $A_{ice} := (NP_{coax} \cdot D_{coax} + 2 \cdot Ir) = 12.88\ in$

Ice Area per Liner Ft = $Ai_{coax} := \frac{\pi}{4} \cdot \left((D_{coax} + 2 \cdot Ir)^2 - D_{coax}^2 \right) = 3.896\ in^2$

Weight of Ice on All Coax Cables = $W_{ice} := Ai_{coax} \cdot Id \cdot NX_{coax} = 18.179\ plf$

Heavy Wind Vertical Load =

$Heavy\_Wind_{Vert} := \overrightarrow{\left((N_{coax} \cdot W_{coax} + W_{ice}) \cdot Coax_{Span} \cdot OF_{HWV} \right)}$

Heavy Wind Transverse Load =

$Heavy\_Wind_{Trans} := \overrightarrow{\left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT} \right)}$

$Heavy\_Wind_{Vert} = \begin{bmatrix} 310 \\ 506 \\ 778 \\ 859 \\ 849 \\ 750 \end{bmatrix} lbf$ $Heavy\_Wind_{Trans} = \begin{bmatrix} 116 \\ 189 \\ 291 \\ 321 \\ 317 \\ 280 \end{bmatrix} lbf$

Extreme Wind Vertical Load =

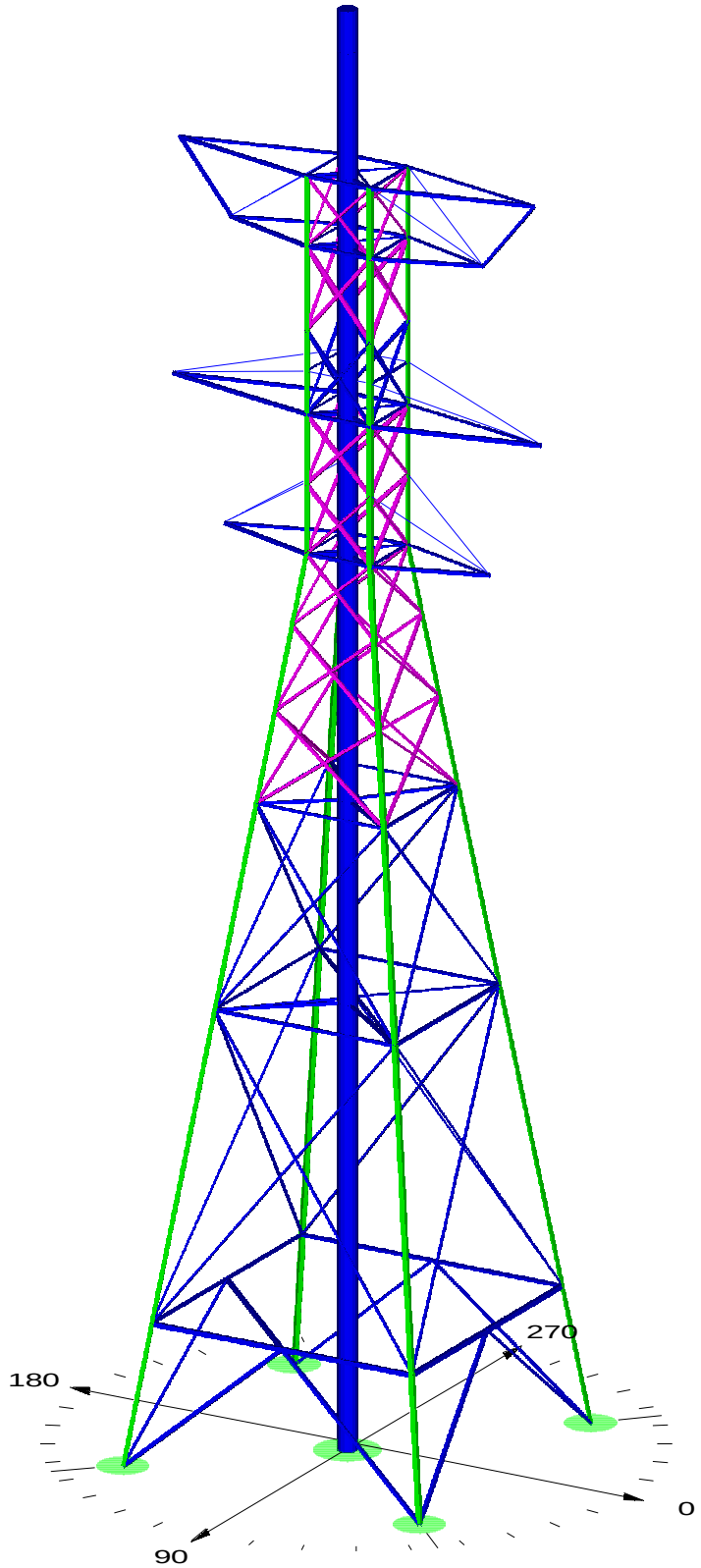
$Extreme\_Wind_{Vert} := \overrightarrow{\left(N_{coax} \cdot W_{coax} \cdot Coax_{Span} \cdot OF_{EWV} \right)}$

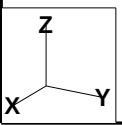
Extreme Wind Transverse Load =

$Extreme\_Wind_{Trans} := \overrightarrow{\left((qz \cdot psf \cdot A \cdot Cd_{coax}) \cdot Coax_{Span} \cdot OF_{EWT} \right)}$

$Extreme\_Wind_{Vert} = \begin{bmatrix} 84 \\ 137 \\ 211 \\ 233 \\ 230 \\ 204 \end{bmatrix} lbf$ $Extreme\_Wind_{Trans} = \begin{bmatrix} 332 \\ 541 \\ 832 \\ 918 \\ 907 \\ 802 \end{bmatrix} lbf$

Centek Engineering Inc, Project: "pls tower 935 w_Antenna Mast"
Tower Version 16.01, 2:39:43 PM Tuesday, January 21, 2020
Undeformed geometry displayed





Project Name : 19145.00 - Wilton, CT
Project Notes: Eversource Structure # 935/ AT&T CT1847
Project File : J:\Jobs\1914500.WI\04_Structural\Tower\Calcs\Rev(3)\PLS Tower\pls tower 935 w_Antenna Mast.tow
Date run   : 4:11:23 PM Wednesday, August 26, 2020
by   : Tower Version 16.01
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

KL/R value of 278.21 exceeds maximum of 200.00 for member "g79P" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79X" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79XY" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79Y" ??
KL/R value of 223.22 exceeds maximum of 200.00 for member "g96P" ??
KL/R value of 223.22 exceeds maximum of 200.00 for member "g96X" ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 7 warnings. ??

Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10 [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force

Loads from file: J:\Jobs\1914500.WI\04_Structural\Tower\Calcs\Rev(3)\PLS Tower\wilton.lca

*** Analysis Results:

Maximum element usage is 99.95% for Angle "g7X" in load case "NESC Extreme"
Maximum insulator usage is 15.05% for Clamp "9" in load case "NESC Extreme"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
NESC Heavy	7P	37.97	8.08	0.11	0.00
NESC Heavy	39P	24.10	0.96	10.93	0.00
NESC Heavy	7X	-23.13	4.86	0.11	0.00
NESC Heavy	7XY	-24.31	6.04	0.08	0.00
NESC Heavy	7Y	43.43	9.80	0.08	0.00
NESC Extreme	7P	69.24	15.36	0.25	0.00
NESC Extreme	39P	8.76	0.81	19.37	0.00
NESC Extreme	7X	-59.80	13.13	0.21	0.00
NESC Extreme	7XY	-64.89	15.85	0.17	0.00
NESC Extreme	7Y	76.19	18.45	0.19	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
NESC Heavy	7P	-5.37	-6.03	-37.97	8.08	-0.06	0.08	0.11	-0.04	0.00
NESC Heavy	39P	-0.14	-0.95	-24.10	0.96	10.53	-2.92	10.93	1.24	0.00
NESC Heavy	7X	2.91	-3.89	23.13	4.86	-0.10	-0.02	0.11	0.25	0.00
NESC Heavy	7XY	-3.67	-4.80	24.31	6.04	-0.08	0.01	0.08	-0.26	0.00
NESC Heavy	7Y	6.27	-7.53	-43.43	9.80	-0.06	-0.06	0.08	0.06	0.00
NESC Extreme	7P	-9.73	-11.88	-69.24	15.36	-0.20	0.15	0.25	0.34	0.00
NESC Extreme	39P	-0.33	-0.74	-8.76	0.81	18.44	-5.94	19.37	2.33	0.00
NESC Extreme	7X	8.17	-10.28	59.80	13.13	-0.20	-0.05	0.21	0.42	0.00
NESC Extreme	7XY	-9.26	-12.87	64.89	15.85	-0.16	0.05	0.17	-0.42	0.00

NESC Extreme	7Y	11.14	-14.70	-76.19	18.45	-0.17	-0.07	0.19	-0.33	0.00	

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Leg Member	Force In Leg Dir. (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
NESC Heavy	7P	12S	g12P	38.813	0.686	0.693	0.030	0.692	-5.37	-6.03	-37.97
NESC Heavy	7X	12X	g12X	-23.627	0.727	0.729	0.345	0.642	2.91	-3.89	23.13
NESC Heavy	7XY	12XY	g12XY	-25.011	1.385	1.403	0.253	1.380	-3.67	-4.80	24.31
NESC Heavy	7Y	12Y	g12Y	44.497	1.416	1.433	-0.165	1.423	6.27	-7.53	-43.43
NESC Extreme	7P	12S	g12P	70.890	2.125	2.146	-0.005	2.146	-9.73	-11.88	-69.24
NESC Extreme	7X	12X	g12X	-61.199	1.876	1.889	0.242	1.874	8.17	-10.28	59.80
NESC Extreme	7XY	12XY	g12XY	-66.694	3.708	3.747	0.131	3.744	-9.26	-12.87	64.89
NESC Extreme	7Y	12Y	g12Y	78.294	3.963	4.009	-0.430	3.986	11.14	-14.70	-76.19

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	101.000	46.500	62	200	0.00	9.92	290.566	0.00	9.92	569.566
2	46.500	0.000	24	57	9.92	23.00	765.434	9.92	23.00	765.434

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Control	Max Cont-rol Comp. %	Comp. Use In Comp.	Comp. Control Member	Comp. Force Load Case (kips)	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. (ft)	Curve No.	No. Of Bolts
Leg1	Leg1	SAE	4X4X0.25	33.0	92.13	Comp	92.13	g6Y	-49.299	NESC Ext	53.509	109.200	168.750	1.000	1.000	1.000	75.47	75.47	5.000	1	12
Leg2	Leg2	SAE	4X4X0.3125	33.0	99.95	Tens	96.50	g12Y	-73.135	NESC Ext	75.786	91.000	175.781	0.250	0.250	0.250	38.67	38.67	10.196	1	10
Leg3	Leg3	SAE	4X4X0.375	33.0	84.58	Tens	84.16	g11Y	-71.976	NESC Ext	85.527	91.000	210.937	0.167	0.167	0.167	57.04	57.04	22.431	1	10
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	33.0	49.17	Comp	49.17	g13X	-5.683	NESC Ext	11.559	18.200	21.094	0.750	0.500	0.500	123.69	122.85	7.071	5	2
XBrace2	XBrace2	SAU	3X2X0.1875	33.0	47.33	Comp	47.33	g15X	-8.177	NESC Ext	17.275	27.300	31.641	0.500	0.750	0.500	120.57	120.47	7.810	5	3
XBrace3	XBrace3	SAE	2X2X0.1875	33.0	29.83	Cross	29.83	g26Y	-3.215	NESC Ext	10.779	18.200	21.094	1.000	0.561	0.561	148.14	137.31	7.617	6	2
XBrace4	XBrace4	SAU	2.5X2X0.1875	33.0	24.10	Cross	24.10	g30Y	-1.663	NESC Ext	6.901	18.200	21.094	0.549	1.000	0.549	222.91	183.29	11.146	6	2
XBrace5	XBrace5	SAE	1.75X1.75X0.25	33.0	83.18	Comp	83.18	g31X	-1.870	NESC Hea	2.248	18.200	28.125	0.789	0.577	0.577	383.90	321.14	18.907	5	2
XBrace6	XBrace6	SAE	1.75X1.75X0.1875	33.0	80.35	Comp	80.35	g34P	-0.854	NESC Ext	1.063	18.200	21.094	0.796	0.409	0.409	498.62	408.55	28.032	5	2
XBrace7	XBrace7	SAU	3.5X2.5X0.25	33.0	60.36	Comp	60.36	g35Y	-5.493	NESC Ext	14.465	9.100	14.062	1.000	0.500	0.500	168.80	168.80			

15.304	4	1																				
	XBrace8		XBrace8	SAU	3X2X0.1875	33.0	56.35	Comp	56.35	g18P	-9.735	NESC Ext	17.275	27.300	31.641	1.000	1.500	1.000	120.57	120.47		
3.905	5	3																				
	Horz1		Horizontal 1	SAE	1.75X1.75X0.1875	33.0	47.87	Comp	47.87	g40P	-2.776	NESC Ext	5.799	9.100	10.547	1.000	1.000	1.000	174.93	174.93		
5.000	4	1																				
	Horz2		Horizontal 2	SAU	2.5X2X0.1875	33.0	50.18	Comp	50.18	g41X	-4.567	NESC Ext	10.284	9.100	10.547	1.000	0.500	0.500	150.14	150.14		
9.922	4	1																				
	Horz3		Horizontal 3	SAU	3X2.5X0.25	33.0	75.16	Comp	75.16	g43X	-6.840	NESC Ext	11.864	9.100	14.062	1.000	0.500	0.500	177.78	177.78		
14.000	4	1																				
	Horz4		**Horizontal 4**	**SAU**	**4X3X0.25**	**33.0**	**66.72**	**Comp**	**66.72**	**g46XY**	**-6.071**	**NESC Ext**	**13.504**	**9.100**	**14.062**	**2.000**	**1.000**	**1.000**	**189.26**	**189.26**		
10.094	**4**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45P g45X g45XY g45Y ??**																			
	Horz5		Horizontal 5	Bar	1.75x1/4	33.0	56.79	Tens	0.00	g48Y	0.000		0.129	9.100	14.062	1.000	2.000	1.000	983.61	983.61		
2.500	4	1																				
	Inner1		Inner1	SAE	1.75X1.75X0.1875	33.0	35.64	Tens	28.15	g76XY	-2.969	NESC Ext	11.437	16.800	10.547	1.000	1.000	1.000	123.69	123.69		
3.536	4	1																				
	Inner2		Inner2	SAU	2.5X2X0.1875	33.0	87.10	Comp	87.10	g79Y	-2.609	NESC Ext	2.995	16.800	10.547	1.000	1.000	1.000	278.21	278.21		
9.899	4	1																				
	Arm1		Ground Wire Arm	SAU	3X2.5X0.25	33.0	15.33	Tens	2.74	g54Y	-0.498	NESC Ext	19.099	18.200	28.125	1.000	0.500	0.500	146.34	140.11		
11.524	5	2																				
	Arm2		Top Cross Arm	SAU	3X2.5X0.25	33.0	23.31	Comp	23.31	g56P	-4.242	NESC Hea	28.509	18.200	28.125	1.000	0.500	0.500	97.38	108.69		
7.669	3	2																				
	Arm3		Middle Cross Arm	SAU	3.5X2.5X0.25	33.0	27.46	Comp	27.46	g58P	-4.997	NESC Hea	24.527	18.200	28.125	1.000	0.500	0.500	132.50	129.56		
12.013	5	2																				
	Arm4		Bottom Cross Arm	SAU	3X2.5X0.25	33.0	26.84	Comp	26.84	g60P	-2.442	NESC Hea	27.682	9.100	14.062	1.000	0.500	0.500	103.41	111.70		
8.143	3	1																				
	ArmBr1	Ground Wire Arm Brace		SAE	2.5X2.5X0.1875	33.0	20.99	Comp	20.99	g62P	-1.910	NESC Hea	10.714	9.100	10.547	1.000	1.000	1.000	155.23	155.23		
6.403	4	1																				
	ArmBr2	Top Cross Arm Brace		Bar	1.75x1/4	33.0	47.14	Tens	0.00	g63Y	0.000		0.039	9.100	14.062	1.000	1.000	1.000	1800.97	1800.97		
9.155	4	1																				
	ArmBr3	Middle Cross Arm Brace		Bar	1.75x1/4	33.0	60.43	Tens	0.00	g64Y	0.000		0.021	9.100	14.062	1.000	1.000	1.000	2435.79	2435.79		
12.382	4	1																				
	ArmBr4	Bottom Cross Arm Brace		Bar	1.75x1/4	33.0	29.20	Tens	0.00	g65Y	0.000		0.035	9.100	14.062	1.000	1.000	1.000	1879.82	1879.82		
9.556	4	1																				
	PWMount		Pipe HSS16"x0.5" Pwmnt Pipe HSS16"x0.5"			42.0	2.80	Comp	2.80	g66P	-21.915	NESC Hea	782.285	0.000	0.000	1.000	1.000	1.000	69.95	69.95		
32.000	1	0																				
	PWMBrace		**Powermount Brace**	**SAE**	**2.5X2.5X0.375**	**36.0**	**34.20**	**Tens**	**29.52**	**g81X**	**-4.960**	**NESC Ext**	**44.815**	**16.800**	**20.391**	**1.000**	**1.000**	**1.000**	**68.87**	**94.44**		
2.795	**3**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g81P ??**																			
	PWMBrace Low	Powermount Brace Lower		SAE	3.5X3.5X0.25	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00		
0.000	0	0																				
	Plate		Plate	Bar	6x3/4	36.0	8.64	Comp	8.64	g97P	-2.066	NESC Ext	116.372	23.900	48.937	1.000	1.000	1.000	69.28	94.64		
1.250	3	1																				
	Leg2R		Leg2 Rein	SAE	4X4X0.5	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.00		
0.000	0	0																				

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Tens. Use %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	Leg1	SAE	4X4X0.25	33.0	92.13	Comp	84.67	g6X	43.728	NESC Ext	51.645	109.200	168.750	168.515	5.000	12	2.000	0.75
Leg2	Leg2	SAE	4X4X0.3125	33.0	99.95	Tens	99.95	g7X	51.023	NESC Ext	51.047	0.000	0.000	0.000	5.098	0	3.640	0.75
Leg3	Leg3	SAE	4X4X0.375	33.0	84.58	Tens	84.58	g11X	53.452	NESC Ext	63.195	91.000	210.937	193.014	22.431	10	3.360	0.75
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	33.0	49.17	Comp	36.26	g13P	5.163	NESC Ext	14.237	18.200	21.094	15.363	7.071	2	1.000	0.75
XBrace2	XBrace2	SAU	3X2X0.1875	33.0	47.33	Comp	46.21	g23Y	8.388	NESC Ext	22.553	27.300	31.641	18.152	7.071	3	1.000	0.75
XBrace3	XBrace3	SAE	2X2X0.1875	33.0	29.83	Cross	22.26	g26X	2.739	NESC Ext	16.910	18.200	21.094	12.305	7.617	2	1.000	0.75
XBrace4	XBrace4	SAU	2.5X2X0.1875	33.0	24.10	Cross	12.24	g28P	2.229	NESC Ext	19.880	18.200	21.094	18.750	9.449	2	1.000	0.75
XBrace5	XBrace5	SAE	1.75X1.75X0.25	33.0	83.18	Comp	45.44	g32X	7.007	NESC Ext	18.488	18.200	28.125	15.422	18.907	2	1.000	0.75
XBrace6	XBrace6	SAE	1.75X1.75X0.1875	33.0	80.35	Comp	68.81	g33Y	8.516	NESC Ext	14.237	18.200	21.094	12.375	28.032	2	1.000	0.75
XBrace7	XBrace7	SAU	3.5X2.5X0.25	33.0	60.36	Comp	54.02	g35XY	4.916	NESC Ext	29.774	9.100	14.062	10.781	15.304	1	1.000	0.75
XBrace8	XBrace8	SAU	3X2X0.1875	33.0	56.35	Comp	43.82	g18X	8.811	NESC Ext	22.553	27.300	31.641	20.109	3.905	3	1.000	0.75
Horz1	Horizontal 1	SAE	1.75X1.75X0.1875	33.0	47.87	Comp	42.13	g40X	3.081	NESC Ext	14.237	9.100	10.547	7.312	5.000	1	1.000	0.75
Horz2	Horizontal 2	SAU	2.5X2X0.1875	33.0	50.18	Comp	25.00	g41P	1.828	NESC Ext	17.096	9.100	10.547	7.312	9.922	1	1.000	0.75

Horz3	Horizontal 3	SAU	3X2.5X0.25	33.0	75.16	Comp	18.79	g43P	1.710NESC Ext	29.626	9.100	14.062	12.500	14.000	1	1.000	0.75	
Horz4	**Horizontal 4**	**SAU**	**4X3X0.25**	**33.0**	**66.72**	**Comp**	**14.02**	**g46Y**	**1.276NESC Ext**	**37.199**	**9.100**	**14.062**	**12.500**	**10.094**	**1**	**1.000**	**0.75**	**A**
potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45P g45X g45XY g45Y ??																		
Horz5	Horizontal 5	Bar	1.75x1/4	33.0	56.79	Tens	56.79	g48X	4.217NESC Hea	7.425	9.100	14.062	9.750	2.500	1	1.000	0.75	
Inner1	Inner1	SAE	1.75X1.75X0.1875	33.0	35.64	Tens	35.64	g74XY	2.750NESC Ext	14.585	16.800	10.547	7.717	3.536	1	1.000	0.6875	
Inner2	Inner2	SAU	2.5X2X0.1875	33.0	87.10	Comp	1.11	g79P	0.086NESC Ext	17.444	16.800	10.547	7.717	9.899	1	1.000	0.6875	
Arm1	Ground Wire Arm	SAU	3X2.5X0.25	33.0	15.33	Tens	15.33	g55Y	2.789NESC Hea	33.338	18.200	28.125	28.125	5.000	2	1.000	0.75	
Arm2	Top Cross Arm	SAU	3X2.5X0.25	33.0	23.31	Comp	1.50	g56X	0.274NESC Ext	33.338	18.200	28.125	28.125	7.669	2	1.000	0.75	
Arm3	Middle Cross Arm	SAU	3.5X2.5X0.25	33.0	27.46	Comp	0.00	g58Y	0.000	37.199	18.200	28.125	28.125	12.013	2	1.000	0.75	
Arm4	Bottom Cross Arm	SAU	3X2.5X0.25	33.0	26.84	Comp	5.27	g60XY	0.480NESC Ext	33.338	9.100	14.062	22.059	8.143	1	1.000	0.75	
ArmBr1	Ground Wire Arm Brace	SAE	2.5X2.5X0.1875	33.0	20.99	Comp	0.00	g62X	0.000	22.613	9.100	10.547	9.375	6.403	1	1.000	0.75	
ArmBr2	Top Cross Arm Brace	Bar	1.75x1/4	33.0	47.14	Tens	47.14	g63P	3.500NESC Hea	7.425	9.100	14.062	9.750	9.155	1	1.000	0.75	
ArmBr3	Middle Cross Arm Brace	Bar	1.75x1/4	33.0	60.43	Tens	60.43	g64P	4.487NESC Hea	7.425	9.100	14.062	9.750	12.382	1	1.000	0.75	
ArmBr4	Bottom Cross Arm Brace	Bar	1.75x1/4	33.0	29.20	Tens	29.20	g65X	2.168NESC Hea	7.425	9.100	14.062	9.750	9.556	1	1.000	0.75	
PWMount	Pipe HSS16"x0.5"	Pwmnt Pipe HSS16"x0.5"		42.0	2.80	Comp	0.00	g66P	0.000	953.399	0.000	0.000	0.000	32.000	0	0.000	0	
PWMBrace	**Powermount Brace**	**SAE**	**2.5X2.5X0.375**	**36.0**	**34.20**	**Tens**	**34.20**	**g81P**	**5.745NESC Ext**	**47.699**	**16.800**	**20.391**	**18.125**	**2.795**	**1**	**1.000**	**0.6875**	**A**
potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g81P ??																		
PWMBrace Low	Powermount Brace Lower	SAE	3.5X3.5X0.25	36.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0	
Plate	Plate	Bar	6x3/4	36.0	8.64	Comp	3.45	g80P	0.825NESC Hea	124.537	23.900	48.937	54.375	1.250	1	1.000	0.875	
Leg2R	Leg2 Rein	SAE	4X4X0.5	33.0	0.00		0.00		0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0	

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	83.18	g31X	Angle
NESC Extreme	99.95	g7X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.58	NESC Heavy	0.0
2	Clamp	3.68	NESC Heavy	0.0
3	Clamp	5.04	NESC Heavy	0.0
4	Clamp	5.02	NESC Heavy	0.0
5	Clamp	5.09	NESC Heavy	0.0
6	Clamp	5.05	NESC Heavy	0.0
7	Clamp	5.02	NESC Heavy	0.0
8	Clamp	4.98	NESC Heavy	0.0
9	Clamp	15.05	NESC Extreme	0.0
10	Clamp	1.16	NESC Extreme	0.0
11	Clamp	1.59	NESC Extreme	0.0
12	Clamp	2.19	NESC Extreme	0.0
13	Clamp	0.50	NESC Extreme	0.0
14	Clamp	3.52	NESC Extreme	0.0
15	Clamp	3.24	NESC Heavy	0.0
16	Clamp	2.80	NESC Extreme	0.0
17	Clamp	0.50	NESC Extreme	0.0
18	Clamp	0.50	NESC Extreme	0.0
19	Clamp	0.50	NESC Extreme	0.0
20	Clamp	0.50	NESC Extreme	0.0
21	Clamp	1.71	NESC Extreme	0.0
22	Clamp	1.52	NESC Heavy	0.0
23	Clamp	1.20	NESC Extreme	0.0
24	Clamp	2.45	NESC Heavy	0.0
25	Clamp	2.34	NESC Heavy	0.0

26	Clamp	3.59	NESC Heavy	0.0
27	Clamp	4.35	NESC Heavy	0.0
28	Clamp	5.32	NESC Heavy	0.0
29	Clamp	8.31	NESC Heavy	0.0
37	Clamp	1.16	NESC Extreme	0.0
38	Clamp	1.59	NESC Extreme	0.0
39	Clamp	2.19	NESC Extreme	0.0
40	Clamp	3.52	NESC Extreme	0.0
41	Clamp	3.01	NESC Extreme	0.0
42	Clamp	2.80	NESC Extreme	0.0

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	18435.4
Total:	18435.4

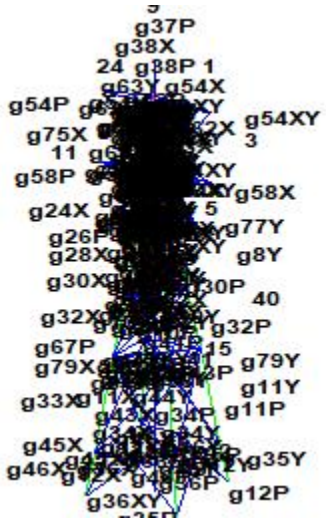
*** End of Report

```
*****************************************************************************
*                                                                           *
* TOWER - Analysis and Design -  Copyright Power Line Systems 1986-2019     *
*                                                                           *
*****************************************************************************

Project Name : 19145.00 - Wilton, CT
Project Notes: Eversource Structure # 935/ AT&T CT1847
Project File : J:\Jobs\1914500.WI\04_Structural\Tower\Calcs\Rev(3)\PLS Tower\pls tower 935 w_Antenna Mast.tow
Date run     : 4:11:21 PM Wednesday, August 26, 2020
by           : Tower Version 16.01
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis
```

KL/R value of 278.21 exceeds maximum of 200.00 for member "g79P" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79X" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79XY" ??
KL/R value of 278.21 exceeds maximum of 200.00 for member "g79Y" ??
KL/R value of 223.22 exceeds maximum of 200.00 for member "g96P" ??
KL/R value of 223.22 exceeds maximum of 200.00 for member "g96X" ??
Unusual number of fixed joints found: 5. Towers normally have from between 1 and 4 fixed joints. ??
The model has 7 warnings. ??




```
Nonlinear convergence parameters: Use Standard Parameters
Tension only member maximum compression load as a percent of compression capacity: 100%
Member check option: ASCE 10
Connection rupture check: ASCE 10
Crossing diagonal check: ASCE 10  [Alternate Unsupported RLOUT = 1]
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
```

Joints Geometry:

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
1P	XY-Symmetry	2.5	2.5	91	Free	Free	Free	Free	Free	Free
2P	XY-Symmetry	2.5	2.5	86	Free	Free	Free	Free	Free	Free

3P	XY-Symmetry	2.5	2.5	80	Free	Free	Free	Free	Free	Free
4P	XY-Symmetry	2.5	2.5	74	Free	Free	Free	Free	Free	Free
5P	XY-Symmetry	2.5	2.5	69	Free	Free	Free	Free	Free	Free
6P	XY-Symmetry	2.5	2.5	64	Free	Free	Free	Free	Free	Free
7P	XY-Symmetry	11.5	11.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18P	X-Symmetry	0	13.75	91	Free	Free	Free	Free	Free	Free
19P	X-Symmetry	0	9.75	86	Free	Free	Free	Free	Free	Free
20P	X-Symmetry	0	14.25	74	Free	Free	Free	Free	Free	Free
21P	X-Symmetry	0	10.25	64	Free	Free	Free	Free	Free	Free
24P	None	0	0	91	Free	Free	Free	Free	Free	Free
25P	None	0	0	86	Free	Free	Free	Free	Free	Free
26P	None	0	0	74	Free	Free	Free	Free	Free	Free
27P	None	0	0	64	Free	Free	Free	Free	Free	Free
29P	None	0	0	32	Free	Free	Free	Free	Free	Free
32P	None	1.25	0	101	Free	Free	Free	Free	Free	Free
33P	None	1.25	0	91	Free	Free	Free	Free	Free	Free
34P	None	1.25	0	86	Free	Free	Free	Free	Free	Free
35P	None	1.25	0	74	Free	Free	Free	Free	Free	Free
36P	None	1.25	0	64	Free	Free	Free	Free	Free	Free
37P	None	1.25	0	46.5	Free	Free	Free	Free	Free	Free
38P	None	1.25	0	32	Free	Free	Free	Free	Free	Free
39P	None	1.25	0	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
1X	X-GenXY	2.5	-2.5	91	Free	Free	Free	Free	Free	Free
1XY	XY-GenXY	-2.5	-2.5	91	Free	Free	Free	Free	Free	Free
1Y	Y-GenXY	-2.5	2.5	91	Free	Free	Free	Free	Free	Free
2X	X-GenXY	2.5	-2.5	86	Free	Free	Free	Free	Free	Free
2XY	XY-GenXY	-2.5	-2.5	86	Free	Free	Free	Free	Free	Free
2Y	Y-GenXY	-2.5	2.5	86	Free	Free	Free	Free	Free	Free
3X	X-GenXY	2.5	-2.5	80	Free	Free	Free	Free	Free	Free
3XY	XY-GenXY	-2.5	-2.5	80	Free	Free	Free	Free	Free	Free
3Y	Y-GenXY	-2.5	2.5	80	Free	Free	Free	Free	Free	Free
4X	X-GenXY	2.5	-2.5	74	Free	Free	Free	Free	Free	Free
4XY	XY-GenXY	-2.5	-2.5	74	Free	Free	Free	Free	Free	Free
4Y	Y-GenXY	-2.5	2.5	74	Free	Free	Free	Free	Free	Free
5X	X-GenXY	2.5	-2.5	69	Free	Free	Free	Free	Free	Free
5XY	XY-GenXY	-2.5	-2.5	69	Free	Free	Free	Free	Free	Free
5Y	Y-GenXY	-2.5	2.5	69	Free	Free	Free	Free	Free	Free
6X	X-GenXY	2.5	-2.5	64	Free	Free	Free	Free	Free	Free
6XY	XY-GenXY	-2.5	-2.5	64	Free	Free	Free	Free	Free	Free
6Y	Y-GenXY	-2.5	2.5	64	Free	Free	Free	Free	Free	Free
7X	X-GenXY	11.5	-11.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
7XY	XY-GenXY	-11.5	-11.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
7Y	Y-GenXY	-11.5	11.5	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
18X	X-Gen	0	-13.75	91	Free	Free	Free	Free	Free	Free
19X	X-Gen	0	-9.75	86	Free	Free	Free	Free	Free	Free
20X	X-Gen	0	-14.25	74	Free	Free	Free	Free	Free	Free
21X	X-Gen	0	-10.25	64	Free	Free	Free	Free	Free	Free

Secondary Joints:

Joint Label	Symmetry Code	Origin Joint	End Joint	Fraction	Elevation (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.
8S	XY-Symmetry	6P	7P	0	59	Free	Free	Free	Free	Free	Free
9S	XY-Symmetry	6P	7P	0	53	Free	Free	Free	Free	Free	Free
10S	XY-Symmetry	6P	7P	0	46.5	Free	Free	Free	Free	Free	Free
11S	XY-Symmetry	6P	7P	0	32	Free	Free	Free	Free	Free	Free
12S	XY-Symmetry	6P	7P	0	10	Free	Free	Free	Free	Free	Free
13S	Y-Symmetry	12S	12X	0.5	0	Free	Free	Free	Free	Free	Free
14S	X-Symmetry	12S	12Y	0.5	0	Free	Free	Free	Free	Free	Free
15S	XY-Symmetry	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
16S	X-Symmetry	3P	4Y	0.5	0	Free	Free	Free	Free	Free	Free
17S	Y-Symmetry	3P	4X	0.5	0	Free	Free	Free	Free	Free	Free
8X	X-GenXY	6P	7P	0	59	Free	Free	Free	Free	Free	Free
8XY	XY-GenXY	6P	7P	0	59	Free	Free	Free	Free	Free	Free
8Y	Y-GenXY	6P	7P	0	59	Free	Free	Free	Free	Free	Free

9X	X-GenXY	6P	7P	0	53	Free	Free	Free	Free	Free	Free
9XY	XY-GenXY	6P	7P	0	53	Free	Free	Free	Free	Free	Free
9Y	Y-GenXY	6P	7P	0	53	Free	Free	Free	Free	Free	Free
10X	X-GenXY	6P	7P	0	46.5	Free	Free	Free	Free	Free	Free
10XY	XY-GenXY	6P	7P	0	46.5	Free	Free	Free	Free	Free	Free
10Y	Y-GenXY	6P	7P	0	46.5	Free	Free	Free	Free	Free	Free
11X	X-GenXY	6P	7P	0	32	Free	Free	Free	Free	Free	Free
11XY	XY-GenXY	6P	7P	0	32	Free	Free	Free	Free	Free	Free
11Y	Y-GenXY	6P	7P	0	32	Free	Free	Free	Free	Free	Free
12X	X-GenXY	6P	7P	0	10	Free	Free	Free	Free	Free	Free
12XY	XY-GenXY	6P	7P	0	10	Free	Free	Free	Free	Free	Free
12Y	Y-GenXY	6P	7P	0	10	Free	Free	Free	Free	Free	Free
13Y	Y-Gen	12S	12X	0.5	0	Free	Free	Free	Free	Free	Free
14X	X-Gen	12S	12Y	0.5	0	Free	Free	Free	Free	Free	Free
15X	X-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
15XY	XY-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
15Y	Y-GenXY	3P	4P	0.5	0	Free	Free	Free	Free	Free	Free
16X	X-Gen	3P	4Y	0.5	0	Free	Free	Free	Free	Free	Free
17Y	Y-Gen	3P	4X	0.5	0	Free	Free	Free	Free	Free	Free

The model contains 49 primary and 32 secondary joints for a total of 81 joints.

Steel Material Properties:

Steel Material Label	Modulus of Elasticity (ksi)	Yield Stress Fy (ksi)	Ultimate Stress Fu (ksi)	Member Stress All. Hyp. 1 (ksi)	Member Stress All. Hyp. 2 (ksi)	Member Rupture Hyp. 1 (ksi)	Member Rupture Hyp. 2 (ksi)	Member Bearing Hyp. 1 (ksi)	Member Bearing Hyp. 2 (ksi)
A 36	2.9e+04	36	58	0	0	0	0	0	0
A7	2.9e+04	33	60	0	0	0	0	0	0
A500 Grade B (42)	2.9e+04	42	58	0	0	0	0	0	0

Bolt Properties:

Bolt Label	Bolt Diameter (in)	Hole Diameter (in)	Ultimate Shear Capacity (kips)	Default End Distance (in)	Default Bolt Spacing (in)	Shear Capacity Hyp. 1 (kips)	Shear Capacity Hyp. 2 (kips)
5/8 A394	0.625	0.75	9.1	1.125	1.5	0	0
5/8 A325	0.625	0.6875	16.8	1.25	1.5	0	0
3/4 A325	0.75	0.875	23.9	1	2.25	0	0

Number Bolts Used By Type:

Bolt Type	Number Bolts
5/8 A394	520
5/8 A325	32
3/4 A325	4

Angle Properties:

Angle Type	Angle Size	Long Leg (in)	Short Leg (in)	Thick. (in)	Unit Weight (lbs/ft)	Gross Area (in^2)	w/t Ratio	Radius of Gyration Rx (in)	Radius of Gyration Ry (in)	Radius of Gyration Rz (in)	Angle Cross Section	Wind Width (in)	Short Edge Dist. (in)	Long Edge Dist. (in)	Optimize Cost Factor	Section Modulus (in^3)
SAE	4X4X0.5	4	4	0.5	12.8	3.75	6.25	1.22	1.22	0.782	Single	4	2	0	1.0000	0
SAE	4X4X0.375	4	4	0.375	9.8	2.86	8.67	1.23	1.23	0.788	Single	4	2	0	1.0000	0
SAE	4X4X0.3125	4	4	0.3125	8.2	2.4	10.6	1.24	1.24	0.791	Single	4	2	0	1.0000	0
SAE	4X4X0.25	4	4	0.25	6.6	1.94	13.5	1.25	1.25	0.795	Single	4	2	0	1.0000	0
SAE	3.5X3.5X0.25	3.5	3.5	0.25	5.8	1.69	11.5	1.09	1.09	0.694	Single	3.5	1.75	0	1.0000	0
SAE	2.5X2.5X0.375	2.5	2.5	0.375	5.9	1.73	4.83	0.753	0.753	0.487	Single	2.5	1.25	0	1.0000	0

SAE	2.5X2.5X0.1875	2.5	2.5	0.1875	3.07	0.902	10.67	0.778	0.778	0.495	Single	2.5	1.25	0	1.0000	0
SAE	2X2X0.1875	2	2	0.1875	2.44	0.71	8	0.617	0.617	0.394	Single	2	1	0	1.0000	0
SAE	1.75X1.75X0.25	1.75	1.75	0.25	2.77	0.81	4.25	0.529	0.529	0.341	Single	1.75	0.875	0	1.0000	0
SAE	1.75X1.75X0.1875	1.75	1.75	0.1875	2.12	0.62	6	0.537	0.537	0.343	Single	1.75	0.875	0	1.0000	0
SAU	4X3X0.25	4	3	0.25	5.8	1.69	13.25	1.28	0.896	0.651	Single	4	1.5	0	1.0000	0
SAU	3.5X2.5X0.25	3.5	2.5	0.25	4.9	1.44	11.25	1.12	0.735	0.544	Single	3.5	1.25	0	1.0000	0
SAU	3X2.5X0.25	3	2.5	0.25	4.5	1.31	9.5	0.945	0.753	0.528	Single	3	1.25	0	1.0000	0
SAU	3X2X0.1875	3	2	0.1875	3.07	0.9	13.33	0.966	0.583	0.439	Single	3	1	0	1.0000	0
SAU	2.5X2X0.1875	2.5	2	0.1875	2.75	0.81	10.67	0.793	0.6	0.427	Single	2.5	1	0	1.0000	0
Bar	6x3/4	6	0.75	0.75	15.3	4.5	8	0.2165	1.732	1.732	Single	6	0	0	0.0000	0
Bar	1.75x1/4	1.75	0	0.25	1.5	0.4375	7	0.305	0.061	0.305	Single	1.75	0	0	0.0000	0
Pwmnt	Pipe HSS16"x0.5"	16	15.07	0	82.85	22.7	1	5.49	5.49	5.49	Round	16	0	0	0.0000	0

Angle Groups:

Group Label	Group Description	Angle Type	Angle Size	Material Type	Element Type	Group Type	Optimize Group	Allow. Add. Angle Width For Optimize (in)
Leg1	Leg1	SAE	4X4X0.25	A7	Beam	Leg	None	0.000
Leg2	Leg2	SAE	4X4X0.3125	A7	Beam	Leg	None	0.000
Leg3	Leg3	SAE	4X4X0.375	A7	Beam	Leg	None	0.000
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBrace2	XBrace2	SAU	3X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBrace3	XBrace3	SAE	2X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBrace4	XBrace4	SAU	2.5X2X0.1875	A7	Truss	Crossing Diagonal	None	0.000
XBrace5	XBrace5	SAE	1.75X1.75X0.25	A7	T-Only	Other	None	0.000
XBrace6	XBrace6	SAE	1.75X1.75X0.1875	A7	T-Only	Other	None	0.000
XBrace7	XBrace7	SAU	3.5X2.5X0.25	A7	Truss	Other	None	0.000
XBrace8	XBrace8	SAU	3X2X0.1875	A7	Truss	Other	None	0.000
Horz1	Horizontal 1	SAE	1.75X1.75X0.1875	A7	Truss	Other	None	0.000
Horz2	Horizontal 2	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
Horz3	Horizontal 3	SAU	3X2.5X0.25	A7	Truss	Other	None	0.000
Horz4	Horizontal 4	SAU	4X3X0.25	A7	Beam	Other	None	0.000
Horz5	Horizontal 5	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
Inner1	Inner1	SAE	1.75X1.75X0.1875	A7	Truss	Other	None	0.000
Inner2	Inner2	SAU	2.5X2X0.1875	A7	Truss	Other	None	0.000
Arm1	Ground Wire Arm	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
Arm2	Top Cross Arm	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
Arm3	Middle Cross Arm	SAU	3.5X2.5X0.25	A7	Beam	Other	None	0.000
Arm4	Bottom Cross Arm	SAU	3X2.5X0.25	A7	Beam	Other	None	0.000
ArmBr1	Ground Wire Arm Brace	SAE	2.5X2.5X0.1875	A7	Truss	Other	None	0.000
ArmBr2	Top Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
ArmBr3	Middle Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
ArmBr4	Bottom Cross Arm Brace	Bar	1.75x1/4	A7	T-Only	Other	None	0.000
PWMount	Pipe HSS16"x0.5"	Pwmnt	Pipe HSS16"x0.5"	A500 Grade B (42)	Beam	Other	None	0.000
PWMBrace	Powermount Brace	SAE	2.5X2.5X0.375	A 36	Beam	Other	None	0.000
PWMBrace Low	Powermount Brace Lower	SAE	3.5X3.5X0.25	A 36	Beam	Other	None	0.000
Plate	Plate	Bar	6x3/4	A 36	Beam	Other	None	0.000
Leg2R	Leg2 Rein	SAE	4X4X0.5	A7	Beam	Leg	None	0.000

Aggregate Angle Information:

Note: Estimate of surface area reported for painting purposes, not wind loading.

