December 6, 2023

Ms. Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification New Cingular Wireless PCS LLC ("AT&T") Site CT2043
670 Chapel Street, Stratford, CT 06614 (the "Property")
Latitude: 41.2379919 N Longitude: -73.1223881 W

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 126'cl level on the existing 101' electric transmission structure # 1321 ("Structure") located near 670 Chapel Street (aka 155 Harvest Ridge Road), Stratford, CT 06614. The Structure and property are owned by Connecticut Light & Power ("Eversource"). Eversource plans on replacing the existing Structure with a new 125' transmission Structure #19520. AT&T intends on modifying its Facility by removing all (9) antennas & equipment from the existing Structure and placing (3) AIR6449 B77D antennas, (3) AIR6419 B77G antennas, (3) TPA65R-BU6DA-K antennas & (3) OPA65R-BU6DA antennas at the 124' level of the replacement Structure.

This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

The AT&T Facility was approved by the CT Siting Council ("Council") under Petition 411 on July 29, 1999. AT&Ts modification complies with the above-mentioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies ("R.C.S.A") §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2). In accordance with to R.C.S.A §16-50j-73, a copy of this letter is being sent to Hon. Laura R. Hoydick, Mayor, Town of Stratford, Susmitha Attota, AICP, Town Planner, Town of Stratford, and Eversource, the Structure & the property owner.

The planned modification of the facility falls squarely within those activities explicitly provided for in R.C.S.A §16-50j-72(b)(2). Specifically:

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require an extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The replacement structure and foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits the proposed modifications to the above referenced telecommunication facility constitute an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2).

Sincerely,

Hollis M. Redding

Hollis M. Redding
SAI Communications, LLC
12 Industrial Way
Salem, NH 03079
Mobile: 860-834-6964
hredding@saigrp.com

Enclosures

Cc: Hon. Laura R. Hoydick, Mayor, Town of Stratford
Susmitha Attota, AICP, Town Planner, Town of Stratford
Connecticut Light & Power (Eversource), the Structure & property owner

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

CT2043

670 Chapel Street, Stratford, CT 06614

November 29, 2023

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of AT&T antenna arrays to be mounted at 124' AGL on a utility pole located at 670 Chapel Street in Stratford, CT. The coordinates of the tower are 41° 14' 16.77" N, 73° 7' 20.6" W.

AT&T is proposing the following:

1) Install twelve (12) multi-band antennas (four (4) sector) to support its commercial LTE network and the FirstNet National Public Safety Broadband Network ("NPSBN").

This report considers the planned antenna configuration for AT&T[1] as well as existing[2] antenna configuration for T-Mobile to derive the resulting % MPE of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] As referenced to AT&T's Radio Frequency Design Sheet, dated 04/26/2021

[2] As referenced to CENTEK Engineering, Structural Analysis of Utility Pole, 670 Chapel Street, Stratford, Connecticut, dated August 29, 2023

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{GRF^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{\left(H^2 + V^2\right)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

GRF = Ground Reflection Factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines AT&T's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
	Beta / 30°	700	160	14.5	4509	TPA65R-BU6D	73	0	5.93	124
		1900	160	15.1	5177		63			
		2100	240	18.4	16604		66			
		700	160	14.3	4306	OPA65R-BU6D	73	0	5.93	124
		850	160	15.2	5298		64			
		3500	54	25.65	19833	AIR 6419	11	0	2.53	124
		3700	87	25.65	31954	AIR 6449	11	0	2.53	124
	Beta / 150°	700	160	14.5	4509	TPA65R-BU6D	73	0	5.93	124
		1900	160	15.1	5177		63			
		2100	240	18.4	16604		66			
		700	160	14.3	4306	OPA65R-BU6D	73	0	5.93	124
		850	160	15.2	5298		64			
		3500	54	25.65	19833	AIR 6419	11	0	2.53	124
		3700	87	25.65	31954	AIR 6449	11	0	2.53	124
	Gamma / 270°	700	160	14.5	4509	TPA65R-BU6D	73	0	5.93	124
		1900	160	15.1	5177		63			
		2100	240	18.4	16604		66			
		700	160	14.3	4306	OPA65R-BU6D	73	0	5.93	124
		850	160	15.2	5298		64			
		3500	54	25.65	19833	AIR 6419	11	0	2.53	124
		3700	87	25.65	31954	AIR 6449	11	0	2.53	124

Table 1: Proposed Antenna Inventory[3][4]

[3] AT&T's Radio Frequency Design Sheet, dated 03/15/2023

[4] Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

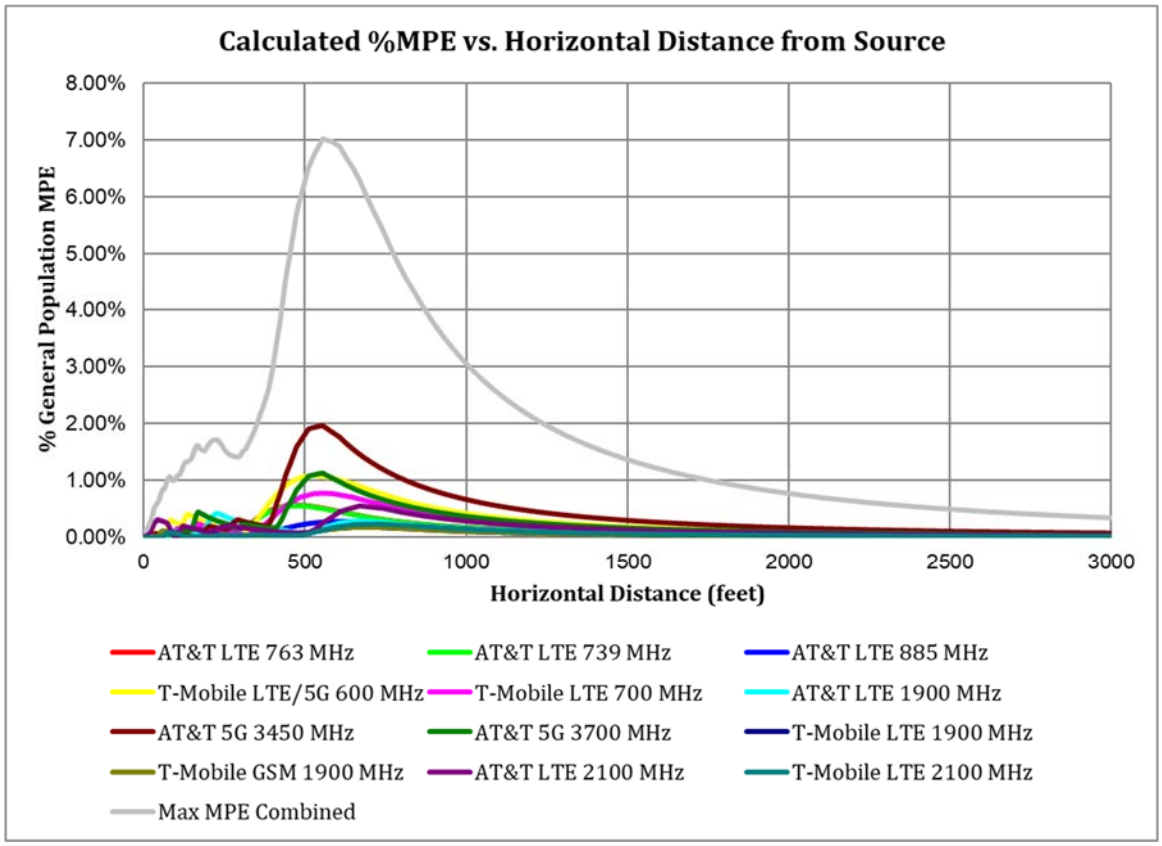


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (7.02% of the General Population limit) is calculated to occur at a horizontal distance of 555 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 555 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six-foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm^2)	Limit (mW/cm^2)	% MPE
AT&T 5G 3450 MHz	1	86.8	124.0	555	0.019644	1.000	1.96%
AT&T 5G 3700 MHz	1	54.0	124.0	555	0.011307	1.000	1.13%
AT&T LTE 1900 MHz	1	160.0	124.0	555	0.001683	1.000	0.17%
AT&T LTE 2100 MHz	1	240.0	124.0	555	0.002569	1.000	0.26%
AT&T LTE 739 MHz	1	160.0	124.0	555	0.002496	0.493	0.51%
AT&T LTE 763 MHz	1	160.0	124.0	555	0.002619	0.509	0.51%
AT&T LTE 885 MHz	1	160.0	124.0	555	0.001581	0.590	0.27%
T-Mobile GSM 1900 MHz	1	140.0	109.0	555	0.001215	1.000	0.12%
T-Mobile LTE 1900 MHz	1	140.0	109.0	555	0.001215	1.000	0.12%
T-Mobile LTE 2100 MHz	1	140.0	109.0	555	0.001270	1.000	0.13%
T-Mobile LTE 700 MHz	1	160.0	109.0	555	0.003603	0.467	0.77%
T-Mobile LTE/5G 600 MHz	1	240.0	109.0	555	0.004281	0.400	1.07%
						Total	**7.02%**

Table 2: Maximum Percent of General Population Exposure Values

6. Conclusion

The above analysis verifies that RF exposure levels from the site with AT&T's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **7.02% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 555 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

November 27, 2023

Report Prepared By: Ram Acharya
RF Engineer
C Squared Systems, LLC — Date

November 29, 2023

Reviewed/Approved By: Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC — Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[6]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

[5] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[6] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

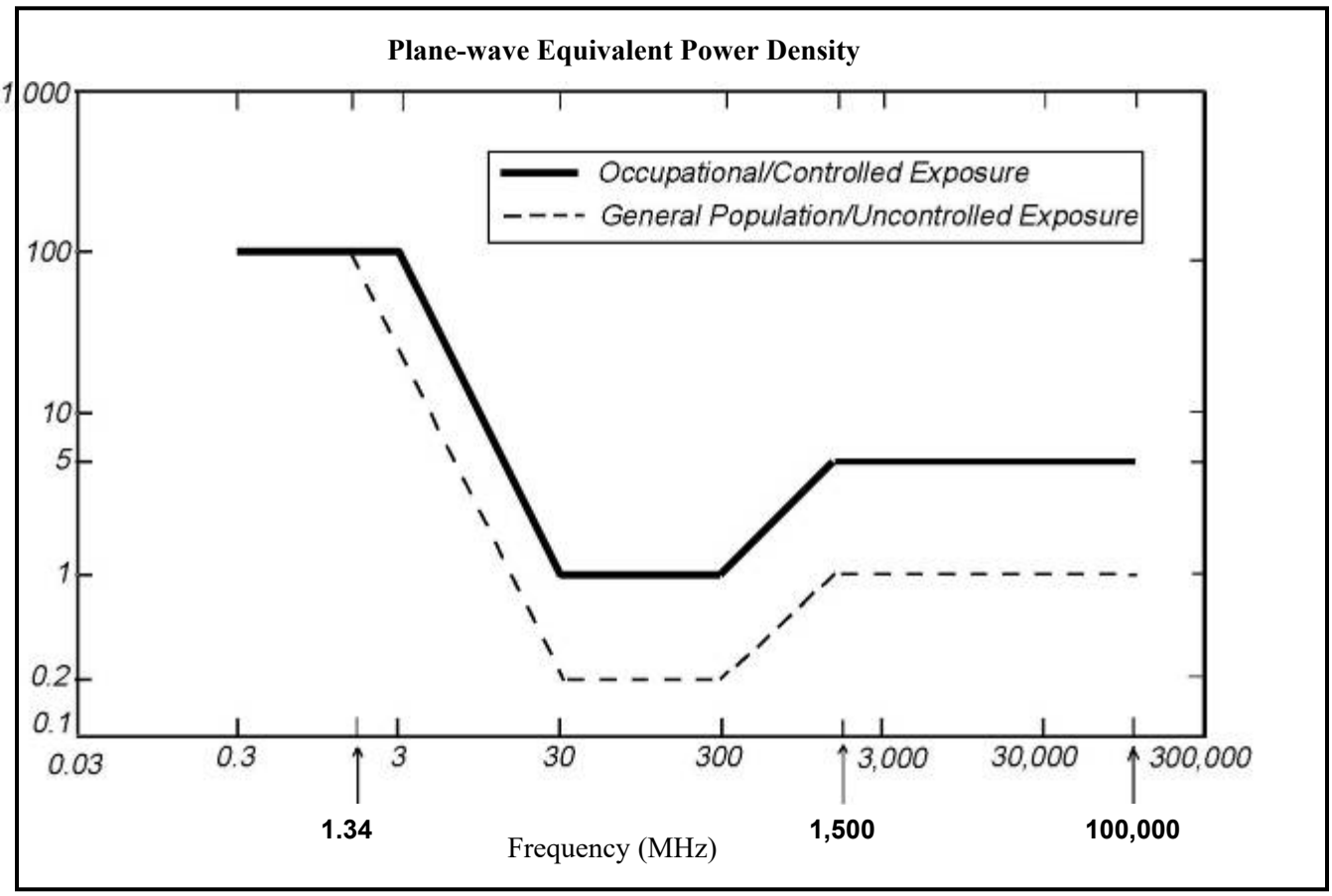
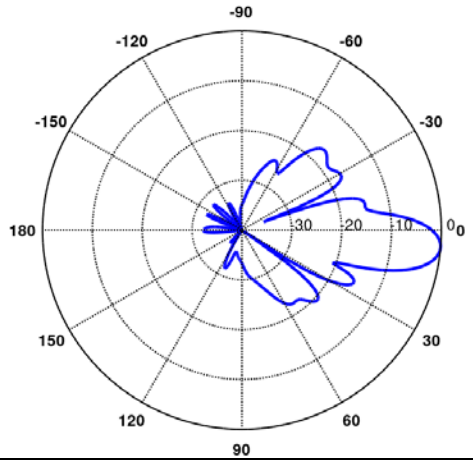
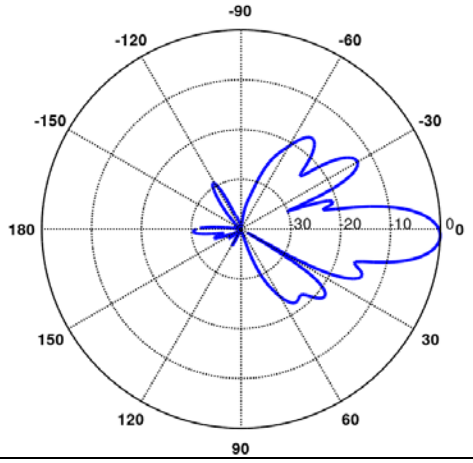
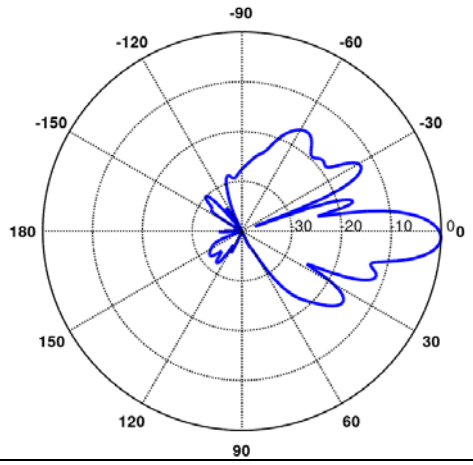
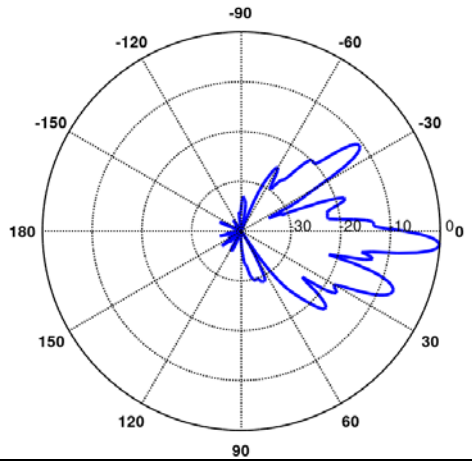
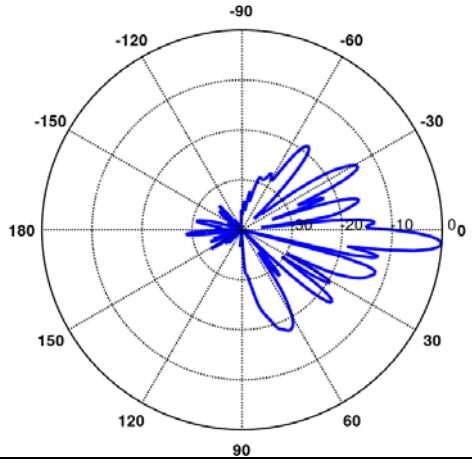


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Mobility Antenna Model Data Sheets and Electrical Patterns

700 MHz Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 698-806 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.8° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Dimensions (L x W x D): 72.1” x 20.7” x 7.7”	
700 MHz Manufacturer: CCI Model #: OPA65R-BU6D Frequency Band: 698-806 MHz Gain: 14.3 dBi Vertical Beamwidth: 12.9° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Dimensions (L x W x D): 71.2” x 20.7” x 7.7”	
850 MHz Manufacturer: CCI Model #: OPA65R-BU6D Frequency Band: 824-894 MHz Gain: 15.5 dBi Vertical Beamwidth: 11.1° Horizontal Beamwidth: 44° Polarization: Dual Linear 45° Dimensions (L x W x D): 71.2” x 20.7” x 7.7”	

1900 MHz Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 1850-1990 MHz Gain: 18.1 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Dimensions (L x W x D): 72.1” x 20.7” x 7.7”	
2100 MHz Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 1920-2180 MHz Gain: 17.3 dBi Vertical Beamwidth: 4.8° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Dimensions (L x W x D): 72.1” x 20.7” x 7.7”	

CTL02043 - STRATFORD NU
NEW EVERSOURCE STRUCT. NO. 19520
670 CHAPEL STREET
STRATFORD, CT 06614

RFDS GENERAL INFORMATION

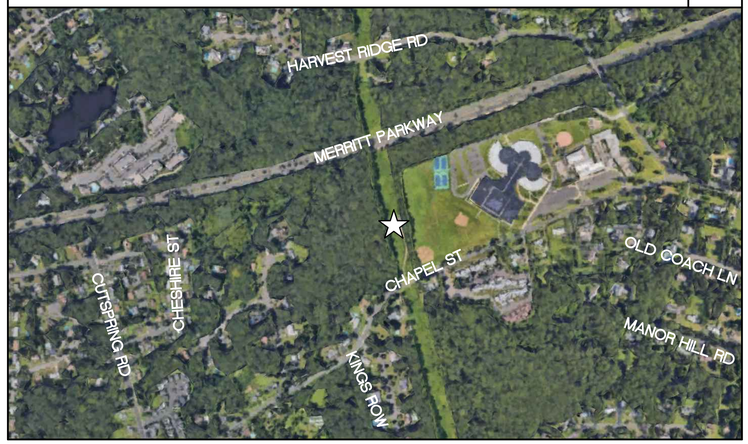
CELL SITE MODIFICATIONS:	5G NR SOFTWARE RADIO 5G NR ACTIVATION 5G NR RADIO 5G NR 1SR CBAND CELL SITE RF MODIFICATIONS BBU RECONFIGURATION WITH NEW IDs LTE NEXT CARRIER LTE 5C LTE 3C LTE 4C
PACE ID:	PACE JOB #1 – MRCTB057995 PACE JOB #2 – MRCTB057785 PACE JOB #3 – MRCTB052198 PACE JOB #4 – MRCTB051456 PACE JOB #5 – MRCTB051273 PACE JOB #6 – MRCTB051467 PACE JOB #7 – MRCTB035098 PACE JOB #8 – MRCTB035156
FA LOCATION CODE:	10035240

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. 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. 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.
5. 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 AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. 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.
18. 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.
19. 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.
20. 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.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. 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.
23. 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. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

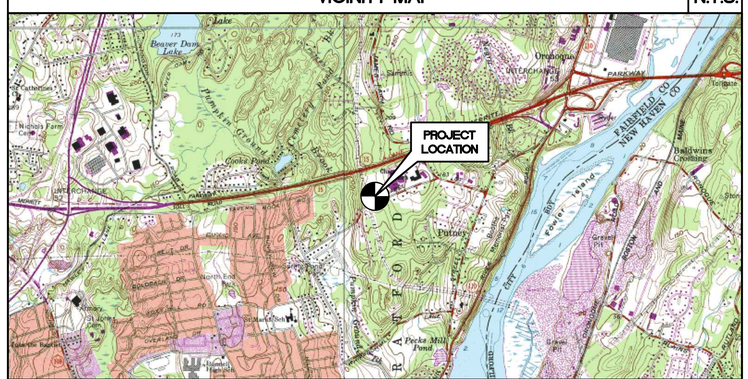
SITE LOCATION MAP

N.T.S.



VICINITY MAP

N.T.S.



SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH

SITE COORDINATES: LATITUDE: 41°-14'-16" N
LONGITUDE: 73°-07'-19" W
GROUND ELEVATION: ±160' AMSL

NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

1. REMOVE (9) EXISTING AT&T ANTENNAS
2. REMOVE (18) EXISTING AT&T DIPLEXERS
3. REMOVE (18) EXISTING AT&T TMA
4. REMOVE (6) EXISTING AT&T RRUs
5. REMOVE (18) EXISTING AT&T COMPONENTS
6. INSTALL NEW SITEPRO ANTENNA PLATFORM MOUNT (P/N: RMQLP-4120-H10)
7. INSTALL (1) PROPOSED ERICSSON AIR6419 B77G ANTENNA PER SECTOR, TOTAL OF (3)
8. INSTALL (1) PROPOSED ERICSSON AIR6449 B77D ANTENNA PER SECTOR, TOTAL OF (3)
9. INSTALL (1) PROPOSED CCI TPA65R-BU6DA-K ANTENNA PER SECTOR, TOTAL OF (3)
10. INSTALL (1) PROPOSED CCI OPA65R-BU6DA ANTENNA PER SECTOR, TOTAL OF (3)
11. INSTALL (16) PROPOSED TSXDC-4310FM SURGE ARRESTORS PER SECTOR AT GRADE, TOTAL OF (48)
12. INSTALL (2) PROPOSED DBC20551V1-2 DIPLEXERS PER SECTOR AT GRADE, TOTAL OF (6)
13. INSTALL (1) PROPOSED TMA2124F03V5-2D TMAs PER SECTOR AT TOWER, TOTAL OF (3)
14. INSTALL (2) PROPOSED TMABPD7823VG12A TMAs PER SECTOR AT TOWER, TOTAL OF (6)
15. INSTALL (1) PROPOSED 4478 B14 RADIO PER SECTOR AT GRADE, TOTAL OF (3)
16. INSTALL (1) PROPOSED 4426 B66 RADIO PER SECTOR AT GRADE, TOTAL OF (3)
17. INSTALL (1) PROPOSED 4449 B5/12 RADIO PER SECTOR AT GRADE, TOTAL OF (3)
18. INSTALL (1) PROPOSED DC6-48-60-18 SQUID AT TOWER.
19. INSTALL (2) PROPOSED CBC61923T-DS TRIPLEXERS PER SECTOR, AT GRADE, TOTAL OF (6)
20. INSTALL (2) PROPOSED 1000860 COMPONENTS PER SECTOR, TOTAL OF (6)
21. INSTALL (4) PROPOSED K SBT 782-11055 COMPONENTS PER SECTOR, TOTAL OF (12)
22. INSTALL PROPOSED (2) 6651 WITH XCEDE CABLE AND 6630 WITH IDLe CABLE
23. INSTALL (2) 6AWG DC CABLES, (24) 1-5/8" CABLES & (1) 18 PAIR FIBER CABLE

PROJECT INFORMATION

SITE NAME:	CTL02043 – STRATFORD NU
SITE ADDRESS:	EVERSOURCE STRUCT. NO. 19520 670 CHAPEL STEET STRATFORD, CT 06614
PROPERTY OWNER:	EVERSOURCE 107 SELDEN STREET BERLIN, CT 06037
LESSEE/TENANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
CONTACT PERSON:	TARAH NOLAN SAI COMMUNICATIONS (603) 212-5049
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD, BRANFORD, CT 06405 (203) 488-0580
SITE COORDINATES:	LATITUDE: 41°-14'-16" N LONGITUDE: 73°-07'-19" W GROUND ELEVATION: ±160' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH

SHEET INDEX

SHEET. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	GENERAL NOTES, SPECIFICATIONS & ANT. SCHEDULE	0
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C-2	COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION	0
C-3	ANTENNA PLAN AND ELEVATION	0
C-4	TYPICAL EQUIPMENT DETAILS	0
C-5	TYPICAL EQUIPMENT DETAILS	0
RF-1	RF PLUMBING DIAGRAM	0
E-1	ELECTRICAL COMPOUND PLAN	0
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E-3	ELECTRICAL GROUNDING PLANS	0
E-4	TYPICAL GROUNDING DETAILS	0
E-5	TYPICAL GROUNDING DETAILS	0
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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/15/23	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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EVERSOURCE STRUCTURE #19520
670 CHAPEL STREET
STRATFORD, CT 06614

DATE: 09/08/23
SCALE: AS NOTED
JOB NO. 23016.03

TITLE SHEET

T-1

Sheet No. 1 of 14

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY III (BASED ON IBC TABLE 1604.5)
- WIND LOAD: (UTILITY POLE & FOUNDATION)
  BASIC WIND SPEED (V) = 110 MPH (3-SECOND GUST)
  BASED ON NESC C2-2023, SECTION 25 RULE 250C.

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. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. 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.
5. 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.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. 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. 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.
5. 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 AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
17. 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.
18. 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.
19. 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.
20. 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.
21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
22. 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.
23. 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. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

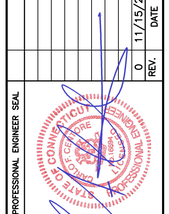
ANTENNA/APPURTENANCE SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA (AT TOWER)	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (AT GRADE)	(E/P) TMA (AT TOWER) DIPLEXER (AT GRADE)	(QTY) PROPOSED HYBRID/COAX (AT TOWER)
A1	–	(EMPTY)	–	–	–			(24) 1-5/8 COAX CABLES (2) DC CABLES (1) FIBER CABLE
A2	PROPOSED	CCI (TPA65R-BU6DA-K)	71.2 x 20.7 x 7.7	124'	30°	(P) 4478 B14 (1), (E) RRUS32 B2 (1), (P) 4426 B66 (1)	(P) TMA2124F03V5-2D (1), (P) CBC61923T-DS (2)	
A3	PROPOSED	ERICSSON (AIR6419 B77G)/(AIR6449 B77D)	30.4 x 15.9 x 8.1	124'	30°			
A4	PROPOSED	CCI (OPA65R-BU6DA)	71.2 x 20.7 x 7.7	124'	30°	(P) 4449 B5/B12 (1)	(P) TMABPD7823VG12A (2), (P) DBC2055F1V1-2 (2)	
B1	–	(EMPTY)	–	–	–			
B2	PROPOSED	CCI (TPA65R-BU6DA-K)	71.2 x 20.7 x 7.7	124'	150°	(P) 4478 B14 (1), (E) RRUS32 B2 (1), (P) 4426 B66 (1)	(P) TMA2124F03V5-2D (1), (P) CBC61923T-DS (2)	
B3	PROPOSED	ERICSSON (AIR6419 B77G)/(AIR6449 B77D)	30.4 x 15.9 x 8.1	124'	150°			
B4	PROPOSED	CCI (OPA65R-BU6DA)	71.2 x 20.7 x 7.7	124'	150°	(P) 4449 B5/B12 (1)	(P) TMABPD7823VG12A (2), (P) DBC2055F1V1-2 (2)	
C1	–	(EMPTY)	–	–	–			
C2	PROPOSED	CCI (TPA65R-BU6DA-K)	71.2 x 20.7 x 7.7	124'	270°	(P) 4478 B14 (1), (E) RRUS32 B2 (1), (P) 4426 B66 (1)	(P) TMA2124F03V5-2D (1), (P) CBC61923T-DS (2)	
C3	PROPOSED	ERICSSON (AIR6419 B77G)/(AIR6449 B77D)	30.4 x 15.9 x 8.1	124'	270°			
C4	PROPOSED	CCI (OPA65R-BU6DA)	71.2 x 20.7 x 7.7	124'	270°	(P) 4449 B5/B12 (1)	(P) TMABPD7823VG12A (2), (P) DBC2055F1V1-2 (2)	

NOTE:
ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/15/23	ASC	TJR	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



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STRATFORD, CT 06614

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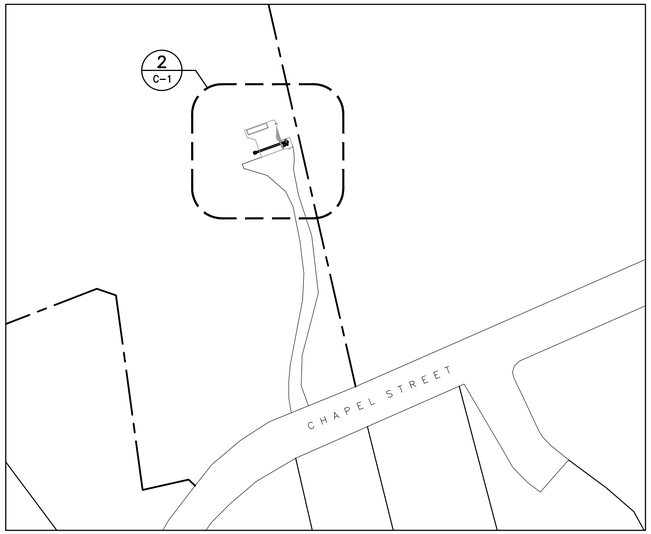
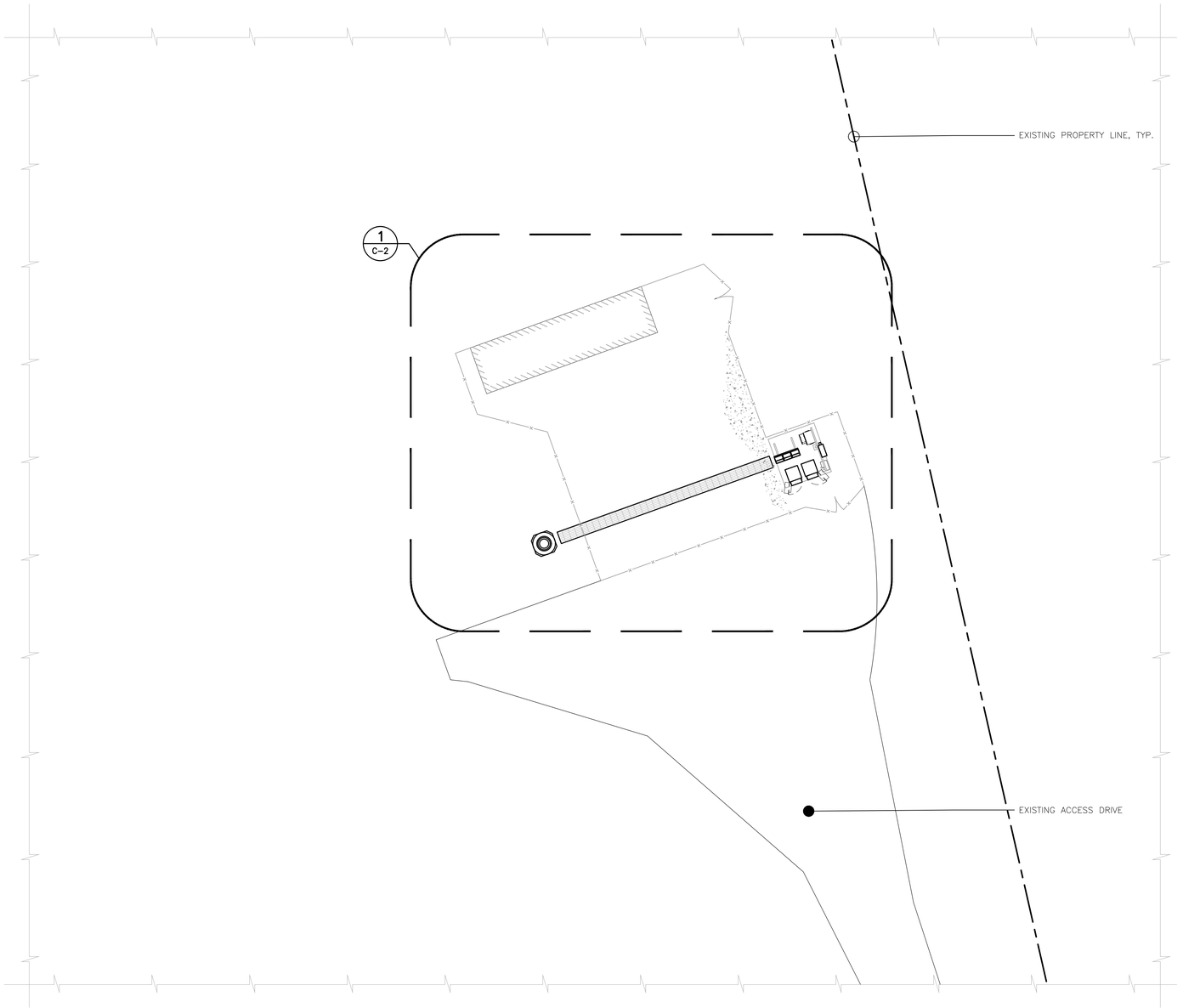
GENERAL NOTES, SPECIFICATIONS AND ANT. SCHEDULE

N-1



1 C-1 **KEY PLAN**
SCALE: 1" = 100'-0"
TRUE NORTH



2 C-1 **PARTIAL SITE PLAN - PROPOSED**
SCALE: 1" = 10'-0"
TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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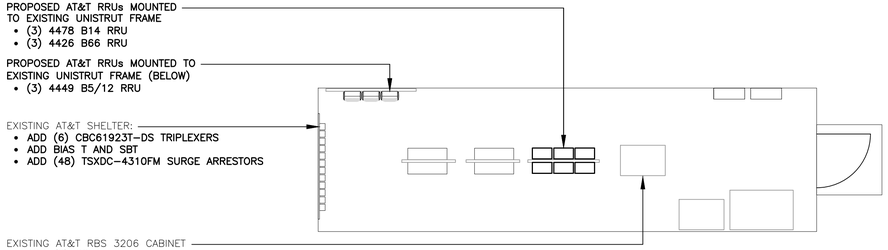
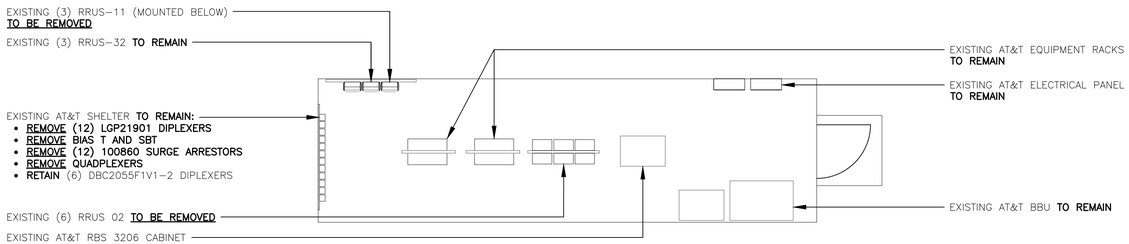
PARTIAL SITE PLAN

C-1
Sheet No. 3 of 14



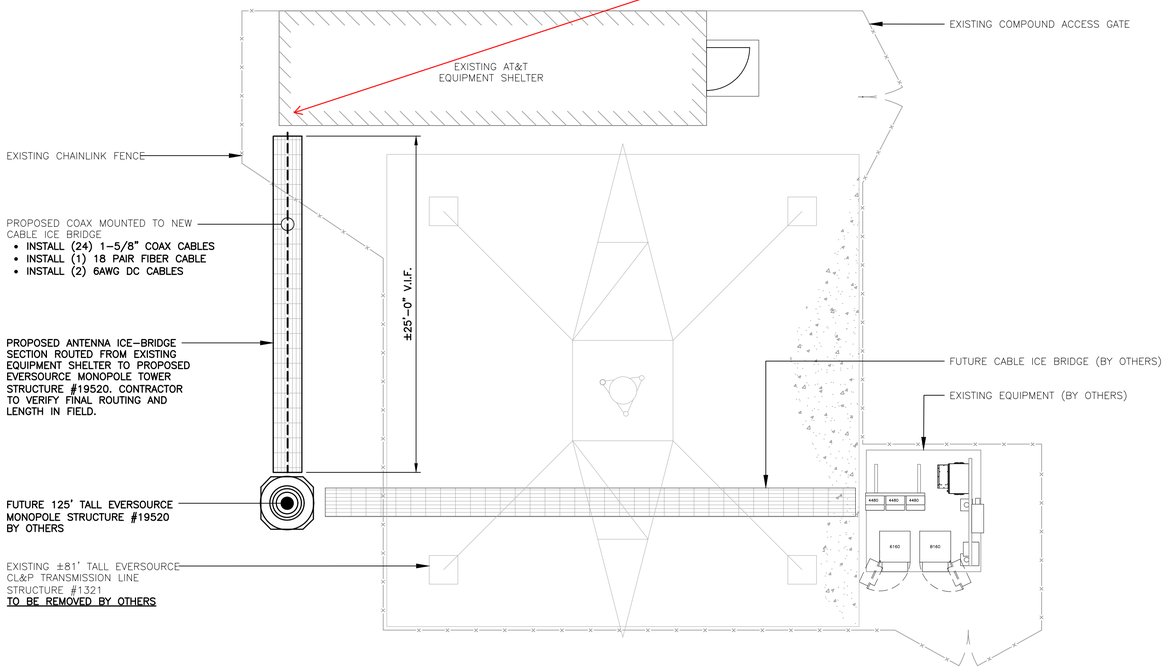
4 C-2 **EQUIPMENT PLAN - PROPOSED**
SCALE: 1/4" = 1'-0"
TRUE NORTH



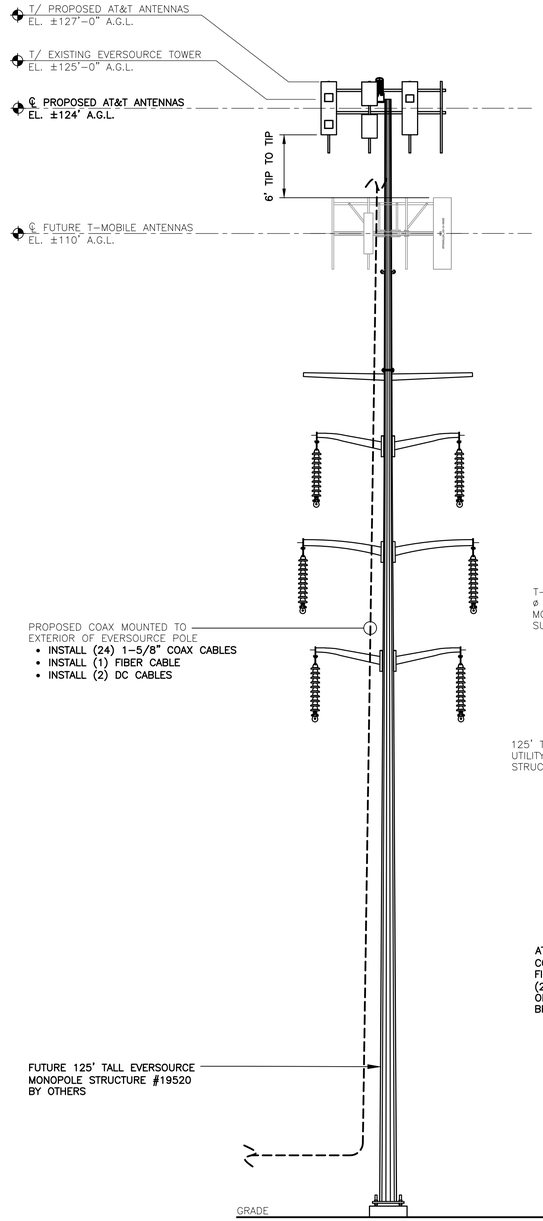
3 C-2 **EQUIPMENT PLAN - EXISTING**
SCALE: 1/4" = 1'-0"
TRUE NORTH

New Coax cable hatchport to be added to accommodate new coax. Old hatchport to be blanked off once old coax is removed

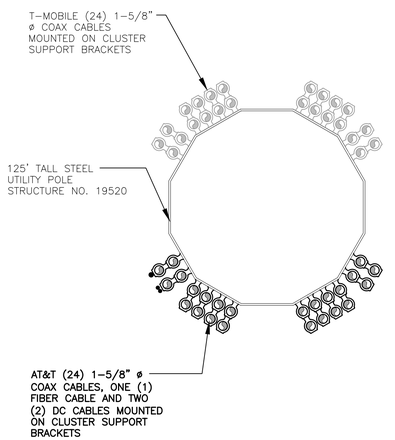
2 C-2



1 C-2 **COMPOUND PLAN - PROPOSED**
SCALE: 1" = 5'-0"
TRUE NORTH



2 C-2 **PROPOSED TOWER ELEVATION**
SCALE: 1" = 8'-0"



4 C-2 **COAX CABLE PLAN**
SCALE: NOT TO SCALE

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING..

REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY "TEP OPCP, LLC" (PROJECT # 323865.844443) DATED 04/27/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 23016.03) DATED 08/29/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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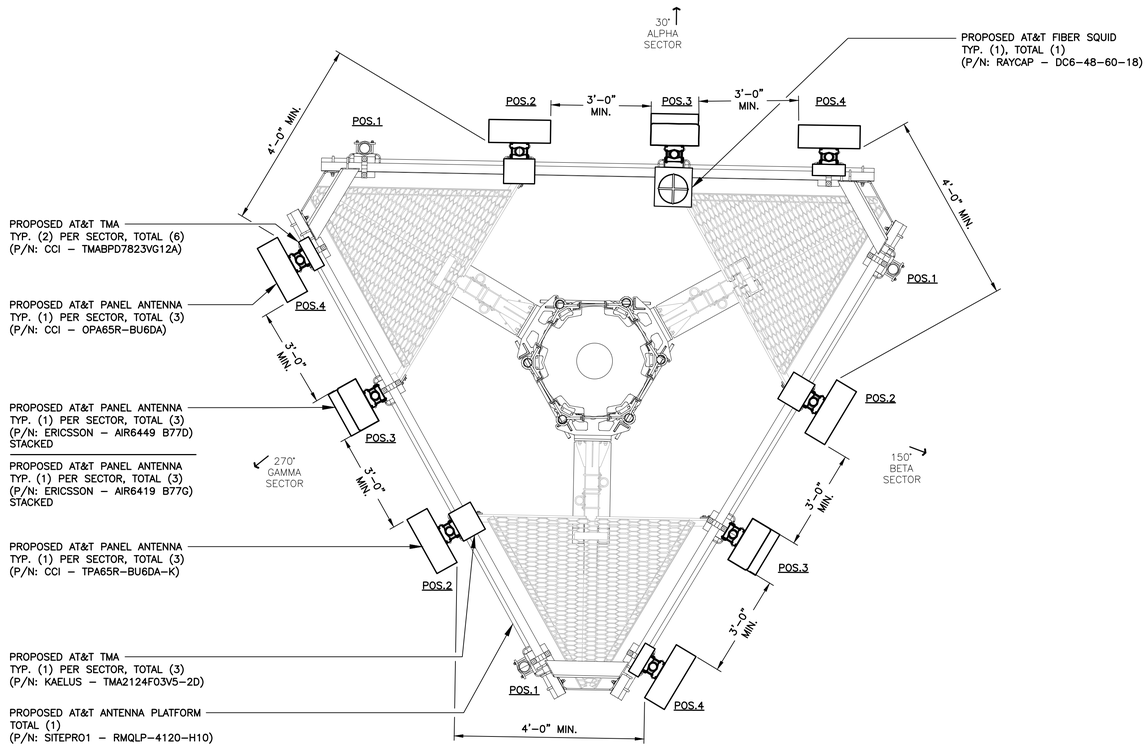
COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION

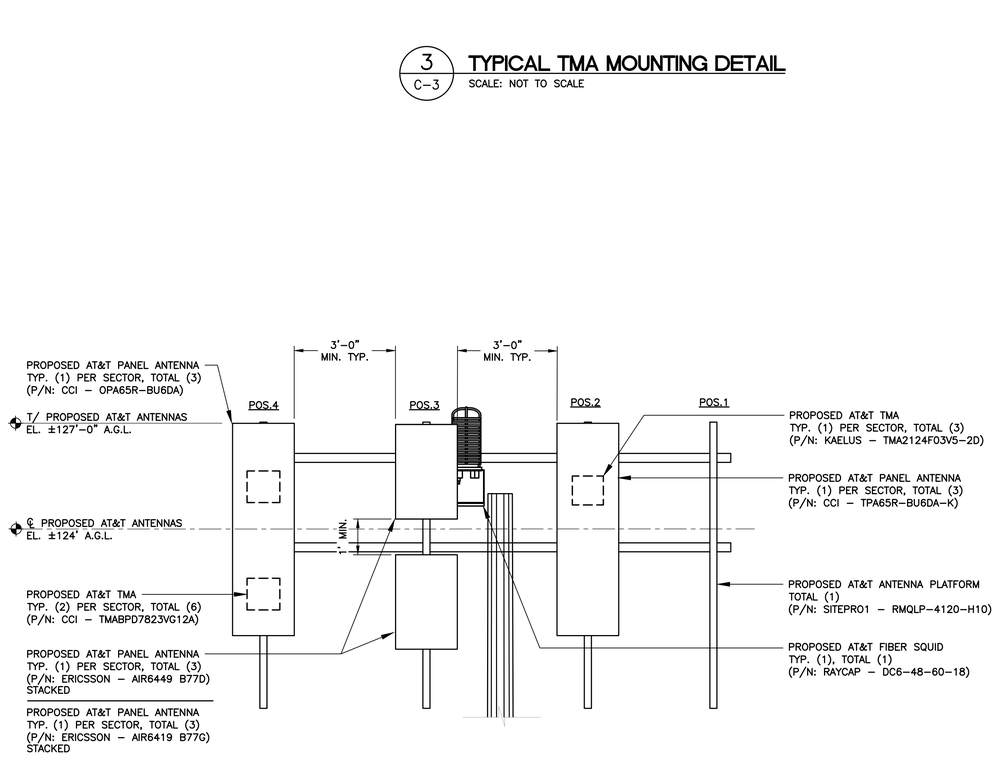
C-2

Sheet No. 4 of 14

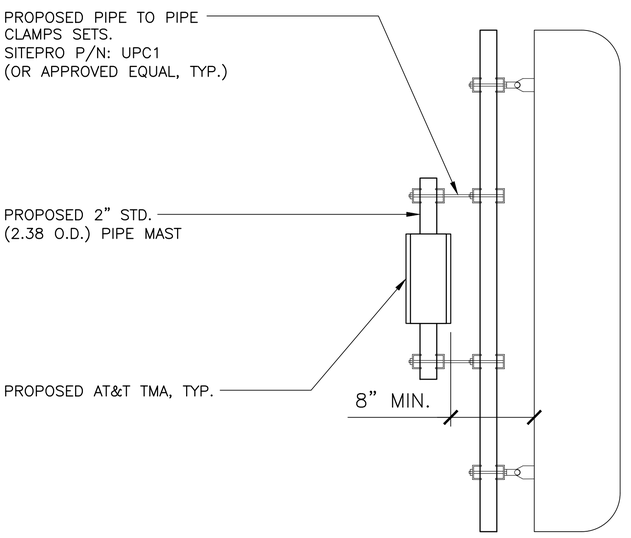


1 / C-3 **ANTENNA CONFIGURATION PLAN**
SCALE: 1/2" = 1' – 0"

TRUE NORTH



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



3 / C-3 **TYPICAL TMA MOUNTING DETAIL**
SCALE: NOT TO SCALE

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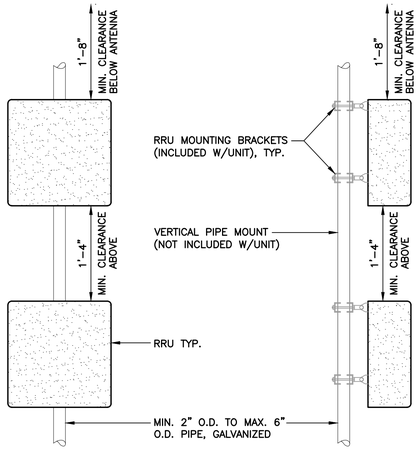
ANTENNA PLAN AND ELEVATION

C-3

Sheet No. 5 of 14

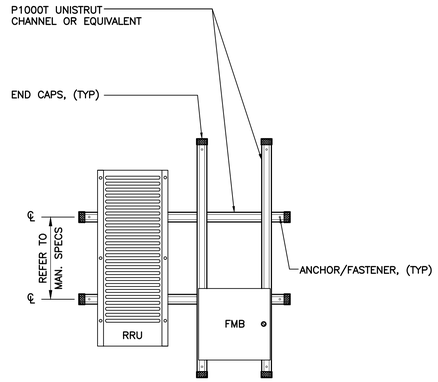


FRONT ELEVATION SIDE ELEVATION

NOTES: (PIPE MOUNTING)

1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

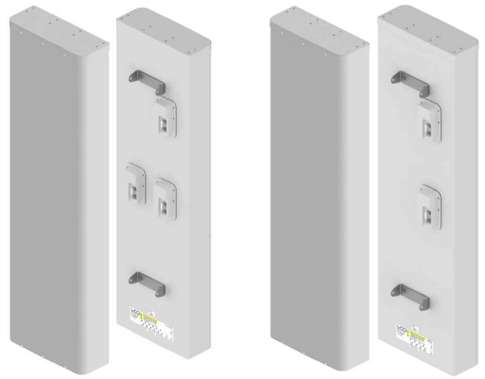
1 TYPICAL RRU MOUNTING DETAILS
C-4 SCALE: NOT TO SCALE



FRONT ELEVATION

NOTES: (UNISTRUT MOUNTING)

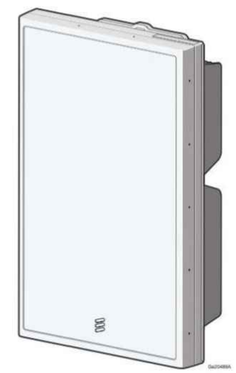
1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
2. MOUNT RRU TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.



TPA65R-BU6DA-K OPA65R-BU6DA

SECTOR ANTENNAS		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TPA65R-BU6D	71.2"H x 20.7"W x 7.7"D	±68.3 LBS.
MAKE: CCI MODEL: OPA65R-BU6D	71.2"H x 20.7"W x 7.7"D	±63.3 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 PROPOSED ANTENNA DETAIL
C-4 SCALE: NOT TO SCALE



AIR6449 B77D / AIR6419 B77G

SECTOR ANTENNAS		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6419 B77G	31.1"H x 16.1"W x 7.3"D	±55.4 LBS.
MAKE: ERICSSON MODEL: AIR6449 B77D	30.6"H x 15.9"W x 10.6"D	±95.5 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

3 PROPOSED ANTENNA DETAIL
C-4 SCALE: NOT TO SCALE

TSXDC-4310FM

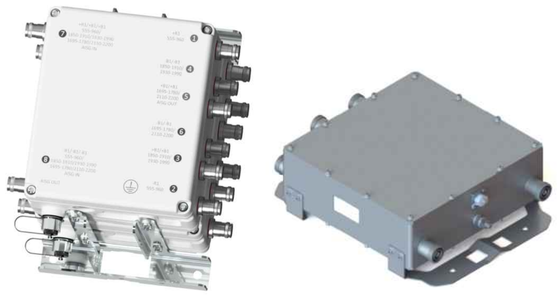
SURGE ARRESTOR	
EQUIPMENT	DIMENSIONS
MAKE: POLYPHASER MODEL: TSXDC-4310FM	2.9"H x 1.81"W x 1.72"D
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.	

4 PROPOSED SURGE ARRESTOR
C-4 SCALE: NOT TO SCALE

CBC61923T-DS

TRIPLEXER	
EQUIPMENT	DIMENSIONS
MAKE: COMMSCOPE MODEL: CBC61923T-DS	6.9"H x 7.8"W x 4.2"D
CONNECTORS: (8) LONG NECK 4.3-10 FEMALE	
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.	

5 PROPOSED TRIPLEXER DETAIL
C-4 SCALE: NOT TO SCALE



TMABPD7823VG12A TMA2124F03V5-2D

TMA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: TMABPD7823VG12A	10.6"H x 11.0"W x 3.8"D	±25.0 LBS
MAKE: KAELUS MODEL: TMA2124F03V5-2D	9.7"H x 10.4"W x 8.3"D	±36.0 LBS
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

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

RRU 4478 B14 RRU 4449 B5/B12 RRU 4426 B66

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: 4426 B66	14.96"H x 13.2"W x 5.8"D	±49 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

7 PROPOSED RRU DETAILS
C-4 SCALE: NOT TO SCALE

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TYPICAL EQUIPMENT DETAILS

C-4

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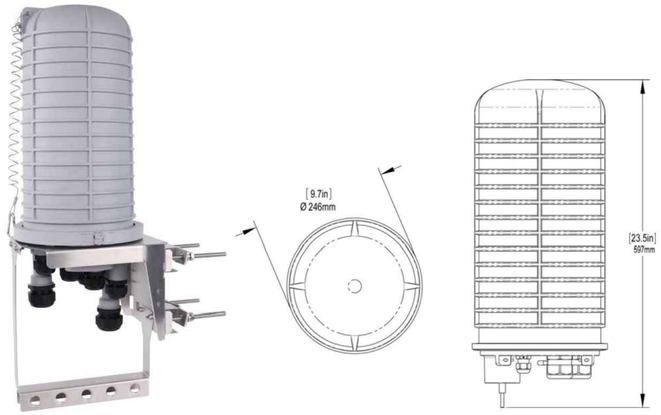


DC6-48-60-18-8F

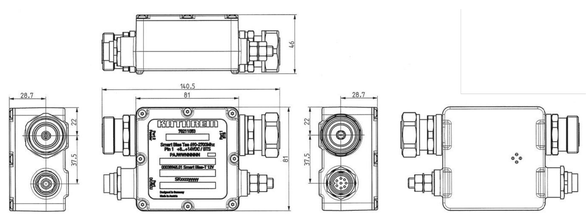
DC/FIBER SQUID		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: DC6-48-60-18-8F	23.5"H x 9.7"D	±20 LBS
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

1 / C-5 **PROPOSED SQUID DETAIL**
SCALE: NOT TO SCALE

DBC2055F1V1-2

DIPLEXER	
EQUIPMENT	DIMENSIONS
MAKE: KAELUS MODEL: DBC2055F1V1-2	5.9"H x 6.7"W x 4.3"D
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.	

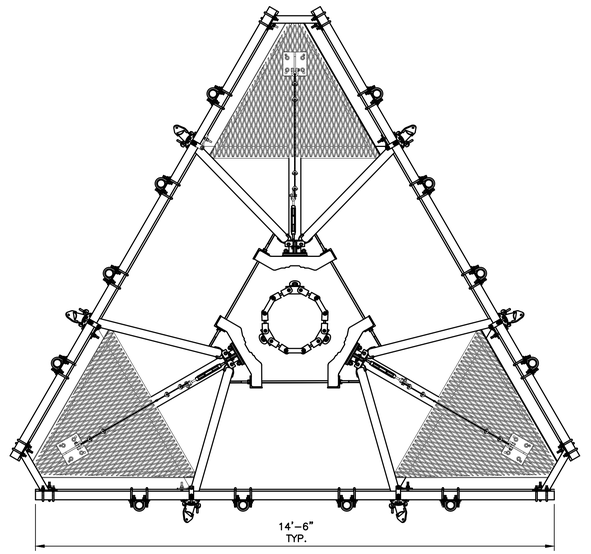
2 / C-5 **PROPOSED DIPLEXER**
SCALE: NOT TO SCALE



K-SBT-782-11055

SMART BIAS T	
EQUIPMENT	DIMENSIONS
MAKE: KATHREIN MODEL: K-SBT-782-11055	3.2"H x 3.2"W x 1.81"D
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.	