Angle Type	Angle Size	Material Type	Total Length (ft)	Total Surface Area (ft^2)	Total Weight (lbs)
SAU	3X2.5X0.25	A7	195.35	179.07	879.06
SAU	3.5X2.5X0.25	A7	180.49	180.49	884.39
SAE	2.5X2.5X0.1875	A7	12.81	10.67	39.32
Bar	1.75x1/4	A7	134.37	39.19	201.56
SAE	1.75X1.75X0.1875	A7	387.39	225.98	821.27

SAU	2.5X2X0.1875		A7	244.04	183.03	671.11
SAU	4X3X0.25		A7	80.75	94.21	468.35
SAE	4X4X0.25		A7	108.00	144.00	712.80
SAE	4X4X0.3125		A7	112.15	149.54	919.66
SAE	4X4X0.375		A7	148.86	198.48	1458.82
SAE	2.5X2.5X0.375		A 36	63.18	52.65	372.74
Pwmnt Pipe	HSS16"x0.5"	A500 Grade B (42)		101.00	523.01	8367.85
Bar	6x3/4		A 36	5.00	5.63	76.50
SAU	3X2X0.1875		A7	238.10	198.42	730.97
SAE	2X2X0.1875		A7	60.94	40.62	148.69
SAE	1.75X1.75X0.25		A7	151.26	88.23	418.98

Sections:
The adjustment factors below only apply to dead load and wind areas that are calculated for members in the model.
They do not apply to equipment or to manually input dead load and drag areas.

Section Label	Joint Defining Section Bottom	Dead Load Adjust. Factor	Transverse Drag x Area Factor For Face	Longitudinal Drag x Area Factor For Face	Transverse Area Factor (CD From Code)	Longitudinal Area Factor (CD From Code)	Af Flat Ar Round Factor For Face EIA Only	Factor For Face EIA Only	Transverse Drag x Area Factor For All	Longitudinal Drag x Area Factor For All	SAPS Angle Drag x Area Factor	SAPS Round Drag x Area Factor	Force Solid Face
1	10S	1.050	3.250	3.250	1.050	1.050	0.000	0.000	1.000	1.000	0.000	0.000	None
2	7P	1.100	3.400	3.400	1.100	1.100	0.000	0.000	1.000	1.000	0.000	0.000	None

Angle Member Connectivity:

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ	Bolt Type	# Bolts	# Bolt Holes	# Shear Planes	Connect Leg	Short Edge Dist. (in)	Long Edge Dist. (in)	End Dist. (in)	Bolt Spacing (in)	Shear Path Length (in)	Tension Path Length (in)	Rest. Coef.
g55P	Arm1		Y-Symmetry	1X	1P	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g55Y	Arm1		Y-Gen	1XY	1Y	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g54P	Arm1		XY-Symmetry	18X	1X	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g54X	Arm1		X-GenXY	18P	1P	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g54XY	Arm1		XY-GenXY	18P	1Y	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g54Y	Arm1		Y-GenXY	18X	1XY	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g57P	Arm2		Y-Symmetry	2X	2P	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g57Y	Arm2		Y-Gen	2XY	2Y	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g56P	Arm2		XY-Symmetry	19X	2X	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g56X	Arm2		X-GenXY	19P	2P	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g56XY	Arm2		XY-GenXY	19P	2Y	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g56Y	Arm2		Y-GenXY	19X	2XY	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.25	0	2.375	1.5	0	0	0
g59P	Arm3		Y-Symmetry	4X	4P	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g59Y	Arm3		Y-Gen	4XY	4Y	3	5	1	1	1	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g58P	Arm3		XY-Symmetry	20X	4X	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g58X	Arm3		X-GenXY	20P	4P	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g58XY	Arm3		XY-GenXY	20P	4Y	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g58Y	Arm3		Y-GenXY	20X	4XY	3	5	1	0.5	0.5	5/8 A394	2	1	1	Long only	1.75	0	2.375	1.5	0	0	0
g61P	Arm4		Y-Symmetry	6X	6P	3	4	1	1	1	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g61Y	Arm4		Y-Gen	6XY	6Y	3	4	1	1	1	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g60P	Arm4		XY-Symmetry	21X	6X	3	4	1	0.5	0.5	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g60X	Arm4		X-GenXY	21P	6P	3	4	1	0.5	0.5	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g60XY	Arm4		XY-GenXY	21P	6Y	3	4	1	0.5	0.5	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g60Y	Arm4		Y-GenXY	21X	6XY	3	4	1	0.5	0.5	5/8 A394	1	1	1	Long only	1.5	0	2.75	0	0	0	0
g62P	ArmBr1		X-Symmetry	18X	19X	2	4	1	1	1	5/8 A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g62X	ArmBr1		X-Gen	18P	19P	2	4	1	1	1	5/8 A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g63P	ArmBr2		XY-Symmetry	19X	1X	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g63X	ArmBr2		X-GenXY	19P	1P	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g63XY	ArmBr2		XY-GenXY	19P	1Y	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g63Y	ArmBr2		Y-GenXY	19X	1XY	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g64P	ArmBr3		XY-Symmetry	20X	15X	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g64X	ArmBr3		X-GenXY	20P	15S	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g64XY	ArmBr3		XY-GenXY	20P	15Y	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g64Y	ArmBr3		Y-GenXY	20X	15XY	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g65P	ArmBr4		XY-Symmetry	21X	5X	2	4	1	1	1	5/8 A394	1	1	1	Long only	0.875	0	1	0	0	0	0

g65X	ArmBr4	X-GenXY	21P	5P	2	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g65XY	ArmBr4	XY-GenXY	21P	5Y	2	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g65Y	ArmBr4	Y-GenXY	21X	5XY	2	4	1	1	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g47P	Horz1	XY-Symmetry	15S	16S	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g47X	Horz1	X-GenXY	16X	15X	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g47XY	Horz1	XY-GenXY	15XY	16X	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g47Y	Horz1	Y-GenXY	16S	15Y	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g40P	Horz1	X-Symmetry	6P	6Y	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g40X	Horz1	X-Gen	6X	6XY	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g39P	Horz1	X-Symmetry	4P	4Y	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g39X	Horz1	X-Gen	4X	4XY	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g38P	Horz1	X-Symmetry	2P	2Y	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g38X	Horz1	X-Gen	2X	2XY	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g37P	Horz1	X-Symmetry	1P	1Y	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g37X	Horz1	X-Gen	1X	1XY	3	4	1	1	1	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g42P	Horz2	Y-Symmetry	10X	10S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g42Y	Horz2	Y-Gen	10XY	10Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g41P	Horz2	X-Symmetry	10S	10Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g41X	Horz2	X-Gen	10X	10XY	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	0.875	0	1	0	0	0	0
g44P	Horz3	Y-Symmetry	11X	11S	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g44Y	Horz3	Y-Gen	11XY	11Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g43P	Horz3	X-Symmetry	11S	11Y	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g43X	Horz3	X-Gen	11X	11XY	3	4	1	0.5	0.5	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g46P	Horz4	XY-Symmetry	12S	13S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g46X	Horz4	X-GenXY	13S	12X	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g46XY	Horz4	XY-GenXY	12XY	13Y	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g46Y	Horz4	Y-GenXY	13Y	12Y	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g45P	Horz4	XY-Symmetry	12Y	14S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g45X	Horz4	X-GenXY	14X	12XY	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g45XY	Horz4	XY-GenXY	12X	14X	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g45Y	Horz4	Y-GenXY	14S	12S	3	4	2	1	1	5/8	A394	1	1	1	Short only	1.25	0	1	0	0	0	0
g48P	Horz5	XY-Symmetry	15X	17S	3	4	1	2	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g48X	Horz5	X-GenXY	17S	15S	3	4	1	2	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g48XY	Horz5	XY-GenXY	15Y	17Y	3	4	1	2	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g48Y	Horz5	Y-GenXY	17Y	15XY	3	4	1	2	1	5/8	A394	1	1	1	Long only	0.875	0	1	0	0	0	0
g77P	Inner1	XY-Symmetry	6P	27P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g77X	Inner1	X-GenXY	6X	27P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g77XY	Inner1	XY-GenXY	27P	6XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g77Y	Inner1	Y-GenXY	6Y	27P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g76P	Inner1	XY-Symmetry	4P	26P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g76X	Inner1	X-GenXY	4X	26P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g76XY	Inner1	XY-GenXY	26P	4XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g76Y	Inner1	Y-GenXY	4Y	26P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g75P	Inner1	XY-Symmetry	2P	25P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g75X	Inner1	X-GenXY	2X	25P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g75XY	Inner1	XY-GenXY	25P	2XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g75Y	Inner1	Y-GenXY	2Y	25P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g74P	Inner1	XY-Symmetry	1P	24P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g74X	Inner1	X-GenXY	1X	24P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g74XY	Inner1	XY-GenXY	24P	1XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g74Y	Inner1	Y-GenXY	1Y	24P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g79P	Inner2	XY-Symmetry	11S	29P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g79X	Inner2	X-GenXY	11X	29P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g79XY	Inner2	XY-GenXY	29P	11XY	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g79Y	Inner2	Y-GenXY	11Y	29P	3	4	1	1	1	5/8	A325	1	1	1	Short only	0.875	0	1	0	0	0	0
g6P	Leg1	XY-Symmetry	5P	6P	1	4	1	1	1	5/8	A394	12	2	1	Both	1.25	2.375	1.5	4	17.063	1.8125	0
g6X	Leg1	X-GenXY	5X	6X	1	4	1	1	1	5/8	A394	12	2	1	Both	1.25	2.375	1.5	4	17.063	1.8125	0
g6XY	Leg1	XY-GenXY	5XY	6XY	1	4	1	1	1	5/8	A394	12	2	1	Both	1.25	2.375	1.5	4	17.063	1.8125	0
g6Y	Leg1	Y-GenXY	5Y	6Y	1	4	1	1	1	5/8	A394	12	2	1	Both	1.25	2.375	1.5	4	17.063	1.8125	0
g5P	Leg1	XY-Symmetry	4P	5P	1	4	1	1	1	5/8	A394	0	2	1		0	0	0	0	0	0	0
g5X	Leg1	X-GenXY	4X	5X	1	4	1	1	1	5/8	A394	0	2	1		0	0	0	0	0	0	0
g5XY	Leg1	XY-GenXY	4XY	5XY	1	4	1	1	1	5/8	A394	0	2	1		0	0	0	0	0	0	0
g5Y	Leg1	Y-GenXY	4Y	5Y	1	4	1	1	1	5/8	A394	0	2	1		0	0	0	0	0	0	0
g4P	Leg1	XY-Symmetry	15S	4P	1	4	1	1	1	5/8	A394	0	4	1		0	0	0	0	0	0	0
g4X	Leg1	X-GenXY	15X	4X	1	4	1	1	1	5/8	A394	0	4	1		0	0	0	0	0	0	0
g4XY	Leg1	XY-GenXY	15XY	4XY	1	4	1	1	1	5/8	A394	0	4	1		0	0	0	0	0	0	0
g4Y	Leg1	Y-GenXY	15Y	4Y	1	4	1	1	1	5/8	A394	0	4	1		0	0	0	0	0	0	0

g3P	Leg1	XY-Symmetry	3P	15S	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g3X	Leg1	X-GenXY	3X	15X	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g3XY	Leg1	XY-GenXY	3XY	15XY	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g3Y	Leg1	Y-GenXY	3Y	15Y	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g2P	Leg1	XY-Symmetry	2P	3P	1	4	1	1	1	5/8	A394	0	2	1			0	0	0	0	0	0	0
g2X	Leg1	X-GenXY	2X	3X	1	4	1	1	1	5/8	A394	0	2	1			0	0	0	0	0	0	0
g2XY	Leg1	XY-GenXY	2XY	3XY	1	4	1	1	1	5/8	A394	0	2	1			0	0	0	0	0	0	0
g2Y	Leg1	Y-GenXY	2Y	3Y	1	4	1	1	1	5/8	A394	0	2	1			0	0	0	0	0	0	0
g1P	Leg1	XY-Symmetry	1P	2P	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g1X	Leg1	X-GenXY	1X	2X	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g1XY	Leg1	XY-GenXY	1XY	2XY	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g1Y	Leg1	Y-GenXY	1Y	2Y	1	4	1	1	1	5/8	A394	0	4	1			0	0	0	0	0	0	0
g9P	Leg2	XY-Symmetry	9S	10S	1	4	0.5	0.5	0.5	5/8	A394	10	2.03	1		Both	0.875	2	1.5	3.5	7.375	3.25	0
g9X	Leg2	X-GenXY	9X	10X	1	4	0.5	0.5	0.5	5/8	A394	10	2.03	1		Both	0.875	2	1.5	3.5	7.375	3.25	0
g9XY	Leg2	XY-GenXY	9XY	10XY	1	4	0.5	0.5	0.5	5/8	A394	10	2.03	1		Both	0.875	2	1.5	3.5	7.375	3.25	0
g9Y	Leg2	Y-GenXY	9Y	10Y	1	4	0.5	0.5	0.5	5/8	A394	10	2.03	1		Both	0.875	2	1.5	3.5	7.375	3.25	0
g8P	Leg2	XY-Symmetry	8S	9S	1	4	0.5	0.5	0.5	5/8	A394	0	3	1			0	0	0	0	0	0	0
g8X	Leg2	X-GenXY	8X	9X	1	4	0.5	0.5	0.5	5/8	A394	0	3	1			0	0	0	0	0	0	0
g8XY	Leg2	XY-GenXY	8XY	9XY	1	4	0.5	0.5	0.5	5/8	A394	0	3	1			0	0	0	0	0	0	0
g8Y	Leg2	Y-GenXY	8Y	9Y	1	4	0.5	0.5	0.5	5/8	A394	0	3	1			0	0	0	0	0	0	0
g7P	Leg2	XY-Symmetry	6P	8S	1	4	1	1	1	5/8	A394	0	3.64	1			0	0	0	0	0	0	0
g7X	Leg2	X-GenXY	6X	8X	1	4	1	1	1	5/8	A394	0	3.64	1			0	0	0	0	0	0	0
g7XY	Leg2	XY-GenXY	6XY	8XY	1	4	1	1	1	5/8	A394	0	3.64	1			0	0	0	0	0	0	0
g7Y	Leg2	Y-GenXY	6Y	8Y	1	4	1	1	1	5/8	A394	0	3.64	1			0	0	0	0	0	0	0
g12P	Leg2	XY-Symmetry	12S	7P	1	4	0.25	0.25	0.25	5/8	A394	10	2	1		Both	0.9375	2	1.5	4	16.1	1.1875	0
g12X	Leg2	X-GenXY	12X	7X	1	4	0.25	0.25	0.25	5/8	A394	10	2	1		Both	0.9375	2	1.5	4	16.1	1.1875	0
g12XY	Leg2	XY-GenXY	12XY	7XY	1	4	0.25	0.25	0.25	5/8	A394	10	2	1		Both	0.9375	2	1.5	4	16.1	1.1875	0
g12Y	Leg2	Y-GenXY	12Y	7Y	1	4	0.25	0.25	0.25	5/8	A394	10	2	1		Both	0.9375	2	1.5	4	16.1	1.1875	0
g11P	Leg3	XY-Symmetry	11S	12S	1	4	0.167	0.167	0.167	5/8	A394	10	3.36	1		Both	0.875	1.9375	1.5	3.75	16.1	1.0625	0
g11X	Leg3	X-GenXY	11X	12X	1	4	0.167	0.167	0.167	5/8	A394	10	3.36	1		Both	0.875	1.9375	1.5	3.75	16.1	1.0625	0
g11XY	Leg3	XY-GenXY	11XY	12XY	1	4	0.167	0.167	0.167	5/8	A394	10	3.36	1		Both	0.875	1.9375	1.5	3.75	16.1	1.0625	0
g11Y	Leg3	Y-GenXY	11Y	12Y	1	4	0.167	0.167	0.167	5/8	A394	10	3.36	1		Both	0.875	1.9375	1.5	3.75	16.1	1.0625	0
g10P	Leg3	XY-Symmetry	10S	11S	1	4	0.25	0.25	0.25	5/8	A394	10	3.35	1		Both	1.3125	2.375	1.5	3.5	15.563	1.9375	0
g10X	Leg3	X-GenXY	10X	11X	1	4	0.25	0.25	0.25	5/8	A394	10	3.35	1		Both	1.3125	2.375	1.5	3.5	15.563	1.9375	0
g10XY	Leg3	XY-GenXY	10XY	11XY	1	4	0.25	0.25	0.25	5/8	A394	10	3.35	1		Both	1.3125	2.375	1.5	3.5	15.563	1.9375	0
g10Y	Leg3	Y-GenXY	10Y	11Y	1	4	0.25	0.25	0.25	5/8	A394	10	3.35	1		Both	1.3125	2.375	1.5	3.5	15.563	1.9375	0
g98P	PWMBrace	X-Symmetry	10X	37P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g98X	PWMBrace	X-Gen	10S	37P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g96P	PWMBrace	X-Symmetry	11S	38P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g96X	PWMBrace	X-Gen	11X	38P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g93P	PWMBrace	X-Symmetry	10XY	37P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g93X	PWMBrace	X-Gen	10Y	37P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g91P	PWMBrace	X-Symmetry	6X	36P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g91X	PWMBrace	X-Gen	6P	36P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g90P	PWMBrace	X-Symmetry	35P	4P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g90X	PWMBrace	X-Gen	35P	4X	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g81P	PWMBrace	X-Symmetry	1X	33P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g81X	PWMBrace	X-Gen	1P	33P	3	4	1	1	1	5/8	A325	1	1	1	Short	only	1.25	0	1	0	0	0	0
g72P	PWMount	None	33P	32P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g71P	PWMount	None	34P	33P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g70P	PWMount	None	35P	34P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g69P	PWMount	None	36P	35P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g68P	PWMount	None	37P	36P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g67P	PWMount	None	38P	37P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g66P	PWMount	None	39P	38P	1	4	1	1	1			0	0	0			0	0	0	0	0	0	0
g97P	Plate	None	29P	38P	3	4	1	1	1	3/4	A325	1	1	1	Long	only	3	0	1.5	0	0	0	0
g86P	Plate	None	27P	36P	3	4	1	1	1	3/4	A325	1	1	1	Long	only	3	0	1.5	0	0	0	0
g85P	Plate	None	26P	35P	3	4	1	1	1	3/4	A325	1	1	1	Long	only	3	0	1.5	0	0	0	0
g80P	Plate	None	24P	33P	3	4	1	1	1	3/4	A325	1	1	1	Long	only	3	0	1.5	0	0	0	0
g14P	XBrace1	XY-Symmetry	1P	2Y	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g14X	XBrace1	X-GenXY	1X	2XY	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g14XY	XBrace1	XY-GenXY	1XY	2X	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g14Y	XBrace1	Y-GenXY	1Y	2P	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g13P	XBrace1	XY-Symmetry	1P	2X	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g13X	XBrace1	X-GenXY	1X	2P	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g13XY	XBrace1	XY-GenXY	1XY	2Y	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0
g13Y	XBrace1	Y-GenXY	1Y	2XY	2	5	0.75	0.5	0.5	5/8	A394	2	1	1	Short	only	0.8125	0	1	2	0	0	0

g24P	XBrace2	XY-Symmetry	5P	6Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g24X	XBrace2	X-GenXY	5X	6XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g24XY	XBrace2	XY-GenXY	5XY	6X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g24Y	XBrace2	Y-GenXY	5Y	6P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g23P	XBrace2	XY-Symmetry	5P	6X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g23X	XBrace2	X-GenXY	5X	6P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g23XY	XBrace2	XY-GenXY	5XY	6Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g23Y	XBrace2	Y-GenXY	5Y	6XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g22P	XBrace2	XY-Symmetry	4P	5Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g22X	XBrace2	X-GenXY	4X	5XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g22XY	XBrace2	XY-GenXY	4XY	5X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g22Y	XBrace2	Y-GenXY	4Y	5P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g21P	XBrace2	XY-Symmetry	4P	5X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g21X	XBrace2	X-GenXY	4X	5P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g21XY	XBrace2	XY-GenXY	4XY	5Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g21Y	XBrace2	Y-GenXY	4Y	5XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	2.75	2.46	0.25	0
g16P	XBrace2	XY-Symmetry	2P	3Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g16X	XBrace2	X-GenXY	2X	3XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g16XY	XBrace2	XY-GenXY	2XY	3X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g16Y	XBrace2	Y-GenXY	2Y	3P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g15P	XBrace2	XY-Symmetry	2P	3X	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g15X	XBrace2	X-GenXY	2X	3P	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g15XY	XBrace2	XY-GenXY	2XY	3Y	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g15Y	XBrace2	Y-GenXY	2Y	3XY	2	5	0.5	0.75	0.5	5/8	A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g26P	XBrace3	XY-Symmetry	6P	8Y	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g26X	XBrace3	X-GenXY	6X	8XY	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g26XY	XBrace3	XY-GenXY	6XY	8X	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g26Y	XBrace3	Y-GenXY	6Y	8S	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g25P	XBrace3	XY-Symmetry	6P	8X	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g25X	XBrace3	X-GenXY	6X	8S	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g25XY	XBrace3	XY-GenXY	6XY	8Y	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g25Y	XBrace3	Y-GenXY	6Y	8XY	2	5	0.781	0.561	0.561	5/8	A394	2	1	1	Short only		1	0	1	1.375	0	0	0
g30P	XBrace4	XY-Symmetry	9S	10Y	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g30X	XBrace4	X-GenXY	9X	10XY	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g30XY	XBrace4	XY-GenXY	9XY	10X	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g30Y	XBrace4	Y-GenXY	9Y	10S	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g29P	XBrace4	XY-Symmetry	9S	10X	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g29X	XBrace4	X-GenXY	9X	10S	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g29XY	XBrace4	XY-GenXY	9XY	10Y	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g29Y	XBrace4	Y-GenXY	9Y	10XY	2	5	0.549	0.774	0.549	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.25	2.21	1.25	0
g28P	XBrace4	XY-Symmetry	8S	9Y	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g28X	XBrace4	X-GenXY	8X	9XY	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g28XY	XBrace4	XY-GenXY	8XY	9X	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g28Y	XBrace4	Y-GenXY	8Y	9S	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g27P	XBrace4	XY-Symmetry	8S	9X	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g27X	XBrace4	X-GenXY	8X	9S	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g27XY	XBrace4	XY-GenXY	8XY	9Y	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g27Y	XBrace4	Y-GenXY	8Y	9XY	2	5	0.569	0.785	0.569	5/8	A394	2	1	1	Long only	0.875	1.5625	1	3.625	2.33	1.25	0
g32P	XBrace5	XY-Symmetry	10S	11Y	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g32X	XBrace5	X-GenXY	10X	11XY	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g32XY	XBrace5	XY-GenXY	10XY	11X	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g32Y	XBrace5	Y-GenXY	10Y	11S	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g31P	XBrace5	XY-Symmetry	10S	11X	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g31X	XBrace5	X-GenXY	10X	11S	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g31XY	XBrace5	XY-GenXY	10XY	11Y	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g31Y	XBrace5	Y-GenXY	10Y	11XY	2	5	0.789	0.577	0.577	5/8	A394	2	1	1	Short only	0.8125		0	1	1.4375	0	0	0
g34P	XBrace6	XY-Symmetry	11S	12Y	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g34X	XBrace6	X-GenXY	11X	12XY	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g34XY	XBrace6	XY-GenXY	11XY	12X	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g34Y	XBrace6	Y-GenXY	11Y	12S	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g33P	XBrace6	XY-Symmetry	11S	12X	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g33X	XBrace6	X-GenXY	11X	12S	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g33XY	XBrace6	XY-GenXY	11XY	12Y	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g33Y	XBrace6	Y-GenXY	11Y	12XY	2	5	0.796	0.409	0.409	5/8	A394	2	1	1	Short only	0.875		0	1	1.5	0	0	0
g36P	XBrace7	XY-Symmetry	14S	7P	2	4	1	0.5	0.5	5/8	A394	1	1	1	Short only		1	0	1	0	0	0	0
g36X	XBrace7	X-GenXY	14X	7X	2	4	1	0.5	0.5	5/8	A394	1	1	1	Short only		1	0	1	0	0	0	0
g36XY	XBrace7	XY-GenXY	14X	7XY	2	4	1	0.5	0.5	5/8	A394	1	1	1	Short only		1	0	1	0	0	0	0

g36Y	XBrace7	Y-GenXY	14S	7Y	2	4	1	0.5	0.5	5/8 A394	1	1	1	Short only	1	0	1	0	0	0	0
g35P	XBrace7	XY-Symmetry	13S	7P	2	4	1	0.5	0.5	5/8 A394	1	1	1	Short only	1	0	1	0	0	0	0
g35X	XBrace7	X-GenXY	13S	7X	2	4	1	0.5	0.5	5/8 A394	1	1	1	Short only	1	0	1	0	0	0	0
g35XY	XBrace7	XY-GenXY	13Y	7XY	2	4	1	0.5	0.5	5/8 A394	1	1	1	Short only	1	0	1	0	0	0	0
g35Y	XBrace7	Y-GenXY	13Y	7Y	2	4	1	0.5	0.5	5/8 A394	1	1	1	Short only	1	0	1	0	0	0	0
g20P	XBrace8	XY-Symmetry	16S	4P	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g20X	XBrace8	X-GenXY	16X	4X	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g20XY	XBrace8	XY-GenXY	16X	4XY	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g20Y	XBrace8	Y-GenXY	16S	4Y	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g19P	XBrace8	XY-Symmetry	3P	16S	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g19X	XBrace8	X-GenXY	3X	16X	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g19XY	XBrace8	XY-GenXY	3XY	16X	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g19Y	XBrace8	Y-GenXY	3Y	16S	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g18P	XBrace8	XY-Symmetry	17S	4P	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g18X	XBrace8	X-GenXY	17S	4X	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g18XY	XBrace8	XY-GenXY	17Y	4XY	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g18Y	XBrace8	Y-GenXY	17Y	4Y	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g17P	XBrace8	XY-Symmetry	3P	17S	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g17X	XBrace8	X-GenXY	3X	17S	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g17XY	XBrace8	XY-GenXY	3XY	17Y	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0
g17Y	XBrace8	Y-GenXY	3Y	17Y	2	5	1	1.5	1	5/8 A394	3	1	1	Long only	0.875	1.4375	1	3.125	2.75	0.25	0

Member Capacities and Overrides:

Member Label	Group Label	Design Override Comp. RL	Comp. Capacity	Heuristic Control Criterion	Design Override Tension Beta	Tension Control Capacity	Tension Control Criterion	L/r Length	L/r Comp. Capacity	Connection Shear Capacity	Connection Bearing Capacity	Net Section Capacity	Rupture Warnings or Errors Tension Capacity	RTE End Dist. Tension	RTE Edge Dist. Tension	Override Comp. Capacity	Override Comp. Capacity	Override Comp. Control Unsup.	Override Tension Capacity Criterion
	Face	Climb	(kips)		Beta	(kips)		(ft)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)	(kips)
g55P	Arm1	18.200	Shear	18.200		Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g55P" controlled by RDis, not RBsh.														
g55Y	Arm1	18.200	Shear	18.200		Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g55Y" controlled by RDis, not RBsh.														
g54P	Arm1	18.200	Shear	18.200		Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g54P" controlled by RDis, not RBsh.														
g54X	Arm1	18.200	Shear	18.200		Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g54X" controlled by RDis, not RBsh.														
g54XY	Arm1	18.200	Shear	18.200		Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g54XY" controlled by RDis, not RBsh.														
g54Y	Arm1	18.200	Shear	18.200		Shear	146	11.52	19.099	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g54Y" controlled by RDis, not RBsh.														
g57P	Arm2	18.200	Shear	18.200		Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g57P" controlled by RDis, not RBsh.														
g57Y	Arm2	18.200	Shear	18.200		Shear	114	5.00	26.226	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g57Y" controlled by RDis, not RBsh.														
g56P	Arm2	18.200	Shear	18.200		Shear	97	7.67	28.509	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g56P" controlled by RDis, not RBsh.														
g56X	Arm2	18.200	Shear	18.200		Shear	97	7.67	28.509	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g56X" controlled by RDis, not RBsh.														
g56XY	Arm2	18.200	Shear	18.200		Shear	97	7.67	28.509	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g56XY" controlled by RDis, not RBsh.														
g56Y	Arm2	18.200	Shear	18.200		Shear	97	7.67	28.509	18.200	28.125	33.338	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g56Y" controlled by RDis, not RBsh.														
g59P	Arm3	18.200	Shear	18.200		Shear	110	5.00	29.359	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g59P" controlled by RDis, not RBsh.														
g59Y	Arm3	18.200	Shear	18.200		Shear	110	5.00	29.359	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	270		Rupture capacity for member "g59Y" controlled by RDis, not RBsh.														
g58P	Arm3	18.200	Shear	18.200		Shear	132	12.01	24.527	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000		0.000
Automatic		0	180		Rupture capacity for member "g58P" controlled by RDis, not RBsh.														

g58X	Arm3	18.200	Shear	18.200	Shear	132	12.01	24.527	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g58X" controlled by RDis, not RBsh.														
g58XY	Arm3	18.200	Shear	18.200	Shear	132	12.01	24.527	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g58XY" controlled by RDis, not RBsh.														
g58Y	Arm3	18.200	Shear	18.200	Shear	132	12.01	24.527	18.200	28.125	37.199	28.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g58Y" controlled by RDis, not RBsh.														
g61P	Arm4	9.100	Shear	9.100	Shear	114	5.00	26.226	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g61P" controlled by RDis, not RBsh.														
g61Y	Arm4	9.100	Shear	9.100	Shear	114	5.00	26.226	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g61Y" controlled by RDis, not RBsh.														
g60P	Arm4	9.100	Shear	9.100	Shear	103	8.14	27.682	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g60P" controlled by RDis, not RBsh.														
g60X	Arm4	9.100	Shear	9.100	Shear	103	8.14	27.682	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g60X" controlled by RDis, not RBsh.														
g60XY	Arm4	9.100	Shear	9.100	Shear	103	8.14	27.682	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g60XY" controlled by RDis, not RBsh.														
g60Y	Arm4	9.100	Shear	9.100	Shear	103	8.14	27.682	9.100	14.062	33.338	22.059	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g60Y" controlled by RDis, not RBsh.														
g62P	ArmBr1	9.100	Shear	9.100	Shear	155	6.40	10.714	9.100	10.547	22.613	9.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	170.156		Rupture capacity for member "g62P" controlled by RDis, not RBsh.														
g62X	ArmBr1	9.100	Shear	9.100	Shear	155	6.40	10.714	9.100	10.547	22.613	9.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	279.844		Rupture capacity for member "g62X" controlled by RDis, not RBsh.														
g63P	ArmBr2	0.039	L/r	7.425	Net Sect	1801	9.15	0.039	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	259.334																
g63X	ArmBr2	0.039	L/r	7.425	Net Sect	1801	9.15	0.039	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	280.666																
g63XY	ArmBr2	0.039	L/r	7.425	Net Sect	1801	9.15	0.039	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	259.334																
g63Y	ArmBr2	0.039	L/r	7.425	Net Sect	1801	9.15	0.039	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	280.666																
g64P	ArmBr3	0.021	L/r	7.425	Net Sect	2436	12.38	0.021	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	267.049																
g64X	ArmBr3	0.021	L/r	7.425	Net Sect	2436	12.38	0.021	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	272.951																
g64XY	ArmBr3	0.021	L/r	7.425	Net Sect	2436	12.38	0.021	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	267.049																
g64Y	ArmBr3	0.021	L/r	7.425	Net Sect	2436	12.38	0.021	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	272.951																
g65P	ArmBr4	0.035	L/r	7.425	Net Sect	1880	9.56	0.035	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.419																
g65X	ArmBr4	0.035	L/r	7.425	Net Sect	1880	9.56	0.035	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	279.581																
g65XY	ArmBr4	0.035	L/r	7.425	Net Sect	1880	9.56	0.035	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.419																
g65Y	ArmBr4	0.035	L/r	7.425	Net Sect	1880	9.56	0.035	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	279.581																
g47P	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g47X	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g47XY	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g47Y	Horz1	9.100	Shear	7.312	Rupture	87	2.50	14.114	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g40P	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g40X	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g39P	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g39X	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g38P	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g38X	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g37P	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	

Automatic		0	180															
g37X	Horz1	5.799	L/r	7.312	Rupture	175	5.00	5.799	9.100	10.547	14.237	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic		0	270															
g42P	Horz2	9.100	Shear	7.312	Rupture	150	9.92	10.284	9.100	10.547	17.096	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic		0	188.078															
g42Y	Horz2	9.100	Shear	7.312	Rupture	150	9.92	10.284	9.100	10.547	17.096	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922															
g41P	Horz2	9.100	Shear	7.312	Rupture	150	9.92	10.284	9.100	10.547	17.096	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic		0	187.778															
g41X	Horz2	9.100	Shear	7.312	Rupture	150	9.92	10.284	9.100	10.547	17.096	7.312	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222															
g44P	Horz3	9.100	Shear	9.100	Shear	178	14.00	11.864	9.100	14.062	29.626	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	188.078	Rupture capacity for member "g44P" controlled by RDis, not RBsh.														
g44Y	Horz3	9.100	Shear	9.100	Shear	178	14.00	11.864	9.100	14.062	29.626	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922	Rupture capacity for member "g44Y" controlled by RDis, not RBsh.														
g43P	Horz3	9.100	Shear	9.100	Shear	178	14.00	11.864	9.100	14.062	29.626	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	187.778	Rupture capacity for member "g43P" controlled by RDis, not RBsh.														
g43X	Horz3	9.100	Shear	9.100	Shear	178	14.00	11.864	9.100	14.062	29.626	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222	Rupture capacity for member "g43X" controlled by RDis, not RBsh.														
g46P	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922	Rupture capacity for member "g46P" controlled by RDis, not RBsh.														
g46X	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922	Rupture capacity for member "g46X" controlled by RDis, not RBsh.														
g46XY	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922	Rupture capacity for member "g46XY" controlled by RDis, not RBsh.														
g46Y	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	261.922	Rupture capacity for member "g46Y" controlled by RDis, not RBsh.														
g45P	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222	Rupture capacity for member "g45P" controlled by RDis, not RBsh.														
g45X	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222	Rupture capacity for member "g45X" controlled by RDis, not RBsh.														
g45XY	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222	Rupture capacity for member "g45XY" controlled by RDis, not RBsh.														
g45Y	Horz4	9.100	Shear	9.100	Shear	189	10.09	13.504	9.100	14.062	37.199	12.500	0.000	0.000	0.000	0.000	0.000	
Automatic		0	262.222	Rupture capacity for member "g45Y" controlled by RDis, not RBsh.														
g48P	Horz5	0.129	L/r	7.425	Net Sect	984	2.50	0.129	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g48X	Horz5	0.129	L/r	7.425	Net Sect	984	2.50	0.129	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g48XY	Horz5	0.129	L/r	7.425	Net Sect	984	2.50	0.129	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g48Y	Horz5	0.129	L/r	7.425	Net Sect	984	2.50	0.129	9.100	14.062	7.425	9.750	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g77P	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g77X	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g77XY	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	270															
g77Y	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	270															
g76P	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g76X	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g76XY	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	270															
g76Y	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g75P	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g75X	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															
g75XY	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	270															
g75Y	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000	
Automatic		0	180															

g74P	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g74X	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g74XY	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000
Automatic		0	270														
g74Y	Inner1	10.547	Bearing	7.717	Rupture	124	3.54	11.437	16.800	10.547	14.585	7.717	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g79P	**Inner2**	**2.995**	**L/r**	**7.717**	**Rupture**	**278**	**9.90**	**2.995**	**16.800**	**10.547**	**17.444**	**7.717**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic		**0**	**190.635**	**KL/R value of 278.21 exceeds maximum of 200.00 for member "g79P" ??**													
g79X	**Inner2**	**2.995**	**L/r**	**7.717**	**Rupture**	**278**	**9.90**	**2.995**	**16.800**	**10.547**	**17.444**	**7.717**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic		**0**	**191.454**	**KL/R value of 278.21 exceeds maximum of 200.00 for member "g79X" ??**													
g79XY	**Inner2**	**2.995**	**L/r**	**7.717**	**Rupture**	**278**	**9.90**	**2.995**	**16.800**	**10.547**	**17.444**	**7.717**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic		**0**	**259.365**	**KL/R value of 278.21 exceeds maximum of 200.00 for member "g79XY" ??**													
g79Y	**Inner2**	**2.995**	**L/r**	**7.717**	**Rupture**	**278**	**9.90**	**2.995**	**16.800**	**10.547**	**17.444**	**7.717**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Automatic		**0**	**191.454**	**KL/R value of 278.21 exceeds maximum of 200.00 for member "g79Y" ??**													
g6P	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	109.200	168.750	51.645	168.515	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g6X	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	109.200	168.750	51.645	168.515	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g6XY	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	109.200	168.750	51.645	168.515	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g6Y	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	109.200	168.750	51.645	168.515	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g5P	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g5X	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g5XY	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g5Y	Leg1	53.509	L/r	51.645	Net Sect	75	5.00	53.509	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g4P	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g4X	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g4XY	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g4Y	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g3P	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g3X	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g3XY	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g3Y	Leg1	60.236	L/r	39.270	Net Sect	45	3.00	60.236	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g2P	Leg1	48.884	L/r	51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g2X	Leg1	48.884	L/r	51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g2XY	Leg1	48.884	L/r	51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g2Y	Leg1	48.884	L/r	51.645	Net Sect	91	6.00	48.884	0.000	0.000	51.645	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g1P	Leg1	53.509	L/r	39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	180														
g1X	Leg1	53.509	L/r	39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-270														
g1XY	Leg1	53.509	L/r	39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	0														
g1Y	Leg1	53.509	L/r	39.270	Net Sect	75	5.00	53.509	0.000	0.000	39.270	0.000	0.000	0.000	0.000	0.000	0.000
Automatic		0	-90														
g9P	Leg2	73.431	L/r	63.499	Net Sect	50	6.63	73.431	91.000	175.781	63.499	116.484	0.000	0.000	0.000	0.000	0.000
Automatic		0	226.09														

g9X	Leg2	73.431	L/r	63.499	Net Sect	50	6.63	73.431	91.000	175.781	63.499	116.484	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g9XY	Leg2	73.431	L/r	63.499	Net Sect	50	6.63	73.431	91.000	175.781	63.499	116.484	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g9Y	Leg2	73.431	L/r	63.499	Net Sect	50	6.63	73.431	91.000	175.781	63.499	116.484	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g8P	Leg2	74.284	L/r	55.997	Net Sect	46	6.12	74.284	0.000	0.000	55.997	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g8X	Leg2	74.284	L/r	55.997	Net Sect	46	6.12	74.284	0.000	0.000	55.997	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g8XY	Leg2	74.284	L/r	55.997	Net Sect	46	6.12	74.284	0.000	0.000	55.997	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g8Y	Leg2	74.284	L/r	55.997	Net Sect	46	6.12	74.284	0.000	0.000	55.997	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g7P	Leg2	65.545	L/r	51.047	Net Sect	77	5.10	65.545	0.000	0.000	51.047	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g7X	Leg2	65.545	L/r	51.047	Net Sect	77	5.10	65.545	0.000	0.000	51.047	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g7XY	Leg2	65.545	L/r	51.047	Net Sect	77	5.10	65.545	0.000	0.000	51.047	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g7Y	Leg2	65.545	L/r	51.047	Net Sect	77	5.10	65.545	0.000	0.000	51.047	0.000	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g12P	Leg2	75.786	L/r	63.731	Net Sect	39	10.20	75.786	91.000	175.781	63.731	172.334	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09		Rupture capacity for member "g12P" controlled by RDis, not RBsh.													
g12X	Leg2	75.786	L/r	63.731	Net Sect	39	10.20	75.786	91.000	175.781	63.731	172.334	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09		Rupture capacity for member "g12X" controlled by RDis, not RBsh.													
g12XY	Leg2	75.786	L/r	63.731	Net Sect	39	10.20	75.786	91.000	175.781	63.731	172.334	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09		Rupture capacity for member "g12XY" controlled by RDis, not RBsh.													
g12Y	Leg2	75.786	L/r	63.731	Net Sect	39	10.20	75.786	91.000	175.781	63.731	172.334	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09		Rupture capacity for member "g12Y" controlled by RDis, not RBsh.													
g11P	Leg3	85.527	L/r	63.195	Net Sect	57	22.43	85.527	91.000	210.937	63.195	193.014	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09		Rupture capacity for member "g11P" controlled by RDis, not RBsh.													
g11X	Leg3	85.527	L/r	63.195	Net Sect	57	22.43	85.527	91.000	210.937	63.195	193.014	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09		Rupture capacity for member "g11X" controlled by RDis, not RBsh.													
g11XY	Leg3	85.527	L/r	63.195	Net Sect	57	22.43	85.527	91.000	210.937	63.195	193.014	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09		Rupture capacity for member "g11XY" controlled by RDis, not RBsh.													
g11Y	Leg3	85.527	L/r	63.195	Net Sect	57	22.43	85.527	91.000	210.937	63.195	193.014	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09		Rupture capacity for member "g11Y" controlled by RDis, not RBsh.													
g10P	Leg3	85.762	L/r	63.288	Net Sect	56	14.78	85.762	91.000	210.937	63.288	234.070	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g10X	Leg3	85.762	L/r	63.288	Net Sect	56	14.78	85.762	91.000	210.937	63.288	234.070	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g10XY	Leg3	85.762	L/r	63.288	Net Sect	56	14.78	85.762	91.000	210.937	63.288	234.070	0.000	0.000	0.000	0.000	0.000
Automatic	0	226.09															
g10Y	Leg3	85.762	L/r	63.288	Net Sect	56	14.78	85.762	91.000	210.937	63.288	234.070	0.000	0.000	0.000	0.000	0.000
Automatic	0	-136.09															
g98P PWMBrace	16.800	Shear	16.800	Shear	153	6.20	21.248	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	190.121		Rupture capacity for member "g98P" controlled by RDis, not RBsh.													
g98X PWMBrace	16.800	Shear	16.800	Shear	153	6.20	21.248	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	259.879		Rupture capacity for member "g98X" controlled by RDis, not RBsh.													
g96P PWMBrace	**9.938**	**L/r**	**16.800**	**Shear**	**223**	**9.06**	**9.938**	**16.800**	**20.391**	**47.699**	**18.125**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	
Automatic	**0**	**259.513**		**KL/R value of 223.22 exceeds maximum of 200.00 for member "g96P" ??**													
g96X PWMBrace	**9.938**	**L/r**	**16.800**	**Shear**	**223**	**9.06**	**9.938**	**16.800**	**20.391**	**47.699**	**18.125**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	
Automatic	**0**	**190.487**		**KL/R value of 223.22 exceeds maximum of 200.00 for member "g96X" ??**													
g93P PWMBrace	12.907	L/r	16.800	Shear	196	7.95	12.907	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	189.697		Rupture capacity for member "g93P" controlled by RDis, not RBsh.													
g93X PWMBrace	12.907	L/r	16.800	Shear	196	7.95	12.907	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.303		Rupture capacity for member "g93X" controlled by RDis, not RBsh.													
g91P PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g91P" controlled by RDis, not RBsh.													
g91X PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g91X" controlled by RDis, not RBsh.													
g90P PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180		Rupture capacity for member "g90P" controlled by RDis, not RBsh.													
g90X PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270		Rupture capacity for member "g90X" controlled by RDis, not RBsh.													
g81P PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	

Automatic	0	180	Rupture capacity for member "g81P" controlled by RDis, not RBsh.															
g81X	PWMBrace	16.800	Shear	16.800	Shear	69	2.80	44.815	16.800	20.391	47.699	18.125	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270	Rupture capacity for member "g81X" controlled by RDis, not RBsh.															
g72P	PWMount	936.688	L/r	953.399	Net Sect	22	10.00	936.688	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g71P	PWMount	949.221	L/r	953.399	Net Sect	11	5.00	949.221	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g70P	PWMount	929.336	L/r	953.399	Net Sect	26	12.00	929.336	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g69P	PWMount	936.688	L/r	953.399	Net Sect	22	10.00	936.688	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g68P	PWMount	902.223	L/r	953.399	Net Sect	38	17.50	902.223	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g67P	PWMount	918.265	L/r	953.399	Net Sect	32	14.50	918.265	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g66P	PWMount	782.285	L/r	953.399	Net Sect	70	32.00	782.285	0.000	0.000	953.399	0.000	0.000	0.000	0.000	0.000	0.000	
Automatic	0	0																
g97P	Plate	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	262.437	Rupture capacity for member "g97P" controlled by RDis, not RBsh.															
g86P	Plate	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180	Rupture capacity for member "g86P" controlled by RDis, not RBsh.															
g85P	Plate	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180	Rupture capacity for member "g85P" controlled by RDis, not RBsh.															
g80P	Plate	23.900	Shear	23.900	Shear	69	1.25	116.372	23.900	48.937	124.537	54.375	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180	Rupture capacity for member "g80P" controlled by RDis, not RBsh.															
g14P	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g14X	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g14XY	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g14Y	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g13P	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g13X	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g13XY	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g13Y	XBrace1	11.559	L/r	14.237	Net Sect	124	7.07	11.559	18.200	21.094	14.237	15.363	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g24P	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g24X	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g24XY	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g24Y	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g23P	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g23X	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g23XY	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g23Y	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g22P	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g22X	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g22XY	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g22Y	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g21P	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																

g21X	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g21XY	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g21Y	XBrace2	18.986	L/r	18.152	Rupture	109	7.07	18.986	27.300	31.641	22.553	18.152	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g16P	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g16X	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g16XY	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g16Y	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g15P	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g15X	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g15XY	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	270																
g15Y	XBrace2	17.275	L/r	20.109	Rupture	121	7.81	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000	
Automatic	0	180																
g26P	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	184.627																
g26X	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	265.373																
g26XY	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	184.627																
g26Y	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	265.373																
g25P	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	265.373																
g25X	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	184.627																
g25XY	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	265.373																
g25Y	XBrace3	12.404	L/r	12.305	Rupture	130	7.62	12.404	18.200	21.094	16.910	12.305	0.000	0.000	0.000	0.000	0.000	
Automatic	0	184.627																
g30P	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	190.647		Rupture capacity for member "g30P" controlled by RDis, not RBsh.														
g30X	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	259.353		Rupture capacity for member "g30X" controlled by RDis, not RBsh.														
g30XY	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	188.727		Rupture capacity for member "g30XY" controlled by RDis, not RBsh.														
g30Y	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	261.273		Rupture capacity for member "g30Y" controlled by RDis, not RBsh.														
g29P	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.382		Rupture capacity for member "g29P" controlled by RDis, not RBsh.														
g29X	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	190.242		Rupture capacity for member "g29X" controlled by RDis, not RBsh.														
g29XY	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.382		Rupture capacity for member "g29XY" controlled by RDis, not RBsh.														
g29Y	XBrace4	9.048	L/r	18.200	Shear	173	11.15	9.048	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	190.242		Rupture capacity for member "g29Y" controlled by RDis, not RBsh.														
g28P	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	188.165		Rupture capacity for member "g28P" controlled by RDis, not RBsh.														
g28X	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.834		Rupture capacity for member "g28X" controlled by RDis, not RBsh.														
g28XY	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	188.165		Rupture capacity for member "g28XY" controlled by RDis, not RBsh.														
g28Y	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	260.834		Rupture capacity for member "g28Y" controlled by RDis, not RBsh.														
g27P	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	259.219		Rupture capacity for member "g27P" controlled by RDis, not RBsh.														
g27X	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	
Automatic	0	191.107		Rupture capacity for member "g27X" controlled by RDis, not RBsh.														
g27XY	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000	0.000	

Automatic	0	259.219		Rupture capacity for member "g27XY" controlled by RDis, not RBsh.														
g27Y	XBrace4	11.223	L/r	18.200	Shear	151	9.45	11.223	18.200	21.094	19.880	18.750	0.000	0.000	0.000	0.000		0.000
Automatic	0	191.107		Rupture capacity for member "g27Y" controlled by RDis, not RBsh.														
g32P	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	193.651																
g32X	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	256.349																
g32XY	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	193.651																
g32Y	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	256.349																
g31P	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	257.831																
g31X	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	192.169																
g31XY	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	257.831																
g31Y	XBrace5	2.248	L/r	15.422	Rupture	384	18.91	2.248	18.200	28.125	18.488	15.422	0.000	0.000	0.000	0.000		0.000
Automatic	0	192.169																
g34P	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	191.092																
g34X	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	258.445																
g34XY	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	191.092																
g34Y	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	258.445																
g33P	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	256.55																
g33X	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	193.601																
g33XY	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	256.55																
g33Y	XBrace6	1.063	L/r	12.375	Rupture	499	28.03	1.063	18.200	21.094	14.237	12.375	0.000	0.000	0.000	0.000		0.000
Automatic	0	193.601																
g36P	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	260.646																
g36X	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	188.427																
g36XY	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	260.646																
g36Y	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	188.427																
g35P	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	191.306																
g35X	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	258.995																
g35XY	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	191.306																
g35Y	XBrace7	9.100	Shear	9.100	Shear	169	15.30	14.465	9.100	14.062	29.774	10.781	0.000	0.000	0.000	0.000		0.000
Automatic	0	258.995																
g20P	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	270																
g20X	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																
g20XY	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	270																
g20Y	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																
g19P	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																
g19X	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																
g19XY	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																
g19Y	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000		0.000
Automatic	0	180																

g18P	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															
g18X	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	270															
g18XY	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															
g18Y	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	270															
g17P	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															
g17X	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															
g17XY	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															
g17Y	XBrace8	17.275	L/r	20.109	Rupture	121	3.91	17.275	27.300	31.641	22.553	20.109	0.000	0.000	0.000	0.000	0.000
Automatic	0	180															

The model contains 257 angle members.