3 / C-5 **PROPOSED SMART BIAS-T**
SCALE: NOT TO SCALE



SITEPRO1:
RMQLP-4120-H10

4 / C-5 **PLATFORM ANTENNA MOUNT DETAIL**
SCALE: NOT SCALE

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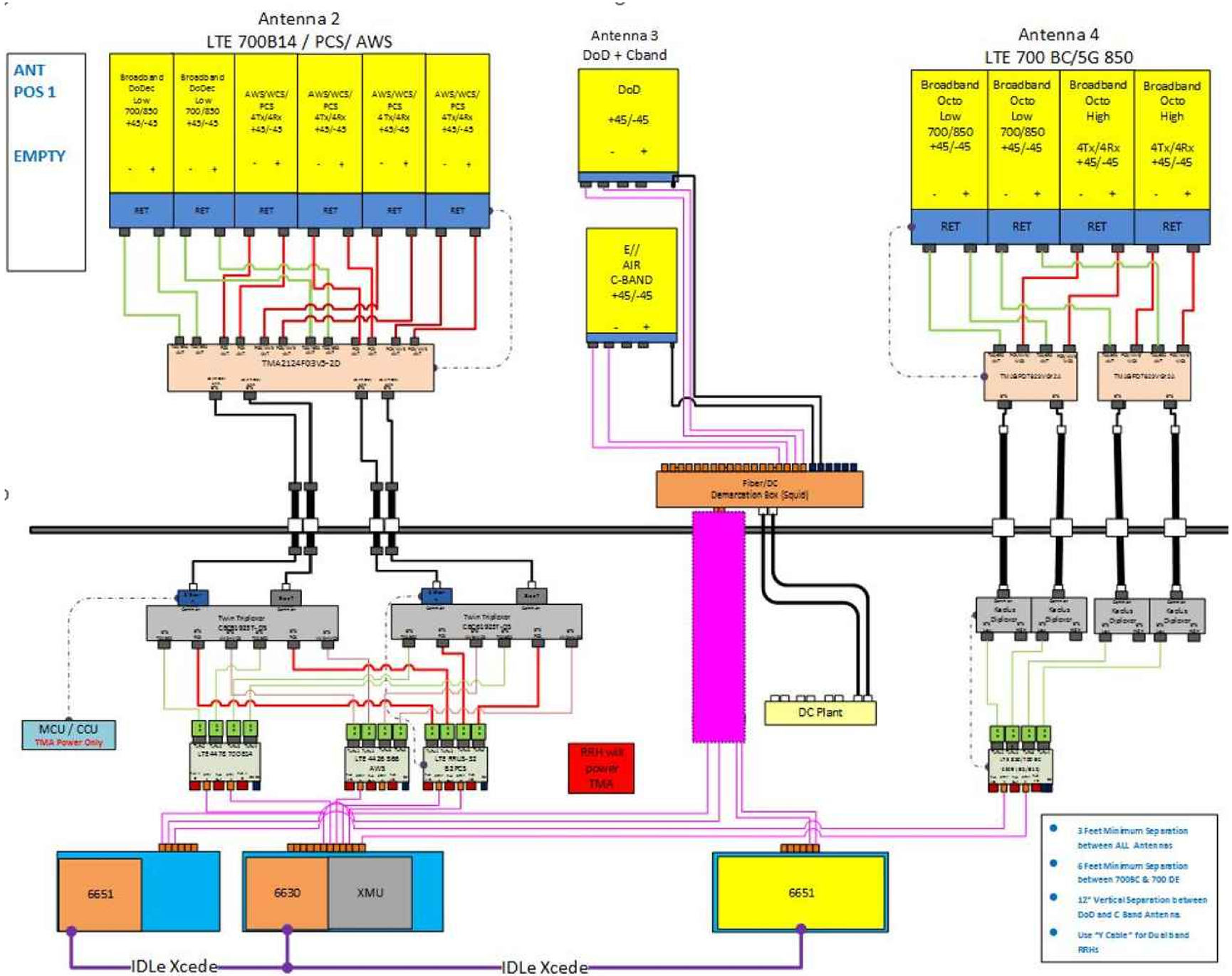
TYPICAL EQUIPMENT DETAILS

C-5

Sheet No. 7 of 14



ALPHA/BETA/GAMMA SECTOR

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RF PLUMBING DIAGRAM

RF-1

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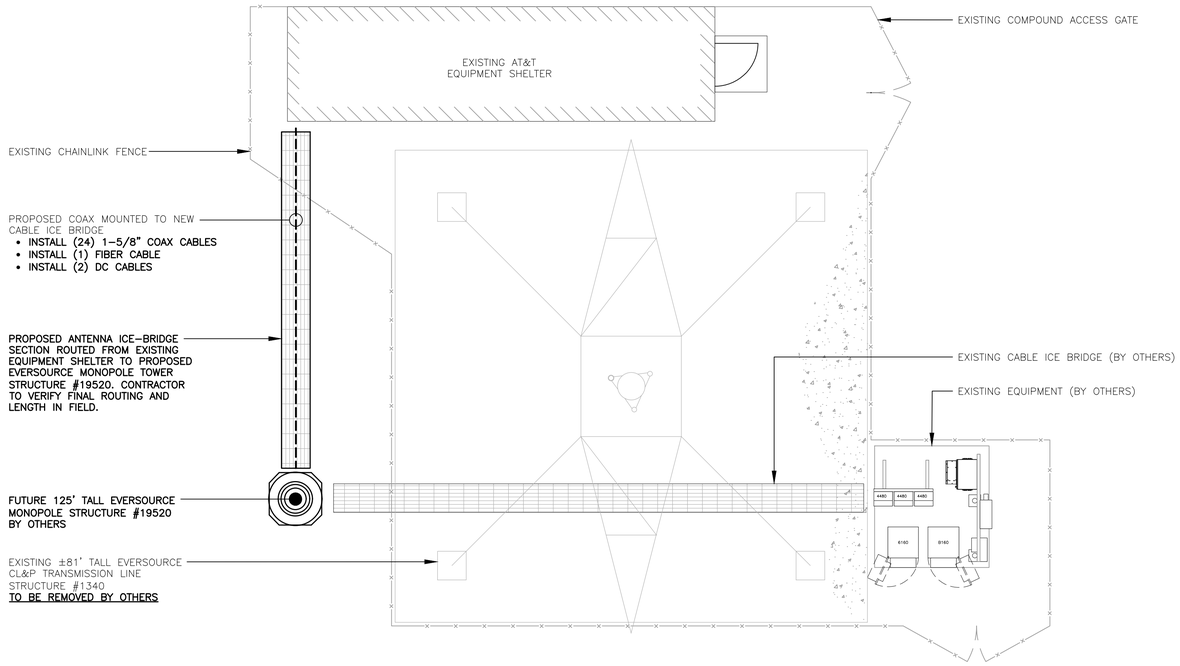

1 / E-1 **ELECTRICAL COMPOUND PLAN**

SCALE: 1/4" = 1'

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ELECTRICAL COMPOUND PLAN

E-1

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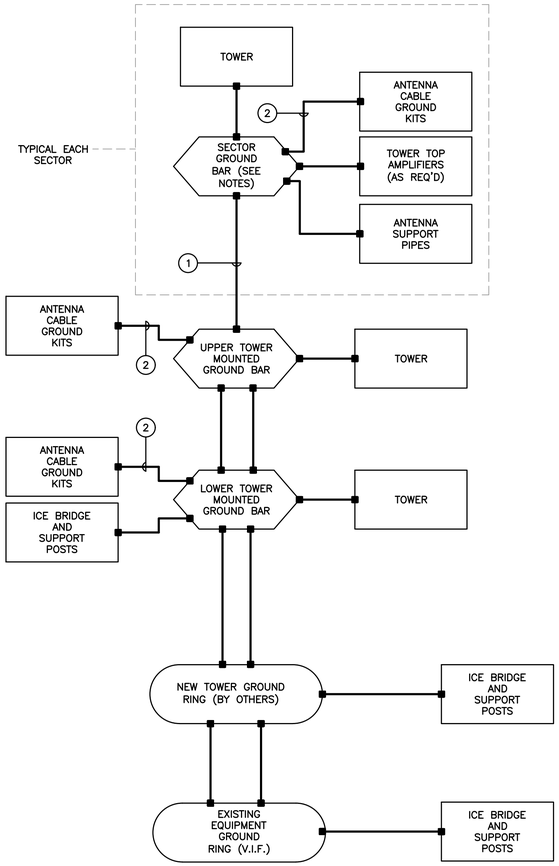

1 / E-2 **ELECTRICAL SCHEMATIC DIAGRAM**
SCALE: NOT TO SCALE

GROUNDING SCHEMATIC NOTES

(1) #2/0 GREEN INSULATED

(2) #6 AWG

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 CABLE TRAY AND 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 AND BATTERY 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 GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
12. COORDINATE WITH EVERSOURCE TRANSMISSION DEPARTMENT REPRESENTATIVE TO DETERMINE ADDITIONAL GROUNDING REQUIREMENTS. PROVIDE ALL REQUIRED ELEMENTS TO MEET EVERSOURCE APPROVAL.
13. COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

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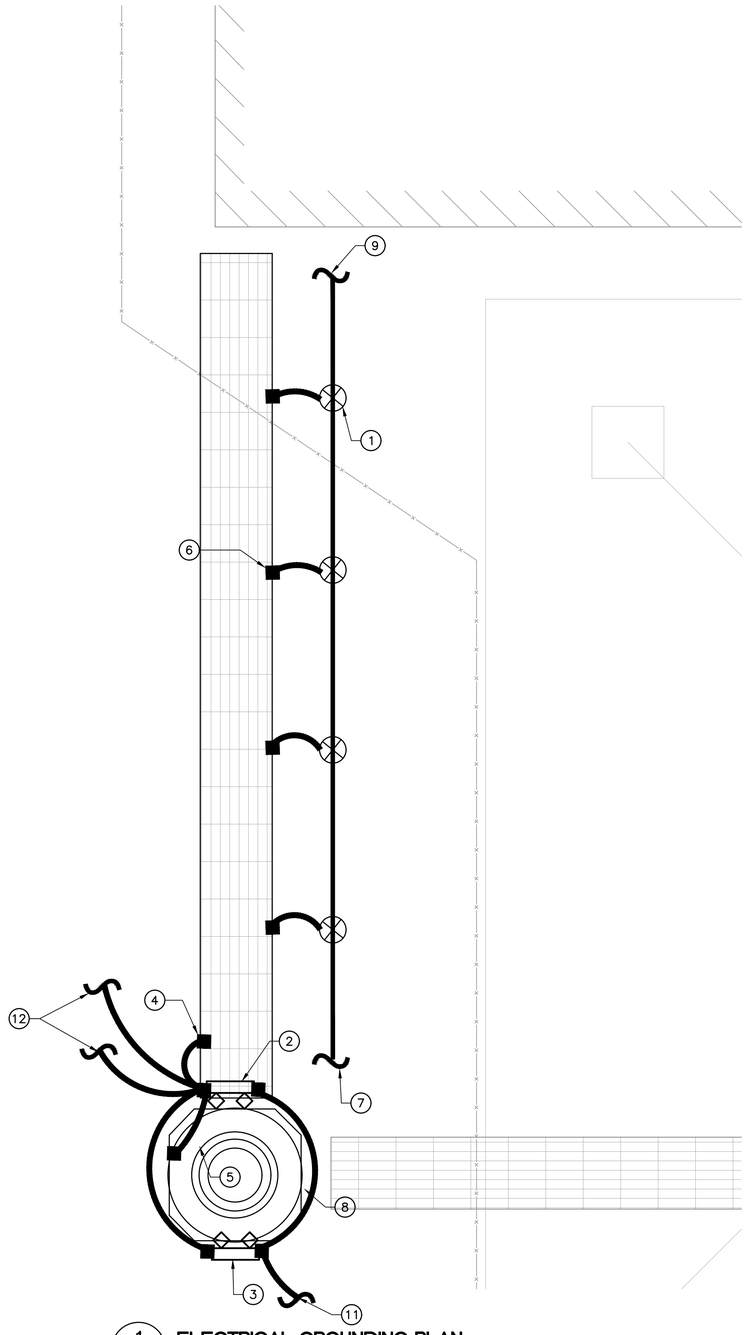
ELECTRICAL SCHEMATIC DIAGRAM

E-2

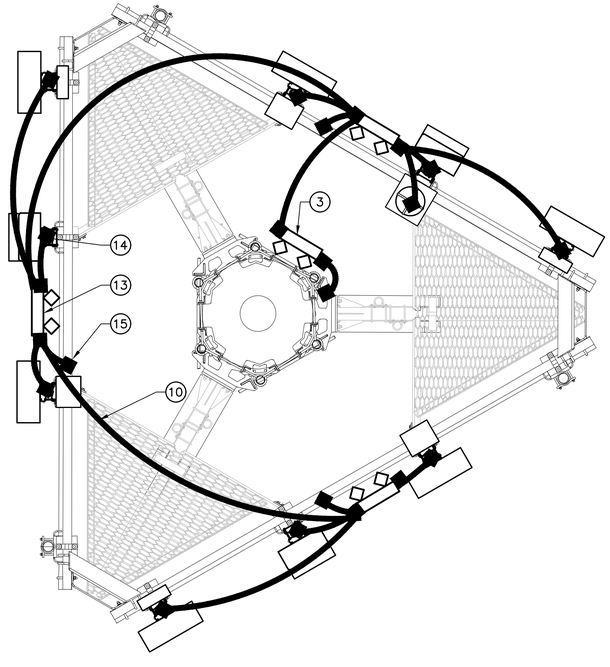
Sheet No. 10 of 14

GROUNDING PLAN NOTES

1. GROUNDING ROD TYP.
2. LOWER TOWER MOUNTED GROUND BAR PER DETAILS.
3. UPPER TOWER MOUNTED GROUND BAR.
4. BOND GROUND BAR TO ICE-BRIDGE TYP.
5. BOND LOWER TOWER MOUNTED GROUND BAR TO TOWER STEEL
6. ICE BRIDGE POST AND COVER. BOND EACH SECTION AND SUPPORT TO GROUND RING.
7. BOND TO EXISTING TOWER GROUND RING. VERIFY LOCATION OF EXISTING GROUND RING IN FIELD.
8. BOND UPPER TOWER MOUNTED GROUND BAR TO LOWER TOWER MOUNTED GROUND BAR (2) GROUND LEADS.
9. BOND TO EXISTING COMPOUND GROUND RING. VERIFY LOCATION OF EXISTING GROUND RING IN FIELD.
10. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
11. BOND UPPER TOWER MOUNTED GROUND BAR TO SECTOR GROUND BAR TYP.
12. BOND LOWER TOWER MOUNTED GROUND BAR TO EXISTING TOWER GROUND RING TYP 2 PLACES. VERIFY LOCATION OF EXISTING GROUND RING IN FIELD.
13. SECTOR GROUND BAR TYP.
14. BOND ANTENNA MOUNTING PIPES TO SECTOR GROUND BAR. (TYPICAL)
15. BOND SECTOR GROUND BAR TO TOWER STEEL.



1 E-3 **ELECTRICAL GROUNDING PLAN**
SCALE: NOT TO SCALE



2 E-3 **ELECTRICAL GROUNDING PLAN - ANTENNA**
SCALE: NOT TO SCALE

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ELECTRICAL GROUNDING PLANS

E-3

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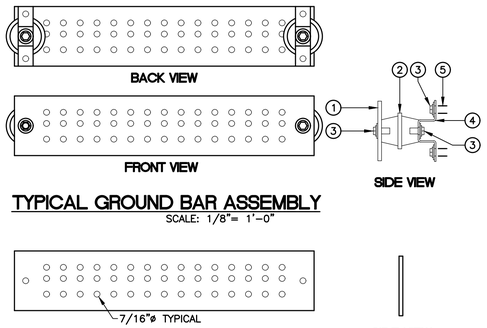
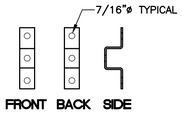


TYPICAL GROUND BAR ASSEMBLY
SCALE: 1/8"= 1'-0"

TYPICAL GROUND BAR - DIMENSIONS
SCALE: 1/8"= 1'-0"

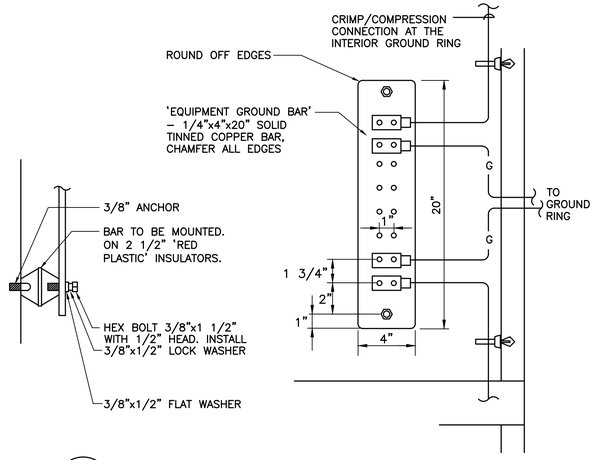
NOTES

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.

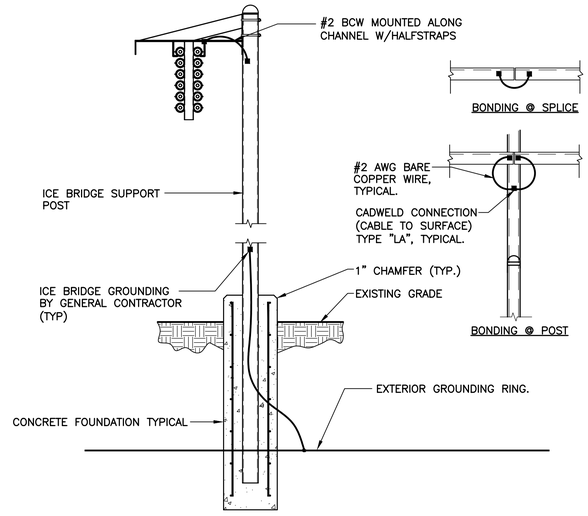


BRACKET FOR GROUND BAR-DIMENSIONS
SCALE: 1/8"= 1'-0"

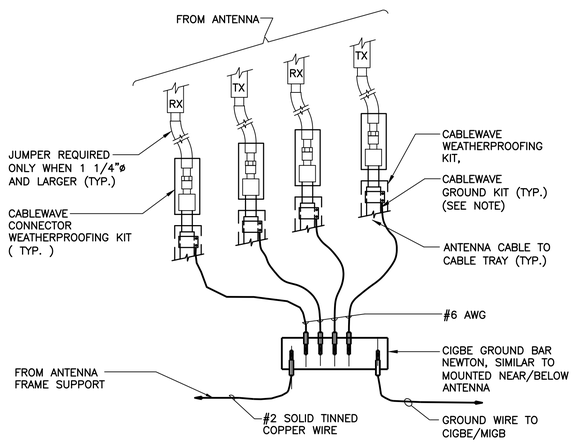
1 E-4 MASTER/EQUIPMENT GROUND BAR DETAILS
SCALE: NOT TO SCALE



2 E-4 EQUIPMENT GROUND BAR DETAIL
SCALE: NOT TO SCALE



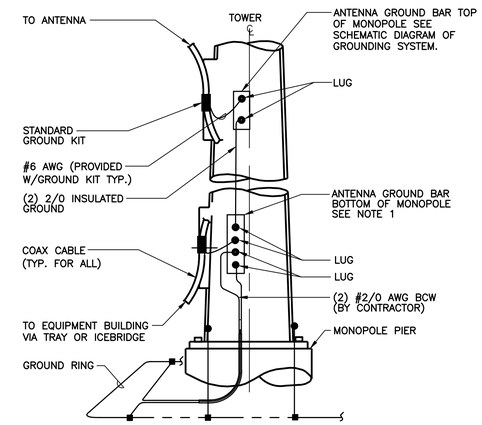
3 E-4 ICE BRIDGE BONDING DETAIL
SCALE: NOT TO SCALE



NOTES:

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

4 E-4 CONNECTION OF GROUND WIRES TO GROUND BAR
SCALE: 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.

5 E-4 ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

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EVERSOURCE STRUCTURE #19520

670 CHAPEL STREET

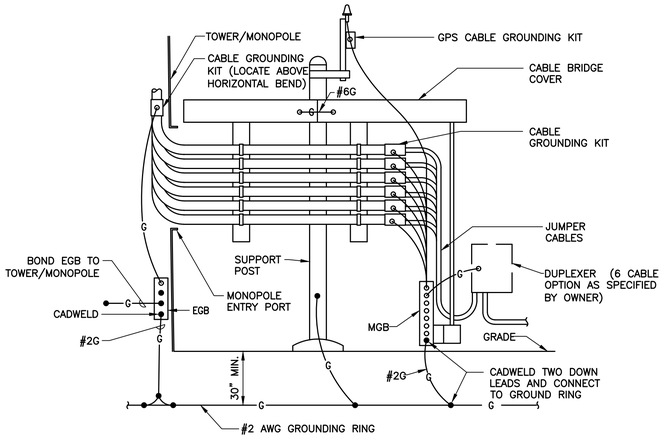
STRATFORD, CT 06614

DATE: 09/08/23
SCALE: AS NOTED
JOB NO. 23016.03

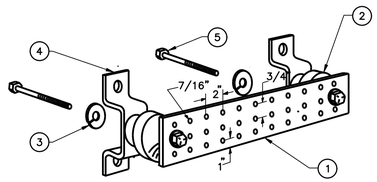
TYPICAL GROUNDING DETAILS

E-4

Sheet No. 12 of 14



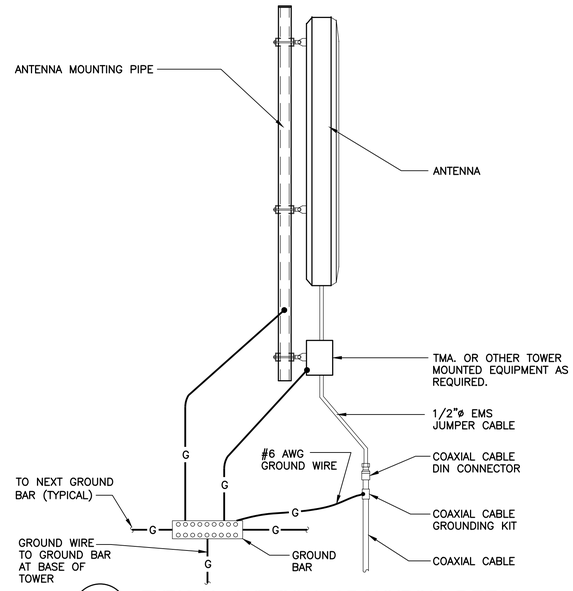
1 E-5 **CABLE BRIDGE GROUNDING DIAGRAM**
SCALE: NOT TO SCALE



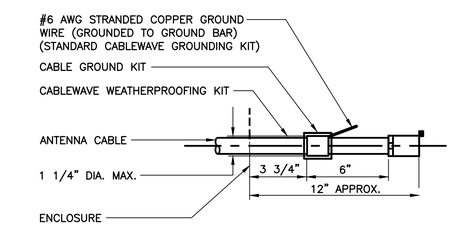
NOTES

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-5 **GROUND BAR DETAIL**
SCALE: NOT TO SCALE



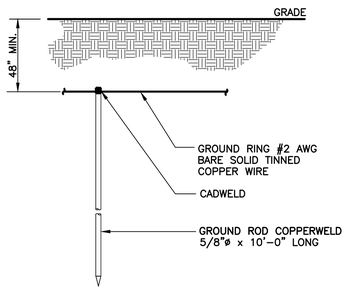
3 E-5 **TYPICAL ANTENNA GROUNDING DETAIL**
SCALE: NOT TO SCALE



NOTES:

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

4 E-5 **ANTENNA CABLE GROUNDING DETAIL**
SCALE: NOT TO SCALE

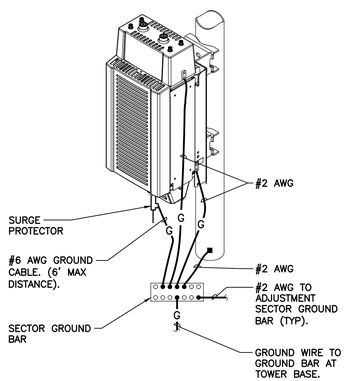


NOTES:

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.

5 E-5 **GROUND ROD DETAIL**
SCALE: NOT TO SCALE

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



6 E-5 **RRH POLE MOUNT GROUNDING**
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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TYPICAL GROUNDING DETAILS

E-5

Sheet No. 13 of 14

ELECTRICAL SPECIFICATIONS

SECTION 16010

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 THE 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. 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.

F. 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.

G. 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.

H. 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.

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

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

K. 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.

L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.

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.

N. THE 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. CONDUITS

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

B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.

D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS

E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111

CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) [2,3]
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. [1]	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

[1] PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.

[2] UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".

[3] WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

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 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.

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. 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 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 CONNECTED TO THE PANELBOARDS SO 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
0	11/15/23	ASC	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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ELECTRICAL SPECIFICATIONS

E-6

CENTEK engineering

Centered on Solutions℠

Structural Analysis of Utility Pole

AT&T Site Ref: CT2043

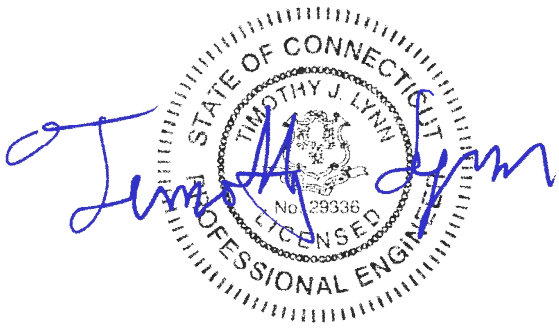
Eversource Structure No. 19520
125' Tall Electric Transmission Pole

670 Chapel Street
Stratford, CT

CENTEK Project No. 23016.03

Date: August 29, 2023

Max Stress Ratio = 96.7%



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 analyze the 125' utility pole located in Stratford, CT for the proposed antenna and equipment installation by AT&T.

The loads consist of the following:

- **AT&T (Final Configuration):**
  Antennas: Three (3) CCI TPA65R-BU6D panel antennas, three (3) Ericsson AIR6419 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) CCI OPA65R-BU6D panel antennas, three (3) Kaelus TMA2124F03V5-2D TMAs, six (6) CCI TMABPD7823VG12A TMAs and one (1) DC6-48-60-18 surge arrestor mounted on one (1) Platform (SitePro p/n RMQLP-4120-H10) to the utility pole with a RAD center elevation of 124-ft above grade.
  Cables: Twenty-four (24) 1-5/8" ∅ coax cables, one (1) fiber cable and two (2) DC cables mounted to the outside of the pole as indicated in Section 4 of this report.
- T-MOBILE (Final Configuration):
  Antennas: Three (3) RFS APXVAALL24_43 panel antennas and three (3) Commscope VV65A-R1 panel antennas mounted on one (1) Platform (SitePro p/n RMQLP-496-HK) to the utility pole with a RAD center elevation of 110-ft above grade.
  Cables: Twenty-four (24) 1-5/8" ∅ coax cables mounted to the outside of the pole as indicated in Section 4 of this report.

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. 48-19, "Design of Steel Transmission Pole Structures", defines allowable steel stresses for evaluation of the utility pole.
- All utility pole members are adequately protected to prevent corrosion of steel members.
- All proposed antenna mounts are modeled as listed above.
- Pipe mast will be properly installed and maintained.
- No residual stresses exist due to incorrect pole erection.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds conform to the requirements of AWS D1.1.
- Pipe mast and utility pole will be in plumb condition.
- Utility pole 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 analysis of the utility pole was independently completed using the current version of PLSPole computer program licensed to CENTEK Engineering, Inc.

NESC prescribed loads for the proposed wireless equipment were calculated to analyze the utility tower. Section 5 of this report details these loads.

Design Basis

Our analysis was performed in accordance with ASCE 48-19, "Design of Steel Transmission Pole Structures", NESC C2-2023 and Eversource Design Criteria.

- UTILITY POLE ANALYSIS

  The purpose of this analysis is to determine the adequacy of the existing utility pole to support the proposed antenna loads. The loading and design requirements were analyzed in accordance with the Eversource Design Criteria Table, NESC C2-2023 ~ Construction Grade B, and ASCE Manual No. 48-19.

  Load cases considered:

  Load Case 1: NESC Heavy Wind
  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
  Wind Speed..... 110 mph (1)
  Radial Ice Thickness..... 0"

  Load Case 3: NESC Extreme Ice w/ Wind
  Wind Pressure..... 6.4 psf
  Radial Ice Thickness..... 0.75"
  Vertical Overload Capacity Factor..... 1.0
  Wind Overload Capacity Factor..... 1.0

  Note 1: NESC C2-2023, Section25, Rule 250C: Extreme Wind Loading, 1.25 x Gust Response Factor (wind speed: 3-second gust)

R e s u l t s

- UTILITY POLE

This analysis finds that the subject utility pole is adequate to support the proposed antenna mast and related appurtenances. The pole stresses meet the requirements set forth by the ASCE Manual No. 48-19, "Design of Steel Transmission Pole Structures", for the applied NESC Heavy and Hi-Wind load cases. The detailed analysis results are provided in Section 6 of this report. The analysis results are summarized as follows:

A maximum usage of **88.39%** occurs in the utility pole under the **NESC Extreme** loading condition.

POLE SECTION:

The utility pole was found to be within allowable limits.

Tower Section	Elevation	Stress Ratio (% of capacity)	Result
Section 3	53.00' -100.00' (AGL)	88.39%	**PASS**

BASE PLATE:

The base plate was found to be within allowable limits from the PLS output.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Base Plate	Bending	69.6%	**PASS**

FLANGE:

The flange bolts and flange plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Flange Bolts	Tension	86.1%	**PASS**
Flange Plate	Bending	79.4%	**PASS**

- FOUNDATION AND ANCHORS

The base of the tower is connected to the foundation by means of (24) 2.25"∅, ASTM A615-75 anchor bolts embedded into the concrete foundation structure. Review of the foundation consisted of a comparison of the base reactions obtained from the proposed tower analysis and the original foundation design.

BASE REACTIONS:

From PLS-Pole analysis of utility pole based on NESC/Eversource prescribed loads.

Load Case	Shear	Axial	Moment
NESC Heavy Wind	36.14 kips	129.01 kips	3100.26 ft-kips
NESC Extreme Wind	67.65 kips	69.52 kips	5820.07 ft-kips
NESC Extreme Ice w/ Wind	24.19 kips	114.43 kips	2097.68 ft-kips

Note 1 – 10% increase to be applied to tower base reactions for foundation verification per OTRM 051

ANCHOR BOLTS:

The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (% of capacity)	Result
Anchor Bolts	Tension	72.3%	**PASS**

FOUNDATION:

Force	Original Design Loading	Proposed Loading	Result
Moment	6,621 ft-kips	6,402 ft-kips	**PASS**
Shear	78.6 kips	74.4 kips	**PASS**

Note 1: Taken from Sabre design calculations.

Note 2: 10% increase applied to PLS base reactions used in foundation verification per OTRM 051.

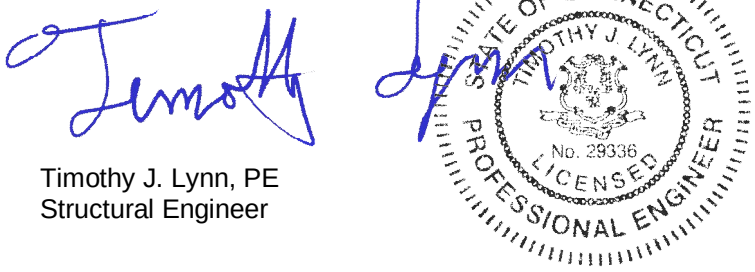
Conclusion

This analysis shows that the subject utility pole **is adequate** to support the proposed equipment upgrade.

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 ~ PLS-POLE

PLS-POLE provides all of the capabilities a structural engineer requires to design transmission, substation or communications structures. It does so using a simple easy to use graphical interface that rests upon our time tested finite element engine. Regardless of whether you want to model a simple wood pole or a guyed steel X-Frame; PLS-POLE can handle the job simply, reliably and efficiently.

Modeling Features:

- Structures are made of standard reusable components that are available in libraries. You can easily create your own libraries or get them from a manufacturer
- Structure models are built interactively using interactive menus and graphical commands
- Automatic generation of underlying finite element model of structure
- Steel poles can have circular, 4, 6, 8, 12, 16, or 18-sided, regular, elliptical or user input cross sections (flat-to-flat or tip-to-tip orientations)
- Steel and concrete poles can be selected from standard sizes available from manufacturers
- Automatic pole class selection
- Cross brace position optimizer
- Capability to specify pole ground line rotations
- Capability to model foundation displacements
- Can optionally model foundation stiffness
- Guys are easily handled (modeled as exact cable elements in nonlinear analysis)
- Powerful graphics module (members color-coded by stress usage)
- Graphical selection of joints and components allows graphical editing and checking
- Poles can be shown as lines, wire frames or can be rendered as 3-d polygon surfaces

Analysis Features:

- Automatic distribution of loads in 2-part suspension insulators (v-strings, horizontal vees, etc.)
- Design checks for ASCE, ANSI/TIA/EIA 222 (Revisions F and G) or other requirements
- Automatic calculation of dead and wind loads
- Automated loading on structure (wind, ice and drag coefficients) according to:
    - ASCE 74-1991
    - NESC 2002
    - NESC 2007
    - IEC 60826:2003
    - EN50341-1:2001 (CENELEC)
    - EN50341-3-9:2001 (UK NNA)
    - EN50341-3-17:2001 (Portugal NNA)
    - ESAA C(b)1-2003 (Australia)
    - TPNZ (New Zealand)
    - REE (Spain)
    - EIA/TIA 222-F
    - ANSI/TIA 222-G
    - CSA S37-01
- Automated microwave antenna loading as per EIA/TIA 222-F and ANSI/TIA 222-G
- Detects buckling by nonlinear analysis

Results Features:

- Detects buckling by nonlinear analysis
- 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
- Automatic tracking of part numbers and costs

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-H covering the design of telecommunications structures specifies LRFD design approach. This approach applies the loads from extreme weather loading conditions, and designs the structure so that it does not exceed code defined percentage of failure strength.

ANSI Standard C2-2023 (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 Eversource 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 1700-year recurrence for TIA-22-H risk category III and a 100-year recurrence for NESC Grade B. 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-H:

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 2023 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.

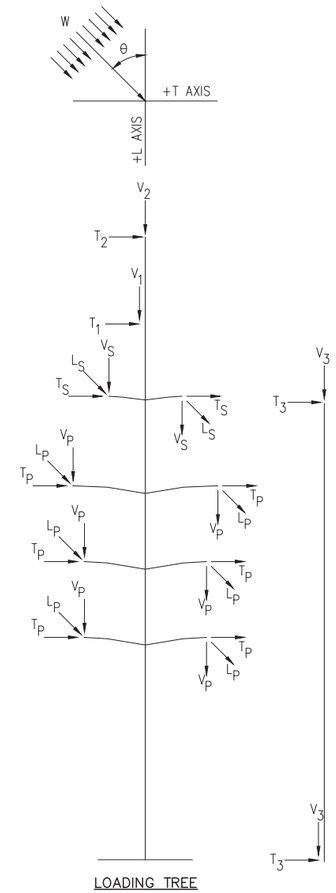
LOAD TABLE 9: 115kV TANGENT
115–kV CONDUCTOR: 1–1590 ACSS FALCON CONDUCTOR
SHIELD WIRE: 1–96 FIBER OPGW 16.4MM
RULING SPAN: 500–900FT.
WIND SPAN: 1000FT.
WEIGHT SPAN (SW ICED, SW UNICED, COND ICED, COND UNICED): 1200FT, 2700FT, 1200FT, 1700FT.
TENSION LIMIT (SW, COND): 6750LBS, 14100LBS @ NESC B Creep
LINE ANGLE: 0°–2°

LOADING CASE										DESIGN LOADS														
DESCRIPTION		Wind (mph)	Wind (psf)	Structure Wind (mph)	Structure Wind (psf)	Θ	Ice	Temp	I/C	VS (k)	TS (k)	LS (k)	VP (k)	TP (k)	LP (k)	T1 (k)	V1 (k)	T2 (k)	V2 (k)	T3 (k)	V3 (k)	W (PSF)	K
1	NESC Rule 250B	39.5	4.0	39.5	4.0	90.0	0.5	0.0	C	2.2	2.0	0.0	6.5	3.3	0.0	6.0	2.0	6.0	2.0	0.2	2.1	10.0	1.5
2	NESC Rule 250C (115–165)	113.5	33.0	121.8	38.0	90.0	0.0	60.0	C	1.4	2.1	0.0	3.8	5.1	0.0	2.9	8.1	2.9	8.1	0.5	0.5	38.0	1.0
3	NESC Rule 250C (w/o wires) (115–165)	0.0	0.0	121.8	38.0	90.0	0.0	60.0	C	0.1	0.0	0.0	0.3	0.0	0.0	2.9	8.1	2.9	8.1	0.5	0.5	38.0	1.0
4	NESC Rule 250D	40.0	4.1	40.0	4.1	90.0	1.0	15.0	C	3.1	1.4	0.0	6.7	2.1	0.0	4.5	2.2	4.5	2.2	0.1	2.0	4.1	1.0
5	Deflection	0.0	0.0	0.0	0.0	90.0	0.0	60.0	C	1.4	0.2	0.0	3.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
6	Broken Wire	39.5	4.0	39.5	4.0	90.0	0.5	0.0	C	2.2	1.7	−11.1	6.5	2.7	−23.2	6.0	2.0	6.0	2.0	0.2	2.1	10.0	1.5

STRUCTURES IN LOAD GROUP: 19520.

NOTES:

1. ALL INDICATED LOADS ARE ULTIMATE AND INCLUDE ALL OVERLOAD FACTORS.
2. V, T & L ARE IN KIPS AND ARE THE LOADS IN THE DIRECTION OF THE STRUCTURES VERTICAL, TRANSVERSE, AND LONGITUDINAL AXIS RESPECTIVELY.
3. W IS THE DESIGN WIND PRESSURE TO APPLY TO THE STRUCTURE. A SHAPE FACTOR OF 1.6 SHALL BE APPLIED TO MEMBERS WITH FEWER THAN 8 SIDES. FOR MEMBERS WITH SIDES 8 TO 12 SIDES, A SHAPE FACTOR OF 1.3 SHALL BE APPLIED. FOR MEMBERS WITH MORE THAN 12 SIDES, A SHAPE FACTOR OF 1.0 SHALL BE APPLIED.
4. APPLY ALL TRANSVERSE LOADS IN BOTH THE NEGATIVE AND POSITIVE TRANSVERSE DIRECTION.
5. THETA IS THE ANGLE IN DEGREES BETWEEN THE L–AXIS AND THE WIND DIRECTION AS SHOWN ON THE LOADING TREE DIAGRAM.
6. THE DEAD LOAD OF THE STRUCTURE SHALL BE MULTIPLIED BY K.
7. STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING CRITERIA OPTIONS:
   A. ALL CONDUCTORS AND GROUND WIRES INSTALLED UNDER ALL LOAD CASES EXCEPT LOAD CASE 3.
   B. APPLY LOAD CASE 6 TO ONE SHIELD WIRE ATTACHMENT OR ONE CONDUCTOR ATTACHMENT IN ONE DIRECTION WITH LOAD CASE 1 APPLIED TO ALL OTHER ATTACHMENTS. DO THIS FOR EVERY SHIELD WIRE AND CONDUCTOR.
   C. DOUBLE CIRCUIT STRUCTURES WILL BE DESIGNED FOR ONE CIRCUIT INSTALLATION WITH TWO SHIELD WIRES FOR THE FOLLOWING LOAD CASES: L1, L2, L4, L5, L6
8. STRUCTURES SHALL BE FABRICATED FROM WEATHERING STEEL
9. STRUCTURES SHALL BE DESIGNED FOR ECCENTRIC MOMENT LOADING DUE TO DEFLECTED SHAPE OF STRUCTURE PLUS A FOUNDATION ROTATION OF 1.5DEG FOR ALL LOAD CASES EXCEPT LOAD CASES 5 (DEFLECTION).
10. POLE SECTIONS SHALL BE EQUIPPED WITH SLIP TYPE CONNECTIONS. FLANGE CONNECTIONS MAY ALSO BE REQUIRED IF SUPPLIER IS NOTIFIED BY ENGINEER.
11. MINIMUM ANCHOR BOLT PROJECTION SHALL BE 12 INCHES WITH THE ANCHOR BOLT THREADED LENGTH BEING SUFFICIENT TO ACCOMMODATE STRUCTURE RAKING. PROVIDE ONE (1) BOLT DIAMETER OF THREAD PROJECTING ABOVE THE TOP NUT.
12. STRUCTURES SHALL BE DESIGNED CONSIDERING A 2% DEFLECTION LIMIT UNDER LOAD CASE 5.
13. COAX CABLE LOADS V3 & T3 APPLIED AT 10' INCREMENTS ALONG POLE.



LOADING TREE

DRAWING NOT TO SCALE

ISSUED FOR CONSTRUCTION

NO.	DATE	DESIGN REVISIONS	BY	CHK	APP	APP
B	11/22/22	ISSUED FOR 100% DESIGN	MSS	AAM	CNM	ACR
A	10/03/22	ISSUED FOR 70% DESIGN	RVD	CNM	ACR	

BURNS McDONNELL

132498

date 10/03/2022
designed RVD
detailed MSS
checked CNM

NO.	DATE	AS BUILT REVISIONS	BY	CHK	APP	APP
–	–	–	–	–	–	–

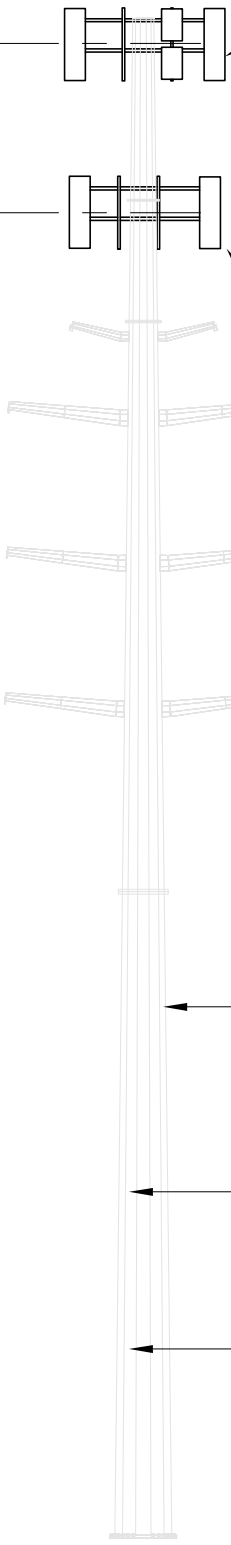
EVERSOURCE ENERGY

TITLE
DEVON S/S - TRAP FALL S/S
115–kV TRANSMISSION LINE
DOUBLE CIRCUIT VERTICAL MONOPOLE 0°–2° CELL TOWER STR. 19520
SHELTON & STRATFORD, CT

BY	BMcD	CHKD	–	APP	–
DATE	02/14/2022	DATE		DATE	
H–SCALE	N/A	SIZE	D	FIELD BOOK & PAGES	
V–SCALE	N/A	V.S.		R.E. DWG	–
R.E. PROJ. NUMBER				DWG NO.	01250-40011p002

℄ EL. AT&T ANTENNAS ±124'-0" AGL

℄ EL. T-MOBILE ANTENNAS ±110'-0" AGL



AT&T (FINAL CONFIG.):
THREE (3) CCI TPA65R-BU6DA PANEL ANTENNAS, THREE (3) ERICSSON AIR6419 PANEL ANTENNAS, THREE (3) ERICSSON AIR6449 PANEL ANTENNAS, THREE (3) CCI OPA65R-BU6D PANEL ANTENNAS, THREE (3) TMA2124F03V5-2D TMAs, SIX (6) TMABPD7823VG12A TMAs AND ONE (1) DC6 SURGE ARRESTOR MOUNTED ON SITEPRO RMQLP-4120-H10 PLATFORM.

T-MOBILE (FINAL CONFIG.):
THREE (3) RFS APXVAALL24_43 PANEL ANTENNAS AND THREE (3) COMMSCOPE VV-65A-R1 PANEL ANTENNAS MOUNTED ON SITEPRO RMQLP-496-HK PLATFORM.

125' TALL STEEL UTILITY POLE STRUCTURE NO. 19520

AT&T (24) 1-5/8" ø COAX CABLES, (1) FIBER CABLE AND (2) DC CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

T-MOBILE (24) 1-5/8" ø COAX CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

1 / SK-1 **TOWER ELEVATION**

SCALE: NOT TO SCALE

REVISIONS		
00	8/29/23	CONSTRUCTION

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

CT2043
STRUCTURE 19520

670 CHAPEL STREET
STRATFORD, CT

PROJECT NO:	23016.03
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	8/29/23

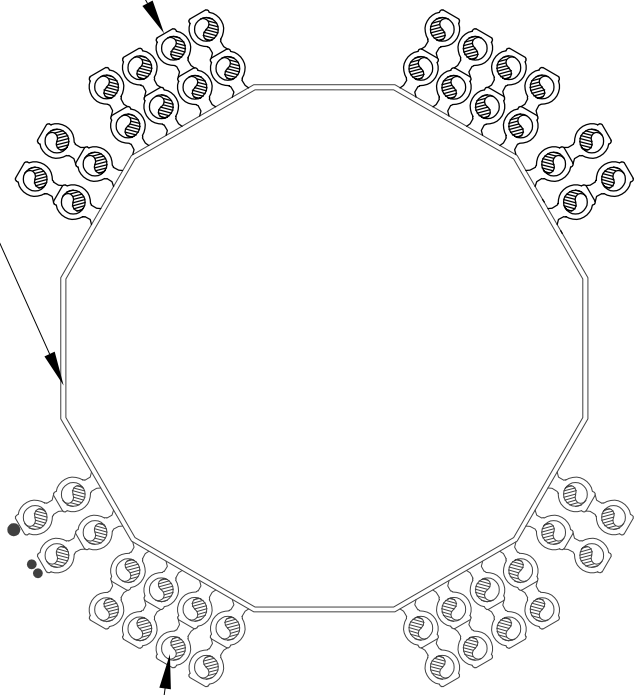
TOWER ELEVATION

SK-1

DWG. 1 OF 2

T-MOBILE (24) 1-5/8" ø COAX CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

125' TALL STEEL UTILITY POLE STRUCTURE NO. 19520



AT&T (24) 1-5/8" ø COAX CABLES, ONE (1) FIBER CABLE AND TWO (2) DC CABLES MOUNTED ON CLUSTER SUPPORT BRACKETS

1 / SK-2 COAX CABLE PLAN

SCALE: NOT TO SCALE

REVISIONS		
00	8/29/23	CONSTRUCTION

CENTEK engineering
Centered on Solutions℠
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(203) 488-0580
(203) 488-8587 Fax
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CT2043
STRUCTURE 19520

670 CHAPEL STREET
STRATFORD, CT

PROJECT NO:	23016.03
DRAWN BY:	TJL
CHECKED BY:	CFC
SCALE:	AS NOTED
DATE:	8/29/23

FEELINE PLAN

SK-2

DWG. 2 OF 2

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: Loads - Structure #19520

Location: Stratford, CT

Rev. 0: 8/29/23

Prepared by: T.J.L Checked by: C.F.C.
Job No. 23016.03

Basic Components

Heavy Wind Pressure =	$p := 4.00 \cdot psf$	(User Input NESC 2023 Figure 250-1 & Table 250-1)
Basic Windspeed =	$V := 110$ mph	(User Input)
Radial Ice Thickness =	$Ir := 0.50 \cdot in$	(User Input NESC 2023 Figure 250-1 & Table 250-1)
Radial Ice Density =	$Id := 56.0 \cdot pcf$	(User Input)

Factors for Extreme Wind Calculation

Elevation of Top of Mast Above Grade =	$TME := 125$ ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.25$	(User Input - Only for NESC Extreme wind case)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{TME}{900}\right)^{\frac{2}{9.5}} = 1.326$	(NESC 2023 Table 250-2)
Turbulence Intensity Constant =	$C_{exp} := 0.2$	(NESC 2023 Table 250-3)
Integral Length Scale of Turbulence Constant =	$L_s := 220$	(NESC 2023 Table 250-3)
Effective Height =	$z_s := 0.67 \cdot TME = 83.75$	(NESC 2023 Table 250-3)
Turbulence Intensity =	$I_z := C_{exp} \cdot \left(\frac{33}{z_s}\right)^{\frac{1}{6}} = 0.171$	(NESC 2023 Table 250-3)
Response Term =	$B_t := \left[\frac{1}{\left[1 + \left(0.56 \cdot \frac{z_s}{L_s}\right)\right]}\right]^{0.5} = 0.908$	(NESC 2023 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(4.61 \cdot I_z \cdot B_t\right)\right]}{\left(1 + 6.1 \cdot I_z\right)} = 0.84$	(NESC 2023 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf \cdot psf = 34.5 \cdot psf$	(NESC 2023 Section 250.C.1)

NESC Extreme Ice w/ Wind Components

Heavy Wind Pressure =	$p_{ex} := 6.4 \cdot psf$	(User Input NESC 2023 Figure 250-3 & Table 250-4)
Radial Ice Thickness =	$Ir_{ex} := 0.75 \cdot in$	(User Input NESC 2023 Figure 250-3)

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)
NESC Extreme Loading =	**1.0**	(User Input)
NESC Extreme Ice with Wind Loading =	**1.0**	(User Input)

Overload Factors for Vertical Loads:

NESC Heavy Loading =	**1.5**	(User Input)
NESC Extreme Loading =	**1.0**	(User Input)
NESC Extreme Ice with Wind Loading =	**1.0**	(User Input)

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI TPA65-BU6D	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 71.2 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 20.7 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 7.7 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 70 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant1} := WT_{ant} \cdot N_{ant} = 210 lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 11349 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 2282 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 74 lb$

Weight of Ice on All Antennas = $Wt_{ice.ant1} := W_{ICEant} \cdot N_{ant} = 222 lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 3500 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 113 lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant1} := W_{ICE.exant} \cdot N_{ant} = 340 lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 10.9 ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 32.6 ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant1} := p \cdot Cd_F \cdot A_{ICEant} = 209 lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 10.2 ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 30.7 ft^2$

Total Antenna Wind Force = $F_{ant1} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2119 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 11.2 ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 33.6 ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant1} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 430 lb$

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Ericsson AIR6419	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 31.1 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 16.1 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 7.3 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 56 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant2} := WT_{ant} \cdot N_{ant} = 168\,lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3655 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 901 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 29\,lb$

Weight of Ice on All Antennas = $Wt_{ice.ant2} := W_{ICEant} \cdot N_{ant} = 88\,lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 1394 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 45\,lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant2} := W_{ICE.exant} \cdot N_{ant} = 136\,lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 3.8\,ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 11.4\,ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant2} := p \cdot Cd_F \cdot A_{ICEant} = 73\,lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 3.5\,ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 10.4\,ft^2$

Total Antenna Wind Force = $F_{ant2} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 720\,lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 4\,ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 12\,ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant2} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 153\,lb$

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Subject: Loads - Structure #19520

Location: Stratford, CT

Rev. 0: 8/29/23

Prepared by: T.J.L Checked by: C.F.C.
Job No. 23016.03

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Ericsson AIR6449	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 30.6 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 15.9 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 10.6 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 96 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant3} := WT_{ant} \cdot N_{ant} = 288 lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5157 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 1038 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 34 lb$

Weight of Ice on All Antennas = $Wt_{ice.ant3} := W_{ICEant} \cdot N_{ant} = 101 lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 1601 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 52 lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant3} := W_{ICE.exant} \cdot N_{ant} = 156 lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 3.7 ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 11.1 ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant3} := p \cdot Cd_F \cdot A_{ICEant} = 71 lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 3.4 ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 10.1 ft^2$

Total Antenna Wind Force = $F_{ant3} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 699 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 3.9 ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 11.6 ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant3} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 149 lb$

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	CCI OPA65R-BU6D	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 71.2 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 21 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 7.8 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 70 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant4} := WT_{ant} \cdot N_{ant} = 210 lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 11663 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 2315 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 75 lb$

Weight of Ice on All Antennas = $Wt_{ice.ant4} := W_{ICEant} \cdot N_{ant} = 225 lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 3550 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 115 lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant4} := W_{ICE.exant} \cdot N_{ant} = 345 lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 11 ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 33.1 ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant4} := p \cdot Cd_F \cdot A_{ICEant} = 212 lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 10.4 ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 31.1 ft^2$

Total Antenna Wind Force = $F_{ant4} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 2149 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 11.4 ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 34.1 ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant4} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 436 lb$

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Kaelus TMA2124F03V5-2D	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 9.7 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 10.4 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 8.3 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 36 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant5} := WT_{ant} \cdot N_{ant} = 108 lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 837 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 297 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 10 lb$

Weight of Ice on All Antennas = $Wt_{ice.ant5} := W_{ICEant} \cdot N_{ant} = 29 lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 469 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 15 lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant5} := W_{ICE.exant} \cdot N_{ant} = 46 lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 0.8 ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 2.5 ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant5} := p \cdot Cd_F \cdot A_{ICEant} = 16 lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 0.7 ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 2.1 ft^2$

Total Antenna Wind Force = $F_{ant5} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 145 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 0.9 ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 2.8 ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant5} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 36 lb$

Development of Wind & Ice Load on Antennas

Antenna Data:	(AT&T)	
Antenna Model =	CCI TMABPD7823VG12A	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 14.25 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 11.024 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 4.11 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 23 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 6$	(User Input)
Gravity Load (without ice)		
Weight of All Antennas =	$Wt_{ant6} := WT_{ant} \cdot N_{ant} = 138 lb$	
Gravity Load (ice only)		
Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 646 \cdot in^3$	
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 291 \cdot in^3$	
Weight of Ice on Each Antenna =	$W_{ICEant} := V_{ice} \cdot Id = 9 lb$	
Weight of Ice on All Antennas =	$Wt_{ice.ant6} := W_{ICEant} \cdot N_{ant} = 57 lb$	
Gravity Load (Extreme ice only)		
Volume of Extreme Ice on Each Antenna =	$V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 461 \cdot in^3$	
Weight of Extreme Ice on Each Antenna =	$W_{ICE.exant} := V_{ice.ex} \cdot Id = 15 lb$	
Weight of Extreme Ice on All Antennas =	$Wt_{ice.ex.ant6} := W_{ICE.exant} \cdot N_{ant} = 90 lb$	
Wind Load (NESC Heavy)		
Surface Area for One Antenna w/ Ice =	$SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 1.3 ft^2$	
Antenna Projected Surface Area w/ Ice =	$A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 7.6 ft^2$	
Total Antenna Wind Force w/ Ice =	$Fi_{ant6} := p \cdot Cd_F \cdot A_{ICEant} = 49 lb$	
Wind Load (NESC Extreme)		
Surface Area for One Antenna =	$SA_{ant} := L_{ant} \cdot W_{ant} = 1.1 ft^2$	
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 6.5 ft^2$	
Total Antenna Wind Force =	$F_{ant6} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 452 lb$	
Wind Load (NESC Extreme Ice w/ Wind)		
Surface Area for One Antenna w/ Extreme Ice =	$SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 1.4 ft^2$	
Antenna Projected Surface Area w/ Extreme Ice =	$A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 8.2 ft^2$	
Total Antenna Wind Force w/ Extreme Ice =	$Fi_{ex.ant6} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 105 lb$	