Sum of Unfactored Dead Load and Drag Areas From Equipment, Input and Calculated:

Joint Label	Dead Load (kips)	X-Drag Area (ft^2)	Y-Drag Area (ft^2)
1P	0.0928	4.830	3.111
2P	0.113	6.153	5.299
3P	0.0657	4.089	4.089
4P	0.119	6.591	4.747
5P	0.0836	5.357	5.092
6P	0.125	6.273	5.226
7P	0.117	5.378	5.378
18P	0.0617	3.479	1.146
19P	0.0581	3.764	1.961
20P	0.0774	5.196	1.299
21P	0.051	3.283	1.440
24P	0.0246	0.729	1.042
25P	0.015	0.729	0.729
26P	0.0246	0.729	1.042
27P	0.0246	0.729	1.042
29P	0.064	2.917	3.229
32P	0.414	6.667	6.667
33P	0.647	10.521	10.573
34P	0.704	11.333	11.333
35P	0.937	15.188	15.240
36P	1.17	18.854	18.906
37P	1.41	23.400	23.400
38P	1.99	32.458	32.510
39P	1.33	21.333	21.333
1X	0.0928	4.830	3.111
1XY	0.0846	4.569	2.981
1Y	0.0846	4.569	2.981
2X	0.113	6.153	5.299
2XY	0.113	6.153	5.299
2Y	0.113	6.153	5.299
3X	0.0657	4.089	4.089
3XY	0.0657	4.089	4.089
3Y	0.0657	4.089	4.089
4X	0.119	6.591	4.747
4XY	0.111	6.330	4.617
4Y	0.111	6.330	4.617
5X	0.0836	5.357	5.092
5XY	0.0836	5.357	5.092
5Y	0.0836	5.357	5.092
6X	0.125	6.273	5.226
6XY	0.116	6.013	5.096
6Y	0.116	6.013	5.096

7X	0.117	5.378	5.378
7XY	0.117	5.378	5.378
7Y	0.117	5.378	5.378
18X	0.0617	3.479	1.146
19X	0.0581	3.764	1.961
20X	0.0774	5.196	1.299
21X	0.051	3.283	1.440
8S	0.0906	4.516	4.516
9S	0.109	5.556	5.556
10S	0.228	9.364	9.234
11S	0.397	15.441	15.311
12S	0.27	10.720	10.720
13S	0.134	7.810	2.945
14S	0.134	2.945	7.810
15S	0.0336	2.067	1.467
16S	0.0293	1.500	2.317
17S	0.0277	2.317	1.500
8X	0.0906	4.516	4.516
8XY	0.0906	4.516	4.516
8Y	0.0906	4.516	4.516
9X	0.109	5.556	5.556
9XY	0.109	5.556	5.556
9Y	0.109	5.556	5.556
10X	0.228	9.364	9.234
10XY	0.233	9.364	9.494
10Y	0.233	9.364	9.494
11X	0.397	15.441	15.311
11XY	0.371	14.712	14.712
11Y	0.371	14.712	14.712
12X	0.27	10.720	10.720
12XY	0.27	10.720	10.720
12Y	0.27	10.720	10.720
13Y	0.134	7.810	2.945
14X	0.134	2.945	7.810
15X	0.0336	2.067	1.467
15XY	0.0336	2.067	1.467
15Y	0.0336	2.067	1.467
16X	0.0293	1.500	2.317
17Y	0.0277	2.317	1.500
Total	17.2	548.491	505.406

Unadjusted Dead Load and Drag Areas by Section:

Section Label	Unfactored Dead Load (kips)	X-Drag Area All (ft^2)	Y-Drag Area All (ft^2)	X-Drag Area Face (ft^2)	Y-Drag Area Face (ft^2)
1	9.077	316.394	273.205	97.250	143.916
2	8.095	232.097	232.201	64.032	126.032
Total	17.172	548.491	505.406	161.283	269.948

Angle Member Weights and Surface Areas by Section:

Section Label	Unfactored Weight (kips)	Factored Weight (kips)	Unfactored Surface Area (ft^2)	Factored Surface Area (ft^2)
1	9.077	9.531	1232.404	1294.024
2	8.095	8.905	980.862	1078.948
Total	17.172	18.435	2213.266	2372.972

Section Joint Information:

Section Label	Joint Label	Joint Elevation (ft)

1	1X	91.000
1	1P	91.000
1	1XY	91.000
1	1Y	91.000
1	18X	91.000
1	18P	91.000
1	2X	86.000
1	2P	86.000
1	2XY	86.000
1	2Y	86.000
1	19X	86.000
1	19P	86.000
1	4X	74.000
1	4P	74.000
1	4XY	74.000
1	4Y	74.000
1	20X	74.000
1	20P	74.000
1	6X	64.000
1	6P	64.000
1	6XY	64.000
1	6Y	64.000
1	21X	64.000
1	21P	64.000
1	15X	77.000
1	15S	77.000
1	15Y	77.000
1	15XY	77.000
1	5X	69.000
1	5P	69.000
1	5Y	69.000
1	5XY	69.000
1	16S	77.000
1	16X	77.000
1	10X	46.500
1	10S	46.500
1	10XY	46.500
1	10Y	46.500
1	17S	77.000
1	17Y	77.000
1	27P	64.000
1	26P	74.000
1	25P	86.000
1	24P	91.000
1	3P	80.000
1	3X	80.000
1	3XY	80.000
1	3Y	80.000
1	9S	53.000
1	9X	53.000
1	9XY	53.000
1	9Y	53.000
1	8S	59.000
1	8X	59.000
1	8XY	59.000
1	8Y	59.000
1	37P	46.500
1	36P	64.000
1	35P	74.000
1	33P	91.000
1	32P	101.000
1	34P	86.000
2	11X	32.000
2	11S	32.000
2	11XY	32.000
2	11Y	32.000

2	12S	10.000
2	13S	10.000
2	12X	10.000
2	12XY	10.000
2	13Y	10.000
2	12Y	10.000
2	14S	10.000
2	14X	10.000
2	29P	32.000
2	7P	0.000
2	7X	0.000
2	7XY	0.000
2	7Y	0.000
2	10S	46.500
2	10X	46.500
2	10XY	46.500
2	10Y	46.500
2	38P	32.000
2	37P	46.500
2	39P	0.000

Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Tran. Face Top Width (ft)	Tran. Face Bot Width (ft)	Tran. Face Gross Area (ft^2)	Long. Face Top Width (ft)	Long. Face Bot Width (ft)	Long. Face Gross Area (ft^2)
1	101.000	46.500	62	200	0.00	9.92	290.566	0.00	9.92	569.566
2	46.500	0.000	24	57	9.92	23.00	765.434	9.92	23.00	765.434

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)	Hardware Capacity (lbs)	Notes
C-EX1		5e+04	0	

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
1	18P	C-EX1	No Limit
2	18X	C-EX1	No Limit
3	19P	C-EX1	No Limit
4	19X	C-EX1	No Limit
5	20P	C-EX1	No Limit
6	20X	C-EX1	No Limit
7	21P	C-EX1	No Limit
8	21X	C-EX1	No Limit
9	32P	C-EX1	No Limit
10	1XY	C-EX1	No Limit
11	3XY	C-EX1	No Limit
12	5XY	C-EX1	No Limit
13	8XY	C-EX1	No Limit
14	10XY	C-EX1	No Limit
15	11XY	C-EX1	No Limit
16	12XY	C-EX1	No Limit
17	1X	C-EX1	No Limit
18	3X	C-EX1	No Limit
19	5X	C-EX1	No Limit

20	8X	C-EX1	No Limit
21	10X	C-EX1	No Limit
22	11X	C-EX1	No Limit
23	12X	C-EX1	No Limit
24	33P	C-EX1	No Limit
25	34P	C-EX1	No Limit
26	35P	C-EX1	No Limit
27	36P	C-EX1	No Limit
28	37P	C-EX1	No Limit
29	38P	C-EX1	No Limit
37	1Y	C-EX1	No Limit
38	3Y	C-EX1	No Limit
39	5Y	C-EX1	No Limit
40	10Y	C-EX1	No Limit
41	11Y	C-EX1	No Limit
42	12Y	C-EX1	No Limit

*** Loads Data

Loads from file: J:\Jobs\1914500.WI\04_Structural\Tower\Calcs\Rev(3)\PLS Tower\wilton.lca

Insulator dead and wind loads are already included in the point loads printed below.

Loading Method Parameters:

Structure Height Summary (used for calculating wind/ice adjust with height):
  Z of ground for wind height adjust 0.00 (ft) and structure Z coordinate that will be put on the centerline ground profile in PLS-CADD.
  Ground elevation shift 0.00 (ft)
  Z of ground with shift 0.00 (ft)
  Z of structure top (highest joint) 101.00 (ft)
  Structure height 101.00 (ft)
  Structure height above ground 101.00 (ft)
  Tower Shape Rectangular

Load distributed evenly among joints in section for section based load cases

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles Tubular Arms and Towers	SF for Guys and Cables	SF for Insuls.	SF for Hardware	SF For Found.	Point Loads	Wind/Ice Model	Trans. Wind Pressure (psf)	Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Joint Displ.
NESC Heavy	1.5000	2.5000	1.00000	1.0000	1.0000	0.0000	1.0000	27 loads	Wind on Face	4	0	0.000	56.000	60.0	
NESC Extreme	1.0000	1.0000	1.00000	1.0000	1.0000	0.0000	1.0000	27 loads	NESC 2017	31	0	0.000	56.000	60.0	

Point Loads for Load Case "NESC Heavy":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	899	823	0	Shield Wire
18X	1402	1031	0	Shield Wire
19P	2062	1305	0	Conductor
19X	2067	1218	0	Conductor
20P	2062	1305	0	Conductor
20X	2067	1218	0	Conductor
21P	2062	1305	0	Conductor
21X	2067	1218	0	Conductor
1XY	310	116	0	Coax Cables on Tower
3XY	506	189	0	Coax Cables on Tower
5XY	778	291	0	Coax Cables on Tower
10XY	859	321	0	Coax Cables on Tower
11XY	849	317	0	Coax Cables on Tower
12XY	750	280	0	Coax Cables on Tower
32P	4568	1523	0	AT&T
32P	1340	269	0	Coax Cables Above Tower
33P	159	0	0	Coax Cables
35P	253	0	0	Coax Cables
36P	257	0	0	Coax Cables
37P	300	0	0	Coax Cables
38P	735	0	0	Coax Cables
1Y	310	116	0	Coax Cables on Tower
3Y	506	189	0	Coax Cables on Tower
5Y	778	291	0	Coax Cables on Tower
10Y	859	321	0	Coax Cables on Tower
11Y	849	317	0	Coax Cables on Tower
12Y	750	280	0	Coax Cables on Tower

Section Load Case Information (Standard) for "NESC Heavy":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	101.00	46.50	73.75	10.00	10.00	3.250	4677.3	0.00	3.250	0.0	0	14296
2	46.50	0.00	23.25	10.00	10.00	3.400	4285.1	0.00	3.400	0.0	0	13357

Point Loads for Load Case "NESC Extreme":

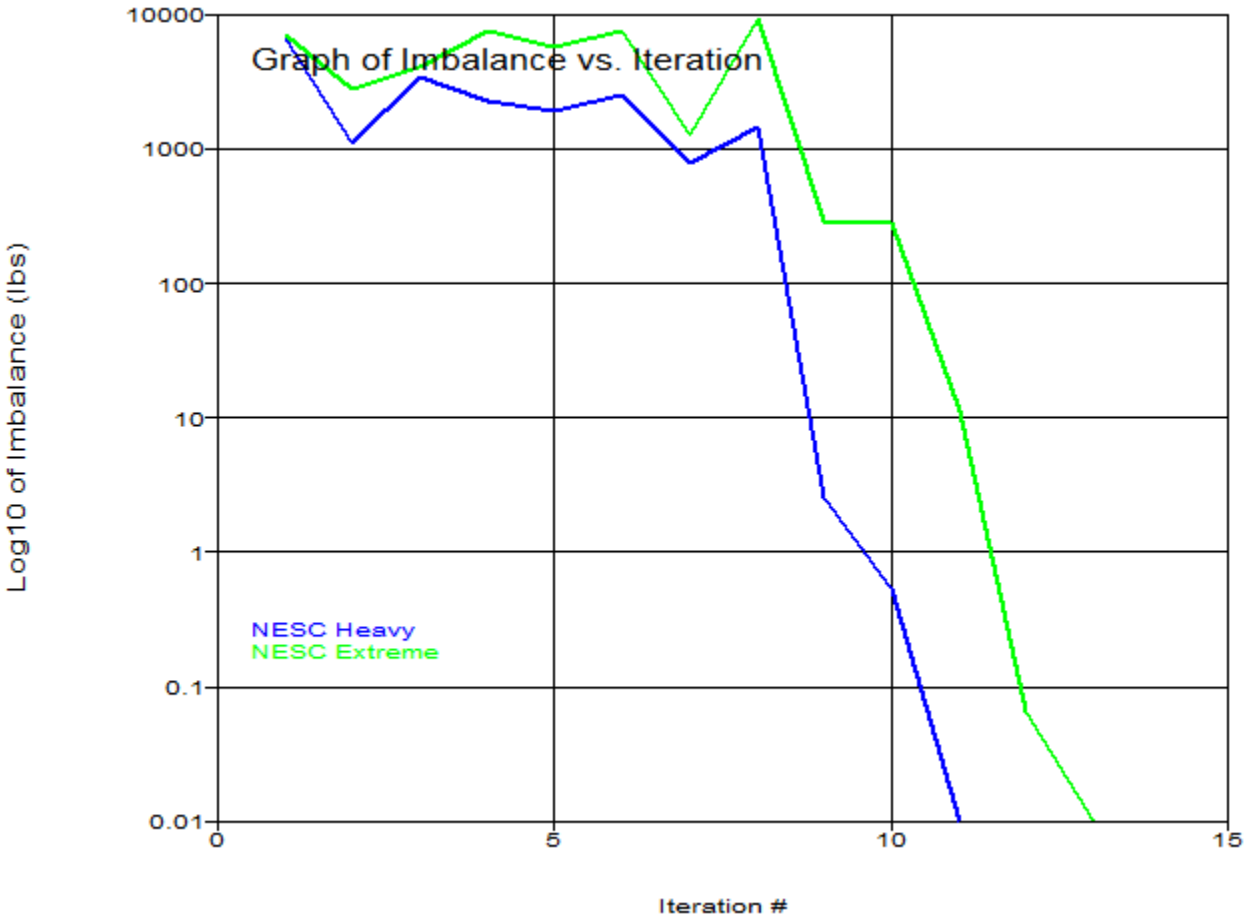
Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
18P	216	570	0	Shield Wire
18X	399	1181	0	Shield Wire
19P	757	1628	0	Conductor
19X	766	1561	0	Conductor
20P	757	1628	0	Conductor
20X	766	1561	0	Conductor
21P	757	1628	0	Conductor
21X	766	1561	0	Conductor
1XY	84	332	0	Coax Cables on Tower
3XY	137	541	0	Coax Cables on Tower
5XY	211	832	0	Coax Cables on Tower
10XY	233	918	0	Coax Cables on Tower
11XY	230	907	0	Coax Cables on Tower
12XY	204	802	0	Coax Cables on Tower
32P	2094	6026	0	AT&T
32P	449	798	0	Coax Cables Above Tower
33P	106	0	0	Coax Cables
35P	168	0	0	Coax Cables
36P	172	0	0	Coax Cables
37P	200	0	0	Coax Cables
38P	490	0	0	Coax Cables
1Y	84	332	0	Coax Cables on Tower
3Y	137	541	0	Coax Cables on Tower
5Y	211	832	0	Coax Cables on Tower
10Y	233	918	0	Coax Cables on Tower
11Y	230	907	0	Coax Cables on Tower
12Y	204	802	0	Coax Cables on Tower

Section Load Case Information (Code) for "NESC Extreme":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Ground (ft)	Res. Adj. Wind Pres. (psf)	Tran Adj. Wind Pres. (psf)	Tran Angle Face Area (ft^2)	Tran Round Face Area (ft^2)	Tran Gross Area (ft^2)	Tran Soli- dity Ratio	Tran Angle Drag Coef	Tran Round Drag Coef	Tran Wind Load (lbs)	Long Adj. Wind Pres. (psf)	Long Angle Face Area (ft^2)	Long Round Face Area (ft^2)	Long Gross Area (ft^2)	Long Soli- dity Ratio	Long Angle Drag Coef	Long Round Drag Coef	Long Wind Load (lbs)	Ice Weight (lbs)	Total Weight (lbs)
1	101.00	46.50	73.75	31.41	31.41	74.81	76.30	290.57	0.520	3.200	2.000	12310.7	0.00	102.11	0.00	569.57	0.179	3.200	2.000	0.0	0	9531
2	46.50	0.00	23.25	31.41	31.41	70.44	68.20	765.43	0.181	3.200	2.000	11362.2	0.00	70.44	0.00	765.43	0.092	3.200	2.000	0.0	0	8905

*** Analysis Results:

Maximum element usage is 99.95% for Angle "g7X" in load case "NESC Extreme"
Maximum insulator usage is 15.05% for Clamp "9" in load case "NESC Extreme"



Angle Forces For All Load Cases:
Positive for tension - negative for compression

Group Label	Angle Label	Max. Usage For All LC %	Max. Tens. For All LC (kips)	Max. Comp. For All LC (kips)	LC 1 (kips)	LC 2 (kips)
Arm1	g55P	13.71	2.496	0.000	2.496	0.962
Arm1	g55Y	15.33	2.789	0.000	2.789	1.062
Arm1	g54P	2.65	0.065	-0.482	0.065	-0.482
Arm1	g54X	4.57	0.832	0.000	0.832	0.542
Arm1	g54XY	4.55	0.828	0.000	0.828	0.544
Arm1	g54Y	2.74	0.054	-0.498	0.054	-0.498

Arm2	g57P	19.25	0.000	-3.504	-3.504	-2.809
Arm2	g57Y	18.62	0.000	-3.389	-3.389	-2.709
Arm2	g56P	23.31	0.000	-4.242	-4.242	-2.670
Arm2	g56X	10.96	0.274	-1.994	-1.994	0.274
Arm2	g56XY	12.23	0.000	-2.227	-2.227	-0.522
Arm2	g56Y	21.68	0.000	-3.945	-3.945	-1.849
Arm3	g59P	19.12	0.000	-3.480	-3.480	-0.820
Arm3	g59Y	21.65	0.000	-3.940	-3.940	-1.122
Arm3	g58P	27.46	0.000	-4.997	-4.997	-2.765
Arm3	g58X	19.80	0.000	-3.603	-3.603	-0.725
Arm3	g58XY	19.97	0.000	-3.635	-3.635	-0.884
Arm3	g58Y	27.16	0.000	-4.943	-4.943	-2.628
Arm4	g61P	20.75	0.000	-1.888	-1.888	-0.683
Arm4	g61Y	25.59	0.000	-2.328	-2.328	-0.964
Arm4	g60P	26.84	0.000	-2.442	-2.442	-1.547
Arm4	g60X	12.70	0.045	-1.156	-1.156	0.045
Arm4	g60XY	9.98	0.480	-0.908	-0.908	0.480
Arm4	g60Y	26.29	0.000	-2.393	-2.393	-1.827
ArmBr1	g62P	20.99	0.000	-1.910	-1.910	-0.690
ArmBr1	g62X	13.91	0.000	-1.266	-1.266	-0.459
ArmBr2	g63P	47.14	3.500	0.000	3.500	1.805
ArmBr2	g63X	36.59	2.717	0.000	2.717	0.656
ArmBr2	g63XY	40.25	2.989	0.000	2.989	1.601
ArmBr2	g63Y	42.22	3.135	0.000	3.135	0.809
ArmBr3	g64P	60.43	4.487	0.000	4.487	1.923
ArmBr3	g64X	59.45	4.415	0.000	4.415	1.726
ArmBr3	g64XY	59.78	4.438	0.000	4.438	1.869
ArmBr3	g64Y	59.57	4.423	0.000	4.423	1.771
ArmBr4	g65P	28.07	2.084	0.000	2.084	0.732
ArmBr4	g65X	29.20	2.168	0.000	2.168	1.082
ArmBr4	g65XY	25.26	1.875	0.000	1.875	0.565
ArmBr4	g65Y	27.19	2.019	0.000	2.019	1.047
Horz1	g47P	6.84	0.135	-0.622	-0.622	0.135
Horz1	g47X	8.53	0.000	-0.776	-0.776	-0.413
Horz1	g47XY	9.02	0.000	-0.821	-0.821	-0.407
Horz1	g47Y	7.79	0.000	-0.709	-0.709	-0.004
Horz1	g40P	47.87	0.000	-2.776	-0.680	-2.776
Horz1	g40X	42.13	3.081	0.000	1.967	3.081
Horz1	g39P	38.40	0.358	-2.227	0.358	-2.227
Horz1	g39X	15.46	1.130	0.000	1.130	0.800
Horz1	g38P	12.92	0.945	0.000	0.945	0.322
Horz1	g38X	25.72	1.881	0.000	1.881	0.624
Horz1	g37P	15.70	1.148	-0.556	-0.556	1.148
Horz1	g37X	33.11	0.000	-1.920	-1.583	-1.920
Horz2	g42P	10.59	0.774	0.000	0.774	0.155
Horz2	g42Y	10.37	0.000	-0.943	-0.726	-0.943
Horz2	g41P	25.00	1.828	0.000	0.903	1.828
Horz2	g41X	50.18	0.000	-4.567	-2.209	-4.567
Horz3	g44P	7.69	0.187	-0.700	0.187	-0.700
Horz3	g44Y	33.72	0.000	-3.069	-2.009	-3.069
Horz3	g43P	18.79	1.710	0.000	0.797	1.710
Horz3	g43X	75.16	0.000	-6.840	-2.768	-6.840
Horz4	g46P	5.90	0.537	-0.096	-0.096	0.537
Horz4	g46X	28.49	0.000	-2.593	-1.512	-2.593
Horz4	g46XY	66.72	0.000	-6.071	-3.014	-6.071
Horz4	g46Y	14.02	1.276	0.000	0.068	1.276
Horz4	g45P	5.01	0.456	0.000	0.091	0.456
Horz4	g45X	38.48	0.000	-3.501	-1.697	-3.501
Horz4	g45XY	33.85	0.000	-3.080	-1.020	-3.080
Horz4	g45Y	0.58	0.000	-0.053	-0.053	-0.016
Horz5	g48P	55.69	4.135	0.000	4.135	1.548
Horz5	g48X	56.79	4.217	0.000	4.217	2.012
Horz5	g48XY	55.64	4.132	0.000	4.132	2.033
Horz5	g48Y	53.41	3.966	0.000	3.966	1.306
Inner1	g77P	10.72	0.827	0.000	0.584	0.827
Inner1	g77X	8.99	0.000	-0.948	-0.554	-0.948
Inner1	g77XY	14.54	1.122	0.000	0.206	1.122

Inner1	g77Y	13.93	0.000	-1.469	-0.908	-1.469
Inner1	g76P	9.84	0.005	-1.037	0.005	-1.037
Inner1	g76X	6.31	0.487	0.000	0.084	0.487
Inner1	g76XY	28.15	0.000	-2.969	-1.499	-2.969
Inner1	g76Y	16.42	1.267	-0.244	-0.244	1.267
Inner1	g75P	30.11	2.323	0.000	0.714	2.323
Inner1	g75X	27.19	2.099	0.000	0.575	2.099
Inner1	g75XY	31.94	2.465	0.000	0.714	2.465
Inner1	g75Y	25.35	1.957	0.000	0.575	1.957
Inner1	g74P	19.65	1.516	0.000	0.405	1.516
Inner1	g74X	15.77	0.000	-1.663	-0.777	-1.663
Inner1	g74XY	35.64	2.750	0.000	1.175	2.750
Inner1	g74Y	22.80	0.000	-2.404	-0.380	-2.404
Inner2	g79P	1.11	0.086	0.000	0.074	0.086
Inner2	g79X	45.82	0.000	-1.372	-0.728	-1.372
Inner2	g79XY	53.49	0.000	-1.602	-0.461	-1.602
Inner2	g79Y	87.10	0.000	-2.609	-1.230	-2.609
Leg1	g6P	90.19	0.000	-48.259	-24.527	-48.259
Leg1	g6X	84.67	43.728	0.000	15.579	43.728
Leg1	g6XY	83.06	42.898	0.000	13.760	42.898
Leg1	g6Y	92.13	0.000	-49.299	-26.390	-49.299
Leg1	g5P	73.82	0.000	-39.499	-19.418	-39.499
Leg1	g5X	70.15	36.231	0.000	12.459	36.231
Leg1	g5XY	67.15	34.681	0.000	10.954	34.681
Leg1	g5Y	73.86	0.000	-39.519	-20.405	-39.519
Leg1	g4P	47.01	0.000	-28.316	-13.466	-28.316
Leg1	g4X	56.16	22.054	0.000	6.115	22.054
Leg1	g4XY	51.65	20.283	0.000	4.798	20.283
Leg1	g4Y	45.69	0.000	-27.521	-13.966	-27.521
Leg1	g3P	46.06	0.000	-27.745	-12.335	-27.745
Leg1	g3X	57.73	22.672	0.000	7.264	22.672
Leg1	g3XY	53.13	20.865	0.000	5.931	20.865
Leg1	g3Y	44.68	0.000	-26.914	-12.829	-26.914
Leg1	g2P	25.81	0.000	-12.617	-6.284	-12.617
Leg1	g2X	28.53	14.735	0.000	4.400	14.735
Leg1	g2XY	25.84	13.344	0.000	3.478	13.344
Leg1	g2Y	24.52	0.000	-11.986	-6.515	-11.986
Leg1	g1P	7.20	0.000	-3.852	-2.162	-3.852
Leg1	g1X	8.51	3.343	-0.152	-0.152	3.343
Leg1	g1XY	7.16	2.812	-0.792	-0.792	2.812
Leg1	g1Y	7.58	0.000	-4.054	-2.675	-4.054
Leg2	g9P	82.68	0.000	-60.714	-32.502	-60.714
Leg2	g9X	87.78	55.738	0.000	22.725	55.738
Leg2	g9XY	82.68	52.501	0.000	20.121	52.501
Leg2	g9Y	79.45	0.000	-58.344	-31.570	-58.344
Leg2	g8P	81.68	0.000	-60.678	-31.875	-60.678
Leg2	g8X	99.75	55.856	0.000	22.382	55.856
Leg2	g8XY	95.26	53.344	0.000	19.717	53.344
Leg2	g8Y	80.70	0.000	-59.949	-32.312	-59.949
Leg2	g7P	82.91	0.000	-54.346	-27.659	-54.346
Leg2	g7X	99.95	51.023	0.000	20.089	51.023
Leg2	g7XY	97.75	49.897	0.000	17.962	49.897
Leg2	g7Y	84.53	0.000	-55.406	-29.311	-55.406
Leg2	g12P	90.17	0.000	-68.334	-37.692	-68.334
Leg2	g12X	94.45	60.197	0.000	23.625	60.197
Leg2	g12XY	99.08	63.146	0.000	23.490	63.146
Leg2	g12Y	96.50	0.000	-73.135	-42.389	-73.135
Leg3	g11P	79.57	0.000	-68.054	-37.270	-68.054
Leg3	g11X	84.58	53.452	0.000	21.186	53.452
Leg3	g11XY	81.95	51.786	0.000	19.101	51.786
Leg3	g11Y	84.16	0.000	-71.976	-40.836	-71.976
Leg3	g10P	76.65	0.000	-65.736	-34.000	-65.736
Leg3	g10X	81.08	51.313	0.000	22.234	51.313
Leg3	g10XY	75.22	47.605	0.000	17.579	47.605
Leg3	g10Y	75.25	0.000	-64.534	-35.823	-64.534
PWMBrace	g98P	15.16	0.000	-2.547	-0.488	-2.547
PWMBrace	g98X	6.89	0.000	-1.157	-0.170	-1.157

PWMBrace	g96P	18.25	0.000	-1.813	-0.945	-1.813
PWMBrace	g96X	8.67	0.000	-0.861	-0.314	-0.861
PWMBrace	g93P	14.44	0.000	-1.864	-0.266	-1.864
PWMBrace	g93X	9.16	0.000	-1.183	-0.814	-1.183
PWMBrace	g91P	20.13	3.382	0.000	0.988	3.382
PWMBrace	g91X	25.10	0.000	-4.216	-2.760	-4.216
PWMBrace	g90P	13.38	2.249	-0.735	-0.735	2.249
PWMBrace	g90X	23.80	0.000	-3.998	-2.120	-3.998
PWMBrace	g81P	34.20	5.745	0.000	2.670	5.745
PWMBrace	g81X	29.52	0.000	-4.960	-0.885	-4.960
PWMount	g72P	0.70	0.000	-6.546	-6.546	-2.570
PWMount	g71P	0.90	0.000	-8.578	-8.578	-3.768
PWMount	g70P	1.04	0.000	-9.685	-9.685	-3.910
PWMount	g69P	1.31	0.000	-12.298	-12.298	-5.175
PWMount	g68P	1.68	0.000	-15.148	-15.148	-6.356
PWMount	g67P	1.94	0.000	-17.791	-17.791	-7.155
PWMount	g66P	2.80	0.000	-21.915	-21.915	-8.384
Plate	g97P	8.64	0.000	-2.066	-0.733	-2.066
Plate	g86P	2.16	0.000	-0.517	-0.517	-0.159
Plate	g85P	5.42	0.000	-1.295	-1.295	-0.813
Plate	g80P	3.45	0.825	0.000	0.825	0.349
XBrace1	g14P	5.72	0.000	-0.494	-0.322	-0.494
XBrace1	g14X	3.33	0.474	0.000	0.135	0.474
XBrace1	g14XY	1.20	0.000	-0.139	-0.138	-0.139
XBrace1	g14Y	2.97	0.000	-0.256	-0.256	-0.035
XBrace1	g13P	36.26	5.163	0.000	1.464	5.163
XBrace1	g13X	49.17	0.000	-5.683	-2.073	-5.683
XBrace1	g13XY	40.93	0.000	-4.731	-1.776	-4.731
XBrace1	g13Y	29.09	4.142	0.000	1.079	4.142
XBrace2	g24P	12.55	0.000	-1.755	-1.427	-1.755
XBrace2	g24X	9.36	1.699	0.000	0.356	1.699
XBrace2	g24XY	7.12	1.292	0.000	0.167	1.292
XBrace2	g24Y	9.06	0.000	-1.267	-1.158	-1.267
XBrace2	g23P	42.55	7.724	0.000	4.797	7.724
XBrace2	g23X	36.74	0.000	-6.975	-2.669	-6.975
XBrace2	g23XY	41.10	0.000	-7.803	-3.025	-7.803
XBrace2	g23Y	46.21	8.388	0.000	4.788	8.388
XBrace2	g22P	3.81	0.692	0.000	0.290	0.692
XBrace2	g22X	7.21	0.000	-1.008	-0.626	-1.008
XBrace2	g22XY	9.30	0.000	-1.301	-0.834	-1.301
XBrace2	g22Y	5.41	0.982	0.000	0.452	0.982
XBrace2	g21P	40.75	7.397	0.000	4.666	7.397
XBrace2	g21X	33.58	0.000	-6.375	-2.515	-6.375
XBrace2	g21XY	34.09	0.000	-6.473	-2.449	-6.473
XBrace2	g21Y	40.82	7.409	0.000	4.519	7.409
XBrace2	g16P	24.78	0.000	-3.033	-0.979	-3.033
XBrace2	g16X	18.00	0.000	-2.203	-1.504	-2.203
XBrace2	g16XY	28.53	0.000	-3.492	-1.964	-3.492
XBrace2	g16Y	14.00	0.000	-1.714	-0.558	-1.714
XBrace2	g15P	44.00	8.848	0.000	3.926	8.848
XBrace2	g15X	47.33	0.000	-8.177	-3.423	-8.177
XBrace2	g15XY	35.73	0.000	-6.172	-2.707	-6.172
XBrace2	g15Y	34.46	6.929	0.000	3.361	6.929
XBrace3	g26P	26.13	0.000	-2.816	-1.220	-2.816
XBrace3	g26X	22.26	2.739	0.000	1.375	2.739
XBrace3	g26XY	19.74	2.429	0.000	0.732	2.429
XBrace3	g26Y	29.83	0.000	-3.215	-1.695	-3.215
XBrace3	g25P	14.12	1.738	0.000	1.229	1.738
XBrace3	g25X	17.56	0.000	-2.178	-1.949	-2.178
XBrace3	g25XY	12.42	0.000	-1.339	-1.339	-1.012
XBrace3	g25Y	2.57	0.316	0.000	0.191	0.316
XBrace4	g30P	20.77	0.000	-1.433	-0.612	-1.433
XBrace4	g30X	7.17	1.304	0.000	0.678	1.304
XBrace4	g30XY	6.37	1.160	0.000	0.327	1.160
XBrace4	g30Y	24.10	0.000	-1.663	-0.900	-1.663
XBrace4	g29P	8.09	1.472	0.000	0.934	1.472
XBrace4	g29X	17.47	0.000	-1.581	-1.156	-1.581

XBrace4	g29XY	10.61	0.000	-0.960	-0.883	-0.960
XBrace4	g29Y	3.01	0.548	0.000	0.242	0.548
XBrace4	g28P	12.24	2.229	0.000	1.155	2.229
XBrace4	g28X	18.73	0.000	-1.646	-0.510	-1.646
XBrace4	g28XY	20.76	0.000	-1.825	-0.957	-1.825
XBrace4	g28Y	10.73	1.953	0.000	0.829	1.953
XBrace4	g27P	9.11	1.659	0.000	1.317	1.659
XBrace4	g27X	15.46	0.000	-1.735	-1.242	-1.735
XBrace4	g27XY	4.72	0.000	-0.530	-0.344	-0.530
XBrace4	g27Y	4.96	0.902	0.000	0.902	0.803
XBrace5	g32P	12.58	0.000	-0.283	-0.283	0.000
XBrace5	g32X	45.44	7.007	0.000	3.006	7.007
XBrace5	g32XY	43.49	6.707	0.000	2.364	6.707
XBrace5	g32Y	0.00	0.000	0.000	0.000	0.000
XBrace5	g31P	21.28	3.282	0.000	0.176	3.282
XBrace5	g31X	83.18	0.000	-1.870	-1.870	0.000
XBrace5	g31XY	0.00	0.000	0.000	0.000	0.000
XBrace5	g31Y	33.15	5.112	0.000	2.705	5.112
XBrace6	g34P	80.35	0.000	-0.854	-0.465	-0.854
XBrace6	g34X	53.39	6.608	0.000	2.961	6.608
XBrace6	g34XY	47.21	5.843	0.000	1.816	5.843
XBrace6	g34Y	0.00	0.000	0.000	0.000	0.000
XBrace6	g33P	26.28	3.253	0.000	1.878	3.253
XBrace6	g33X	0.00	0.000	0.000	0.000	0.000
XBrace6	g33XY	0.00	0.000	0.000	0.000	0.000
XBrace6	g33Y	68.81	8.516	0.000	4.120	8.516
XBrace7	g36P	1.40	0.000	-0.127	-0.112	-0.127
XBrace7	g36X	5.91	0.000	-0.537	-0.537	-0.396
XBrace7	g36XY	4.00	0.364	0.000	0.364	0.165
XBrace7	g36Y	8.29	0.000	-0.755	-0.305	-0.755
XBrace7	g35P	29.47	0.000	-2.681	-1.118	-2.681
XBrace7	g35X	23.23	2.114	0.000	0.766	2.114
XBrace7	g35XY	54.02	4.916	0.000	1.871	4.916
XBrace7	g35Y	60.36	0.000	-5.493	-2.230	-5.493
XBrace8	g20P	11.75	2.363	0.000	0.645	2.363
XBrace8	g20X	12.37	2.488	0.000	1.545	2.488
XBrace8	g20XY	19.03	3.827	0.000	2.103	3.827
XBrace8	g20Y	6.04	1.215	0.000	0.357	1.215
XBrace8	g19P	6.00	1.206	0.000	0.320	1.206
XBrace8	g19X	19.54	3.929	0.000	2.097	3.929
XBrace8	g19XY	12.82	2.577	0.000	1.609	2.577
XBrace8	g19Y	12.78	2.570	0.000	0.742	2.570
XBrace8	g18P	56.35	0.000	-9.735	-4.094	-9.735
XBrace8	g18X	43.82	8.811	0.000	3.476	8.811
XBrace8	g18XY	39.35	7.913	0.000	3.099	7.913
XBrace8	g18Y	51.18	0.000	-8.842	-3.899	-8.842
XBrace8	g17P	41.76	8.398	0.000	3.442	8.398
XBrace8	g17X	52.73	0.000	-9.109	-3.999	-9.109
XBrace8	g17XY	46.38	0.000	-8.012	-3.739	-8.012
XBrace8	g17Y	36.27	7.293	0.000	2.999	7.293