Development of Wind & Ice Load on Antennas

Antenna Data: (AT&T)

Antenna Model =	Raycap DC6-48-60-18-8C		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 31.4 \cdot in$	in	(User Input)
Antenna Width =	$W_{ant} := 18.28 \cdot in$	in	(User Input)
Antenna Thickness =	$T_{ant} := 10.24 \cdot in$	in	(User Input)
Antenna Weight =	$WT_{ant} := 26 \cdot lb$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant7} := WT_{ant} \cdot N_{ant} = 26\,lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5878 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 1144 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 37\,lb$

Weight of Ice on All Antennas = $Wt_{ice.ant7} := W_{ICEant} \cdot N_{ant} = 37\,lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 1762 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 57\,lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant7} := W_{ICE.exant} \cdot N_{ant} = 57\,lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 4.3\,ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 4.3\,ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant7} := p \cdot Cd_F \cdot A_{ICEant} = 28\,lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 4\,ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 4\,ft^2$

Total Antenna Wind Force = $F_{ant7} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 275\,lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 4.5\,ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 4.5\,ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant7} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 58\,lb$

Development of Wind & Ice Load on Mounts

Mount Data: (AT&T)

Mount Type:	SitePro RMQLP-4120-H10	
Mount EPA (no ice) =	$EPA := 28.15 \cdot ft^2$	(User Input from SitePro Document)
Mount EPA (0.5" ice) =	$EPA_{ice} := 34.10 \cdot ft^2$	(User Input from SitePro Document)
Mount EPA (0.75" ice) =	$EPA_{ice.ex} := 37.10 \cdot ft^2$	(User Input from SitePro Document/Interpolation)
Weight (no ice) =	$W := 3265 \cdot lb$	(User Input from SitePro Document)
Weight (0.5" ice) =	$W_{ice} := 3657 \cdot lb$	(User Input from SitePro Document)
Weight (0.75" ice) =	$W_{ice.ex} := 3920 \cdot lb$	(User Input from SitePro Document/Interpolation)
Weight Antenna Pipes =	$Wap := [(3.66 \cdot plf) \cdot 10 \cdot ft \cdot 12] = 439 \cdot lb$	
Weight 0.5" ice on Antenna Pipes =	$Wap_{ice} := \left[\left[(3.375)^2 - (2.375)^2\right] \cdot 120 \cdot 12\right] \cdot in^3 \cdot \frac{\pi}{4} \cdot (ld) = 211 \cdot lb$	
Weight 0.75" ice on Antenna Pipes =	$Wap_{ice.ex} := \left[\left[(3.875)^2 - (2.375)^2\right] \cdot 120 \cdot 12\right] \cdot in^3 \cdot \frac{\pi}{4} \cdot (ld) = 344 \cdot lb$	
Total Pipe Length =	$TPL := 12 \cdot 10 \cdot ft = 120 ft$	
Total Antenna Length =	$TAL := 71.2 \cdot in \cdot 6 + 31.1 \cdot in \cdot 3 + 30.6 \cdot in \cdot 3 = 51.025 ft$	
Exposed Pipe Area =	$ExPA := (TPL - TAL) 2.375 \cdot in = 13.651 ft^2$	
Exposed Pipe Area (0.5" Ice) =	$ExPA_{ice} := (TPL - TAL) 3.375 \cdot in = 19.399 ft^2$	
Exposed Pipe Area (0.75' Ice) =	$ExPA_{ice.ex} := (TPL - TAL) 3.875 \cdot in = 22.273 ft^2$	
Mount Projected Surface Area =	$CdAa := 1.3 \cdot ExPA + EPA = 45.9 ft^2$	
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 1.3 \cdot ExPA_{ice} + EPA_{ice} = 59.3 ft^2$	
Mount Projected Surface Area w/ Extreme Ice =	$CdAa_{ice.ex} := 1.3 \cdot ExPA_{ice.ex} + EPA_{ice.ex} = 66.1 ft^2$	

Gravity Loads (without ice)

Weight of All Mounts = $Wt_{mnt1} := W + Wap = 3704 lb$

Gravity Load (ice only)

Weight of Ice on All Mounts = $Wt_{ice.mnt1} := W_{ice} - W + Wap + Wap_{ice} = 1042 lb$

Gravity Load (extreme ice only)

Weight of Ice on All Mounts = $Wt_{ice.ex.mnt1} := W_{ice.ex} - W + Wap + Wap_{ice.ex} = 1438 lb$

Wind Load (NESC Heavy)

Total Mount Wind Force w/ Ice = $Fi_{mnt1} := p \cdot CdAa_{ice} = 237 lb$

Wind Load (NESC Extreme)

Total Mount Wind Force = $F_{mnt1} := qz \cdot CdAa \cdot m = 1979 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Total Mount Wind Force w/ Extreme Ice = $Fi_{ex.mnt1} := p_{ex} \cdot CdAa_{ice.ex} \cdot m = 528 lb$

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	RFSAPXVAALL24_43	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 95.9 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 24 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 8.5 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 150 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant8} := WT_{ant} \cdot N_{ant} = 450 lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 19564 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := (L_{ant} + 2 \cdot Ir)(W_{ant} + 2 \cdot Ir)(T_{ant} + 2 \cdot Ir) - V_{ant} = 3450 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 112 lb$

Weight of Ice on All Antennas = $Wt_{ice.ant8} := W_{ICEant} \cdot N_{ant} = 335 lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := (L_{ant} + 2 \cdot Ir_{ex})(W_{ant} + 2 \cdot Ir_{ex})(T_{ant} + 2 \cdot Ir_{ex}) - V_{ant} = 5273 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 171 lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant8} := W_{ICE.exant} \cdot N_{ant} = 513 lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := (L_{ant} + 2 \cdot Ir) \cdot (W_{ant} + 2 \cdot Ir) = 16.8 ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 50.5 ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant8} := p \cdot Cd_F \cdot A_{ICEant} = 323 lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 16 ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 47.9 ft^2$

Total Antenna Wind Force = $F_{ant8} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 3309 lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := (L_{ant} + 2 \cdot Ir_{ex}) \cdot (W_{ant} + 2 \cdot Ir_{ex}) = 17.2 ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 51.7 ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant8} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 662 lb$

Development of Wind & Ice Load on Antennas

Antenna Data: (T-Mobile)

Antenna Model =	Commscope VV65A-R1	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 54.724 \cdot in$	(User Input)
Antenna Width =	$W_{ant} := 12.087 \cdot in$	(User Input)
Antenna Thickness =	$T_{ant} := 4.646 \cdot in$	(User Input)
Antenna Weight =	$WT_{ant} := 30 \cdot lb$	(User Input)
Number of Antennas =	$N_{ant} := 3$	(User Input)

Gravity Load (without ice)

Weight of All Antennas = $Wt_{ant9} := WT_{ant} \cdot N_{ant} = 90\,lb$

Gravity Load (ice only)

Volume of Each Antenna = $V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 3073 \cdot in^3$

Volume of Ice on Each Antenna = $V_{ice} := \left(L_{ant} + 2 \cdot Ir\right)\left(W_{ant} + 2 \cdot Ir\right)\left(T_{ant} + 2 \cdot Ir\right) - V_{ant} = 1044 \cdot in^3$

Weight of Ice on Each Antenna = $W_{ICEant} := V_{ice} \cdot Id = 34\,lb$

Weight of Ice on All Antennas = $Wt_{ice.ant9} := W_{ICEant} \cdot N_{ant} = 102\,lb$

Gravity Load (Extreme ice only)

Volume of Extreme Ice on Each Antenna = $V_{ice.ex} := \left(L_{ant} + 2 \cdot Ir_{ex}\right)\left(W_{ant} + 2 \cdot Ir_{ex}\right)\left(T_{ant} + 2 \cdot Ir_{ex}\right) - V_{ant} = 1622 \cdot in^3$

Weight of Extreme Ice on Each Antenna = $W_{ICE.exant} := V_{ice.ex} \cdot Id = 53\,lb$

Weight of Extreme Ice on All Antennas = $Wt_{ice.ex.ant9} := W_{ICE.exant} \cdot N_{ant} = 158\,lb$

Wind Load (NESC Heavy)

Surface Area for One Antenna w/ Ice = $SA_{ICEant} := \left(L_{ant} + 2 \cdot Ir\right) \cdot \left(W_{ant} + 2 \cdot Ir\right) = 5.1\,ft^2$

Antenna Projected Surface Area w/ Ice = $A_{ICEant} := SA_{ICEant} \cdot N_{ant} = 15.2\,ft^2$

Total Antenna Wind Force w/ Ice = $Fi_{ant9} := p \cdot Cd_F \cdot A_{ICEant} = 97\,lb$

Wind Load (NESC Extreme)

Surface Area for One Antenna = $SA_{ant} := L_{ant} \cdot W_{ant} = 4.6\,ft^2$

Antenna Projected Surface Area = $A_{ant} := SA_{ant} \cdot N_{ant} = 13.8\,ft^2$

Total Antenna Wind Force = $F_{ant9} := qz \cdot Cd_F \cdot A_{ant} \cdot m = 951\,lb$

Wind Load (NESC Extreme Ice w/ Wind)

Surface Area for One Antenna w/ Extreme Ice = $SA_{ICE.exant} := \left(L_{ant} + 2 \cdot Ir_{ex}\right) \cdot \left(W_{ant} + 2 \cdot Ir_{ex}\right) = 5.3\,ft^2$

Antenna Projected Surface Area w/ Extreme Ice = $A_{ICE.exant} := SA_{ICE.exant} \cdot N_{ant} = 15.9\,ft^2$

Total Antenna Wind Force w/ Extreme Ice = $Fi_{ex.ant9} := p_{ex} \cdot Cd_F \cdot A_{ICE.exant} \cdot m = 204\,lb$

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Subject: Loads - Structure #19520

Location: Stratford, CT

Rev. 0: 8/29/23

Prepared by: T.J.L Checked by: C.F.C.
Job No. 23016.03

Development of Wind & Ice Load on Mounts

Mount Data: (T-Mobile)

Mount Type:	SitePro RMQLP-496-HK	
Mount EPA (no ice) =	$EPA := 26.29 \cdot ft^2$	(User Input from SitePro Document)
Mount EPA (0.5" ice) =	$EPA_{ice} := 32.25 \cdot ft^2$	(User Input from SitePro Document)
Mount EPA (0.75" ice) =	$EPA_{ice.ex} := 35.12 \cdot ft^2$	(User Input from SitePro Document/Interpolation)
Weight (no ice) =	$W := 2130 \cdot lb$	(User Input from SitePro Document)
Weight (0.5" ice) =	$W_{ice} := 2580 \cdot lb$	(User Input from SitePro Document)
Weight (0.75" ice) =	$W_{ice.ex} := 2873 \cdot lb$	(User Input from SitePro Document/Interpolation)
Weight Antenna Pipes =	$Wap := [(3.66 \cdot plf) \cdot 8 \cdot ft \cdot 12] = 351 \cdot lb$	
Weight 0.5" ice on Antenna Pipes =	$Wap_{ice} := \left[\left[(3.375)^2 - (2.375)^2\right] \cdot 96 \cdot 12\right] \cdot in^3 \cdot \frac{\pi}{4} \cdot (Id) = 169 \cdot lb$	
Weight 0.75" ice on Antenna Pipes =	$Wap_{ice.ex} := \left[\left[(3.875)^2 - (2.375)^2\right] \cdot 96 \cdot 12\right] \cdot in^3 \cdot \frac{\pi}{4} \cdot (Id) = 275 \cdot lb$	
Total Pipe Length =	$TPL := 12 \cdot 8 \cdot ft = 96\,ft$	
Total Antenna Length =	$TAL := 95.9 \cdot in \cdot 3 + 54.7 \cdot in \cdot 3 = 37.65\,ft$	
Exposed Pipe Area =	$ExPA := (TPL - TAL) 2.375 \cdot in = 11.548\,ft^2$	
Exposed Pipe Area (0.5" Ice) =	$ExPA_{ice} := (TPL - TAL) 3.375 \cdot in = 16.411\,ft^2$	
Exposed Pipe Area (0.75' Ice) =	$ExPA_{ice.ex} := (TPL - TAL) 3.875 \cdot in = 18.842\,ft^2$	
Mount Projected Surface Area =	$CdAa := 1.3 \cdot ExPA + EPA = 41.3\,ft^2$	
Mount Projected Surface Area w/ Ice =	$CdAa_{ice} := 1.3 \cdot ExPA_{ice} + EPA_{ice} = 53.6\,ft^2$	
Mount Projected Surface Area w/ Extreme Ice =	$CdAa_{ice.ex} := 1.3 \cdot ExPA_{ice.ex} + EPA_{ice.ex} = 59.6\,ft^2$	
Gravity Loads (without ice)		
Weight of All Mounts =	$Wt_{mnt2} := W + Wap = 2481\,lb$	
Gravity Load (ice only)		
Weight of Ice on All Mounts =	$Wt_{ice.mnt2} := W_{ice} - W + Wap + Wap_{ice} = 970\,lb$	
Gravity Load (extreme ice only)		
Weight of Ice on All Mounts =	$Wt_{ice.ex.mnt2} := W_{ice.ex} - W + Wap + Wap_{ice.ex} = 1369\,lb$	
Wind Load (NESC Heavy)		
Total Mount Wind Force w/ Ice =	$Fi_{mnt2} := p \cdot CdAa_{ice} = 214\,lb$	
Wind Load (NESC Extreme)		
Total Mount Wind Force =	$F_{mnt2} := qz \cdot CdAa \cdot m = 1781\,lb$	
Wind Load (NESC Extreme Ice w/ Wind)		
Total Mount Wind Force w/ Extreme Ice =	$Fi_{ex.mnt2} := p_{ex} \cdot CdAa_{ice.ex} \cdot m = 477\,lb$	

Total Equipment Loads:

AT&T Loads:

NESC Heavy Wind Vertical =

$Wt_{tot} := \left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{ant4} + Wt_{ant5} + Wt_{ant6} + Wt_{ant7} + Wt_{mnt1}\right) = 4852\,lb$

$Wt_{ice.tot} := \left(Wt_{ice.ant1} + Wt_{ice.ant2} + Wt_{ice.ant3} + Wt_{ice.ant4} + Wt_{ice.ant5} + Wt_{ice.ant6} + Wt_{ice.ant7} + Wt_{ice.mnt1}\right) = 1800\,lb$

$\left(Wt_{tot} + Wt_{ice.tot}\right)\cdot 1.5 = 9978\,lb$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant1} + Fi_{ant2} + Fi_{ant3} + Fi_{ant4} + Fi_{ant5} + Fi_{ant6} + Fi_{ant7} + Fi_{mnt1}\right)\cdot 2.5 = 2238\,lb$

NESC Extreme Wind Vertical = $\left(Wt_{ant1} + Wt_{ant2} + Wt_{ant3} + Wt_{ant4} + Wt_{ant5} + Wt_{ant6} + Wt_{ant7} + Wt_{mnt1}\right) = 4852\,lb$

NESC Extreme Wind Trasnsverse = $\left(F_{ant1} + F_{ant2} + F_{ant3} + F_{ant4} + F_{ant5} + F_{ant6} + F_{ant7} + F_{mnt1}\right) = 8538\,lb$

NESC Extreme Ice w/ Wind Vertical =

$Wt_{ice.ex.tot} := \left(Wt_{ice.ex.ant1} + Wt_{ice.ex.ant2} + Wt_{ice.ex.ant3} + Wt_{ice.ex.ant4} + Wt_{ice.ex.ant5} + Wt_{ice.ex.ant6} + Wt_{ice.ex.ant7} + Wt_{ice.ex.mnt1}\right) = 2607\,lb$

$\left(Wt_{tot} + Wt_{ice.ex.tot}\right) = 7459\,lb$

NESC Extreme Ice w/ Wind Trasnsverse = $\left(Fi_{ex.ant1} + Fi_{ex.ant2} + Fi_{ex.ant3} + Fi_{ex.ant4} + Fi_{ex.ant5} + Fi_{ex.ant6} + Fi_{ex.ant7} + Fi_{ex.mnt1}\right) = 1896\,lb$

T-Mobile Loads:

NESC Heavy Wind Vertical =

$Wt_{tot} := \left(Wt_{ant8} + Wt_{ant9} + Wt_{mnt2}\right) = 3021\,lb$

$Wt_{ice.tot} := \left(Wt_{ice.ant8} + Wt_{ice.ant9} + Wt_{ice.mnt2}\right) = 1407\,lb$

$\left(Wt_{tot} + Wt_{ice.tot}\right)\cdot 1.5 = 6642\,lb$

NESC Heavy Wind Trasnsverse = $\left(Fi_{ant8} + Fi_{ant9} + Fi_{mnt2}\right)\cdot 2.5 = 1586\,lb$

NESC Extreme Wind Vertical = $\left(Wt_{ant8} + Wt_{ant9} + Wt_{mnt2}\right) = 3021\,lb$

NESC Extreme Wind Trasnsverse = $\left(F_{ant8} + F_{ant9} + F_{mnt2}\right) = 6041\,lb$

NESC Extreme Ice w/ Wind Vertical =

$Wt_{ice.ex.tot} := \left(Wt_{ice.ex.ant8} + Wt_{ice.ex.ant9} + Wt_{ice.ex.mnt2}\right) = 2040\,lb$

$\left(Wt_{tot} + Wt_{ice.ex.tot}\right) = 5061\,lb$

NESC Extreme Ice w/ Wind Trasnsverse = $\left(Fi_{ex.ant8} + Fi_{ex.ant9} + Fi_{ex.mnt2}\right) = 1343\,lb$

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Subject: Coax Cable on Pole #19520

Location: Stratford, CT

Rev. 0: 8/29/23

Prepared by: T.J.L Checked by: C.F.C.
Job No. 23016.03

Coax Cable on Pole

Coaxial Cable Span	$Coax_{Span} := 10ft$		*(User Input)*
Heavy Wind Pressure =	$p := 4 \cdot psf$		*(User Input)*
Radial Ice Thickness =	$Ir := 0.5 \cdot in$		*(User Input)*
Radial Ice Density =	$Id := 56 \cdot pcf$		*(User Input)*
Extreme Ice w/ Wind Pressure =	$p_{ex} := 6.4 \cdot psf$		*(User Input)*
Extreme Radial Ice Thickness =	$Ir_{ex} := 0.75 \cdot in$		*(User Input)*
Basic Windspeed =	$V := 110$	mph	(User Input)
Height to Top of Coax Above Grade =	$TC := 125$	ft	(User Input)
Multiplier Gust Response Factor =	$m := 1.00$		(User Input - Only for NESC Extreme wind case)
Velocity Pressure Coefficient =	$Kz := 2.01 \cdot \left(\frac{0.67TC}{900}\right)^{\frac{2}{9.5}} = 1.219$		(NESC 2023 Table 250-2)
Turbulence Intensity Constant =	$C_{exp} := 0.2$		(NESC 2023 Table 250-3)
Integral Length Scale of Turbulence Constant =	$L_s := 220$		(NESC 2023 Table 250-3)
Effective Height =	$z_s := 0.67 \cdot TC = 83.75$		(NESC 2023 Table 250-3)
Turbulence Intensity =	$I_z := C_{exp} \cdot \left(\frac{33}{z_s}\right)^{\frac{1}{6}} = 0.171$		(NESC 2023 Table 250-3)
Response Term =	$B_t := \left[\frac{1}{\left[1 + \left(0.56 \cdot \frac{z_s}{L_s}\right)\right]}\right]^{0.5} = 0.908$		(NESC 2023 Table 250-3)
Gust Response Factor =	$Grf := \frac{\left[1 + \left(4.61 \cdot I_z \cdot B_t\right)\right]}{\left(1 + 6.1 \cdot I_z\right)} = 0.84$		(NESC 2023 Table 250-3)
Wind Pressure =	$qz := 0.00256 \cdot Kz \cdot V^2 \cdot Grf = 31.7$	psf	(NESC 2023 Section 250.C.1)

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 =	$N_{coax} := 51$	*(User Input)*	(24) AT&T Coax Cables (1) AT&T Fiber Cable (2) AT&T DC Cables (24) T-Mobile Coax Cables {1-5/8 size conservatively used for all}
Number of Projected Coax Cables =	$NP_{coax} := 4$	*(User Input)*	

Shape Factor = $Cd_{coax} := 1.6$ *(User Input)*

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)*

Overload Factor for NESC Extreme Ice w/ Wind Transverse Load = $OF_{EIT} := 1.0$ *(User Input)*

Overload Factor for NESC Extreme Ice w/ Wind Vertical Load = $OF_{EIV} := 1.0$ *(User Input)*

Projected width without Ice = $A := \left(NP_{coax} \cdot D_{coax}\right) = 7.92 \cdot in$

Projected width with Ice = $A_{ice} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir\right) = 8.92 \cdot in$

Projected width with Extreme Ice = $A_{ice.ex} := \left(NP_{coax} \cdot D_{coax} + 2 \cdot Ir_{ex}\right) = 9.42 \cdot in$

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 = $W_{ice} := Ai_{coax} \cdot Id \cdot N_{coax} = 77.262 \cdot plf$

Extreme Ice Area per Liner Ft = $Ai_{coax.ex} := \frac{\pi}{4} \cdot \left[\left(D_{coax} + 2 \cdot Ir_{ex}\right)^2 - D_{coax}^2\right] = 0.045\,ft^2$

Weight of Extreme Ice on All Coax Cables = $W_{ice.ex} := Ai_{coax.ex} \cdot Id \cdot N_{coax} = 127.576 \cdot plf$

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 =

$$\overrightarrow{Heavy\_Wind_{Trans} := \left(p \cdot A_{ice} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{HWT}\right)}$$

$Heavy\_WInd_{Vert} = 1955\,lb$ $Heavy\_Wind_{Trans} = 119\,lb$

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 =

$$\overrightarrow{Extreme\_Wind_{Trans} := \left[\left(qz \cdot psf \cdot A \cdot Cd_{coax}\right) \cdot Coax_{Span} \cdot OF_{EWT}\right]}$$

$Extreme\_Wind_{Vert} = 530\,lb$ $Extreme\_Wind_{Trans} = 335\,lb$

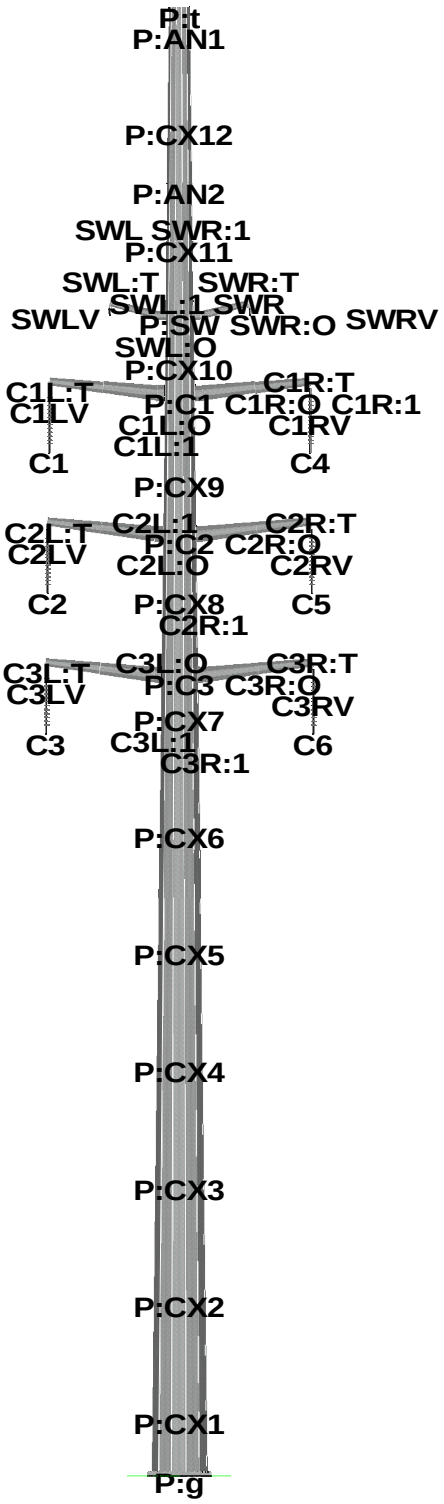
Extreme Ice w/ Wind Vertical Load =

$$\overrightarrow{Extreme\_Ice_{Vert} := \left[\left(N_{coax} \cdot W_{coax} + W_{ice.ex}\right) \cdot Coax_{Span} \cdot OF_{EIV}\right]}$$

Extreme Ice w/ Wind Transverse Load =

$$\overrightarrow{Extreme\_Ice_{Trans} := \left(p_{ex} \cdot A_{ice.ex} \cdot Cd_{coax} \cdot Coax_{Span} \cdot OF_{EIT}\right)}$$

$Extreme\_Ice_{Vert} = 1806\,lb$ $Extreme\_Ice_{Trans} = 80\,lb$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P:AN1
P:CX12
P:AN2
SWL SWR:1
P:CX11
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SWLV P:SW SWR:O SWRV
SWL:O
P:CX10
C1L:T C1R:T
C1LV P:C1 C1R:O C1R:1
C1L:O C1RV
C1L:1
C1 C4
P:CX9
C2L:1 C2R:T
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C2 P:CX8 C5
C2R:1
C3L:O C3R:T
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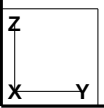

Z
X
Y

10 (ft)

Project Name : 23016.03 - Startford, CT
Project Notes: Structure # 19520 / AT&T CT2043
Project File : J:\Jobs\2301600.WI\03_CT2043\05_Structural\Backup Documentation\Calcs\PLS-Pole\111-23-24183-125FT.POL
Date run : 2:46:31 PM Tuesday, August 29, 2023
by : PLS-POLE Version 17.50
Licensed to : Centek Engineering Inc

Successfully performed nonlinear analysis

Load case 'NESC Rule 250C' uses loading method NESC 2023 which is still being tested and/or is a draft. Carefully check your results. ??
The model has 1 warning. ??

Loads from file: J:\Jobs\2301600.WI\03_CT2043\05_Structural\Backup Documentation\Calcs\PLS-Pole\111-23-24183.lca

*** Analysis Results:

Maximum element usage is 88.39% for Steel Pole "P" in load case "NESC Rule 250C"
Maximum insulator usage is 25.75% for Suspension "C1LS" in load case "NESC Rule 250B"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Resultant Force (kips)	Bending Moment (ft-k)	Foundation Usage %
NESC Rule 250B	P:g	129.01	36.14	133.98	3100.26	0.00
NESC Rule 250C	P:g	69.52	67.65	97.00	5820.07	0.00
NESC Rule 250D	P:g	114.43	24.19	116.95	2097.68	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 Rule 250B	P:g	-0.18	-36.14	-129.01	36.14	3100.25	-9.89	3100.26	-0.01	0.00
NESC Rule 250C	P:g	-0.04	-67.65	-69.52	67.65	5820.07	-2.42	5820.07	-0.00	0.00
NESC Rule 250D	P:g	-0.07	-24.19	-114.43	24.19	2097.67	-3.99	2097.68	-0.00	0.00

Summary of Tip Deflections For All Load Cases:

Note: positive tip load results in positive deflection

Load Case	Joint Label	Long. Defl. (in)	Tran. Defl. (in)	Vert. Defl. (in)	Resultant Defl. (in)	Long. Rot. (deg)	Tran. Rot. (deg)	Twist (deg)
NESC Rule 250B	P:t	0.11	40.27	-0.76	40.28	0.01	-2.56	0.00
NESC Rule 250C	P:t	0.03	79.70	-2.82	79.75	0.00	-5.37	0.00
NESC Rule 250D	P:t	0.04	27.76	-0.39	27.76	0.00	-1.79	0.00

Tubes Summary:

Pole Label	Tube Num.	Weight (lbs)	Load Case	Maximum Usage %	Resultant Moment (ft-k)

P	1	937	NESC	Rule	250C	20.04	134.45
P	2	720	NESC	Rule	250C	36.73	305.90
P	3	6626	NESC	Rule	250C	88.39	2407.55
P	4	14028	NESC	Rule	250C	85.89	5820.07

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %			Load Case		Height AGL (ft)	Segment Number	Weight (lbs)
P	88.39	NESC	Rule	250C		54.0	20	25147.6

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %			Load Case		Height AGL (ft)	Segment Number	Weight (lbs)
SWL	21.55	NESC	Rule	250D		98.7	1	74.1
SWR	23.92	NESC	Rule	250D		98.7	1	74.1
C1L	24.12	NESC	Rule	250D		92.3	2	326.1
C1R	24.93	NESC	Rule	250B		92.1	1	326.1
C2L	24.14	NESC	Rule	250D		80.3	2	326.1
C2R	24.96	NESC	Rule	250B		80.1	1	326.1
C3L	24.18	NESC	Rule	250D		68.3	2	326.1
C3R	25.00	NESC	Rule	250B		68.1	1	326.1

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case			Maximum Usage %	Element Label	Element Type
NESC	Rule	250B	47.48	P	Steel Pole
NESC	Rule	250C	88.39	P	Steel Pole
NESC	Rule	250D	33.36	P	Steel Pole

Summary of Steel Pole Usages by Load Case:

Load Case			Maximum Usage %	Steel Pole Label	Height AGL (ft)	Segment Number
NESC	Rule	250B	47.48	P	54.0	20
NESC	Rule	250C	88.39	P	54.0	20
NESC	Rule	250D	33.36	P	54.0	20

Summary of Base Plate Usages by Load Case:

Load Case			Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC	Rule	250B	P	1	15.072	126.177	3433.684	-10.954	32.957	84.513	-3	107.548	2.842	0.00
NESC	Rule	250C	P	1	15.072	66.683	5820.069	-2.420	53.724	137.767	3	176.003	3.628	0.00

NESC	Rule	250D	P	1	15.072	111.588	3433.696	-6.532	32.731	83.933	-3	106.897	2.832	0.00

Summary of Tubular Davit Usages by Load Case:

Load Case			Maximum Usage %	Tubular Davit Label	Height AGL (ft)	Segment Number
NESC	Rule	250B	25.00	C3R	68.1	1
NESC	Rule	250C	14.86	C3R	68.1	1
NESC	Rule	250D	24.80	C3R	68.1	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case			Weight (lbs)
AN1	Clamp	10.23	NESC	Rule	250B	0.0
AN2&CX2	Clamp	6.83	NESC	Rule	250B	0.0
CX1	Clamp	1.96	NESC	Rule	250B	0.0
CX2	Clamp	1.96	NESC	Rule	250B	0.0
CX3	Clamp	1.96	NESC	Rule	250B	0.0
CX4	Clamp	1.96	NESC	Rule	250B	0.0
CX5	Clamp	1.96	NESC	Rule	250B	0.0
CX6	Clamp	1.96	NESC	Rule	250B	0.0
CX7	Clamp	1.96	NESC	Rule	250B	0.0
CX8	Clamp	1.96	NESC	Rule	250B	0.0
CX9	Clamp	1.96	NESC	Rule	250B	0.0
CX10	Clamp	1.96	NESC	Rule	250B	0.0
CX11	Clamp	1.96	NESC	Rule	250B	0.0
CX12	Clamp	1.96	NESC	Rule	250B	0.0
SWLS	Suspension	23.03	NESC	Rule	250D	50.0
SWRS	Suspension	23.03	NESC	Rule	250D	50.0
C1LS	Suspension	25.75	NESC	Rule	250B	300.0
C1RS	Suspension	25.75	NESC	Rule	250B	300.0
C2LS	Suspension	25.75	NESC	Rule	250B	300.0
C2RS	Suspension	25.75	NESC	Rule	250B	300.0
C3LS	Suspension	25.75	NESC	Rule	250B	300.0
C3RS	Suspension	25.75	NESC	Rule	250B	300.0

*** Weight of structure (lbs):
Weight of Tubular Davit Arms: 2104.7
Weight of Steel Poles: 25147.6
Weight of Suspensions: 1900.0
Total: 29152.3

*** End of Report

```
**************************************************************************
*                                                                        *
*                              PLS-POLE                                  *
*                   POLE AND FRAME ANALYSIS AND DESIGN                   *
*               Copyright Power Line Systems 1999-2022                   *
*                                                                        *
**************************************************************************

Project Name : 23016.03 - Startford, CT
Project Notes: Structure # 19520 / AT&T CT2043
Project File : J:\Jobs\2301600.WI\03_CT2043\05_Structural\Backup Documentation\Calcs\PLS-Pole\111-23-24183-125FT.POL
Date run     : 2:46:29 PM Tuesday, August 29, 2023
by           : PLS-POLE Version 17.50
Licensed to  : Centek Engineering Inc

Successfully performed nonlinear analysis

Load case 'NESC  Rule  250C' uses loading method NESC 2023 which is still being tested and/or is a draft.  Carefully check your results. ??
The model has 1 warning.  ??
```

```
Modeling options:
  Offset Arms from Pole/Mast:   Yes
  Offset Braces from Pole/Mast: Yes
  Offset Guys from Pole/Mast:   Yes
  Offset Posts from Pole/Mast:  Yes
  Offset Strains from Pole/Mast:  Yes
  Use Alternate Convergence Process: No
  Steel poles and tubular arms checked with ASCE/SEI 48-19
  Base plates are NOT checked  ??
```

Vang Connectivity:

Vang Label	Attach Label	Tip Label	Azimuth (deg)	Length (ft)	Measured Relative To
SWLV	SWL:T	SWLV	0	0.25	Face

SWRV	SWR:T	SWRV	0	0.25	Face
C1LV	C1L:T	C1LV	0	0.25	Face
C1RV	C1R:T	C1RV	0	0.25	Face
C2LV	C2L:T	C2LV	0	0.25	Face
C2RV	C2R:T	C2RV	0	0.25	Face
C3LV	C3L:T	C3LV	0	0.25	Face
C3RV	C3R:T	C3RV	0	0.25	Face

Default Modulus of Elasticity for Steel = 29000.00 (ksi)
Default Weight Density for Steel = 490.00 (lbs/ft^3)

Steel Pole Properties:

Steel Pole Property	Stock Number	Length	Default Embedded Length	Base Plate	Shape	Tip Diameter	Base Diameter	Taper	Default Drag Coef.	Tubes	Modulus of Elasticity Override	Weight Density Override	Shape At Base	Strength Check Type	Distance From Tip	Ultimate Trans. Load	Ultimate Texture Long. Load
		(ft)	(ft)			(in)	(in)	(in/ft)			(ksi)	(lbs/ft^3)			(ft)	(kips)	(kips)
111-23-24183-100FT		125.00	0	Yes	12F	21	56.25	0	1.6	4 tubes	0	0		Calculated	0.000	0.0000	0.0000

Steel Tubes Properties:

Pole Property	Tube No.	Length	Thickness	Lap Length	Lap Factor	Lap Butt Offset	Gap or	Yield Stress	Moment Cap. Override	Tube Weight	Center of Gravity	Taper	Calculated Tube Top Diameter	Tube Bot. Diameter	1.5x Diam. Lap Length	Actual Overlap
		(ft)	(in)	(ft)		(in)		(ksi)	(ft-k)	(lbs)	(ft)	(in/ft)	(in)	(in)	(ft)	(ft)
111-23-24183-100FT	1	15	0.25	0.000	0.000	0.000		65.000	0.000	937	7.73	0.27800	21.00	25.17	3.084	0.000
111-23-24183-100FT	2	10	0.25	0.000	0.000	0.000		65.000	0.000	720	5.09	0.27800	25.17	27.95	3.431	0.000
111-23-24183-100FT	3	47	0.375	0.000	0.000	0.000		65.000	0.000	6626	24.99	0.27800	28.20	41.27	5.064	0.000
111-23-24183-100FT	4	53	0.5	0.000	0.000	0.000		65.000	0.000	14028	27.84	0.27800	41.52	56.25	0.000	0.000

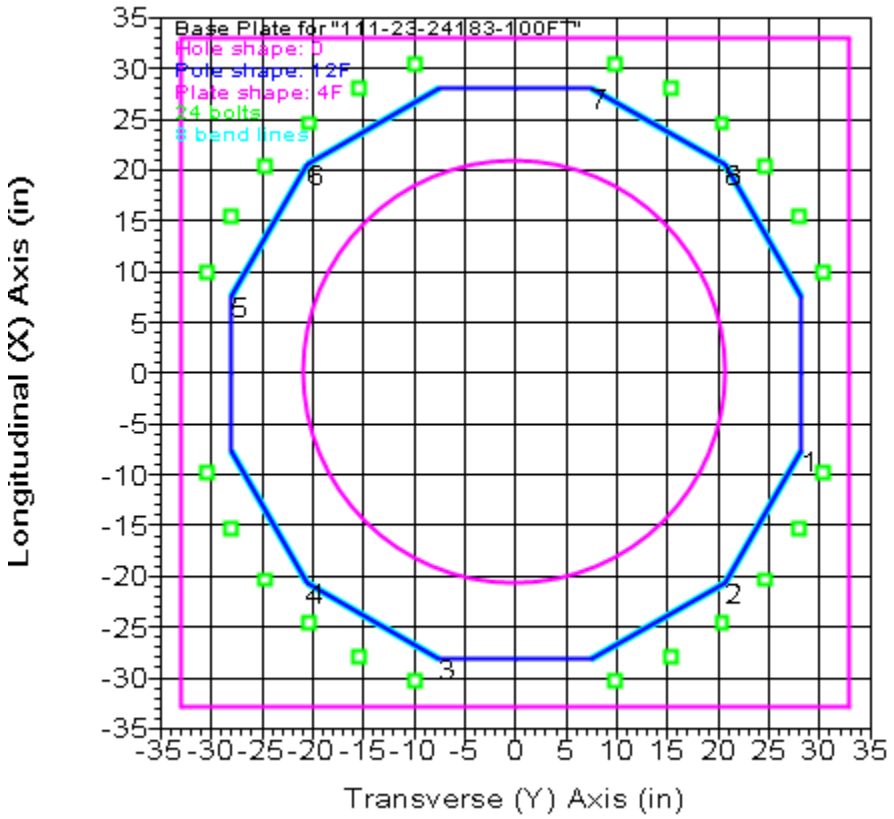
Base Plate Properties:

Pole Property	Plate Diam.	Plate Shape	Plate Thick.	Plate Weight	Bend Line Length Override	Hole Diam.	Hole Shape	Steel Density	Steel Yield Stress	Bolt Diam.	Bolt Pattern Diam.	Num. Of Bolts	Bolt Cage X Inertia	Bolt Cage Y Inertia
	(in)		(in)	(lbs)	(in)	(in)		(lbs/ft^3)	(ksi)	(in)	(in)		(in^4)	(in^4)
111-23-24183-100FT	65.875	4F	3.500	2837	0.000	42.000	0	490.00	50.000	2.250	64.000	24	48699.05	48699.05

Base Plate Bolt Coordinates for Property "111-23-24183-100FT":

Bolt X	Bolt Y	Bolt

Coord.	Coord.	Angle (deg)
0.3086	0.9492	0
0.4805	0.875	0
0.6367	0.7695	0
0.7695	0.6367	0
0.875	0.4805	0
0.9492	0.3086	0

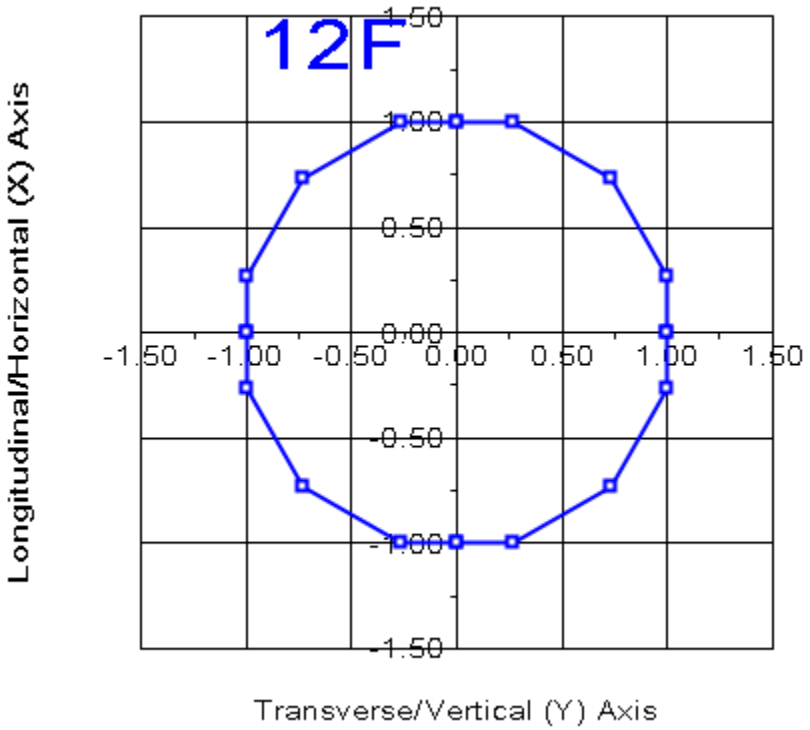


Steel Pole Connectivity:

Pole Label	Tip Joint	Base Joint	X of Base (ft)	Y of Base (ft)	Z of Base (ft)	Inclin. About X (deg)	Inclin. About Y (deg)	Property Set	Attach. Labels	Base Connect	Embed % Override	Embed C. Override (ft)
P			0	0	0	0	0	111-23-24183-100FT	18 labels		0.00	0

Relative Attachment Labels for Steel Pole "P":

Joint Label	Distance From Origin/Top Joint (ft)	Global Z of Attach (ft)
P:AN1	1.00	0.00
P:CX12	10.00	0.00
P:CX11	20.00	0.00
P:CX10	30.00	0.00
P:AN2	15.00	0.00
P:CX9	40.00	0.00
P:SW	26.25	0.00
P:C1	32.92	0.00
P:CX8	50.00	0.00
P:C2	44.92	0.00
P:CX7	60.00	0.00
P:CX6	70.00	0.00
P:C3	56.92	0.00
P:CX5	80.00	0.00
P:CX4	90.00	0.00
P:CX3	100.00	0.00
P:CX2	110.00	0.00
P:CX1	120.00	0.00



Pole Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	T-Moment Inertia (in^4)	L-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	T-Moment Capacity (ft-k)	L-Moment Capacity (ft-k)
P	P:t	P:t Ori	0.00	21.00	16.68	919.33	919.33	0.00	19.8	65.00	65.00	474.26	474.26
P	P:AN1	P:AN1 End	1.00	21.28	16.90	956.77	956.77	0.00	20.1	65.00	65.00	487.12	487.12
P	P:AN1	P:AN1 Ori	1.00	21.28	16.90	956.77	956.77	0.00	20.1	65.00	65.00	487.12	487.12
P	#P:0	Tube 1 End	5.50	22.53	17.91	1137.88	1137.88	0.00	21.5	65.00	65.00	547.16	547.16
P	#P:0	Tube 1 Ori	5.50	22.53	17.91	1137.88	1137.88	0.00	21.5	65.00	65.00	547.16	547.16
P	P:CX12	P:CX12 End	10.00	23.78	18.91	1340.51	1340.51	0.00	22.8	65.00	65.00	610.69	610.69
P	P:CX12	P:CX12 Ori	10.00	23.78	18.91	1340.51	1340.51	0.00	22.8	65.00	65.00	610.69	610.69
P	P:AN2	P:AN2 End	15.00	25.17	20.03	1592.36	1592.36	0.00	24.3	65.00	65.00	685.36	685.36
P	P:AN2	P:AN2 Ori	15.00	25.17	20.03	1592.36	1592.36	0.00	24.3	65.00	65.00	685.36	685.36
P	P:CX11	P:CX11 End	20.00	26.56	21.15	1873.94	1873.94	0.00	25.8	65.00	65.00	764.34	764.34
P	P:CX11	P:CX11 Ori	20.00	26.56	21.15	1873.94	1873.94	0.00	25.8	65.00	65.00	764.34	764.34
P	#P:1	SpliceT End	25.00	27.95	22.27	2186.90	2186.90	0.00	27.3	65.00	65.00	847.63	847.63
P	#P:1	SpliceT Ori	25.00	28.20	33.55	3325.28	3325.28	0.00	17.5	65.00	65.00	1277.44	1277.44
P	P:SW	P:SW End	26.25	28.55	33.97	3451.42	3451.42	0.00	17.7	65.00	65.00	1309.76	1309.76
P	P:SW	P:SW Ori	26.25	28.55	33.97	3451.42	3451.42	0.00	17.7	65.00	65.00	1309.76	1309.76
P	P:CX10	P:CX10 End	30.00	29.59	35.23	3848.87	3848.87	0.00	18.5	65.00	65.00	1409.13	1409.13
P	P:CX10	P:CX10 Ori	30.00	29.59	35.23	3848.87	3848.87	0.00	18.5	65.00	65.00	1409.13	1409.13
P	P:C1	P:C1 End	32.92	30.40	36.21	4178.67	4178.67	0.00	19.0	65.00	65.00	1489.02	1489.02
P	P:C1	P:C1 Ori	32.92	30.40	36.21	4178.67	4178.67	0.00	19.0	65.00	65.00	1489.02	1489.02
P	#P:2	Tube 3 End	36.46	31.39	37.39	4603.10	4603.10	0.00	19.7	65.00	65.00	1588.83	1588.83
P	#P:2	Tube 3 Ori	36.46	31.39	37.39	4603.10	4603.10	0.00	19.7	65.00	65.00	1588.83	1588.83
P	P:CX9	P:CX9 End	40.00	32.37	38.58	5055.34	5055.34	0.00	20.4	65.00	65.00	1691.88	1691.88
P	P:CX9	P:CX9 Ori	40.00	32.37	38.58	5055.35	5055.35	0.00	20.4	65.00	65.00	1691.88	1691.88
P	P:C2	P:C2 End	44.92	33.74	40.23	5731.73	5731.73	0.00	21.4	65.00	65.00	1840.48	1840.48
P	P:C2	P:C2 Ori	44.92	33.74	40.23	5731.73	5731.73	0.00	21.4	65.00	65.00	1840.48	1840.48
P	#P:3	Tube 3 End	47.46	34.44	41.08	6103.39	6103.39	0.00	21.9	65.00	65.00	1919.64	1919.64
P	#P:3	Tube 3 Ori	47.46	34.44	41.08	6103.39	6103.39	0.00	21.9	65.00	65.00	1919.64	1919.64
P	P:CX8	P:CX8 End	50.00	35.15	41.93	6490.78	6490.78	0.00	22.4	65.00	65.00	2000.47	2000.47
P	P:CX8	P:CX8 Ori	50.00	35.15	41.93	6490.78	6490.78	0.00	22.4	65.00	65.00	2000.47	2000.47
P	#P:4	Tube 3 End	53.46	36.11	43.09	7044.38	7044.38	0.00	23.1	65.00	65.00	2113.27	2113.27
P	#P:4	Tube 3 Ori	53.46	36.11	43.09	7044.38	7044.38	0.00	23.1	65.00	65.00	2113.27	2113.27
P	P:C3	P:C3 End	56.92	37.07	44.25	7628.60	7628.60	0.00	23.8	65.00	65.00	2229.15	2229.15
P	P:C3	P:C3 Ori	56.92	37.07	44.25	7628.60	7628.60	0.00	23.8	65.00	65.00	2229.15	2229.15
P	P:CX7	P:CX7 End	60.00	37.93	45.28	8175.08	8175.08	0.00	24.4	65.00	65.00	2334.91	2334.91
P	P:CX7	P:CX7 Ori	60.00	37.93	45.28	8175.08	8175.08	0.00	24.4	65.00	65.00	2334.91	2334.91
P	#P:5	Tube 3 End	65.00	39.32	46.96	9116.76	9116.76	0.00	25.4	65.00	65.00	2511.82	2511.82
P	#P:5	Tube 3 Ori	65.00	39.32	46.96	9116.76	9116.76	0.00	25.4	65.00	65.00	2511.82	2511.82
P	P:CX6	P:CX6 End	70.00	40.71	48.63	10128.12	10128.12	0.00	26.4	65.00	65.00	2695.19	2695.19
P	P:CX6	P:CX6 Ori	70.00	40.71	48.63	10128.13	10128.13	0.00	26.4	65.00	65.00	2695.19	2695.19
P	#P:6	SpliceT End	72.00	41.27	49.31	10552.74	10552.74	0.00	26.8	65.00	65.00	2770.35	2770.35
P	#P:6	SpliceT Ori	72.00	41.52	65.94	14200.64	14200.64	0.00	19.6	65.00	65.00	3705.56	3705.56
P	#P:7	Tube 4 End	76.00	42.63	67.73	15387.11	15387.11	0.00	20.2	65.00	65.00	3910.42	3910.42
P	#P:7	Tube 4 Ori	76.00	42.63	67.73	15387.11	15387.11	0.00	20.2	65.00	65.00	3910.42	3910.42
P	P:CX5	P:CX5 End	80.00	43.74	69.52	16637.91	16637.91	0.00	20.8	65.00	65.00	4120.80	4120.80
P	P:CX5	P:CX5 Ori	80.00	43.74	69.52	16637.91	16637.91	0.00	20.8	65.00	65.00	4120.80	4120.80
P	#P:8	Tube 4 End	85.00	45.13	71.75	18294.43	18294.43	0.00	21.5	65.00	65.00	4391.52	4391.52
P	#P:8	Tube 4 Ori	85.00	45.13	71.75	18294.43	18294.43	0.00	21.5	65.00	65.00	4391.52	4391.52
P	P:CX4	P:CX4 End	90.00	46.52	73.99	20057.41	20057.41	0.00	22.3	65.00	65.00	4670.86	4670.86
P	P:CX4	P:CX4 Ori	90.00	46.52	73.99	20057.41	20057.41	0.00	22.3	65.00	65.00	4670.86	4670.86
P	#P:9	Tube 4 End	95.00	47.91	76.22	21930.17	21930.17	0.00	23.0	65.00	65.00	4958.81	4958.81
P	#P:9	Tube 4 Ori	95.00	47.91	76.22	21930.17	21930.17	0.00	23.0	65.00	65.00	4958.81	4958.81
P	P:CX3	P:CX3 End	100.00	49.30	78.46	23916.02	23916.02	0.00	23.7	65.00	65.00	5255.37	5255.37
P	P:CX3	P:CX3 Ori	100.00	49.30	78.46	23916.02	23916.02	0.00	23.7	65.00	65.00	5255.37	5255.37
P	#P:10	Tube 4 End	105.00	50.69	80.69	26018.28	26018.28	0.00	24.5	65.00	65.00	5560.55	5560.55

P	#P:10	Tube 4 Ori	105.00	50.69	80.69	26018.28	26018.28	0.00	24.5	65.00	65.00	5560.55	5560.55
P	P:CX2	P:CX2 End	110.00	52.08	82.92	28240.27	28240.27	0.00	25.2	65.00	65.00	5874.34	5874.34
P	P:CX2	P:CX2 Ori	110.00	52.08	82.92	28240.27	28240.27	0.00	25.2	65.00	65.00	5874.34	5874.34
P	#P:11	Tube 4 End	115.00	53.47	85.16	30585.29	30585.29	0.00	26.0	65.00	65.00	6196.75	6196.75
P	#P:11	Tube 4 Ori	115.00	53.47	85.16	30585.30	30585.30	0.00	26.0	65.00	65.00	6196.75	6196.75
P	P:CX1	P:CX1 End	120.00	54.86	87.39	33056.67	33056.67	0.00	26.7	65.00	65.00	6527.77	6527.77
P	P:CX1	P:CX1 Ori	120.00	54.86	87.39	33056.68	33056.68	0.00	26.7	65.00	65.00	6527.77	6527.77
P	P:g	P:g End	125.00	56.25	89.63	35657.73	35657.73	0.00	27.5	65.00	65.00	6867.40	6867.40

Tubular Davit Properties:

Davit Property Label	Stock Number	Steel Shape	Thickness (in)	Base Diameter or Depth (in)	Tip Diameter or Depth (in)	Taper (in/ft)	Drag Coef.	Modulus of Elasticity (ksi)	Geometry Check	Strength Type	Vertical Capacity (lbs)	Tension Capacity (lbs)	Compres. Capacity (lbs)	Long. Capacity (lbs)	Yield Stress (ksi)	Steel Weight Density (lbs/ft^3)	Texture Override	Shape At End
9FT COND ARM		8F	0.25	16	8	0	1.3	29000	2 points	Calculated	0	0	0	0	65	0		
4FT SW ARM-qt# 111		8F	0.1875	9	6	0	1.3	29000	2 points	Calculated	0	0	0	0	65	0		

Intermediate Joints for Davit Property "9FT COND ARM":

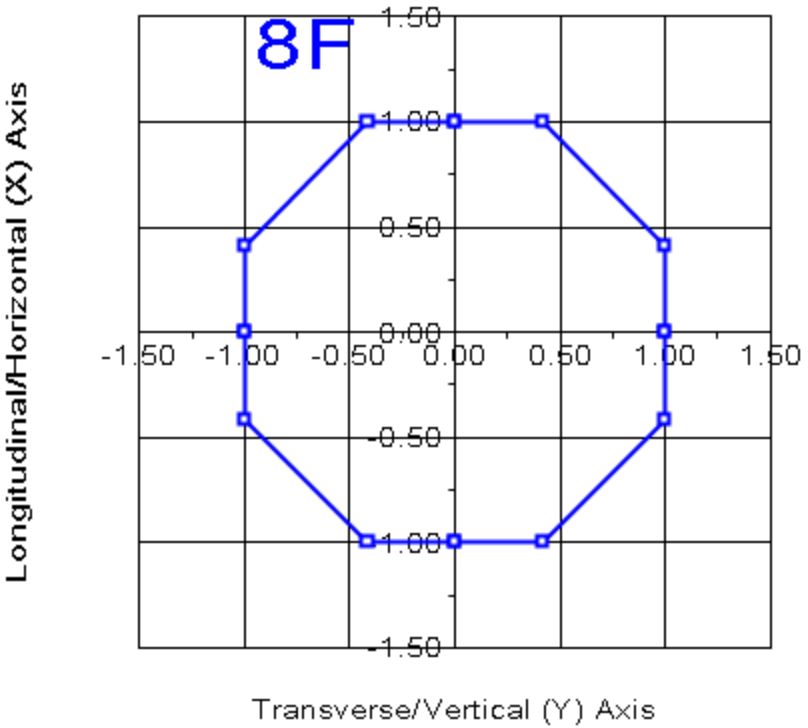
Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
1	0.67	0
T	9.79	-1

Intermediate Joints for Davit Property "4FT SW ARM-qt# 111":

Joint Label	Horz. Offset (ft)	Vert. Offset (ft)
1	0.67	0
T	4.67	-1

Tubular Davit Arm Connectivity:

Davit Label	Attach Label	Davit Property Set	Azimuth (deg)
SWL	P:SW	4FT SW ARM-qt# 111	180
SWR	P:SW	4FT SW ARM-qt# 111	0
C1L	P:C1	9FT COND ARM	180
C1R	P:C1	9FT COND ARM	0
C2L	P:C2	9FT COND ARM	180
C2R	P:C2	9FT COND ARM	0
C3L	P:C3	9FT COND ARM	180
C3R	P:C3	9FT COND ARM	0



Tubular Davit Arm Steel Properties:

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Outer Diam. (in)	Area (in^2)	V-Moment Inertia (in^4)	H-Moment Inertia (in^4)	D/t	W/t Max.	Fy (ksi)	Fa Min. (ksi)	V-Moment Capacity (ft-k)	H-Moment Capacity (ft-k)
SWL	SWL:O	Origin	0.00	9.00	5.48	56.22	56.22	0.00	15.7	65.00	65.00	67.67	67.67
SWL	SWL:1	End	0.67	8.58	5.21	48.57	48.57	0.00	14.8	65.00	65.00	61.32	61.32
SWL	SWL:1	Origin	0.67	8.58	5.21	48.57	48.57	0.00	14.8	65.00	65.00	61.32	61.32
SWL	SWL:T	End	4.79	6.00	3.61	16.14	16.14	0.00	9.1	65.00	65.00	29.14	29.14
SWR	SWR:O	Origin	0.00	9.00	5.48	56.22	56.22	0.00	15.7	65.00	65.00	67.67	67.67
SWR	SWR:1	End	0.67	8.58	5.21	48.57	48.57	0.00	14.8	65.00	65.00	61.32	61.32
SWR	SWR:1	Origin	0.67	8.58	5.21	48.57	48.57	0.00	14.8	65.00	65.00	61.32	61.32
SWR	SWR:T	End	4.79	6.00	3.61	16.14	16.14	0.00	9.1	65.00	65.00	29.14	29.14
C1L	C1L:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C1L	C1L:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C1L	C1L:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C1L	#C1L:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C1L	#C1L:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C1L	C1L:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08

C1R	C1R:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C1R	C1R:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C1R	C1R:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C1R	#C1R:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C1R	#C1R:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C1R	C1R:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08
C2L	C2L:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C2L	C2L:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C2L	C2L:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C2L	#C2L:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C2L	#C2L:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C2L	C2L:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08
C2R	C2R:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C2R	C2R:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C2R	C2R:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C2R	#C2R:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C2R	#C2R:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C2R	C2R:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08
C3L	C3L:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C3L	C3L:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C3L	C3L:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C3L	#C3L:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C3L	#C3L:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C3L	C3L:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08
C3R	C3R:O	Origin	0.00	16.00	13.05	427.83	427.83	0.00	22.4	65.00	65.00	289.67	289.67
C3R	C3R:1	End	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C3R	C3R:1	Origin	0.67	15.46	12.60	384.98	384.98	0.00	21.5	65.00	65.00	269.85	269.85
C3R	#C3R:0	End	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C3R	#C3R:0	Origin	5.26	11.73	9.51	165.61	165.61	0.00	15.3	65.00	65.00	152.98	152.98
C3R	C3R:T	End	9.84	8.00	6.42	51.01	51.01	0.00	9.1	65.00	65.00	69.08	69.08

*** Insulator Data

Clamp Properties:

Label	Stock Number	Holding Capacity (lbs)	Hardware Capacity (lbs)	Notes
Clamp		1e+05	0	

Clamp Insulator Connectivity:

Clamp Label	Structure And Tip Attach	Property Set	Min. Required Vertical Load (uplift) (lbs)
AN1	P:AN1	Clamp	No Limit
AN2&CX2	P:AN2	Clamp	No Limit
CX1	P:CX1	Clamp	No Limit
CX2	P:CX2	Clamp	No Limit
CX3	P:CX3	Clamp	No Limit
CX4	P:CX4	Clamp	No Limit
CX5	P:CX5	Clamp	No Limit

CX6	P:CX6	Clamp	No Limit
CX7	P:CX7	Clamp	No Limit
CX8	P:CX8	Clamp	No Limit
CX9	P:CX9	Clamp	No Limit
CX10	P:CX10	Clamp	No Limit
CX11	P:CX11	Clamp	No Limit
CX12	P:CX12	Clamp	No Limit

Suspension Properties:

Label	Stock Number	Length (ft)	Weight (lbs)	Wind Area (ft^2)	Tension Capacity (lbs)	Top Rect Width (ft)	Top Rect Height (ft)	Bot. Rect Width (ft)	Bot. Rect Height (ft)	Vert. Rect Width (ft)	Vert. Rect Height (ft)	Hardware Capacity (lbs)	Notes	Draw	Rigid
SWSI		0.5	50	3	1.5e+04	0	0	0	0	0	0	0	Shedless		No
CSI		5.5	300	7	3e+04	0	0	0	0	0	0	0	Sheds		No

Suspension Insulator Connectivity:

Suspension Label	Structure Attach	Tip Label	Property Set	Cond. 1 Minimum Swing (deg)	Cond. 1 Maximum Swing (deg)	Cond. 2 Minimum Swing (deg)	Cond. 2 Maximum Swing (deg)	Cond. 3 Minimum Swing (deg)	Cond. 3 Maximum Swing (deg)	Cond. 4 Minimum Swing (deg)	Cond. 4 Maximum Swing (deg)	Min. Required Vertical Load (uplift) (lbs)
SWLS	SWLV	SWL	SWSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
SWRS	SWRV	SWR	SWSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C1LS	C1LV	C1	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C1RS	C1RV	C4	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C2LS	C2LV	C2	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C2RS	C2RV	C5	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C3LS	C3LV	C3	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit
C3RS	C3RV	C6	CSI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	No Limit

*** Loads Data

Loads from file: J:\Jobs\2301600.WI\03_CT2043\05_Structural\Backup Documentation\Calcs\PLS-Pole\111-23-24183.lca

Insulator dead and wind loads are calculated by the program and are not 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)	125.00 (ft)	
Structure height	125.00 (ft)	
Structure height above ground	125.00 (ft)	

Vector Load Cases:

Load Case Description	Dead Load Factor	Wind Area Factor	SF for Steel Poles and Tubular Towers	SF for Wood Poles	SF for Conc. Poles	SF for Conc. Ult. Check	SF for First Crack	SF for Zero Tens.	SF for Guys and Cables	SF for Tubular Arms	SF for Non Insuls.	SF for Braces Hardware	SF For Found.	Point Loads	Wind/Ice Model	Trans. Longit. Wind Pressure (psf)	Ice Thick. (in)	Ice Density (lbs/ft^3)	Temperature (deg F)	Pole Deflection Limit	Pole Deflection % or (ft)
NESC Rule 250B	1.5000	2.5000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	22 loads	Wind on All	4	0	0.500	57.000	0.0	No Limit	0
NESC Rule 250C	1.0000	1.0000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	22 loads	NESC 2023	31	0	0.000	57.000	60.0	No Limit	0
NESC Rule 250D	1.0000	1.0000	1.00000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	22 loads	Wind on All	6.4	0	0.750	57.000	15.0	No Limit	0

Point Loads for Load Case "NESC Rule 250B":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	2200	2000	0	
SWR	2200	2000	0	
C1	6500	3300	0	
C2	6500	3300	0	
C3	6500	3300	0	
C4	6500	3300	0	
C5	6500	3300	0	
C6	6500	3300	0	
P:AN1	9978	2238	0	AT&T
P:AN2	6642	1586	0	T-Mobile
P:CX1	1955	119	0	COAX CABLE LOAD
P:CX2	1955	119	0	COAX CABLE LOAD
P:CX3	1955	119	0	COAX CABLE LOAD
P:CX4	1955	119	0	COAX CABLE LOAD

P:CX5	1955	119	0	COAX CABLE LOAD
P:CX6	1955	119	0	COAX CABLE LOAD
P:CX7	1955	119	0	COAX CABLE LOAD
P:CX8	1955	119	0	COAX CABLE LOAD
P:CX9	1955	119	0	COAX CABLE LOAD
P:CX10	1955	119	0	COAX CABLE LOAD
P:CX11	1955	119	0	COAX CABLE LOAD
P:CX12	1955	119	0	COAX CABLE LOAD

Detailed Pole Loading Data for Load Case "NESC Rule 250B":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
P	P:t	P:AN1	125.00	124.00	124.50	21.139	1e+06	1.600	10.00	0.50	85.71	28.19	13.45	1.33	29.52	0.00
P	P:AN1		124.00	119.50	121.75	21.904	1.04e+06	1.600	10.00	0.50	399.80	131.43	62.73	6.00	137.43	0.00
P		P:CX12	119.50	115.00	117.25	23.155	1.1e+06	1.600	10.00	0.50	422.89	138.93	66.31	6.00	144.93	0.00
P	P:CX12	P:AN2	115.00	110.00	112.50	24.475	1.16e+06	1.600	10.00	0.50	496.97	163.18	77.88	6.67	169.84	0.00
P	P:AN2	P:CX11	110.00	105.00	107.50	25.865	1.22e+06	1.600	10.00	0.50	525.49	172.44	82.30	6.67	179.11	0.00
P	P:CX11		105.00	100.00	102.50	27.255	1.29e+06	1.600	10.00	0.50	554.04	181.71	86.72	6.67	188.38	0.00
P		P:SW	100.00	98.75	99.37	28.374	1.34e+06	1.600	10.00	0.50	215.40	47.29	22.57	1.67	48.96	0.00
P	P:SW	P:CX10	98.75	95.00	96.87	29.069	1.38e+06	1.600	10.00	0.50	662.23	145.35	69.37	5.00	150.35	0.00
P	P:CX10	P:C1	95.00	92.08	93.54	29.996	1.42e+06	1.600	10.00	0.50	532.32	116.79	55.74	3.89	120.68	0.00
P	P:C1		92.08	88.54	90.31	30.894	1.46e+06	1.600	10.00	0.50	664.91	145.83	69.60	4.72	150.55	0.00
P		P:CX9	88.54	85.00	86.77	31.878	1.51e+06	1.600	10.00	0.50	686.35	150.47	71.81	4.72	155.19	0.00
P	P:CX9	P:C2	85.00	80.08	82.54	33.054	1.56e+06	1.600	10.00	0.50	989.51	216.84	103.49	6.56	223.41	0.00
P	P:C2		80.08	77.54	78.81	34.091	1.61e+06	1.600	10.00	0.50	527.06	115.46	55.10	3.39	118.85	0.00
P		P:CX8	77.54	75.00	76.27	34.797	1.65e+06	1.600	10.00	0.50	538.09	117.85	56.25	3.39	121.24	0.00
P	P:CX8		75.00	71.54	73.27	35.631	1.69e+06	1.600	10.00	0.50	750.75	164.39	78.45	4.61	169.00	0.00
P		P:C3	71.54	68.08	69.81	36.593	1.73e+06	1.600	10.00	0.50	771.24	168.82	80.57	4.61	173.44	0.00
P	P:C3	P:CX7	68.08	65.00	66.54	37.502	1.78e+06	1.600	10.00	0.50	703.77	154.02	73.51	4.11	158.12	0.00
P	P:CX7		65.00	60.00	62.50	38.625	1.83e+06	1.600	10.00	0.50	1177.04	257.51	122.90	6.67	264.18	0.00
P		P:CX6	60.00	55.00	57.50	40.015	1.89e+06	1.600	10.00	0.50	1219.81	266.78	127.32	6.67	273.45	0.00
P	P:CX6		55.00	53.00	54.00	40.988	1.94e+06	1.600	10.00	0.50	499.95	109.31	52.17	2.67	111.97	0.00
P			53.00	49.00	51.00	42.072	1.99e+06	1.600	10.00	0.50	1364.48	224.40	107.09	5.33	229.73	0.00
P		P:CX5	49.00	45.00	47.00	43.184	2.04e+06	1.600	10.00	0.50	1401.05	230.33	109.93	5.33	235.66	0.00
P	P:CX5		45.00	40.00	42.50	44.435	2.1e+06	1.600	10.00	0.50	1802.64	296.25	141.39	6.67	302.92	0.00
P		P:CX4	40.00	35.00	37.50	45.825	2.17e+06	1.600	10.00	0.50	1859.67	305.52	145.81	6.67	312.18	0.00
P	P:CX4		35.00	30.00	32.50	47.215	2.24e+06	1.600	10.00	0.50	1916.70	314.78	150.23	6.67	321.45	0.00
P		P:CX3	30.00	25.00	27.50	48.605	2.3e+06	1.600	10.00	0.50	1973.73	324.05	154.66	6.67	330.72	0.00
P	P:CX3		25.00	20.00	22.50	49.995	2.37e+06	1.600	10.00	0.50	2030.77	333.32	159.08	6.67	339.98	0.00
P		P:CX2	20.00	15.00	17.50	51.385	2.43e+06	1.600	10.00	0.50	2087.80	342.58	163.50	6.67	349.25	0.00
P	P:CX2		15.00	10.00	12.50	52.775	2.5e+06	1.600	10.00	0.50	2144.83	351.85	167.92	6.67	358.52	0.00
P		P:CX1	10.00	5.00	7.50	54.165	2.56e+06	1.600	10.00	0.50	2201.86	361.12	172.35	6.67	367.79	0.00
P	P:CX1	P:g	5.00	0.00	2.50	55.555	2.63e+06	1.600	10.00	0.50	2258.89	370.39	176.77	6.67	377.05	0.00

Point Loads for Load Case "NESC Rule 250C":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	1400	2100	0	
SWR	1400	2100	0	

C1	3800	5100	0	
C2	3800	5100	0	
C3	3800	5100	0	
C4	3800	5100	0	
C5	3800	5100	0	
C6	3800	5100	0	
P:AN1	4852	8538	0	AT&T
P:AN2	3021	6041	0	T-Mobile
P:CX1	530	335	0	COAX CABLE LOAD
P:CX2	530	335	0	COAX CABLE LOAD
P:CX3	530	335	0	COAX CABLE LOAD
P:CX4	530	335	0	COAX CABLE LOAD
P:CX5	530	335	0	COAX CABLE LOAD
P:CX6	530	335	0	COAX CABLE LOAD
P:CX7	530	335	0	COAX CABLE LOAD
P:CX8	530	335	0	COAX CABLE LOAD
P:CX9	530	335	0	COAX CABLE LOAD
P:CX10	530	335	0	COAX CABLE LOAD
P:CX11	530	335	0	COAX CABLE LOAD
P:CX12	530	335	0	COAX CABLE LOAD

Detailed Pole Loading Data for Load Case "NESC Rule 250C":

Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
P	P:t	P:AN1	125.00	124.00	124.50	21.139	1.78e+06	1.000	31.69	0.00	57.14	55.83	0.00	0.00	55.83	0.00
P	P:AN1		124.00	119.50	121.75	21.904	1.85e+06	1.000	31.69	0.00	266.53	260.33	0.00	0.00	260.33	0.00
P		P:CX12	119.50	115.00	117.25	23.155	1.95e+06	1.000	31.69	0.00	281.93	275.20	0.00	0.00	275.20	0.00
P	P:CX12	P:AN2	115.00	110.00	112.50	24.475	2.06e+06	1.000	31.69	0.00	331.31	323.21	0.00	0.00	323.21	0.00
P	P:AN2	P:CX11	110.00	105.00	107.50	25.865	2.18e+06	1.000	31.69	0.00	350.33	341.57	0.00	0.00	341.57	0.00
P	P:CX11		105.00	100.00	102.50	27.255	2.3e+06	1.000	31.69	0.00	369.36	359.92	0.00	0.00	359.92	0.00
P		P:SW	100.00	98.75	99.37	28.374	2.39e+06	1.000	31.69	0.00	143.60	93.67	0.00	0.00	93.67	0.00
P	P:SW	P:CX10	98.75	95.00	96.87	29.069	2.45e+06	1.000	31.69	0.00	441.49	287.91	0.00	0.00	287.91	0.00
P	P:CX10	P:C1	95.00	92.08	93.54	29.996	2.53e+06	1.000	31.69	0.00	354.88	231.33	0.00	0.00	231.33	0.00
P	P:C1		92.08	88.54	90.31	30.894	2.6e+06	1.000	31.69	0.00	443.27	288.85	0.00	0.00	288.85	0.00
P		P:CX9	88.54	85.00	86.77	31.878	2.69e+06	1.000	31.69	0.00	457.57	298.05	0.00	0.00	298.05	0.00
P	P:CX9	P:C2	85.00	80.08	82.54	33.054	2.79e+06	1.000	31.69	0.00	659.68	429.52	0.00	0.00	429.52	0.00
P	P:C2		80.08	77.54	78.81	34.091	2.87e+06	1.000	31.69	0.00	351.37	228.70	0.00	0.00	228.70	0.00
P		P:CX8	77.54	75.00	76.27	34.797	2.93e+06	1.000	31.69	0.00	358.73	233.44	0.00	0.00	233.44	0.00
P	P:CX8		75.00	71.54	73.27	35.631	3e+06	1.000	31.69	0.00	500.50	325.61	0.00	0.00	325.61	0.00
P		P:C3	71.54	68.08	69.81	36.593	3.08e+06	1.000	31.69	0.00	514.16	334.40	0.00	0.00	334.40	0.00
P	P:C3	P:CX7	68.08	65.00	66.54	37.502	3.16e+06	1.000	31.69	0.00	469.18	305.07	0.00	0.00	305.07	0.00
P	P:CX7		65.00	60.00	62.50	38.625	3.26e+06	1.000	31.69	0.00	784.69	510.07	0.00	0.00	510.07	0.00
P		P:CX6	60.00	55.00	57.50	40.015	3.37e+06	1.000	31.69	0.00	813.21	528.43	0.00	0.00	528.43	0.00
P	P:CX6		55.00	53.00	54.00	40.988	3.45e+06	1.000	31.69	0.00	333.30	216.51	0.00	0.00	216.51	0.00
P			53.00	49.00	51.00	42.072	3.55e+06	1.000	31.69	0.00	909.65	444.47	0.00	0.00	444.47	0.00
P		P:CX5	49.00	45.00	47.00	43.184	3.64e+06	1.000	31.69	0.00	934.03	456.22	0.00	0.00	456.22	0.00
P	P:CX5		45.00	40.00	42.50	44.435	3.75e+06	1.000	31.69	0.00	1201.76	586.80	0.00	0.00	586.80	0.00
P		P:CX4	40.00	35.00	37.50	45.825	3.86e+06	1.000	31.69	0.00	1239.78	605.15	0.00	0.00	605.15	0.00
P	P:CX4		35.00	30.00	32.50	47.215	3.98e+06	1.000	31.69	0.00	1277.80	623.51	0.00	0.00	623.51	0.00
P		P:CX3	30.00	25.00	27.50	48.605	4.1e+06	1.000	31.69	0.00	1315.82	641.87	0.00	0.00	641.87	0.00
P	P:CX3		25.00	20.00	22.50	49.995	4.21e+06	1.000	31.69	0.00	1353.84	660.22	0.00	0.00	660.22	0.00
P		P:CX2	20.00	15.00	17.50	51.385	4.33e+06	1.000	31.69	0.00	1391.86	678.58	0.00	0.00	678.58	0.00

P	P:CX2		15.00	10.00	12.50	52.775	4.45e+06	1.000	31.69	0.00	1429.89	696.93	0.00	0.00	696.93	0.00
P		P:CX1	10.00	5.00	7.50	54.165	4.57e+06	1.000	31.69	0.00	1467.91	715.29	0.00	0.00	715.29	0.00
P	P:CX1	P:g	5.00	0.00	2.50	55.555	4.68e+06	1.000	31.69	0.00	1505.93	733.65	0.00	0.00	733.65	0.00

Point Loads for Load Case "NESC Rule 250D":

Joint Label	Vertical Load (lbs)	Transverse Load (lbs)	Longitudinal Load (lbs)	Load Comment
SWL	3100	1400	0	
SWR	3100	1400	0	
C1	6700	2100	0	
C2	6700	2100	0	
C3	6700	2100	0	
C4	6700	2100	0	
C5	6700	2100	0	
C6	6700	2100	0	
P:AN1	7459	1896	0	AT&T
P:AN2	5061	1343	0	T-Mobile
P:CX1	1806	80	0	COAX CABLE LOAD
P:CX2	1806	80	0	COAX CABLE LOAD
P:CX3	1806	80	0	COAX CABLE LOAD
P:CX4	1806	80	0	COAX CABLE LOAD
P:CX5	1806	80	0	COAX CABLE LOAD
P:CX6	1806	80	0	COAX CABLE LOAD
P:CX7	1806	80	0	COAX CABLE LOAD
P:CX8	1806	80	0	COAX CABLE LOAD
P:CX9	1806	80	0	COAX CABLE LOAD
P:CX10	1806	80	0	COAX CABLE LOAD
P:CX11	1806	80	0	COAX CABLE LOAD
P:CX12	1806	80	0	COAX CABLE LOAD

Detailed Pole Loading Data for Load Case "NESC Rule 250D":

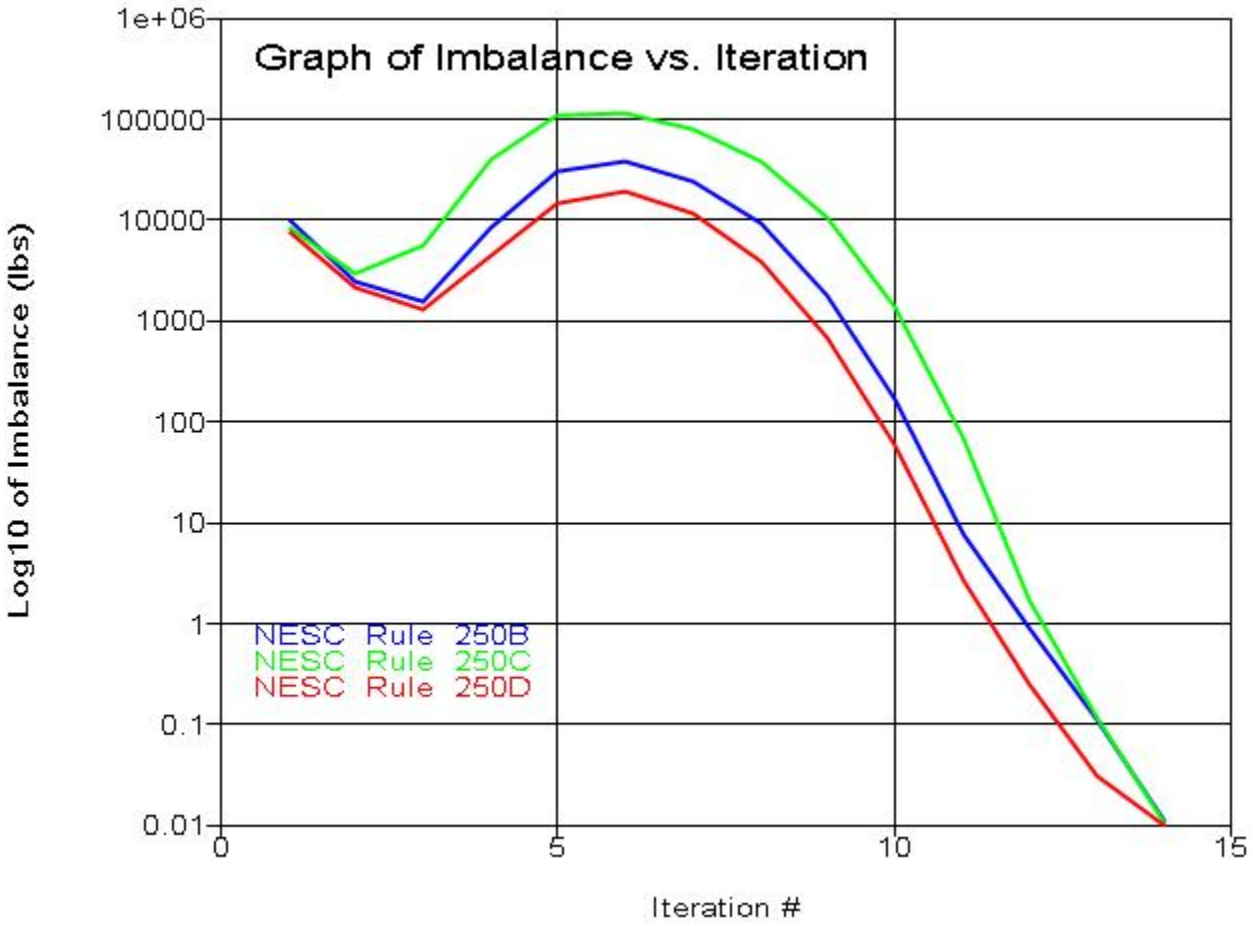
Notes: Does not include loads from equipment, arms, guys, braces, etc. or user input loads.
Wind load is calculated for the undeformed shape of a pole.

Pole Label	Top Joint	Bottom Joint	Section Top Z (ft)	Section Bottom Z (ft)	Section Average Elevation (ft)	Outer Diameter (in)	Reynolds Number	Drag Coef.	Adjusted Wind Pressure (psf)	Adjusted Ice Thickness (in)	Pole Vert. Load (lbs)	Pole Wind Load (lbs)	Pole Ice Vertical Load (lbs)	Pole Ice Wind Load (lbs)	Tran. Wind Load (lbs)	Long. Wind Load (lbs)
P	P:t	P:AN1	125.00	124.00	124.50	21.139	8.01e+05	1.600	6.40	0.75	57.14	18.04	20.18	1.28	19.32	0.00
P	P:AN1		124.00	119.50	121.75	21.904	8.3e+05	1.600	6.40	0.75	266.53	84.12	94.09	5.76	89.88	0.00
P		P:CX12	119.50	115.00	117.25	23.155	8.77e+05	1.600	6.40	0.75	281.93	88.92	99.46	5.76	94.69	0.00
P	P:CX12	P:AN2	115.00	110.00	112.50	24.475	9.27e+05	1.600	6.40	0.75	331.31	104.44	116.82	6.40	110.84	0.00
P	P:AN2	P:CX11	110.00	105.00	107.50	25.865	9.8e+05	1.600	6.40	0.75	350.33	110.37	123.45	6.40	116.77	0.00
P	P:CX11		105.00	100.00	102.50	27.255	1.03e+06	1.600	6.40	0.75	369.36	116.30	130.08	6.40	122.70	0.00
P		P:SW	100.00	98.75	99.37	28.374	1.07e+06	1.600	6.40	0.75	143.60	30.27	33.86	1.60	31.87	0.00
P	P:SW	P:CX10	98.75	95.00	96.87	29.069	1.1e+06	1.600	6.40	0.75	441.49	93.03	104.06	4.80	97.83	0.00
P	P:CX10	P:C1	95.00	92.08	93.54	29.996	1.14e+06	1.600	6.40	0.75	354.88	74.75	83.61	3.74	78.49	0.00
P	P:C1		92.08	88.54	90.31	30.894	1.17e+06	1.600	6.40	0.75	443.27	93.34	104.40	4.53	97.87	0.00
P		P:CX9	88.54	85.00	86.77	31.878	1.21e+06	1.600	6.40	0.75	457.57	96.31	107.72	4.53	100.84	0.00
P	P:CX9	P:C2	85.00	80.08	82.54	33.054	1.25e+06	1.600	6.40	0.75	659.68	138.79	155.24	6.30	145.09	0.00
P	P:C2		80.08	77.54	78.81	34.091	1.29e+06	1.600	6.40	0.75	351.37	73.90	82.66	3.25	77.15	0.00
P		P:CX8	77.54	75.00	76.27	34.797	1.32e+06	1.600	6.40	0.75	358.73	75.43	84.37	3.25	78.68	0.00
P	P:CX8		75.00	71.54	73.27	35.631	1.35e+06	1.600	6.40	0.75	500.50	105.22	117.68	4.43	109.64	0.00
P		P:C3	71.54	68.08	69.81	36.593	1.39e+06	1.600	6.40	0.75	514.16	108.06	120.86	4.43	112.49	0.00

P	P:C3	P:CX7	68.08	65.00	66.54	37.502	1.42e+06	1.600	6.40	0.75	469.18	98.58	110.26	3.94	102.52	0.00
P	P:CX7		65.00	60.00	62.50	38.625	1.46e+06	1.600	6.40	0.75	784.69	164.82	184.35	6.40	171.22	0.00
P		P:CX6	60.00	55.00	57.50	40.015	1.52e+06	1.600	6.40	0.75	813.21	170.75	190.99	6.40	177.15	0.00
P	P:CX6		55.00	53.00	54.00	40.988	1.55e+06	1.600	6.40	0.75	333.30	69.96	78.25	2.56	72.52	0.00
P			53.00	49.00	51.00	42.072	1.59e+06	1.600	6.40	0.75	909.65	143.62	160.64	5.12	148.75	0.00
P		P:CX5	49.00	45.00	47.00	43.184	1.64e+06	1.600	6.40	0.75	934.03	147.42	164.89	5.12	152.54	0.00
P	P:CX5		45.00	40.00	42.50	44.435	1.68e+06	1.600	6.40	0.75	1201.76	189.61	212.08	6.40	196.02	0.00
P		P:CX4	40.00	35.00	37.50	45.825	1.74e+06	1.600	6.40	0.75	1239.78	195.55	218.72	6.40	201.95	0.00
P	P:CX4		35.00	30.00	32.50	47.215	1.79e+06	1.600	6.40	0.75	1277.80	201.48	225.35	6.40	207.88	0.00
P		P:CX3	30.00	25.00	27.50	48.605	1.84e+06	1.600	6.40	0.75	1315.82	207.41	231.98	6.40	213.81	0.00
P	P:CX3		25.00	20.00	22.50	49.995	1.89e+06	1.600	6.40	0.75	1353.84	213.34	238.62	6.40	219.74	0.00
P		P:CX2	20.00	15.00	17.50	51.385	1.95e+06	1.600	6.40	0.75	1391.86	219.27	245.25	6.40	225.67	0.00
P	P:CX2		15.00	10.00	12.50	52.775	2e+06	1.600	6.40	0.75	1429.89	225.20	251.89	6.40	231.60	0.00
P		P:CX1	10.00	5.00	7.50	54.165	2.05e+06	1.600	6.40	0.75	1467.91	231.13	258.52	6.40	237.54	0.00
P	P:CX1	P:g	5.00	0.00	2.50	55.555	2.1e+06	1.600	6.40	0.75	1505.93	237.07	265.16	6.40	243.47	0.00

*** Analysis Results:

Maximum element usage is 88.39% for Steel Pole "P" in load case "NESC Rule 250C"
Maximum insulator usage is 25.75% for Suspension "C1LS" in load case "NESC Rule 250B"



*** Analysis Results for Load Case No. 1 "NESC Rule 250B" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Rule 250B":

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)
P:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
P:t	0.00909	3.356	-0.06348	-2.5600	0.0068	0.0000	0.00909	3.356	124.9
P:AN1	0.008971	3.311	-0.06249	-2.5600	0.0068	0.0000	0.008971	3.311	123.9

P:CX12	0.007902	2.911	-0.05338	-2.5324	0.0068	0.0000	0.007902	2.911	114.9
P:AN2	0.007314	2.691	-0.04844	-2.4992	0.0067	0.0000	0.007314	2.691	110
P:CX11	0.006734	2.475	-0.04359	-2.4532	0.0066	0.0000	0.006734	2.475	105
P:SW	0.006029	2.211	-0.03781	-2.3837	0.0064	0.0000	0.006029	2.211	98.71
P:CX10	0.005616	2.056	-0.0345	-2.3464	0.0062	0.0000	0.005616	2.056	94.97
P:C1	0.0053	1.937	-0.03199	-2.3129	0.0061	0.0000	0.0053	1.937	92.05
P:CX9	0.004559	1.657	-0.02615	-2.2063	0.0058	0.0000	0.004559	1.657	84.97
P:C2	0.004067	1.472	-0.02243	-2.1142	0.0056	0.0000	0.004067	1.472	80.06
P:CX8	0.003583	1.289	-0.01885	-2.0031	0.0053	0.0000	0.003583	1.289	74.98
P:C3	0.002967	1.057	-0.01458	-1.8282	0.0049	0.0000	0.002967	1.057	68.07
P:CX7	0.00271	0.9605	-0.01287	-1.7424	0.0047	0.0000	0.00271	0.9605	64.99
P:CX6	0.001958	0.682	-0.008331	-1.4328	0.0039	0.0000	0.001958	0.682	54.99
P:CX5	0.001333	0.4558	-0.005249	-1.1642	0.0033	0.0000	0.001333	0.4558	44.99
P:CX4	0.000819	0.2747	-0.003123	-0.9031	0.0026	0.0000	0.000819	0.2747	35
P:CX3	0.0004246	0.1395	-0.001722	-0.6398	0.0019	0.0000	0.0004246	0.1395	25
P:CX2	0.0001559	0.05008	-0.0008343	-0.3794	0.0012	0.0000	0.0001559	0.05008	15
P:CX1	1.822e-05	0.005675	-0.0002466	-0.1246	0.0004	0.0000	1.822e-05	0.005675	5
SWL:O	0.006035	2.212	0.01167	-2.3837	0.0064	0.0000	0.006035	1.023	98.76
SWL:1	0.006038	2.213	0.03931	-2.3514	0.0064	0.0000	0.006038	0.3531	98.79
SWL:T	0.006169	2.255	0.1951	-2.1818	0.0064	0.0000	0.006169	-3.605	99.95
SWR:O	0.006023	2.21	-0.08728	-2.3837	0.0064	0.0000	0.006023	3.399	98.66
SWR:1	0.006019	2.209	-0.1154	-2.4241	0.0064	0.0000	0.006019	4.069	98.63
SWR:T	0.006109	2.25	-0.2942	-2.5987	0.0064	0.0000	0.006109	8.109	99.46
C1L:O	0.005306	1.938	0.01913	-2.3129	0.0061	0.0000	0.005306	0.6716	92.1
C1L:1	0.005309	1.939	0.04595	-2.2822	0.0061	0.0000	0.005309	0.002142	92.13
C1L:T	0.005456	1.98	0.3694	-1.8486	0.0061	0.0000	0.005456	-9.076	93.45
C1R:O	0.005294	1.936	-0.08311	-2.3129	0.0061	0.0000	0.005294	3.203	92
C1R:1	0.005291	1.936	-0.1104	-2.3450	0.0061	0.0000	0.005291	3.872	91.97
C1R:T	0.005351	1.972	-0.5238	-2.7583	0.0061	0.0000	0.005351	13.03	92.56
C2L:O	0.004073	1.473	0.02943	-2.1142	0.0056	0.0000	0.004073	0.06684	80.11
C2L:1	0.004075	1.473	0.05393	-2.0835	0.0056	0.0000	0.004075	-0.6027	80.13
C2L:T	0.004206	1.51	0.3458	-1.6489	0.0056	0.0000	0.004206	-9.686	81.43
C2R:O	0.004061	1.471	-0.07429	-2.1142	0.0056	0.0000	0.004061	2.876	80.01
C2R:1	0.004059	1.47	-0.09923	-2.1463	0.0056	0.0000	0.004059	3.546	79.98
C2R:T	0.004116	1.504	-0.4809	-2.5602	0.0056	0.0000	0.004116	12.7	80.6
C3L:O	0.002971	1.058	0.0347	-1.8282	0.0049	0.0000	0.002971	-0.4872	68.11
C3L:1	0.002973	1.058	0.05586	-1.7974	0.0049	0.0000	0.002973	-1.157	68.14
C3L:T	0.003083	1.088	0.3022	-1.3616	0.0049	0.0000	0.003083	-10.25	69.38
C3R:O	0.002962	1.056	-0.06386	-1.8282	0.0049	0.0000	0.002962	2.601	68.02
C3R:1	0.00296	1.056	-0.08546	-1.8604	0.0049	0.0000	0.00296	3.27	67.99
C3R:T	0.003014	1.086	-0.4216	-2.2752	0.0049	0.0000	0.003014	12.42	68.66
SWLV	0.006115	2.237	0.2001	-2.1818	0.0064	0.0000	0.006115	-3.744	99.47
SWRV	0.006055	2.228	-0.2992	-2.5987	0.0064	0.0000	0.006055	8.209	98.97
C1LV	0.005394	1.962	0.3717	-1.8486	0.0061	0.0000	0.005394	-9.159	92.87
C1RV	0.005288	1.944	-0.5262	-2.7583	0.0061	0.0000	0.005288	13.06	91.97
C2LV	0.00415	1.493	0.3478	-1.6489	0.0056	0.0000	0.00415	-9.766	80.85
C2RV	0.004059	1.478	-0.4832	-2.5602	0.0056	0.0000	0.004059	12.74	80.02
C3LV	0.003034	1.075	0.3039	-1.3616	0.0049	0.0000	0.003034	-10.32	68.8
C3RV	0.002965	1.063	-0.4236	-2.2752	0.0049	0.0000	0.002965	12.46	68.08

Joint Support Reactions for Load Case "NESC Rule 250B":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	Result. Usage %	Result. Force (kips)	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 %
P:g	-0.18	0.0	-36.14	0.0	0.0	-129.01	0.0	0.0	133.98	0.0	3100.25	0.0	-9.9	0.0	0.0	-0.01	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Rule 250B":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
P	P:t	Origin	0.00	40.27	0.11	-0.76	-0.00	-0.00	0.0	-0.05	0.02	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
P	P:AN1	End	1.00	39.74	0.11	-0.75	0.02	-0.00	0.0	-0.05	0.02	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	2
P	P:AN1	Origin	1.00	39.74	0.11	-0.75	0.02	-0.00	-0.0	-10.20	2.79	-0.00	-0.60	0.00	0.34	0.00	0.84	1.3	5
P	Tube 1	End	5.50	37.33	0.10	-0.69	12.59	-0.02	-0.0	-10.20	2.79	-0.00	-0.57	1.50	0.08	0.00	2.07	3.2	2
P	Tube 1	Origin	5.50	37.33	0.10	-0.69	12.59	-0.02	0.0	-10.67	2.95	-0.01	-0.60	1.50	0.09	0.00	2.10	3.2	2
P	P:CX12	End	10.00	34.93	0.09	-0.64	25.88	-0.05	0.0	-10.67	2.95	-0.01	-0.56	2.76	0.08	0.00	3.32	5.1	2
P	P:CX12	Origin	10.00	34.93	0.09	-0.64	25.88	-0.05	0.0	-13.16	3.33	-0.01	-0.70	2.76	0.09	0.00	3.46	5.3	2
P	P:AN2	End	15.00	32.29	0.09	-0.58	42.55	-0.11	0.0	-13.16	3.33	-0.01	-0.66	4.04	0.09	0.00	4.70	7.2	2
P	P:AN2	Origin	15.00	32.29	0.09	-0.58	42.55	-0.11	0.0	-20.32	5.40	-0.02	-1.01	4.04	0.14	0.00	5.06	7.8	2
P	P:CX11	End	20.00	29.70	0.08	-0.52	69.53	-0.20	0.0	-20.32	5.40	-0.02	-0.96	5.92	0.13	0.00	6.88	10.6	2
P	P:CX11	Origin	20.00	29.70	0.08	-0.52	69.53	-0.20	0.0	-22.89	5.79	-0.02	-1.08	5.92	0.14	0.00	7.00	10.8	2
P	SpliceT	End	25.00	27.16	0.07	-0.47	98.48	-0.31	0.0	-22.89	5.79	-0.02	-1.03	7.56	0.14	0.00	8.59	13.2	2
P	SpliceT	Origin	25.00	27.16	0.07	-0.47	98.48	-0.31	-0.0	-23.34	5.91	-0.03	-0.70	5.01	0.09	0.00	5.71	8.8	2
P	P:SW	End	26.25	26.53	0.07	-0.45	105.86	-0.34	-0.0	-23.34	5.91	-0.03	-0.69	5.26	0.09	0.00	5.95	9.1	2
P	P:SW	Origin	26.25	26.53	0.07	-0.45	108.11	-0.34	0.0	-28.42	10.28	-0.03	-0.84	5.37	0.16	0.00	6.21	9.6	2
P	P:CX10	End	30.00	24.67	0.07	-0.41	146.65	-0.45	0.0	-28.42	10.28	-0.03	-0.81	6.77	0.15	0.00	7.58	11.7	2
P	P:CX10	Origin	30.00	24.67	0.07	-0.41	146.65	-0.45	0.0	-31.04	10.62	-0.03	-0.88	6.77	0.16	0.00	7.66	11.8	2
P	P:C1	End	32.92	23.25	0.06	-0.38	177.66	-0.55	0.0	-31.04	10.62	-0.03	-0.86	7.76	0.16	0.00	8.62	13.3	2
P	P:C1	Origin	32.92	23.25	0.06	-0.38	180.76	-0.55	0.0	-46.30	18.09	-0.04	-1.28	7.90	0.26	0.00	9.19	14.1	2
P	Tube 3	End	36.46	21.55	0.06	-0.35	244.79	-0.68	0.0	-46.30	18.09	-0.04	-1.24	10.02	0.26	0.00	11.27	17.3	2
P	Tube 3	Origin	36.46	21.55	0.06	-0.35	244.79	-0.68	0.0	-47.06	18.23	-0.04	-1.26	10.02	0.26	0.00	11.29	17.4	2
P	P:CX9	End	40.00	19.89	0.05	-0.31	309.32	-0.83	0.0	-47.06	18.23	-0.04	-1.22	11.89	0.25	0.00	13.12	20.2	2
P	P:CX9	Origin	40.00	19.89	0.05	-0.31	309.32	-0.83	0.0	-49.96	18.58	-0.05	-1.29	11.89	0.26	0.00	13.19	20.3	2
P	P:C2	End	44.92	17.66	0.05	-0.27	400.74	-1.07	0.0	-49.96	18.58	-0.05	-1.24	14.16	0.24	0.00	15.41	23.7	2
P	P:C2	Origin	44.92	17.66	0.05	-0.27	403.80	-1.07	0.0	-65.44	26.00	-0.05	-1.63	14.27	0.34	0.00	15.91	24.5	2
P	Tube 3	End	47.46	16.55	0.05	-0.25	469.83	-1.21	0.0	-65.44	26.00	-0.05	-1.59	15.92	0.33	0.00	17.52	27.0	2
P	Tube 3	Origin	47.46	16.55	0.05	-0.25	469.83	-1.21	0.0	-66.05	26.08	-0.06	-1.61	15.92	0.34	0.00	17.54	27.0	2
P	P:CX8	End	50.00	15.46	0.04	-0.23	536.07	-1.35	0.0	-66.05	26.08	-0.06	-1.58	17.43	0.33	0.00	19.01	29.3	2
P	P:CX8	Origin	50.00	15.46	0.04	-0.23	536.07	-1.35	0.0	-68.75	26.35	-0.06	-1.64	17.43	0.33	0.00	19.08	29.4	2
P	Tube 3	End	53.46	14.04	0.04	-0.20	627.24	-1.56	0.0	-68.75	26.35	-0.06	-1.60	19.31	0.32	0.00	20.91	32.2	2
P	Tube 3	Origin	53.46	14.04	0.04	-0.20	627.24	-1.56	0.0	-69.63	26.44	-0.07	-1.62	19.31	0.32	0.00	20.93	32.2	2
P	P:C3	End	56.92	12.68	0.04	-0.17	718.73	-1.79	0.0	-69.63	26.44	-0.07	-1.57	20.97	0.32	0.00	22.55	34.7	2
P	P:C3	Origin	56.92	12.68	0.04	-0.17	721.72	-1.79	0.0	-85.14	33.73	-0.07	-1.92	21.06	0.40	0.00	22.99	35.4	2
P	P:CX7	End	60.00	11.53	0.03	-0.15	825.60	-2.01	0.0	-85.14	33.73	-0.07	-1.88	23.00	0.39	0.00	24.89	38.3	2
P	P:CX7	Origin	60.00	11.53	0.03	-0.15	825.60	-2.01	0.0	-88.20	33.98	-0.08	-1.95	23.00	0.40	0.00	24.96	38.4	2
P	Tube 3	End	65.00	9.77	0.03	-0.12	995.47	-2.39	0.0	-88.20	33.98	-0.08	-1.88	25.78	0.38	0.00	27.66	42.6	2
P	Tube 3	Origin	65.00	9.77	0.03	-0.12	995.47	-2.39	0.0	-89.61	34.04	-0.08	-1.91	25.78	0.38	0.00	27.69	42.6	2
P	P:CX6	End	70.00	8.18	0.02	-0.10	1165.66	-2.81	0.0	-89.61	34.04	-0.08	-1.84	28.13	0.37	0.00	29.98	46.1	2
P	P:CX6	Origin	70.00	8.18	0.02	-0.10	1165.66	-2.81	0.0	-92.58	34.24	-0.09	-1.90	28.13	0.37	0.00	30.04	46.2	2
P	SpliceT	End	72.00	7.60	0.02	-0.09	1234.14	-2.98	0.0	-92.58	34.24	-0.09	-1.88	28.98	0.37	0.00	30.86	47.5	2
P	SpliceT	Origin	72.00	7.60	0.02	-0.09	1234.14	-2.98	0.0	-93.64	34.30	-0.09	-1.42	21.66	0.28	0.00	23.09	35.5	2
P	Tube 4	End	76.00	6.49	0.02	-0.08	1371.35	-3.35	0.0	-93.64	34.30	-0.09	-1.38	22.81	0.27	0.00	24.20	37.2	2
P	Tube 4	Origin	76.00	6.49	0.02	-0.08	1371.35	-3.35	0.0	-95.20	34.40	-0.10	-1.41	22.81	0.27	0.00	24.22	37.3	2
P	P:CX5	End	80.00	5.47	0.02	-0.06	1508.94	-3.74	0.0	-95.20	34.40	-0.10	-1.37	23.82	0.26	0.00	25.19	38.8	2
P	P:CX5	Origin	80.00	5.47	0.02	-0.06	1508.94	-3.74	0.0	-98.94	34.67	-0.10	-1.42	23.82	0.26	0.00	25.24	38.8	2
P	Tube 4	End	85.00	4.31	0.01	-0.05	1682.27	-4.26	0.0	-98.94	34.67	-0.10	-1.38	24.92	0.26	0.00	26.30	40.5	2
P	Tube 4	Origin	85.00	4.31	0.01	-0.05	1682.27	-4.26	0.0	-101.00	34.78	-0.11	-1.41	24.92	0.26	0.00	26.33	40.5	2
P	P:CX4	End	90.00	3.30	0.01	-0.04	1856.18	-4.82	0.0	-101.00	34.78	-0.11	-1.37	25.85	0.25	0.00	27.22	41.9	2
P	P:CX4	Origin	90.00	3.30	0.01	-0.04	1856.18	-4.82	0.0	-105.07	35.04	-0.12	-1.42	25.85	0.25	0.00	27.27	42.0	2
P	Tube 4	End	95.00	2.42	0.01	-0.03	2031.39	-5.42	0.0	-105.07	35.04	-0.12	-1.38	26.65	0.24	0.00	28.03	43.1	2
P	Tube 4	Origin	95.00	2.42	0.01	-0.03	2031.39	-5.42	0.0	-107.25	35.15	-0.13	-1.41	26.65	0.24	0.00	28.06	43.2	2
P	P:CX3	End	100.00	1.67	0.01	-0.02	2207.16	-6.06	0.0	-107.25	35.15	-0.13	-1.37	27.32	0.24	0.00	28.69	44.1	2
P	P:CX3	Origin	100.00	1.67	0.01	-0.02	2207.16	-6.06	0.0	-111.44	35.40	-0.14	-1.42	27.32	0.24	0.00	28.74	44.2	2

P	Tube 4	End	105.00	1.07	0.00	-0.01	2384.17	-6.74	0.0	-111.44	35.40	-0.14	-1.38	27.89	0.23	0.00	29.27	45.0	2
P	Tube 4	Origin	105.00	1.07	0.00	-0.01	2384.17	-6.74	0.0	-113.74	35.51	-0.14	-1.41	27.89	0.23	0.00	29.30	45.1	2
P	P:CX2	End	110.00	0.60	0.00	-0.01	2561.73	-7.46	0.0	-113.74	35.51	-0.14	-1.37	28.37	0.23	0.00	29.74	45.8	2
P	P:CX2	Origin	110.00	0.60	0.00	-0.01	2561.73	-7.46	0.0	-118.06	35.75	-0.15	-1.42	28.37	0.23	0.00	29.79	45.8	2
P	Tube 4	End	115.00	0.27	0.00	-0.01	2740.49	-8.23	0.0	-118.06	35.75	-0.15	-1.39	28.77	0.22	0.00	30.16	46.4	2
P	Tube 4	Origin	115.00	0.27	0.00	-0.01	2740.49	-8.23	0.0	-120.48	35.86	-0.16	-1.41	28.77	0.22	0.00	30.19	46.4	2
P	P:CX1	End	120.00	0.07	0.00	-0.00	2919.79	-9.04	0.0	-120.48	35.86	-0.16	-1.38	29.10	0.22	0.00	30.48	46.9	2
P	P:CX1	Origin	120.00	0.07	0.00	-0.00	2919.79	-9.04	0.0	-124.92	36.09	-0.17	-1.43	29.10	0.22	0.00	30.53	47.0	2
P	P:g	End	125.00	0.00	0.00	0.00	3100.25	-9.89	0.0	-124.92	36.09	-0.17	-1.39	29.37	0.21	0.00	30.76	47.3	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Rule 250B":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
SWL	SWL:O	Origin	0.00	26.54	0.07	0.14	-9.63	0.00	-0.0	-2.13	2.29	-0.00	-0.39	9.25	0.33	0.00	9.66	14.9	2
SWL	SWL:1	End	0.67	26.55	0.07	0.47	-8.10	0.00	-0.0	-2.13	2.29	-0.00	-0.41	8.58	0.35	0.00	9.01	13.9	2
SWL	SWL:1	Origin	0.67	26.55	0.07	0.47	-8.10	0.00	0.0	-2.60	1.66	-0.00	-0.50	8.58	0.25	0.00	9.09	14.0	2
SWL	SWL:T	End	4.79	27.06	0.07	2.34	-1.26	0.00	0.0	-2.60	1.66	-0.00	-0.72	2.81	0.37	0.00	3.59	5.5	2
SWR	SWR:O	Origin	0.00	26.52	0.07	-1.05	-11.88	-0.00	0.0	2.13	2.29	0.00	0.39	11.41	0.33	0.00	11.81	18.2	2
SWR	SWR:1	End	0.67	26.51	0.07	-1.38	-10.34	-0.00	0.0	2.13	2.29	0.00	0.41	10.96	0.35	0.00	11.39	17.5	2
SWR	SWR:1	Origin	0.67	26.51	0.07	-1.38	-10.34	-0.00	0.0	1.53	2.68	0.00	0.29	10.96	0.41	0.00	11.28	17.3	2
SWR	SWR:T	End	4.79	27.00	0.07	-3.53	0.71	0.00	0.0	1.53	2.68	0.00	0.42	0.66	1.44	0.00	2.71	4.2	3
C1L	C1L:O	Origin	0.00	23.26	0.06	0.23	-67.75	0.01	-0.0	-3.66	7.27	-0.00	-0.28	15.20	0.44	0.00	15.50	23.9	2
C1L	C1L:1	End	0.67	23.27	0.06	0.55	-62.88	0.01	-0.0	-3.66	7.27	-0.00	-0.29	15.15	0.46	0.00	15.46	23.8	2
C1L	C1L:1	Origin	0.67	23.27	0.06	0.55	-62.88	0.01	0.0	-4.40	6.69	-0.00	-0.35	15.15	0.42	0.00	15.51	23.9	2
C1L	#C1L:0	End	5.26	23.53	0.06	2.60	-32.18	0.00	0.0	-4.40	6.69	-0.00	-0.46	13.67	0.56	0.00	14.17	21.8	2
C1L	#C1L:0	Origin	5.26	23.53	0.06	2.60	-32.18	0.00	0.0	-4.34	6.49	-0.00	-0.46	13.67	0.55	0.00	14.16	21.8	2
C1L	C1L:T	End	9.84	23.76	0.07	4.43	-2.40	0.00	0.0	-4.34	6.49	-0.00	-0.68	0.93	1.96	0.00	3.75	5.8	3
C1R	C1R:O	Origin	0.00	23.24	0.06	-1.00	-70.85	-0.01	0.0	3.67	7.27	0.00	0.28	15.90	0.44	0.00	16.20	24.9	2
C1R	C1R:1	End	0.67	23.23	0.06	-1.32	-65.97	-0.01	0.0	3.67	7.27	0.00	0.29	15.89	0.46	0.00	16.20	24.9	2
C1R	C1R:1	Origin	0.67	23.23	0.06	-1.32	-65.97	-0.01	-0.0	2.88	7.47	0.00	0.23	15.89	0.47	0.00	16.14	24.8	2
C1R	#C1R:0	End	5.26	23.44	0.06	-3.70	-31.69	-0.00	-0.0	2.88	7.47	0.00	0.30	13.47	0.63	0.00	13.81	21.3	2
C1R	#C1R:0	Origin	5.26	23.44	0.06	-3.70	-31.69	-0.00	0.0	2.93	7.24	0.00	0.31	13.47	0.61	0.00	13.82	21.3	2
C1R	C1R:T	End	9.84	23.66	0.06	-6.29	1.51	0.00	0.0	2.93	7.24	0.00	0.46	0.00	2.35	0.00	4.09	6.3	4
C2L	C2L:O	Origin	0.00	17.67	0.05	0.35	-67.90	0.01	-0.0	-3.64	7.29	-0.00	-0.28	15.24	0.44	0.00	15.53	23.9	2
C2L	C2L:1	End	0.67	17.68	0.05	0.65	-63.02	0.01	-0.0	-3.64	7.29	-0.00	-0.29	15.18	0.46	0.00	15.49	23.8	2
C2L	C2L:1	Origin	0.67	17.68	0.05	0.65	-63.02	0.01	0.0	-4.37	6.71	-0.00	-0.35	15.18	0.42	0.00	15.54	23.9	2
C2L	#C2L:0	End	5.26	17.91	0.05	2.51	-32.25	0.00	0.0	-4.37	6.71	-0.00	-0.46	13.70	0.56	0.00	14.19	21.8	2
C2L	#C2L:0	Origin	5.26	17.91	0.05	2.51	-32.25	0.00	0.0	-4.31	6.51	-0.00	-0.45	13.70	0.55	0.00	14.19	21.8	2
C2L	C2L:T	End	9.84	18.12	0.05	4.15	-2.40	0.00	0.0	-4.31	6.51	-0.00	-0.67	0.93	1.96	0.00	3.76	5.8	3
C2R	C2R:O	Origin	0.00	17.65	0.05	-0.89	-70.95	-0.01	0.0	3.64	7.29	0.00	0.28	15.92	0.44	0.00	16.22	25.0	2
C2R	C2R:1	End	0.67	17.64	0.05	-1.19	-66.07	-0.01	0.0	3.64	7.29	0.00	0.29	15.91	0.46	0.00	16.22	25.0	2
C2R	C2R:1	Origin	0.67	17.64	0.05	-1.19	-66.07	-0.01	-0.0	2.86	7.48	0.00	0.23	15.91	0.47	0.00	16.16	24.9	2
C2R	#C2R:0	End	5.26	17.84	0.05	-3.37	-31.74	-0.00	-0.0	2.86	7.48	0.00	0.30	13.49	0.63	0.00	13.83	21.3	2
C2R	#C2R:0	Origin	5.26	17.84	0.05	-3.37	-31.74	-0.00	0.0	2.90	7.25	0.00	0.31	13.49	0.61	0.00	13.83	21.3	2
C2R	C2R:T	End	9.84	18.05	0.05	-5.77	1.51	0.00	0.0	2.90	7.25	0.00	0.45	0.00	2.35	0.00	4.10	6.3	4
C3L	C3L:O	Origin	0.00	12.69	0.04	0.42	-68.11	0.01	-0.0	-3.60	7.30	-0.00	-0.28	15.28	0.45	0.00	15.58	24.0	2
C3L	C3L:1	End	0.67	12.69	0.04	0.67	-63.22	0.01	-0.0	-3.60	7.30	-0.00	-0.29	15.23	0.46	0.00	15.54	23.9	2
C3L	C3L:1	Origin	0.67	12.69	0.04	0.67	-63.22	0.01	0.0	-4.34	6.73	-0.00	-0.34	15.23	0.43	0.00	15.59	24.0	2
C3L	#C3L:0	End	5.26	12.89	0.04	2.26	-32.34	0.00	0.0	-4.34	6.73	-0.00	-0.46	13.74	0.57	0.00	14.23	21.9	2

C3L	#C3L:0	Origin	5.26	12.89	0.04	2.26	-32.34	0.00	0.0	-4.28	6.53	-0.00	-0.45	13.74	0.55	0.00	14.23	21.9	2
C3L	C3L:T	End	9.84	13.06	0.04	3.63	-2.40	0.00	0.0	-4.28	6.53	-0.00	-0.67	0.93	1.97	0.00	3.77	5.8	3
C3R	C3R:O	Origin	0.00	12.67	0.04	-0.77	-71.09	-0.01	0.0	3.61	7.31	0.00	0.28	15.95	0.45	0.00	16.25	25.0	2
C3R	C3R:1	End	0.67	12.67	0.04	-1.03	-66.20	-0.01	0.0	3.61	7.31	0.00	0.29	15.95	0.46	0.00	16.25	25.0	2
C3R	C3R:1	Origin	0.67	12.67	0.04	-1.03	-66.20	-0.01	-0.0	2.82	7.50	0.00	0.22	15.95	0.47	0.00	16.19	24.9	2
C3R	#C3R:0	End	5.26	12.84	0.04	-2.93	-31.81	-0.00	-0.0	2.82	7.50	0.00	0.30	13.51	0.63	0.00	13.85	21.3	2
C3R	#C3R:0	Origin	5.26	12.84	0.04	-2.93	-31.81	-0.00	0.0	2.87	7.26	0.00	0.30	13.51	0.61	0.00	13.86	21.3	2
C3R	C3R:T	End	9.84	13.04	0.04	-5.06	1.51	0.00	0.0	2.87	7.26	0.00	0.45	0.00	2.36	0.00	4.10	6.3	4

Summary of Clamp Capacities and Usages for Load Case "NESC Rule 250B":

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 %
AN1	10.226	100.00	100.00	10.23	0.00	0.00	0.00	10.23
AN2&CX2	6.829	100.00	100.00	6.83	0.00	0.00	0.00	6.83
CX1	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX2	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX3	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX4	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX5	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX6	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX7	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX8	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX9	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX10	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX11	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96
CX12	1.959	100.00	100.00	1.96	0.00	0.00	0.00	1.96

Summary of Suspension Capacities and Usages for Load Case "NESC Rule 250B":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
SWLS	3.049	15.00	15.00	20.33	0.00	0.00	0.00	20.33
SWRS	3.049	15.00	15.00	20.33	0.00	0.00	0.00	20.33
C1LS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75
C1RS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75
C2LS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75
C2RS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75
C3LS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75
C3RS	7.724	30.00	30.00	25.75	0.00	0.00	0.00	25.75

*** Analysis Results for Load Case No. 2 "NESC Rule 250C" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Rule 250C":

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)
P:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
P:t	0.002174	6.641	-0.2346	-5.3687	0.0016	0.0000	0.002174	6.641	124.8
P:AN1	0.002146	6.548	-0.2302	-5.3687	0.0016	0.0000	0.002146	6.548	123.8
P:CX12	0.001893	5.71	-0.1911	-5.2789	0.0016	0.0000	0.001893	5.71	114.8
P:AN2	0.001754	5.254	-0.1702	-5.1731	0.0016	0.0000	0.001754	5.254	109.8
P:CX11	0.001616	4.809	-0.1502	-5.0283	0.0016	0.0000	0.001616	4.809	104.8
P:SW	0.001448	4.273	-0.1271	-4.8114	0.0015	0.0000	0.001448	4.273	98.62
P:CX10	0.00135	3.961	-0.1141	-4.7024	0.0015	0.0000	0.00135	3.961	94.89
P:C1	0.001275	3.724	-0.1044	-4.6094	0.0015	0.0000	0.001275	3.724	91.98
P:CX9	0.001098	3.17	-0.08257	-4.3429	0.0014	0.0000	0.001098	3.17	84.92
P:C2	0.0009809	2.806	-0.06897	-4.1292	0.0013	0.0000	0.0009809	2.806	80.01
P:CX8	0.0008652	2.45	-0.05636	-3.8841	0.0013	0.0000	0.0008652	2.45	74.94
P:C3	0.0007175	2.003	-0.04167	-3.5149	0.0012	0.0000	0.0007175	2.003	68.04
P:CX7	0.0006558	1.818	-0.03603	-3.3388	0.0011	0.0000	0.0006558	1.818	64.96
P:CX6	0.0004749	1.287	-0.02155	-2.7223	0.0009	0.0000	0.0004749	1.287	54.98
P:CX5	0.0003238	0.8584	-0.01207	-2.2011	0.0008	0.0000	0.0003238	0.8584	44.99
P:CX4	0.0001993	0.5167	-0.005962	-1.7021	0.0006	0.0000	0.0001993	0.5167	34.99
P:CX3	0.0001035	0.2621	-0.002449	-1.2036	0.0005	0.0000	0.0001035	0.2621	25
P:CX2	3.807e-05	0.09404	-0.0007626	-0.7127	0.0003	0.0000	3.807e-05	0.09404	15
P:CX1	4.46e-06	0.01065	-0.0001395	-0.2340	0.0001	0.0000	4.46e-06	0.01065	5
SWL:O	0.001452	4.277	-0.02733	-4.8114	0.0015	0.0000	0.001452	3.087	98.72
SWL:1	0.001453	4.279	0.02875	-4.7949	0.0015	0.0000	0.001453	2.42	98.78
SWL:T	0.00149	4.375	0.3557	-4.6983	0.0015	0.0000	0.00149	-1.484	100.1
SWR:O	0.001445	4.268	-0.2269	-4.8114	0.0015	0.0000	0.001445	5.458	98.52
SWR:1	0.001444	4.266	-0.2832	-4.8369	0.0015	0.0000	0.001444	6.126	98.47
SWR:T	0.00146	4.337	-0.6295	-4.9401	0.0015	0.0000	0.00146	10.2	99.12
C1L:O	0.001278	3.728	-0.002615	-4.6094	0.0015	0.0000	0.001278	2.461	92.08
C1L:1	0.00128	3.73	0.05112	-4.5936	0.0015	0.0000	0.00128	1.794	92.13
C1L:T	0.001327	3.836	0.7575	-4.3490	0.0015	0.0000	0.001327	-7.221	93.84
C1R:O	0.001272	3.72	-0.2062	-4.6094	0.0015	0.0000	0.001272	4.987	91.87
C1R:1	0.001271	3.718	-0.2602	-4.6275	0.0015	0.0000	0.001271	5.654	91.82
C1R:T	0.001274	3.769	-1.021	-4.8406	0.0015	0.0000	0.001274	14.83	92.06
C2L:O	0.0009837	2.81	0.03225	-4.1292	0.0013	0.0000	0.0009837	1.404	80.11
C2L:1	0.000985	2.811	0.08038	-4.1132	0.0013	0.0000	0.000985	0.7357	80.16
C2L:T	0.001026	2.903	0.7108	-3.8655	0.0013	0.0000	0.001026	-8.293	81.79
C2R:O	0.0009782	2.802	-0.1702	-4.1292	0.0013	0.0000	0.0009782	4.208	79.91
C2R:1	0.0009769	2.801	-0.2186	-4.1476	0.0013	0.0000	0.0009769	4.876	79.86
C2R:T	0.0009819	2.85	-0.9024	-4.3632	0.0013	0.0000	0.0009819	14.05	80.18
C3L:O	0.0007197	2.006	0.05304	-3.5149	0.0012	0.0000	0.0007197	0.4608	68.13
C3L:1	0.0007207	2.007	0.094	-3.4986	0.0012	0.0000	0.0007207	-0.208	68.17
C3L:T	0.0007544	2.081	0.6271	-3.2470	0.0012	0.0000	0.0007544	-9.253	69.71
C3R:O	0.0007152	2	-0.1364	-3.5149	0.0012	0.0000	0.0007152	3.544	67.94
C3R:1	0.0007143	1.998	-0.1776	-3.5335	0.0012	0.0000	0.0007143	4.213	67.9
C3R:T	0.000721	2.044	-0.7635	-3.7525	0.0012	0.0000	0.000721	13.38	68.32
SWLV	0.001478	4.336	0.3672	-4.6983	0.0015	0.0000	0.001478	-1.645	99.63
SWRV	0.001447	4.295	-0.6381	-4.9401	0.0015	0.0000	0.001447	10.28	98.63
C1LV	0.001313	3.792	0.764	-4.3490	0.0015	0.0000	0.001313	-7.328	93.26
C1RV	0.001259	3.72	-1.024	-4.8406	0.0015	0.0000	0.001259	14.84	91.48
C2LV	0.001013	2.864	0.7164	-3.8655	0.0013	0.0000	0.001013	-8.395	81.22
C2RV	0.0009683	2.806	-0.9056	-4.3632	0.0013	0.0000	0.0009683	14.07	79.59

C3LV	0.0007427	2.049	0.6317	-3.2470	0.0012	0.0000	0.0007427	-9.35	69.13
C3RV	0.0007091	2.006	-0.7664	-3.7525	0.0012	0.0000	0.0007091	13.4	67.73

Joint Support Reactions for Load Case "NESC Rule 250C":

Joint Label	X Force (kips)	X Usage %	Y Force (kips)	Y Usage %	H-Shear Usage %	Z Force (kips)	Comp. Uplift Usage %	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 %
P:g	-0.04	0.0	-67.65	0.0	0.0	-69.52	0.0	0.0	97.00	0.0	5820.07	0.0	-2.4	0.0	0.0	-0.00	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Rule 250C":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
P	P:t	Origin	0.00	79.70	0.03	-2.82	-0.00	-0.00	0.0	-0.03	0.03	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	5
P	P:AN1	End	1.00	78.57	0.03	-2.76	0.03	-0.00	0.0	-0.03	0.03	-0.00	-0.00	0.00	0.00	0.00	0.01	0.0	4
P	P:AN1	Origin	1.00	78.57	0.03	-2.76	0.03	-0.00	-0.0	-4.22	9.16	-0.00	-0.25	0.00	1.10	0.00	1.92	3.0	5
P	Tube 1	End	5.50	73.53	0.02	-2.53	41.23	-0.00	-0.0	-4.22	9.16	-0.00	-0.24	4.90	0.27	0.00	5.16	7.9	2
P	Tube 1	Origin	5.50	73.53	0.02	-2.53	41.23	-0.00	0.0	-4.50	9.44	-0.00	-0.25	4.90	0.28	0.00	5.17	8.0	2
P	P:CX12	End	10.00	68.52	0.02	-2.29	83.73	-0.01	0.0	-4.50	9.44	-0.00	-0.24	8.91	0.26	0.00	9.16	14.1	2
P	P:CX12	Origin	10.00	68.52	0.02	-2.29	83.73	-0.01	0.0	-5.32	10.14	-0.00	-0.28	8.91	0.28	0.00	9.21	14.2	2
P	P:AN2	End	15.00	63.05	0.02	-2.04	134.45	-0.02	0.0	-5.32	10.14	-0.00	-0.27	12.75	0.27	0.00	13.03	20.0	2
P	P:AN2	Origin	15.00	63.05	0.02	-2.04	134.45	-0.02	0.0	-8.15	16.78	-0.00	-0.41	12.75	0.44	0.00	13.18	20.3	2
P	P:CX11	End	20.00	57.71	0.02	-1.80	218.34	-0.04	0.0	-8.15	16.78	-0.00	-0.39	18.57	0.42	0.00	18.97	29.2	2
P	P:CX11	Origin	20.00	57.71	0.02	-1.80	218.34	-0.04	0.0	-9.06	17.51	-0.01	-0.43	18.57	0.44	0.00	19.01	29.2	2
P	SpliceT	End	25.00	52.53	0.02	-1.58	305.90	-0.07	0.0	-9.06	17.51	-0.01	-0.41	23.46	0.42	0.00	23.88	36.7	2
P	SpliceT	Origin	25.00	52.53	0.02	-1.58	305.90	-0.07	-0.0	-9.35	17.74	-0.01	-0.28	15.57	0.28	0.00	15.85	24.4	2
P	P:SW	End	26.25	51.27	0.02	-1.53	328.08	-0.08	-0.0	-9.35	17.74	-0.01	-0.28	16.28	0.28	0.00	16.57	25.5	2
P	P:SW	Origin	26.25	51.27	0.02	-1.53	330.60	-0.08	0.0	-12.33	22.58	-0.01	-0.36	16.41	0.35	0.00	16.78	25.8	2
P	P:CX10	End	30.00	47.54	0.02	-1.37	415.26	-0.10	0.0	-12.33	22.58	-0.01	-0.35	19.16	0.34	0.00	19.51	30.0	2
P	P:CX10	Origin	30.00	47.54	0.02	-1.37	415.26	-0.10	0.0	-13.27	23.22	-0.01	-0.38	19.16	0.35	0.00	19.54	30.1	2
P	P:C1	End	32.92	44.69	0.02	-1.25	483.06	-0.12	0.0	-13.27	23.22	-0.01	-0.37	21.09	0.34	0.00	21.46	33.0	2
P	P:C1	Origin	32.92	44.69	0.02	-1.25	487.99	-0.13	0.0	-21.67	34.80	-0.01	-0.60	21.30	0.51	0.00	21.92	33.7	2
P	Tube 3	End	36.46	41.32	0.01	-1.12	611.18	-0.16	0.0	-21.67	34.80	-0.01	-0.58	25.01	0.49	0.00	25.60	39.4	2
P	Tube 3	Origin	36.46	41.32	0.01	-1.12	611.18	-0.16	0.0	-22.20	35.08	-0.01	-0.59	25.01	0.50	0.00	25.61	39.4	2
P	P:CX9	End	40.00	38.04	0.01	-0.99	735.35	-0.19	0.0	-22.20	35.08	-0.01	-0.58	28.25	0.48	0.00	28.84	44.4	2
P	P:CX9	Origin	40.00	38.04	0.01	-0.99	735.35	-0.19	0.0	-23.37	35.78	-0.01	-0.61	28.25	0.49	0.00	28.87	44.4	2
P	P:C2	End	44.92	33.67	0.01	-0.83	911.41	-0.25	0.0	-23.37	35.78	-0.01	-0.58	32.19	0.47	0.00	32.78	50.4	2
P	P:C2	Origin	44.92	33.67	0.01	-0.83	916.27	-0.25	0.0	-32.04	47.33	-0.01	-0.80	32.36	0.62	0.00	33.18	51.0	2
P	Tube 3	End	47.46	31.51	0.01	-0.75	1036.47	-0.28	0.0	-32.04	47.33	-0.01	-0.78	35.10	0.61	0.00	35.89	55.2	2
P	Tube 3	Origin	47.46	31.51	0.01	-0.75	1036.47	-0.28	0.0	-32.50	47.51	-0.01	-0.79	35.10	0.61	0.00	35.90	55.2	2
P	P:CX8	End	50.00	29.40	0.01	-0.68	1157.15	-0.32	0.0	-32.50	47.51	-0.01	-0.78	37.60	0.60	0.00	38.39	59.1	2
P	P:CX8	Origin	50.00	29.40	0.01	-0.68	1157.15	-0.32	0.0	-33.56	48.10	-0.01	-0.80	37.60	0.61	0.00	38.42	59.1	2
P	Tube 3	End	53.46	26.65	0.01	-0.58	1323.58	-0.37	0.0	-33.56	48.10	-0.01	-0.78	40.71	0.59	0.00	41.51	63.9	2
P	Tube 3	Origin	53.46	26.65	0.01	-0.58	1323.58	-0.37	0.0	-34.22	48.35	-0.02	-0.79	40.71	0.59	0.00	41.52	63.9	2
P	P:C3	End	56.92	24.03	0.01	-0.50	1490.88	-0.42	0.0	-34.22	48.35	-0.02	-0.77	43.48	0.58	0.00	44.26	68.1	2
P	P:C3	Origin	56.92	24.03	0.01	-0.50	1495.65	-0.42	0.0	-43.06	59.75	-0.02	-0.97	43.62	0.71	0.00	44.61	68.6	2
P	P:CX7	End	60.00	21.82	0.01	-0.43	1679.67	-0.47	0.0	-43.06	59.75	-0.02	-0.95	46.76	0.70	0.00	47.73	73.4	2
P	P:CX7	Origin	60.00	21.82	0.01	-0.43	1679.67	-0.47	0.0	-44.44	60.38	-0.02	-0.98	46.76	0.70	0.00	47.76	73.5	2
P	Tube 3	End	65.00	18.47	0.01	-0.34	1981.55	-0.56	0.0	-44.44	60.38	-0.02	-0.95	51.28	0.68	0.00	52.24	80.4	2
P	Tube 3	Origin	65.00	18.47	0.01	-0.34	1981.55	-0.56	0.0	-45.56	60.69	-0.02	-0.97	51.28	0.68	0.00	52.27	80.4	2
P	P:CX6	End	70.00	15.44	0.01	-0.26	2285.01	-0.67	0.0	-45.56	60.69	-0.02	-0.94	55.11	0.66	0.00	56.06	86.2	2
P	P:CX6	Origin	70.00	15.44	0.01	-0.26	2285.01	-0.67	0.0	-46.89	61.27	-0.02	-0.96	55.11	0.67	0.00	56.09	86.3	2
P	SpliceT	End	72.00	14.33	0.01	-0.23	2407.55	-0.71	0.0	-46.89	61.27	-0.02	-0.95	56.49	0.66	0.00	57.45	88.4	2
P	SpliceT	Origin	72.00	14.33	0.01	-0.23	2407.55	-0.71	0.0	-47.68	61.50	-0.02	-0.72	42.23	0.49	0.00	42.97	66.1	2

P	Tube 4	End	76.00	12.23	0.00	-0.18	2653.52	-0.80	0.0	-47.68	61.50	-0.02	-0.70	44.11	0.48	0.00	44.82	69.0	2
P	Tube 4	Origin	76.00	12.23	0.00	-0.18	2653.52	-0.80	0.0	-48.82	61.82	-0.02	-0.72	44.11	0.48	0.00	44.84	69.0	2
P	P:CX5	End	80.00	10.30	0.00	-0.14	2900.79	-0.89	0.0	-48.82	61.82	-0.02	-0.70	45.76	0.47	0.00	46.47	71.5	2
P	P:CX5	Origin	80.00	10.30	0.00	-0.14	2900.79	-0.89	0.0	-50.64	62.54	-0.03	-0.73	45.76	0.48	0.00	46.50	71.5	2
P	Tube 4	End	85.00	8.12	0.00	-0.10	3213.50	-1.02	0.0	-50.64	62.54	-0.03	-0.71	47.57	0.46	0.00	48.28	74.3	2
P	Tube 4	Origin	85.00	8.12	0.00	-0.10	3213.50	-1.02	0.0	-52.13	62.96	-0.03	-0.73	47.57	0.46	0.00	48.30	74.3	2
P	P:CX4	End	90.00	6.20	0.00	-0.07	3528.27	-1.16	0.0	-52.13	62.96	-0.03	-0.70	49.10	0.45	0.00	49.81	76.6	2
P	P:CX4	Origin	90.00	6.20	0.00	-0.07	3528.27	-1.16	0.0	-54.19	63.72	-0.03	-0.73	49.10	0.46	0.00	49.84	76.7	2
P	Tube 4	End	95.00	4.54	0.00	-0.05	3846.88	-1.31	0.0	-54.19	63.72	-0.03	-0.71	50.43	0.44	0.00	51.15	78.7	2
P	Tube 4	Origin	95.00	4.54	0.00	-0.05	3846.88	-1.31	0.0	-55.76	64.15	-0.03	-0.73	50.43	0.45	0.00	51.17	78.7	2
P	P:CX3	End	100.00	3.15	0.00	-0.03	4167.63	-1.47	0.0	-55.76	64.15	-0.03	-0.71	51.55	0.43	0.00	52.27	80.4	2
P	P:CX3	Origin	100.00	3.15	0.00	-0.03	4167.63	-1.46	0.0	-57.90	64.93	-0.03	-0.74	51.55	0.44	0.00	52.29	80.5	2
P	Tube 4	End	105.00	2.01	0.00	-0.02	4492.27	-1.63	0.0	-57.90	64.93	-0.03	-0.72	52.52	0.43	0.00	53.24	81.9	2
P	Tube 4	Origin	105.00	2.01	0.00	-0.02	4492.27	-1.63	0.0	-59.55	65.37	-0.04	-0.74	52.52	0.43	0.00	53.26	81.9	2
P	P:CX2	End	110.00	1.13	0.00	-0.01	4819.12	-1.81	0.0	-59.55	65.37	-0.04	-0.72	53.33	0.42	0.00	54.05	83.2	2
P	P:CX2	Origin	110.00	1.13	0.00	-0.01	4819.12	-1.81	0.0	-61.77	66.16	-0.04	-0.74	53.33	0.42	0.00	54.08	83.2	2
P	Tube 4	End	115.00	0.50	0.00	-0.00	5149.91	-2.00	0.0	-61.77	66.16	-0.04	-0.73	54.02	0.41	0.00	54.75	84.2	2
P	Tube 4	Origin	115.00	0.50	0.00	-0.00	5149.91	-2.00	0.0	-63.49	66.62	-0.04	-0.75	54.02	0.41	0.00	54.78	84.3	2
P	P:CX1	End	120.00	0.13	0.00	-0.00	5482.99	-2.21	0.0	-63.49	66.62	-0.04	-0.73	54.60	0.40	0.00	55.33	85.1	2
P	P:CX1	Origin	120.00	0.13	0.00	-0.00	5482.99	-2.21	0.0	-65.79	67.42	-0.04	-0.75	54.60	0.41	0.00	55.36	85.2	2
P	P:g	End	125.00	0.00	0.00	0.00	5820.07	-2.42	0.0	-65.79	67.42	-0.04	-0.73	55.09	0.40	0.00	55.83	85.9	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Rule 250C":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
SWL	SWL:O	Origin	0.00	51.32	0.02	-0.33	-4.97	0.00	-0.0	-2.32	1.32	-0.00	-0.42	4.77	0.19	0.00	5.21	8.0	2
SWL	SWL:1	End	0.67	51.35	0.02	0.35	-4.09	0.00	-0.0	-2.32	1.32	-0.00	-0.44	4.33	0.20	0.00	4.79	7.4	2
SWL	SWL:1	Origin	0.67	51.35	0.02	0.35	-4.09	0.00	0.0	-2.55	0.69	-0.00	-0.49	4.33	0.11	0.00	4.83	7.4	2
SWL	SWL:T	End	4.79	52.51	0.02	4.27	-1.24	0.00	0.0	-2.55	0.69	-0.00	-0.71	2.77	0.15	0.00	3.48	5.4	2
SWR	SWR:O	Origin	0.00	51.22	0.02	-2.72	-7.47	-0.00	0.0	2.32	1.33	0.00	0.42	7.18	0.19	0.00	7.61	11.7	2
SWR	SWR:1	End	0.67	51.19	0.02	-3.40	-6.58	-0.00	0.0	2.32	1.33	0.00	0.44	6.98	0.20	0.00	7.43	11.4	2
SWR	SWR:1	Origin	0.67	51.19	0.02	-3.40	-6.58	-0.00	0.0	1.93	1.81	0.00	0.37	6.98	0.28	0.00	7.36	11.3	2
SWR	SWR:T	End	4.79	52.04	0.02	-7.55	0.89	0.00	0.0	1.93	1.81	0.00	0.54	1.98	0.41	0.00	2.61	4.0	2
C1L	C1L:O	Origin	0.00	44.74	0.02	-0.03	-35.05	0.00	-0.0	-5.66	3.96	-0.00	-0.43	7.87	0.24	0.00	8.31	12.8	2
C1L	C1L:1	End	0.67	44.76	0.02	0.61	-32.40	0.00	-0.0	-5.66	3.96	-0.00	-0.45	7.80	0.25	0.00	8.27	12.7	2
C1L	C1L:1	Origin	0.67	44.76	0.02	0.61	-32.40	0.00	0.0	-6.03	3.23	-0.00	-0.48	7.80	0.20	0.00	8.29	12.8	2
C1L	#C1L:0	End	5.26	45.41	0.02	4.91	-17.59	0.00	0.0	-6.03	3.23	-0.00	-0.63	7.47	0.27	0.00	8.12	12.5	2
C1L	#C1L:0	Origin	5.26	45.41	0.02	4.91	-17.59	0.00	0.0	-6.00	3.10	-0.00	-0.63	7.47	0.26	0.00	8.12	12.5	2
C1L	C1L:T	End	9.84	46.03	0.02	9.09	-3.35	0.00	0.0	-6.00	3.10	-0.00	-0.93	3.15	0.39	0.00	4.14	6.4	2
C1R	C1R:O	Origin	0.00	44.64	0.02	-2.47	-39.96	-0.00	0.0	5.66	3.97	0.00	0.43	8.97	0.24	0.00	9.41	14.5	2
C1R	C1R:1	End	0.67	44.61	0.02	-3.12	-37.31	-0.00	0.0	5.66	3.97	0.00	0.45	8.99	0.25	0.00	9.45	14.5	2
C1R	C1R:1	Origin	0.67	44.61	0.02	-3.12	-37.31	-0.00	0.0	5.20	4.45	0.00	0.41	8.99	0.28	0.00	9.41	14.5	2
C1R	#C1R:0	End	5.26	44.92	0.02	-7.63	-16.87	-0.00	0.0	5.20	4.45	0.00	0.55	7.17	0.37	0.00	7.74	11.9	2
C1R	#C1R:0	Origin	5.26	44.92	0.02	-7.63	-16.87	-0.00	0.0	5.22	4.29	0.00	0.55	7.17	0.36	0.00	7.74	11.9	2
C1R	C1R:T	End	9.84	45.23	0.02	-12.25	2.83	0.00	0.0	5.22	4.29	0.00	0.81	2.66	0.54	0.00	3.59	5.5	2
C2L	C2L:O	Origin	0.00	33.72	0.01	0.39	-35.55	0.00	-0.0	-5.63	4.01	-0.00	-0.43	7.98	0.24	0.00	8.42	13.0	2
C2L	C2L:1	End	0.67	33.74	0.01	0.96	-32.87	0.00	-0.0	-5.63	4.01	-0.00	-0.45	7.92	0.25	0.00	8.38	12.9	2
C2L	C2L:1	Origin	0.67	33.74	0.01	0.96	-32.87	0.00	0.0	-6.01	3.28	-0.00	-0.48	7.92	0.21	0.00	8.40	12.9	2
C2L	#C2L:0	End	5.26	34.30	0.01	4.81	-17.82	0.00	0.0	-6.01	3.28	-0.00	-0.63	7.57	0.28	0.00	8.22	12.6	2
C2L	#C2L:0	Origin	5.26	34.30	0.01	4.81	-17.82	0.00	0.0	-5.97	3.15	-0.00	-0.63	7.57	0.27	0.00	8.21	12.6	2
C2L	C2L:T	End	9.84	34.84	0.01	8.53	-3.35	0.00	0.0	-5.97	3.15	-0.00	-0.93	3.15	0.40	0.00	4.14	6.4	2

C2R	C2R:O	Origin	0.00	33.63	0.01	-2.04	-40.39	-0.00	0.0	5.63	4.02	0.00	0.43	9.06	0.24	0.00	9.50	14.6	2
C2R	C2R:1	End	0.67	33.61	0.01	-2.62	-37.70	-0.00	0.0	5.63	4.02	0.00	0.45	9.08	0.25	0.00	9.54	14.7	2
C2R	C2R:1	Origin	0.67	33.61	0.01	-2.62	-37.70	-0.00	0.0	5.17	4.50	0.00	0.41	9.08	0.28	0.00	9.50	14.6	2
C2R	#C2R:0	End	5.26	33.90	0.01	-6.67	-17.07	-0.00	0.0	5.17	4.50	0.00	0.54	7.25	0.38	0.00	7.83	12.0	2
C2R	#C2R:0	Origin	5.26	33.90	0.01	-6.67	-17.07	-0.00	0.0	5.18	4.34	0.00	0.54	7.25	0.37	0.00	7.82	12.0	2
C2R	C2R:T	End	9.84	34.20	0.01	-10.83	2.83	0.00	0.0	5.18	4.34	0.00	0.81	2.66	0.55	0.00	3.59	5.5	2
C3L	C3L:O	Origin	0.00	24.07	0.01	0.64	-36.19	0.00	-0.0	-5.58	4.07	-0.00	-0.43	8.12	0.25	0.00	8.56	13.2	2
C3L	C3L:1	End	0.67	24.08	0.01	1.13	-33.46	0.00	-0.0	-5.58	4.07	-0.00	-0.44	8.06	0.26	0.00	8.52	13.1	2
C3L	C3L:1	Origin	0.67	24.08	0.01	1.13	-33.46	0.00	0.0	-5.97	3.35	-0.00	-0.47	8.06	0.21	0.00	8.54	13.1	2
C3L	#C3L:0	End	5.26	24.54	0.01	4.39	-18.11	0.00	0.0	-5.97	3.35	-0.00	-0.63	7.70	0.28	0.00	8.34	12.8	2
C3L	#C3L:0	Origin	5.26	24.54	0.01	4.39	-18.11	0.00	0.0	-5.94	3.22	-0.00	-0.62	7.70	0.27	0.00	8.33	12.8	2
C3L	C3L:T	End	9.84	24.98	0.01	7.53	-3.35	0.00	0.0	-5.94	3.22	-0.00	-0.92	3.15	0.41	0.00	4.13	6.4	2
C3R	C3R:O	Origin	0.00	24.00	0.01	-1.64	-40.94	-0.00	0.0	5.58	4.08	0.00	0.43	9.19	0.25	0.00	9.62	14.8	2
C3R	C3R:1	End	0.67	23.98	0.01	-2.13	-38.21	-0.00	0.0	5.58	4.08	0.00	0.44	9.20	0.26	0.00	9.66	14.9	2
C3R	C3R:1	Origin	0.67	23.98	0.01	-2.13	-38.21	-0.00	0.0	5.12	4.55	0.00	0.41	9.20	0.29	0.00	9.62	14.8	2
C3R	#C3R:0	End	5.26	24.25	0.01	-5.59	-17.33	-0.00	0.0	5.12	4.55	0.00	0.54	7.36	0.38	0.00	7.93	12.2	2
C3R	#C3R:0	Origin	5.26	24.25	0.01	-5.59	-17.33	-0.00	0.0	5.13	4.39	0.00	0.54	7.36	0.37	0.00	7.93	12.2	2
C3R	C3R:T	End	9.84	24.53	0.01	-9.16	2.83	0.00	0.0	5.13	4.39	0.00	0.80	2.66	0.55	0.00	3.59	5.5	2

Summary of Clamp Capacities and Usages for Load Case "NESC Rule 250C":

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 %
AN1	9.820	100.00	100.00	9.82	0.00	0.00	0.00	9.82
AN2&CX2	6.754	100.00	100.00	6.75	0.00	0.00	0.00	6.75
CX1	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX2	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX3	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX4	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX5	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX6	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX7	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX8	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX9	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX10	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX11	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63
CX12	0.627	100.00	100.00	0.63	0.00	0.00	0.00	0.63

Summary of Suspension Capacities and Usages for Load Case "NESC Rule 250C":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
SWLS	2.631	15.00	15.00	17.54	0.00	0.00	0.00	17.54
SWRS	2.631	15.00	15.00	17.54	0.00	0.00	0.00	17.54
C1LS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39
C1RS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39
C2LS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39
C2RS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39
C3LS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39

C3RS	6.718	30.00	30.00	22.39	0.00	0.00	0.00	22.39

*** Analysis Results for Load Case No. 3 "NESC Rule 250D" - Number of iterations in SAPS 14

Equilibrium Joint Positions and Rotations for Load Case "NESC Rule 250D":

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)
P:g	0	0	0	0.0000	0.0000	0.0000	0	0	0
P:t	0.003655	2.313	-0.03267	-1.7905	0.0027	0.0000	0.003655	2.313	125
P:AN1	0.003608	2.282	-0.03218	-1.7905	0.0027	0.0000	0.003608	2.282	124
P:CX12	0.003179	2.002	-0.02768	-1.7688	0.0027	0.0000	0.003179	2.002	115
P:AN2	0.002943	1.849	-0.02524	-1.7430	0.0027	0.0000	0.002943	1.849	110
P:CX11	0.00271	1.698	-0.02284	-1.7073	0.0026	0.0000	0.00271	1.698	105
P:SW	0.002427	1.514	-0.01998	-1.6536	0.0026	0.0000	0.002427	1.514	98.73
P:CX10	0.002261	1.407	-0.01835	-1.6251	0.0025	0.0000	0.002261	1.407	94.98
P:C1	0.002134	1.325	-0.01711	-1.5996	0.0025	0.0000	0.002134	1.325	92.06
P:CX9	0.001836	1.132	-0.01419	-1.5207	0.0023	0.0000	0.001836	1.132	84.99
P:C2	0.001638	1.004	-0.01233	-1.4539	0.0022	0.0000	0.001638	1.004	80.07
P:CX8	0.001443	0.878	-0.01052	-1.3744	0.0021	0.0000	0.001443	0.878	74.99
P:C3	0.001195	0.719	-0.008339	-1.2508	0.0020	0.0000	0.001195	0.719	68.07
P:CX7	0.001092	0.6532	-0.007448	-1.1907	0.0019	0.0000	0.001092	0.6532	64.99
P:CX6	0.0007893	0.4632	-0.005032	-0.9761	0.0016	0.0000	0.0007893	0.4632	54.99
P:CX5	0.0005372	0.3092	-0.00337	-0.7915	0.0013	0.0000	0.0005372	0.3092	45
P:CX4	0.0003302	0.1862	-0.002172	-0.6130	0.0010	0.0000	0.0003302	0.1862	35
P:CX3	0.0001712	0.0945	-0.001314	-0.4338	0.0008	0.0000	0.0001712	0.0945	25
P:CX2	6.287e-05	0.0339	-0.0006953	-0.2570	0.0005	0.0000	6.287e-05	0.0339	15
P:CX1	7.35e-06	0.003839	-0.0002171	-0.0844	0.0002	0.0000	7.35e-06	0.003839	5
SWL:O	0.002428	1.515	0.01435	-1.6536	0.0026	0.0000	0.002428	0.3255	98.76
SWL:1	0.002429	1.515	0.03336	-1.6055	0.0026	0.0000	0.002429	-0.3442	98.78
SWL:T	0.002479	1.542	0.1342	-1.3660	0.0026	0.0000	0.002479	-4.318	99.88
SWR:O	0.002425	1.514	-0.0543	-1.6536	0.0026	0.0000	0.002425	2.703	98.7
SWR:1	0.002424	1.514	-0.07399	-1.7075	0.0026	0.0000	0.002424	3.373	98.68
SWR:T	0.002462	1.544	-0.2055	-1.9512	0.0026	0.0000	0.002462	7.404	99.54
C1L:O	0.002136	1.325	0.01825	-1.5996	0.0025	0.0000	0.002136	0.05859	92.1
C1L:1	0.002136	1.326	0.03673	-1.5685	0.0025	0.0000	0.002136	-0.6111	92.12
C1L:T	0.00219	1.351	0.2465	-1.1335	0.0025	0.0000	0.00219	-9.706	93.33
C1R:O	0.002132	1.324	-0.05247	-1.5996	0.0025	0.0000	0.002132	2.591	92.03
C1R:1	0.002131	1.324	-0.0714	-1.6317	0.0025	0.0000	0.002131	3.261	92.01
C1R:T	0.002161	1.352	-0.3713	-2.0540	0.0025	0.0000	0.002161	12.41	92.71
C2L:O	0.00164	1.004	0.02333	-1.4539	0.0022	0.0000	0.00164	-0.4017	80.1
C2L:1	0.00164	1.004	0.04011	-1.4227	0.0023	0.0000	0.00164	-1.071	80.12
C2L:T	0.001688	1.027	0.2267	-0.9872	0.0023	0.0000	0.001688	-10.17	81.31
C2R:O	0.001636	1.003	-0.048	-1.4539	0.0022	0.0000	0.001636	2.409	80.03
C2R:1	0.001636	1.003	-0.06522	-1.4860	0.0022	0.0000	0.001636	3.079	80.01
C2R:T	0.001663	1.029	-0.3419	-1.9085	0.0023	0.0000	0.001663	12.22	80.74
C3L:O	0.001197	0.7194	0.02538	-1.2508	0.0020	0.0000	0.001197	-0.8254	68.11
C3L:1	0.001197	0.7195	0.03979	-1.2196	0.0020	0.0000	0.001197	-1.495	68.12
C3L:T	0.001238	0.7379	0.1941	-0.7835	0.0020	0.0000	0.001238	-10.6	69.27
C3R:O	0.001194	0.7186	-0.04206	-1.2508	0.0020	0.0000	0.001194	2.263	68.04
C3R:1	0.001193	0.7185	-0.05691	-1.2829	0.0020	0.0000	0.001193	2.933	68.02
C3R:T	0.001219	0.742	-0.3012	-1.7058	0.0020	0.0000	0.001219	12.08	68.78
SWLV	0.002458	1.53	0.1372	-1.3660	0.0026	0.0000	0.002458	-4.45	99.4
SWRV	0.002441	1.528	-0.2093	-1.9512	0.0026	0.0000	0.002441	7.508	99.06
C1LV	0.002165	1.34	0.2479	-1.1335	0.0025	0.0000	0.002165	-9.781	92.75
C1RV	0.002135	1.331	-0.3732	-2.0540	0.0025	0.0000	0.002135	12.45	92.13
C2LV	0.001666	1.017	0.2279	-0.9872	0.0023	0.0000	0.001666	-10.24	80.73
C2RV	0.00164	1.01	-0.3437	-1.9085	0.0023	0.0000	0.00164	12.27	80.16

C3LV	0.001218	0.73	0.195	-0.7835	0.0020	0.0000	0.001218	-10.67	68.7
C3RV	0.001199	0.7247	-0.3028	-1.7058	0.0020	0.0000	0.001199	12.12	68.2

Joint Support Reactions for Load Case "NESC Rule 250D":

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 %
P:g	-0.07	0.0	-24.19	0.0	0.0	-114.43	0.0	0.0	116.95	0.0	2097.67	0.0	-4.0	0.0	0.0	-0.00	0.0	0.0

Detailed Steel Pole Usages for Load Case "NESC Rule 250D":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Trans. Mom. (Local Mx) (ft-k)	Long. Mom. (Local My) (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Tran. Shear (kips)	Long. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
P	P:t	Origin	0.00	27.76	0.04	-0.39	-0.00	-0.00	0.0	-0.04	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	5
P	P:AN1	End	1.00	27.38	0.04	-0.39	0.01	-0.00	0.0	-0.04	0.01	-0.00	-0.00	0.00	0.00	0.00	0.00	0.0	2
P	P:AN1	Origin	1.00	27.38	0.04	-0.39	0.01	-0.00	-0.0	-7.65	2.20	-0.00	-0.45	0.00	0.26	0.00	0.64	1.0	5
P	Tube 1	End	5.50	25.70	0.04	-0.36	9.91	-0.01	-0.0	-7.65	2.20	-0.00	-0.43	1.18	0.07	0.00	1.61	2.5	2
P	Tube 1	Origin	5.50	25.70	0.04	-0.36	9.91	-0.01	0.0	-8.02	2.30	-0.00	-0.45	1.18	0.07	0.00	1.63	2.5	2
P	P:CX12	End	10.00	24.02	0.04	-0.33	20.27	-0.02	0.0	-8.02	2.30	-0.00	-0.42	2.16	0.06	0.00	2.58	4.0	2
P	P:CX12	Origin	10.00	24.02	0.04	-0.33	20.27	-0.02	0.0	-10.24	2.55	-0.00	-0.54	2.16	0.07	0.00	2.70	4.2	2
P	P:AN2	End	15.00	22.18	0.04	-0.30	33.02	-0.04	0.0	-10.24	2.55	-0.00	-0.51	3.13	0.07	0.00	3.65	5.6	2
P	P:AN2	Origin	15.00	22.18	0.04	-0.30	33.02	-0.04	0.0	-15.72	4.17	-0.01	-0.78	3.13	0.11	0.00	3.92	6.0	2
P	P:CX11	End	20.00	20.37	0.03	-0.27	53.86	-0.08	0.0	-15.72	4.17	-0.01	-0.74	4.58	0.10	0.00	5.33	8.2	2
P	P:CX11	Origin	20.00	20.37	0.03	-0.27	53.86	-0.08	0.0	-18.02	4.42	-0.01	-0.85	4.58	0.11	0.00	5.44	8.4	2
P	SpliceT	End	25.00	18.61	0.03	-0.25	75.98	-0.12	0.0	-18.02	4.42	-0.01	-0.81	5.83	0.10	0.00	6.64	10.2	2
P	SpliceT	Origin	25.00	18.61	0.03	-0.25	75.98	-0.12	-0.0	-18.36	4.50	-0.01	-0.55	3.87	0.07	0.00	4.42	6.8	2
P	P:SW	End	26.25	18.17	0.03	-0.24	81.60	-0.13	-0.0	-18.36	4.50	-0.01	-0.54	4.05	0.07	0.00	4.59	7.1	2
P	P:SW	Origin	26.25	18.17	0.03	-0.24	83.21	-0.13	0.0	-25.08	7.59	-0.01	-0.74	4.13	0.12	0.00	4.87	7.5	2
P	P:CX10	End	30.00	16.88	0.03	-0.22	111.69	-0.18	0.0	-25.08	7.59	-0.01	-0.71	5.15	0.11	0.00	5.87	9.0	2
P	P:CX10	Origin	30.00	16.88	0.03	-0.22	111.69	-0.18	0.0	-27.38	7.81	-0.01	-0.78	5.15	0.12	0.00	5.93	9.1	2
P	P:C1	End	32.92	15.90	0.03	-0.21	134.50	-0.22	0.0	-27.38	7.81	-0.01	-0.76	5.87	0.11	0.00	6.63	10.2	2
P	P:C1	Origin	32.92	15.90	0.03	-0.21	136.50	-0.22	0.0	-42.41	12.59	-0.02	-1.17	5.96	0.18	0.00	7.14	11.0	2
P	Tube 3	End	36.46	14.72	0.02	-0.19	181.09	-0.27	0.0	-42.41	12.59	-0.02	-1.13	7.41	0.18	0.00	8.55	13.2	2
P	Tube 3	Origin	36.46	14.72	0.02	-0.19	181.09	-0.27	0.0	-42.97	12.68	-0.02	-1.15	7.41	0.18	0.00	8.57	13.2	2
P	P:CX9	End	40.00	13.58	0.02	-0.17	225.97	-0.33	0.0	-42.97	12.68	-0.02	-1.11	8.69	0.17	0.00	9.80	15.1	2
P	P:CX9	Origin	40.00	13.58	0.02	-0.17	225.97	-0.33	0.0	-45.48	12.91	-0.02	-1.18	8.69	0.18	0.00	9.87	15.2	2
P	P:C2	End	44.92	12.04	0.02	-0.15	289.47	-0.43	0.0	-45.48	12.91	-0.02	-1.13	10.23	0.17	0.00	11.36	17.5	2
P	P:C2	Origin	44.92	12.04	0.02	-0.15	291.44	-0.43	0.0	-60.65	17.65	-0.02	-1.51	10.30	0.23	0.00	11.81	18.2	2
P	Tube 3	End	47.46	11.28	0.02	-0.14	336.26	-0.48	0.0	-60.65	17.65	-0.02	-1.48	11.39	0.23	0.00	12.87	19.8	2
P	Tube 3	Origin	47.46	11.28	0.02	-0.14	336.26	-0.48	0.0	-61.10	17.69	-0.02	-1.49	11.39	0.23	0.00	12.88	19.8	2
P	P:CX8	End	50.00	10.54	0.02	-0.13	381.20	-0.54	0.0	-61.10	17.69	-0.02	-1.46	12.39	0.22	0.00	13.85	21.3	2
P	P:CX8	Origin	50.00	10.54	0.02	-0.13	381.20	-0.54	0.0	-63.45	17.87	-0.02	-1.51	12.39	0.23	0.00	13.91	21.4	2
P	Tube 3	End	53.46	9.56	0.02	-0.11	443.03	-0.63	0.0	-63.45	17.87	-0.02	-1.47	13.63	0.22	0.00	15.11	23.2	2
P	Tube 3	Origin	53.46	9.56	0.02	-0.11	443.03	-0.63	0.0	-64.10	17.93	-0.03	-1.49	13.63	0.22	0.00	15.12	23.3	2
P	P:C3	End	56.92	8.63	0.01	-0.10	505.05	-0.72	0.0	-64.10	17.93	-0.03	-1.45	14.73	0.21	0.00	16.19	24.9	2
P	P:C3	Origin	56.92	8.63	0.01	-0.10	506.97	-0.72	0.0	-79.28	22.58	-0.03	-1.79	14.79	0.27	0.00	16.59	25.5	2
P	P:CX7	End	60.00	7.84	0.01	-0.09	576.51	-0.81	0.0	-79.28	22.58	-0.03	-1.75	16.06	0.26	0.00	17.81	27.4	2
P	P:CX7	Origin	60.00	7.84	0.01	-0.09	576.51	-0.81	0.0	-81.89	22.74	-0.03	-1.81	16.06	0.27	0.00	17.87	27.5	2
P	Tube 3	End	65.00	6.64	0.01	-0.07	690.18	-0.96	0.0	-81.89	22.74	-0.03	-1.74	17.87	0.26	0.00	19.62	30.2	2
P	Tube 3	Origin	65.00	6.64	0.01	-0.07	690.18	-0.96	0.0	-82.92	22.77	-0.03	-1.77	17.87	0.26	0.00	19.64	30.2	2
P	P:CX6	End	70.00	5.56	0.01	-0.06	804.04	-1.13	0.0	-82.92	22.77	-0.03	-1.70	19.40	0.25	0.00	21.11	32.5	2
P	P:CX6	Origin	70.00	5.56	0.01	-0.06	804.04	-1.13	0.0	-85.46	22.91	-0.04	-1.76	19.40	0.25	0.00	21.16	32.6	2
P	SpliceT	End	72.00	5.16	0.01	-0.06	849.85	-1.20	0.0	-85.46	22.91	-0.04	-1.73	19.95	0.25	0.00	21.68	33.4	2
P	SpliceT	Origin	72.00	5.16	0.01	-0.06	849.85	-1.20	0.0	-86.23	22.94	-0.04	-1.31	14.91	0.18	0.00	16.22	25.0	2

P	Tube 4	End	76.00	4.41	0.01	-0.05	941.61	-1.35	0.0	-86.23	22.94	-0.04	-1.27	15.66	0.18	0.00	16.93	26.1	2
P	Tube 4	Origin	76.00	4.41	0.01	-0.05	941.61	-1.35	0.0	-87.34	23.00	-0.04	-1.29	15.66	0.18	0.00	16.95	26.1	2
P	P:CX5	End	80.00	3.71	0.01	-0.04	1033.62	-1.50	0.0	-87.34	23.00	-0.04	-1.26	16.31	0.18	0.00	17.57	27.0	2
P	P:CX5	Origin	80.00	3.71	0.01	-0.04	1033.62	-1.50	0.0	-90.43	23.18	-0.04	-1.30	16.31	0.18	0.00	17.61	27.1	2
P	Tube 4	End	85.00	2.93	0.01	-0.03	1149.50	-1.72	0.0	-90.43	23.18	-0.04	-1.26	17.02	0.17	0.00	18.28	28.1	2
P	Tube 4	Origin	85.00	2.93	0.01	-0.03	1149.50	-1.72	0.0	-91.90	23.25	-0.05	-1.28	17.02	0.17	0.00	18.30	28.2	2
P	P:CX4	End	90.00	2.23	0.00	-0.03	1265.75	-1.94	0.0	-91.90	23.25	-0.05	-1.24	17.62	0.17	0.00	18.87	29.0	2
P	P:CX4	Origin	90.00	2.23	0.00	-0.03	1265.75	-1.94	0.0	-95.23	23.42	-0.05	-1.29	17.62	0.17	0.00	18.91	29.1	2
P	Tube 4	End	95.00	1.64	0.00	-0.02	1382.87	-2.18	0.0	-95.23	23.42	-0.05	-1.25	18.13	0.16	0.00	19.39	29.8	2
P	Tube 4	Origin	95.00	1.64	0.00	-0.02	1382.87	-2.18	0.0	-96.79	23.50	-0.05	-1.27	18.13	0.16	0.00	19.41	29.9	2
P	P:CX3	End	100.00	1.13	0.00	-0.02	1500.36	-2.44	0.0	-96.79	23.50	-0.05	-1.23	18.56	0.16	0.00	19.80	30.5	2
P	P:CX3	Origin	100.00	1.13	0.00	-0.02	1500.36	-2.44	0.0	-100.20	23.67	-0.05	-1.28	18.56	0.16	0.00	19.84	30.5	2
P	Tube 4	End	105.00	0.72	0.00	-0.01	1618.70	-2.72	0.0	-100.20	23.67	-0.05	-1.24	18.93	0.16	0.00	20.17	31.0	2
P	Tube 4	Origin	105.00	0.72	0.00	-0.01	1618.70	-2.72	0.0	-101.85	23.74	-0.06	-1.26	18.93	0.16	0.00	20.19	31.1	2
P	P:CX2	End	110.00	0.41	0.00	-0.01	1737.41	-3.01	0.0	-101.85	23.74	-0.06	-1.23	19.23	0.15	0.00	20.46	31.5	2
P	P:CX2	Origin	110.00	0.41	0.00	-0.01	1737.41	-3.01	0.0	-105.35	23.91	-0.06	-1.27	19.23	0.15	0.00	20.51	31.5	2
P	Tube 4	End	115.00	0.18	0.00	-0.01	1856.96	-3.32	0.0	-105.35	23.91	-0.06	-1.24	19.49	0.15	0.00	20.73	31.9	2
P	Tube 4	Origin	115.00	0.18	0.00	-0.01	1856.96	-3.32	0.0	-107.09	23.99	-0.07	-1.26	19.49	0.15	0.00	20.75	31.9	2
P	P:CX1	End	120.00	0.05	0.00	-0.00	1976.91	-3.65	0.0	-107.09	23.99	-0.07	-1.23	19.69	0.14	0.00	20.92	32.2	2
P	P:CX1	Origin	120.00	0.05	0.00	-0.00	1976.91	-3.65	0.0	-110.68	24.15	-0.07	-1.27	19.69	0.15	0.00	20.96	32.3	2
P	P:g	End	125.00	0.00	0.00	0.00	2097.67	-3.99	0.0	-110.68	24.15	-0.07	-1.23	19.86	0.14	0.00	21.10	32.5	2

Detailed Tubular Davit Arm Usages for Load Case "NESC Rule 250D":

Element Label	Joint Label	Joint Position	Rel. Dist. (ft)	Trans. Defl. (in)	Long. Defl. (in)	Vert. Defl. (in)	Vert. Mom. (ft-k)	Horz. Mom. (ft-k)	Tors. Mom. (ft-k)	Axial Force (kips)	Vert. Shear (kips)	Horz. Shear (kips)	P/A (ksi)	M/S. (ksi)	V/Q. (ksi)	T/R. (ksi)	Res. (ksi)	Max. Usage %	At Pt.
SWL	SWL:O	Origin	0.00	18.18	0.03	0.17	-14.27	0.00	-0.0	-1.51	3.18	-0.00	-0.28	13.71	0.46	0.00	14.01	21.6	2
SWL	SWL:1	End	0.67	18.18	0.03	0.40	-12.14	0.00	-0.0	-1.51	3.18	-0.00	-0.29	12.87	0.49	0.00	13.19	20.3	2
SWL	SWL:1	Origin	0.67	18.18	0.03	0.40	-12.14	0.00	0.0	-2.22	2.69	-0.00	-0.43	12.87	0.41	0.00	13.32	20.5	2
SWL	SWL:T	End	4.79	18.50	0.03	1.61	-1.07	0.00	0.0	-2.22	2.69	-0.00	-0.61	2.39	0.60	0.00	3.18	4.9	2
SWR	SWR:O	Origin	0.00	18.17	0.03	-0.65	-15.88	-0.00	0.0	1.51	3.18	0.00	0.28	15.25	0.46	0.00	15.55	23.9	2
SWR	SWR:1	End	0.67	18.16	0.03	-0.89	-13.75	-0.00	0.0	1.51	3.18	0.00	0.29	14.57	0.49	0.00	14.89	22.9	2
SWR	SWR:1	Origin	0.67	18.16	0.03	-0.89	-13.75	-0.00	0.0	0.72	3.41	0.00	0.14	14.57	0.52	0.00	14.74	22.7	2
SWR	SWR:T	End	4.79	18.53	0.03	-2.47	0.31	0.00	0.0	0.72	3.41	0.00	0.20	0.00	1.97	0.00	3.41	5.2	4
C1L	C1L:O	Origin	0.00	15.90	0.03	0.22	-68.85	0.00	-0.0	-2.35	7.25	-0.00	-0.18	15.45	0.44	0.00	15.65	24.1	2
C1L	C1L:1	End	0.67	15.91	0.03	0.44	-63.99	0.00	-0.0	-2.35	7.25	-0.00	-0.19	15.41	0.46	0.00	15.62	24.0	2
C1L	C1L:1	Origin	0.67	15.91	0.03	0.44	-63.99	0.00	0.0	-3.09	6.86	-0.00	-0.25	15.41	0.43	0.00	15.68	24.1	2
C1L	#C1L:0	End	5.26	16.08	0.03	1.81	-32.53	0.00	0.0	-3.09	6.86	-0.00	-0.33	13.82	0.58	0.00	14.18	21.8	2
C1L	#C1L:0	Origin	5.26	16.08	0.03	1.81	-32.53	0.00	0.0	-3.04	6.72	-0.00	-0.32	13.82	0.57	0.00	14.18	21.8	2
C1L	C1L:T	End	9.84	16.21	0.03	2.96	-1.69	0.00	0.0	-3.04	6.72	-0.00	-0.47	0.00	2.18	0.00	3.81	5.9	4
C1R	C1R:O	Origin	0.00	15.89	0.03	-0.63	-70.84	-0.00	0.0	2.35	7.25	0.00	0.18	15.90	0.44	0.00	16.10	24.8	2
C1R	C1R:1	End	0.67	15.89	0.03	-0.86	-65.99	-0.00	0.0	2.35	7.25	0.00	0.19	15.90	0.46	0.00	16.10	24.8	2
C1R	C1R:1	Origin	0.67	15.89	0.03	-0.86	-65.99	-0.00	-0.0	1.57	7.36	0.00	0.12	15.90	0.47	0.00	16.04	24.7	2
C1R	#C1R:0	End	5.26	16.05	0.03	-2.54	-32.24	-0.00	-0.0	1.57	7.36	0.00	0.17	13.70	0.62	0.00	13.91	21.4	2
C1R	#C1R:0	Origin	5.26	16.05	0.03	-2.54	-32.24	-0.00	0.0	1.61	7.20	0.00	0.17	13.70	0.61	0.00	13.91	21.4	2
C1R	C1R:T	End	9.84	16.22	0.03	-4.46	0.80	0.00	0.0	1.61	7.20	0.00	0.25	0.00	2.34	0.00	4.05	6.2	4
C2L	C2L:O	Origin	0.00	12.05	0.02	0.28	-68.92	0.00	-0.0	-2.33	7.25	-0.00	-0.18	15.47	0.44	0.00	15.66	24.1	2
C2L	C2L:1	End	0.67	12.05	0.02	0.48	-64.06	0.00	-0.0	-2.33	7.25	-0.00	-0.18	15.43	0.46	0.00	15.64	24.1	2
C2L	C2L:1	Origin	0.67	12.05	0.02	0.48	-64.06	0.00	0.0	-3.07	6.87	-0.00	-0.24	15.43	0.43	0.00	15.69	24.1	2
C2L	#C2L:0	End	5.26	12.20	0.02	1.71	-32.57	0.00	0.0	-3.07	6.87	-0.00	-0.32	13.84	0.58	0.00	14.20	21.8	2
C2L	#C2L:0	Origin	5.26	12.20	0.02	1.71	-32.57	0.00	0.0	-3.03	6.73	-0.00	-0.32	13.84	0.57	0.00	14.19	21.8	2
C2L	C2L:T	End	9.84	12.32	0.02	2.72	-1.69	0.00	0.0	-3.03	6.73	-0.00	-0.47	0.00	2.18	0.00	3.81	5.9	4