*** Analysis Results for Load Case No. 1 "NESC Heavy" - Number of iterations in SAPS 11

Equilibrium Joint Positions and Rotations for Load Case "NESC Heavy":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.01041	0.252	-0.02186	-0.3839	-0.0048	-0.0482	2.49	2.752	90.98
2P	-0.007838	0.2217	-0.02157	-0.3336	-0.0423	-0.0481	2.492	2.722	85.98
3P	-0.00477	0.1868	-0.0208	-0.3293	-0.0044	-0.0536	2.495	2.687	79.98
4P	-0.00224	0.1524	-0.01932	-0.3374	-0.0426	-0.0587	2.498	2.652	73.98
5P	0.001808	0.128	-0.01754	-0.2623	-0.0239	-0.0588	2.502	2.628	68.98
6P	0.001982	0.1046	-0.0153	-0.2595	-0.0089	-0.0590	2.502	2.605	63.98
7P	0	0	0	0.0000	0.0000	0.0000	11.5	11.5	0
18P	-0.001289	0.254	-0.09639	-0.3797	-0.0054	-0.0447	-0.001289	14	90.9
19P	-0.001776	0.2232	-0.07118	-0.4017	-0.0304	-0.0482	-0.001776	9.973	85.93
20P	0.009043	0.1534	-0.1116	-0.4988	-0.0125	-0.0537	0.009043	14.4	73.89
21P	0.00936	0.1066	-0.05747	-0.3317	-0.0117	-0.0499	0.00936	10.36	63.94
24P	-0.01245	0.254	-0.003976	-0.3872	-0.0669	-0.0380	-0.01245	0.254	91
25P	-0.01013	0.2239	-0.04074	0.0000	0.0000	0.0000	-0.01013	0.2239	85.96
26P	-0.004738	0.155	-0.003403	-0.2988	-0.0645	-0.0583	-0.004738	0.155	74
27P	-0.0004503	0.1069	-0.003094	-0.2353	-0.0647	-0.0403	-0.0004503	0.1069	64
29P	0.005219	0.02991	-0.002522	-0.0879	-0.1032	-0.0217	0.005219	0.02991	32
32P	-0.01689	0.3258	-0.003173	-0.4299	-0.0258	-0.0427	1.233	0.3258	101
33P	-0.01244	0.2531	-0.002809	-0.3872	-0.0257	-0.0426	1.238	0.2531	91
34P	-0.01018	0.221	-0.00264	-0.3509	-0.0264	-0.0433	1.24	0.221	86
35P	-0.004751	0.1538	-0.002274	-0.2988	-0.0252	-0.0448	1.245	0.1538	74
36P	-0.0004561	0.106	-0.001972	-0.2353	-0.0244	-0.0402	1.25	0.106	64
37P	0.005492	0.05499	-0.001494	-0.1192	-0.0093	-0.0310	1.255	0.05499	46.5
38P	0.005211	0.02944	-0.001079	-0.0879	0.0084	-0.0215	1.255	0.02944	32
39P	0	0	0	0.0000	0.0000	0.0000	1.25	0	0
1X	-0.01493	0.2518	0.007141	-0.2812	-0.0002	-0.0594	2.485	-2.248	91.01
1XY	-0.01449	0.2557	0.004621	-0.3295	-0.0150	-0.0485	-2.514	-2.244	91
1Y	-0.01025	0.256	-0.02425	-0.3444	-0.0256	-0.0490	-2.51	2.756	90.98
2X	-0.01206	0.2223	0.007242	-0.3473	-0.0307	-0.0532	2.488	-2.278	86.01
2XY	-0.01258	0.2265	0.004777	-0.3325	-0.0360	-0.0482	-2.513	-2.273	86
2Y	-0.008098	0.226	-0.02392	-0.3393	-0.0197	-0.0519	-2.508	2.726	85.98
3X	-0.01114	0.1859	0.006883	-0.3489	-0.0206	-0.0515	2.489	-2.314	80.01
3XY	-0.007981	0.1905	0.004516	-0.3484	-0.0289	-0.0494	-2.508	-2.309	80
3Y	-0.005424	0.1916	-0.02313	-0.3241	-0.0485	-0.0544	-2.505	2.692	79.98
4X	-0.006801	0.1529	0.006262	-0.2618	-0.0123	-0.0497	2.493	-2.347	74.01
4XY	-0.007112	0.1578	0.004034	-0.2857	-0.0212	-0.0505	-2.507	-2.342	74
4Y	-0.002337	0.1572	-0.0216	-0.3147	0.0058	-0.0574	-2.502	2.657	73.98
5X	-0.006339	0.1262	0.005226	-0.2986	-0.0308	-0.0553	2.494	-2.374	69.01
5XY	-0.003382	0.1309	0.003134	-0.2884	-0.0248	-0.0473	-2.503	-2.369	69
5Y	-0.001913	0.133	-0.01972	-0.2745	-0.0348	-0.0604	-2.502	2.633	68.98
6X	-0.002631	0.1048	0.003889	-0.1940	-0.0083	-0.0610	2.497	-2.395	64
6XY	-0.003175	0.1095	0.001957	-0.2176	-0.0169	-0.0442	-2.503	-2.39	64
6Y	0.002174	0.1092	-0.01732	-0.2392	-0.0225	-0.0636	-2.498	2.609	63.98
7X	0	0	0	0.0000	0.0000	0.0000	11.5	-11.5	0
7XY	0	0	0	0.0000	0.0000	0.0000	-11.5	-11.5	0
7Y	0	0	0	0.0000	0.0000	0.0000	-11.5	11.5	0
18X	-0.02367	0.2538	0.06456	-0.2946	0.0019	-0.0415	-0.02367	-13.5	91.06
19X	-0.01846	0.2255	0.0426	-0.2645	-0.0360	-0.0474	-0.01846	-9.525	86.04
20X	-0.01838	0.1569	0.04041	-0.1214	-0.0113	-0.0584	-0.01838	-14.09	74.04
21X	-0.01017	0.1079	0.03265	-0.2256	-0.0086	-0.0542	-0.01017	-10.14	64.03
8S	0.005962	0.08597	-0.01525	-0.1744	-0.0434	-0.0584	3.209	3.289	58.98
9S	0.008919	0.06714	-0.0146	-0.1515	-0.0153	-0.0594	4.056	4.114	52.99
10S	0.01079	0.05098	-0.01343	-0.1161	-0.0019	-0.0612	4.972	5.012	46.49
11S	0.009385	0.02578	-0.01098	-0.0768	0.0160	-0.0304	7.009	7.026	31.99
12S	-6.364e-05	0.0004337	-0.005578	-0.0278	0.0107	0.0431	10.09	10.09	9.994
13S	0.008471	0.0004594	0.001089	-0.0325	-0.0226	0.0540	10.1	0.0004594	10
14S	-4.687e-05	-0.009592	-0.001471	-0.0321	-0.0058	0.0002	-4.687e-05	10.08	9.999
15S	-0.004532	0.1697	-0.02009	-0.3260	-0.0247	-0.0561	2.495	2.67	76.98
16S	-0.003729	0.1098	-0.02074	0.0000	0.0000	0.0000	-0.003729	2.61	76.98

17S	-0.006321	0.1689	-0.006461	0.0000	0.0000	0.0000	2.494	0.1689	76.99	
8X	-0.003088	0.08553	0.005078	-0.1978	-0.0087	-0.0717	3.2	-3.118	59.01	
8XY	-0.000729	0.09189	0.002784	-0.1878	-0.0321	-0.0365	-3.204	-3.111	59	
8Y	0.003112	0.09245	-0.01759	-0.1750	0.0034	-0.0657	-3.2	3.296	58.98	
9X	-0.001577	0.06693	0.005929	-0.1448	-0.0256	-0.0741	4.045	-3.98	53.01	
9XY	-0.0001432	0.07511	0.003319	-0.1415	-0.0074	-0.0349	-4.047	-3.972	53	
9Y	0.005967	0.07572	-0.01743	-0.1511	-0.0262	-0.0691	-4.041	4.123	52.98	
10X	-0.0003873	0.05068	0.006195	-0.1066	-0.0123	-0.0840	4.961	-4.91	46.51	
10XY	0.000552	0.06125	0.00323	-0.1093	-0.0169	-0.0255	-4.96	-4.9	46.5	
10Y	0.01042	0.06092	-0.01705	-0.1281	-0.0191	-0.0669	-4.951	5.022	46.48	
11X	0.0005928	0.02572	0.005823	-0.0646	-0.0069	-0.0975	7.001	-6.974	32.01	
11XY	0.001615	0.03379	0.003774	-0.0929	0.0072	0.0938	-6.998	-6.966	32	
11Y	0.009093	0.03303	-0.01425	-0.1098	0.0412	-0.0518	-6.991	7.033	31.99	
12X	-0.0002484	0.0007748	0.003385	0.0053	-0.0560	-0.2625	10.09	-10.09	10	
12XY	0.0008215	0.001626	0.003164	-0.0005	0.0599	0.2630	-10.09	-10.09	10	
12Y	-5.898e-05	0.001008	-0.006181	-0.0360	0.0021	-0.0536	-10.09	10.09	9.994	
13Y	-0.008847	0.001	0.001139	-0.0306	0.0310	-0.0485	-10.1	0.001	10	
14X	0.0002199	0.07165	-0.01039	0.0004	-0.0019	-0.0037	0.0002199	-10.02	9.99	
15X	-0.009107	0.1681	0.006549	-0.3204	-0.0540	-0.0505	2.491	-2.332	77.01	
15XY	-0.007313	0.173	0.004251	-0.3108	-0.0005	-0.0501	-2.507	-2.327	77	
15Y	-0.002794	0.1745	-0.02239	-0.3325	-0.0338	-0.0558	-2.503	2.674	76.98	
16X	-0.008152	0.2332	0.004363	0.0000	0.0000	0.0000	-0.008152	-2.267	77	
17Y	-0.005644	0.1737	-0.008707	0.0000	0.0000	0.0000	-2.506	0.1737	76.99	

Joint Support Reactions for Load Case "NESC Heavy":

Joint Label	X Force (kips)	X Usage %(kips)	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
7P	-5.37	0.0	-6.03	0.0	0.0	-37.97	0.0	0.0	38.82	0.0	-0.06	0.0	0.1	0.0	0.0	-0.04	0.0	0.0
39P	-0.14	0.0	-0.95	0.0	0.0	-24.10	0.0	0.0	24.12	0.0	10.53	0.0	-2.9	0.0	0.0	1.24	0.0	0.0
7X	2.91	0.0	-3.89	0.0	0.0	23.13	0.0	0.0	23.64	0.0	-0.10	0.0	-0.0	0.0	0.0	0.25	0.0	0.0
7XY	-3.67	0.0	-4.80	0.0	0.0	24.31	0.0	0.0	25.05	0.0	-0.08	0.0	0.0	0.0	0.0	-0.26	0.0	0.0
7Y	6.27	0.0	-7.53	0.0	0.0	-43.43	0.0	0.0	44.52	0.0	-0.06	0.0	-0.1	0.0	0.0	0.06	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Heavy":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.0000	-0.1462	-0.0000	0.0000	0.1462	-0.0104	0.2520	-0.0219
2P	0.0000	0.0000	-0.1777	0.0000	0.0000	0.1777	-0.0078	0.2217	-0.0216
3P	0.0000	0.0000	-0.1034	0.0000	0.0000	0.1034	-0.0048	0.1868	-0.0208
4P	0.0000	0.0000	-0.1875	-0.0000	0.0000	0.1875	-0.0022	0.1524	-0.0193
5P	0.0000	0.0000	-0.1316	0.0000	0.0000	0.1316	0.0018	0.1280	-0.0175
6P	0.0000	0.0000	-0.1962	0.0000	0.0000	0.1962	0.0020	0.1046	-0.0153
7P	0.0000	0.0000	-0.1927	5.3691	6.0316	-37.7767	0.0000	0.0000	0.0000
18P	0.0000	0.8230	-0.9962	-0.0000	-0.8230	0.9962	-0.0013	0.2540	-0.0964
19P	0.0000	1.3050	-2.1535	-0.0000	-1.3050	2.1535	-0.0018	0.2232	-0.0712
20P	0.0000	1.3050	-2.1840	-0.0000	-1.3050	2.1840	0.0090	0.1534	-0.1116
21P	0.0000	1.3050	-2.1423	-0.0000	-1.3050	2.1423	0.0094	0.1066	-0.0575
24P	0.0000	0.0000	-0.0387	-0.0000	-0.0000	0.0387	-0.0125	0.2540	-0.0040
25P	0.0000	0.0000	-0.0236	-0.0000	0.0000	0.0236	-0.0101	0.2239	-0.0407
26P	0.0000	0.0000	-0.0387	0.0000	-0.0000	0.0387	-0.0047	0.1550	-0.0034
27P	0.0000	0.0000	-0.0387	-0.0000	-0.0000	0.0387	-0.0005	0.1069	-0.0031
29P	0.0000	0.0000	-0.1056	-0.0000	-0.0000	0.1056	0.0052	0.0299	-0.0025
32P	0.0000	2.0087	-6.5604	0.0000	-2.0087	6.5604	-0.0169	0.3258	-0.0032
33P	0.0000	0.3250	-1.1787	0.0000	-0.3250	1.1787	-0.0124	0.2531	-0.0028
34P	0.0000	0.3683	-1.1092	-0.0000	-0.3683	1.1092	-0.0102	0.2210	-0.0026
35P	0.0000	0.4767	-1.7294	-0.0000	-0.4767	1.7294	-0.0048	0.1538	-0.0023
36P	0.0000	0.5958	-2.0923	0.0000	-0.5958	2.0923	-0.0005	0.1060	-0.0020
37P	0.0000	0.7078	-2.5643	0.0000	-0.7078	2.5643	0.0055	0.0550	-0.0015
38P	0.0000	1.0540	-4.0173	0.0000	-1.0540	4.0173	0.0052	0.0294	-0.0011

39P	0.0000	0.7253	-2.1872	0.1394	0.2251	-21.9154	0.0000	0.0000	0.0000
1X	0.0000	0.0672	-0.1462	-0.0000	-0.0672	0.1462	-0.0149	0.2518	0.0071
1XY	0.0000	0.1832	-0.4432	0.0000	-0.1832	0.4432	-0.0145	0.2557	0.0046
1Y	0.0000	0.1160	-0.4432	0.0000	-0.1160	0.4432	-0.0103	0.2560	-0.0242
2X	0.0000	0.1182	-0.1777	0.0000	-0.1182	0.1777	-0.0121	0.2223	0.0072
2XY	0.0000	0.1182	-0.1777	-0.0000	-0.1182	0.1777	-0.0126	0.2265	0.0048
2Y	0.0000	0.0000	-0.1777	-0.0000	0.0000	0.1777	-0.0081	0.2260	-0.0239
3X	0.0000	0.0963	-0.1034	-0.0000	-0.0963	0.1034	-0.0111	0.1859	0.0069
3XY	0.0000	0.2853	-0.6094	0.0000	-0.2853	0.6094	-0.0080	0.1905	0.0045
3Y	0.0000	0.1890	-0.6094	-0.0000	-0.1890	0.6094	-0.0054	0.1916	-0.0231
4X	0.0000	0.0998	-0.1875	-0.0000	-0.0998	0.1875	-0.0068	0.1529	0.0063
4XY	0.0000	0.0998	-0.1746	0.0000	-0.0998	0.1746	-0.0071	0.1578	0.0040
4Y	0.0000	0.0000	-0.1746	0.0000	0.0000	0.1746	-0.0023	0.1572	-0.0216
5X	0.0000	0.1249	-0.1316	-0.0000	-0.1249	0.1316	-0.0063	0.1262	0.0052
5XY	0.0000	0.4159	-0.9096	0.0000	-0.4159	0.9096	-0.0034	0.1309	0.0031
5Y	0.0000	0.2910	-0.9096	0.0000	-0.2910	0.9096	-0.0019	0.1330	-0.0197
6X	0.0000	0.1139	-0.1962	0.0000	-0.1139	0.1962	-0.0026	0.1048	0.0039
6XY	0.0000	0.1139	-0.1832	-0.0000	-0.1139	0.1832	-0.0032	0.1095	0.0020
6Y	0.0000	0.0000	-0.1832	-0.0000	0.0000	0.1832	0.0022	0.1092	-0.0173
7X	0.0000	0.1328	-0.1927	-2.9081	3.7621	23.3257	0.0000	0.0000	0.0000
7XY	0.0000	0.1328	-0.1927	3.6713	4.6656	24.5027	0.0000	0.0000	0.0000
7Y	0.0000	0.0000	-0.1927	-6.2717	7.5302	-43.2353	0.0000	0.0000	0.0000
18X	0.0000	1.0682	-1.4992	-0.0000	-1.0682	1.4992	-0.0237	0.2538	0.0646
19X	0.0000	1.2817	-2.1585	-0.0000	-1.2817	2.1585	-0.0185	0.2255	0.0426
20X	0.0000	1.2602	-2.1890	-0.0000	-1.2602	2.1890	-0.0184	0.1569	0.0404
21X	0.0000	1.2648	-2.1473	-0.0000	-1.2648	2.1473	-0.0102	0.1079	0.0326
8S	0.0000	0.0000	-0.1426	0.0000	0.0000	0.1426	0.0060	0.0860	-0.0153
9S	0.0000	0.0000	-0.1715	0.0000	0.0000	0.1715	0.0089	0.0671	-0.0146
10S	0.0000	0.0000	-0.3688	0.0000	0.0000	0.3688	0.0108	0.0510	-0.0134
11S	0.0000	0.0000	-0.6559	0.0000	0.0000	0.6559	0.0094	0.0258	-0.0110
12S	0.0000	0.0000	-0.4450	0.0000	-0.0000	0.4450	-0.0001	0.0004	-0.0056
13S	0.0000	0.0000	-0.2203	0.0000	-0.0000	0.2203	0.0085	0.0005	0.0011
14S	0.0000	0.0000	-0.2203	-0.0000	-0.0000	0.2203	-0.0000	-0.0096	-0.0015
15S	0.0000	0.0000	-0.0529	-0.0000	0.0000	0.0529	-0.0045	0.1697	-0.0201
16S	0.0000	0.0000	-0.0461	-0.0000	0.0000	0.0461	-0.0037	0.1098	-0.0207
17S	0.0000	0.0000	-0.0437	0.0000	0.0000	0.0437	-0.0063	0.1689	-0.0065
8X	0.0000	0.1126	-0.1426	0.0000	-0.1126	0.1426	-0.0031	0.0855	0.0051
8XY	0.0000	0.1126	-0.1426	0.0000	-0.1126	0.1426	-0.0007	0.0919	0.0028
8Y	0.0000	0.0000	-0.1426	0.0000	0.0000	0.1426	0.0031	0.0925	-0.0176
9X	0.0000	0.1378	-0.1715	0.0000	-0.1378	0.1715	-0.0016	0.0669	0.0059
9XY	0.0000	0.1378	-0.1715	0.0000	-0.1378	0.1715	-0.0001	0.0751	0.0033
9Y	0.0000	0.0000	-0.1715	0.0000	0.0000	0.1715	0.0060	0.0757	-0.0174
10X	0.0000	0.2363	-0.3688	0.0000	-0.2363	0.3688	-0.0004	0.0507	0.0062
10XY	0.0000	0.5573	-1.2359	-0.0000	-0.5573	1.2359	0.0006	0.0613	0.0032
10Y	0.0000	0.3210	-1.2359	-0.0000	-0.3210	1.2359	0.0104	0.0609	-0.0170
11X	0.0000	0.3840	-0.6559	-0.0000	-0.3840	0.6559	0.0006	0.0257	0.0058
11XY	0.0000	0.7010	-1.4608	-0.0000	-0.7010	1.4608	0.0016	0.0338	0.0038
11Y	0.0000	0.3170	-1.4608	0.0000	-0.3170	1.4608	0.0091	0.0330	-0.0142
12X	0.0000	0.3094	-0.4450	0.0000	-0.3094	0.4450	-0.0002	0.0008	0.0034
12XY	0.0000	0.5894	-1.1950	-0.0000	-0.5894	1.1950	0.0008	0.0016	0.0032
12Y	0.0000	0.2800	-1.1950	-0.0000	-0.2800	1.1950	-0.0001	0.0010	-0.0062
13Y	0.0000	0.0000	-0.2203	-0.0000	-0.0000	0.2203	-0.0088	0.0010	0.0011
14X	0.0000	0.2655	-0.2203	-0.0000	-0.2655	0.2203	0.0002	0.0717	-0.0104
15X	0.0000	0.0477	-0.0529	-0.0000	-0.0477	0.0529	-0.0091	0.1681	0.0065
15XY	0.0000	0.0477	-0.0529	0.0000	-0.0477	0.0529	-0.0073	0.1730	0.0043
15Y	0.0000	0.0000	-0.0529	0.0000	0.0000	0.0529	-0.0028	0.1745	-0.0224
16X	0.0000	0.0753	-0.0461	-0.0000	-0.0753	0.0461	-0.0082	0.2332	0.0044
17Y	0.0000	0.0000	-0.0437	-0.0000	0.0000	0.0437	-0.0056	0.1737	-0.0087

Crossing Diagonal Check for Load Case "NESC Heavy" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R Curve No.	Alternate Unsupported L/R RLOUT Cap. (kips)	Alternate Unsupported L/R	Alternate Unsupported KL/R Curve No.

g14P	g14Y	Short only	-0.32	-0.26	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Short only	-0.26	-0.32	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g24P	g24Y	Long only	-1.43	-1.16	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g24Y	g24P	Long only	-1.16	-1.43	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22X	g22XY	Long only	-0.63	-0.83	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22XY	g22X	Long only	-0.83	-0.63	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g16P	g16Y	Long only	-0.98	-0.56	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16X	g16XY	Long only	-1.50	-1.96	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-1.96	-1.50	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16Y	g16P	Long only	-0.56	-0.98	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g26P	g26Y	Short only	-1.22	-1.69	12.40	0.781	0.561	0.561	130.15	127.77	5	10.78	1.000	148.14	137.31	6
g26Y	g26P	Short only	-1.69	-1.22	12.40	0.781	0.561	0.561	130.15	127.77	5	10.78	1.000	148.14	137.31	6
g25XY	g25Y	Short only	-1.34	0.19	12.40	0.781	0.561	0.561	130.15	127.77	5	10.78	1.000	148.14	137.31	6
g30P	g30Y	Long only	-0.61	-0.90	9.05	0.549	0.774	0.549	172.54	160.07	5	6.90	1.000	222.91	183.29	6
g30Y	g30P	Long only	-0.90	-0.61	9.05	0.549	0.774	0.549	172.54	160.07	5	6.90	1.000	222.91	183.29	6
g28X	g28XY	Long only	-0.51	-0.96	11.22	0.569	0.785	0.569	151.09	143.73	5	8.79	1.000	188.97	162.42	6
g28XY	g28X	Long only	-0.96	-0.51	11.22	0.569	0.785	0.569	151.09	143.73	5	8.79	1.000	188.97	162.42	6

Summary of Clamp Capacities and Usages for Load Case "NESC Heavy":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
1	1.292	50.00	50.00	2.58	0.00	0.00	0.00	2.58
2	1.841	50.00	50.00	3.68	0.00	0.00	0.00	3.68
3	2.518	50.00	50.00	5.04	0.00	0.00	0.00	5.04
4	2.510	50.00	50.00	5.02	0.00	0.00	0.00	5.02
5	2.544	50.00	50.00	5.09	0.00	0.00	0.00	5.09
6	2.526	50.00	50.00	5.05	0.00	0.00	0.00	5.05
7	2.508	50.00	50.00	5.02	0.00	0.00	0.00	5.02
8	2.492	50.00	50.00	4.98	0.00	0.00	0.00	4.98
9	6.861	50.00	50.00	13.72	0.00	0.00	0.00	13.72
10	0.480	50.00	50.00	0.96	0.00	0.00	0.00	0.96
11	0.673	50.00	50.00	1.35	0.00	0.00	0.00	1.35
12	1.000	50.00	50.00	2.00	0.00	0.00	0.00	2.00
13	0.182	50.00	50.00	0.36	0.00	0.00	0.00	0.36
14	1.356	50.00	50.00	2.71	0.00	0.00	0.00	2.71
15	1.620	50.00	50.00	3.24	0.00	0.00	0.00	3.24
16	1.332	50.00	50.00	2.66	0.00	0.00	0.00	2.66
17	0.161	50.00	50.00	0.32	0.00	0.00	0.00	0.32
18	0.141	50.00	50.00	0.28	0.00	0.00	0.00	0.28
19	0.181	50.00	50.00	0.36	0.00	0.00	0.00	0.36
20	0.182	50.00	50.00	0.36	0.00	0.00	0.00	0.36
21	0.438	50.00	50.00	0.88	0.00	0.00	0.00	0.88
22	0.760	50.00	50.00	1.52	0.00	0.00	0.00	1.52
23	0.542	50.00	50.00	1.08	0.00	0.00	0.00	1.08
24	1.223	50.00	50.00	2.45	0.00	0.00	0.00	2.45
25	1.169	50.00	50.00	2.34	0.00	0.00	0.00	2.34
26	1.794	50.00	50.00	3.59	0.00	0.00	0.00	3.59
27	2.175	50.00	50.00	4.35	0.00	0.00	0.00	4.35
28	2.660	50.00	50.00	5.32	0.00	0.00	0.00	5.32
29	4.153	50.00	50.00	8.31	0.00	0.00	0.00	8.31
37	0.458	50.00	50.00	0.92	0.00	0.00	0.00	0.92
38	0.638	50.00	50.00	1.28	0.00	0.00	0.00	1.28
39	0.955	50.00	50.00	1.91	0.00	0.00	0.00	1.91
40	1.277	50.00	50.00	2.55	0.00	0.00	0.00	2.55
41	1.495	50.00	50.00	2.99	0.00	0.00	0.00	2.99
42	1.227	50.00	50.00	2.45	0.00	0.00	0.00	2.45

*** Analysis Results for Load Case No. 2 "NESC Extreme" - Number of iterations in SAPS 13

Equilibrium Joint Positions and Rotations for Load Case "NESC Extreme":

Joint Label	X-Displ (ft)	Y-Displ (ft)	Z-Displ (ft)	X-Rot (deg)	Y-Rot (deg)	Z-Rot (deg)	X-Pos (ft)	Y-Pos (ft)	Z-Pos (ft)
1P	-0.005572	0.5443	-0.03992	-0.7942	-0.0160	-0.0756	2.494	3.044	90.96
2P	-0.003609	0.4761	-0.03912	-0.7618	-0.0393	-0.0701	2.496	2.976	85.96
3P	-0.0005527	0.3967	-0.03724	-0.7555	0.0189	-0.0727	2.499	2.897	79.96
4P	0.001472	0.3214	-0.03378	-0.6879	-0.0770	-0.0734	2.501	2.821	73.97
5P	0.00809	0.2663	-0.02996	-0.5930	-0.0166	-0.0802	2.508	2.766	68.97
6P	0.005731	0.2176	-0.02543	-0.5131	-0.0063	-0.0868	2.506	2.718	63.97
7P	0	0	0	0.0000	0.0000	0.0000	11.5	11.5	0
18P	0.005445	0.5458	-0.1951	-0.7883	-0.0130	-0.0501	0.005445	14.3	90.8
19P	0.004679	0.4783	-0.1402	-0.8015	-0.0216	-0.0641	0.004679	10.23	85.86
20P	0.01963	0.324	-0.1884	-0.7752	-0.0122	-0.0918	0.01963	14.57	73.81
21P	0.017	0.2208	-0.1057	-0.6266	-0.0139	-0.0785	0.017	10.47	63.89
24P	-0.008758	0.5473	-0.006318	-0.9287	-0.1864	-0.0338	-0.008758	0.5473	90.99
25P	-0.006635	0.4786	-0.06835	0.0000	0.0000	0.0000	-0.006635	0.4786	85.93
26P	-0.001714	0.3251	-0.004719	-0.6467	-0.1843	-0.1010	-0.001714	0.3251	74
27P	0.002342	0.2208	-0.004098	-0.5055	-0.1847	-0.0529	0.002342	0.2208	64
29P	0.009194	0.0583	-0.006088	-0.1850	-0.3907	-0.0520	0.009194	0.0583	31.99
32P	-0.01273	0.7259	-0.005068	-1.0755	-0.0238	-0.0562	1.237	0.7259	101
33P	-0.008758	0.5464	-0.003418	-0.9286	-0.0237	-0.0561	1.241	0.5464	91
34P	-0.006708	0.4712	-0.002823	-0.8030	-0.0242	-0.0596	1.243	0.4712	86
35P	-0.001727	0.3231	-0.001836	-0.6465	-0.0240	-0.0679	1.248	0.3231	74
36P	0.002336	0.2196	-0.001222	-0.5053	-0.0243	-0.0605	1.252	0.2196	64
37P	0.008628	0.1121	-0.0007214	-0.2525	-0.0132	-0.0508	1.259	0.1121	46.5
38P	0.009161	0.05725	-0.0004601	-0.1847	0.0093	-0.0402	1.259	0.05725	32
39P	0	0	0	0.0000	0.0000	0.0000	1.25	0	0
1X	-0.01212	0.5446	0.02534	-0.7040	0.0117	-0.0825	2.488	-1.955	91.03
1XY	-0.01158	0.5495	0.0229	-0.7591	-0.0088	-0.0667	-2.512	-1.951	91.02
1Y	-0.005888	0.5492	-0.04195	-0.7675	-0.0298	-0.0645	-2.506	3.049	90.96
2X	-0.00958	0.4768	0.0255	-0.7788	-0.0176	-0.0726	2.49	-2.023	86.03
2XY	-0.009749	0.4827	0.02309	-0.7549	-0.0490	-0.0690	-2.51	-2.017	86.02
2Y	-0.003694	0.4819	-0.04114	-0.7572	-0.0129	-0.0680	-2.504	2.982	85.96
3X	-0.01048	0.3967	0.02446	-0.7598	-0.0329	-0.0747	2.49	-2.103	80.02
3XY	-0.004041	0.4037	0.02219	-0.7530	-0.0093	-0.0752	-2.504	-2.096	80.02
3Y	-0.001387	0.4039	-0.03935	-0.7438	-0.0706	-0.0734	-2.501	2.904	79.96
4X	-0.004961	0.3218	0.02255	-0.6334	0.0082	-0.0772	2.495	-2.178	74.02
4XY	-0.005177	0.3295	0.02046	-0.6557	-0.0382	-0.0806	-2.505	-2.171	74.02
4Y	0.002098	0.329	-0.03598	-0.6662	0.0409	-0.0810	-2.498	2.829	73.96
5X	-0.006896	0.2658	0.01964	-0.6199	-0.0345	-0.0842	2.493	-2.234	69.02
5XY	0.000521	0.2731	0.0177	-0.6138	-0.0167	-0.0780	-2.499	-2.227	69.02
5Y	-0.0001854	0.2738	-0.03216	-0.6088	-0.0417	-0.0803	-2.5	2.774	68.97
6X	-0.0009954	0.2178	0.01599	-0.4589	-0.0087	-0.0914	2.499	-2.282	64.02
6XY	-0.001847	0.2248	0.01412	-0.4858	-0.0154	-0.0755	-2.502	-2.275	64.01
6Y	0.006508	0.2245	-0.02753	-0.4956	-0.0303	-0.0802	-2.493	2.724	63.97
7X	0	0	0	0.0000	0.0000	0.0000	11.5	-11.5	0
7XY	0	0	0	0.0000	0.0000	0.0000	-11.5	-11.5	0
7Y	0	0	0	0.0000	0.0000	0.0000	-11.5	11.5	0
18X	-0.023	0.5481	0.1722	-0.7643	0.0109	-0.0481	-0.023	-13.2	91.17
19X	-0.01797	0.4809	0.1194	-0.7419	-0.0387	-0.0626	-0.01797	-9.269	86.12
20X	-0.023	0.3272	0.1504	-0.6180	-0.0099	-0.0916	-0.023	-13.92	74.15
21X	-0.0123	0.2222	0.08952	-0.5876	-0.0061	-0.0787	-0.0123	-10.03	64.09
8S	0.01187	0.1781	-0.0259	-0.3820	-0.0651	-0.0948	3.215	3.381	58.97
9S	0.01509	0.1394	-0.02534	-0.3113	-0.0058	-0.0995	4.062	4.186	52.97
10S	0.01671	0.1058	-0.02385	-0.2478	-0.0029	-0.1147	4.978	5.067	46.48
11S	0.01795	0.04957	-0.01953	-0.1501	0.0280	-0.1441	7.018	7.05	31.98
12S	-0.0006123	0.001275	-0.01011	-0.0075	0.0939	-0.3463	10.09	10.1	9.99
13S	-0.005332	0.001169	-0.0009105	-0.0764	-0.0067	0.1923	10.09	0.001169	9.999
14S	-0.000153	0.0945	0.01259	-0.0100	-0.0083	-0.0070	-0.000153	10.19	10.01
15S	-0.001788	0.3578	-0.03551	-0.7178	-0.0158	-0.0732	2.498	2.858	76.96
16S	0.0005479	0.4663	-0.03759	0.0000	0.0000	0.0000	0.0005479	2.966	76.96

17S	0.002525	0.3576	-0.005883	0.0000	0.0000	0.0000	2.503	0.3576	76.99
8X	-0.003572	0.1782	0.01755	-0.3985	0.0115	-0.1057	3.2	-3.025	59.02
8XY	0.002158	0.1877	0.01518	-0.3847	-0.0568	-0.0612	-3.201	-3.015	59.02
8Y	0.006094	0.1877	-0.02837	-0.3773	0.0200	-0.0699	-3.197	3.391	58.97
9X	-0.001959	0.1393	0.01837	-0.3085	-0.0356	-0.1097	4.045	-3.908	53.02
9XY	0.002052	0.1516	0.0156	-0.3059	0.0001	-0.0540	-4.045	-3.895	53.02
9Y	0.009808	0.152	-0.02844	-0.3085	-0.0413	-0.0632	-4.037	4.199	52.97
10X	-0.0003128	0.1059	0.01797	-0.2348	-0.0155	-0.1279	4.961	-4.855	46.52
10XY	0.001629	0.1214	0.01488	-0.2341	-0.0153	-0.0329	-4.959	-4.84	46.51
10Y	0.01595	0.1209	-0.02794	-0.2496	-0.0367	-0.0443	-4.945	5.082	46.47
11X	-8.608e-05	0.04989	0.01665	-0.1484	-0.0047	-0.1687	7	-6.95	32.02
11XY	0.002444	0.06605	0.014	-0.1788	0.0061	0.1604	-6.998	-6.934	32.01
11Y	0.01733	0.06485	-0.02418	-0.1816	0.0300	0.1258	-6.983	7.065	31.98
12X	-0.001382	0.001709	0.008556	-0.0044	-0.1083	-0.4370	10.09	-10.09	10.01
12XY	0.001716	0.003794	0.008656	-0.0223	0.1117	0.4332	-10.09	-10.09	10.01
12Y	0.0001962	0.002795	-0.01056	-0.0228	-0.0682	0.3484	-10.09	10.1	9.989
13Y	0.005869	0.002538	-0.0009891	-0.0704	0.0212	-0.1887	-10.09	0.002538	9.999
14X	0.0001367	0.1323	-0.01957	-0.0211	-0.0005	-0.0079	0.0001367	-9.961	9.98
15X	-0.007146	0.3575	0.02351	-0.7226	-0.0734	-0.0752	2.493	-2.143	77.02
15XY	-0.005079	0.365	0.02133	-0.7106	0.0267	-0.0785	-2.505	-2.135	77.02
15Y	0.002589	0.3653	-0.03766	-0.7199	-0.0431	-0.0768	-2.497	2.865	76.96
16X	-0.006006	0.431	0.02018	0.0000	0.0000	0.0000	-0.006006	-2.069	77.02
17Y	-0.01108	0.3651	-0.008024	0.0000	0.0000	0.0000	-2.511	0.3651	76.99

Joint Support Reactions for Load Case "NESC Extreme":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Usage %	Uplift Usage %	Result. Force (kips)	Result. Usage %	X Moment (ft-k)	X-M. Usage %	Y Moment (ft-k)	Y-M. Usage %	H-Bend-M Usage %	Z Moment (ft-k)	Z-M. Usage %	Max. Usage %
7P	-9.73	0.0	-11.88	0.0	0.0	-69.24	0.0	0.0	70.92	0.0	-0.20	0.0	0.2	0.0	0.0	0.34	0.0	0.0
39P	-0.33	0.0	-0.74	0.0	0.0	-8.76	0.0	0.0	8.79	0.0	18.44	0.0	-5.9	0.0	0.0	2.33	0.0	0.0
7X	8.17	0.0	-10.28	0.0	0.0	59.80	0.0	0.0	61.23	0.0	-0.20	0.0	-0.1	0.0	0.0	0.42	0.0	0.0
7XY	-9.26	0.0	-12.87	0.0	0.0	64.89	0.0	0.0	66.80	0.0	-0.16	0.0	0.1	0.0	0.0	-0.42	0.0	0.0
7Y	11.14	0.0	-14.70	0.0	0.0	-76.19	0.0	0.0	78.39	0.0	-0.17	0.0	-0.1	0.0	0.0	-0.33	0.0	0.0

Joint Displacements, Loads and Member Forces on Joints for Load Case "NESC Extreme":

Joint Label	X External Load (kips)	Y External Load (kips)	Z External Load (kips)	X Member Force (kips)	Y Member Force (kips)	Z Member Force (kips)	X Disp. (ft)	Y Disp. (ft)	Z Disp. (ft)
1P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0056	0.5443	-0.0399
2P	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0036	0.4761	-0.0391
3P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0006	0.3967	-0.0372
4P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0015	0.3214	-0.0338
5P	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0081	0.2663	-0.0300
6P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0057	0.2176	-0.0254
7P	0.0000	0.4734	-0.3710	9.7314	11.4090	-68.8676	0.0000	0.0000	0.0000
18P	0.0000	0.7686	-0.3697	-0.0000	-0.7686	0.3697	0.0054	0.5458	-0.1951
19P	0.0000	1.8266	-0.9107	0.0000	-1.8266	0.9107	0.0047	0.4783	-0.1402
20P	0.0000	1.8266	-0.9107	-0.0000	-1.8266	0.9107	0.0196	0.3240	-0.1884
21P	0.0000	1.8266	-0.9107	-0.0000	-1.8266	0.9107	0.0170	0.2208	-0.1057
24P	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0088	0.5473	-0.0063
25P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0066	0.4786	-0.0684
26P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0017	0.3251	-0.0047
27P	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0023	0.2208	-0.0041
29P	0.0000	0.4734	-0.3710	-0.0000	-0.4734	0.3710	0.0092	0.0583	-0.0061
32P	0.0000	7.0226	-2.6967	-0.0000	-7.0226	2.6967	-0.0127	0.7259	-0.0051
33P	0.0000	0.1986	-0.2597	-0.0000	-0.1986	0.2597	-0.0088	0.5464	-0.0034
34P	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0067	0.4712	-0.0028
35P	0.0000	0.1986	-0.3217	0.0000	-0.1986	0.3217	-0.0017	0.3231	-0.0018
36P	0.0000	0.1986	-0.3257	-0.0000	-0.1986	0.3257	0.0023	0.2196	-0.0012
37P	0.0000	0.6720	-0.7248	0.0000	-0.6720	0.7248	0.0086	0.1121	-0.0007
38P	0.0000	0.4734	-0.8610	0.0000	-0.4734	0.8610	0.0092	0.0573	-0.0005

39P	0.0000	0.4734	-0.3710	0.3259	0.2694	-8.3848	0.0000	0.0000	0.0000
1X	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0121	0.5446	0.0253
1XY	0.0000	0.5306	-0.2377	-0.0000	-0.5306	0.2377	-0.0116	0.5495	0.0229
1Y	0.0000	0.5306	-0.2377	0.0000	-0.5306	0.2377	-0.0059	0.5492	-0.0420
2X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0096	0.4768	0.0255
2XY	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0097	0.4827	0.0231
2Y	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0037	0.4819	-0.0411
3X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0105	0.3967	0.0245
3XY	0.0000	0.7396	-0.2907	0.0000	-0.7396	0.2907	-0.0040	0.4037	0.0222
3Y	0.0000	0.7396	-0.2907	-0.0000	-0.7396	0.2907	-0.0014	0.4039	-0.0394
4X	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0050	0.3218	0.0225
4XY	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0052	0.3295	0.0205
4Y	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0021	0.3290	-0.0360
5X	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0069	0.2658	0.0196
5XY	0.0000	1.0306	-0.3647	-0.0000	-1.0306	0.3647	0.0005	0.2731	0.0177
5Y	0.0000	1.0306	-0.3647	-0.0000	-1.0306	0.3647	-0.0002	0.2738	-0.0322
6X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0010	0.2178	0.0160
6XY	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0018	0.2248	0.0141
6Y	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0065	0.2245	-0.0275
7X	0.0000	0.4734	-0.3710	-8.1682	9.8102	60.1739	0.0000	0.0000	0.0000
7XY	0.0000	0.4734	-0.3710	9.2560	12.3958	65.2595	0.0000	0.0000	0.0000
7Y	0.0000	0.4734	-0.3710	-11.1449	14.2274	-75.8222	0.0000	0.0000	0.0000
18X	0.0000	1.3796	-0.5527	-0.0000	-1.3796	0.5527	-0.0230	0.5481	0.1722
19X	0.0000	1.7596	-0.9197	0.0000	-1.7596	0.9197	-0.0180	0.4809	0.1194
20X	0.0000	1.7596	-0.9197	0.0000	-1.7596	0.9197	-0.0230	0.3272	0.1504
21X	0.0000	1.7596	-0.9197	-0.0000	-1.7596	0.9197	-0.0123	0.2222	0.0895
8S	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0119	0.1781	-0.0259
9S	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0151	0.1394	-0.0253
10S	0.0000	0.6720	-0.5248	-0.0000	-0.6720	0.5248	0.0167	0.1058	-0.0238
11S	0.0000	0.4734	-0.3710	-0.0000	-0.4734	0.3710	0.0180	0.0496	-0.0195
12S	0.0000	0.4734	-0.3710	-0.0000	-0.4734	0.3710	-0.0006	0.0013	-0.0101
13S	0.0000	0.4734	-0.3710	-0.0000	-0.4734	0.3710	-0.0053	0.0012	-0.0009
14S	0.0000	0.4734	-0.3710	0.0000	-0.4734	0.3710	-0.0002	0.0945	0.0126
15S	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0018	0.3578	-0.0355
16S	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0005	0.4663	-0.0376
17S	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0025	0.3576	-0.0059
8X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0036	0.1782	0.0175
8XY	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0022	0.1877	0.0152
8Y	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0061	0.1877	-0.0284
9X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0020	0.1393	0.0184
9XY	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0021	0.1516	0.0156
9Y	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	0.0098	0.1520	-0.0284
10X	0.0000	0.6720	-0.5248	-0.0000	-0.6720	0.5248	-0.0003	0.1059	0.0180
10XY	0.0000	1.5900	-0.7578	0.0000	-1.5900	0.7578	0.0016	0.1214	0.0149
10Y	0.0000	1.5900	-0.7578	-0.0000	-1.5900	0.7578	0.0159	0.1209	-0.0279
11X	0.0000	0.4734	-0.3710	0.0000	-0.4734	0.3710	-0.0001	0.0499	0.0167
11XY	0.0000	1.3804	-0.6010	-0.0000	-1.3804	0.6010	0.0024	0.0660	0.0140
11Y	0.0000	1.3804	-0.6010	0.0000	-1.3804	0.6010	0.0173	0.0649	-0.0242
12X	0.0000	0.4734	-0.3710	0.0000	-0.4734	0.3710	-0.0014	0.0017	0.0086
12XY	0.0000	1.2754	-0.5750	-0.0000	-1.2754	0.5750	0.0017	0.0038	0.0087
12Y	0.0000	1.2754	-0.5750	0.0000	-1.2754	0.5750	0.0002	0.0028	-0.0106
13Y	0.0000	0.4734	-0.3710	0.0000	-0.4734	0.3710	0.0059	0.0025	-0.0010
14X	0.0000	0.4734	-0.3710	0.0000	-0.4734	0.3710	0.0001	0.1323	-0.0196
15X	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	-0.0071	0.3575	0.0235
15XY	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0051	0.3650	0.0213
15Y	0.0000	0.1986	-0.1537	0.0000	-0.1986	0.1537	0.0026	0.3653	-0.0377
16X	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0060	0.4310	0.0202
17Y	0.0000	0.1986	-0.1537	-0.0000	-0.1986	0.1537	-0.0111	0.3651	-0.0080

Crossing Diagonal Check for Load Case "NESC Extreme" (RLOUT controls):

Comp. Member Label	Tens. Member Label	Connect Leg for Comp. Member	Force In Comp. Member (kips)	Force In Tens. Member (kips)	Original Supported L/R Cap. (kips)	Original Supported RLX	Original Supported RLY	Original Supported RLZ	Original Supported L/R	Original Supported KL/R Curve No.	Alternate Unsupported L/R RLOUT Cap. (kips)	Alternate Unsupported L/R	Alternate Unsupported KL/R Curve No.

g14P	g14Y	Short only	-0.49	-0.03	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g14Y	g14P	Short only	-0.03	-0.49	11.56	0.750	0.500	0.500	123.69	122.85	5	8.63	1.000	158.01	143.38	6
g24P	g24Y	Long only	-1.76	-1.27	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g24Y	g24P	Long only	-1.27	-1.76	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22X	g22XY	Long only	-1.01	-1.30	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g22XY	g22X	Long only	-1.30	-1.01	18.99	0.500	0.750	0.500	109.16	111.87	2	13.99	1.000	145.55	135.71	6
g16P	g16Y	Long only	-3.03	-1.71	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16X	g16XY	Long only	-2.20	-3.49	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16XY	g16X	Long only	-3.49	-2.20	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g16Y	g16P	Long only	-1.71	-3.03	17.27	0.500	0.750	0.500	120.57	120.47	5	12.24	1.000	160.76	145.07	6
g26P	g26Y	Short only	-2.82	-3.22	12.40	0.781	0.561	0.561	130.15	127.77	5	10.78	1.000	148.14	137.31	6
g26Y	g26P	Short only	-3.22	-2.82	12.40	0.781	0.561	0.561	130.15	127.77	5	10.78	1.000	148.14	137.31	6
g30P	g30Y	Long only	-1.43	-1.66	9.05	0.549	0.774	0.549	172.54	160.07	5	6.90	1.000	222.91	183.29	6
g30Y	g30P	Long only	-1.66	-1.43	9.05	0.549	0.774	0.549	172.54	160.07	5	6.90	1.000	222.91	183.29	6
g28X	g28XY	Long only	-1.65	-1.82	11.22	0.569	0.785	0.569	151.09	143.73	5	8.79	1.000	188.97	162.42	6
g28XY	g28X	Long only	-1.82	-1.65	11.22	0.569	0.785	0.569	151.09	143.73	5	8.79	1.000	188.97	162.42	6

Summary of Clamp Capacities and Usages for Load Case "NESC Extreme":

Clamp Label	Force (kips)	Input Holding Capacity (kips)	Factored Holding Capacity (kips)	Holding Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
1	0.853	50.00	50.00	1.71	0.00	0.00	0.00	1.71
2	1.486	50.00	50.00	2.97	0.00	0.00	0.00	2.97
3	2.041	50.00	50.00	4.08	0.00	0.00	0.00	4.08
4	1.985	50.00	50.00	3.97	0.00	0.00	0.00	3.97
5	2.041	50.00	50.00	4.08	0.00	0.00	0.00	4.08
6	1.985	50.00	50.00	3.97	0.00	0.00	0.00	3.97
7	2.041	50.00	50.00	4.08	0.00	0.00	0.00	4.08
8	1.985	50.00	50.00	3.97	0.00	0.00	0.00	3.97
9	7.523	50.00	50.00	15.05	0.00	0.00	0.00	15.05
10	0.581	50.00	50.00	1.16	0.00	0.00	0.00	1.16
11	0.795	50.00	50.00	1.59	0.00	0.00	0.00	1.59
12	1.093	50.00	50.00	2.19	0.00	0.00	0.00	2.19
13	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
14	1.761	50.00	50.00	3.52	0.00	0.00	0.00	3.52
15	1.506	50.00	50.00	3.01	0.00	0.00	0.00	3.01
16	1.399	50.00	50.00	2.80	0.00	0.00	0.00	2.80
17	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
18	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
19	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
20	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
21	0.853	50.00	50.00	1.71	0.00	0.00	0.00	1.71
22	0.601	50.00	50.00	1.20	0.00	0.00	0.00	1.20
23	0.601	50.00	50.00	1.20	0.00	0.00	0.00	1.20
24	0.327	50.00	50.00	0.65	0.00	0.00	0.00	0.65
25	0.251	50.00	50.00	0.50	0.00	0.00	0.00	0.50
26	0.378	50.00	50.00	0.76	0.00	0.00	0.00	0.76
27	0.381	50.00	50.00	0.76	0.00	0.00	0.00	0.76
28	0.988	50.00	50.00	1.98	0.00	0.00	0.00	1.98
29	0.983	50.00	50.00	1.97	0.00	0.00	0.00	1.97
37	0.581	50.00	50.00	1.16	0.00	0.00	0.00	1.16
38	0.795	50.00	50.00	1.59	0.00	0.00	0.00	1.59
39	1.093	50.00	50.00	2.19	0.00	0.00	0.00	2.19
40	1.761	50.00	50.00	3.52	0.00	0.00	0.00	3.52
41	1.506	50.00	50.00	3.01	0.00	0.00	0.00	3.01
42	1.399	50.00	50.00	2.80	0.00	0.00	0.00	2.80

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage
which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Cont-rol	Max Comp. Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Shear Capacity (kips)	Comp. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. (ft)	Curve No.	No. Of Bolts	Member Comp.
Leg1	Leg1	SAE	4X4X0.25	33.0	92.13	Comp	92.13	g6Y	-49.299	NESC Ext	53.509	109.200	168.750	1.000	1.000	1.000	75.47	75.47	5.000	1	12	
Leg2	Leg2	SAE	4X4X0.3125	33.0	99.95	Tens	96.50	g12Y	-73.135	NESC Ext	75.786	91.000	175.781	0.250	0.250	0.250	38.67	38.67	10.196	1	10	
Leg3	Leg3	SAE	4X4X0.375	33.0	84.58	Tens	84.16	g11Y	-71.976	NESC Ext	85.527	91.000	210.937	0.167	0.167	0.167	57.04	57.04	22.431	1	10	
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	33.0	49.17	Comp	49.17	g13X	-5.683	NESC Ext	11.559	18.200	21.094	0.750	0.500	0.500	123.69	122.85	7.071	5	2	
XBrace2	XBrace2	SAU	3X2X0.1875	33.0	47.33	Comp	47.33	g15X	-8.177	NESC Ext	17.275	27.300	31.641	0.500	0.750	0.500	120.57	120.47	7.810	5	3	
XBrace3	XBrace3	SAE	2X2X0.1875	33.0	29.83	Cross	29.83	g26Y	-3.215	NESC Ext	10.779	18.200	21.094	1.000	0.561	0.561	148.14	137.31	7.617	6	2	
XBrace4	XBrace4	SAU	2.5X2X0.1875	33.0	24.10	Cross	24.10	g30Y	-1.663	NESC Ext	6.901	18.200	21.094	0.549	1.000	0.549	222.91	183.29	11.146	6	2	
XBrace5	XBrace5	SAE	1.75X1.75X0.25	33.0	83.18	Comp	83.18	g31X	-1.870	NESC Hea	2.248	18.200	28.125	0.789	0.577	0.577	383.90	321.14	18.907	5	2	
XBrace6	XBrace6	SAE	1.75X1.75X0.1875	33.0	80.35	Comp	80.35	g34P	-0.854	NESC Ext	1.063	18.200	21.094	0.796	0.409	0.409	498.62	408.55	28.032	5	2	
XBrace7	XBrace7	SAU	3.5X2.5X0.25	33.0	60.36	Comp	60.36	g35Y	-5.493	NESC Ext	14.465	9.100	14.062	1.000	0.500	0.500	168.80	168.80	15.304	4	1	
XBrace8	XBrace8	SAU	3X2X0.1875	33.0	56.35	Comp	56.35	g18P	-9.735	NESC Ext	17.275	27.300	31.641	1.000	1.500	1.000	120.57	120.47	3.905	5	3	
Horz1	Horizontal 1	SAE	1.75X1.75X0.1875	33.0	47.87	Comp	47.87	g40P	-2.776	NESC Ext	5.799	9.100	10.547	1.000	1.000	1.000	174.93	174.93	5.000	4	1	
Horz2	Horizontal 2	SAU	2.5X2X0.1875	33.0	50.18	Comp	50.18	g41X	-4.567	NESC Ext	10.284	9.100	10.547	1.000	0.500	0.500	150.14	150.14	9.922	4	1	
Horz3	Horizontal 3	SAU	3X2.5X0.25	33.0	75.16	Comp	75.16	g43X	-6.840	NESC Ext	11.864	9.100	14.062	1.000	0.500	0.500	177.78	177.78	14.000	4	1	
Horz4	**Horizontal 4**	**SAU**	**4X3X0.25**	**33.0**	**66.72**	**Comp**	**66.72**	**g46XY**	**-6.071**	**NESC Ext**	**13.504**	**9.100**	**14.062**	**2.000**	**1.000**	**1.000**	**189.26**	**189.26**	**10.094**	**4**	**1**	**A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45P g45X g45XY g45Y ??**
Horz5	Horizontal 5	Bar	1.75x1/4	33.0	56.79	Tens	0.00	g48Y	0.000		0.129	9.100	14.062	1.000	2.000	1.000	983.61	983.61	2.500	4	1	
Inner1	Inner1	SAE	1.75X1.75X0.1875	33.0	35.64	Tens	28.15	g76XY	-2.969	NESC Ext	11.437	16.800	10.547	1.000	1.000	1.000	123.69	123.69	3.536	4	1	
Inner2	Inner2	SAU	2.5X2X0.1875	33.0	87.10	Comp	87.10	g79Y	-2.609	NESC Ext	2.995	16.800	10.547	1.000	1.000	1.000	278.21	278.21	9.899	4	1	
Arm1	Ground Wire Arm	SAU	3X2.5X0.25	33.0	15.33	Tens	2.74	g54Y	-0.498	NESC Ext	19.099	18.200	28.125	1.000	0.500	0.500	146.34	140.11	11.524	5	2	
Arm2	Top Cross Arm	SAU	3X2.5X0.25	33.0	23.31	Comp	23.31	g56P	-4.242	NESC Hea	28.509	18.200	28.125	1.000	0.500	0.500	97.38	108.69	7.669	3	2	
Arm3	Middle Cross Arm	SAU	3.5X2.5X0.25	33.0	27.46	Comp	27.46	g58P	-4.997	NESC Hea	24.527	18.200	28.125	1.000	0.500	0.500	132.50	129.56	12.013	5	2	
Arm4	Bottom Cross Arm	SAU	3X2.5X0.25	33.0	26.84	Comp	26.84	g60P	-2.442	NESC Hea	27.682	9.100	14.062	1.000	0.500	0.500	103.41	111.70	8.143	3	1	

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       ArmBr1  Ground Wire Arm Brace   SAE   2.5X2.5X0.1875     33.0 20.99  Comp 20.99    g62P  -1.910NESC Hea   10.714    9.100   10.547 1.000 1.000 1.000  155.23  155.23
6.403     4     1
       ArmBr2    Top Cross Arm Brace   Bar         1.75x1/4     33.0 47.14  Tens  0.00    g63Y   0.000            0.039    9.100   14.062 1.000 1.000 1.000 1800.97 1800.97
9.155     4     1
       ArmBr3 Middle Cross Arm Brace   Bar         1.75x1/4     33.0 60.43  Tens  0.00    g64Y   0.000            0.021    9.100   14.062 1.000 1.000 1.000 2435.79 2435.79
12.382    4     1
       ArmBr4 Bottom Cross Arm Brace   Bar         1.75x1/4     33.0 29.20  Tens  0.00    g65Y   0.000            0.035    9.100   14.062 1.000 1.000 1.000 1879.82 1879.82
9.556     4     1
      PWMount       Pipe HSS16"x0.5" Pwmnt Pipe HSS16"x0.5"     42.0  2.80  Comp  2.80    g66P -21.915NESC Hea  782.285    0.000    0.000 1.000 1.000 1.000   69.95   69.95
32.000    1     0
     PWMBrace       Powermount Brace   SAE    2.5X2.5X0.375     36.0 34.20  Tens 29.52    g81X  -4.960NESC Ext   44.815   16.800   20.391 1.000 1.000 1.000   68.87   94.44
2.795     3     1 A potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g81P  ??
 PWMBrace Low Powermount Brace Lower   SAE     3.5X3.5X0.25     36.0  0.00        0.00            0.000            0.000    0.000    0.000 0.000 0.000 0.000    0.00    0.00
0.000     0     0
       Plate                 Plate   Bar            6x3/4     36.0  8.64  Comp  8.64    g97P  -2.066NESC Ext  116.372   23.900   48.937 1.000 1.000 1.000   69.28   94.64
1.250     3     1
       Leg2R              Leg2 Rein   SAE          4X4X0.5     33.0  0.00        0.00            0.000            0.000    0.000    0.000 0.000 0.000 0.000    0.00    0.00
0.000     0     0
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Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts Tens.	No. Of Holes	Hole Diameter (in)
Leg1	Leg1	SAE	4X4X0.25	33.0	92.13	Comp	84.67	g6X	43.728NESC Ext		51.645	109.200	168.750	168.515	5.000	12	2.000	0.75
Leg2	Leg2	SAE	4X4X0.3125	33.0	99.95	Tens	99.95	g7X	51.023NESC Ext		51.047	0.000	0.000	0.000	5.098	0	3.640	0.75
Leg3	Leg3	SAE	4X4X0.375	33.0	84.58	Tens	84.58	g11X	53.452NESC Ext		63.195	91.000	210.937	193.014	22.431	10	3.360	0.75
XBrace1	XBrace1	SAE	1.75X1.75X0.1875	33.0	49.17	Comp	36.26	g13P	5.163NESC Ext		14.237	18.200	21.094	15.363	7.071	2	1.000	0.75
XBrace2	XBrace2	SAU	3X2X0.1875	33.0	47.33	Comp	46.21	g23Y	8.388NESC Ext		22.553	27.300	31.641	18.152	7.071	3	1.000	0.75
XBrace3	XBrace3	SAE	2X2X0.1875	33.0	29.83	Cross	22.26	g26X	2.739NESC Ext		16.910	18.200	21.094	12.305	7.617	2	1.000	0.75
XBrace4	XBrace4	SAU	2.5X2X0.1875	33.0	24.10	Cross	12.24	g28P	2.229NESC Ext		19.880	18.200	21.094	18.750	9.449	2	1.000	0.75
XBrace5	XBrace5	SAE	1.75X1.75X0.25	33.0	83.18	Comp	45.44	g32X	7.007NESC Ext		18.488	18.200	28.125	15.422	18.907	2	1.000	0.75
XBrace6	XBrace6	SAE	1.75X1.75X0.1875	33.0	80.35	Comp	68.81	g33Y	8.516NESC Ext		14.237	18.200	21.094	12.375	28.032	2	1.000	0.75
XBrace7	XBrace7	SAU	3.5X2.5X0.25	33.0	60.36	Comp	54.02	g35XY	4.916NESC Ext		29.774	9.100	14.062	10.781	15.304	1	1.000	0.75
XBrace8	XBrace8	SAU	3X2X0.1875	33.0	56.35	Comp	43.82	g18X	8.811NESC Ext		22.553	27.300	31.641	20.109	3.905	3	1.000	0.75
Horz1	Horizontal 1	SAE	1.75X1.75X0.1875	33.0	47.87	Comp	42.13	g40X	3.081NESC Ext		14.237	9.100	10.547	7.312	5.000	1	1.000	0.75
Horz2	Horizontal 2	SAU	2.5X2X0.1875	33.0	50.18	Comp	25.00	g41P	1.828NESC Ext		17.096	9.100	10.547	7.312	9.922	1	1.000	0.75
Horz3	Horizontal 3	SAU	3X2.5X0.25	33.0	75.16	Comp	18.79	g43P	1.710NESC Ext		29.626	9.100	14.062	12.500	14.000	1	1.000	0.75
Horz4	**Horizontal 4**	**SAU**	**4X3X0.25**	**33.0**	**66.72**	**Comp**	**14.02**	**g46Y**	**1.276NESC Ext**		**37.199**	**9.100**	**14.062**	**12.500**	**10.094**	**1**	**1.000**	**0.75 A**
potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g45P g45X g45XY g45Y ??																		
Horz5	Horizontal 5	Bar	1.75x1/4	33.0	56.79	Tens	56.79	g48X	4.217NESC Hea		7.425	9.100	14.062	9.750	2.500	1	1.000	0.75
Inner1	Inner1	SAE	1.75X1.75X0.1875	33.0	35.64	Tens	35.64	g74XY	2.750NESC Ext		14.585	16.800	10.547	7.717	3.536	1	1.000	0.6875
Inner2	Inner2	SAU	2.5X2X0.1875	33.0	87.10	Comp	1.11	g79P	0.086NESC Ext		17.444	16.800	10.547	7.717	9.899	1	1.000	0.6875
Arm1	Ground Wire Arm	SAU	3X2.5X0.25	33.0	15.33	Tens	15.33	g55Y	2.789NESC Hea		33.338	18.200	28.125	28.125	5.000	2	1.000	0.75
Arm2	Top Cross Arm	SAU	3X2.5X0.25	33.0	23.31	Comp	1.50	g56X	0.274NESC Ext		33.338	18.200	28.125	28.125	7.669	2	1.000	0.75
Arm3	Middle Cross Arm	SAU	3.5X2.5X0.25	33.0	27.46	Comp	0.00	g58Y	0.000		37.199	18.200	28.125	28.125	12.013	2	1.000	0.75
Arm4	Bottom Cross Arm	SAU	3X2.5X0.25	33.0	26.84	Comp	5.27	g60XY	0.480NESC Ext		33.338	9.100	14.062	22.059	8.143	1	1.000	0.75
ArmBr1	Ground Wire Arm Brace	SAE	2.5X2.5X0.1875	33.0	20.99	Comp	0.00	g62X	0.000		22.613	9.100	10.547	9.375	6.403	1	1.000	0.75
ArmBr2	Top Cross Arm Brace	Bar	1.75x1/4	33.0	47.14	Tens	47.14	g63P	3.500NESC Hea		7.425	9.100	14.062	9.750	9.155	1	1.000	0.75
ArmBr3	Middle Cross Arm Brace	Bar	1.75x1/4	33.0	60.43	Tens	60.43	g64P	4.487NESC Hea		7.425	9.100	14.062	9.750	12.382	1	1.000	0.75
ArmBr4	Bottom Cross Arm Brace	Bar	1.75x1/4	33.0	29.20	Tens	29.20	g65X	2.168NESC Hea		7.425	9.100	14.062	9.750	9.556	1	1.000	0.75
PWMount	Pipe HSS16"x0.5" Pwmnt Pipe HSS16"x0.5"			42.0	2.80	Comp	0.00	g66P	0.000		953.399	0.000	0.000	0.000	32.000	0	0.000	0
PWMBrace	**Powermount Brace**	**SAE**	**2.5X2.5X0.375**	**36.0**	**34.20**	**Tens**	**34.20**	**g81P**	**5.745NESC Ext**		**47.699**	**16.800**	**20.391**	**18.125**	**2.795**	**1**	**1.000**	**0.6875 A**
potentially damaging moment exists in the following members (make sure your system is well triangulated to minimize moments): g81P ??																		
PWMBrace Low	Powermount Brace Lower	SAE	3.5X3.5X0.25	36.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0
Plate	Plate	Bar	6x3/4	36.0	8.64	Comp	3.45	g80P	0.825NESC Hea		124.537	23.900	48.937	54.375	1.250	1	1.000	0.875
Leg2R	Leg2 Rein	SAE	4X4X0.5	33.0	0.00		0.00		0.000		0.000	0.000	0.000	0.000	0.000	0	0.000	0

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Heavy	83.18	g31X	Angle
NESC Extreme	99.95	g7X	Angle

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
1	Clamp	2.58	NESC Heavy	0.0
2	Clamp	3.68	NESC Heavy	0.0
3	Clamp	5.04	NESC Heavy	0.0
4	Clamp	5.02	NESC Heavy	0.0
5	Clamp	5.09	NESC Heavy	0.0
6	Clamp	5.05	NESC Heavy	0.0
7	Clamp	5.02	NESC Heavy	0.0
8	Clamp	4.98	NESC Heavy	0.0
9	Clamp	15.05	NESC Extreme	0.0
10	Clamp	1.16	NESC Extreme	0.0
11	Clamp	1.59	NESC Extreme	0.0
12	Clamp	2.19	NESC Extreme	0.0
13	Clamp	0.50	NESC Extreme	0.0
14	Clamp	3.52	NESC Extreme	0.0
15	Clamp	3.24	NESC Heavy	0.0
16	Clamp	2.80	NESC Extreme	0.0
17	Clamp	0.50	NESC Extreme	0.0
18	Clamp	0.50	NESC Extreme	0.0
19	Clamp	0.50	NESC Extreme	0.0
20	Clamp	0.50	NESC Extreme	0.0
21	Clamp	1.71	NESC Extreme	0.0
22	Clamp	1.52	NESC Heavy	0.0
23	Clamp	1.20	NESC Extreme	0.0
24	Clamp	2.45	NESC Heavy	0.0
25	Clamp	2.34	NESC Heavy	0.0
26	Clamp	3.59	NESC Heavy	0.0
27	Clamp	4.35	NESC Heavy	0.0
28	Clamp	5.32	NESC Heavy	0.0
29	Clamp	8.31	NESC Heavy	0.0
37	Clamp	1.16	NESC Extreme	0.0
38	Clamp	1.59	NESC Extreme	0.0
39	Clamp	2.19	NESC Extreme	0.0
40	Clamp	3.52	NESC Extreme	0.0
41	Clamp	3.01	NESC Extreme	0.0
42	Clamp	2.80	NESC Extreme	0.0

Loads At Insulator Attachments For All Load Cases:

Load Case	Insulator Label	Insulator Type	Structure Attach Label	Structure Attach Load X (kips)	Structure Attach Load Y (kips)	Structure Attach Load Z (kips)	Structure Attach Load Res. (kips)
NESC Heavy	1	Clamp	18P	0.000	0.823	0.996	1.292
NESC Heavy	2	Clamp	18X	0.000	1.068	1.499	1.841
NESC Heavy	3	Clamp	19P	0.000	1.305	2.153	2.518
NESC Heavy	4	Clamp	19X	0.000	1.282	2.158	2.510
NESC Heavy	5	Clamp	20P	0.000	1.305	2.184	2.544
NESC Heavy	6	Clamp	20X	0.000	1.260	2.189	2.526
NESC Heavy	7	Clamp	21P	0.000	1.305	2.142	2.508

NESC Heavy	8	Clamp	21X	0.000	1.265	2.147	2.492
NESC Heavy	9	Clamp	32P	0.000	2.009	6.560	6.861
NESC Heavy	10	Clamp	1XY	0.000	0.183	0.443	0.480
NESC Heavy	11	Clamp	3XY	0.000	0.285	0.609	0.673
NESC Heavy	12	Clamp	5XY	0.000	0.416	0.910	1.000
NESC Heavy	13	Clamp	8XY	0.000	0.113	0.143	0.182
NESC Heavy	14	Clamp	10XY	0.000	0.557	1.236	1.356
NESC Heavy	15	Clamp	11XY	0.000	0.701	1.461	1.620
NESC Heavy	16	Clamp	12XY	0.000	0.589	1.195	1.332
NESC Heavy	17	Clamp	1X	0.000	0.067	0.146	0.161
NESC Heavy	18	Clamp	3X	0.000	0.096	0.103	0.141
NESC Heavy	19	Clamp	5X	0.000	0.125	0.132	0.181
NESC Heavy	20	Clamp	8X	0.000	0.113	0.143	0.182
NESC Heavy	21	Clamp	10X	0.000	0.236	0.369	0.438
NESC Heavy	22	Clamp	11X	0.000	0.384	0.656	0.760
NESC Heavy	23	Clamp	12X	0.000	0.309	0.445	0.542
NESC Heavy	24	Clamp	33P	0.000	0.325	1.179	1.223
NESC Heavy	25	Clamp	34P	0.000	0.368	1.109	1.169
NESC Heavy	26	Clamp	35P	0.000	0.477	1.729	1.794
NESC Heavy	27	Clamp	36P	0.000	0.596	2.092	2.175
NESC Heavy	28	Clamp	37P	0.000	0.708	2.564	2.660
NESC Heavy	29	Clamp	38P	0.000	1.054	4.017	4.153
NESC Heavy	37	Clamp	1Y	0.000	0.116	0.443	0.458
NESC Heavy	38	Clamp	3Y	0.000	0.189	0.609	0.638
NESC Heavy	39	Clamp	5Y	0.000	0.291	0.910	0.955
NESC Heavy	40	Clamp	10Y	0.000	0.321	1.236	1.277
NESC Heavy	41	Clamp	11Y	0.000	0.317	1.461	1.495
NESC Heavy	42	Clamp	12Y	0.000	0.280	1.195	1.227
NESC Extreme	1	Clamp	18P	0.000	0.769	0.370	0.853
NESC Extreme	2	Clamp	18X	0.000	1.380	0.553	1.486
NESC Extreme	3	Clamp	19P	0.000	1.827	0.911	2.041
NESC Extreme	4	Clamp	19X	0.000	1.760	0.920	1.985
NESC Extreme	5	Clamp	20P	0.000	1.827	0.911	2.041
NESC Extreme	6	Clamp	20X	0.000	1.760	0.920	1.985
NESC Extreme	7	Clamp	21P	0.000	1.827	0.911	2.041
NESC Extreme	8	Clamp	21X	0.000	1.760	0.920	1.985
NESC Extreme	9	Clamp	32P	0.000	7.023	2.697	7.523
NESC Extreme	10	Clamp	1XY	0.000	0.531	0.238	0.581
NESC Extreme	11	Clamp	3XY	0.000	0.740	0.291	0.795
NESC Extreme	12	Clamp	5XY	0.000	1.031	0.365	1.093
NESC Extreme	13	Clamp	8XY	0.000	0.199	0.154	0.251
NESC Extreme	14	Clamp	10XY	0.000	1.590	0.758	1.761
NESC Extreme	15	Clamp	11XY	0.000	1.380	0.601	1.506
NESC Extreme	16	Clamp	12XY	0.000	1.275	0.575	1.399
NESC Extreme	17	Clamp	1X	0.000	0.199	0.154	0.251
NESC Extreme	18	Clamp	3X	0.000	0.199	0.154	0.251
NESC Extreme	19	Clamp	5X	0.000	0.199	0.154	0.251
NESC Extreme	20	Clamp	8X	0.000	0.199	0.154	0.251
NESC Extreme	21	Clamp	10X	0.000	0.672	0.525	0.853
NESC Extreme	22	Clamp	11X	0.000	0.473	0.371	0.601
NESC Extreme	23	Clamp	12X	0.000	0.473	0.371	0.601
NESC Extreme	24	Clamp	33P	0.000	0.199	0.260	0.327
NESC Extreme	25	Clamp	34P	0.000	0.199	0.154	0.251
NESC Extreme	26	Clamp	35P	0.000	0.199	0.322	0.378
NESC Extreme	27	Clamp	36P	0.000	0.199	0.326	0.381
NESC Extreme	28	Clamp	37P	0.000	0.672	0.725	0.988
NESC Extreme	29	Clamp	38P	0.000	0.473	0.861	0.983
NESC Extreme	37	Clamp	1Y	0.000	0.531	0.238	0.581
NESC Extreme	38	Clamp	3Y	0.000	0.740	0.291	0.795
NESC Extreme	39	Clamp	5Y	0.000	1.031	0.365	1.093
NESC Extreme	40	Clamp	10Y	0.000	1.590	0.758	1.761
NESC Extreme	41	Clamp	11Y	0.000	1.380	0.601	1.506
NESC Extreme	42	Clamp	12Y	0.000	1.275	0.575	1.399

Overturning Moments For User Input Concentrated Loads:

Moments are static equivalents based on central axis of 0,0 (i.e. a single pole).

Load Case	Total Tran. Load (kips)	Total Long. Load (kips)	Total Vert. Load (kips)	Transverse Overturning Moment (ft-k)	Longitudinal Overturning Moment (ft-k)	Torsional Moment (ft-k)
NESC Heavy	14.243	0.000	30.404	1055.022	34.005	14.015
NESC Extreme	26.806	0.000	11.061	1981.338	7.211	37.992

*** Weight of structure (lbs):
Weight of Angles*Section DLF: 18435.4
Total: 18435.4

*** End of Report

CENTEK engineering
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Subject:	Foundation Analysis Tower # 935
Location:	Wilton, CT
Rev. 3: 8/26/20	Prepared by: T.J.L. Checked by: C.A.G. Job No. 19145.00

Foundation Analysis

Input Data:

Max. Reactions at Tower Leg:

Shear (Compression Leg) =	$Shear_{comp} := 18.5 \cdot 1.1 \cdot kips = 20.4 \cdot kips$	(User Input)
Shear (Uplift Leg) =	$Shear_{up} := 15.9 \cdot 1.1 \cdot kips = 17.5 \cdot kips$	(User Input)
Compression =	$Comp := 76.2 \cdot 1.1 \cdot kips = 83.8 \cdot kips$	(User Input)
Uplift =	$Uplift := 64.9 \cdot 1.1 \cdot kips = 71.4 \cdot kips$	(User Input)

Tower Properties:

Tower Height =	$H_t := 91 \cdot ft$	(User Input)

Foundation Properties:

Pier Height =	$P_H := 3.25 \cdot ft$	(User Input)
Pier Width Top =	$P_{w1} := 1.67 \cdot ft$	(User Input)
Pier Width Botttom =	$P_{w2} := 2.08 \cdot ft$	(User Input)
Pier Projection Above Grade =	$P_P := 2.5 \cdot ft$	(User Input)
Pad Width =	$Pd_w := 12 \cdot ft$	(User Input)
Pad Thickness =	$Pd_t := 4 \cdot ft$	(User Input)

Subgrade Properties:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Water Unit Weight =	$\gamma w := 62.4 \cdot pcf$	(User Input)
Soil Unit Weight =	$\gamma s := 100 \cdot pcf$	(User Input)
Uplift Angle =	$\phi := 30.0 \cdot deg$	(User Input)
Ultimate Soil Bearing Capacity =	$BC_{soil} := 7000 \cdot psf$	(User Input)
Coefficient of Friction =	$\mu := 0.45$	(User Input)
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)} = 3$	

Calculated Data:

Volume of the Concrete Pad = $V_{pad} := Pd_w^2 \cdot Pd_t = 576 \cdot ft^3$

Volume of the Concrete Pier = $V_{pier} := \frac{(P_H)}{3} \cdot \left(P_{w1}^2 + P_{w2}^2 + \sqrt{P_{w1}^2 \cdot P_{w2}^2}\right) = 11.47 \cdot ft^3$

Resisting Pyramid Base 1 = $B_1 := Pd_w^2 = 144 ft^2$

Resisting Pyramid Base 2 = $B_2 := \left[2 \cdot \tan(\phi) \cdot (P_H - P_P) + Pd_w\right]^2 = 166 ft^2$

Volume of Soil Above Footing = $V_{soil} := \left[Pd_w^2 \cdot (P_H - P_P)\right] - V_{pier} = 97 \cdot ft^3$

Total Vdlume ofConcrete = $V_{Conc} := V_{pad} + V_{pier} = 587 \cdot ft^3$

Mass of Concrete = $Mass_{Conc} := V_{Conc} \cdot \gamma c = 88.1 \cdot kips$

Mass of Soil = $Mass_{Soil} := V_{soil} \cdot \gamma s = 10 \cdot kips$

Total Mass = $Mass_{tot} := Mass_{Conc} + Mass_{Soil} = 98 \cdot kips$

Check Uplift:

Required Factor of Safety = $F_S := 1.0$

$ActualFS := \frac{Mass_{tot}}{Uplift} = 1.37$

$Uplift\_Check := if\left(\frac{Mass_{tot}}{Uplift} \geq F_S, "OK", "Overstressed"\right)$

Uplift_Check = "OK"

Check Bearing:

Cross Sectional Area of Pad = $A_{pad} := Pd_w^2 = 144 ft^2$

Section Modulus of Pad = $S_{pad} := \frac{(Pd_w)^3}{6} = 288 \cdot ft^3$

$Bearing := \frac{Comp + Mass_{Conc}}{A_{pad}} + \frac{\left[Shear_{comp} \cdot (P_H + Pd_t)\right]}{S_{pad}} = 1.71 \cdot ksf$

$Bearing\_Check := if\left(Bearing \leq BC_{soil}, "OK", "No Good"\right)$

Bearing_Check = "OK"

Check Overturning:

Passive Pressure (on pier) =

$P1_{top} := K_p \cdot \gamma s \cdot 0 = 0 \cdot ksf$

$P1_{bot} := K_p \cdot \gamma s \cdot (P_H - P_P) = 0.225 \cdot ksf$

$P1_{ave} := \frac{P1_{top} + P1_{bot}}{2} = 0.113 \cdot ksf$

$A_1 := P_H \cdot \left[\frac{(P_{w1} + P_{w2})}{2} \right] = 6.094\,ft^2$

Ultimate Shear =

$S1_u := P1_{ave} \cdot A_1 = 0.686 \cdot kip$

Passive Pressure (on pad) =

$P2_{top} := K_p \cdot \gamma s \cdot (P_H - P_P) = 0.225 \cdot ksf$

$P2_{bot} := K_p \cdot \gamma s \cdot (P_H + Pd_t - P_P) = 1.425 \cdot ksf$

$P2_{ave} := \frac{P2_{top} + P2_{bot}}{2} = 0.825 \cdot ksf$

$A_2 := Pd_t \cdot Pd_w = 48\,ft^2$

Ultimate Shear =

$S2_u := P2_{ave} \cdot A_2 = 39.6 \cdot kip$

Passive Pressure Resistance to Overturning =

$PP_R := \min[Shear_{up}, (S2_u)] = 17.49 \cdot kip$

Overturning Moment =

$OM := Uplift \cdot \frac{Pd_w}{2} + Shear_{up} \cdot (P_H + Pd_t) = 555.1 \cdot k \cdot ft$

Resisting Moment =

$RM := Mass_{tot} \cdot \left(\frac{Pd_w}{2} \right) + PP_R \cdot Pd_t \cdot \frac{1}{3} = 610 \cdot k \cdot ft$

$ActualFS := \frac{RM}{OM} = 1.1$

$Overturning\_Check := if\left(\frac{RM}{OM} \geq F_S, "OK", "No\ Good" \right)$

$Overturning\_Check = "OK"$

Check Sliding:

Sliding Resistance =

$S_R := \mu \cdot (Mass_{Conc} + Comp) + S1_u + S2_u = 117.659 \cdot kips$

$Sliding\_Check := if(Shear_{comp} \le S_R, "OK", "No Good")$

$Sliding\_Check = "OK"$

$ActualFS := \frac{S_R}{Shear_{comp}} = 5.78$

Sliding Resistance =

$S_R := \mu \cdot (Mass_{Conc} - Uplift) + S1_u + S2_u = 47.814 \cdot kips$

$Sliding\_Check := if(Shear_{up} \le S_R, "OK", "No Good")$

$Sliding\_Check = "OK"$

$ActualFS := \frac{S_R}{Shear_{up}} = 2.73$

Proposed Mat Dowel Development:

Dowel Size = $d_b := \frac{5}{8} = 0.625$ in

Proposed Rebar Strength = $f_y := 60000$ psi

Proposed Concrete Strength = $f_c := 4000$ psi

$\psi_t := 1$

$\psi_e := 1$

$\lambda := 1$

Required Development Length into Proposed Concrete = $l_d := \left(\frac{f_y \cdot \psi_t \cdot \psi_e}{25 \cdot \lambda \cdot \sqrt{f_c}} \right) \cdot d_b = 23.717$ in

Standard 90degree Hook Length = $Hook := 12 \cdot d_b = 7.5$ in

Existing Pad/Pier to Proposed Mat Dowel Connection:

Anchor Data:

#5 A615 Grade 60 w/ Hilti HY200 Adhesive & 7.5" Embedment

Number of Dowels =	$N := 8$	(User Input)
Steel Design Strength in Tension =	$\phi N_{sa} := 18135 \cdot lb$	(User Input)
Steel Design Strength in Shear =	$\phi V_{sa} := 10045 \cdot lb$	(User Input)
Design Strength in Tension =	$\phi N_n := 10435 \cdot lb$	(User Input)
Design Strength in Shear =	$\phi V_n := 22470 \cdot lb$	(User Input)
Spacing Factor in Tension =	$f_{AN} := 1.0$	(User Input)
Edge Distance Factor in Tension =	$f_{RN} := 1.0$	(User Input)
Spacing Factor in Shear =	$f_{AV} := 0.94$	(User Input)
Edge Distance Factor in Shear =	$f_{RV} := 1.0$	(User Input)
Concrte Thickness Factor in Shear =	$f_{HV} := 1.0$	(User Input)
Design Resistance in Tension =	$N_{des} := \min(\phi N_{sa}, \phi N_n \cdot f_{AN} \cdot f_{RN}) = 10.44 \cdot kips$	
Design Resistance in Shear =	$V_{des} := \min(\phi V_{sa}, \phi V_n \cdot f_{AV} \cdot f_{RV} \cdot f_{HV}) = 10.05 \cdot kips$	

Design Reactions:

Concrete Unit Weight =	$\gamma c := 150 \cdot pcf$	(User Input)
Weight of Existing Pad and Pier =	$Wt_{ex} := 89 \cdot ft^3 \cdot \gamma c = 13.4 \cdot kips$	(User Input)
Residual Uplift to be Resisted by Proposed Mat =	$Uplift_{Res} := Uplift - Wt_{ex} = 58 \cdot kips$	
Shear @ Existing Proposed Interface =	$V_u := Uplift_{Res} = 58 \cdot kips$	

Anchor Check:

Max Tension Force =	$T_{Max} := 0 = 0 \cdot kips$
Max Shear Force =	$V_{Max} := \frac{V_u}{N} = 7.26 \cdot kips$
Condition 1 =	$Condition1 := if\left(\frac{T_{Max}}{N_{des}} + \frac{V_{Max}}{V_{des}} \le 1.2, "OK", "NG"\right) = "OK"$
% of Capacity =	$\frac{\frac{T_{Max}}{N_{des}} + \frac{V_{Max}}{V_{des}}}{1.2} = 60.2 \cdot \%$

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT1847	DATE:	11/27/2019	RF DESIGN ENG:	Radu Alecsandru
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	
REVISION:	Final	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	RA9161@ATT.COM
INITIATIVE /PROJECT:	4/1/2019 initial release of the RFDS 8/14/2019 updated for reduce loading 9/17/2019 updated to Candidate C due to structural fails of the other two candidates 11/27/2019 updated CL from 100 to 103 per site aq				

RF PERF ENG:		RFDS PROGRAM TYPE:	2020 New Site		
RF PERF PHONE:		RFDS TECHNOLOGY:	New		
RF PERF EMAIL:		STATE/STATUS:	Preliminary/In Progress		
RFDS VERSION:	4.00	RFDS ID:	2996038		
		Created By:	ra9161	Updated By:	ra9161
UMTS FREQUENCY:		Date Created:	4/1/2019 12:22:06 PM	Date Updated:	11/27/2019 8:20:59 AM
LTE FREQUENCY:	700, 850, 1900, AWS	ESTIMATED SQIN:	15,856		
5G FREQUENCY:					
I-PLAN JOB # 1:	NER-RCTB-18-07698	IPLAN PRD GRP || SUB GRP #1:	New Site || LTE Only 1C		
I-PLAN JOB # 2:	NER-RCTB-19-02138	IPLAN PRD GRP || SUB GRP #2:	LTE Next Carrier || LTE 2C		
I-PLAN JOB # 3:	NER-RCTB-19-02139	IPLAN PRD GRP || SUB GRP #3:	LTE Next Carrier || LTE 3C		
I-PLAN JOB # 4:	NER-RCTB-19-02140	IPLAN PRD GRP || SUB GRP #4:	LTE Next Carrier || LTE 4C		
I-PLAN JOB # 5:	NER-RCTB-19-02141	IPLAN PRD GRP || SUB GRP #5:	LTE Next Carrier || LTE 5C		
I-PLAN JOB # 6:		IPLAN PRD GRP || SUB GRP #6:			
I-PLAN JOB # 7:		IPLAN PRD GRP || SUB GRP #7:			
I-PLAN JOB # 8:		IPLAN PRD GRP || SUB GRP #8:			

Section 2 - LOCATION INFORMATION

USID:	255701	FA LOCATION CODE:	12685512	LOCATION NAME:	WILTON CT
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT
ADDRESS:	RIVERGATE DRIVE	CITY:	WILTON	STATE:	CT
ZIP CODE:	06897	COUNTY:	FAIRFIELD	LONG (DEC. DEG.):	-73.3910450
LATITUDE (D-M-S):	41d 10m55.4304s	LONGITUDE (D-M-S):	-73d -23m-27.762s	LAT (DEC. DEG.):	41.1820640
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	EVERSOURCE TRANSMISSION TOWER. RIVERGATE DRIVE. ASSESSOR MAP PARCEL 15-22, NO STREET NUMBER ASSIGNED TO THIS EVERSOURCE OWNED PARCEL. HOUSE NEXT DOOR IS 15 RIVERGATE. HOUSE ACROSS STREET IS 16 RIVERGATE DRIVE.				