C2R	C2R:O	Origin	0.00	12.04	0.02	-0.58	-70.89	-0.00	0.0	2.33	7.25	0.00	0.18	15.91	0.44	0.00	16.10	24.8	2
C2R	C2R:1	End	0.67	12.04	0.02	-0.78	-66.02	-0.00	0.0	2.33	7.25	0.00	0.19	15.90	0.46	0.00	16.11	24.8	2
C2R	C2R:1	Origin	0.67	12.04	0.02	-0.78	-66.02	-0.00	-0.0	1.55	7.36	0.00	0.12	15.90	0.47	0.00	16.05	24.7	2
C2R	#C2R:0	End	5.26	12.18	0.02	-2.33	-32.26	-0.00	-0.0	1.55	7.36	0.00	0.16	13.71	0.62	0.00	13.91	21.4	2
C2R	#C2R:0	Origin	5.26	12.18	0.02	-2.33	-32.26	-0.00	0.0	1.60	7.21	0.00	0.17	13.71	0.61	0.00	13.91	21.4	2
C2R	C2R:T	End	9.84	12.35	0.02	-4.10	0.80	0.00	0.0	1.60	7.21	0.00	0.25	0.00	2.34	0.00	4.06	6.2	4
C3L	C3L:O	Origin	0.00	8.63	0.01	0.30	-69.03	0.00	-0.0	-2.30	7.26	-0.00	-0.18	15.49	0.44	0.00	15.68	24.1	2
C3L	C3L:1	End	0.67	8.63	0.01	0.48	-64.16	0.00	-0.0	-2.30	7.26	-0.00	-0.18	15.46	0.46	0.00	15.66	24.1	2
C3L	C3L:1	Origin	0.67	8.63	0.01	0.48	-64.16	0.00	0.0	-3.05	6.88	-0.00	-0.24	15.46	0.43	0.00	15.72	24.2	2
C3L	#C3L:0	End	5.26	8.76	0.01	1.52	-32.62	0.00	0.0	-3.05	6.88	-0.00	-0.32	13.86	0.58	0.00	14.21	21.9	2
C3L	#C3L:0	Origin	5.26	8.76	0.01	1.52	-32.62	0.00	0.0	-3.00	6.74	-0.00	-0.32	13.86	0.57	0.00	14.21	21.9	2
C3L	C3L:T	End	9.84	8.85	0.01	2.33	-1.69	0.00	0.0	-3.00	6.74	-0.00	-0.47	0.00	2.19	0.00	3.82	5.9	4
C3R	C3R:O	Origin	0.00	8.62	0.01	-0.50	-70.94	-0.00	0.0	2.31	7.26	0.00	0.18	15.92	0.44	0.00	16.11	24.8	2
C3R	C3R:1	End	0.67	8.62	0.01	-0.68	-66.08	-0.00	0.0	2.31	7.26	0.00	0.18	15.92	0.46	0.00	16.12	24.8	2
C3R	C3R:1	Origin	0.67	8.62	0.01	-0.68	-66.08	-0.00	-0.0	1.53	7.37	0.00	0.12	15.92	0.47	0.00	16.06	24.7	2
C3R	#C3R:0	End	5.26	8.75	0.01	-2.04	-32.28	-0.00	-0.0	1.53	7.37	0.00	0.16	13.72	0.62	0.00	13.92	21.4	2
C3R	#C3R:0	Origin	5.26	8.75	0.01	-2.04	-32.28	-0.00	0.0	1.57	7.21	0.00	0.17	13.72	0.61	0.00	13.92	21.4	2
C3R	C3R:T	End	9.84	8.90	0.01	-3.61	0.80	0.00	0.0	1.57	7.21	0.00	0.24	0.00	2.34	0.00	4.06	6.2	4

Summary of Clamp Capacities and Usages for Load Case "NESC Rule 250D":

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 %
AN1	7.696	100.00	100.00	7.70	0.00	0.00	0.00	7.70
AN2&CX2	5.236	100.00	100.00	5.24	0.00	0.00	0.00	5.24
CX1	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX2	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX3	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX4	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX5	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX6	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX7	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX8	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX9	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX10	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX11	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81
CX12	1.808	100.00	100.00	1.81	0.00	0.00	0.00	1.81

Summary of Suspension Capacities and Usages for Load Case "NESC Rule 250D":

Suspension Label	Tension (kips)	Input Tension Capacity (kips)	Factored Tension Capacity (kips)	Tension Usage %	Input Hardware Capacity (kips)	Factored Hardware Capacity (kips)	Hardware Usage %	Max. Usage %
SWLS	3.455	15.00	15.00	23.03	0.00	0.00	0.00	23.03
SWRS	3.455	15.00	15.00	23.03	0.00	0.00	0.00	23.03
C1LS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40
C1RS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40
C2LS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40
C2RS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40
C3LS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40

C3RS	7.321	30.00	30.00	24.40	0.00	0.00	0.00	24.40

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress

Summary of Steel Pole Usages:

Steel Pole Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
P	88.39	NESC Rule 250C	54.0	20	25147.6

Base Plate Results by Bend Line:

Pole Label	Load Case	Bend Line #	Start X (ft)	Start Y (ft)	End X (ft)	End Y (ft)	Length (in)	Bending Stress (ksi)	Bolt Mom. Sum (ft-k)	# Bolts Acting	Bolt Max Load (kips)	Min Plate Thickness (in)	Actual Thickness (in)	Usage %	
P	NESC Rule 250B	1	-0.628	2.344	-1.716	1.716	15.072	32.957	84.513	-3	107.548	2.842	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	2	-1.716	1.716	-2.344	0.628	15.072	19.180	49.184	-3	74.064	2.168	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	3	-2.344	-0.628	-1.716	-1.716	15.072	15.456	39.635	-3	-63.021	1.946	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	4	-1.716	-1.716	-0.628	-2.344	15.072	29.321	75.190	-3	-96.821	2.680	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	5	0.628	-2.344	1.716	-1.716	15.072	29.432	75.473	-3	-97.033	2.685	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	6	1.716	-1.716	2.344	-0.628	15.072	15.655	40.144	-3	-63.550	1.958	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	7	2.344	0.628	1.716	1.716	15.072	18.981	48.674	-3	73.536	2.156	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250B	8	1.716	1.716	0.628	2.344	15.072	32.846	84.229	-3	107.336	2.837	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250C	1	-0.628	2.344	-1.716	1.716	15.072	53.724	137.767	3	176.003	3.628	3.500	0.00	
P	NESC Rule 250C	2	-1.716	1.716	-2.344	0.628	15.072	30.307	77.718	3	119.016	2.725	3.500	0.00	
P	NESC Rule 250C	3	-2.344	-0.628	-1.716	-1.716	15.072	28.400	72.828	3	-113.342	2.638	3.500	0.00	
P	NESC Rule 250C	4	-1.716	-1.716	-0.628	-2.344	15.072	51.837	132.927	3	-170.400	3.564	3.500	0.00	
P	NESC Rule 250C	5	0.628	-2.344	1.716	-1.716	15.072	51.861	132.990	3	-170.446	3.565	3.500	0.00	
P	NESC Rule 250C	6	1.716	-1.716	2.344	-0.628	15.072	28.444	72.941	3	-113.459	2.640	3.500	0.00	
P	NESC Rule 250C	7	2.344	0.628	1.716	1.716	15.072	30.263	77.606	3	118.899	2.723	3.500	0.00	
P	NESC Rule 250C	8	1.716	1.716	0.628	2.344	15.072	53.700	137.704	3	175.956	3.627	3.500	0.00	
P	NESC Rule 250D	1	-0.628	2.344	-1.716	1.716	15.072	32.731	83.933	-3	106.897	2.832	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	2	-1.716	1.716	-2.344	0.628	15.072	18.936	48.559	-3	73.350	2.154	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	3	-2.344	-0.628	-1.716	-1.716	15.072	15.700	40.260	-3	-63.736	1.961	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	4	-1.716	-1.716	-0.628	-2.344	15.072	29.547	75.770	-3	-97.472	2.691	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	5	0.628	-2.344	1.716	-1.716	15.072	29.613	75.939	-3	-97.598	2.694	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	6	1.716	-1.716	2.344	-0.628	15.072	15.818	40.564	-3	-64.051	1.969	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	7	2.344	0.628	1.716	1.716	15.072	18.818	48.255	-3	73.035	2.147	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2
P	NESC Rule 250D	8	1.716	1.716	0.628	2.344	15.072	32.665	83.764	-3	106.771	2.829	3.500	0.00	Note: actual load overridden by one half of pole moment capacity at the base as per ASCE/SEI 48-19 6.4.2

Summary of Tubular Davit Usages:

Tubular Davit Label	Maximum Usage %	Load Case	Height AGL (ft)	Segment Number	Weight (lbs)
SWL	21.55	NESC Rule 250D	98.7	1	74.1
SWR	23.92	NESC Rule 250D	98.7	1	74.1
C1L	24.12	NESC Rule 250D	92.3	2	326.1
C1R	24.93	NESC Rule 250B	92.1	1	326.1
C2L	24.14	NESC Rule 250D	80.3	2	326.1
C2R	24.96	NESC Rule 250B	80.1	1	326.1
C3L	24.18	NESC Rule 250D	68.3	2	326.1
C3R	25.00	NESC Rule 250B	68.1	1	326.1

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
NESC Rule 250B	47.48	P	Steel Pole
NESC Rule 250C	88.39	P	Steel Pole
NESC Rule 250D	33.36	P	Steel Pole

Summary of Steel Pole Usages by Load Case:

Load Case	Maximum Usage %	Steel Pole Label	Height AGL (ft)	Segment Number
NESC Rule 250B	47.48	P	54.0	20
NESC Rule 250C	88.39	P	54.0	20
NESC Rule 250D	33.36	P	54.0	20

Summary of Base Plate Usages by Load Case:

Load Case	Pole Label	Bend Line #	Length (in)	Vertical Load (kips)	X Moment (ft-k)	Y Moment (ft-k)	Bending Stress (ksi)	Bolt Moment Sum (ft-k)	# Bolts Acting On Bend Line	Max Bolt Load For Bend Line (kips)	Minimum Plate Thickness (in)	Usage %
NESC Rule 250B	P	1	15.072	126.177	3433.684	-10.954	32.957	84.513	-3	107.548	2.842	0.00
NESC Rule 250C	P	1	15.072	66.683	5820.069	-2.420	53.724	137.767	3	176.003	3.628	0.00
NESC Rule 250D	P	1	15.072	111.588	3433.696	-6.532	32.731	83.933	-3	106.897	2.832	0.00

Summary of Tubular Davit Usages by Load Case:

Load Case	Maximum Usage %	Tubular Davit Label	Height AGL (ft)	Segment Number
NESC Rule 250B	25.00	C3R	68.1	1
NESC Rule 250C	14.86	C3R	68.1	1
NESC Rule 250D	24.80	C3R	68.1	1

Summary of Insulator Usages:

Insulator Label	Insulator Type	Maximum Usage %	Load Case	Weight (lbs)
AN1	Clamp	10.23	NESC Rule 250B	0.0
AN2&CX2	Clamp	6.83	NESC Rule 250B	0.0
CX1	Clamp	1.96	NESC Rule 250B	0.0
CX2	Clamp	1.96	NESC Rule 250B	0.0
CX3	Clamp	1.96	NESC Rule 250B	0.0
CX4	Clamp	1.96	NESC Rule 250B	0.0
CX5	Clamp	1.96	NESC Rule 250B	0.0
CX6	Clamp	1.96	NESC Rule 250B	0.0
CX7	Clamp	1.96	NESC Rule 250B	0.0
CX8	Clamp	1.96	NESC Rule 250B	0.0
CX9	Clamp	1.96	NESC Rule 250B	0.0
CX10	Clamp	1.96	NESC Rule 250B	0.0
CX11	Clamp	1.96	NESC Rule 250B	0.0
CX12	Clamp	1.96	NESC Rule 250B	0.0
SWLS	Suspension	23.03	NESC Rule 250D	50.0
SWRS	Suspension	23.03	NESC Rule 250D	50.0
C1LS	Suspension	25.75	NESC Rule 250B	300.0
C1RS	Suspension	25.75	NESC Rule 250B	300.0
C2LS	Suspension	25.75	NESC Rule 250B	300.0
C2RS	Suspension	25.75	NESC Rule 250B	300.0
C3LS	Suspension	25.75	NESC Rule 250B	300.0
C3RS	Suspension	25.75	NESC Rule 250B	300.0

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 Rule 250B	AN1	Clamp	P:AN1	0.000	2.238	9.978	10.226
NESC Rule 250B	AN2&CX2	Clamp	P:AN2	0.000	1.586	6.642	6.829
NESC Rule 250B	CX1	Clamp	P:CX1	0.000	0.119	1.955	1.959
NESC Rule 250B	CX2	Clamp	P:CX2	0.000	0.119	1.955	1.959
NESC Rule 250B	CX3	Clamp	P:CX3	0.000	0.119	1.955	1.959
NESC Rule 250B	CX4	Clamp	P:CX4	0.000	0.119	1.955	1.959
NESC Rule 250B	CX5	Clamp	P:CX5	0.000	0.119	1.955	1.959
NESC Rule 250B	CX6	Clamp	P:CX6	0.000	0.119	1.955	1.959
NESC Rule 250B	CX7	Clamp	P:CX7	0.000	0.119	1.955	1.959
NESC Rule 250B	CX8	Clamp	P:CX8	0.000	0.119	1.955	1.959
NESC Rule 250B	CX9	Clamp	P:CX9	0.000	0.119	1.955	1.959
NESC Rule 250B	CX10	Clamp	P:CX10	0.000	0.119	1.955	1.959
NESC Rule 250B	CX11	Clamp	P:CX11	0.000	0.119	1.955	1.959
NESC Rule 250B	CX12	Clamp	P:CX12	0.000	0.119	1.955	1.959
NESC Rule 250B	SWLS	Suspension	SWLV	0.000	2.030	2.275	3.049
NESC Rule 250B	SWRS	Suspension	SWRV	0.000	2.030	2.275	3.049
NESC Rule 250B	C1LS	Suspension	C1LV	0.000	3.370	6.950	7.724
NESC Rule 250B	C1RS	Suspension	C1RV	0.000	3.370	6.950	7.724
NESC Rule 250B	C2LS	Suspension	C2LV	0.000	3.370	6.950	7.724
NESC Rule 250B	C2RS	Suspension	C2RV	0.000	3.370	6.950	7.724
NESC Rule 250B	C3LS	Suspension	C3LV	0.000	3.370	6.950	7.724
NESC Rule 250B	C3RS	Suspension	C3RV	0.000	3.370	6.950	7.724
NESC Rule 250C	AN1	Clamp	P:AN1	0.000	8.538	4.852	9.820
NESC Rule 250C	AN2&CX2	Clamp	P:AN2	0.000	6.041	3.021	6.754
NESC Rule 250C	CX1	Clamp	P:CX1	0.000	0.335	0.530	0.627

NESC	Rule	250C	CX2	Clamp	P:CX2	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX3	Clamp	P:CX3	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX4	Clamp	P:CX4	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX5	Clamp	P:CX5	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX6	Clamp	P:CX6	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX7	Clamp	P:CX7	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX8	Clamp	P:CX8	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX9	Clamp	P:CX9	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX10	Clamp	P:CX10	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX11	Clamp	P:CX11	0.000	0.335	0.530	0.627
NESC	Rule	250C	CX12	Clamp	P:CX12	0.000	0.335	0.530	0.627
NESC	Rule	250C	SWLS	Suspension	SWLV	0.000	2.195	1.450	2.631
NESC	Rule	250C	SWRS	Suspension	SWRV	0.000	2.195	1.450	2.631
NESC	Rule	250C	C1LS	Suspension	C1LV	0.000	5.322	4.100	6.718
NESC	Rule	250C	C1RS	Suspension	C1RV	0.000	5.322	4.100	6.718
NESC	Rule	250C	C2LS	Suspension	C2LV	0.000	5.322	4.100	6.718
NESC	Rule	250C	C2RS	Suspension	C2RV	0.000	5.322	4.100	6.718
NESC	Rule	250C	C3LS	Suspension	C3LV	0.000	5.322	4.100	6.718
NESC	Rule	250C	C3RS	Suspension	C3RV	0.000	5.322	4.100	6.718
NESC	Rule	250D	AN1	Clamp	P:AN1	0.000	1.896	7.459	7.696
NESC	Rule	250D	AN2&CX2	Clamp	P:AN2	0.000	1.343	5.061	5.236
NESC	Rule	250D	CX1	Clamp	P:CX1	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX2	Clamp	P:CX2	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX3	Clamp	P:CX3	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX4	Clamp	P:CX4	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX5	Clamp	P:CX5	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX6	Clamp	P:CX6	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX7	Clamp	P:CX7	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX8	Clamp	P:CX8	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX9	Clamp	P:CX9	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX10	Clamp	P:CX10	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX11	Clamp	P:CX11	0.000	0.080	1.806	1.808
NESC	Rule	250D	CX12	Clamp	P:CX12	0.000	0.080	1.806	1.808
NESC	Rule	250D	SWLS	Suspension	SWLV	0.000	1.419	3.150	3.455
NESC	Rule	250D	SWRS	Suspension	SWRV	0.000	1.419	3.150	3.455
NESC	Rule	250D	C1LS	Suspension	C1LV	0.000	2.145	7.000	7.321
NESC	Rule	250D	C1RS	Suspension	C1RV	0.000	2.145	7.000	7.321
NESC	Rule	250D	C2LS	Suspension	C2LV	0.000	2.145	7.000	7.321
NESC	Rule	250D	C2RS	Suspension	C2RV	0.000	2.145	7.000	7.321
NESC	Rule	250D	C3LS	Suspension	C3LV	0.000	2.145	7.000	7.321
NESC	Rule	250D	C3RS	Suspension	C3RV	0.000	2.145	7.000	7.321

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	Rule	250B	29.532	0.000	86.330	2568.380	0.000	0.000
NESC	Rule	250C	54.920	0.000	41.733	4970.671	0.000	0.000
NESC	Rule	250D	19.906	0.000	82.492	1758.128	0.000	0.000

*** Weight of structure (lbs):
    Weight of Tubular Davit Arms: 2104.7
    Weight of Steel Poles: 25147.6
    Weight of Suspensions: 1900.0

Total:	29152.3

*** End of Report

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Subject: Anchor Bolt Analysis Pole #19520

Location: Stratford, CT

Rev. 0: 8/29/23

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 23016.03

Anchor Bolt Analysis:

Input Data:

Bolt Force:

Maximum Tensile Force = $T_{Max} := 176 \cdot kips$ (User Input from PLS-Pole)

Maximum Shear Force at Base = $V_{base} := 68 \cdot kips$ (User Input from PLS-Pole)

Anchor Bolt Data:

Use AST MA615 Grade 75

Number of Anchor Bolts = $N := 24$ (User Input)

Bolt "Column" Distance = $l := 3.0 \cdot in$ (User Input)

Bolt Ultimate Strength = $F_u := 100 \cdot ksi$ (User Input)

Bolt Yeild Strength= $F_y := 75 \cdot ksi$ (User Input)

Bolt Modulus = $E := 29000 \cdot ksi$ (User Input)

Diameter of Anchor Bolts = $D := 2.25 \cdot in$ (User Input)

Threads per Inch = $n := 4.5$ (User Input)

Anchor Bolt Analysis:

Stress Area of Bolt = $A_s := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 3.248 \cdot in^2$

Maximum Shear Force per Bolt = $V_{Max} := \frac{V_{base}}{N} = 2.8 \times 10^3 \, lbf$

Shear Stress per Bolt = $f_v := \frac{V_{Max}}{A_s} = 872.4 \, psi$

Tensile Stress Permitted = $F_t := 0.75 \cdot F_u = 75 \cdot ksi$

Shear Stress Permitted = $F_v := 0.35 F_u = 35 \cdot ksi$

Permitted Axial Tensile Stress in Conjuction with Shear = $F_{tv} := F_t \cdot \sqrt{1 - \left(\frac{f_v}{F_v}\right)^2} = 74.98 \cdot ksi$

Bolt Tension % of Capacity = $\frac{T_{Max}}{F_{tv} \cdot A_s} = 72.28 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{F_{tv} \cdot A_s} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

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Subject:	Flange Bolts and Flangeplate Analysis
Location:	Structure 19520 Stratford, CT
Rev. 0: 8/29/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 23016.03

Flange Bolt and Flange Plate Analysis:

Input Data:

Flange @ 110-ft

Tower Reactions:

Overturning Moment =	OM := 134·ft·kips	(User Input)
Shear Force =	Shear := 17·kips	(User Input)
Axial Force =	Axial := 8·kips	(User Input)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 12	(User Input)
Diameter of Bolt Circle =	D_{bc} := 29·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 MA871 Grade 65

Plate Yield Strength =	Fy_{bp} := 65·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1·in	(User Input)
Flange Plate Diameter =	D_{bp} := 31.75·in	(User Input)
Outer Pole Diameter =	D_{pole} := 25.17·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 14.5 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 7.25 \cdot in$ $d_7 = -7.25 \cdot in$

$d_2 = 12.56 \cdot in$ $d_8 = -12.56 \cdot in$

$d_3 = 14.50 \cdot in$ $d_9 = -14.50 \cdot in$

$d_4 = 12.56 \cdot in$ $d_{10} = -12.56 \cdot in$

$d_5 = 7.25 \cdot in$ $d_{11} = -7.25 \cdot in$

$d_6 = 0.00 \cdot in$ $d_{12} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 12.585 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.00 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 1.91 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.00 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 15.5 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 1.261 \times 10^3 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Check Flange Bolts:

Maximum Shear Stress = $V_{Max} := \frac{Shear}{N \cdot A_g} = 1.8 \cdot ksi$

Permitted Shear Stress = $F_v := \left(0.35 \cdot F_{ub}\right) = 42 \cdot ksi$

Condition1 = $Condition1 := if\left(V_{Max} \le F_v, "OK", "Overstressed"\right)$ $\frac{V_{Max}}{F_v} = 4.29 \cdot \%$

Condition1 = "OK"

Maximum Tensile Stress = $T_{Max} := \frac{\left(OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N}\right)}{A_n} = 29.4 \cdot ksi$

Permitted Tensile Stress = $F_t := \left(0.75 \cdot F_{ub}\right) = 90 \cdot ksi$

Condition2 = $Condition2 := if\left(\frac{T_{Max}}{F_t} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_t} = 32.68 \cdot \%$

Condition2 = "OK"

Permitted Tensile Stress with Shear = $F_{t.v} := F_t \cdot \sqrt{1 - \left(\frac{V_{Max}}{F_v}\right)^2} = 89.9 \cdot ksi$

Condition3 = $Condition3 := if\left(\frac{T_{Max}}{F_{t.v}} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_{t.v}} = 32.71 \cdot \%$

Condition3 = "OK"

Flange Plate Analysis:

Force from Bolts =

$$C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$$

$C_1 = 9.9 \cdot kips$

$C_2 = 16.7 \cdot kips$

$C_3 = 19.1 \cdot kips$

$C_4 = 16.7 \cdot kips$

$C_5 = 9.9 \cdot kips$

$C_6 = 0.7 \cdot kips$

$C_7 = -8.6 \cdot kips$

$C_8 = -15.3 \cdot kips$

$C_9 = -17.8 \cdot kips$

$C_{10} = -15.3 \cdot kips$

$C_{11} = -8.6 \cdot kips$

$C_{12} = 0.7 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \, t_{bp}^{\,2}\right)} = 14.2 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 0.9 \cdot Fy_{bp} = 58.5 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 24.3 \cdot \%$$

Condition1 =

$$Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$$

Condition1 = "Ok"

Flange Bolt and Flange Plate Analysis:

Input Data:

Flange @ 100-ft

Tower Reactions:

Overturning Moment =	OM := 306·ft·kips	(User Input)
Shear Force =	Shear := 18.0·kips	(User Input)
Axial Force =	Axial := 9.5·kips	(User Input)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 12	(User Input)
Diameter of Bolt Circle =	D_{bc} := 32.5·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 MA871 Grade 65

Plate Yield Strength =	Fy_{bp} := 65·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1.25·in	(User Input)
Flange Plate Diameter =	D_{bp} := 35.25·in	(User Input)
Outer Pole Diameter =	D_{pole} := 27.95·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 16.25 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left\| \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \right.$
$\left. d \leftarrow R_{bc} \cdot \sin(\theta) \right.$

$d_1 = 8.13 \cdot in$ $d_7 = -8.13 \cdot in$

$d_2 = 14.07 \cdot in$ $d_8 = -14.07 \cdot in$

$d_3 = 16.25 \cdot in$ $d_9 = -16.25 \cdot in$

$d_4 = 14.07 \cdot in$ $d_{10} = -14.07 \cdot in$

$d_5 = 8.13 \cdot in$ $d_{11} = -8.13 \cdot in$

$d_6 = 0.00 \cdot in$ $d_{12} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 13.975 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.10 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 2.28 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.10 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 17.2 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 1.584 \times 10^3 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Check Flange Bolts:

Maximum Shear Stress = $V_{Max} := \frac{Shear}{N \cdot A_g} = 1.9 \cdot ksi$

Permitted Shear Stress = $F_v := \left(0.35 \cdot F_{ub}\right) = 42 \cdot ksi$

Condition1 = $Condition1 := if\left(V_{Max} \le F_v, "OK", "Overstressed"\right)$ $\frac{V_{Max}}{F_v} = 4.55 \cdot \%$

Condition1 = "OK"

Maximum Tensile Stress = $T_{Max} := \frac{\left(OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N}\right)}{A_n} = 60.9 \cdot ksi$

Permitted Tensile Stress = $F_t := \left(0.75 \cdot F_{ub}\right) = 90 \cdot ksi$

Condition2 = $Condition2 := if\left(\frac{T_{Max}}{F_t} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_t} = 67.63 \cdot \%$

Condition2 = "OK"

Permitted Tensile Stress with Shear = $F_{t.v} := F_t \cdot \sqrt{1 - \left(\frac{V_{Max}}{F_v}\right)^2} = 89.9 \cdot ksi$

Condition3 = $Condition3 := if\left(\frac{T_{Max}}{F_{t.v}} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_{t.v}} = 67.70 \cdot \%$

Condition3 = "OK"

Flange Plate Analysis:

Force from Bolts =

$$C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$$

$C_1 = 19.6 \cdot kips$ $C_7 = -18.0 \cdot kips$

$C_2 = 33.4 \cdot kips$ $C_8 = -31.8 \cdot kips$

$C_3 = 38.5 \cdot kips$ $C_9 = -36.9 \cdot kips$

$C_4 = 33.4 \cdot kips$ $C_{10} = -31.8 \cdot kips$

$C_5 = 19.6 \cdot kips$ $C_{11} = -18.0 \cdot kips$

$C_6 = 0.8 \cdot kips$ $C_{12} = 0.8 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^{\,2}\right)} = 21 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 0.9 \cdot Fy_{bp} = 58.5 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 35.9 \cdot \%$$

Condition1 =

$$Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$$

Condition1 = "Ok"

Flange Bolt and Flange Plate Analysis:

Input Data: Flange @ 53-ft

Tower Reactions:

Overturning Moment =	OM := 2408·ft·kips	(User Input)
Shear Force =	Shear := 61.5·kips	(User Input)
Axial Force =	Axial := 48·kips	(User Input)

Flange Bolt Data:

Use AST MA325

Number of Flange Bolts =	N := 52	(User Input)
Diameter of Bolt Circle =	D_{bc} := 46.5·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·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

Use AST MA588 Grade 50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 2.25·in	(User Input)
Flange Plate Diameter =	D_{bp} := 49.25·in	(User Input)
Outer Pole Diameter =	D_{pole} := 41.27·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 23.25 \cdot in$

Distance to Bolts = $i := 1 .. N$

$d_i := \left| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N} \right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$

$d_1 = 2.80 \cdot in$ $d_2 = 5.56 \cdot in$ $d_3 = 8.24 \cdot in$ $d_4 = 10.80 \cdot in$ $d_5 = 13.21 \cdot in$ $d_6 = 15.42 \cdot in$ $d_7 = 17.40 \cdot in$ $d_8 = 19.13 \cdot in$ $d_9 = 20.59 \cdot in$ $d_{10} = 21.74 \cdot in$ $d_{11} = 22.57 \cdot in$ $d_{12} = 23.08 \cdot in$ $d_{13} = 23.25 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 20.635 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_2 = 0.00 \cdot in$ $MA_3 = 0.00 \cdot in$ $MA_4 = 0.00 \cdot in$ $MA_5 = 0.00 \cdot in$ $MA_6 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$ $MA_8 = 0.00 \cdot in$ $MA_9 = 0.00 \cdot in$ $MA_{10} = 1.10 \cdot in$ $MA_{11} = 1.94 \cdot in$ $MA_{12} = 2.45 \cdot in$ $MA_{13} = 2.61 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 21.5 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 1.405 \times 10^4 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Check Flange Bolts:

Maximum Shear Stress = $V_{Max} := \frac{Shear}{N \cdot A_g} = 1.5 \cdot ksi$

Permitted Shear Stress = $F_v := \left(0.35 \cdot F_{ub}\right) = 42 \cdot ksi$

Condition1 = $Condition1 := if\left(V_{Max} \le F_v, "OK", "Overstressed"\right)$ $\frac{V_{Max}}{F_v} = 3.59 \cdot \%$

Condition1 = "OK"

Maximum Tensile Stress = $T_{Max} := \frac{\left(OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N}\right)}{A_n} = 77.4 \cdot ksi$

Permitted Tensile Stress = $F_t := \left(0.75 \cdot F_{ub}\right) = 90 \cdot ksi$

Condition2 = $Condition2 := if\left(\frac{T_{Max}}{F_t} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_t} = 85.99 \cdot \%$

Condition2 = "OK"

Permitted Tensile Stress with Shear = $F_{t.v} := F_t \cdot \sqrt{1 - \left(\frac{V_{Max}}{F_v}\right)^2} = 89.9 \cdot ksi$

Condition3 = $Condition3 := if\left(\frac{T_{Max}}{F_{t.v}} \le 1.00, "OK", "Overstressed"\right)$ $\frac{T_{Max}}{F_{t.v}} = 86.04 \cdot \%$

Condition3 = "OK"

Flange Plate Analysis:

Force from Bolts =

$$C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$$

$C_1 = 6.7 \cdot kips$ $C_7 = 36.7 \cdot kips$ $C_{13} = 48.7 \cdot kips$

$C_2 = 12.4 \cdot kips$ $C_8 = 40.3 \cdot kips$

$C_3 = 17.9 \cdot kips$ $C_9 = 43.2 \cdot kips$

$C_4 = 23.1 \cdot kips$ $C_{10} = 45.6 \cdot kips$

$C_5 = 28.1 \cdot kips$ $C_{11} = 47.3 \cdot kips$

$C_6 = 32.6 \cdot kips$ $C_{12} = 48.4 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \, t_{bp}^{\,2}\right)} = 35.7 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 0.9 \cdot Fy_{bp} = 45 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 79.4 \cdot \%$$

Condition1 =

$$Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"}\right)$$

Condition1 = "Ok"

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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	Baseplate Analysis
Location:	Stratford, CT
Rev. 0: 8/29/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 23016.03

Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 5820·ft·kips	(Input From tnxTower)
Shear Force =	Shear := 68·kips	(Input From tnxTower)
Axial Force =	Axial := 70·kips	(Input From tnxTower)

Anchor Bolt Data:

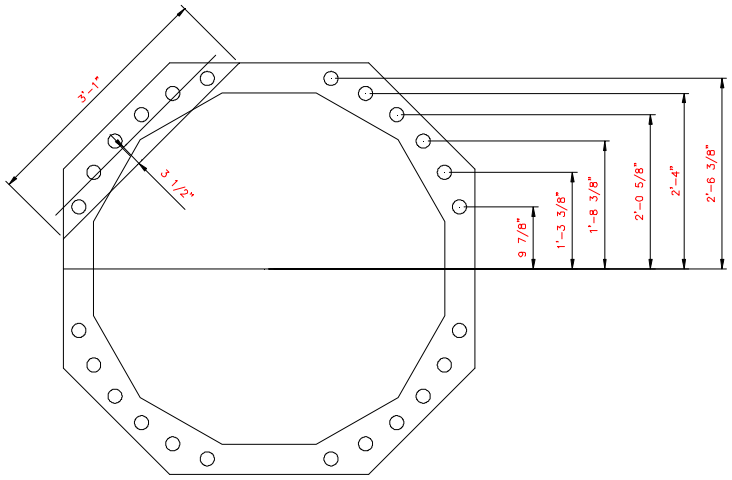
ASTMA615 Grade 75

Number of Anchor Bolts =	N := 24	(User Input)
Bolt Ultimate Strength =	F_u := 100·ksi	(User Input)
Bolt Yield Strength =	F_y := 75·ksi	(User Input)
Diameter of Anchor Bolts =	D := 2.25·in	(User Input)

Base Plate Data:

Use AST MA588 Grade 50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Base Plate Thickness =	t_{bp} := 3.5·in	(User Input)
Base Plate Diameter =	D_{bp} := 65.875·in	(User Input)
Outer Pole Diameter =	D_{pole} := 56.25·in	(User Input)



Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

$d_1 := 30.375in$ $d_2 := 28in$ $d_3 := 24.625in$ $d_4 := 20.375in$ $d_5 := 15.375in$ $d_6 := 9.875in$ (User Input)

Critical Distances For Bending in Plate: (User Input)

$ma_1 := 3.5in$

Effective Width of Baseplate for Bending = $B_{eff} := 37in$ (User Input)

Polar Moment of Inertia = $I_p := \left[(d_1)^2 \cdot 4 + (d_2)^2 \cdot 4 + (d_3)^2 \cdot 4 + (d_4)^2 \cdot 4 + (d_5)^2 \cdot 4 + (d_6)^2 \cdot 4\right] = 12248.3 \cdot in^2$

Base Plate Analysis:

Force from Bolts =

$$C_1 := \frac{OM \cdot d_1}{I_p} + \frac{Axial}{N} = 176.115 \cdot kips$$

$$C_2 := \frac{OM \cdot d_2}{I_p} + \frac{Axial}{N} = 162.573 \cdot kips$$

$$C_3 := \frac{OM \cdot d_3}{I_p} + \frac{Axial}{N} = 143.329 \cdot kips$$

$$C_4 := \frac{OM \cdot d_4}{I_p} + \frac{Axial}{N} = 119.095 \cdot kips$$

$$C_5 := \frac{OM \cdot d_5}{I_p} + \frac{Axial}{N} = 90.585 \cdot kips$$

$$C_6 := \frac{OM \cdot d_6}{I_p} + \frac{Axial}{N} = 59.224 \cdot kips$$

Applied Bending Stress in Plate =

$$f_{bp} := \frac{6 \cdot \left(C_1 \cdot ma_1 + C_2 \cdot ma_1 + C_3 \cdot ma_1 + C_4 \cdot ma_1 + C_5 \cdot ma_1 + C_6 \cdot ma_1\right)}{B_{eff} \, t_{bp}^2} = 34.79 \cdot ksi$$

Allowable Bending Stress in Plate = $F_{bp} := Fy_{bp} = 50 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 69.6 \cdot \%$

Condition2= = $Condition1 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Condition1 = "Ok"

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTL02043	DATE:	3/15/2023	RF DESIGN ENG:	Mateen Mohammed	RF PERF BKUP:		RFDS PROGRAM TYPE:	2023 LTE Next Carrier
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	5107767382	RF PERF PHONE:		RFDS TECHNOLOGY:	5G NR 1DR-1
REVISION:	Preliminary	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	mm093q@att.com	RF PERF EMAIL:		STATE/STATUS:	Preliminary/Approved
						ADDITIONAL WORKFLOW NOTIFICATIONS:		RFDS ID:	5651822
						RFDS VERSION	1.00	Created By:	mm093q
						UMTS FREQUENCY:		Created:	3/15/2023
						LTE FREQUENCY:	700,1900,AWS,WCS	Estimated SQIN:	13,464
						5G FREQUENCY:	850,1900,AWS,CBAND,DoD	RER Initiative:	
INITIATIVE PROJECT	Revised RFDS as per email to Combine all the jobs in New RFDS. LTE 3C AWS J LTE 4C 850 B(U) 5G NR 1SR CBand - C-Band BBU reconfiguration with new IDs - 1900 A3 5G NR 1SR CBand - 3.45 GHz DoD LTE 5C - 700 UPPER D 5G NR Activation - 1900 A3-A4 5G NR Activation - 850 B(U)					IPLAN JOB # 1:	ER_-RCTB-21-06940	PRD || SUB GRP #1	5G NR Software Radio || 5G NR Activation
						IPLAN JOB # 2:	ER_-RCTB-21-06939	PRD || SUB GRP #2	5G NR Software Radio || 5G NR Activation
						IPLAN JOB # 3:	ER_-RCTB-21-01914	PRD || SUB GRP #3	5G NR Radio || 5G NR 1SR CBand
						IPLAN JOB # 4:	ER_-RCTB-21-01377	PRD || SUB GRP #4	Cell Site RF Modifications || BBU reconfiguration with new IDs
						IPLAN JOB # 5:	ER_-RCTB-21-00869	PRD || SUB GRP #5	5G NR Radio || 5G NR 1SR CBand
						IPLAN JOB # 6:	ER_-RCTB-21-00452	PRD || SUB GRP #6	LTE Next Carrier || LTE 5C
						IPLAN JOB # 7:	NER-RCTB-18-07129	PRD || SUB GRP #7	LTE Next Carrier || LTE 3C
						IPLAN JOB # 8:	NER-RCTB-18-07198	PRD || SUB GRP #8	LTE Next Carrier || LTE 4C
						IPLAN JOB # 9:		PRD || SUB GRP #9	
						IPLAN JOB #10:		PRD || SUB GRP #10	
						IPLAN JOB # 11:		PRD || SUB GRP #11	
						IPLAN JOB # 12:		PRD || SUB GRP #12	
						IPLAN JOB # 13:		PRD || SUB GRP #13	
						IPLAN JOB # 14:		PRD || SUB GRP #14	
						IPLAN JOB # 15:		PRD || SUB GRP #15	
						IPLAN JOB # 16:		PRD || SUB GRP #16	

Section 2 - LOCATION INFORMATION

USID:	60376	FA LOCATION CODE:	10035240	LOCATION NAME:	STRATFORD NU	ORACLE PRJT # 1:		PACE JOB #1:	MRCTB057995
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:		PACE JOB #2:	MRCTB057785
ADDRESS:	670 CHAPEL STREET	CITY:	STRATFORD	STATE:	CT	ORACLE PRJT # 3:	2051A102BP	PACE JOB #3:	MRCTB052198
ZIP CODE:	06614	COUNTY:	FAIRFIELD	LONG (DEC. DEG.):	-73.1223881	ORACLE PRJT # 4:	2051A0Z7C0	PACE JOB #4:	MRCTB051456
LATITUDE (D-M-S):	41d 14m 16.77084s	LONGITUDE (D-M-S):	-73d -7m -20.59716s	LAT (DEC. DEG.):	41.2379919	ORACLE PRJT # 5:	2051A0Z7FQ	PACE JOB #5:	MRCTB051273
						ORACLE PRJT # 6:	2051A0Z71W	PACE JOB #6:	MRCTB051467
						ORACLE PRJT # 7:	2051A0KPJS	PACE JOB #7:	MRCTB035098
						ORACLE PRJT # 8:	2051A0KPH6	PACE JOB #8:	MRCTB035156
						ORACLE PRJT # 9:		PACE JOB #9:	
						ORACLE PRJT # 10:		PACE JOB #10:	
						ORACLE PRJT # 11:		PACE JOB #11:	
						ORACLE PRJT # 12:		PACE JOB #12:	
						ORACLE PRJT # 13:		PACE JOB #13:	
						ORACLE PRJT # 14:		PACE JOB #14:	
						ORACLE PRJT # 15:		PACE JOB #15:	
						ORACLE PRJT # 16:		PACE JOB #16:	
						BORDER CELL WITH CONTOUR COORD:		SEARCH RING NAME:	
						AM STUDY REQ'D (Y/N):	No	SEARCH RING ID:	
						FREQ COORD:		BTA:	MSA / RSA:
								LAC(UMTS):	
						RF DISTRICT:	TBD		
						RF ZONE:	TBD	RNC(UMTS):	
								MME POOL ID(LTE):	FF01
						PARENT NAME(UMTS):			

DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:

STRATFORD UN 2043
MERRITT PARKWAY NORTH TO EXIT 53 TURN RIGHT ONTO MAIN STREET PUTNEY. GO ABOUT 1/2 MILE AND BEAR LEFT ON CHAPEL STREET, AFTER PASSING THE SCHOOLS (2 OF THEM) AND THE ATHLETIC FIELDS YOU WILL SEE ON YOUR RIGHT A GATE GOING INTO THE POWER LINES SITE IS IN HERE ON THE LEFT POWER TOWER. DEMARC IS IN TELCO BOX IN COMPOUND
FROM SOUTH
TAKE MERRITT PARKWAY GOING NORTH TO EXIT 53 MAKE RIGHT ON 110 AT MAIN STREET PUTNEY MAKE RIGHT GO ABOUT 1/2 MILE AND BEAR LEFT ON CHAPEL STREET , AFTER PASSING THE SCHOOLS (2 OF THEM) AND THE ATHLETIC FIELDS, YOU WILL SEE ON YOUR RIGHT A GATE GOING INTO THE POWER LINES SITE IS IN HERE ON THE LEFT POWER TOWER. DEMARC IS IN TELCO BOX IN COMPOUND
ADDRESS: 670 CHAPEL STREET STRATFORD, CT
ACCESS: 24/7 8899 COMBO ON COMPOUND
CONTACT: UI SITE ON POWER TOWER
SECURITY: NONE
POWER COMPANY: UNITES ILLUMINATING (800) 722-5584
T-1 GSM DHXW 264406 & HCGS//717057
T-1 UMTS HCGS 730368 & HCGS 730369
SNET: (800) 448-1008 AND (203) 420-3131 (24-HR REPAIR)
METER 70 311 273

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:			
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:					

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:	UTILITY	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	0.00	FCC ASR NUMBER:		MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	101.00			MARKET LOCATION 1900 MHz Band:	
LIGHTING TYPE:	NOT REQUIRED					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				INTRADO		0		
SECTOR B					INTRADO		0		
SECTOR C					INTRADO		0		
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				INTRADO		0		
SECTOR B					INTRADO		0		
SECTOR C					INTRADO		0		
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 6/7 - BBU INFORMATION - existing

	BBU 1	BBU 2
BBU ID:	360112	652569
TECHNOLOGY:	LTE	LTE,5G
BBU NAME:	CTL02043	CTL06043R,CTCN002043
BBU USID:	60376	60376
CELL ID / BCF:	CTL02043	CTCN002043
BTA/TID:	321L	321N
4-9 DIGIT SITE ID:	2043	002043
COW OR TOY?:	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	BASE
EQUIPMENT NAME:	STRATFORD NU	STRATFORD NU
DISASTER PRIORITY:	3	3
EQUIPMENT VENDOR:	ERICSSON	ERICSSON
EQUIPMENT TYPE (Model):	BASEBAND 6630	BASEBAND 6630
BASEBAND CONFIGURATION :		xxxxx / 1x6630 / xxxxx + IDLe
MARKET STATE CODE:	CT	CT,CTC
NODE B NUMBER:	2043	6043,2043
SIDEHAUL SWITCH VENDOR:		
SIDEHAUL SWITCH MODEL:		
SIDEHAUL SWITCH NAME:		
SIDEHAUL SWITCH ADDITIONAL CARDS:		
UL-CoMP:		
CSS - CTS COMMON ID:	CTL02043	CTCN002043
CSS - SECONDARY FUNCTION ID:		CTL06043R

Section 6/7 - BBU INFORMATION - final

	BBU 1	BBU 2	BBU 3
BBU ID:	360112	0	652569
TECHNOLOGY:	LTE	5G	LTE,5G
BBU NAME:	CTL02043	CTCN032043	CTL06043R,CTCN002043
BBU USID:	60376	60376	60376
CELL ID / BCF:	CTL02043	CTCN032043	CTCN002043
BTA/TID:	321L		321N
4-9 DIGIT SITE ID:	2043	14032043	002043
COW OR TOY?:	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	OVERLAY	BASE
EQUIPMENT NAME:	STRATFORD NU	CTCN032043	STRATFORD NU
DISASTER PRIORITY:	3	0	3
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE (Model):	BASEBAND 6630	BASEBAND 6648	BASEBAND 6630
BASEBAND CONFIGURATION :	xxxxx / 1x6630 / xxxxx	xxxxx / 1x6648 / xxxxx + IDLe	xxxxx / 1x6630 / xxxxx + IDLe
MARKET STATE CODE:	CT	CTC	CT,CTC
NODE B NUMBER:	2043	32043	6043,2043
SIDEHAUL SWITCH VENDOR:			
SIDEHAUL SWITCH MODEL:			
SIDEHAUL SWITCH NAME:			
SIDEHAUL SWITCH ADDITIONAL CARDS:			
UL-CoMP:			
CSS - CTS COMMON ID:	CTL02043		CTCN002043
CSS - SECONDARY FUNCTION ID:			CTL06043R

Section 7b - Radio INFORMATION - existing

Section 7b - Radio INFORMATION - final

Section 8 - RBS/SECTOR ASSOCIATION - existing

	BBU 1	BBU 2
CTS Common ID	CTL02043	CTL06043R,CTCN002043
Soft Sector IDs	CTL02043_3A_1	CTCN002043_N005A_1
	CTL02043_3B_1	CTCN002043_N005B_1
	CTL02043_3C_1	CTCN002043_N005C_1
	CTL02043_7A_1	CTL06043_2A_2
	CTL02043_7B_1	CTL06043_2B_2
	CTL02043_7C_1	CTL06043_2C_2
	CTL02043_8A_1	CTL06043_9A_1
	CTL02043_8B_1	CTL06043_9A_2
	CTL02043_8C_1	CTL06043_9B_1
	CTL02043_9A_1	CTL06043_9B_2
	CTL02043_9A_2	CTL06043_9C_1
	CTL02043_9B_1	CTL06043_9C_2
	CTL02043_9B_2	
	CTL02043_9C_1	
	CTL02043_9C_2	

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1	BBU 2	BBU 3
CTS Common ID	CTL02043	CTCN032043	CTL06043R,CTCN002043
Soft Sector IDs	CTL02043_7A_1	CTCN032043_N077A_1	CTCN002043_N002A_1
	CTL02043_7A_3_F	CTCN032043_N077A_2	CTCN002043_N002B_1
	CTL02043_7B_1	CTCN032043_N077B_1	CTCN002043_N002C_1
	CTL02043_7B_3_F	CTCN032043_N077B_2	CTCN002043_N005A_1
	CTL02043_7C_1	CTCN032043_N077C_1	CTCN002043_N005B_1
	CTL02043_7C_3_F	CTCN032043_N077C_2	CTCN002043_N005C_1
			CTCN002043_N066A_1
			CTCN002043_N066B_1
			CTCN002043_N066C_1
			CTL06043_2A_2
			CTL06043_2B_2
			CTL06043_2C_2
			CTL06043_9A_1
			CTL06043_9A_2
			CTL06043_9B_1
			CTL06043_9B_2
			CTL06043_9C_1
			CTL06043_9C_2

Section 9 - SOFT SECTOR ID - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)														
SECTOR A SOFT SECTOR ID	CTL02043_7A_1	CTL02043_8A_1	CTL02043_9A_1	CTL06043_2A_2	CTL02043_3A_1	CTL02043_9A_2	CTL06043_9A_1	CTL06043_9A_2		CTCN002043_N005A_1				
SECTOR B	CTL02043_7B_1	CTL02043_8B_1	CTL02043_9B_1	CTL06043_2B_2	CTL02043_3B_1	CTL02043_9B_2	CTL06043_9B_1	CTL06043_9B_2		CTCN002043_N005B_1				
SECTOR C	CTL02043_7C_1	CTL02043_8C_1	CTL02043_9C_1	CTL06043_2C_2	CTL02043_3C_1	CTL02043_9C_2	CTL06043_9C_1	CTL06043_9C_2		CTCN002043_N005C_1				
SECTOR D														
SECTOR E														
SECTOR F														
OMNI														

Section 9 - SOFT SECTOR ID - final

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)														
SECTOR A SOFT SECTOR ID	CTL02043_7A_1			CTL06043_2A_2			CTL06043_9A_1	CTL06043_9A_2	CTL02043_7A_3_F	CTCN002043_N005A	CTCN002043_N002	CTCN002043_N066	CTCN032043_N077	CTCN032043_N077A_2
SECTOR B	CTL02043_7B_1			CTL06043_2B_2			CTL06043_9B_1	CTL06043_9B_2	CTL02043_7B_3_F	CTCN002043_N005B	CTCN002043_N002	CTCN002043_N066	CTCN032043_N077	CTCN032043_N077B_2
SECTOR C	CTL02043_7C_1			CTL06043_2C_2			CTL06043_9C_1	CTL06043_9C_2	CTL02043_7C_3_F	CTCN002043_N005C	CTCN002043_N002	CTCN002043_N066	CTCN032043_N077	CTCN032043_N077C_2
SECTOR D														
SECTOR E														
SECTOR F														
OMNI														

Section 9 - Cell Number - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)														
SECTOR A CELL NUMBER	15	1	8	192	149	178	8	178		25				
SECTOR B	16	2	9	193	150	179	9	179		49				
SECTOR C	17	3	10	194	151	180	10	180		73				
SECTOR D														
SECTOR E														
SECTOR F														
OMNI														

Section 9 - Cell Number - final

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
USEID (excluding Hard Sector)														
SECTOR A CELL NUMBER	15			192			8	178	171	25	26	27	36	37
SECTOR B	16			193			9	179	172	49	50	51	60	61
SECTOR C	17			194			10	180	173	73	74	75	84	85
SECTOR D														
SECTOR E														
SECTOR F														
OMNI														

Section 10 - CID/SAC - existing

	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
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 1ST AWS	LTE 1ST WCS	LTE 2ND 1900	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 700	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND
SECTOR A CID/SAC														
SECTOR B														
SECTOR C														
SECTOR D														
SECTOR E														
SECTOR F														
OMNI														

Section 11 - CURRENT RADIO COUNTS existing

Section 12 - CURRENT T1 COUNTS existing

Section 13 - NEW/PROPOSED RADIO COUNTS

Section 14 - NEW/PROPOSED T1 COUNTS

Section 15A - CURRENT 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	7770		7770				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Powerwave				CCI Antennas							
ANTENNA SIZE (H x W x D)	55X11X5		55X11X5				72X14.8X9							
ANTENNA WEIGHT	35		35				50.7							
AZIMUTH	143		143				30							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	124		124				124							
ANTENNA TIP HEIGHT	126		126				127							
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2		2				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)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020	2	Powerwave 7020				Built-in						
SURGE ARRESTOR (QTY/MODEL)							2	1000860						
DIPLEXER (QTY/MODEL)	2	LGP21901	2	LGP21901			2	DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401	2	LGP21401			2	DTMABP7819VG 12A						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860	2	1000860										
PDU FOR TMAS (QTY/MODEL)	1	LGP12104	1	LGP12104										
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
REPEATER (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11 B12						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-32 B2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
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		60376.A.850.3G.1	CTV20431	CTV20431		UMTS 850	7770.00.850.00	13.5		0	None	RFS 1-1/4	177	NO	0		No		309		1	
	PORT 2		60376.A.850.3G.2	CTV20431	CTV2043A		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4	177	NO	0		No		309		2	
	PORT 3		60376.A.1900.3G.1	CTU20437	CTU20434		UMTS 1900	7770.00.1900.00	15.5		0	None	RFS 1-1/4	177	NO	0		No		615		1	
ANTENNA POSITION 2	PORT 1		60376.A.850.25G.1	321G20431	321G20431		GSM 850	7770.00.850.00	13.5		0	None	RFS 1-1/4	177	NO			No	12.58	147.57		3	
ANTENNA POSITION 4	PORT 1		60376.A.700.4G.1	CTL02043_7A_1	CTL02043_7A_1		LTE 700	H6_719MHz_05DT	14.11		5	BOTTOM	1 5/8" - CommScope	177	NO	0				827.9421		7	
	PORT 3		60376.A.1900.4G.111	CTL02043_9A_1	CTL02043_9A_1		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		7	
	PORT 4			CTL02043_9A_2	CTL02043_9A_2		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		7	

Section 15B - CURRENT 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	7770		7770				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Powerwave				CCI Antennas							
ANTENNA SIZE (H x W x D)	55X11X5		55X11X5				72X14.8X9							
ANTENNA WEIGHT	35		35				50.7							
AZIMUTH	263		263				150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	124		124				124							
ANTENNA TIP HEIGHT	126		126				127							
MECHANICAL DOWNTILT	0		0				2							
FEEDER AMOUNT	2		2				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)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020	2	Powerwave 7020				Built-in						
SURGE ARRESTOR (QTY/MODEL)							4	1000860						
DIPLEXER (QTY/MODEL)	2	LGP21901	2	LGP21901			2	DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401	2	LGP21401			2	DTMABP7819VG 12A						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860	2	1000860										
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	RRUS-11 B12						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-32 B2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
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		60376.B.850.3G.1	CTV20432	CTV20432		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4	177	NO	0		No		309		9	
	PORT 2		60376.B.850.3G.2	CTV20432	CTV2043B		UMTS 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4	177	NO	0		No		309		10	
	PORT 3		60376.B.1900.3G.1	CTU20438	CTU20435		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4	177	NO	0		No		615		9	
ANTENNA POSITION 2	PORT 1		60376.B.850.25G.1	321G20432	321G20432		GSM 850	7770.00.850.06	13.5		6	BOTTOM	RFS 1-1/4	177	NO			No	12.58	147.57		11	
ANTENNA POSITION 4	PORT 1		60376.B.700.4G.1	CTL02043_7B_1	CTL02043_7B_1		LTE 700	H6_719MHz_02DT	14.28		2	BOTTOM	1 5/8" - CommScope	177	NO	0				827.9421		15	
	PORT 3		60376.B.1900.4G.111	CTL02043_9B_1	CTL02043_9B_1		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		15	
	PORT 4			CTL02043_9B_2	CTL02043_9B_2		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		15	