ORACLE PTN # 1:	2051A0LENX	PACE JOB # 1:	MRCTB036755
ORACLE PTN # 2:	2051A0PFLQ	PACE JOB # 2:	MRCTB039634
ORACLE PTN # 3:	2051A0PFLL	PACE JOB # 3:	MRCTB039635
ORACLE PTN # 4:	2051A0PFLN	PACE JOB # 4:	MRCTB039638
ORACLE PTN # 5:	2051A0PFLR	PACE JOB # 5:	MRCTB039637
ORACLE PTN # 6:		PACE JOB # 6:	
ORACLE PTN # 7:		PACE JOB # 7:	
ORACLE PTN # 8:		PACE JOB # 8:	
BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:	WILTON SPOONWOOD RD
AM STUDY REQ'D (Y/N):	No	SEARCH_RING_ID:	S1847
FREQ COORD:		BTA:	MSA / RSA:
		LAC(UMTS):	
RF DISTRICT:			
RF ZONE:		RNC(UMTS):	
		MME POOL ID(LTE):	FF01
PARENT NAME(UMTS):			

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:	
CGSA - MINOR FILING NEEDED (Yes/No)::	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:			

CGSA CALL SIGNS:	

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:	UTILITY
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):		FCC ASR NUMBER:	NR
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	91.00		
LIGHTING TYPE:	NOT REQUIRED				

MARKET LOCATION 700 MHz Band:			
MARKET LOCATION 850 MHz Band:			
MARKET LOCATION 1900 MHz Band:			
MARKET LOCATION AWS Band:			
MARKET LOCATION WCS Band:			
MARKET LOCATION Future Band:			

Section 5 - E-911 INFORMATION - existing

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911										
SECTOR B										
SECTOR C										
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

Section 5 - E-911 INFORMATION - final

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:		
SECTOR A E-911										
SECTOR B										
SECTOR C										
SECTOR D										
SECTOR E										
SECTOR F										
OMNI										

SECTION 6/7 - BBU INFORMATION - final

	BBU 1								
BBU RBS ID:	RFDS_48913124								
TECHNOLOGY:	LTE								
BBU NAME (CTS Common ID):	CTL01847								
CELL ID / BCF:	CTL01847								
BTA/TID:									
4-9 DIGIT SITE ID:	51847								
COW OR TOY?:	No								
CELL SITE TYPE:	SECTORIZED								
SITE TYPE:	MACRO-CONVENTIONAL								
BTS LOCATION ID:									
BASE STATION TYPE:	BASE								
EQUIPMENT NAME:	WILTON-RIVERGATE DRIVE								
DISASTER PRIORITY:	0								
EQUIPMENT VENDOR:	ERICSSON								
EQUIPMENT TYPE (Model):	BASEBAND 6630 LTE								
BASEBAND CONFIGURATION:	1x6601 / 1x6630 / 1xXMU03								
MARKET STATE CODE:	CT								
NODE B NUMBER:	1847								

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1																							
CTS Common ID	CTL01847																							
Soft Sector IDs	CTL01847_2A_2																							
	CTL01847_2B_2																							
	CTL01847_2C_2																							
	CTL01847_7A_1																							
	CTL01847_7A_3_F																							
	CTL01847_7B_1																							
	CTL01847_7B_3_F																							
	CTL01847_7C_1																							
	CTL01847_7C_3_F																							
	CTL01847_8A_1																							
	CTL01847_8B_1																							
	CTL01847_8C_1																							
	CTL01847_9A_1																							
	CTL01847_9A_2																							
	CTL01847_9B_1																							
	CTL01847_9B_2																							
	CTL01847_9C_1																							
	CTL01847_9C_2																							

Section 9 - SOFT SECTOR ID - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																				
USEID (excluding Hard Sector)																										
SECTOR A SOFT SECTOR ID																										
SECTOR B																										
SECTOR C																										
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - SOFT SECTOR ID - final

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																				
USEID (excluding Hard Sector)																										
SECTOR A SOFT SECTOR ID	CTL01847_7A_1	CTL01847_8A_1	CTL01847_9A_1	CTL01847_9A_2	CTL01847_2A_2	CTL01847_7A_3_F																				
SECTOR B	CTL01847_7B_1	CTL01847_8B_1	CTL01847_9B_1	CTL01847_9B_2	CTL01847_2B_2	CTL01847_7B_3_F																				
SECTOR C	CTL01847_7C_1	CTL01847_8C_1	CTL01847_9C_1	CTL01847_9C_2	CTL01847_2C_2	CTL01847_7C_3_F																				
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																				
USEID (excluding Hard Sector)																										
SECTOR A CELL NUMBER																										
SECTOR B																										
SECTOR C																										
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 9 - Cell Number - final

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																				
USEID (excluding Hard Sector)																										
SECTOR A CELL NUMBER	15	1	8	178	192	171																				
SECTOR B	16	2	9	179	193	172																				
SECTOR C	17	3	10	180	194	173																				
SECTOR D																										
SECTOR E																										
SECTOR F																										
OMNI																										

Section 10 - CID/SAC - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																					
SECTOR A CID/SAC																											
SECTOR B																											
SECTOR C																											
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 10 - CID/SAC - final

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 4TH 1900	LTE 4TH AWS	LTE 5TH 700																					
SECTOR A CID/SAC																											
SECTOR B																											
SECTOR C																											
SECTOR D																											
SECTOR E																											
SECTOR F																											
OMNI																											

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K		DMP65R-BU8DA-K											
ANTENNA VENDOR	CCI Antennas		CCI Antennas											
ANTENNA SIZE (H x W x D)	96X21X7.8		96X20.7X7.7											
ANTENNA WEIGHT	87		95											
AZIMUTH	0		0											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	103		103											
ANTENNA TIP HEIGHT	107		107											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	8		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36		36										
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	8	Polyphaser TSXDC-4310-FM	12	Polyphaser TSXDC-4310-FM										
DIPLEXER (QTY/MODEL)	8	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	4	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)										
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	4478 B14	1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)			1	8843 B2/B66A										
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	12 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.A.700.4G.tmp5		CTL01847_7A_3_F	CTL01847_7A_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.A.AWS.4G.tmp4		CTL01847_2A_2	CTL01847_2A_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.A.850.4G.tmp1		CTL01847_8A_1	CTL01847_8A_1	TxRx/	LTE 850	DMP65R-	14.7	0	2	BOTTOM	1-5/8" COAX	140	0			NO					

						TxRx		BU8D_850MHz_02DT															
	PORT 2	255701.A.700.4G.tmp1		CTL01847_7A_1	CTL01847_7A_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.A.1900.4G.tmp1,255701.A.1900.4G.tmp4		CTL01847_9A_1,CTL01847_9A_2	CTL01847_9A_1,CTL01847_9A_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	0	2	BOTTOM	1-5/8" COAX	140	0			NO					

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K		DMP65R-BU8DA-K											
ANTENNA VENDOR	CCI Antennas		CCI Antennas											
ANTENNA SIZE (H x W x D)	96X21X7.8		96X20.7X7.7											
ANTENNA WEIGHT	87		95											
AZIMUTH	120		120											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	103		103											
ANTENNA TIP HEIGHT	107		107											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	8		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36		36										
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	8	Polyphaser TSXDC-4310-FM	12	Polyphaser TSXDC-4310-FM										
DIPLEXER (QTY/MODEL)	8	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	4	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)										
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	4478 B14	1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)			1	8843 B2/B66A										
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	12 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.B.700.4G.tmp5		CTL01847_7B_3_F	CTL01847_7B_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.B.AWS.4G.tmp4		CTL01847_2B_2	CTL01847_2B_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.B.850.4G.tmp1		CTL01847_8B_1	CTL01847_8B_1	TxRx/	LTE 850	DMP65R-	14.7	120	2	BOTTOM	1-5/8" COAX	140	0			NO					

						TxRx		BU8D_850MHz_02DT															
	PORT 2	255701.B.700.4G.tmp1		CTL01847_7B_1	CTL01847_7B_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.B.1900.4G.tmp1,255701.B.1900.4G.tmp4		CTL01847_9B_1,CTL01847_9B_2	CTL01847_9B_1,CTL01847_9B_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	120	2	BOTTOM	1-5/8" COAX	140	0			NO					

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
Existing Antenna?														
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K		DMP65R-BU8DA-K											
ANTENNA VENDOR	CCI Antennas		CCI Antennas											
ANTENNA SIZE (H x W x D)	96X21X7.8		96X20.7X7.7											
ANTENNA WEIGHT	87		95											
AZIMUTH	240		240											
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	103		103											
ANTENNA TIP HEIGHT	107		107											
MECHANICAL DOWNTILT	0		0											
FEEDER AMOUNT	8		4											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)		36		36										
Antenna RET Motor (QTY/MODEL)														
SURGE ARRESTOR (QTY/MODEL)	8	Polyphaser TSXDC-4310-FM	12	Polyphaser TSXDC-4310-FM										
DIPLEXER (QTY/MODEL)	8	Kaelus DBC0055F1V51-1	4	Kaelus DBC0055F1V51-1										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	4	CCI - TMABPDB7823VG12A (Twin-LBP)	2	CCI - TMABPDB7823VG12A (Twin-LBP)										
CURRENT INJECTORS FOR TMA (QTY/MODEL)														
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)	1	4478 B14	1	4449 B5/B12										
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)			1	8843 B2/B66A										
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	12 feeders 1 5/8" per sector													
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.C.700.4G.tmp5		CTL01847_7C_3_F	CTL01847_7C_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.C.AWS.4G.tmp4		CTL01847_2C_2	CTL01847_2C_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.C.850.4G.tmp1		CTL01847_8C_1	CTL01847_8C_1	TxRx/	LTE 850	DMP65R-	14.7	240	2	BOTTOM	1-5/8" COAX	140	0			NO					

						TxRx		BU8D_850MHz_02DT															
	PORT 2	255701.C.700.4G.tmp1		CTL01847_7C_1	CTL01847_7C_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.C.1900.4G.tmp1,255701.C.1900.4G.tmp4		CTL01847_9C_1,CTL01847_9C_2	CTL01847_9C_1,CTL01847_9C_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	240	2	BOTTOM	1-5/8" COAX	140	0			NO					

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K	DMP65R-BU8DA-K					
ANTENNA VENDOR	CCI Antennas	CCI Antennas					
ANTENNA SIZE (H x W x D)	96X21X7.8	96X20.7X7.7					
ANTENNA WEIGHT	87	95					
AZIMUTH	0	0					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103	103					
ANTENNA TIP HEIGHT	107	107					
MECHANICAL DOWNTILT	0	0					
FEEDER AMOUNT	8	4					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)	36	36					
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)	8 Polyphaser TSXDC-4310-FM	12 Polyphaser TSXDC-4310-FM					
DIPLEXER (QTY/MODEL)	8 Kaelus DBC0055F1V51-1	4 Kaelus DBC0055F1V51-1					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	4 CCI - TMABPDB7823VG12A (Twin-LBP)	2 CCI - TMABPDB7823VG12A (Twin-LBP)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 4478 B14	1 4449 B5/B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 8843 B2/B66A					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	12 feeders 1 5/8" per sector						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.A.700.4G.tmp5		CTL01847_7A_3_F	CTL01847_7A_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.A.AWS.4G.tmp4		CTL01847_2A_2	CTL01847_2A_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.A.850.4G.tmp1		CTL01847_8A_1	CTL01847_8A_1	TxRx/TxRx	LTE 850	DMP65R-BU8D_850MHz_02DT	14.7	0	2	BOTTOM	1-5/8" COAX	140	0			NO					

	PORT 2	255701.A.700.4G.tmp1		CTL01847_7A_1	CTL01847_7A_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	0	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.A.1900.4G.tmp1,255701.A.1900.4G.tmp4		CTL01847_9A_1,CTL01847_9A_2	CTL01847_9A_1,CTL01847_9A_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	0	2	BOTTOM	1-5/8" COAX	140	0			NO					

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K	DMP65R-BU8DA-K					
ANTENNA VENDOR	CCI Antennas	CCI Antennas					
ANTENNA SIZE (H x W x D)	96X21X7.8	96X20.7X7.7					
ANTENNA WEIGHT	87	95					
AZIMUTH	120	120					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103	103					
ANTENNA TIP HEIGHT	107	107					
MECHANICAL DOWNTILT	0	0					
FEEDER AMOUNT	8	4					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)	36	36					
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)	8 Polyphaser TSXDC-4310-FM	12 Polyphaser TSXDC-4310-FM					
DIPLEXER (QTY/MODEL)	8 Kaelus DBC0055F1V51-1	4 Kaelus DBC0055F1V51-1					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	4 CCI - TMABPDB7823VG12A (Twin-LBP)	2 CCI - TMABPDB7823VG12A (Twin-LBP)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 4478 B14	1 4449 B5/B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 8843 B2/B66A					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	12 feeders 1 5/8" per sector						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.B.700.4G.tmp5		CTL01847_7B_3_F	CTL01847_7B_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.B.AWS.4G.tmp4		CTL01847_2B_2	CTL01847_2B_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.B.850.4G.tmp1		CTL01847_8B_1	CTL01847_8B_1	TxRx/TxRx	LTE 850	DMP65R-BU8D_850MHz_02DT	14.7	120	2	BOTTOM	1-5/8" COAX	140	0			NO					

	PORT 2	255701.B.700.4G.tmp1		CTL01847_7B_1	CTL01847_7B_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	120	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.B.1900.4G.tmp1,255701.B.1900.4G.tmp4		CTL01847_9B_1,CTL01847_9B_2	CTL01847_9B_1,CTL01847_9B_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	120	2	BOTTOM	1-5/8" COAX	140	0			NO					

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	TPA65R-BU8DA-K	DMP65R-BU8DA-K					
ANTENNA VENDOR	CCI Antennas	CCI Antennas					
ANTENNA SIZE (H x W x D)	96X21X7.8	96X20.7X7.7					
ANTENNA WEIGHT	87	95					
AZIMUTH	240	240					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	103	103					
ANTENNA TIP HEIGHT	107	107					
MECHANICAL DOWNTILT	0	0					
FEEDER AMOUNT	8	4					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)	36	36					
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)	8 Polyphaser TSXDC-4310-FM	12 Polyphaser TSXDC-4310-FM					
DIPLEXER (QTY/MODEL)	8 Kaelus DBC0055F1V51-1	4 Kaelus DBC0055F1V51-1					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	4 CCI - TMABPDB7823VG12A (Twin-LBP)	2 CCI - TMABPDB7823VG12A (Twin-LBP)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1 4478 B14	1 4449 B5/B12					
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)		1 8843 B2/B66A					
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	12 feeders 1 5/8" per sector						
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	255701.C.700.4G.tmp5		CTL01847_7C_3_F	CTL01847_7C_3_F	TxRx/TxRx	LTE 700	TPA65R-BU8D_770MHz_02DT	14.9	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.C.AWS.4G.tmp4		CTL01847_2C_2	CTL01847_2C_2	TxRx/TxRx	LTE AWS	TPA65R-BU8D_2130MHz_02DT	17.8	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
ANTENNA POSITION 2	PORT 1	255701.C.850.4G.tmp1		CTL01847_8C_1	CTL01847_8C_1	TxRx/TxRx	LTE 850	DMP65R-BU8D_850MHz_02DT	14.7	240	2	BOTTOM	1-5/8" COAX	140	0			NO					

	PORT 2	255701.C.700.4G.tmp1		CTL01847_7C_1	CTL01847_7C_1	TxRx/ TxRx	LTE 700	DMP65R-BU8D_725MHz_02DT	14.6	240	2	BOTTOM	1-5/8" COAX	140	0			NO					
	PORT 5	255701.C.1900.4G.tmp1,255701.C.1900.4G.tmp4		CTL01847_9C_1,CTL01847_9C_2	CTL01847_9C_1,CTL01847_9C_2	TxRx/ TxRx	LTE 1900	DMP65R-BU8D_1930MHz_02DT	16.7	240	2	BOTTOM	1-5/8" COAX	140	0			NO					

Diagram - Sector	A	Diagram File Name - S1847 2ANT 5C.vsd							
Atoll Site Name -	CT1847	Location Name -	WILTON CT		Market -	CONNECTICUT		Market Cluster -	NEW ENGLAND
Comments:									

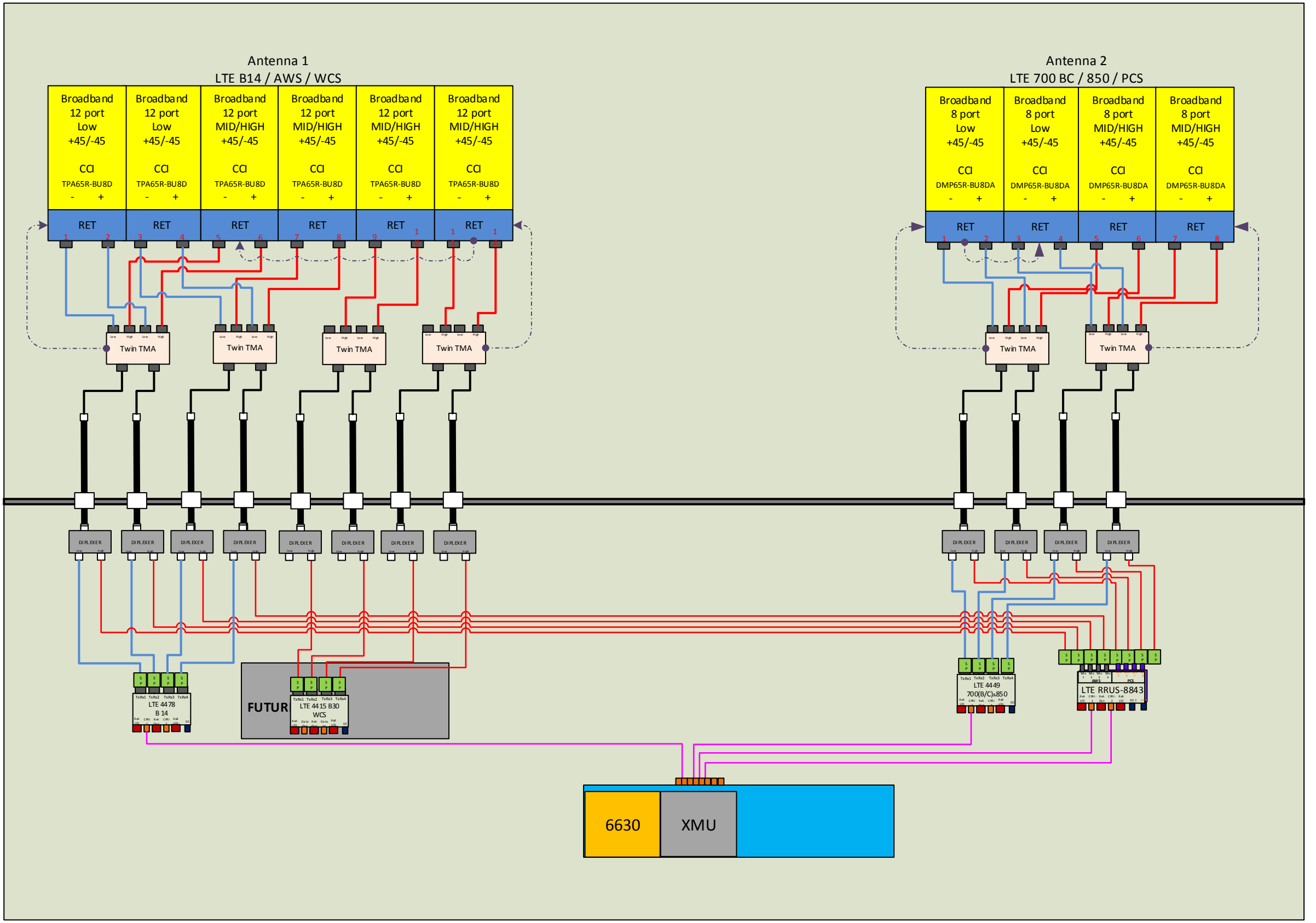


Diagram - Sector	B	Diagram File Name - S1847 2ANT 5C.vsd							
Atoll Site Name -	CT1847	Location Name -	WILTON CT		Market -	CONNECTICUT		Market Cluster -	NEW ENGLAND
Comments:									

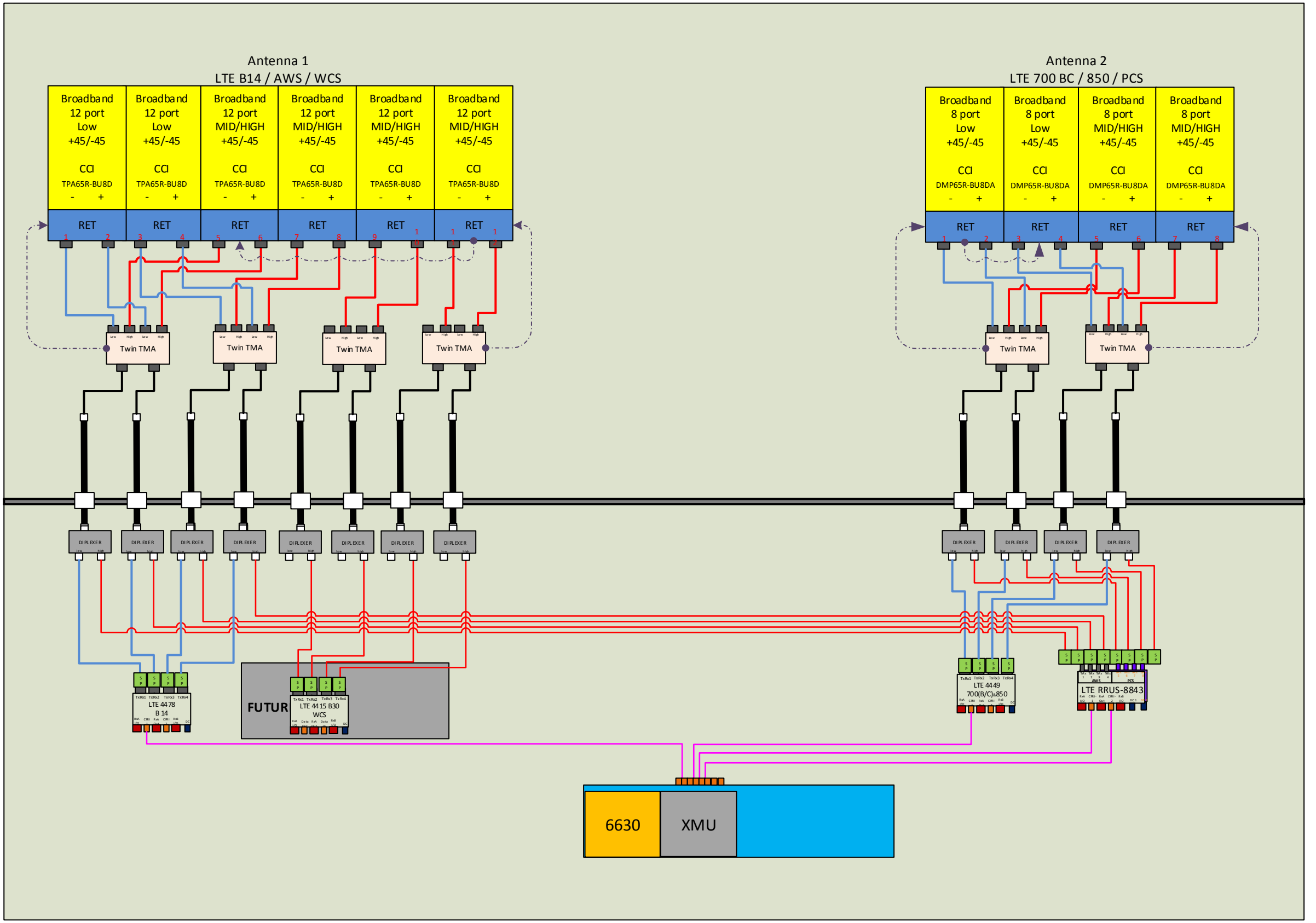
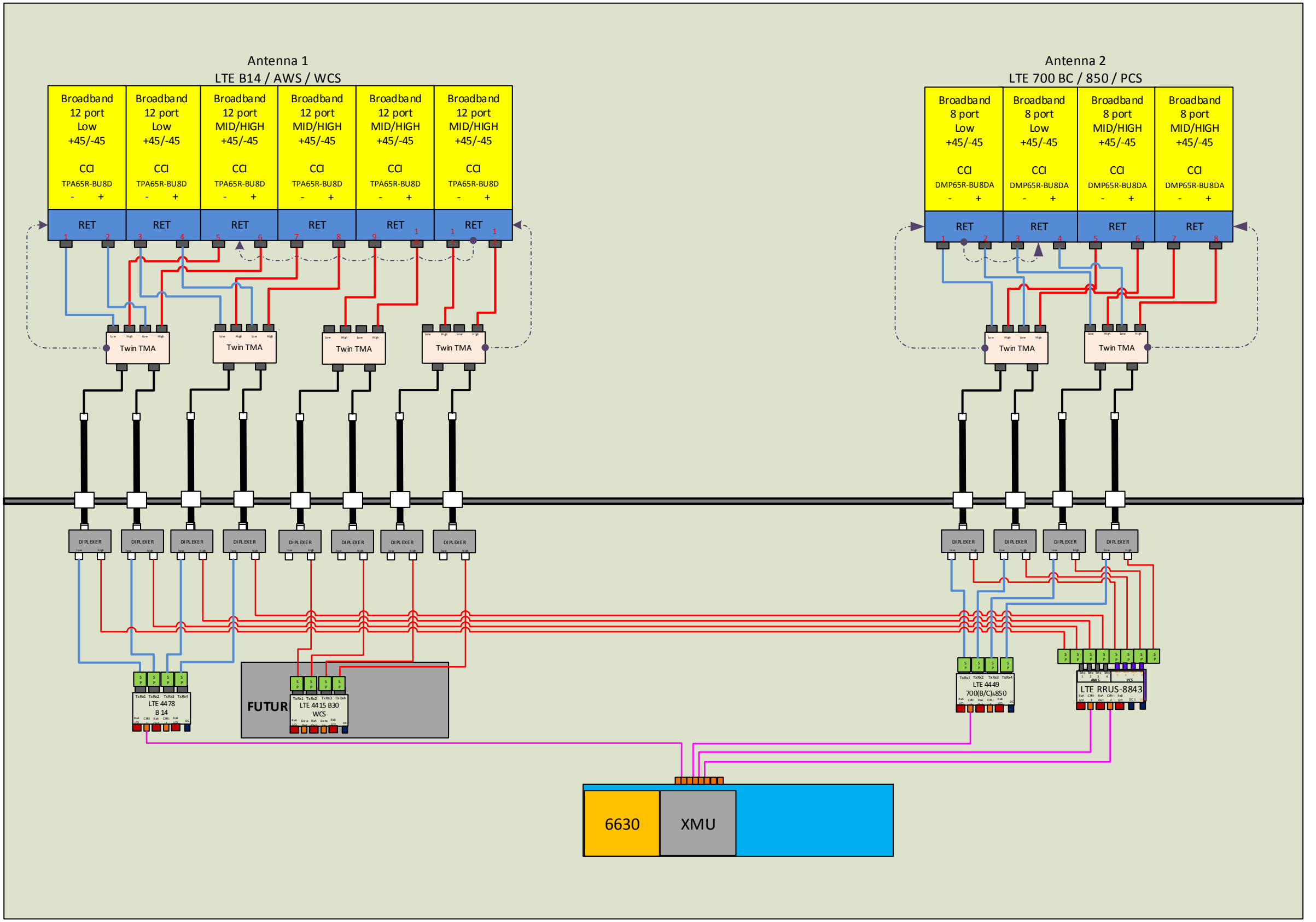


Diagram - Sector	C	Diagram File Name - S1847 2ANT 5C.vsd					
Atoll Site Name -	CT1847	Location Name -	WILTON CT	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							



NOTES			
Date Time (Eastern)	Version	ATTUID	Note
8/14/2019 5:12:05 PM	2.00	ra9161	RFDS VERSION incremented.
9/17/2019 9:49:44 AM	3.00	ra9161	RFDS VERSION incremented.
11/27/2019 8:13:29 AM	4.00	ra9161	RFDS VERSION incremented.

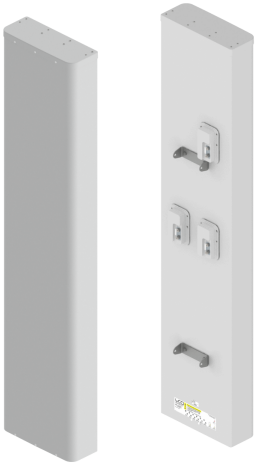
Antennas

MultiPort Series

DATA SHEET

Multi-Band Twelve-Port Antenna

TPA65R-BU8D



- Eight foot (2.4 m) multiband, twelve port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Eight high band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz in a single antenna enclosure
- Innovative Low and High Band Array configuration allows for 4T4R (4x4 MIMO) on Low Band and Dual 4T4R (4x4 MIMO) High Band Arrays, using full length arrays (non stacked), all in under a 20.7" (525 mm) width enclosure, an Industry First
- Full Spectrum Compliance for WCS and AWS-3 frequencies and Band 14 Operations
- Array configuration allows for 4T4R (4X4 MIMO) on Low Band, essential for Band 14 Operations
- LTE Optimized FBR and SPR performance, providing for an efficient use of valuable radio capacity
- LTE Optimized Boresight and Sector XPD and USL performance, essential for LTE Performance
- Exceeds minimum PIM performance requirements
- Equipped with new 4.3-10 connector, which is 40% smaller than traditional 7/16 DIN connector
- Equipped with 3 field replaceable, integrated AISG 2.0 compliant Remote Electrical Tilt (RET) Controllers (Type 1 External)
- Ordering options for External RET Controllers (Type 1) or Internally Integraged RET Controllers (Type 17)

Overview

The CCI 12-Port multiband array is a twelve port antenna, with eight wide band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz. The antenna provides the capability to deploy Dual 4x4 Multiple-input Multiple-output (MIMO) in the high band and 4X4 Multiple-input Multiple-output (MIMO) across low band ports. The CCI 12-Port allows independent tilt control between the low band ports and high band ports and independent tilt control between left and right antenna arrays.

In this three RET configuration, the 1st RET is dedicated for the four Low Band ports. The 2nd RET is dedicated for the four Left High Band ports and the 3th RET is dedicated for the four Right High Band ports. This RET arrangement allows for complete flexibility in coverage control between left and right antenna arrays.

CCI antennas are designed and produced to ISO 9001 certification standards for reliability and quality in our state-of-the-art manufacturing facilities.

Applications

- Dual 4x4 MIMO for the High Band and 4X4 MIMO Low Band ports
- Ready for Network Standardization on 4.3-10 DIN connectors
- With CCI's multiband antennas, wireless providers can connect multiple platforms to a single antenna, reducing tower load, lease expense, deployment time and installation costs

SPECIFICATIONS

Multi-Band Twelve-Port Antenna

TPA65R-BU8D

Electrical

Ports	4 x Low Band Ports for 698-896 MHz	
Frequency Range	698-806 MHz	824-896 MHz
Gain[1]	15.6 dBi	16.6 dBi
Gain (Average)[2]	14.6 dBi	15.6 dBi
Azimuth Beamwidth (-3dB)	74°	63°
Elevation Beamwidth (-3dB)	9.5°	8.0°
Electrical Downtilt	2° to 12°	2° to 12°
Elevation Sidelobes (1st Upper)	<-19 dB	<-18 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 25 dB	> 25 dB
Cross-Polar Discrimination at Sector[2]	11.2 dB	10.9 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	500 watts	500 watts
Polarization	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

Ports	8 x High Band Ports for 1695-2400 MHz			
Frequency Range	1695-1880 MHz	1850-1990 MHz	1920-2180 MHz	2300-2400 MHz
Gain[1]	18.0 dBi	18.1 dBi	18.3 dBi	18.0 dBi
Gain (Average)[2]	16.7 dBi	17.1 dBi	17.3 dBi	16.8 dBi
Azimuth Beamwidth (-3dB)	71°	67°	67°	62°
Elevation Beamwidth (-3dB)	5.7°	5.1°	4.7°	4.1°
Electrical Downtilt	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	<-18 dB	<-18 dB	<-17 dB	<-16 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Front-to-Back Ratio ±20°	> 32 dB	> 32 dB	> 32 dB	> 32 dB
Cross-Polar Discrimination at Peak	> 19 dB	> 18 dB	> 20 dB	> 21 dB
Cross-Polar Discrimination at Sector[2]	11.0 dB	9.1 dB	9.9 dB	8.0 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc	≤ -153 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts
Polarization	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°	Dual Linear 45°
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground

[1]Peak gain across sub-bands.
[2]Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

SPECIFICATIONS

Multi-Band Twelve-Port Antenna

TPA65R-BU8D

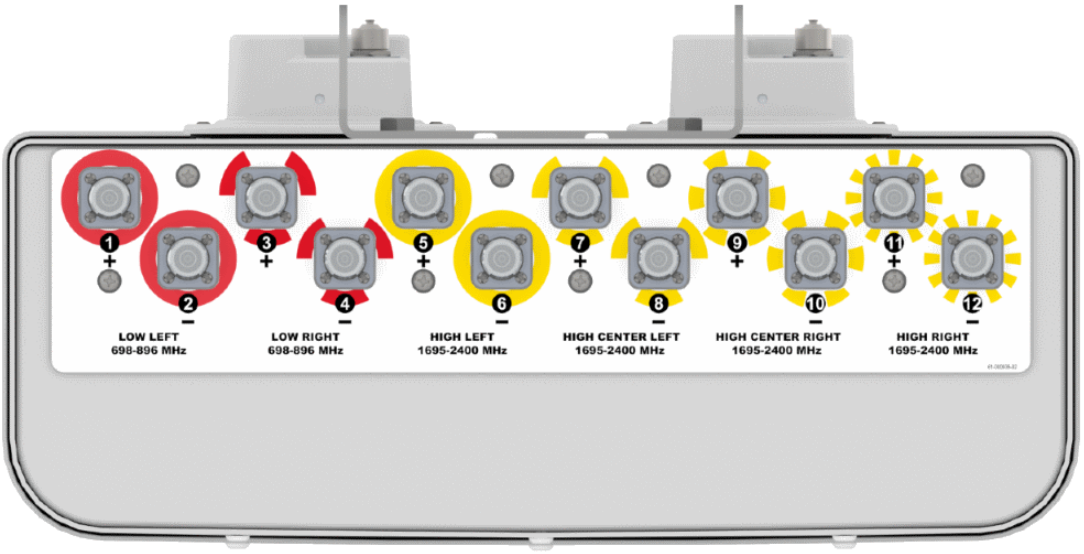
Mechanical

Dimensions (LxWxD)	96.0x20.7x7.7 in (2438x525x197 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	457 lbs (2033 N) @ 100 mph (161 kph)
Side Wind Load	209 lbs (929 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	17.9 ft^2 (1.7 m^2)
Weight *	87.1 lbs (39.5 kg)
Connector	12 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)
Package Dimensions (LxWxD)	104.3x28.7x16.9 in (2650x730x430 mm)
Package Weight	145 lbs (65.8 kg)

** Weight excludes mounting kit*

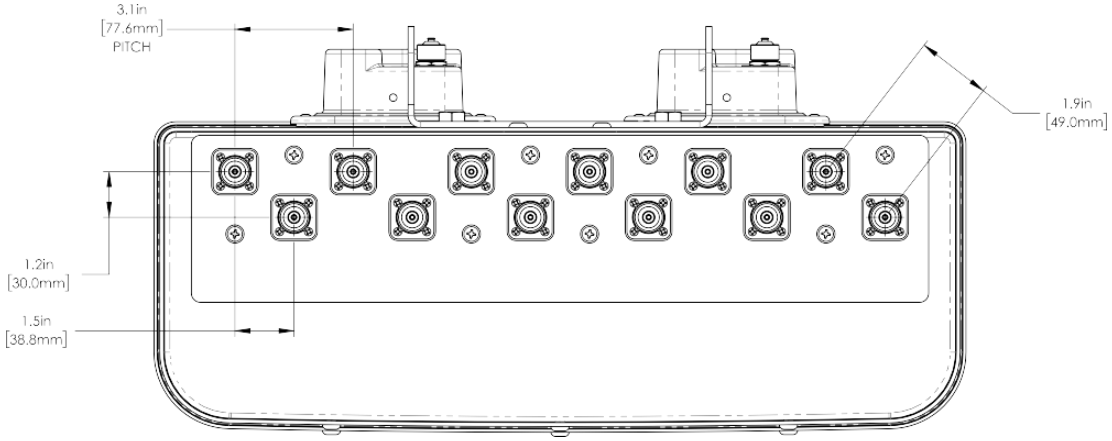
Bottom View

TPA65R-BU8DA



Connector Spacing

TPA65R-BU8DA

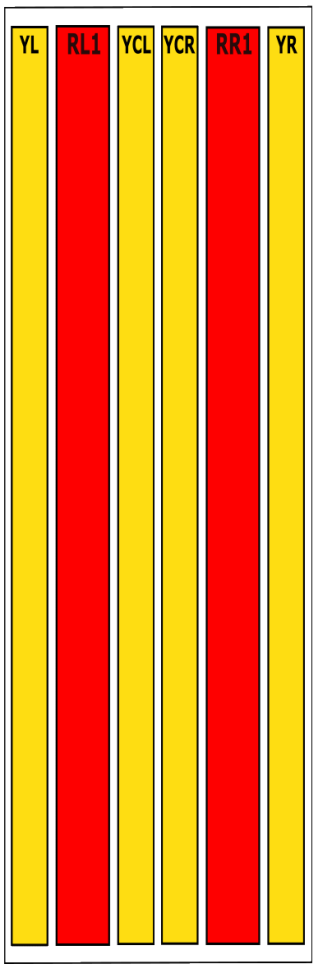


Mechanical

RET to Element Configuration

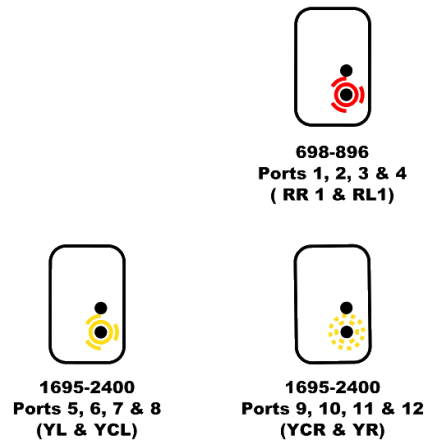
TPA65R-BU8DA Element and RET configuration (Type 1 External RET)

Top of antenna
Viewed from rear



RET placement as viewed from rear of antenna

Top of antenna

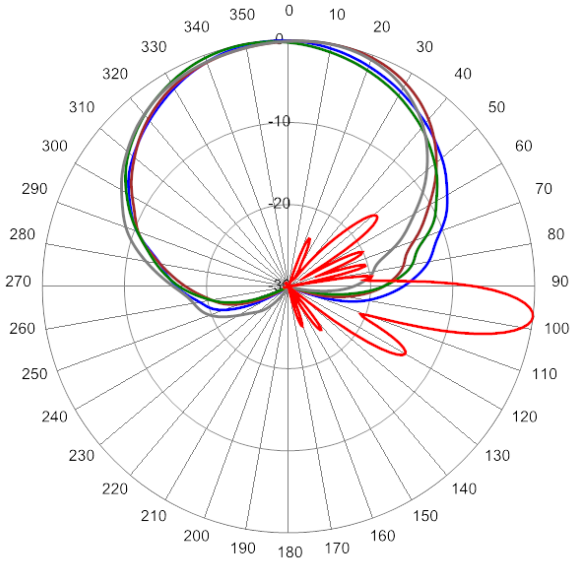


Array	Ports	Freq (MHz)	Ports controlled by common RET
RL1	1, 2	698-896	1, 2, 3, 4
RR1	3, 4	698-896	
YL	5, 6	1695-2400	5, 6, 7, 8
YCL	7, 8	1695-2400	
YCR	9,10	1695-2400	9, 10, 11, 12
YR	11,12	1695-2400	

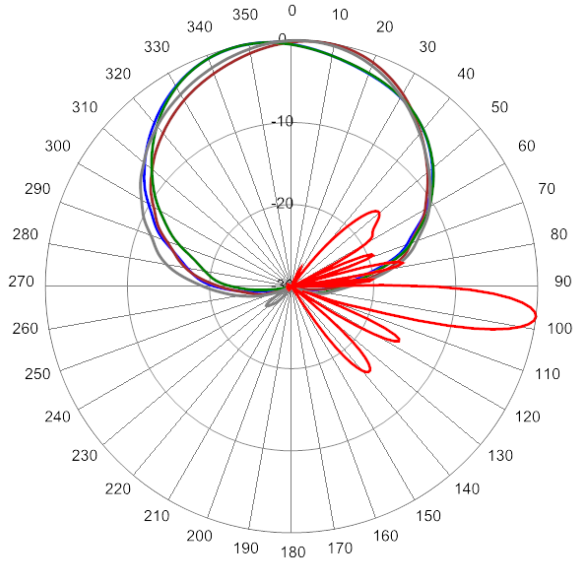
Mechanical

Typical Antenna Patterns

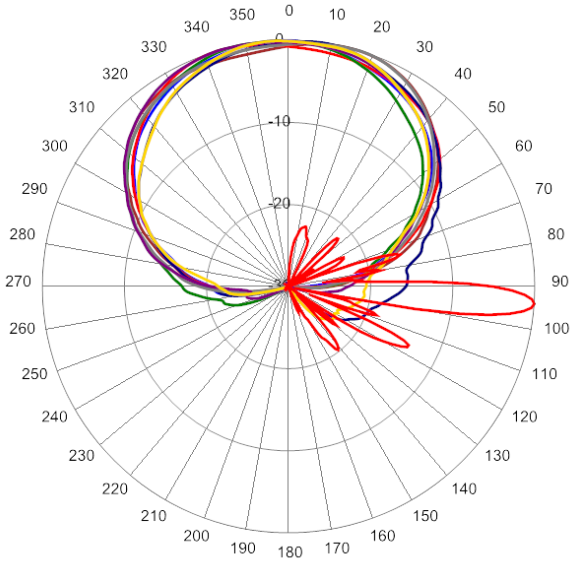
For detailed information on additional antenna patterns, contact customer support at support@cciproducts.com



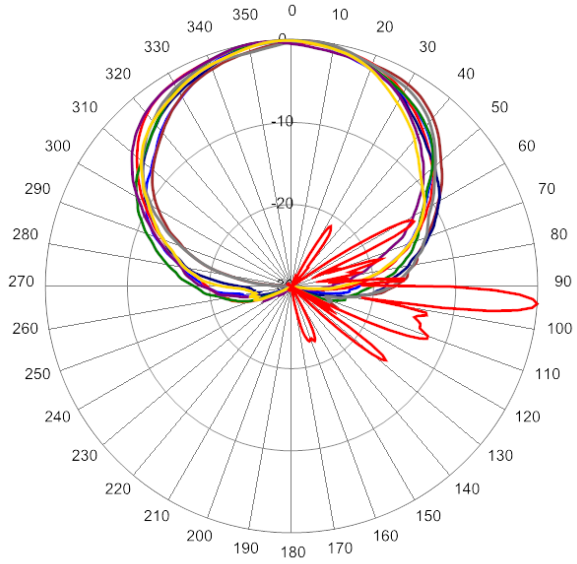
734 MHz Azimuth with Elevation 7°



880 MHz Azimuth with Elevation 7°



1720 MHz Azimuth with Elevation 4°



2155 MHz Azimuth with Elevation 4°

ORDERING

Multi-Band Twelve-Port Antenna

TPA65R-BU8D

Parts & Accessories

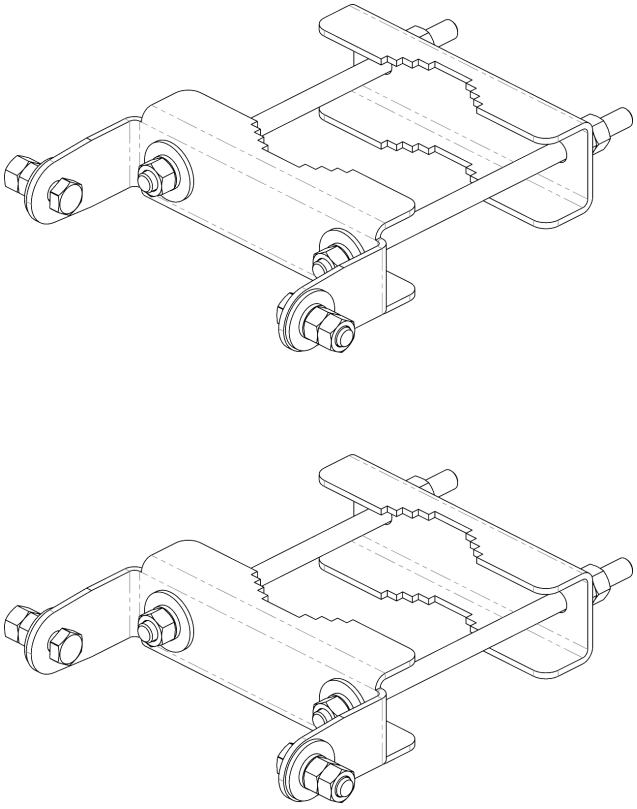
TPA65R-BU8DA-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET200 RET actuators (Type 1 external)and MBK-16 mounting bracket
TPA65R-BU8DB-K	Eight foot (2.4 m) antenna with 65° azimuth beamwidth, 4.3-10 female connectors, 3 factory installed BSA-RET400 RET actuators (Type 17 internal) and MBK-16 mounting bracket
MBK-16	Mounting bracket kit (top and bottom) with fixed 0° mechanical tilt
MBK-01	Mounting bracket kit (top and bottom) with 0° to 10° mechanical tilt adjustment
BSA-RET200	Type 1 Remote electrical tilt actuator
BSA-RET400	Type 17 Remote electrical tilt actuator
DPA-CBK-AG-RRU	Antenna with 3 RET (Type 1) to RRU AISG cable kit
DPA-CBK-RA-AG-RRU	Antenna with 3 RET (Tpye 1)to RRU AISG right angle cable kit
AISGC-M-F-10FT	10 Ft (3 m) Male/Female RRU to Antenna AISG cable