Section 15C - CURRENT 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	7770		7770				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Powerwave				CCI Antennas							
ANTENNA SIZE (H x W x D)	55X11X5		55X11X5				72X14.8X9							
ANTENNA WEIGHT	35		35				50.7							
AZIMUTH	23		23				270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	124		124				124							
ANTENNA TIP HEIGHT	126		126				127							
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2		2				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)														
Antenna RET Motor (QTY/MODEL)	2	Powerwave 7020	2	Powerwave 7020				Built-in						
SURGE ARRESTOR (QTY/MODEL)							4	1000860						
DIPLEXER (QTY/MODEL)	2	LGP21901	2	LGP21901			2	DBC2055F1V1-2						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								RRH CONTROLLED						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	LGP21401	2	LGP21401			2	DTMABP7819VG 12A						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	1000860	2	1000860										
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	RRUS-11 B12						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-32 B2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
RRH_7B_1 (QTY/MODEL)														
RRH_7B_2 (QTY/MODEL)														
RRH_7B_3 (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
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		60376.C.850.3G.1	CTV20433	CTV20433		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4	177	NO	0		No		309		17	
	PORT 2		60376.C.850.3G.2	CTV20433	CTV2043C		UMTS 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4	177	NO	0		No		309		18	
	PORT 3		60376.C.1900.3G.1	CTV20439	CTV20436		UMTS 1900	7770.00.1900.00	15.5		0	BOTTOM	RFS 1-1/4	177	NO	0		No		615		17	
ANTENNA POSITION 2	PORT 1		60376.C.850.25G.1	321G20433	321G20433		GSM 850	7770.00.850.00	13.5		0	BOTTOM	RFS 1-1/4	177	NO			No	12.58	147.57		19	
ANTENNA POSITION 4	PORT 1		60376.C.700.4G.1	CTL02043_7C_1	CTL02043_7C_1		LTE 700	H6_719MHz_02DT	14.28		2	BOTTOM	1 5/8" - CommScope	177	NO	0				827.9421		23	
	PORT 3		60376.C.1900.4G.111	CTL02043_9C_1	CTL02043_9C_1		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		23	
	PORT 4			CTL02043_9C_2	CTL02043_9C_2		LTE 1900	H6_1930MHz_02DT	16.85		2	BOTTOM	1 5/8" - CommScope	177	NO	0				3258.367		23	

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		30	30	30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT							
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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)			1 DC6-48-60-18				
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)				with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860	1 IDLe Xcede				
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055	1 6648				
Local Market Note 1	//the site will be build on a new utility structure and all components will be new.-						
Local Market Note 2							
Local Market Note 3	6630-XMU03-6630-6648-IDLe Xcede						

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)	RX/AIT 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 2	PORT 1			CTL02043_7A_3_F	CTL02043_7A_3_F		LTE 700	BU6DA_716MHz_05DT	14.7	30	5	BOTTOM	Commscope 1-5/8	177									
	PORT 3			CTL06043_9A_1	CTL06043_9A_1		LTE 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 4			CTL06043_9A_2	CTL06043_9A_2		LTE 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 7			CTL06043_2A_2	CTL06043_2A_2		LTE AWS	BU6DA_2170MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 11			CTCN002043_N002A_1	CTCN002043_N002A_1		5G 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 12			CTCN002043_N066A_1	CTCN002043_N066A_1		5G AWS	BU6DA_2170MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1			CTCN032043_N077A_1	CTCN032043_N077A_1		5G CBAND	B77D+AIR6419 B77G STACKED		30	0	Integrated	FIBER	0									
	PORT 5			CTCN032043_N077A_2	CTCN032043_N077A_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		30	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02043_7A_1	CTL02043_7A_1		LTE 700	BU6DA_716MHz_05DT	14.7	30	5	BOTTOM	Commscope 1-5/8	177									
	PORT 2			CTCN002043_N005A_1	CTCN002043_N005A_1		5G 850	BU6DA_850MHz_05DT	15.4	30	5	BOTTOM	Commscope 1-5/8	177									

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		2		2			
FEEDER AMOUNT							
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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG12A			
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)				with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860					
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055					
Local Market Note 1	(the site will be build on a new utility structure and all components will be new.-						
Local Market Note 2							
Local Market Note 3	6630-XMU03-6630-6648-IDLe Xcede						

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)	RX/AIT 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 2	PORT 1			CTL02043_7B_3_F	CTL02043_7B_3_F		LTE 700	BU6DA_716MHz_05DT	14.9	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 3			CTL06043_9B_1	CTL06043_9B_1		LTE 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 4			CTL06043_9B_2	CTL06043_9B_2		LTE 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 7			CTL06043_2B_2	CTL06043_2B_2		LTE AWS	BU6DA_2170MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 11			CTCN002043_N002B_1	CTCN002043_N002B_1		5G 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 12			CTCN002043_N066B_1	CTCN002043_N066B_1		5G AWS	BU6DA_2170MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1			CTCN032043_N077B_1	CTCN032043_N077B_1		5G CBAND	B77D+AIR6419 B77G STACKED		150	0	Integrated	FIBER	0									
	PORT 5			CTCN032043_N077B_2	CTCN032043_N077B_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		150	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02043_7B_1	CTL02043_7B_1		LTE 700	BU6DA_716MHz_05DT	14.9	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 2			CTCN002043_N005B_1	CTCN002043_N005B_1		5G 850	BU6DA_850MHz_05DT	15.4	150	2	BOTTOM	Commscope 1-5/8	177									

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		270	270	270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT							
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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG12A			
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)				with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860					
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055					
Local Market Note 1	Antenna/RRHs positions as per						
Local Market Note 2							
Local Market Note 3	6630-6648-IDLe Xcede						

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)	RX/AIT 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 2	PORT 1			CTL02043_7C_3_F	CTL02043_7C_3_F		LTE 700	BU6DA_716MHz_05DT	14.9	270	2	BOTTOM	Commscope 1-5/8	177									
	PORT 3			CTL06043_9C_1	CTL06043_9C_1		LTE 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 4			CTL06043_9C_2	CTL06043_9C_2		LTE 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 7			CTL06043_2C_2	CTL06043_2C_2		LTE AWS	BU6DA_2170MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 11			CTCN002043_N002C_1	CTCN002043_N002C_1		5G 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 12			CTCN002043_N066C_1	CTCN002043_N066C_1		5G AWS	BU6DA_2170MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1			CTCN032043_N077C_1	CTCN032043_N077C_1		5G CBAND	B77D+AIR6419 B77G STACKED		270	0	Integrated	FIBER	0									
	PORT 5			CTCN032043_N077C_2	CTCN032043_N077C_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		270	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1			CTL02043_7C_1	CTL02043_7C_1		LTE 700	BU6DA_716MHz_05DT	14.9	270	2	BOTTOM	Commscope 1-5/8	177									
	PORT 2			CTCN002043_N005C_1	CTCN002043_N005C_1		5G 850	BU6DA_850MHz_05DT	15.4	270	2	BOTTOM	Commscope 1-5/8	177									

Section 16.5A - SCOPING TOWER CONFIGURATION - SECTOR A (OR OMNI)

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		30	30	30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT		4		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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG12A			
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)			1 DC6-48-60-18				
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)				with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860	1 IDLe Xcede				
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055	1 6648				
Local Market Note 1	//the site will be build on a new utility structure and all components will be new.-						
Local Market Note 2							
Local Market Note 3	6630-XMU03-6630-6648-IDLe Xcede						

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)	RX/AIT 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 2	PORT 1	60376.A.700.4G.1.mp5		CTL02043_7A_3_F	CTL02043_7A_3_F		LTE 700	BU6DA_716MHz_05DT	14.7	30	5	BOTTOM	Commscope 1-5/8	177									
	PORT 2	60376.A.1900.4.G.3		CTL06043_9A_1	CTL06043_9A_1		LTE 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 4	60376.A.1900.4.G.4		CTL06043_9A_2	CTL06043_9A_2		LTE 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 7	60376.A.AWS.4G.1		CTL06043_2A_2	CTL06043_2A_2		LTE AWS	BU6DA_2170MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 11	60376.A.1900.5.G.tmp1		CTCN002043_N002A_1	CTCN002043_N002A_1		5G 1900	BU6DA_1900MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
	PORT 12	60376.A.AWS.5G.tmp1		CTCN002043_N066A_1	CTCN002043_N066A_1		5G AWS	BU6DA_2170MHz_04DT	17.15	30	4	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1	60376.A.CBAND.5G.tmp1		CTCN032043_N077A_1	CTCN032043_N077A_1		5G CBAND	B77D+AIR6419 B77G STACKED		30	0	Integrated	FIBER	0									
	PORT 5	60376.A.CBAND.5G.tmp2		CTCN032043_N077A_2	CTCN032043_N077A_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		30	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1	60376.A.700.4G.1		CTL02043_7A_1	CTL02043_7A_1		LTE 700	BU6DA_716MHz_05DT	14.7	30	5	BOTTOM	Commscope 1-5/8	177									
	PORT 2	60376.A.850.5G.1		CTCN002043_N005A_1	CTCN002043_N005A_1		5G 850	BU6DA_850MHz_05DT	15.4	30	5	BOTTOM	Commscope 1-5/8	177									

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		150	150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		2		2			
FEEDER AMOUNT		4		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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG 12A			
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)				with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860					
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055					
Local Market Note 1	//the site will be build on a new utility structure and all components will be new.-						
Local Market Note 2							
Local Market Note 3	6630-XMU03-6630-6648-IDLe Xcede						

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)	RX/AIT 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 2	PORT 1	60376.B.700.4G.tmp5		CTL02043_7B_3_F	CTL02043_7B_3_F		LTE 700	BU6DA_716MHz_05DT	14.9	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 3	60376.B.1900.4G.3		CTL06043_9B_1	CTL06043_9B_1		LTE 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 4	60376.B.1900.4G.4		CTL06043_9B_2	CTL06043_9B_2		LTE 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 7	60376.B.AWS.4G.1		CTL06043_2B_2	CTL06043_2B_2		LTE AWS	BU6DA_2170MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 11	60376.B.1900.5G.tmp1		CTCN002043_N002B_1	CTCN002043_N002B_1		5G 1900	BU6DA_1900MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 12	60376.B.AWS.5G.tmp1		CTCN002043_N066B_1	CTCN002043_N066B_1		5G AWS	BU6DA_2170MHz_04DT	16.85	150	2	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1	60376.B.CBAND.5G.tmp1		CTCN032043_N077B_1	CTCN032043_N077B_1		5G CBAND	B77D+AIR6419 B77G STACKED		150	0	Integrated	FIBER	0									
	PORT 5	60376.B.CBAND.5G.tmp2		CTCN032043_N077B_2	CTCN032043_N077B_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		150	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1	60376.B.700.4G.1		CTL02043_7B_1	CTL02043_7B_1		LTE 700	BU6DA_716MHz_05DT	14.9	150	2	BOTTOM	Commscope 1-5/8	177									
	PORT 2	60376.B.850.5G.1		CTCN002043_N005B_1	CTCN002043_N005B_1		5G 850	BU6DA_850MHz_05DT	15.4	150	2	BOTTOM	Commscope 1-5/8	177									

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-BU6DA-K	AIR6449 B77D+AIR6419 B77G STACKED	OPA65R-BU6DA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X21X7.8			
ANTENNA WEIGHT		69	81.6	60.2			
AZIMUTH		270	270	270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		124	124	124			
ANTENNA TIP HEIGHT		127		127			
MECHANICAL DOWNTILT		0		0			
FEEDER AMOUNT		4		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)							
Antenna RET Motor (QTY/MODEL)		Built-in	Built-in	Built-in			
SURGE ARRESTOR (QTY/MODEL)		12 TSXDC-4310FM		4 TSXDC-4310FM			
DIPLEXER (QTY/MODEL)				2 DBC2055F1V1-2			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		RRH CONTROLLED		RRH CONTROLLED			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)		1 TMA2124F03V5-2D		2 TMABPD7823VG 12A			
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)				with another band			
RRH - 1900 band (QTY/MODEL)		1 RRUS-32 B2					
RRH - AWS band (QTY/MODEL)		1 4426 B66					
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1 integrated within: AIR6449 B77D				
Additional RRH #2 - any band (QTY/MODEL)			1 integrated within: AIR6419 B77G				
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)		2 Twin Triplexer CBC61923T-DS					
Additional Component 2 (QTY/MODEL)		2 1000860					
Additional Component 3 (QTY/MODEL)		2 K SBT 782-11055					
Local Market Note 1	//the site will be build on a new utility structure and all components will be new.-						
Local Market Note 2							
Local Market Note 3	6630-XMU03-6630-6648-IDLe Xcede						

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 2	PORT 1	60376.C.700.4G.tmp5		CTL02043_7C_3_F	CTL02043_7C_3_F		LTE 700	BU6DA_716MHz_05DT	14.9	270	2	BOTTOM	Commscope 1-5/8	177									
	PORT 3	60376.C.1900.4G.3		CTL06043_9C_1	CTL06043_9C_1		LTE 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 4	60376.C.1900.4G.4		CTL06043_9C_2	CTL06043_9C_2		LTE 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 7	60376.C.AWS.4G.1		CTL06043_2C_2	CTL06043_2C_2		LTE AWS	BU6DA_2170MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 11	60376.C.1900.5G.tmp1		CTCN002043_N002C_1	CTCN002043_N002C_1		5G 1900	BU6DA_1900MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
	PORT 12	60376.C.AWS.5G.tmp1		CTCN002043_N066C_1	CTCN002043_N066C_1		5G AWS	BU6DA_2170MHz_04DT	17	270	3	BOTTOM	Commscope 1-5/8	177									
ANTENNA POSITION 3	PORT 1	60376.C.CBAND_5G.tmp1		CTCN032043_N077C_1	CTCN032043_N077C_1		5G CBAND	B77D+AIR6419 B77G STACKED		270	0	Integrated	FIBER	0									
	PORT 5	60376.C.CBAND_5G.tmp2		CTCN032043_N077C_2	CTCN032043_N077C_2		5G 3.5GHZ	B77D+AIR6419 B77G STACKED		270	0	Integrated	FIBER	0									
ANTENNA POSITION 4	PORT 1	60376.C.700.4G.1		CTL02043_7C_1	CTL02043_7C_1		LTE 700	BU6DA_716MHz_05DT	14.9	270	2	BOTTOM	Commscope 1-5/8	177									
	PORT 2	60376.C.850.5G.1		CTCN002043_N005C_1	CTCN002043_N005C_1		5G 850	BU6DA_850MHz_05DT	15.4	270	2	BOTTOM	Commscope 1-5/8	177									

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Section 1 - Site Information

Site ID: CT11426A
Status: Draft
Version: 5
Project Type: L600
Approved: Not approved
Approved By: Not approved
Last Modified: 07/28/2023 3:04:18 PM
Last Modified By: Hansraj.Rana4@T-Mobile.com

Site Name: Stratford/MP/James Farm
Site Class: Utility Lattice Tower
Site Type: Structure Non Building
Plan Year:
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Northeast Utilities

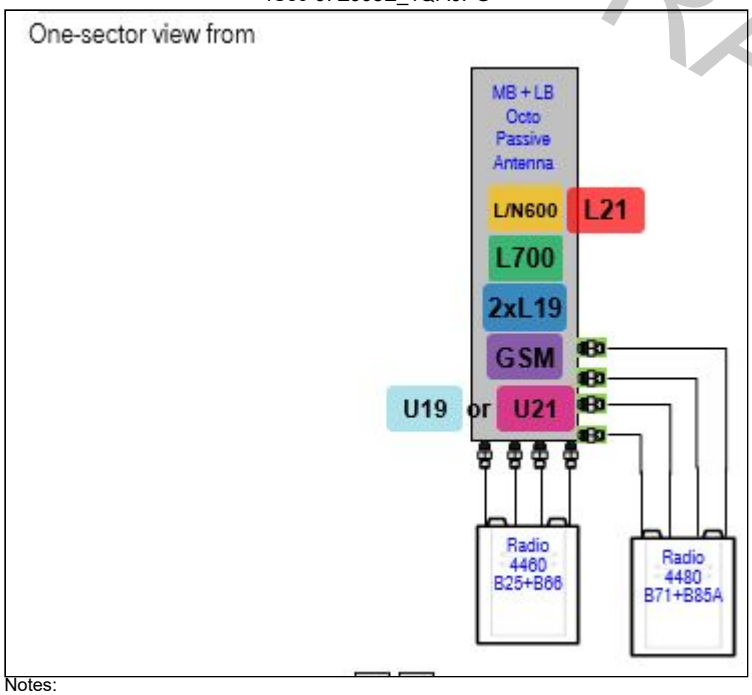
Latitude: 41.23785
Longitude: -73.12244
Address: 670 Chapel St, CL&P Pole 1321
City, State: Stratford, CT
Region: NORTHEAST

RAN Template: 67E998E 6160			AL Template: 4Sec-67E998E_1QP_1OP	
Sector Count: 3	**Antenna Count:** 6	**Coax Line Count:** 24	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

4Sec-67E998E_1QP.JPG



Notes:

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 94DB Outdoor (evolved from 4B)

Enclosure	1	2
Enclosure Type	RBS 6102	Ancillary Equipment (Ericsson)
Radio	RUS01 B2 (x3) [L1900] [G1900]; RUS01 B2 (x3) [L1900]; RUS01 B4 (x3) [L2100]; RUS01 B4 (x3) [U2100 (DECOMMISSIONED)]	
Baseband	BB 6630 [L1900] [L2100]; DUG20; DUW30 (x2)	
Hybrid Cable System		Ericsson 6x12 HCS *Select Length & AWG*

Proposed RAN Equipment

Template: 67E998E 6160

Enclosure	1	2
Enclosure Type	Enclosure 6160 AC V1	B160
Baseband	BB 6648 [N600] [L600] [L700] [L1900] [L2100]; DUG20 [G1900]	
Transport System	CSR IXRe V2 (Gen2)	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 20m (x4); PSU 4813 vR4A (Kit)	

RAN Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

Section 6 - A&L Equipment

Existing Template: 94B_1QP SIMO
Proposed Template: 4Sec-67E998E_1QP_1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	70	
M. Tilt	0	
Height (ft)	109	
Ports	**P1**	**P2**
Active Tech	L1900, G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	70				70	
M. Tilt						
Height (ft)	109				109	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	N600 L600 L700	N600 L600 L700			L2100 N1900 G1900 L1900	L2100 L1900 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**			Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	230	
M. Tilt	0	
Height (ft)	109	
Ports	**P1**	**P2**
Active Tech	L1900 G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	230				230	
M. Tilt						
Height (ft)	109				109	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	L600 N600 L700	L600 N600 L700			L1900 L2100 G1900 N1900	L1900 L2100 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**			Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Sector 3 (Existing) view from behind		
Coverage Type	A - Outdoor Macro	
Antenna	1	
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)	
Azimuth	330	
M. Tilt	0	
Height (ft)	109	
Ports	**P1**	**P2**
Active Tech	L1900 G1900	L2100
Dark Tech		
Restricted Tech		
Decomm. Tech	U1900	U2100
E. Tilt	2	2
Cables	1-1/4" Coax - 120 ft.	1-1/4" Coax - 120 ft.
TMAs	Generic Twin Style 1A - PCS (At Antenna)	Generic Twin Style 1B - AWS (At Antenna)
Diplexer / Combiners		
Radio		
Sector Equipment		

Unconnected Equipment:

Scope of Work:

RAN Template:	A&L Template:
67E998E 6160	4Sec-67E998E_1QP_1OP

CT11426A_L600_5_draft

Print Name: Standard
PORs: L600_L600 Coverage

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro					
Antenna	1				2	
Antenna Model	RFS - APXVAALL24_43-U-NA20 (Octo)				Commscope_VV-65A-R1 (Quad)	
Azimuth	330				330	
M. Tilt						
Height (ft)	109				109	
Ports	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Active Tech	N600 L700 L600	N600 L700 L600			G1900 L2100 L1900 N1900	L2100 L1900 N1900
Dark Tech						
Restricted Tech						
Decomm. Tech						
E. Tilt						
Cables	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**			Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**	Coax Jumper **(x2)** CABLE 1 5/8IN FOAM PREMIUM - 150 ft. **(x2)**
TMAs						
Diplexer / Combiners						
Radio	Radio 4480 B71+B85 (At Cabinet)	SHARED Radio 4480 B71+B85 (At Cabinet)			Radio 4460 B25+B66 (At Cabinet)	SHARED Radio 4460 B25+B66 (At Cabinet)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

Antennas

MultiPort Series

DATA SHEET

Multi-Band Twelve-Port Antenna

TPA65R-BU6D

- Six foot (1.8 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 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
- Ordering options for External RET Controllers (Type 1) or Internally Integrated 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 4×4 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 4×4 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-BU6D

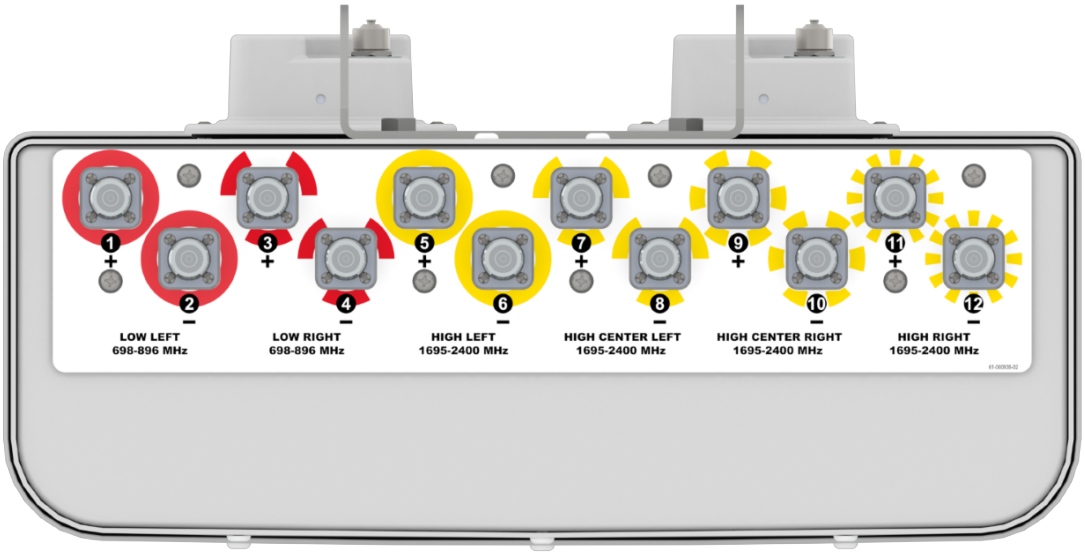
Mechanical

Dimensions (LxWxD)	71.2x20.7x7.7 in (1808x525x197 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	325 lbs (1446 N) @ 100 mph (161 kph)
Side Wind Load	144 lbs (642 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	12.7 ft^2 (1.2 m^2)
Weight *	68.3 lbs (31.0 kg)
Packaging Dimensions (LxWxD)	81.4x25.2x13.9 in (2067x641x354 mm)
Packaged Weight ~	116.8 lbs (53.0 kg)
Connector	12 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting*

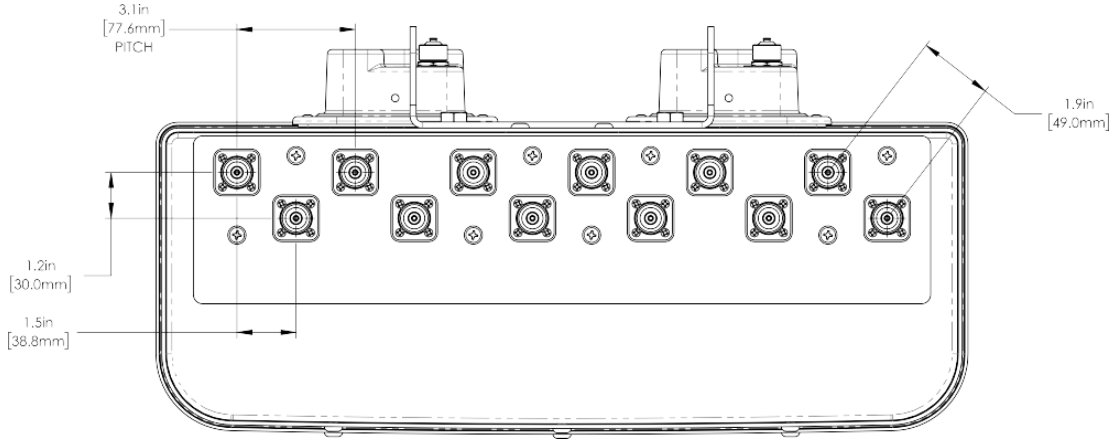
Bottom View

TPA65R-BU6DA



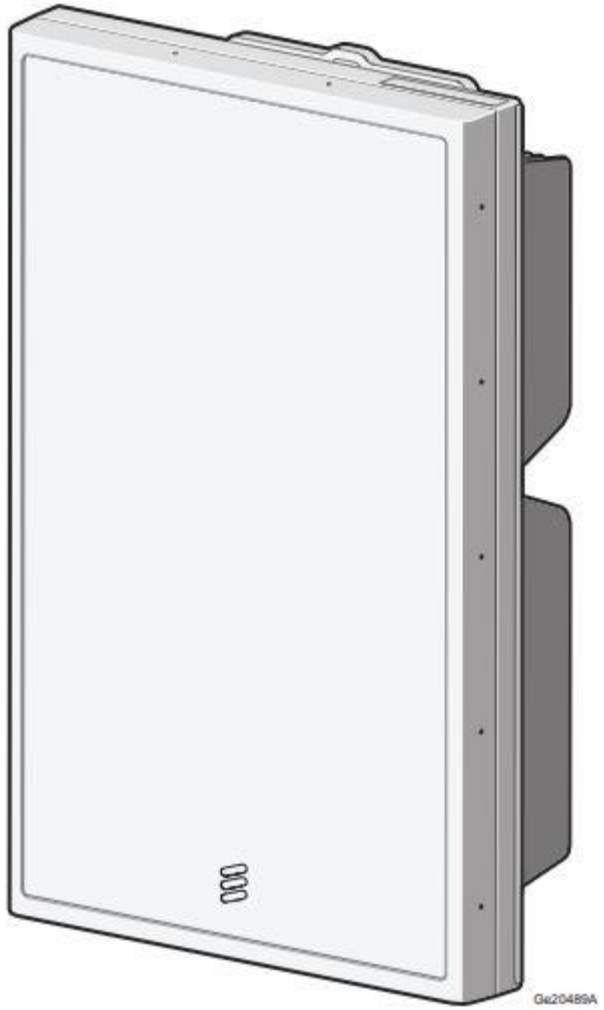
Connector Spacing

TPA65R-BU6DA



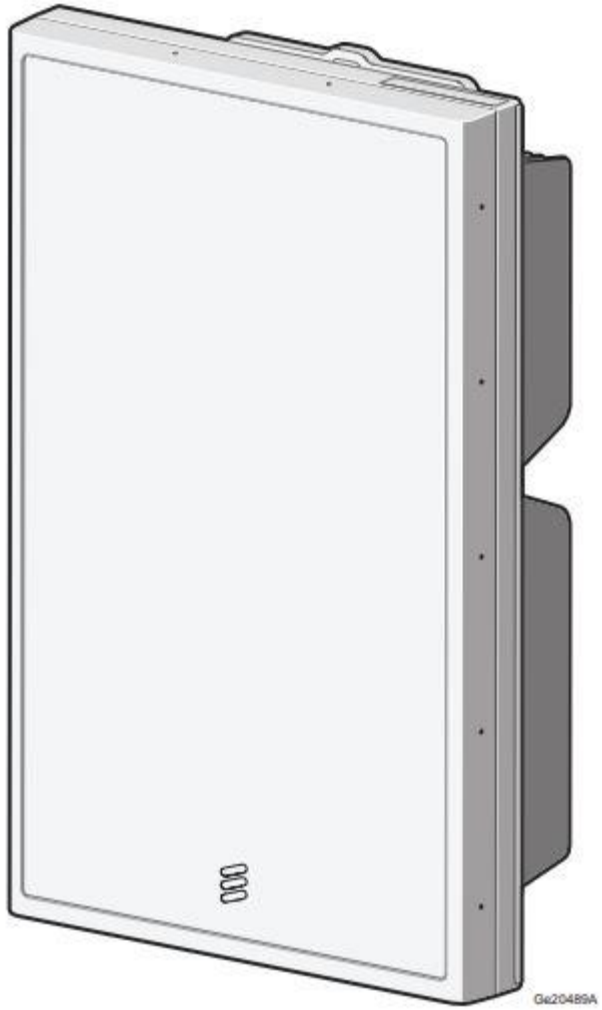
ERICSSON AIR 6419 B77G

- ERICSSON AIR 6419 has a total of 2 ECPRI connections @ 25.8 Gbps, 1 DC Power cable connection
- Operates over B77G DOD band (3.4-3.6 GHz)
- Breaker size = 45A DC, DC Power Consumption = 1280W (for dimensioning)
- Dimensions
  - Height: 31.1” (790 mm)
  - Width: 16.1” (408 mm)
  - Depth: 7.3” (186 mm)
- Weight, excl. mounting hardware = 44 lbs (20 kg)
- Weight with Mounting Hardware = 55.4 lbs (25.2 kg)
- Max Frontal Wind Load @ 42m/s = 454 N
- Horizontal Separation Required between AIR 6419 = 100mm
- Minimum Vertical Space Required below/above AIR 6419 = 300mm
- Minimum Height Above Users = 5m
- Outdoor Installation locations to avoid:
  - Hot microclimates caused by, for example, heat radiated or reflected from dark or metallic walls or floors
  - Chimney mouths or ventilation system outlets
  - In front of Large glass surfaces or concrete surfaces
- Avoid radio interference by keeping the area directly in front of the antenna clear of metal surfaces such as railing, ladders or chains or equipment generating electromagnetic fields, for example, electric motors in air conditioners or diesel generators in front of antenna
- Do not use metallic paint to cover the AIR 6419 If painting is required. Do not paint underside of AIR 6419.



ERICSSON AIR 6449 B77

- ERICSSON AIR 6449 has a total of 4 ECPRI connections @ 25 Gbps
- Operates over B77 band (3.3-4.2 GHz)
- Breaker size = 50A DC, DC Power Consumption = 1280W (for dimensioning)
- Dimensions
  - Height: 30.6” (778 mm)
  - Width: 15.9” (403 mm)
  - Depth: 10.6” (268 mm)
- Weight, excl. mounting hardware = 82.5 lbs (37.5 kg)
- Weight with Mounting Hardware = 95.5 lbs (43.4 kg)
- Max Frontal Wind Load @ 42m/s = 478 N
- Horizontal Separation Required between AIR 6449 = 100mm
- Minimum Vertical Space Required below AIR 6449 = 300mm
- Minimum Height Above Users = 5m
- Outdoor Installation locations to avoid:
  - Hot microclimates caused by, for example, heat radiated or reflected from dark or metallic walls or floors
  - Chimney mouths or ventilation system outlets
  - In front of Large glass surfaces or concrete surfaces
- Avoid radio interference by keeping the area directly in front of the antenna clear of metal surfaces such as railing, ladders or chains or equipment generating electromagnetic fields, for example, electric motors in air conditioners or diesel generators in front of antenna
- Do not use metallic paint to cover the AIR 6449 If painting is required. Do not paint underside of AIR 6449.



Antennas

MultiPort Series

DATA SHEET

Multi-Band Eight-Port Antenna

OPA65R-BU6D

- Six foot (1.8 m) multiband, eigth port antenna with a 65° azimuth beamwidth covering 698-896 MHz and 1695-2400 MHz frequencies
- Four 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 High Band Arrays, using full length arrays (non stacked), all in a 21.0" (534 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
- Ordering options for External RET Controllers (Type 1) or Internally Integrated RET Controllers (Type 17)

Overview

The CCI Multi-Port multiband array is a eight port antenna, with four wide band ports covering 1695-2400 MHz and four low band ports covering 698-896 MHz. The antenna provides the capability to deploy 4x4 Multiple-input Multiple-output (MIMO) in the high band and 4X4 Multiple-input Multiple-output (MIMO) across low band ports. The CCI 8-Port allows independent tilt control between the low band ports and high band ports and independent tilt 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

- 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 Eight-Port Antenna

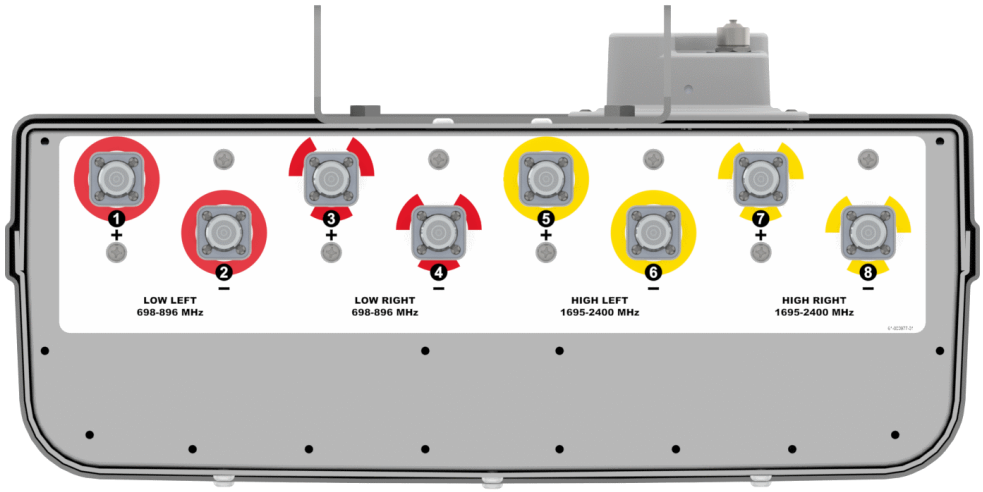
OPA65R-BU6D

Mechanical

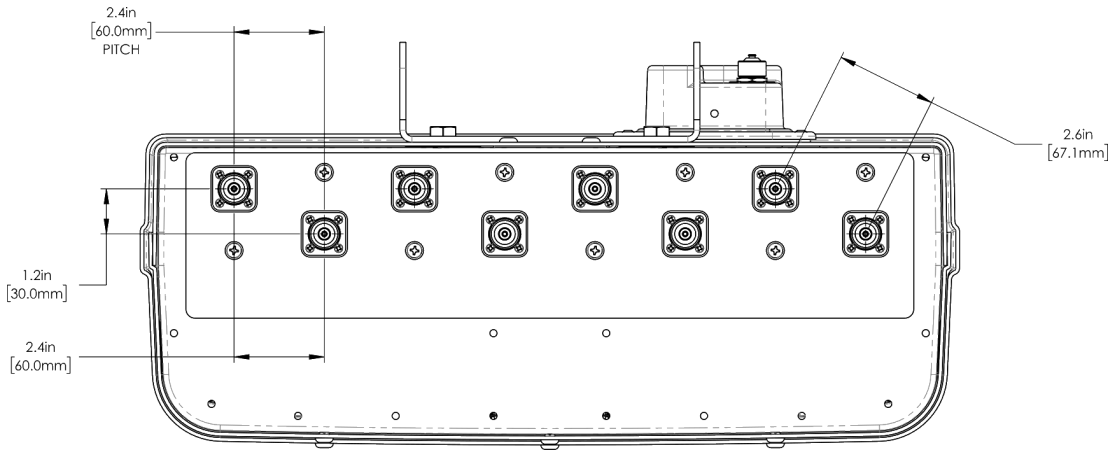
Dimensions (LxWxD)	71.2x21.0x7.8 in (1808x534x198 mm)
Survival Wind Speed	> 150 mph (> 241 kph)
Front Wind Load	330 lbs (1467 N) @ 100 mph (161 kph)
Side Wind Load	145 lbs (646 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	12.9 ft^2 (1.2 m^2)
Weight *	63.2 lbs (28.7 kg)
Connector	8 x 4.3-10 female
Mounting Pole	2 to 5 in (5 to 12 cm)

** Weight excludes mounting*

Bottom View



Connector Spacing

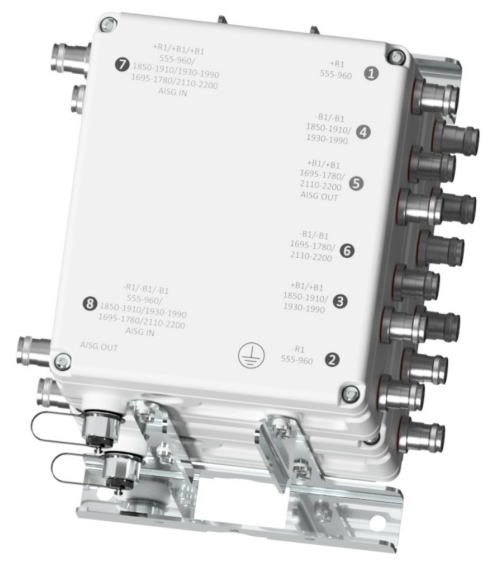


TMA2124F03V5-2D

DUAL TWIN TMA 1900/AWS/LOWPASS 555-960MHZ 6 ANT

NON-DIPLEXED 1900/AWS ANTENNA PORTS

Designed to be deployed in co-located AWS & 1900 networks, the Kaelus TMA2124 provides gain in 1900 and AWS uplink, using independent LNAs per band and per channel. Low loss bypass 555-960MHz signal to low band antennas is also provided.



FEATURES

- Improved base station sensitivity through excellent noise figure performance and linearity
- AISG 2.0 compatible, full software upgradable using AISG "personality" upload
- DC/AISG passthrough to AWS antenna (port 5)
- AISG OUT connector disabled when AISG device (SBT equipped antenna) present on Port 3 +R1/+R1
- One AISG subunit per LNA, 4 in total. All fixed gain
- 555-960 bypass to low band antenna

TECHNICAL SPECIFICATIONS

BAND NAME	1900	AWS
DOWNLINK		
Passband	1930 - 1990MHz	2110 - 2200MHz
Insertion loss	0.4dB typical	0.3dB typical
Return loss	22dB typical	
Maximum input power	160W (average) / 2kW (PEP)	160W (average) / 2kW (PEP)
Intermodulation products	-155dBc maximum, at antenna port in RX band with 2 x 20W carriers	-163dBc maximum, at antenna port in RX band with 2 x 20W carriers
UPLINK		
Passband	1850 - 1910MHz	1695 - 1780MHz
Gain	13dB	
Gain variation	±1dB maximum	
Return loss	22dB typical	
Bypass return loss	14dB typical	
Bypass loss	3dB typical	
Noise figure	1.2dB typical @ 13dB gain	1.0dB typical @ 13dB gain
Output IP3	+28dBm typical	
Maximum input power with no damage	+12dBm	
555-960 LOWPASS FILTER		
Passband	555 - 960MHz	
Insertion loss	0.2dB typical	
Return loss	21dB typical	
Maximum input power	250W (average) / 2.5kW (PEP)	
Intermodulation products	-155dBc maximum, at antenna port with 2 x 20W carriers	
ELECTRICAL		
Impedance	50Ohms	

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POWER SUPPLY AND ALARM (CURRENT WINDOW ALARM MODE, DEFAULT)	
Current window alarm mode (CWA) is the default operating mode and can be configured to specific customer requirements. The TMA2124F03V4 is configured so that both channels are independently powered and monitored via their respective BTS port, 7 or 8. The BTS port sinks additional current to indicate an alarm state in its uplink path. Normal operating and alarm current values are configured independently via a field-loadable personality file. Please contact Kaelus for more information.	
DC supply voltage	+8.5 to +18V DC, case is DC ground
DC supply	Each BTS port powered individually
DC supply current, normal mode	200mA per port typical (both ports are powered)
DC supply current, alarm mode	300mA per port typical (both ports are powered)

AISG MODE OF OPERATION (AUTO SELECTED ON VALID AISG 2.0 FRAMES)	
AISG signals can be applied to port 7 or port 8. The TMA unit switches to AISG mode when valid frames are detected on either port 7 or 8. All LNAs take DC power from the port with the AISG frames or, if DC is present on both ports, power will be supplied equally between the ports. Each LNA is controlled uniquely by its sub-unit number.	
DC supply voltage	+7.5V to +30V DC
AISG version	2.0 (1.1 optional)
Supply current, AISG mode	500mA @ 7.5V, 135mA @ 30V typical
AISG connector, current rating	IEC60130-9, 8-pin female, < 4A peak, 2A continuous, pin 6
Field firmware upgradable	Yes (R951022ATA2.0 Rev 2.9.12)
AISG pass through to antenna port	Yes

ANTENNA AISG OOK + DC

When DC is applied it is quickly switched through to port 5. If an over-current condition is detected, DC & AISG are disconnected from port 5. If DC remains connected to the load at port 5, DC and AISG are disconnected from the AISG OUT 8 pin connector. If DC is disconnected from port 5, DC and AISG are enabled at the AISG OUT 8 pin connector. If a short circuit is detected at the AISG OUT 8 pin connector, DC and AISG are disabled.

Mode of Operation	Voltage at Port 5	Assumption	"Autosense + Protection" Switch Status	Comment
AISG or CWA	High	Device present or open circuit	Close	DC & AISG OOK will be supplied to port 5. DC & AISG is removed from the AISG OUT 8 pin port
AISG or CWA	Low	DC short circuit or low DC resistance	Open	DC & AISG OOK will not be supplied to port 5. DC & AISG are supplied to the AISG OUT 8 pin port

ENVIRONMENTAL	
For further details of environmental compliance, please contact Kaelus.	
Temperature range	-40ºC to +65ºC | -40°F to +149°F
Ingress protection	IP67
Altitude	3,000m | 10,000ft
Lightning protection	IEC61312-1, RF: ±5kA maximum (8/20us), AISG: ±2kA maximum (8/20us)
MTBF	>1,000,000 hours
Compliance	FCC Part 15 subpart B

MECHANICAL	
Dimensions H x D x W (single unit)	245 x 263 x 210mm | 9.7 x 10.4 x 8.3in excluding brackets and connectors
Weight	16.2kg | 35.71lbs
Finish	Painted, light grey (RAL 7035)
Connectors	4.3-10 (F) x 16 long neck, AISG (F) x 2
Wind Load	Front 390N, Side 147N (Single) Front 251N, Side 409N (Twin) At 74m/s (AS/NZS 1170-2-2011 Structural design - Wind actions - Cyclone areas)
Mounting	Pole/wall bracket supplied with two metal clamps 45-178mm diameter poles

ORDERING INFORMATION

PART NUMBER	CONFIGURATION	OPTIONAL FEATURES	CONNECTORS
TMA2124F03V5-1D	TWIN 2 in / 6 out	STANDARD	4.3-10 (F)
TMA2124F03V5-2D	QUAD 4 in / 12 out	STANDARD	4.3-10 (F)
TMA2124F03V5-1S	TWIN 2 in / 6 out	STANDARD	4.3-10 (F)
TMA2124F03V5-2S	QUAD 4 in / 12 out	STANDARD	4.3-10 (F)

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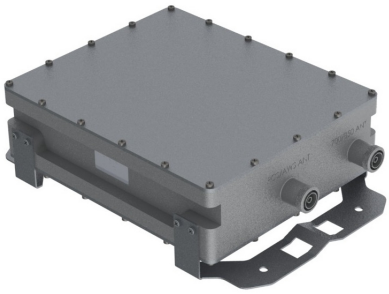
Triple Band (AWS/PCS/WCS) Twin TMA with 700/850 Bypass

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

DATA SHEET

DC Surge Protection Solutions

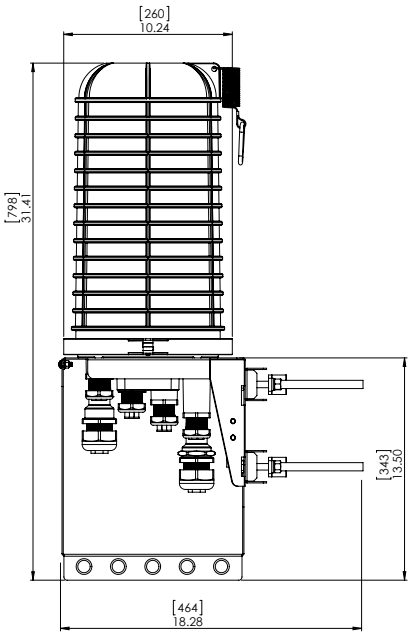
DC6-48-60-18-8C-EV

Overvoltage Protection and Fiber Distribution/Cable Management Solution

Rooftop / Towertop

The DC6-48-60-18-8C-EV is designed to provide the ultimate coordination between the SPD and the RRH/RRU by offering industry-leading low-clamping voltage of 160V and extremely robust protection for use in a high DC voltage environment. Capable of providing 12.5kA (10/350 µs) max per circuit surge capacity for up to 6 -48V DC circuits.

powered by **Strikesorb®**



Features

- Provides discrete protection for six individual -48V DC circuits
- Surge protection of 90kA 8/20 µs
- Maximum impulse current 12.5kA 10/350 µs
- Fiber connections for up to 18 fiber pair
- Simplifies inter-connectivity and cable management for DC conductors
- UL 1449 4th Edition Type 2 protective device
- IEC 61643-11 Class I protection for DC applications
- Form C relay contacts included, allowing remote monitoring of suppressor status
- Copper-coated lid to reduce power line interference
- Patented design
- Patented Strikesorb technology ensures lowest let-through voltage available in the industry, providing enhanced coordination with the RRH/RRU
- Raycap recommends that DC protection system be installed within 5 meters of the radio

Benefits

- Strikesorb modules are fully recognized to UL 1449 4th Edition, and IEC 61643-11 Safety Standards, meeting all intermediate and high current fault requirements to facilitate use in original equipment manufacturers (OEM) applications
- Strikesorb offers unique maintenance-free protection against direct lightning currents
- Design provides maximum flexibility for installation
- NEMA 4X enclosure allows for indoor or outdoor installation

G02-01-203 180122

Raycap

www.raycap.com

SPECIFICATIONS

DC Surge Protection Solutions

DC6-48-60-18-8C-EV

Overvoltage Protection and Fiber Distribution/Cable Management Solution

powered by **Strikesorb®**

Electrical

Model Number		DC6-48-60-18-8C-EV
CEQ / ANT Number		CEQ.18537
Number of Circuits Protected		6
Surge Protective Device (SPD) Type per UL 1449 4th Edition		Type 2
Surge Protection Class as per IEC 61643-11		Class I
Nominal Operating DC Voltage [U_n]		48 V
Nominal Discharge Current [I_n] per UL 1449 4th Edition		20 kA 8/20 µs
Maximum Surge Current [I_{max}] per IEC 61643-11		90 kA 8/20 µs
Maximum Impulse (Lightning) Current [I_{imp}] per IEC 61643-11		12.5 kA 10/350 µs
Maximum Continuous Operating DC Voltage [U_c] (MCOV)		60 VDC
Voltage Protection Level [U_p] per IEC 61643-11		160 V
Voltage Protection Rating (VPR) per UL 1449 4th Edition		330 V
Suppression Technology		MOV
Strikesorb Module Type 2CA (UL 1449 4th edition)		30-V1-EV
Protection Modes:	Normal Mode	-48V to Return
	Common Mode	Return to Ground

Mechanical

Connection Terminal (Alarm) Method		Form C Hardwired, #22 to #12 AWG [0.34 to 4 mm²]
Connection Terminal (Suppression) Method (for all power cables)		Compression lug 2 hole, #10, 5/8 pitch, #12 – #4 AWG [3.3 – 21.15 mm²]
Connection Terminal (Terminal Block) Method	Copper	#12 to #4 AWG [3.3 – 21.15 mm²]
Fiber Connection Method		LC-LC Single Mode
Environmental Ingress Protection (IP) Rating		IP 68
Operating Temperature (°C)		-40° C to +100° C
Storage Temperature (°C)		-70° C to +80° C
Cold Temperature Cycling IEC 61300-2-22		-30° C to +60° C 200 hrs @5 PSI
Resistance to Aggressive Materials CEI IEC 61073-2		Including Acids and Bases
UV Protection ISO 4892-2 Method A		Xenon-Arc 2160 hrs
Enclosure Type		Outdoor NEMA 4X
Enclosure Dimensions (L x W x H)		18.28" x 10.24" x 31.4" [464 x 260 x 797 mm]
Weight*		System: 16.0 lbs [7.25 kg] Mount: 10.2 lbs [4.62 kg] Total: 26.2 lbs [11.87 kg]
Combined Wind Loading	Sustained	150 mph Sustained: 105.7 lbs [470 N]
	Gust	195 mph Gust: 213.6 lbs [950 N]

Standards Compliance & Certifications

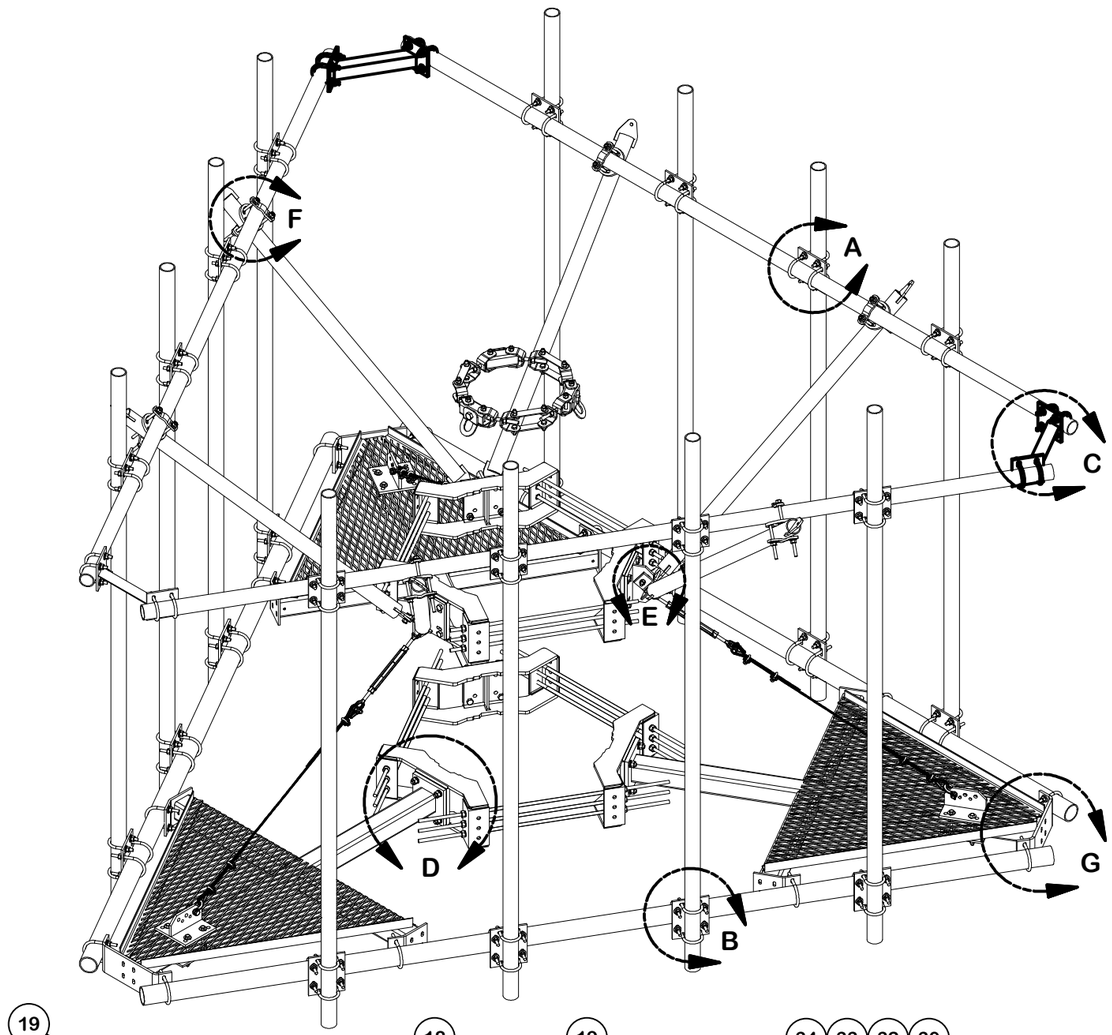
NEBS certified to: GR-63-CORE Issue 4, GR-1089-CORE Issue 6, GR-3108-CORE Issue 3, GR-487-CORE Issue 4, ATT-TP-76200 Issue 18

Strikesorb modules are compliant to the following Surge Protection Device Standards:

Standards: UL 1449 4th Edition: 2011, IEC 61643-11: 2011, EN 61643-11: 2012, IEEE C62.11: 2005, IEEE C62.41: 2002, IEEE C62.45: 2002, NEMA-LS-1

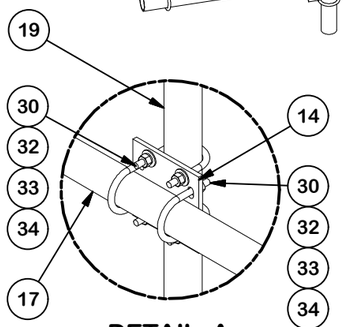
Certifications: UL, VDE, CE

AWG=American Wire Gauge

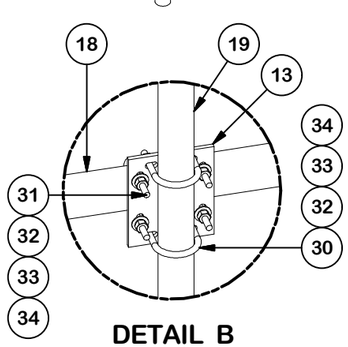


PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMENT		68.81	412.85
2	3	X-SV196L	LONG PLATFORM WELDMENT		230.94	692.81
3	6	X-TBW	T-BRACKET WELDMENT		13.60	81.60
4	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
5	6	X-VSKL	LONG SUPPORT WELDMENT FOR VSK REINFORCEMENTS		37.05	222.33
6	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALV.)		2.51	15.04
7	12	X-100064	CLAMP (4" V-CLAMP) GALVANIZED		0.92	11.06
8	3	320751-I	1/2" CHAIN SHACKLE		0.76	2.29
9	3	320601-I	5/8" TURNBUCKLE		2.63	7.89
10	6	320777-I	5/16" THIMBLE		0.06	0.36
11	12	320152-I	5/16" WIRE ROPE CLIP		1.32	15.78
12	3	AC516-10	5/16" AIRECRAFT CABLE		1.25	3.76
13	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
14	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
15	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
17	3	P30174	2-7/8" O.D. x 174" SCH. 40 PIPE	174 in	84.20	252.59
18	3	P3174	3-1/2" X 174" SCH 40 GALVANIZED PIPE	174 in	109.97	329.90
19	12	P30120	2-7/8" x 120" (2-1/2" SCH. 40) GALVANIZED PIPE	120 in	58.07	696.79
20	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		4.18	75.27
20	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		2.09	37.63
21	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
22	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	4.27
23	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
24	60	G58LW	5/8" HDG LOCKWASHER		0.03	1.57
25	60	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	7.79
26	6	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	0.89
27	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
28	12	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	3.24
29	24	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	5 1/2 in	0.41	9.83
30	84	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.67	56.19
31	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.83	29.82
32	288	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	9.82
33	285	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	3.96
34	285	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	20.41
35	1	HALO40	5,000 LB. MAINTENANCE TIE-OFF POINT		41.12	41.12
					TOTAL WT. #	3249.41



DETAIL A



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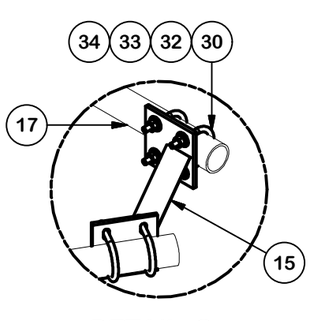

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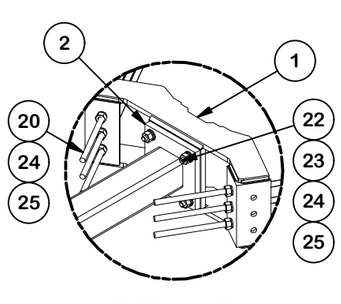

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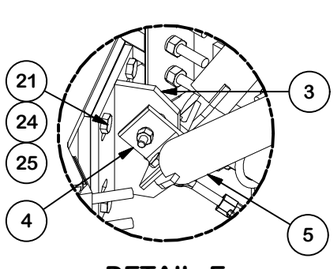

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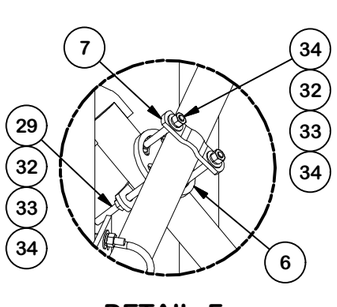
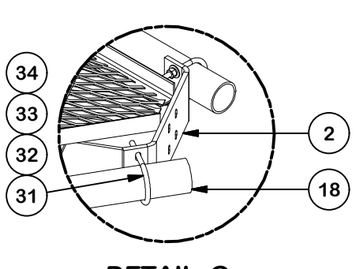


DETAIL F



DETAIL G

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS AND ANGLES ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION
14' 6" LOW PROFILE PLATFORM
WITH TWELVE 2-7/8" ANTENNA MOUTING
PIPES, REINFORCED HANDRAIL, AND CABLE

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX
Tampa, FL

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CSL 10/17/2019	10/18/2019	RMQLP-4120-H10

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
87	02	CUSTOMER	BMC 10/18/2019	RMQLP-4120-H10

SITE PRO 1
A valmont COMPANY
1545 Pidco Drive
Plymouth, IN 46563
Phone: 574.936.4221
Fax: 574.936.8925
Email: SP1Engineering@valmont.com
www.sitepro1.com

June 5, 2020

Site Pro 1 / Valmont Mounting System:

Part Number = RMQLP-4120-H10
Part Description = 14' Low Pro-Platform with Handrail System

Mount EPA (no antenna pipes, walkway included (0.67*EPA)):

EPA_N	= 42.20(28.15) sq-Ft	$EPA_{N\ (0.5"\ Ice)}$	= 51.14(34.10) sq-Ft	$EPA_{N\ (1"\ Ice)}$	= 60.14(40.10) sq-Ft
EPA_T	= 39.62(26.41) sq-Ft	$EPA_{T\ (0.5"\ Ice)}$	= 48.52(32.35) sq-Ft	$EPA_{T(1"\ Ice)}$	= 57.81(38.54) sq-Ft
Weight	= 3265 lb	$Weight_{(0.5"\ Ice)}$	=3657 lb	$Weight_{(1"\ Ice)}$	= 4180 lb

Classification Rating:

Heavy 10

Design Standards

ANSI/TIA-222-G-2012
ANSI/TIA-222-H-2018
ASCE 7-16
ATT-002-291-373
International Building Code 2018
TIA-5053

Analysis and Modeling Technique

An elastic, three-dimensional, frame, truss model was developed to examine the structural behavior of the mount. All orientations in the engineering model correspond with the assembly drawing constraints. The mount was analyzed with twelve (12) mounting locations (antenna, mount pipe, radio, dish, and any other appurtenance) evenly spaced across the face of the mount, with a zero inch (0) vertical eccentricity on the mast pipe. Wind directions considered were perpendicular (normal) to the face of the frame and at 30 degree increments up to 90 degrees (tangential) to the face of the frame. Wind, dead weight and ice weight on the mount was also included in the model.