Mounting Bracket Kit

MBK-16

Mechanical

Weight	9.9 lbs (4.5 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lbs (54 Nm)
Mechanical Tilt	0°



MBK-16 Top and Bottom Bracket

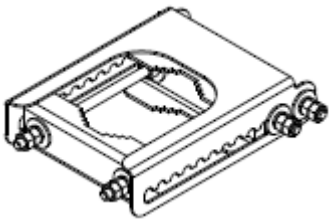
MultiPort Series

Mounting Bracket Kit

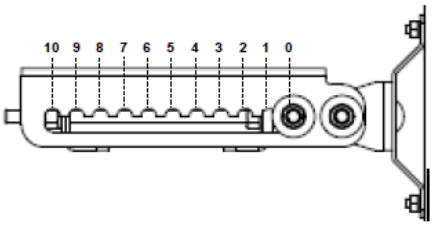
MBK-01

Mechanical

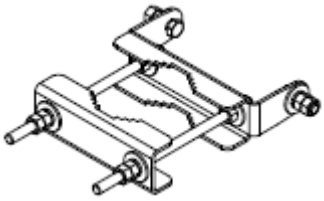
Weight	12.6 lbs (5.7 kg)
Hinge Pitch	47.25 in (1200 mm)
Mounting Pole Dimension	2 to 5 in (5 to 12 cm)
Fastener Size	M12
Installation Torque	40 ft·lb (54 Nm)
Mechanical Tilt Adjustment	0° - 10°



MBK-01 Top Adjustable Bracket



MBK-01 Top Adjustable Bracket Side View



MBK-01 Bottom Fixed Bracket

MultiPort Series

Remote Electrical Tilt Actuator (RET)

BSA-RET200

General Specifications

Part Number	BSA-RET200
Protocols	AISG 2.0
RET Type	Type 1
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

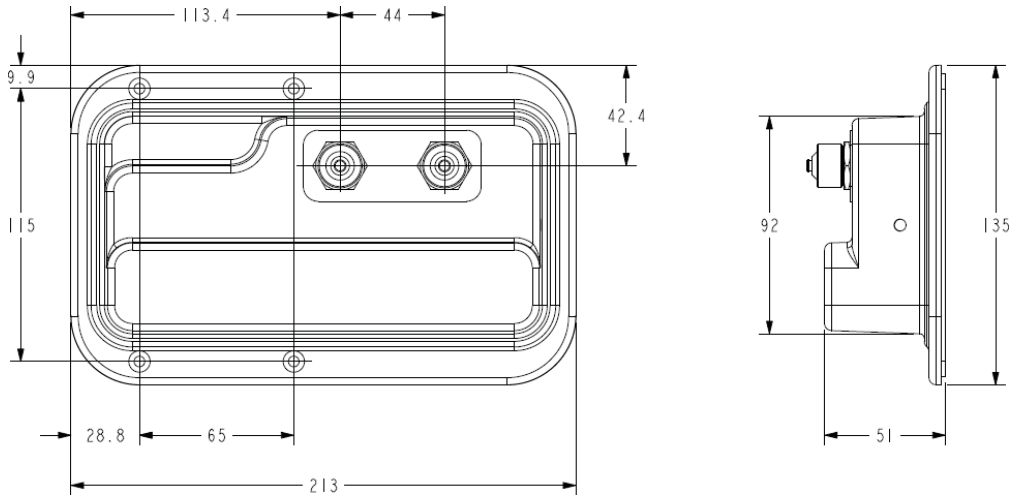
Electrical

Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	120 mA at V_{in}=24
Current Consumption Idle	55 mA at V_{in}=24
Hardware Interface	AISG-RS 485 A/B
Input Connector	Male 1 x 8 pin Daisy Chain
Output Connector	Female 1 x 8 pin Daisy Chain

Mechanical

Dimensions (LxWxD)	8.0x5.0x2.0 in. (213x135x51 mm)
Housing	ASA/ABS/Aluminum
Weight	1.7 lbs (0.75 kg)

ASA= Acrylic Styrene Acrylonitrile
ABS=Acrylanitrile Butadiene Styrene



Internal Remote Electrical Tilt (iRET)

General Specifications

Part Number	BSA-RET400
Protocols	AISG 2.0
RET Type	Type 17
Adjustment Cycles	>10,000 cycles
Tilt Accuracy	±0.1°
Temperature Range	-40° C to 70° C

Electrical

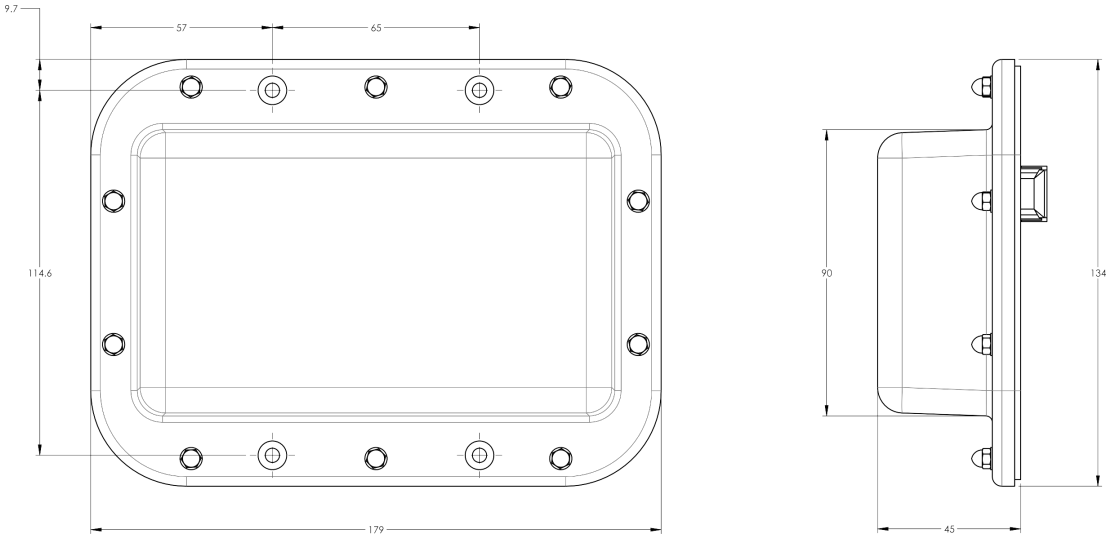
Data Interface Signal	DC
Input Voltage	10-30 Vdc
Current Consumption Tilt	100 mA at V_{in}=24 (500 mA MAX)
Current Consumption Idle	10 mA at V_{in}=24

Mechanical

Dimensions (LxWxD)	7.0x5.3x1.8 in. (179x134x45 mm)
Housing	ASA/ABS/Aluminum
Weight	1.3 lbs (0.6 kg)

ASA= Acrylic Styrene Acrylonitrile

ABS=Acrylanitrile Butadiene Styrene



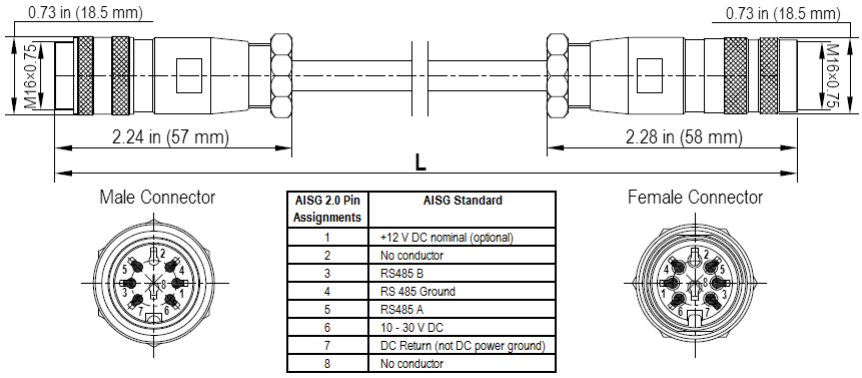
AISG Cable Kit

DPA-CBK-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-M-F-27	AISGC-M-F-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 Nm)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female	
Length	27 in (686 mm)	120 in (3048 mm)
Weight	0.33 lbs (0.15 kg)	0.69 lbs (0.31 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

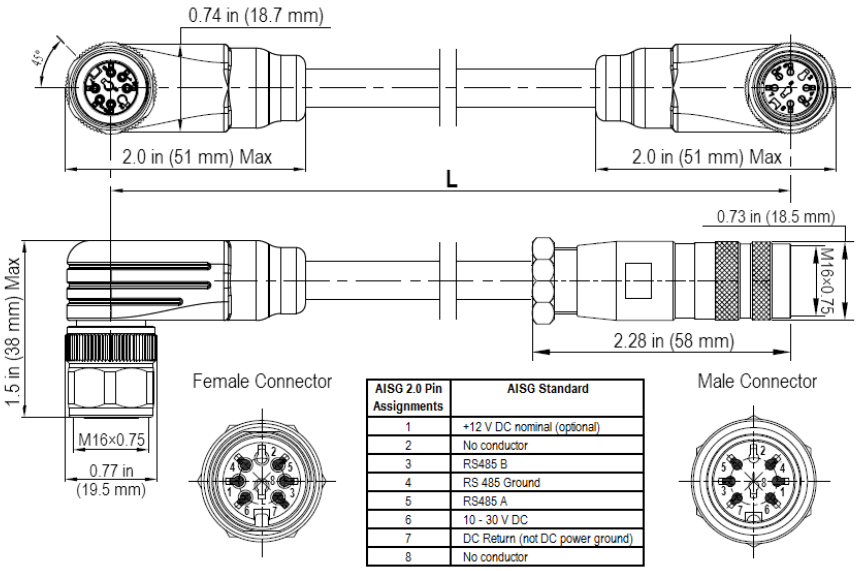
AISG Cable Kit

DPA-CBK-RA-AG-RRU

Electrical/Mechanical/Environmental Specifications

	RET to RET Cables	RRU to Antenna Cables
Individual Cable Part Number	AISGC-MRA-FRA-36	AISGC-M-FRA-10FT
Cable style	UL2464	
Protocol	AISG 1.1 and AISG 2.0	
Maximum voltage	300 V	
Rated current	5 A at 104° F (40° C)	
Temperature Range	-40° to 80° C	
Flammability	UL 1581 VW-1	
Ingress Protection	IEC 60529:2001, IP67	
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5& Nm)	
Construction	Shielded (Tinned Copper Braid)	
Braid coverage	85%	
Jacket Material	Matte Polyurethane (Black)	
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464	
Cable Diameter	0.307 in (7.8 mm)	
Minimum bend radius	3.9 in (100 mm)	
Connectors	2 x 8 pin IEC 60130-9 Right angle male/right angle female	2 x 8 pin IEC 60130-9 Straight male/right angle female
Length	36 in (914 mm)	120 in (3048 mm)
Weight	0.23 lbs (0.10 kg)	0.77 lbs (0.35 kg)
Cables per kit	2	2

Mechanical Specifications



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

Right Angle to Right Angle and Right Angle to Straight Jumper Cable

AISG Cable

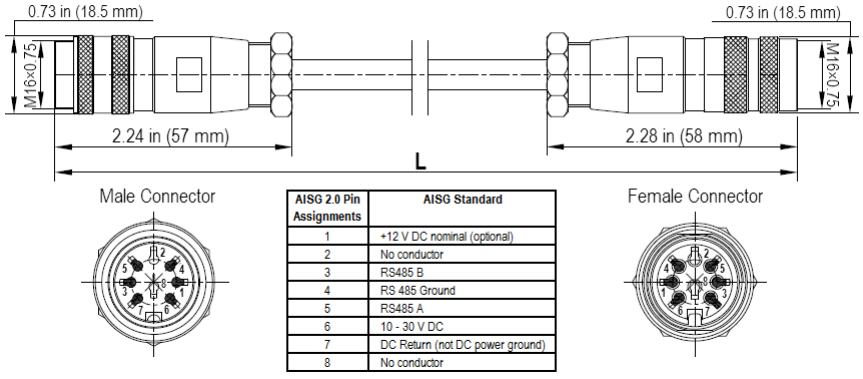
AISGC-M-F-xFT

Electrical Specifications

Individual Cable Part Number	AISGC-M-F-x(FT)
Cable style	UL2464
Protocol	AISG 1.1 and AISG 2.0
Maximum voltage	300 V
Rated current	5 A at 104° F (40° C)

Mechanical Specifications

Individual Cable Part Number	AISGC-M-F-x(FT)
Cables per kit	1
Connectors	2 x 8 pin IEC 60130-9 Straight male/straight female
Tightening torque	Hand tighten only ≈ 1.84 ft-lbs (2.5 Nm)
Construction	Shielded (Tinned Copper Braid)
Braid coverage	85%
Jacket Material	Matte Polyurethane (Black)
Conductors	1 twisted pair - 24 AWG 3 conductors - 19 AWG AWM style 2464
Cable Diameter	0.307 in (7.8 mm)
Length	See order details
Minimum bend radius	3.9 in (100 mm)



AISG 2.0 Pin Assignments	AISG Standard
1	+12 V DC nominal (optional)
2	No conductor
3	RS485 B
4	RS 485 Ground
5	RS485 A
6	10 - 30 V DC
7	DC Return (not DC power ground)
8	No conductor

AISG-Male to AISG-Female Jumper Cable

Environmental Specifications

Individual Cable Part Number	AISGC-M-F-xFT
Temperature Range	-40° to 80° C
Flammability	UL 1581 VW-1
Ingress Protection	IEC 60529:2001, IP67

STANDARDS & CERTIFICATIONS

Standards & Compliance

Safety	EN 60950-1, UL 60950-1
Emission	EN 55022
Immunity	EN 55024
Environmental	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-5, IEC 60068-2-6, IEC-60068-2-11, IEC 60068-2-14, IEC 60068-2-18, IEC 60068-2-27, IEC 60068-2-29, IEC 60068-02-30, IEC 60068-2-52, IEC 60068-2-64, GR-63-CORE 4.3.1, EN 60529, IP 24

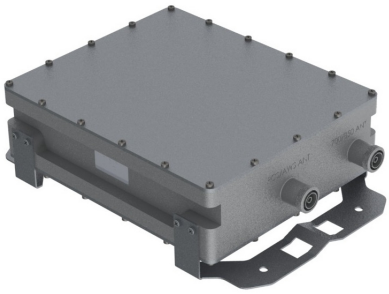
Certifications

Antenna Interface Standards Group (AISG), Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US, ISO 9001

Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass

Tel: 201-342-3338 Fax: 201-342-3339 www.cciproducts.com

General Information



CCI's Triple Band TMA with 700/850 bypass contains two triple band TMA's in a single housing. The TMA's are fully duplexed and share a single LNA for all three bands. The bypass path provides excellent isolation to the TMA path. Separate antenna ports for the bypass path and TMA path are combined onto a single BTS port. Low noise high linearity amplifiers improve the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports CDMA, EDGE/GSM, UMTS and LTE BTS equipment. The TMA is ideally suited for sites upgraded to quad-band using the existing infrastructure. The TMA allows the sharing of feeder lines for both AWS and PCS bands thus reducing tower loading, leasing, and installation costs. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Model TMABPDB7823VG12A

Contents:

Features:

- Small lightweight unit
- Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass
- Independent Gain Control
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system is an outdoor quad band tower mount unit which provides low noise amplification of PCS, AWS, and WCS uplink signals combined with 700/850 bypassed signals from separate antenna ports to a common BTS port. The tower mount unit consists of 14 band-pass filters, two redundant low noise amplifiers (LNA) with bypass failure circuitry, two bias tees, AISG control circuitry, and lightning protection circuitry all housed in an IP68 enclosure suited to long life masthead mounting. The AWS, PCS and WCS paths are dual duplexed to separate the low power uplink signals from the high power down link signals at the BTS and antenna ports. The AWS, PCS, and WCS uplink signals are amplified with a dedicated ultra-low noise PHEMT LNA with adjustable gain control. The unit provides protection against lightning strikes via a multistage surge protection circuit. DC power and AISG 2.0 control is provided via the BTS feeder cable. The unit operates in current window alarm (CWA) mode until a valid AISG message is detected, at which point it automatically switches to AISG mode. Once in AISG mode, the unit can only switch back to CWA mode with the receipt of an AISG CCI vendor defined command. In CWA mode, the unit requires 12VDC at each BTS port and follows typical current window convention. In AISG mode, the unit will accept 10-30 VDC from either BTS port. In AISG mode, the unit does not require an AISG 2.0 compatible site control unit (SCU) and may also be powered by a standard power distribution unit (PDU).

An optional Site Control Unit (SCU) is available to power up to 32 AISG modules per sector and to provide the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains dual redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

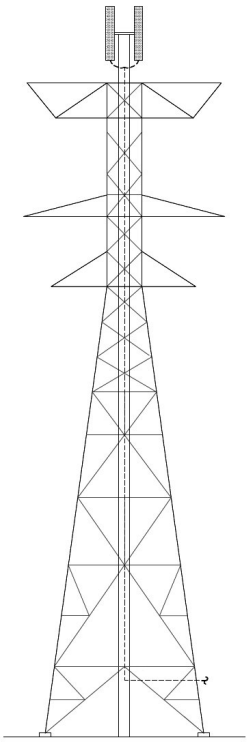
CCI Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass Typical Specifications

Description	Typical Specifications			
Electrical Specifications	**700/850**	**PCS**	**AWS**	**WCS**
Receive Frequency Range	-	1850 – 1910 MHz	1710 – 1755 MHz	2305 – 2320 MHz
Transmit Frequency Range	-	1930 – 1990 MHz	2110 – 2155 MHz	2345 – 2360 MHz
Bypass Frequency Range	698 - 894 MHz	-	-	-
Amplifier Gain	-	6 to 12 dB Adjustable in 0.25 dB steps via AISG	6 to 12 dB Adjustable in 0.25 dB steps via AISG	6 to 12 dB Adjustable in 0.25 dB steps via AISG
Gain Variation	-	±1.0 dB	±1.0 dB	±1.0 dB
System Noise Figure	-	1.4 dB Typ.	1.3 dB Typ.	1.3 dB Typ.
Input Third Order Intercept Point	-	+12 dBm Min at Max. Gain		
Input / Output Return Loss	18 dB Min all ports, 12 dB Min. Bypass Mode			
Insertion Loss	0.25 dB Typ.			
Transmit Passband	-	0.5 dB Typical	0.4 dB Typical	0.4 dB Typical
Bypass Mode, (PCS/AWS/WCS) Rx Passband	-	2.5 dB Typ.	2.5 dB Typ.	2.5 dB Typ.
Filter Characteristics				
Continuous Average Power	200 Watts max			
Peak Envelope Power	2 KW max			
Intermodulation Performance				
IMD at ANT port in Rx Band	< -112 dBm (-155 dBc) [2 tones at +43 dBm]			
Operating Voltage	+10V to +30V DC provided via coax or AISG			
Power Consumption	<2.0 Watts			
Mechanical Specifications				
Connectors	DIN 7-16 female x 2; AISG x 1			
Dimensions (Body Only)	10.63” (H) x 11.024” (W) x 3.72” (D); (290.60 (H) x 280.00 (W) x 95.0 (D) mm)			
Dimensions (with Conn. & Bracket)	14.25” (H) x 11.024” (W) x 4.11” (D); (362.00 (H) x 280.00 (W) x 104.40 (D) mm)			
Weight	23.1 Lbs. (10.5 Kg) - with Brackets; 22 Lbs. (10 Kg) - without brackets			
Mounting	Pole/Wall Mounting Bracket			
Environmental Specifications				
Operating Temperature	-40˚ C to +65˚C			
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5			
Enclosure	IP68			
MTBF	>500,000 hours			

All specifications are subject to change. The latest specifications are available at www.cciproducts.com

5

Environmental Sound Assessment



Wireless Communication Facility
CT1847 Wilton
EVERSOURCE Structure 935
Rivergate Drive, Wilton, CT 06897

January 7, 2020

Prepared For:

AT&T Wireless
550 Cochituate Road
Suites 13 & 14
Framingham, MA 01701

Prepared By:

Modeling Specialties
30 Maple Road
Westford, MA 01886

ENVIRONMENTAL NOISE EVALUATION

AT&T Mobility is developing a Wireless Communications Facility (the site) in Wilton Connecticut to support personal wireless communication in the area. The proposed AT&T Wireless antennas will be mounted on an existing Eversource transmission structure. Environmentally sensitive electronic equipment will be enclosed in a walk-in cabinet at the foot of the structure. A small door-mounted cooler unit will be mounted on the cabinet, typically producing no sound, but will produce sound when it is actively supplementing the cooling. An emergency generator is also proposed within the fenced equipment compound at the foot of the structure. The diesel generator will operate only during emergencies and for occasional daytime testing of about one-half hour.

This report addresses land uses in the area, measured ambient sound levels in the area, sources expected at this installation and resulting sound levels at area sensitive locations.

Overview of Project and Site Vicinity

The project is located within the Right-of-Way at the foot of an Eversource Transmission Structure in Wilton, CT. The area surrounding the site is zoned Residential and has a residential character. The nearest residential lots are located in three directions from the equipment. Residential use in other directions are much more distant and will receive less sound energy than those modeled here.

Ambient sound levels were established by field measurements. The sound levels resulting from the proposed equipment were estimated using vendor data and measurements made at similar installations. AT&T / CENTEK plans dated November 11, 2019 provided the necessary information to support the evaluation of project sounds. The corresponding sound levels expected at the nearby sensitive locations were estimated using noise modeling techniques prescribed in acoustical literature.

Figure 1 has a backdrop of Google aerial imagery and is annotated to show the proposed site, surrounding area and nearby receptor locations, showing the orientation and distance from the proposed equipment to the receptor location.

Figure 1: Project Area Showing the Site, Nearby Features and Modeled Sensitive Receptors

Discussion of General Noise Analysis Methods

There are a number of ways in which sound (noise) levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. Following is a brief introduction to the noise measurement terminology used in this assessment.

Noise Metrics

The Sound Level Meter used to measure environmental sound is a standardized instrument.[1] It contains "weighting networks" to adjust the frequency response of the instrument to approximate that of the human ear under various circumstances. One of these is the *A-weighting* network. A-weighted sound levels emphasize the middle frequency sounds and de-emphasize lower and higher frequency sounds; they are reported in decibels designated as "dBA." All broadband levels represented in this study are weighted using the A-weighting scale.

The sounds in our environment usually vary with time so they cannot always be described with a single number. Two methods are used for describing variable sounds. These are *exceedance levels* and *equivalent level.* Both are derived from a large number of moment-to-moment A-weighted sound level measurements. Exceedance levels are designated L_n, where "n" can have any value from 0 to 100 percent. For example:

- L_{10} is the sound level in dBA exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the *intrusive* sound level because it is caused by occasional louder noises like those from passing motor vehicles.

- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the *residual* sound level, which is the sound level observed when there are no loud, transient noises.

By using exceedance levels, it is possible to separate steady sounds (L_{90}) from occasional louder sounds (L_{10}) in the environment. The *equivalent level* is the level of a hypothetical steady sound that has the same energy as the actual fluctuating sound observed. The equivalent level is designated L_{eq}, and is also A-weighted. The equivalent level is strongly influenced by occasional loud, intrusive noises. When a steady sound is observed, all of the L_n and L_{eq} are equal.

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[1] *American National Standard Specification for Sound Level Meters*, ANSI S1.4-1983, published by the Standards Secretariat of the Acoustical Society of America, NY.

In the design of noise control treatments, it is essential to know something about the frequency spectrum of the sound of interest. Noise control treatments do not function like the human ear, so simple A-weighted levels are not useful for noise-control design or the identification of tones. The spectra of sounds are usually stated in terms of *octave band sound pressure levels*, in dB, with the octave frequency bands being those established by standard.[2] The sounds at the proposed site have been evaluated with respect to the octave band sound pressure levels, as well as the A-weighted equivalent sound level. Only the A-weighted values are presented here, since they represent the more easily recognized sound scale.

Noise Regulations and Criteria

Sound compliance is judged on two bases: the extent to which governmental regulations or guidelines are met, and the extent to which it is estimated that the community is protected from the excessive sound levels. The governmental regulations that may be applicable to sound produced by activities at the project site are summarized below.

Federal

- Occupational noise exposure standards: 29 CFR 1910.95. This regulation restricts the noise exposure of employees at the workplace as referred to in OSHA requirements. Workers will not routinely attend this facility. Furthermore, the facility will emit only occasional sounds of modest levels, as demonstrated by this study.

State

- The state of Connecticut (Connecticut Department of Energy & Environmental Protection or CDEEP) regulates noise at Regulation Title 22a, Sections 69-1 through 69-7.4, Control of Noise. The project is a Class B (Utility - Communications) emitter. The land use is Utility in a residential Zone 2A. The site is surrounded by residential land whose property lines were evaluated as Class A Noise Receptors. An excerpt from the Town of Wilton Zoning Map is shown in Figure 2. The details of the CDEEP performance criteria are shown in Table 1 below and are based on the source and receiving land uses.

Table 1: Overview of CDEEP Performance Criteria

	Receptor's Zone			
Emitter's Zone	Industrial	Commercial	Residential/Day	Residential/Night
Residential	62 dBA	55 dBA	55 dBA	45 dBA
Commercial	62 dBA	62 dBA	55 dBA	45 dBA
Industrial	70 dBA	66 dBA	61 dBA	51 dBA

[2] *American National Standard Specification for Octave, Half-octave and Third-octave Band Filter Sets*, ANSI S1.11-1966(R1975).

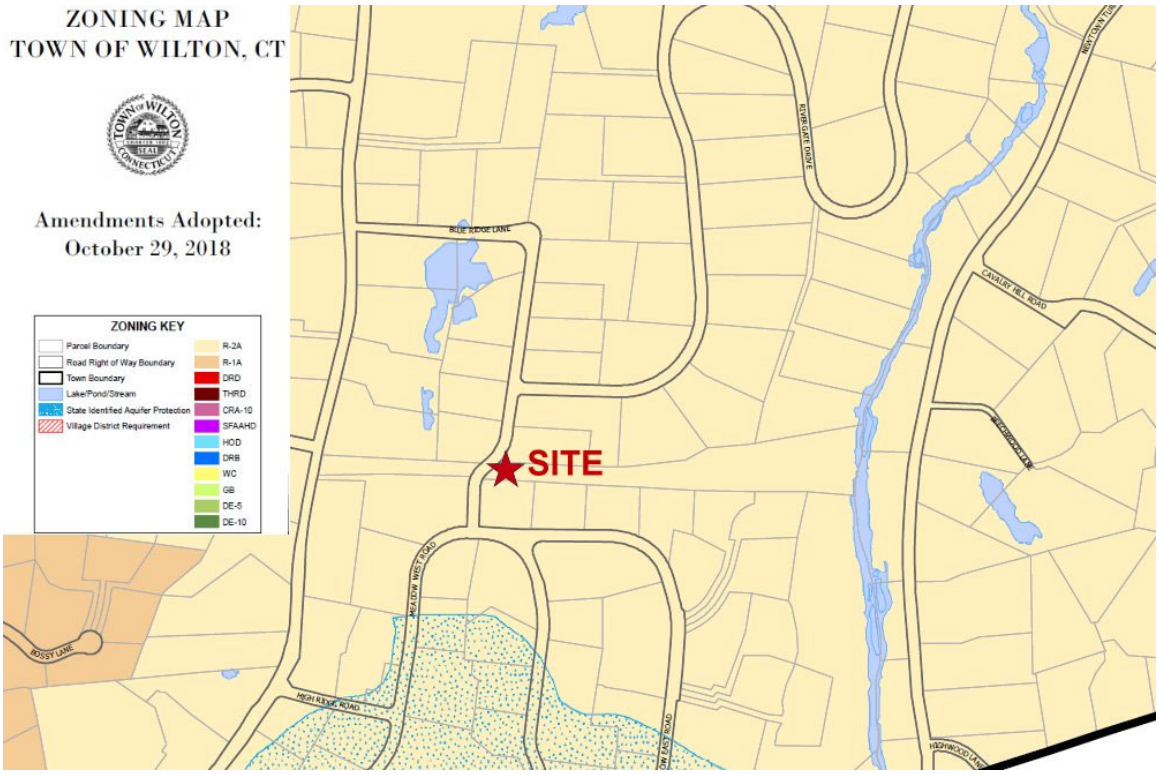


Figure 2: Excerpt of the Wilton Online Zoning Map

Local

- The Wilton Zoning Regulations Section 29.9H *"para 7. Noise: No noise shall be transmitted outside the property from which it originates at a level that exceeds 80 decibels during daylight hours or 55 decibels from 10:00 P.M. to 7:00 A.M. at any lot line, as registered on A-weighted network of a sound level meter manufactured according to standards prescribed by the American National Standards Institute, ANSI S1.4, type 1 or type 2.*

  Section 5n, for projects that require Site Plan Approval or Special Permit states that *"Ground-mounted, roof-mounted or side-mounted equipment for Regulated Facilities shall be consistent with the noise standards as stated in the Town of Wilton Noise Ordinance."*

Existing Community Sound Levels

The area has a suburban residential character. The nearest sensitive receptors (residences) are located south of the transmission ROW. Sound level measurements were made in the site access drive to establish the background sound levels for the area on November 22, 2019. The ambient sound fluctuates through the day and night so measurements were made during the daytime and in the quietest hours of the night (usually midnight to 5:00 am). A new source of sound tends to be noticed most during conditions that are otherwise quiet. Because of this, the ambient sound survey was scheduled under conditions that represented quiet sound levels for the area.

Attended sound level measurements were made using a Rion NA-28 sound level meter. The measurements create a baseline community sound level and captured the frequency-specific character of the sound. The meter was mounted on a tripod approximately 5 feet above the ground. The microphone was fitted with factory recommended foam windscreen. The meter was programmed to take measurements for 20 minutes and then store processed statistical levels. The meter meets the requirements of ANSI S1.4 Type 1 – Precision specification for sound level meters. The meter was calibrated in the field using a Larsen Davis Cal-250 acoustical calibrator before and after the sessions. The field calibrations indicated that the meters did not drift during the study. The spectrum analyzer complies with the requirements of the ANSI S1-11 for octave band filters.

Results of the Ambient Survey

The results of the ambient sound level measurements are summarized in Table 2. The Leq represents the "average" sound level while the L_{90} represents the "background" sound level. Both are shown in this study to characterize the existing sound field. Comparing the Leq levels (including all sounds) to the L90 levels (quietest 10% of samples) illustrates the sound character of the area. Baseline levels are affected by community conditions, meteorology, seasons, insects and traffic patterns. Because the measured levels are dominated by distant traffic patterns, they can be expected to fluctuate. The measurements indicate that the existing nighttime sound levels are currently within the residential target levels of the CDEEP standards for nighttime sounds (45 dBA). The daytime sound levels also meet the daytime sound standards (55 dBA). Because of the seasonal and weather conditions of the survey, the measured levels exclude precipitation, significant wind, insects and traffic peaks.

Table 2: Ambient Sound Levels Measured on November 22, 2019

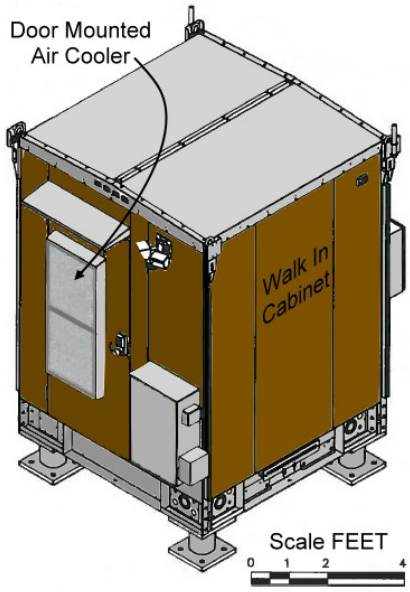
Location	Time	Period	L_{eq}	L_{90}
Site Drive	9:25 AM	Day	49 dBA	44 dBA
Site Drive	4:33 AM	Night	42 dBA	34 dBA

Consistent with most residential communities, the daytime is affected by elevated traffic volumes on local and distant roadways along with local daytime activities. Nighttime levels tend to be lower because of lower traffic volumes and the lack of neighborhood activities.

Sounds from the Proposed Installation

The proposed installation has been designed to minimize the effect on the sound environment. Most of the equipment planned for the installation will produce no sound. Sounds that will be produced by the equipment will be significantly mitigated to manage any effects at sensitive locations. This analysis represents the most likely sound levels to be expected as a result of the normal operation of the equipment using data from potential equipment vendors and measurements of other similar equipment. Details of the modeling and assumptions are provided below. The proposed equipment will include antennas on the power mount and cable trays that support necessary cabling.

None of this equipment will produce environmental sound. As noted above, there are only two proposed sources of sound related to this project. The cabinet coolers and a standby generator to provide system power during periods when utility support is lost. The equipment is described and quantified below:



Environmental Control Equipment. A walk-in cabinet will be located in the fenced compound at the base of the utility structure. The cabinet will house AT&T equipment that is environmentally sensitive. The proposed Vertiv cabinets have two ways to provide cooling. Multiple fans move filtered ambient air through the front wall and out the back wall. Their speed and corresponding sound level vary based on how much cooling is needed. The ventilation system provides adequate cooling except when the ambient temperature is very high. When needed the door-mounted cooler provides additional support. The highest operational sound levels are expected in the hottest days of summer when the cooler is active. It is noted that the system has a heating mode with minimal interaction with the outdoors, so is not associated with community sound.

Non-Routine Sound Emissions

The installation will include a small diesel generator installed inside a separate enclosure. It is a DC generator, which dramatically changes the way that it supports the facility. The generator will only operate to the level demanded by the load. Occasionally, the engine will be remotely tested to assure availability. But since it will have no load, the unit will operate at little more than an idle during the test. The sound level associated with the generator test is expected to be in the mid 50's dBA at 23 feet from the unit. While it might be noticeable if standing at the compound fence, it is expected to remain at or below the daytime ambient at residences.

The equipment is monitored remotely, so attended service will be infrequent. Only during an emergency or during an attended performance test will the unit operate under load. The full load test requires a service technician to physically attach a load bank to assure that all design loads are available. However, this conservative study is based on the full load performance reported by the manufacturer of 62 dBA at 23 feet.

Equipment Sound Level Modeling

A computer model was developed for the project sounds based on conservative sound propagation principles prescribed in acoustics literature. Each of the expected sources

during operation of the facility were identified and quantified, then estimated at the nearest sensitive receptors. Sound levels decrease with distance, so the resulting sound level will be lower at more distant locations. The sound modeling accounts for specific source and propagation path assumptions for each modeled receiver location.

Sound level prediction modeling was performed using CADNA software under downwind weather conditions as assumed in the standard ISO 9613-2. Table 3 summarizes the modeling input parameters.

Table 3: Modeling Input Parameters

Item	Modeling Input and Description
Terrain	Flat Terrain assumed
Temperature	10°C
Relative Humidity	70%
Weather Condition	6.5 mph, directly from facility to receptor*
Ground Attenuation	0.2, hard surface (0.5 = soft ground, 0.0 = pure reflection)
Atmospheric Inversion	CONCAWE – Category F**
# of Sound Reflections	2
Receptor Height	1.5 meter above ground level

** Propagation calculations incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze of 1 to 5 m/s (ISO 1996-2: 1987) from source to receiver.*

***CONCAWE – Category F indicates an atmosphere that promotes sound propagation.*

Some receptors are in line-of-site of the equipment, so no terrain effects were included in the modeling. An equipment layout plan is shown in Figure 2. An elevation drawing of the compound is shown in Figure 3. The modeling indicates that additional shielding is needed around the generator. Figure 4 shows a 6-foot sound barrier concept that will provide adequate supplemental shielding.

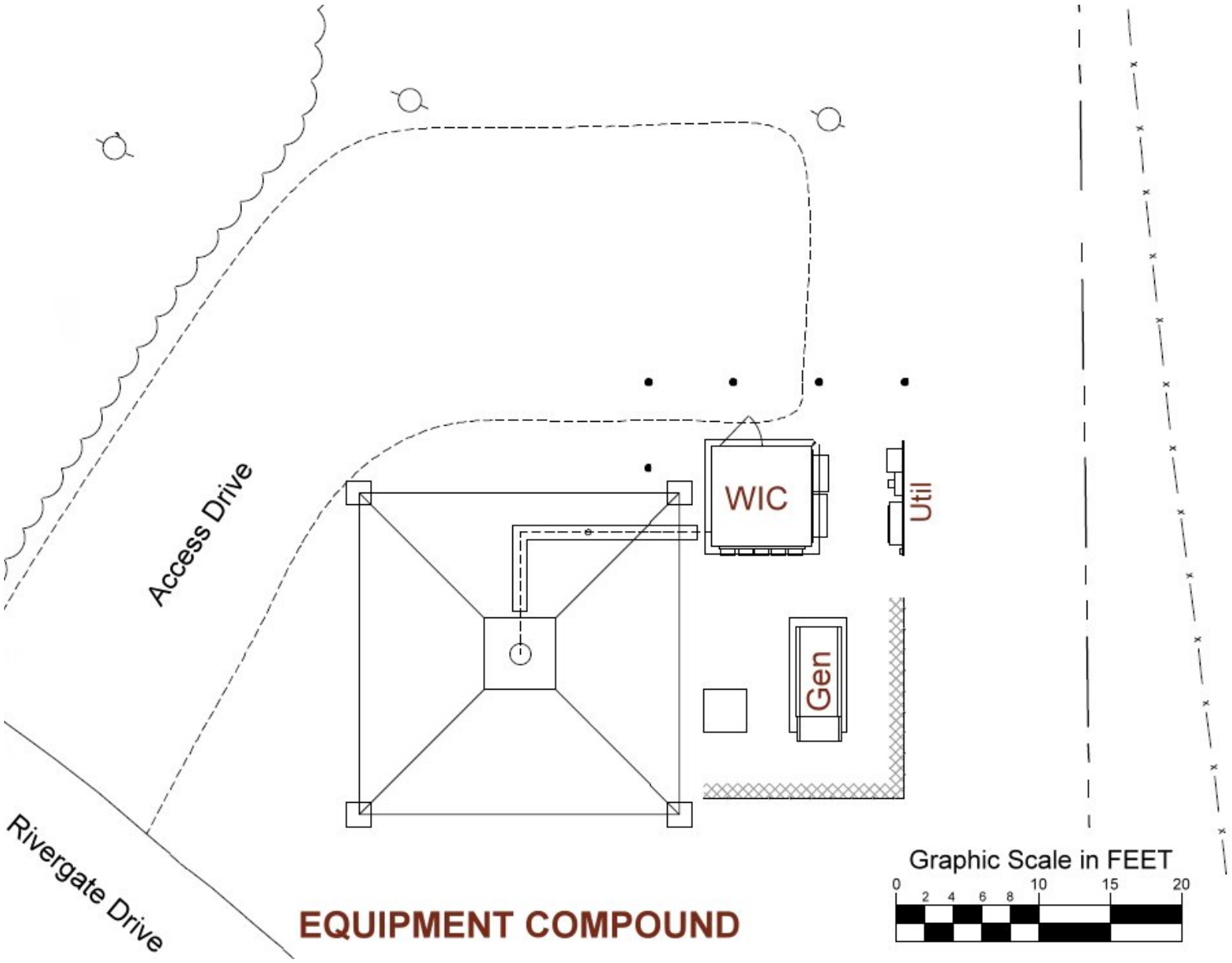


Figure 2: Plan Showing the Proposed Layout of the Equipment Compound

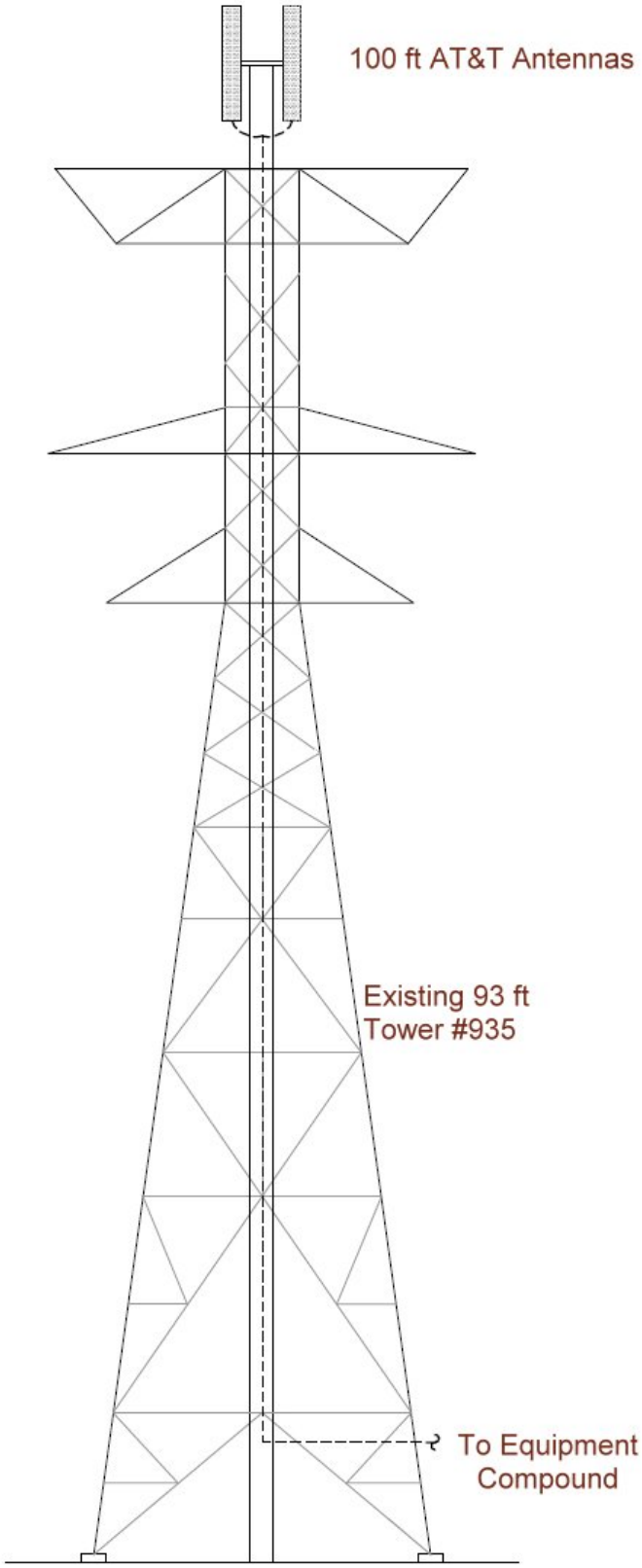


Figure 3: Plan Showing the Proposed Elevation Layout of the Site

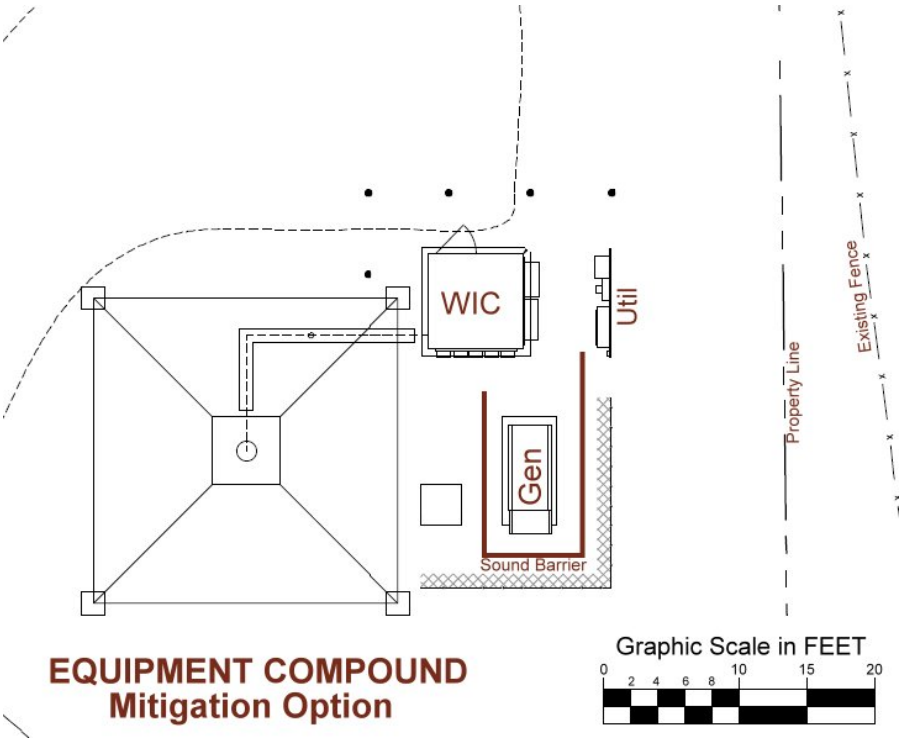


Figure 4: Sketch Showing the Proposed Sound Barrier Around the Generator

Results of Sound Level Modeling

The routine operation of the facility is not expected to include the cabinet cooler or generator, so emits only modest fan sounds when needed. To calculate the effect of the facility under the worst conditions, the sounds from the cabinet fans plus cooler plus generator is modeled together at receptor locations. The site location, receptors and their orientation to the proposed equipment were shown in Figure 1. The results of the worst-case modeling are shown in Table 4. Like air conditioning units in the surrounding community, the need for the supplemental cooler is expected to be limited to the warmest summer days under direct sunlight conditions. The cooler and generator test might never operate together as modeled in this worst-case scenario.

Table 4: Predicted Worst-Case Sound Levels Expected at Receptors

Receptor Location	Distance (Ft) (from Cabinet)	Ambient Level Day/Night (L_{eq})	Sound Level Standard (dBA)	Cooler+ Generator Level
P/L, South	17	49/43	55	55 dBA
P/L, Northeast	55	49/43	55	54 dBA
P/L, Northwest	65	49/43	55	45 dBA
Residence, South	80	49/43	55	42 dBA
Residence, Northeast	165	49/43	55	44 dBA
Residence, Northwest	130	49/43	55	39 dBA

Note: It is customary to conduct all calculations using precise values, but to round the result to whole dBA. All results are rounded to units (dBA).

Sound Mitigation Assumptions

There are several of notable mitigation measures in place to achieve the low sound levels shown above. The selection of the walk-in cabinet reduces area and sound levels associated with full size shelters. The cabinet is oriented so the sound is minimized in the direction of the nearest property line. The generator was optimized from units that are available to support this equipment. The lowest sound level is a result of its inverter design, fully enclosed diesel engine and its low profile. The physical size of the generator cabinet is important because its low height allows a modestly sized sound barrier fence to effectively supplement the mitigation effort.

Conclusions

The potential sounds from the proposed installation were evaluated using measured field baseline, vendor data and numerical modeling methods. Most of the time, the proposed wireless facility will produce no sound. The ambient sound level was established to be 49 dBA during the daytime and 42 dBA at night. The cabinet ventilation sound is expected to be near the ambient levels at the nearest residential property lines. A supplementary cabinet cooler is expected to operate only during the daytime under summertime highest temperatures.

Infrequently, the proposed facility will include the emergency generator testing. This infrequent daytime testing was modeled to include the combined sound from cooler and generator operation. This represents a worst-case estimate which could only happen during the few hottest days of the summer. The graphical modeling summaries in Figure 5 shows the results at the residential property lines. They also show the lower sound levels expected at the existing residences on those same parcels.

The results of this expert analysis indicate the facility will comply with all federal, state and local requirements with respect to environmental sound at residential receptors.

Figure 5: Graphical Summary of the Modeling Results Under Worst-Case Operating Conditions

6

TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates	
Latitude	41-10-55.4 north
Longitude	073-23-27.6 west
Measurements (Meters)	
Overall Structure Height (AGL)	32.6
Support Structure Height (AGL)	NaN
Site Elevation (AMSL)	93.3
Structure Type	
LTOWER - Lattice Tower	

Tower Construction Notifications
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

7

WETLAND INSPECTION

April 10, 2020 **APT Project No.: CT1931580**

Prepared For: New Cingular Wireless PCS, LLC ("AT&T")
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Site Name: CT1847 Wilton CL&P Lattice Structure No. 935

Site Address: Rivergate Drive, Wilton, Connecticut

Date(s) of Investigation: 3/24/2020

Field Conditions: **Weather:** sunny**,** high 40's
Soil Moisture: dry to moist

Wetland/Watercourse Delineation Methodology[1]:
☒Connecticut Inland Wetlands and Watercourses
☐Connecticut Tidal Wetlands

Municipal Upland Review Area: **Wetlands:** 100 feet **Watercourses:** 100 feet

The wetlands inspection was performed by[2]:

Matthew Gustafson, Registered Soil Scientist

Enclosures: Wetland Delineation Field Form & Wetland Inspection Map

This report is provided as a brief summary of findings from APT's wetland investigation of the referenced Study Area that consists of proposed development activities and areas generally within 200 feet.[3] If applicable, APT is available to provide a more comprehensive wetland impact analysis upon receipt of site plans depicting the proposed development activities and surveyed location of identified wetland and watercourse resources.

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1 *Wetlands and watercourses were delineated in accordance with applicable local, state and federal statutes, regulations and guidance.*

2 All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

3 *APT has relied upon the accuracy of information provided by SAI-ATT and its contractors regarding proposed lease area and access road/utility easement locations for identifying wetlands and watercourses within the study area.*

Attachments

- Wetland Delineation Field Form
- Wetland Inspection Map

Wetland Delineation Field Form

Wetland I.D.:	Wetland 1	
Flag #'s:	WF 1-01 to 1-05	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated/seepage ☒	Seasonally Saturated/perched ☒
Comments: Wetland 1 consists of a headwater wetland consisting of a hillside seep system with seasonal saturation.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☒	Scrub-shrub ☒	Forested ☒
Open Water ☐	Disturbed ☒	Wet Meadow ☐
Comments: Vegetation classes range from interior emergent, transitional scrub/shrub, and edge forest resulting from regular vegetation management associated with the electrical transmission corridor.		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☒ Potential ☐	Other ☐
Vernal Pool Habitat Type: None	
Comments: None	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐

DOMINANT PLANTS:

Japanese Knotweed* (Polygonum cuspidatum)	Silky Dogwood (Cornus amomum)
Common Reed* (Phragmites australis)	Multiflora Rose* (Rosa multiflora)
Red Maple (Acer rubrum)	

* denotes Connecticut Invasive Species Council invasive plant species

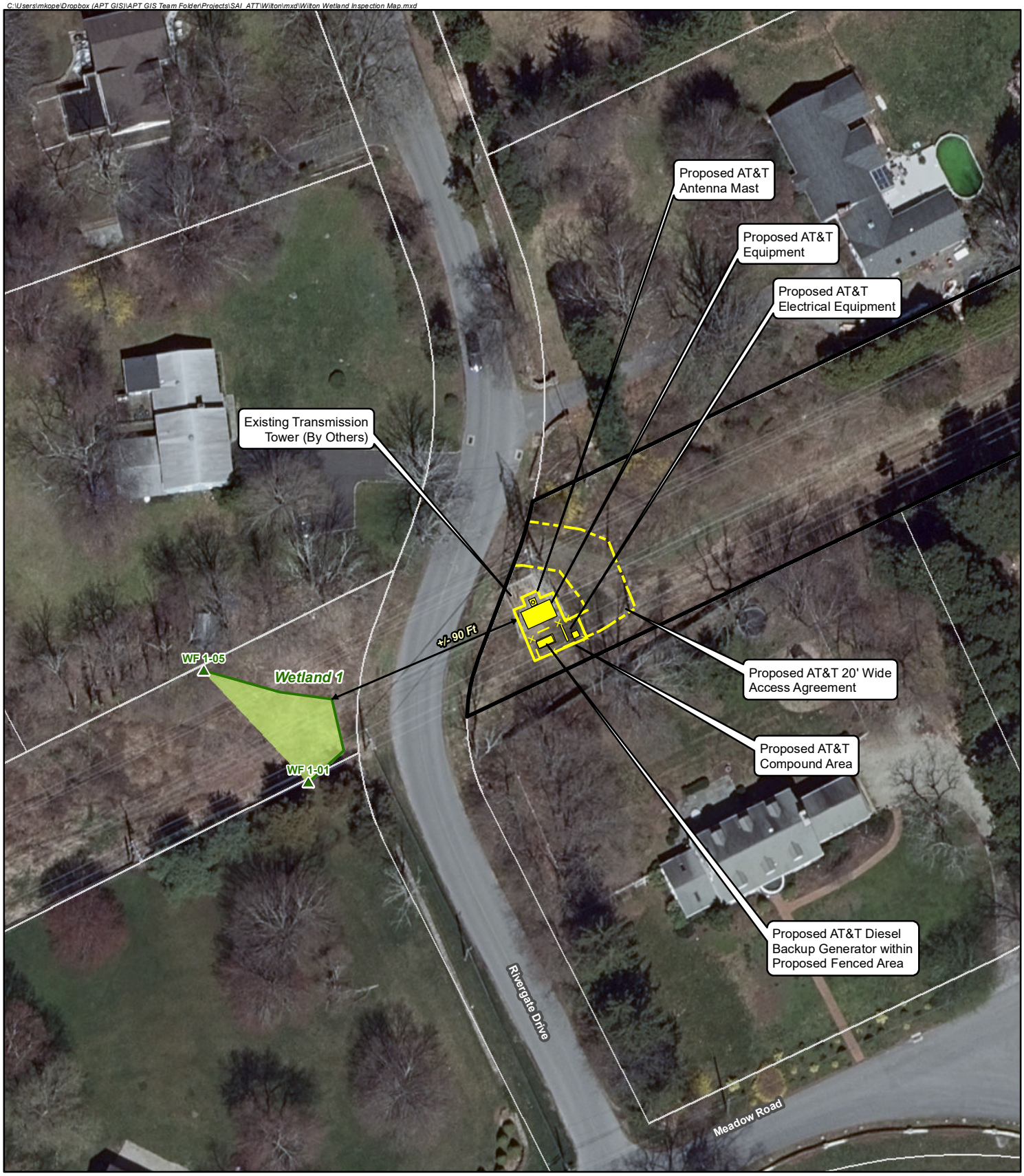
GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that AT&T proposes to install an antenna support structure within and modifications to an existing CL&P lattice transmission structure #935 located off the east side of Rivergate Drive east ("Facility"). The project area is characterized by maintained and overgrown upland field within the transmission right-of-way ("ROW") adjacent to the paved public road.

No wetlands are located within or immediately adjacent to the proposed Facility. The nearest wetland area, Wetland 1, is located on the opposite side of Rivergate Drive west of the proposed work activities. This nearby wetland feature consists of the headwater seep located within the maintained ROW and is associated with a larger wetland complex that drains west away from the Facility.

The proposed Facility development activities are located ±90 feet east from Wetland 1, across Rivergate Drive. Therefore, the Facility would not adversely impact Wetland 1 due to the separating distance and the intervening paved public road, provided appropriate erosion controls are installed and maintained in accordance with the *2002 Connecticut Guidelines For Soil Erosion and Sediment Control*.

C:\Users\mkope\Dropbox (APT GIS)\APT GIS Team Folder\Projects\SAI_ATT\Wilton\mxd\Wilton Wetland Inspection Map.mxd



Legend

- Proposed AT&T Compound
- Proposed AT&T Equipment
- Proposed AT&T Fence
- Proposed AT&T Access Agreement
- Wetland Flag
- Approximate Wetland
- Delineated Wetland Boundary
- Subject Property
- Approximate Parcel Boundary (CTDEEP)

Wetland Inspection Map

Proposed Wireless
Telecommunications Facility
CL&P Utility Structure No. 935
Rivergate Drive
Wilton, Connecticut

N
W E
S

60 30 0 60 Feet

Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 60 feet
Map Date: March 2020

at&t

ALL-POINTS TECHNOLOGY CORPORATION

8

Martin J. Lain
C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
Martin.Lavin@csquaredsystems.com

C Squared Systems, LLC

January 28, 2020

Connecticut Siting Council

Subject: New Cingular Wireless PCS, LLC ("AT&T") – S1847 – Rivergate Drive, Wilton, CT

Dear Connecticut Siting Council:

C Squared Systems has been retained by New Cingular Wireless PCS, LLC ("AT&T") to investigate RF Power Density levels for the AT&T antenna arrays, to be installed on a transmission tower, located at Rivergate Drive in Wilton, CT.

Calculations were done in accordance with FCC OET Bulletin 65. These worst-case calculations assume that all transmitters are simultaneously operating at full power and that there is 0 dB of cable loss. The calculation point is 6 feet above ground level to model the RF power density at the head of a person standing at the base of the tower.

Due to the directional nature of the proposed AT&T antennas, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to the Attachment for the vertical patterns of the proposed AT&T antennas. The calculated results below include a nominal 10 dB off-beam pattern loss to account for the lower relative gain directly below the antennas.

Location	Carrier	Vertical Distance to Antenna (Ft.)	Operating Frequency (MHz)	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Ground Level	AT&T LTE	103	739	1	3014	0.0115	0.4927	2.34%
	AT&T LTE	103	761	1	2813	0.0108	0.5073	2.12%
	AT&T LTE	103	885	1	2878	0.0110	0.5900	1.87%
	AT&T LTE	103	1900	1	4562	0.0174	1.0000	1.74%
	AT&T LTE	103	2100	1	8815	0.0337	1.0000	3.37%
							Total	**11.44%**

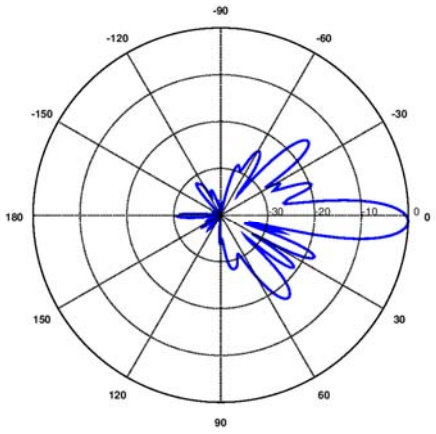
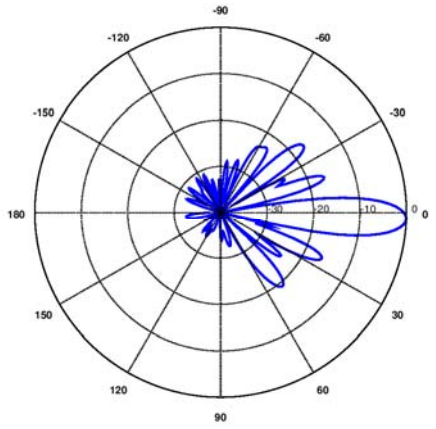
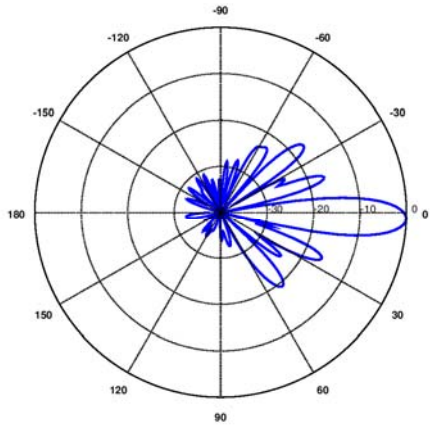
Summary: Under worst-case assumptions, RF Power Density levels for the proposed AT&T antenna arrays will not exceed **11.44%**[1] of the FCC MPE limit for General Public/Uncontrolled Environments.

Sincerely,

Martin J. Lavin
C Squared Systems, LLC

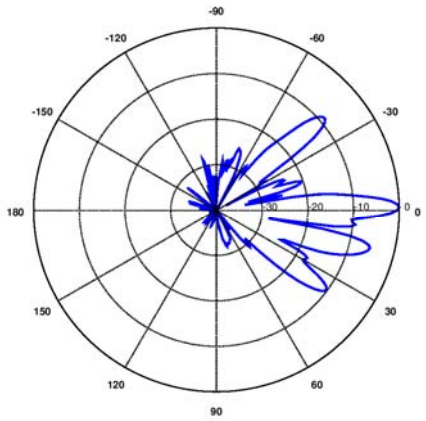
[1] The total %MPE is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

Attachment: AT&T's Antenna Data Sheets and Electrical Patterns

750 MHz Manufacturer: CCI Products Model #: TPA-65R-BU8DA-K Frequency Band: 698-787 MHz Gain: 12.8 dBd Vertical Beamwidth: 9.4° Horizontal Beamwidth: 63° Polarization: Dual Pol ± 45° Size L x W x D: 96.0" x 25.5" x 7.6"	
750 MHz Manufacturer: CCI Products Model #: DMP-65R-BU8DA-K Frequency Band: 698-787 MHz Gain: 12.5 dBd Vertical Beamwidth: 9.5° Horizontal Beamwidth: 75° Polarization: Dual Pol ± 45° Size L x W x D: 96.0" x 20.7" x 7.7"	
850 MHz Manufacturer: CCI Products Model #: DMP-65R-BU8DA-K Frequency Band: 824-894 MHz Gain: 12.6 dBd Vertical Beamwidth: 8.0° Horizontal Beamwidth: 64° Polarization: Dual Pol ± 45° Size L x W x D: 96.0" x 20.7" x 7.7"	

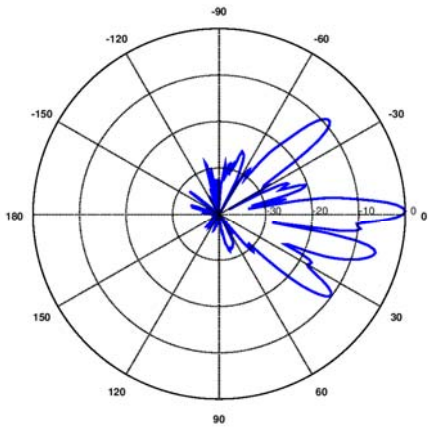
1900 MHz

Manufacturer:	CCI Products
Model #:	DMP-65R-BU8DA-K
Frequency Band:	1850-1990 MHz
Gain:	14.6 dBd
Vertical Beamwidth:	5.1°
Horizontal Beamwidth:	68°
Polarization:	Dual Pol ± 45°
Size L x W x D:	96.0” x 20.7” x 7.7”



2100 MHz

Manufacturer:	CCI Products
Model #:	TPA-65R-BU8DA-K
Frequency Band:	1920 - 2180 MHz
Gain:	15.7 dBd
Vertical Beamwidth:	4.8°
Horizontal Beamwidth:	63°
Polarization:	Dual Pol ± 45°
Size L x W x D:	96.0” x 25.5” x 7.6”



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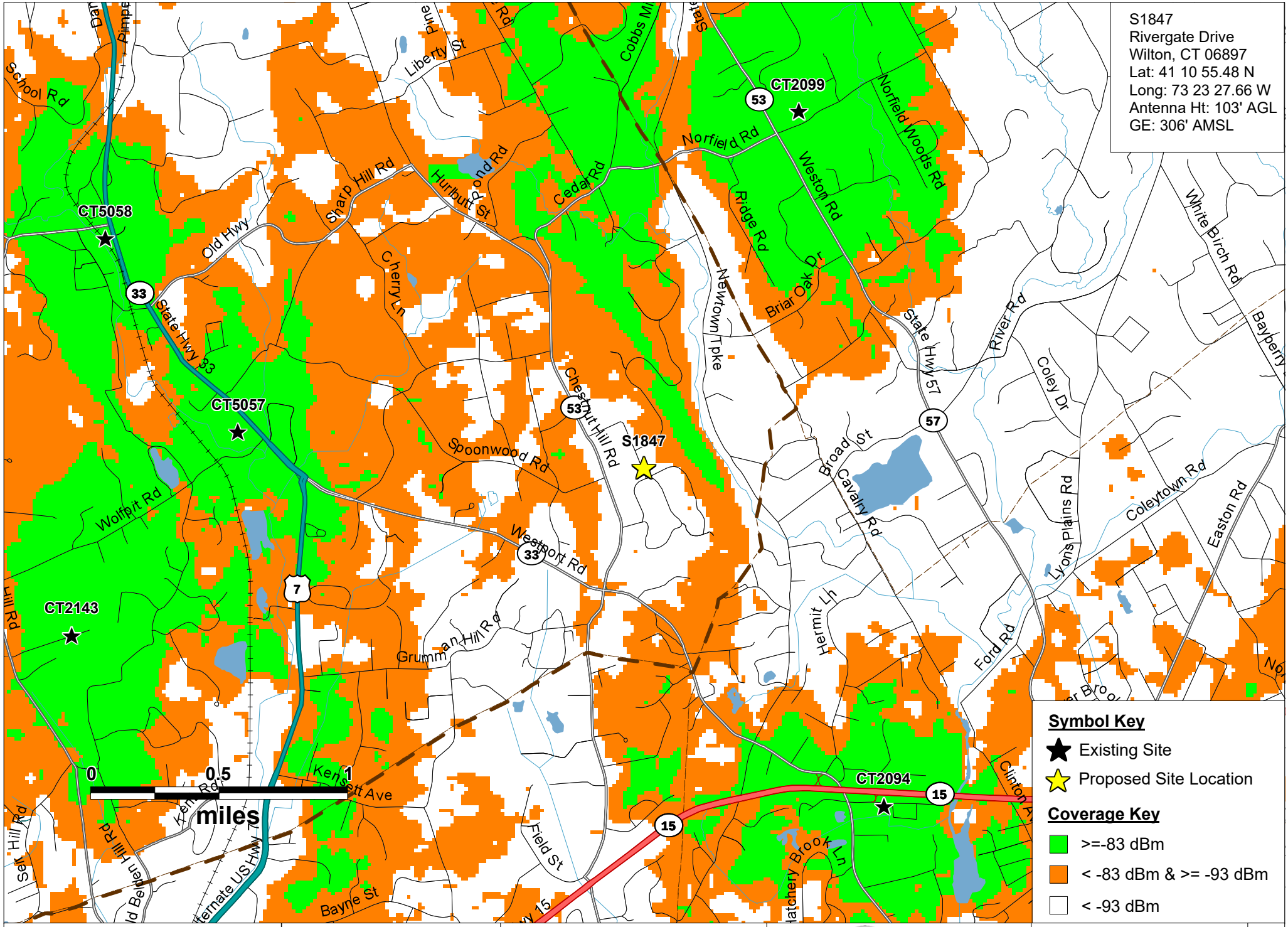
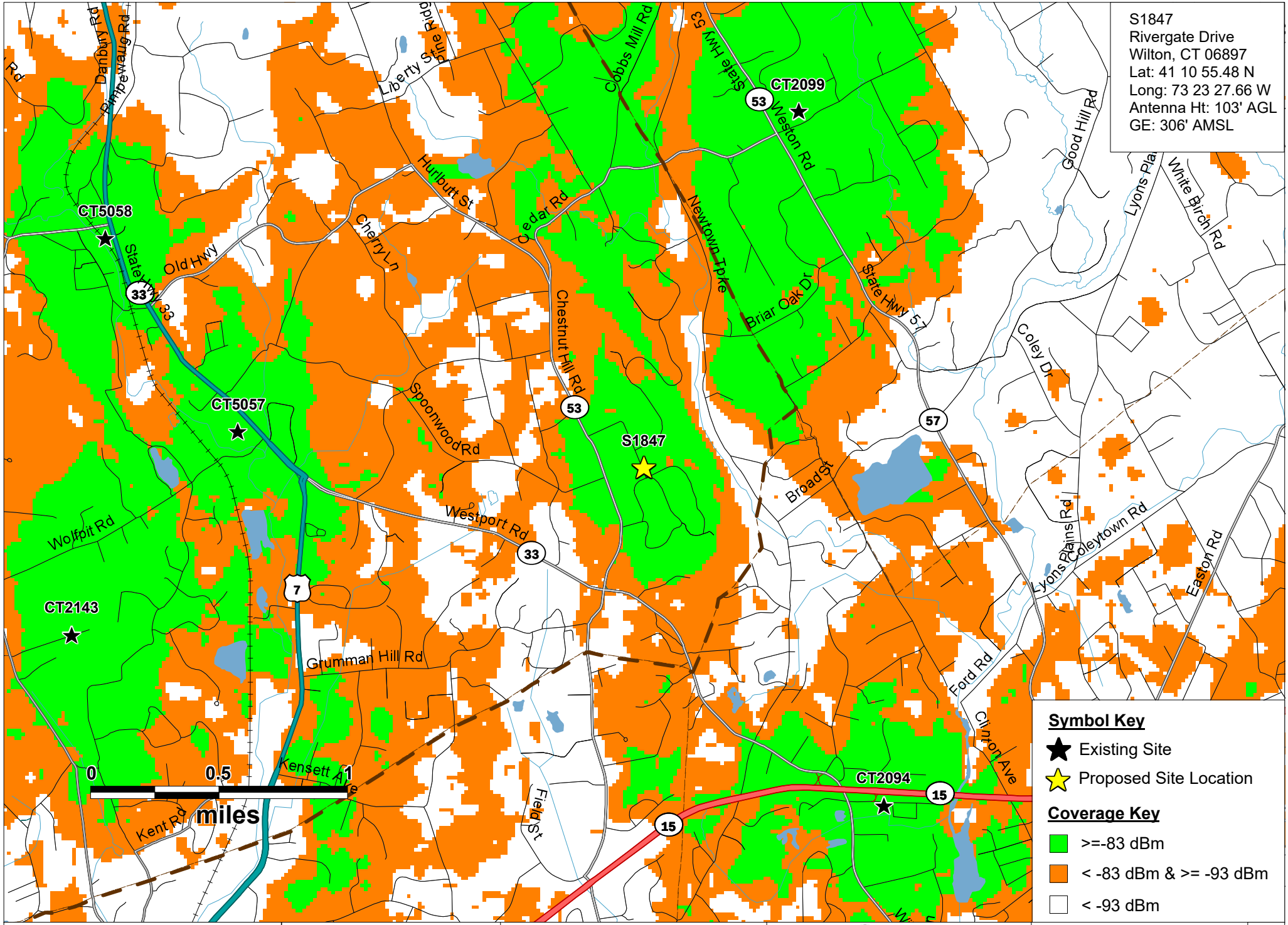


Existing Coverage 700 MHz LTE	Wilton	Rivergate Drive Wilton, CT 06897	at&t

PREPARED ON
DATE: 01/27/2020
REV 0



Existing & Proposed 700 MHz LTE Coverage	Wilton	Rivergate Drive Wilton, CT 06897	at&t

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CERTIFICATION OF SERVICE

I hereby certify that on the 4th day of February 2021, a copy of the following letter and notice of the intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the attached list of abutting property owners:

Dated: 02/04/2021

Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
New Cingular Wireless PCS, LLC (AT&T)

NICOKLAS PATURYNSKI YVONNE M. PATURYNSKI 16 RIVERGATE DRIVE WILTON, CT 06897	CONNECTICUT LIGHT & POWER COMPANY P.O. BOX 270 HARTFORD, CT 06141
JOSEPH PRESTO JENNIFER WULFF 31 WEST MEADOW ROAD WILTON, CT 06897	PAULINE B. PREVETT 39 WEST MEADOW ROAD WILTON, CT 06897
MICHAEL J. BRAGG CHRISTINE M. BRAGG 15 RIVERGATE DRIVE WILTON, CT 06897	BRUCE J. IPE RUTH A. IPE 31 RIVERGATE DRIVE WILTON, CT 06897
ROGER LEVY EDYTHE F. LEVY 43 RIVERGATE DRIVE E WILTON, CT 06897	SOM DEV BINA DEV 248 SHADY BROOK DRIVE LONGHORNE, PA 19047
ROBERT ZEOLI NICOLE ZEOLI 151 RIVERGATE DRIVE WILTON, CT 06897	JAMES J. SHANNON ANISSA M. SHANNON 271 NEWTOWN TPKE WILTON, CT 06897
DIANE SCHWARTZ JONATHAN SCHWARTZ 249 NEWTOWN TPKE WILTON, CT 06897	LUCIA MANNINI ROBERT OSTERMANN 93 EAST MEADOW ROAD WILTON, CT 06897
JEFFREY A. BURKI 258 SASCO HILL ROAD FAIRFIELD, CT 06824	WILLIAM E. MARTIN 79 EAST MEADOW ROAD WILTON, CT 06897
LORENZO DIURNO FILOMENA M. DIURNO 73 EAST MEADOW ROAD WILTON, CT 06897	DIVYESH PATEL KRISHNA R. PATEL 17 WOODWAY LANE WESTPORT, CT 06880
MICHAEL J. DUGAN AMANDA M. DUGAN 71 EAST MEADOW ROAD WILTON, CT, 06897	

NOTICE

Notice is hereby given, pursuant to Section 16-50j-40 of the Regulations of Connecticut State Agencies of a Petition being filed with the Connecticut Siting Council ("Siting Council") on or after February 5, 2021 by New Cingular Wireless PCS, LLC ("AT&T"). AT&T seeks a declaratory ruling that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under Section 16-50k of the Connecticut General Statutes ("C.G.S.") to modify existing public utility tower # 935 owned by Eversource located at 11 Rivergate Drive, Wilton, Connecticut.

The Site is a 5.70-acre public utility right-of-way located on the easterly side of Rivergate Drive approximately 200' north of the Rivergate Drive and West Meadow Road intersection. The Site is currently improved with electrical transmission infrastructure, including a 93'-tall steel lattice electrical transmission tower (Eversource Structure No. 935) operated by Eversource. AT&T will install an approximately 18' x 25' unmanned, gravel equipment compound at grade level which will be enclosed on the southern and western sides be an 8' tall chainlink fence with sound attenuation materials. The equipment compound will be bounded on the eastern side by 6'6" (3'6" AGL) steel and concrete bollards and the northern side of the compound will be bounded by the base of the existing transmission tower. The equipment compound will consist of a walk-in cabinet on a 8'6" x 8'6" concrete pad. AT&T proposes a 9' ice-bridge with 9 remote radio units ("RRUs") and 36 diplexers mounted to the vertical posts of the proposed ice-bridge. The equipment compound will include a 15kW Diesel Power Generator as an emergency back-up power source for AT&T's facility, which will be located on a 4' x 5' concrete pad.

The Petition will provide additional details of the proposal and explain why AT&T submits that this proposed modification presents no significant adverse environmental effects. The location, height and other features of the proposal are subject to review and potential change under the provisions of Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after February 5, 2021 at the following:

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Town of Wilton
Lori Kaback, CCTC
Town Clerk
238 Danbury Road
Wilton, CT 06897

or the offices of the undersigned. A copy of the Petition will also be available on the Connecticut Siting Council website: https://www.ct.gov/cSc/site/default.asp under Pending Matters. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Daniel Patrick, Esq.
Lucia Chiocchio, Esq
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, New York 10601
(914) 761-1300
Attorneys for the Petitioner

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

February 4, 2021

VIA CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

Re: New Cingular Wireless PCS, LLC ("AT&T")
Modify Existing Public Utility Tower
11 Rivergate Drive, Wilton, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and our client's intent to file a petition for a declaratory ruling with the State of Connecticut Siting Council for approval to modify existing public utility tower # 935 (the "Site") owned by Eversource at the above-captioned property.

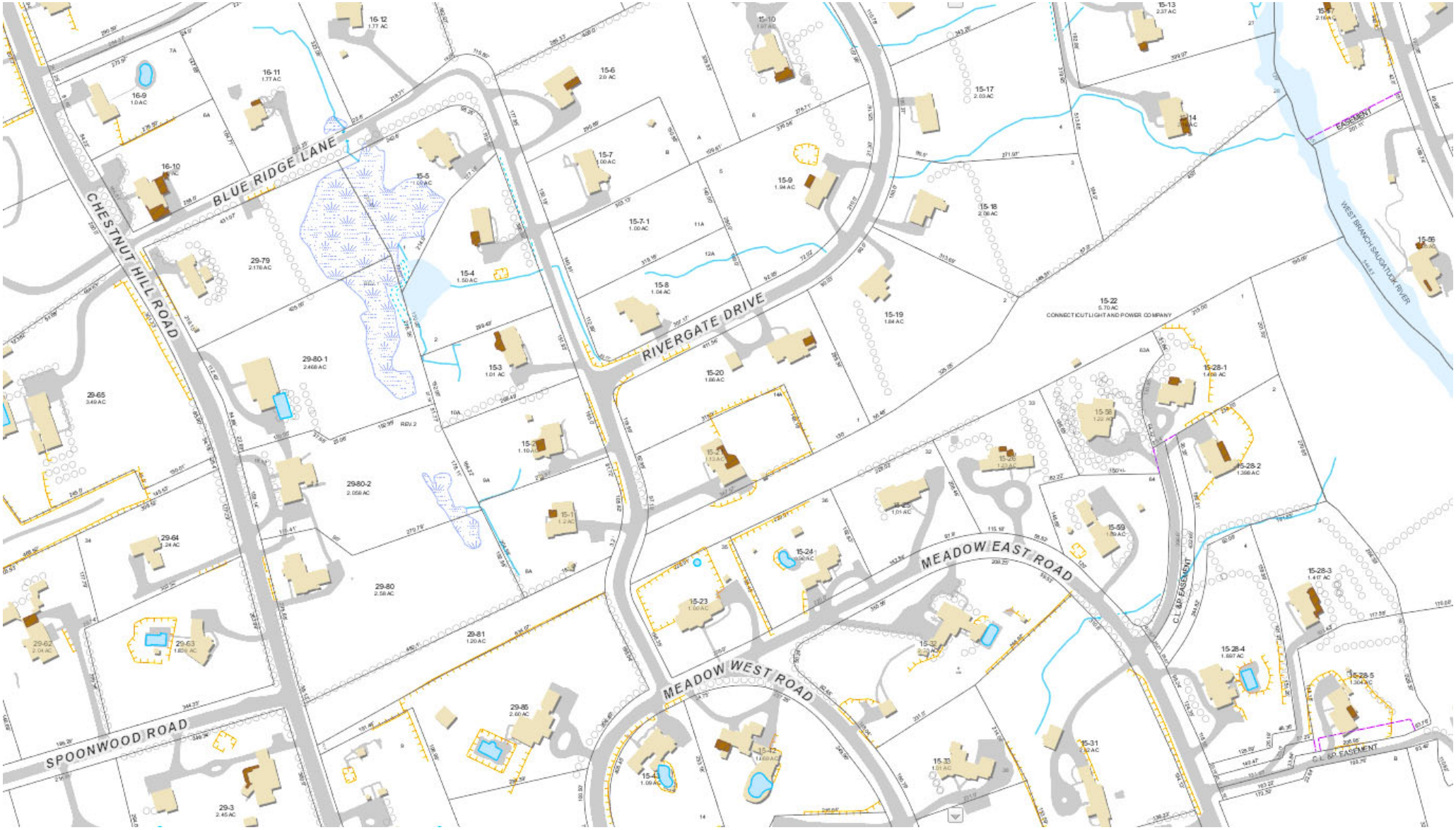
State law requires that record owners of property abutting a parcel on which a facility is proposed be sent notice of an applicant's intent to file a petition with the Siting Council.

Included with this letter please find a Notice of this submission and details of the proposal. Of note, the location, height and other features of the Site are subject to review and potential change by the Connecticut Siting Council under the provisions of Connecticut General Statutes §16-50g et seq.

If you have any questions concerning this petition, please contact the Connecticut Siting Council or the undersigned after February 5, 2021 the date that the petition is expected to be on file.

Very truly yours,

Daniel Patrick
Enclosure


BLUE RIDGE LANE
CHESTNUT HILL ROAD
RIVERGATE DRIVE
MEADOW EAST ROAD
MEADOW WEST ROAD
SPOONWOOD ROAD
WEST BRANCH SAUGATUCK RIVER
EASEMENT
C.L. &P. EASEMENT
C.L. &P. EASEMENT
CONNECTICUT LIGHT AND POWER COMPANY

CERTIFICATION OF SERVICE

I hereby certify that on the 4th day of February 2021, a copy of the following notice of intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested to the list below.

Dated: 02/04/2021

Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
New Cingular Wireless PCS, LLC ("AT&T)

State

THE HONORABLE WILLIAM TONG ATTORNEY GENERAL OFFICE OF THE ATTORNEY GENERAL 165 CAPITOL AVENUE HARTFORD, CT 06106	DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT OFFICES OF CULTURE AND TOURISM DAVID LEHMAN, COMMISSIONER 450 COLUMBUS BLVD HARTFORD, CT 06103
DEPARTMENT OF PUBLIC HEALTH Dr. DEIDRE S. GIFFORD, MD, MPH, ACTING COMMISSIONER 410 CAPITOL AVENUE HARTFORD, CT 06134	DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION PUBLIC UTILITIES REGULATORY AUTHORITY MARISSA P. GILLETT, CHAIRMAN TEN FRANKLIN SQUARE NEW BRITAIN, CT 06051
COUNCIL ON ENVIRONMENTAL QUALITY PETER B. HEARN, EXECUTIVE DIRECTOR 79 ELM STREET HARTFORD, CT 06106	DEPARTMENT OF TRANSPORTATION JOSEPH GIULIETTI, COMMISSIONER 2800 BERLIN TURNPIKE P.O. BOX 317546 NEWINGTON, CT 06131
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION KATIE DYKES, COMMISSIONER 79 ELM STREET HARTFORD, CT 06106	DEPARTMENT OF AGRICULTURE BRYAN P. HURLBURT, COMMISSIONER 450 COLUMBUS BOULEVARD SUITE 701 HARTFORD, CT 06103
OFFICE OF POLICY AND MANAGEMENT MELISSA MCCAW, SECRETARY 450 CAPITOL AVENUE HARTFORD, CT 06106	DEPARTMENT OF EMERGENCY SERVICES & PUBLIC PROTECTION DIVISION OF EMERGENCY MANAGEMENT AND HOMELAND SECURITY JAMES C. ROVELLA, COMMISSIONER 1111 COUNTRY CLUB ROAD MIDDLETOWN, CT 06457

STATE HISTORIC PRESERVATION OFFICE DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT 450 COLUMBUS BLVD., 5TH FLOOR, HARTFORD, CT 06103	SECRETARY OF STATE DENISE MERRILL 165 CAPITOL AVENUE HARTFORD, CT 06106
STATE HOUSE REPRESENTATIVE- 125th DISTRICT TOM O'DEA LEGISLATIVE OFFICE BUILDING ROOM 4200 300 CAPITOL AVENUE HARTFORD, CT 06106	STATE HOUSE REPRESENTATIVE- 143rd DISTRICT STEPHANIE THOMAS LEGISLATIVE OFFICE BUILDING ROOM 4200 300 CAPITOL AVENUE HARTFORD, CT 06106
WESTERN COUNCIL OF GOVERNMENTS 1 RIVERSIDE ROAD SANDY HOOK, CT 06482	STATE SENATOR WILL HASKELL LEGISLATIVE OFFICE BUILDING 300 CAPITOL AVENUE LOB ROOM 3300 HARTFORD, CT 06101

Federal

FEDERAL COMMUNICATIONS COMMISSION 45 L STREET NE WASHINGTON, DC 20554	FEDERAL AVIATION ADMINISTRATION 800 INDEPENDENCE AVENUE, SW WASHINGTON, DC 20591
U.S. CONGRESSMAN –4TH DISTRICT JAMES HIMES 888 WASHINGTON BLVD 10TH FLOOR STAMFORD, CT 06901	U.S. SENATOR CHRIS MURPHY COLT GATEWAY 120 HUYSHOPE AVENUE SUITE 401 HARTFORD, CT 06106
U.S. SENATOR RICHARD BLUMENTHAL 90 STATE HOUSE SQUARE, 10TH FLOOR HARTFORD, CT 06103	

Town of Wilton

LYNNE VANDERSLICE, FIRST SELECTWOMAN TOWN HALL 238 DANBURY ROAD WILTON, CT 06897	MICHAEL WRINN DIRECTOR OF PLANNING & LAND USE MANAGEMENT/TOWN PLANNER PLANNING & ZONING DEPARTMENT TOWN ANNEX 238 DANBURY ROAD WILTON, CT 06897

ENVIRONMENTAL AFFAIRS DEPARTMENT INLAND WETLANDS COMMISSION TOWN ANNEX 238 DANBURY ROAD WILTON, CT 06897	LORI KABACK, CCTC, TOWN CLERK TOWN OF WILTON 238 DANBURY ROAD WILTON, CT 06897
ENVIRONMENTAL AFFAIRS DEPARTMENT CONSERVATION COMMISSION TOWN ANNEX 238 DANBURY ROAD WILTON, CT 06897	

Town of Westport

JIM MARPE, FIRST SELECTMAN WESTPORT TOWN HALL 110 MYRTLE AVENUE, ROOM 310 WESTPORT, CT 06880	MICHELLE PERILLIE, AICP CFM, PLANNER PLANNING AND ZONING DEPARTMENT WESTPORT TOWN HALL 110 MYRTLE AVENUE, ROOM 203 WESTPORT, CT 06880
CONSERVATION DEPARTMENT INLAND WETLANDS COMMISSION WESTPORT TOWN HALL 110 MYRTLE AVENUE, ROOM 205 WESTPORT, CT 06880	JEFFREY M. DUNKERTON, TOWN CLERK WESTPORT TOWN HALL 110 MYRTLE AVENUE, ROOM 105 WESTPORT, CT 06880
CONSERVATION DEPARTMENT CONSERVATION COMMISSION WESTPORT TOWN HALL 110 MYRTLE AVENUE, ROOM 205 WESTPORT, CT 06880	