Modeling Software

Autodesk Inventor
RISA-3D

PRODUCT DATASHEET

APXVAALL24_43-U-NA20

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600, 700, 800, AWS, PCS & BRS applications.

- **24 Inch Width For Easier Zoning**
- **Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality**
- **Superior elevation pattern performance across the entire electrical down tilt range**
- **Includes three AISG RET motors - Includes 0.5m AISG jumper for optional daisy chain of two high band RET motors for one single AISG point of high band tilt control.**
- **Low band arrays driven by a single RET motor**

Technical Features

LOW BAND LEFT ARRAY (617-894 MHZ) [R1]

Frequency Band	MHz	617-698	698-806	806-894
Gain Typical	dBi	15.5	16.1	16.2
Gain Over All Tilts	dBi	15.2 +/- .3	15.6 +/- .5	15.8 +/- .4
Horizontal Beamwidth @3dB	Deg	65 +/-3	64 +/-2	62 +/-3
Vertical Beamwidth @3dB	Deg	9.9 +/- .7	8.6 +/- .7	7.6 +/-.4
Electrical Downtilt Range	Deg	2 to 12		
Upper Side Lobe Suppression Peak to +20	dB	15	14	14
Front-to-Back, at +/-30°, Copolar	dB	25	25	29
Cross Polar Discrimination (XPD) @ Boresight	dB	18	18	17
Cross Polar Discrimination (XPD) @ +/-60	dB	5	5	6
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	400		

RADIO FREQUENCY SYSTEMS

Dual Slant Polarized Quad Band (8 Port) Antenna, 617-894/617-894/1695-2690/1695-2690MHz, 65deg, 16.2/16.1/18.9/18.7dBi, 2.4m (8ft), VET, RET, 2-12°/2-12°/2-12°/2-12°

HIGH BAND RIGHT ARRAY (1695-2690 MHZ) [Y2]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200	2200-2490	2490-2690
Gain Typical	dBi	17.7	18.1	18.7	18.5	18.0
Gain Over All Tilts	dBi	17.1 +/- .6	17.6 +/- .5	18 +/- .7	17.9 +/- .6	17.4 +/- .6
Horizontal Beamwidth @3dB	Deg	67 +/- 5	64 +/- 5	65 +/- 5	62 +/- 7	60 +/- 9
Vertical Beamwidth @3dB	Deg	5.7 +/- .5	5.2 +/- .3	4.7 +/- .6	4.2 +/- .3	4.2 +/- .3
Electrical Downtilt Range	Deg	2 to 12				
Upper Side Lobe Suppression Peak to +20	dB	15	15	14	14	13
Front-to-Back, at +/-30°, Copolar	dB	27	28	26	23	21
Cross Polar Discrimination (XPD) @ Boresight	dB	21	17	14	16	18
Cross Polar Discrimination (XPD) @ +/-60	dB	10	8	7	4	1
3rd Order PIM 2 x 43dBm	dBc	-153				
VSWR	-	1.5:1				
Cross Polar Isolation	dB	25				
Maximum Effective Power per Port	Watt	300				

ELECTRICAL SPECIFICATIONS

Impedance	Ohm	50.0
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	2436 x 609 x 215 (95.9 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	55.7 (122.8)
Weight (Mounting Hardware only)	kg (lb)	12.3 (27.1)
Packing size- HxWxD	mm (in)	2565 x 735 x 390 (101 x 28.9 x 15.4)
Shipping Weight	kg (lb)	77.9 (171.7)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Grounding type		DC Grounded
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1428.0
Wind Load @Rated Wind Side	N	434.0
Wind Load @Rated Wind Rear	N	1544.0
Environmental		ETSI 300-019-2-4 Class 4.1E

VV-65A-R1

4-port sector antenna, 4x 1695–2690 MHz, 65° HPBW, 1x RET,The two high band arrays utilize a common tilt.

- The RET interface comprises one pair of AISG input/output ports

General Specifications

Antenna Type	Sector
Band	Single band
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	PVC, UV resistant
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, total	4

Remote Electrical Tilt (RET) Information

RET Hardware	CommRET v2
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
Input Voltage	10–30 Vdc
Internal RET	High band (1)
Power Consumption, idle state, maximum	2 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0

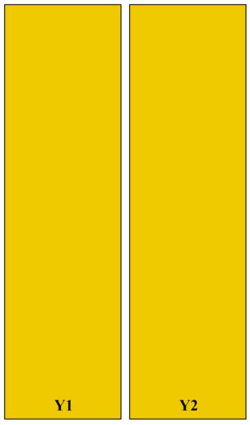
Dimensions

Width	307 mm | 12.087 in
Depth	118 mm | 4.646 in
Length	1390 mm | 54.724 in

VV-65A-R1

Net Weight, without mounting kit	10.8 kg | 23.81 lb

Array Layout



Array ID	Frequency (MHz)	RF Connector	HPBW	RET (SRET)	AISG No.	AISG RET UID
Y1	1695-2690	1 - 2	65°	1	AISG1	CPxxxxxxxxxxxxxxxY1
Y2	1695-2690	3 - 4	65°			

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2690 MHz
Polarization	±45°
Total Input Power, maximum	400 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2500**	**2490–2690**

SITE PRO 1
A valmont COMPANY

1545 Pidco Drive
Plymouth, IN 46563
Phone: 574.936.4221
Fax: 574.936.8925
Email: SP1Engineering@valmont.com
www.sitepro1.com

June 15, 2020

Site Pro 1 / Valmont Mounting System:

Part Number = RMQLP-xxx-HK / RMQLP-xxx + PRK-1245L + HRK14
Part Description = 14' Low Pro-Platform with Reinforcement and Handrail System

Mount EPA (no antenna pipes, walkway included, (0.67*EPA)):

EPA_N	= 39.24(26.29) sq-Ft	$EPA_{N\ (0.5"\ Ice)}$	= 48.14(32.25) sq-Ft	$EPA_{N\ (1"\ Ice)}$	= 56.69(37.98) sq-Ft
EPA_T	= 38.48(25.78) sq-Ft	$EPA_{T\ (0.5"\ Ice)}$	= 47.60(31.89) sq-Ft	$EPA_{T(1"\ Ice)}$	= 56.46(37.82) sq-Ft
Weight	= 2130 lb	$Weight_{(0.5"\ Ice)}$	=2580 lb	$Weight_{(1"\ Ice)}$	= 3165 lb

Classification Rating:

Heavy 10

Design Standards

ANSI/TIA-222-G-2012
ANSI/TIA-222-H-2018
ASCE 7-16
AT&T Mount Classification
International Building Code 2018
TIA-5053

Analysis and Modeling Technique

An elastic, three-dimensional, frame, truss model was developed to examine the structural behavior of the mount. All orientations in the engineering model correspond with the assembly drawing constraints. The mount was analyzed with four (4) mounting locations (antenna, mount pipe, radio, dish, and any other appurtenance) evenly spaced across the face of the mount, with no vertical eccentricity. Wind directions considered were perpendicular (normal) to the face of the frame and at 30 degree increments up to 90 degrees (tangential) to the face of the frame. Wind, dead weight and ice weight on the mount was also included in the model.

Modeling Software

Autodesk Inventor
RISA-3D
ANSYS Workbench

April 27, 2023

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:	AT&T Site Number:	CT2043 (C-BAND)
	FA Number:	10035240
	PACE Number:	MRCTB035098
	PT Number:	2051A0KPJS
	TEP Project Number:	323865.844443
	AT&T Site Name:	STRATFORD NU
	Site Address:	670 Chapel Street Stratford, CT 06614

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mount to determine its capability of supporting the following loading:

- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) AIR6449 B77D Antennas (30.4"x15.9"x8.0" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 B77G Antennas (28.2"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) OPA65R-BU6A Antennas (71.1"x11.7"x8.4" – Wt. = 58 lbs. /each)**
- **(3) TMA2124F03V5-2D TMA's (10.4"x9.7"x8.3" - Wt. = 36 lbs. /each) (Pos.2)**
- **(6) TMABPD7823VG12A TMA's (10.7"x11.1"x3.8" – Wt. = 25 lbs. /each) (Pos.4)**
- **(1) DC6-48-60-18-8C Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Standoff)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1, P/N RMQLP-4120-H10, dated October 18, 2019 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.31 in was used for this analysis.
- TEP NE considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.176 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.055.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount will be secured to the proposed monopole with a ring mount and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 RMQLP-4120-H10 mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	45	LC2	89%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N RMQLP-4120-H10, dated October 18, 2019.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:
Note: Existing tower and mount to be removed and replaced.











Wind & Ice
Calculations

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\,(z/z_g)^{2/\alpha}$

z=	124	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.324**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\,K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}=	**1**	
K_h=	1	
K_c=	1.0	(from Table 2-4)
K_t=		(from Table 2-5)
f=		(from Table 2-5)
Category=	1	
z=	124	
z_s=	149	(Mean elevation of base of structure above sea level)
H=		(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i =	1.00	in
Importance Factor = I=	1.15	(from Table 2-3)
K_{iz} =	1.14	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.31 in

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	150	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.324	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**54.14**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**8.01**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.88**	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.31 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	688	119	37
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.75	1.20	205	39	11
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.91	1.20	218	41	12
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	6.08	1.36	425	80	23
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	1.07	1.20	46	11	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.00	1.20	0	2	0
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	1.07	1.20	46	11	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.00	1.20	0	2	0
DC6 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	84	17	4
L2-1/2x2-1/2 Angle	2.5	12.0	-	0.21	0.21	2.00	23		
L2x2 Angle	2.0	12.0	-	0.17	0.17	2.00	18		
PL 6x3/8	6.0	12.0	-	0.50	0.50	2.00	54		
HSS 4x4	4.0	12.0	-	0.33	0.33	1.25	23		
3" Pipe	3.5	12.0	-	0.29	0.29	1.20	19		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	16		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	13		

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.31	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	688	304	592
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	205	98	178
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	218	115	192
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	425	325	400
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	44
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	10
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	44
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	10

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.8	23.3	10.3	11.96	5.29	3.17	7.15	1.23	1.40	118	60	103
AIR6419 Antenna	30.8	18.7	9.9	4.01	2.12	1.65	3.11	1.20	1.23	39	21	34
AIR6449 Antenna	33.0	18.5	10.6	4.25	2.44	1.78	3.11	1.20	1.23	41	24	37
OPA65R-BU6A Antenna	73.7	14.3	11.0	7.33	5.64	5.15	6.69	1.32	1.39	77	63	74
TMA2124F03V5-2D TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	4
TMABPD7823VG12A TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	4

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	37	16	32
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	11	5	9
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	12	6	10
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	23	17	21
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	1
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	1

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.31	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	688	304	400
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	205	98	124
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	218	115	141
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	425	325	350
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	41
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	29
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	41
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	29

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.8	23.3	10.3	11.96	5.29	3.17	7.15	1.23	1.40	118	60	74
AIR6419 Antenna	30.8	18.7	9.9	4.01	2.12	1.65	3.11	1.20	1.23	39	21	25
AIR6449 Antenna	33.0	18.5	10.6	4.25	2.44	1.78	3.11	1.20	1.23	41	24	28
OPA65R-BU6A Antenna	73.7	14.3	11.0	7.33	5.64	5.15	6.69	1.32	1.39	77	63	66
TMA2124F03V5-2D TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	8
TMABPD7823VG12A TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	8

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	37	16	21
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	11	5	7
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	12	6	7
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	23	17	19
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.31	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	688	304	304
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	205	98	98
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	218	115	115
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	425	325	325
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	39
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	39
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	39
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	39

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.8	23.3	10.3	11.96	5.29	3.17	7.15	1.23	1.40	118	60	60
AIR6419 Antenna	30.8	18.7	9.9	4.01	2.12	1.65	3.11	1.20	1.23	39	21	21
AIR6449 Antenna	33.0	18.5	10.6	4.25	2.44	1.78	3.11	1.20	1.23	41	24	24
OPA65R-BU6A Antenna	73.7	14.3	11.0	7.33	5.64	5.15	6.69	1.32	1.39	77	63	63
TMA2124F03V5-2D TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	9
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	9
TMABPD7823VG12A TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	9
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	9

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	37	16	16
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	11	5	5
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	12	6	6
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	23	17	17
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.31	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	688	304	400
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	205	98	124
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	218	115	141
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	425	325	350
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	41
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	29
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	41
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	29

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.8	23.3	10.3	11.96	5.29	3.17	7.15	1.23	1.40	118	60	74
AIR6419 Antenna	30.8	18.7	9.9	4.01	2.12	1.65	3.11	1.20	1.23	39	21	25
AIR6449 Antenna	33.0	18.5	10.6	4.25	2.44	1.78	3.11	1.20	1.23	41	24	28
OPA65R-BU6A Antenna	73.7	14.3	11.0	7.33	5.64	5.15	6.69	1.32	1.39	77	63	66
TMA2124F03V5-2D TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	8
TMABPD7823VG12A TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	8

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	37	16	21
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	11	5	7
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	12	6	7
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	23	17	19
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	2

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM Checked By: MSC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.31	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	688	304	592
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	205	98	178
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	218	115	192
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	425	325	400
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	44
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	10
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	46	39	44
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	39	10

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	73.8	23.3	10.3	11.96	5.29	3.17	7.15	1.23	1.40	118	60	103
AIR6419 Antenna	30.8	18.7	9.9	4.01	2.12	1.65	3.11	1.20	1.23	39	21	34
AIR6449 Antenna	33.0	18.5	10.6	4.25	2.44	1.78	3.11	1.20	1.23	41	24	37
OPA65R-BU6A Antenna	73.7	14.3	11.0	7.33	5.64	5.15	6.69	1.32	1.39	77	63	74
TMA2124F03V5-2D TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	4
TMABPD7823VG12A TMA	13.0	12.3	10.9	1.11	0.99	1.06	1.19	1.20	1.20	11	9	10
TMA2124F03V5-2D TMA (Shielded)	13.0	2.6	10.9	0.24	0.99	4.96	1.19	1.31	1.20	2	9	4

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	37	16	32
AIR6419 Antenna	28.2	16.1	7.3	3.15	1.43	1.75	3.86	1.20	1.26	11	5	9
AIR6449 Antenna	30.4	15.9	8.0	3.36	1.69	1.91	3.80	1.20	1.26	12	6	10
OPA65R-BU6A Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	23	17	21
TMA2124F03V5-2D TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	1
TMABPD7823VG12A TMA	10.4	9.7	8.3	0.70	0.60	1.07	1.25	1.20	1.20	2	2	2
TMA2124F03V5-2D TMA (Shielded)	10.4	0.0	8.3	0.00	0.60	0.00	1.25	1.20	1.20	0	2	1

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice:	1.31	in.
Density of ice:	56	pcf

TPA65R-BU6DA-K Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:	222	lbs
Weight of object:	69.0	lbs
Combined weight of ice and object:	291	lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:

Height (in):	28.2	
Width (in):	16.1	
Depth (in):	8.0	
Total weight of ice on object:	73	lbs
Weight of object:	66.0	lbs
Combined weight of ice and object:	139	lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.4	
Width (in):	15.9	
Depth (in):	8.0	
Total weight of ice on object:	77	lbs
Weight of object:	82.0	lbs
Combined weight of ice and object:	159	lbs

OPA65R-BU6A Antenna

Weight of ice based on total radial SF area:

Height (in):	71.1	
Width (in):	11.7	
Depth (in):	8.4	
Total weight of ice on object:	149	lbs
Weight of object:	58.0	lbs
Combined weight of ice and object:	207	lbs

TMA2124F03V5-2D TMA

Weight of ice based on total radial SF area:

Height (in):	10.4	
Width (in):	9.7	
Depth (in):	8.3	
Total weight of ice on object:	20	lbs
Weight of object:	36.0	lbs
Combined weight of ice and object:	56	lbs

TMABPD7823VG12A TMA

Weight of ice based on total radial SF area:

Height (in):	10.7	
Width (in):	3.8	
Depth (in):	11.1	
Total weight of ice on object:	19	lbs
Weight of object:	25.0	lbs
Combined weight of ice and object:	44	lbs

DC6 Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:	48	lbs
Weight of object:	29	lbs
Combined weight of ice and object:	77	lbs

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	2.5	
Per foot weight of ice on object:	8	plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:	7	plf

PL 6x3/8

Weight of ice based on total radial SF area:

Height (in):	6	
Width (in):	0.375	
Per foot weight of ice on object:	12	plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:	11	plf

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:	8	plf

2-1/2" Pipe

Per foot weight of ice:

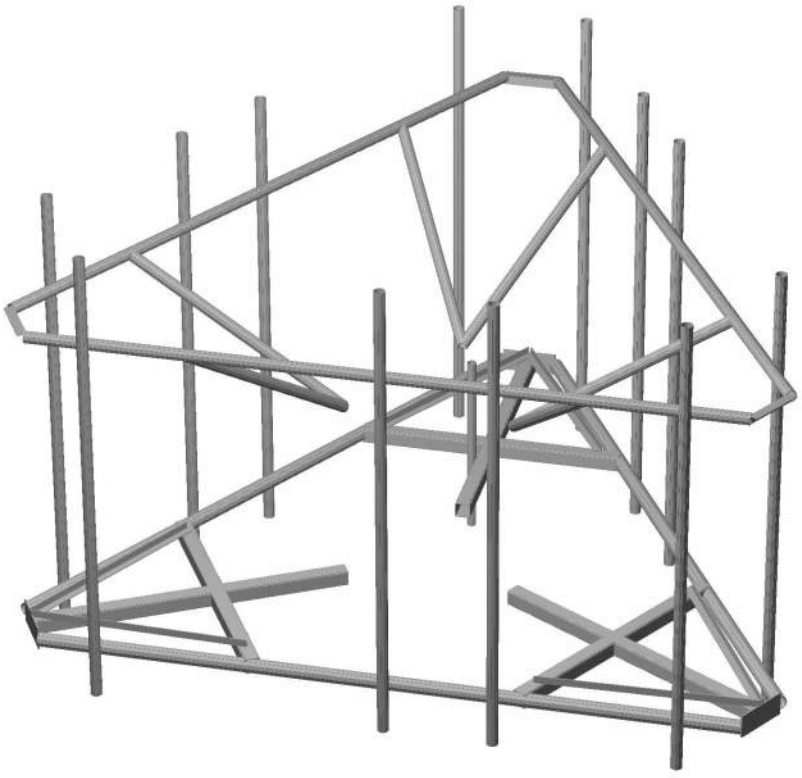
diameter (in):	2.88	
Per foot weight of ice on object:	7	plf

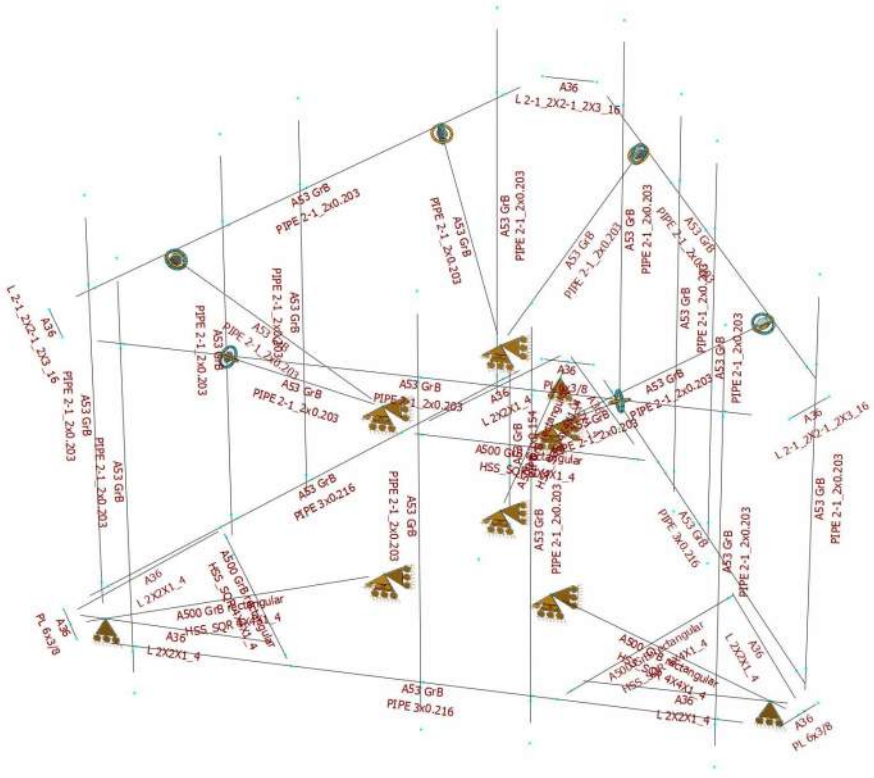
2" Pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:	6	plf

Mount Calculations
(Proposed Conditions)


Y
X
Z


A36
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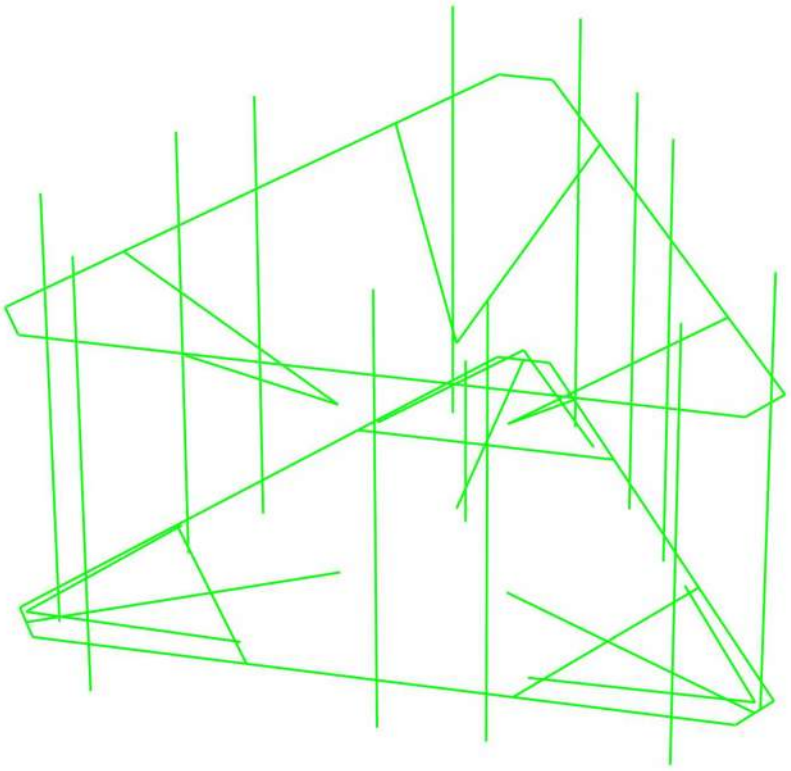
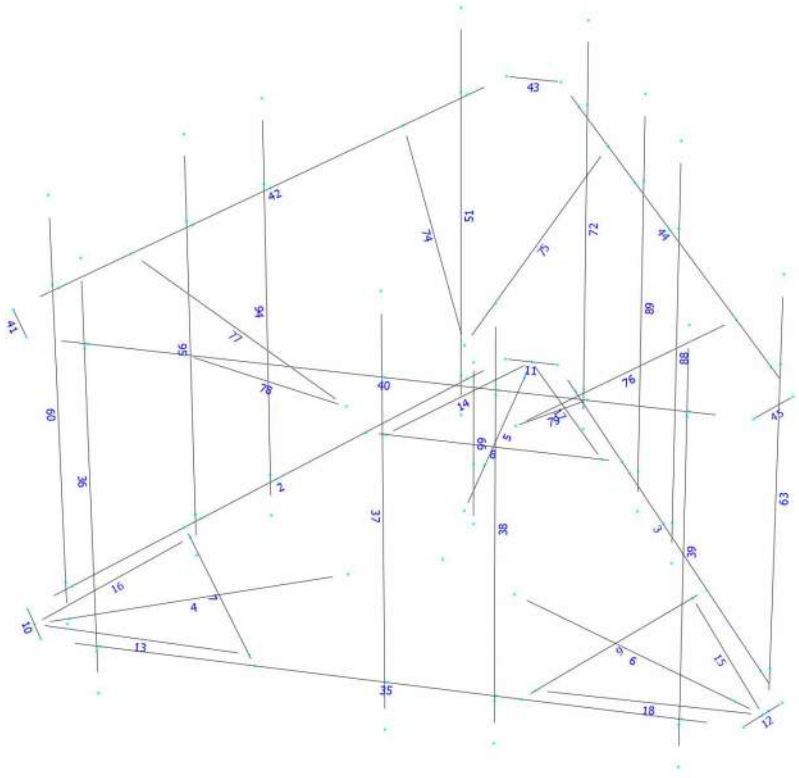
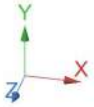
A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 3x0.216
A500 GrB
HSS_SQR 4X4X1_4
A36
L 2X2X1_4
A36
PL 6x3/8
Y
X
Z


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z

Current Date: 4/27/2023 1:40 PM
Units system: English





RAM® Elements
CONNECT Edition

Current Date: 4/27/2023 4:02 PM
Units system: English

Load data

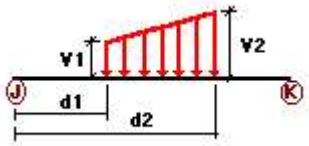
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load on Antenna 1	No	LL
LLa2	500 lb Live Load on Antenna 2	No	LL
LLa3	500 lb Live Load on Antenna 3	No	LL
LLa4	500 lb Live Load on Antenna 4	No	LL

Distributed force on members



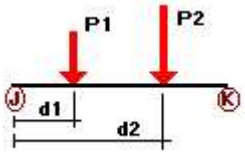
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	4	y	-0.01	-0.01	0.00	No	3.90	No
	5	y	-0.01	-0.01	0.00	No	3.90	No
	6	y	-0.01	-0.01	0.00	No	3.90	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	9	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	18	y	-0.01	0.00	0.00	No	0.00	No
W0	2	z	-0.019	-0.019	0.00	No	100.00	Yes
	3	z	-0.019	-0.019	0.00	No	100.00	Yes
	4	z	-0.023	-0.023	0.00	No	100.00	Yes
	6	z	-0.023	-0.023	0.00	No	100.00	Yes

	7	z	-0.023	-0.023	0.00	No	100.00	Yes
	8	z	-0.023	-0.023	0.00	No	100.00	Yes
	9	z	-0.023	-0.023	0.00	No	100.00	Yes
	10	z	-0.054	-0.054	0.00	No	100.00	Yes
	11	z	-0.054	-0.054	0.00	No	100.00	Yes
	12	z	-0.054	-0.054	0.00	No	100.00	Yes
	13	z	-0.018	-0.018	0.00	No	100.00	Yes
	14	z	-0.018	-0.018	0.00	No	100.00	Yes
	15	z	-0.018	-0.018	0.00	No	100.00	Yes
	16	z	-0.018	-0.018	0.00	No	100.00	Yes
	17	z	-0.018	-0.018	0.00	No	100.00	Yes
	18	z	-0.018	-0.018	0.00	No	100.00	Yes
	35	z	-0.019	-0.019	0.00	No	100.00	Yes
	36	z	-0.016	-0.016	0.00	No	10.00	Yes
		z	-0.016	-0.016	90.00	Yes	100.00	Yes
	37	z	-0.016	-0.016	0.00	No	10.00	Yes
		z	-0.016	-0.016	90.00	Yes	100.00	Yes
	38	z	-0.016	-0.016	0.00	No	100.00	Yes
	39	z	-0.016	-0.016	0.00	No	10.00	Yes
		z	-0.016	-0.016	90.00	Yes	100.00	Yes
	40	z	-0.016	-0.016	0.00	No	100.00	Yes
	41	z	-0.023	-0.023	0.00	No	100.00	Yes
	42	z	-0.016	-0.016	0.00	No	100.00	Yes
	43	z	-0.023	-0.023	0.00	No	100.00	Yes
	44	z	-0.016	-0.016	0.00	No	100.00	Yes
	45	z	-0.023	-0.023	0.00	No	100.00	Yes
	51	z	-0.016	-0.016	0.00	No	100.00	Yes
	60	z	-0.016	-0.016	0.00	No	100.00	Yes
	63	z	-0.016	-0.016	0.00	No	100.00	Yes
	72	z	-0.016	-0.016	0.00	No	100.00	Yes
	74	z	-0.016	-0.016	0.00	No	100.00	Yes
	75	z	-0.016	-0.016	0.00	No	100.00	Yes
	76	z	-0.016	-0.016	0.00	No	100.00	Yes
	77	z	-0.016	-0.016	0.00	No	100.00	Yes
	78	z	-0.016	-0.016	0.00	No	100.00	Yes
	79	z	-0.016	-0.016	0.00	No	100.00	Yes
	88	z	-0.016	-0.016	0.00	No	100.00	Yes
	89	z	-0.016	-0.016	0.00	No	100.00	Yes
	94	z	-0.016	-0.016	0.00	No	100.00	Yes
	95	z	-0.016	-0.016	0.00	No	100.00	Yes
	99	z	-0.013	-0.013	0.00	No	100.00	Yes
W30	2	x	-0.019	-0.019	0.00	No	100.00	Yes
	3	x	-0.019	-0.019	0.00	No	100.00	Yes
	4	x	-0.023	-0.023	0.00	No	100.00	Yes
	5	x	-0.023	-0.023	0.00	No	100.00	Yes
	6	x	-0.023	-0.023	0.00	No	100.00	Yes
	7	x	-0.023	-0.023	0.00	No	100.00	Yes
	9	x	-0.023	-0.023	0.00	No	100.00	Yes
	10	x	-0.054	-0.054	0.00	No	100.00	Yes
	11	x	-0.054	-0.054	0.00	No	100.00	Yes
	12	x	-0.054	-0.054	0.00	No	100.00	Yes
	14	x	-0.018	-0.018	0.00	No	100.00	Yes
	15	x	-0.018	-0.018	0.00	No	100.00	Yes
	16	x	-0.018	-0.018	0.00	No	100.00	Yes
	17	x	-0.018	-0.018	0.00	No	100.00	Yes
	36	x	-0.016	-0.016	0.00	No	100.00	Yes
	37	x	-0.016	-0.016	0.00	No	100.00	Yes
	38	x	-0.016	-0.016	0.00	No	100.00	Yes
	39	x	-0.016	-0.016	0.00	No	100.00	Yes
	41	x	-0.023	-0.023	0.00	No	100.00	Yes

	42	x	-0.016	-0.016	0.00	No	100.00	Yes
	43	x	-0.023	-0.023	0.00	No	100.00	Yes
	44	x	-0.016	-0.016	0.00	No	100.00	Yes
	45	x	-0.023	-0.023	0.00	No	100.00	Yes
	51	x	-0.016	-0.016	0.00	No	100.00	Yes
	60	x	-0.016	-0.016	0.00	No	100.00	Yes
	63	x	-0.016	-0.016	0.00	No	10.00	Yes
		x	-0.016	-0.016	90.00	Yes	100.00	Yes
	72	x	-0.016	-0.016	0.00	No	10.00	Yes
		x	-0.016	-0.016	90.00	Yes	100.00	Yes
	74	x	-0.016	-0.016	0.00	No	100.00	Yes
	75	x	-0.016	-0.016	0.00	No	100.00	Yes
	76	x	-0.016	-0.016	0.00	No	100.00	Yes
	77	x	-0.016	-0.016	0.00	No	100.00	Yes
	78	x	-0.016	-0.016	0.00	No	100.00	Yes
	79	x	-0.016	-0.016	0.00	No	100.00	Yes
	88	x	-0.016	-0.016	0.00	No	10.00	Yes
		x	-0.016	-0.016	90.00	Yes	100.00	Yes
	89	x	-0.016	-0.016	0.00	No	100.00	Yes
	94	x	-0.016	-0.016	0.00	No	100.00	Yes
	95	x	-0.016	-0.016	0.00	No	100.00	Yes
	99	x	-0.013	-0.013	0.00	No	100.00	Yes
Di	2	y	-0.008	-0.008	0.00	No	100.00	Yes
	3	y	-0.008	-0.008	0.00	No	100.00	Yes
	4	y	-0.011	-0.011	0.00	No	100.00	Yes
	5	y	-0.011	-0.011	0.00	No	100.00	Yes
	6	y	-0.011	-0.011	0.00	No	100.00	Yes
	7	y	-0.011	-0.011	0.00	No	100.00	Yes
	8	y	-0.011	-0.011	0.00	No	100.00	Yes
	9	y	-0.011	-0.011	0.00	No	100.00	Yes
	10	y	-0.012	-0.012	0.00	No	100.00	Yes
	11	y	-0.012	-0.012	0.00	No	100.00	Yes
	12	y	-0.012	-0.012	0.00	No	100.00	Yes
	13	y	-0.007	-0.007	0.00	No	100.00	Yes
	14	y	-0.007	-0.007	0.00	No	100.00	Yes
	15	y	-0.007	-0.007	0.00	No	100.00	Yes
	16	y	-0.007	-0.007	0.00	No	100.00	Yes
	17	y	-0.007	-0.007	0.00	No	100.00	Yes
	18	y	-0.007	-0.007	0.00	No	100.00	Yes
	35	y	-0.008	-0.008	0.00	No	100.00	Yes
	36	y	-0.007	-0.007	0.00	No	100.00	Yes
	37	y	-0.007	-0.007	0.00	No	100.00	Yes
	38	y	-0.007	-0.007	0.00	No	100.00	Yes
	39	y	-0.007	-0.007	0.00	No	100.00	Yes
	40	y	-0.007	-0.007	0.00	No	100.00	Yes
	41	y	-0.008	-0.008	0.00	No	100.00	Yes
	42	y	-0.007	-0.007	0.00	No	100.00	Yes
	43	y	-0.008	-0.008	0.00	No	100.00	Yes
	44	y	-0.007	-0.007	0.00	No	100.00	Yes
	45	y	-0.008	-0.008	0.00	No	100.00	Yes
	51	y	-0.007	-0.007	0.00	No	100.00	Yes
	60	y	-0.007	-0.007	0.00	No	100.00	Yes
	63	y	-0.007	-0.007	0.00	No	100.00	Yes
	72	y	-0.007	-0.007	0.00	No	100.00	Yes
	74	y	-0.007	-0.007	0.00	No	100.00	Yes
	75	y	-0.007	-0.007	0.00	No	100.00	Yes
	76	y	-0.007	-0.007	0.00	No	100.00	Yes
	77	y	-0.007	-0.007	0.00	No	100.00	Yes
	78	y	-0.007	-0.007	0.00	No	100.00	Yes
	79	y	-0.007	-0.007	0.00	No	100.00	Yes

	88	y	-0.007	-0.007	0.00	No	100.00	Yes
	89	y	-0.007	-0.007	0.00	No	100.00	Yes
	94	y	-0.007	-0.007	0.00	No	100.00	Yes
	95	y	-0.007	-0.007	0.00	No	100.00	Yes
	99	y	-0.006	-0.006	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	36	y	-0.029	2.50	No
		y	-0.029	7.50	No
		y	-0.05	6.00	No
	37	y	-0.033	3.00	No
		y	-0.033	5.00	No
		y	-0.041	6.00	No
		y	-0.041	8.00	No
	39	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.036	6.00	No
	51	y	-0.029	2.50	No
		y	-0.029	7.50	No
		y	-0.05	6.00	No
	60	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.036	6.00	No
	63	y	-0.029	2.50	No
		y	-0.029	7.50	No
		y	-0.05	6.00	No
	72	y	-0.035	2.50	No
		y	-0.035	7.50	No
		y	-0.036	6.00	No
	88	y	-0.033	3.00	No
		y	-0.033	5.00	No
		y	-0.041	6.00	No
		y	-0.041	8.00	No
	94	y	-0.033	3.00	No
		y	-0.033	5.00	No
		y	-0.041	6.00	No
		y	-0.041	8.00	No
	99	y	-0.029	2.00	No
W0	36	z	-0.213	2.50	No
		z	-0.213	7.50	No
	37	z	-0.103	3.00	No
		z	-0.103	5.00	No
		z	-0.109	6.00	No
		z	-0.109	8.00	No
	39	z	-0.344	2.50	No
		z	-0.344	7.50	No
	51	z	-0.175	2.50	No

		z	-0.175	7.50	No
		z	-0.029	6.00	No
	60	z	-0.20	2.50	No
		z	-0.20	7.50	No
		z	-0.029	6.00	No
	63	z	-0.175	2.50	No
		z	-0.175	7.50	No
		z	-0.029	6.00	No
	72	z	-0.20	2.50	No
		z	-0.20	7.50	No
		z	-0.029	6.00	No
	88	z	-0.062	3.00	No
		z	-0.062	5.00	No
		z	-0.071	6.00	No
		z	-0.071	8.00	No
	94	z	-0.062	3.00	No
		z	-0.062	5.00	No
		z	-0.071	6.00	No
		z	-0.071	8.00	No
	99	z	-0.084	2.00	No
W30	36	x	-0.163	2.50	No
		x	-0.163	7.50	No
		x	-0.039	6.00	No
	37	x	-0.049	3.00	No
		x	-0.049	5.00	No
		x	-0.058	6.00	No
		x	-0.058	8.00	No
	39	x	-0.152	2.50	No
		x	-0.152	7.50	No
		x	-0.039	6.00	No
	51	x	-0.20	2.50	No
		x	-0.20	7.50	No
		x	-0.01	6.00	No
	60	x	-0.296	2.50	No
		x	-0.296	7.50	No
		x	-0.01	6.00	No
	63	x	-0.20	2.50	No
		x	-0.20	7.50	No
		x	-0.01	6.00	No
	72	x	-0.296	2.50	No
		x	-0.296	7.50	No
		x	-0.01	6.00	No
	88	x	-0.089	3.00	No
		x	-0.089	5.00	No
		x	-0.096	6.00	No
		x	-0.096	8.00	No
	94	x	-0.089	3.00	No
		x	-0.089	5.00	No
		x	-0.096	6.00	No
		x	-0.096	8.00	No
	99	x	-0.084	2.00	No
Di	36	y	-0.075	2.50	No
		y	-0.075	7.50	No
		y	-0.038	6.00	No
	37	y	-0.037	3.00	No
		y	-0.037	5.00	No
		y	-0.039	6.00	No
		y	-0.039	8.00	No
	39	y	-0.111	2.50	No
		y	-0.111	7.50	No

		y	-0.02	6.00	No
	51	y	-0.075	2.50	No
		y	-0.075	7.50	No
		y	-0.038	6.00	No
	60	y	-0.111	2.50	No
		y	-0.111	7.50	No
		y	-0.02	6.00	No
	63	y	-0.075	2.50	No
		y	-0.075	7.50	No
		y	-0.038	6.00	No
	72	y	-0.111	2.50	No
		y	-0.111	7.50	No
		y	-0.02	6.00	No
	88	y	-0.037	3.00	No
		y	-0.037	5.00	No
		y	-0.039	6.00	No
		y	-0.039	8.00	No
	94	y	-0.037	3.00	No
		y	-0.037	5.00	No
		y	-0.039	6.00	No
		y	-0.039	8.00	No
	99	y	-0.048	2.00	No
Wi0	36	z	-0.04	2.50	No
		z	-0.04	7.50	No
		z	-0.002	6.00	No
	37	z	-0.02	3.00	No
		z	-0.02	5.00	No
		z	-0.021	6.00	No
		z	-0.021	8.00	No
	39	z	-0.06	2.50	No
		z	-0.06	7.50	No
		z	-0.002	6.00	No
	51	z	-0.033	2.50	No
		z	-0.033	7.50	No
		z	-0.008	6.00	No
	60	z	-0.037	2.50	No
		z	-0.037	7.50	No
		z	-0.008	6.00	No
	63	z	-0.033	2.50	No
		z	-0.033	7.50	No
		z	-0.008	6.00	No
	72	z	-0.037	2.50	No
		z	-0.037	7.50	No
		z	-0.008	6.00	No
	88	z	-0.013	3.00	No
		z	-0.013	5.00	No
		z	-0.014	6.00	No
		z	-0.014	8.00	No
	94	z	-0.013	3.00	No
		z	-0.013	5.00	No
		z	-0.014	6.00	No
		z	-0.014	8.00	No
	99	z	-0.017	2.00	No
Wi30	36	x	-0.032	2.50	No
		x	-0.032	7.50	No
		x	-0.009	6.00	No
	37	x	-0.011	3.00	No
		x	-0.011	5.00	No
		x	-0.012	6.00	No
		x	-0.012	8.00	No

	39	x	-0.03	2.50	No
		x	-0.03	7.50	No
		x	-0.009	6.00	No
	51	x	-0.037	2.50	No
		x	-0.037	7.50	No
		x	-0.004	6.00	No
	60	x	-0.052	2.50	No
		x	-0.052	7.50	No
		x	-0.004	6.00	No
	63	x	-0.037	2.50	No
		x	-0.037	7.50	No
		x	-0.004	6.00	No
	72	x	-0.052	2.50	No
		x	-0.052	7.50	No
		x	-0.004	6.00	No
	88	x	-0.017	3.00	No
		x	-0.017	5.00	No
		x	-0.019	6.00	No
		x	-0.019	8.00	No
	94	x	-0.017	3.00	No
		x	-0.017	5.00	No
		x	-0.019	6.00	No
		x	-0.019	8.00	No
	99	x	-0.017	2.00	No
WL0	36	z	-0.012	2.50	No
		z	-0.012	7.50	No
	37	z	-0.006	3.00	No
		z	-0.006	5.00	No
		z	-0.006	6.00	No
		z	-0.006	8.00	No
	39	z	-0.019	2.50	No
		z	-0.019	7.50	No
	51	z	-0.01	2.50	No
		z	-0.01	7.50	No
		z	-0.002	6.00	No
	60	z	-0.011	2.50	No
		z	-0.011	7.50	No
		z	-0.002	6.00	No
	63	z	-0.01	2.50	No
		z	-0.01	7.50	No
		z	-0.002	6.00	No
	72	z	-0.011	2.50	No
		z	-0.011	7.50	No
		z	-0.002	6.00	No
	88	z	-0.004	3.00	No
		z	-0.004	5.00	No
		z	-0.004	6.00	No
		z	-0.004	8.00	No
	94	z	-0.004	3.00	No
		z	-0.004	5.00	No
		z	-0.004	6.00	No
		z	-0.004	8.00	No
	99	z	-0.004	2.00	No
WL30	36	x	-0.009	2.50	No
		x	-0.009	7.50	No
		x	-0.002	6.00	No
	37	x	-0.003	3.00	No
		x	-0.003	5.00	No
		x	-0.003	6.00	No
		x	-0.003	8.00	No

	39	x	-0.008	2.50	No
		x	-0.008	7.50	No
		x	-0.002	6.00	No
	51	x	-0.011	2.50	No
		x	-0.011	7.50	No
		x	-0.001	6.00	No
	60	x	-0.016	2.50	No
		x	-0.016	7.50	No
		x	-0.001	6.00	No
	63	x	-0.011	2.50	No
		x	-0.011	7.50	No
		x	-0.001	6.00	No
	72	x	-0.016	2.50	No
		x	-0.016	7.50	No
		x	-0.001	6.00	No
	88	x	-0.005	3.00	No
		x	-0.005	5.00	No
		x	-0.005	6.00	No
		x	-0.005	8.00	No
	94	x	-0.005	3.00	No
		x	-0.005	5.00	No
		x	-0.005	6.00	No
		x	-0.005	8.00	No
	99	x	-0.004	2.00	No
LL1	35	y	-0.25	50.00	Yes
LL2	35	y	-0.25	0.00	Yes
LLa1	39	y	-0.50	50.00	Yes
LLa2	38	y	-0.50	50.00	Yes
LLa3	37	y	-0.50	50.00	Yes
LLa4	36	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load on Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load on Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

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Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

W180=-W0
W210=-W30
Wi180=-Wi0
Wi210=-Wi30
WL180=-WL0
WL210=-WL30
LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**4**	LC2 at 60.42%	0.19	OK	
		5	LC4 at 59.38%	**0.37**	**OK**	
		6	LC3 at 60.42%	0.29	OK	
		7	LC2 at 48.44%	0.21	OK	
		8	LC1 at 48.44%	0.22	OK	
		9	LC3 at 50.00%	0.21	OK	
	L 2-1_2X2-1_2X3_16	**41**	LC4 at 100.00%	0.83	OK	
		43	LC3 at 100.00%	0.81	OK	
		45	LC2 at 100.00%	**0.89**	**OK**	
	L 2X2X1_4	**13**	LC3 at 100.00%	0.24	OK	

	14	LC1 at 100.00%	0.26	OK
	15	LC4 at 100.00%	0.27	OK
	16	LC2 at 0.00%	**0.31**	**OK**
	17	LC1 at 0.00%	0.29	OK
	18	LC3 at 0.00%	0.28	OK
PIPE 2-1_2x0.203	**36**	LC3 at 25.00%	0.24	OK
	37	LC3 at 60.42%	0.19	OK
	38	LC4 at 89.58%	0.17	OK
	39	LC4 at 89.58%	0.23	OK
	40	LC2 at 22.32%	0.55	OK
	42	LC3 at 77.68%	**0.63**	**OK**
	44	LC3 at 22.32%	0.56	OK
	51	LC1 at 89.58%	0.30	OK
	60	LC2 at 89.58%	0.33	OK
	63	LC4 at 89.58%	0.30	OK
	72	LC1 at 89.58%	0.30	OK
	74	LC3 at 0.00%	0.25	OK
	75	LC3 at 0.00%	0.24	OK
	76	LC2 at 0.00%	0.20	OK
	77	LC4 at 0.00%	0.19	OK
	78	LC4 at 0.00%	0.21	OK
	79	LC2 at 0.00%	0.23	OK
	88	LC3 at 89.58%	0.19	OK
	89	LC1 at 89.58%	0.22	OK
	94	LC2 at 50.00%	0.23	OK
	95	LC2 at 89.58%	0.21	OK
PIPE 2x0.154	**99**	LC4 at 59.38%	**0.06**	**OK**
PIPE 3x0.216	**2**	LC2 at 33.93%	0.31	OK
	3	LC4 at 50.00%	0.30	OK
	35	LC2 at 68.75%	**0.33**	**OK**
PL 6x3/8	**10**	LC2 at 46.88%	0.28	OK
	11	LC1 at 50.00%	**0.31**	**OK**
	12	LC4 at 50.00%	0.27	OK

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	-4.00	0.00	0
3	0.596	-4.00	-8.7157	0
4	7.846	-4.00	3.8417	0
9	-7.846	-4.00	3.8417	0
10	-0.596	-4.00	-8.7157	0
12	7.25	-4.00	4.874	0
13	-7.25	-4.00	4.874	0
14	7.548	-4.00	4.3578	0
15	1.7716	-4.00	1.0228	0
18	-7.548	-4.00	4.3578	0
19	-1.7716	-4.00	1.0228	0
20	0.00	-4.00	-8.7157	0
21	0.00	-4.00	-2.0457	0
22	2.846	-4.00	-4.8186	0
23	5.596	-4.00	-0.0554	0
26	-2.846	-4.00	-4.8186	0
27	-5.596	-4.00	-0.0554	0
28	-2.75	-4.00	4.874	0
29	2.75	-4.00	4.874	0
30	5.3725	-4.00	0.3317	0
31	2.9735	-4.00	4.4869	0
34	-2.9735	-4.00	4.4869	0
35	-5.3725	-4.00	0.3317	0

36	-2.399	-4.00	-4.8186	0
37	2.399	-4.00	-4.8186	0
86	6.00	-4.00	4.874	0
87	6.00	-4.00	5.074	0
90	2.25	-4.00	4.874	0
91	2.25	-4.00	5.074	0
94	0.00	-4.00	4.874	0
95	0.00	-4.00	5.074	0
98	-6.00	-4.00	4.874	0
99	-6.00	-4.00	5.074	0
100	6.00	5.00	5.074	0
101	2.25	5.00	5.074	0
102	0.00	5.00	5.074	0
103	-6.00	5.00	5.074	0
104	6.00	-5.00	5.074	0
105	2.25	-5.00	5.074	0
106	0.00	-5.00	5.074	0
107	-6.00	-5.00	5.074	0
108	-7.25	3.00	4.874	0
109	-7.846	3.00	3.8417	0
110	-0.596	3.00	-8.7157	0
111	0.596	3.00	-8.7157	0
112	7.25	3.00	4.874	0
113	7.846	3.00	3.8417	0
114	-1.7716	0.00	1.0228	0
115	0.00	0.00	-2.0457	0
116	1.7716	0.00	1.0228	0
117	-6.00	3.00	4.874	0
118	-6.00	3.00	5.074	0
119	0.00	3.00	4.874	0
120	0.00	3.00	5.074	0
121	2.25	3.00	4.874	0
122	2.25	3.00	5.074	0
123	6.00	3.00	4.874	0
124	6.00	3.00	5.074	0
125	-1.221	-4.00	-7.6332	0
126	-1.3942	-4.00	-7.7332	0
127	-1.3942	5.00	-7.7332	0
128	-1.3942	-5.00	-7.7332	0
129	-1.221	3.00	-7.6332	0
130	-1.3942	3.00	-7.7332	0
143	-7.221	-4.00	2.7592	0
144	-7.3942	-4.00	2.6592	0
145	-7.3942	5.00	2.6592	0
146	-7.3942	-5.00	2.6592	0
147	-7.221	3.00	2.7592	0
148	-7.3942	3.00	2.6592	0
149	7.221	-4.00	2.7592	0
150	7.3942	-4.00	2.6592	0
151	7.3942	5.00	2.6592	0
152	7.3942	-5.00	2.6592	0
153	7.221	3.00	2.7592	0
154	7.3942	3.00	2.6592	0
167	1.221	-4.00	-7.6332	0
168	1.3942	-4.00	-7.7332	0
169	1.3942	5.00	-7.7332	0
170	1.3942	-5.00	-7.7332	0
171	1.221	3.00	-7.6332	0
172	1.3942	3.00	-7.7332	0
173	6.221	3.00	1.0271	0

174	-4.00	3.00	4.874	0
175	-2.221	3.00	-5.9011	0
176	4.00	3.00	4.874	0
177	-6.221	3.00	1.0271	0
178	2.221	3.00	-5.9011	0
179	0.00	-4.00	-7.9746	0
180	6.9062	-4.00	3.9873	0
181	-6.9062	-4.00	3.9873	0
194	3.096	-4.00	-4.3856	0
195	3.2692	-4.00	-4.4856	0
196	4.221	-4.00	-2.437	0
197	4.3942	-4.00	-2.537	0
198	3.2692	5.00	-4.4856	0
199	4.3942	5.00	-2.537	0
200	3.2692	-5.00	-4.4856	0
201	4.3942	-5.00	-2.537	0
202	4.221	3.00	-2.437	0
203	4.3942	3.00	-2.537	0
204	3.096	3.00	-4.3856	0
205	3.2692	3.00	-4.4856	0
206	-5.346	-4.00	-0.4884	0
207	-5.5192	-4.00	-0.5884	0
208	-4.221	-4.00	-2.437	0
209	-4.3942	-4.00	-2.537	0
210	-5.5192	5.00	-0.5884	0
211	-4.3942	5.00	-2.537	0
212	-5.5192	-5.00	-0.5884	0
213	-4.3942	-5.00	-2.537	0
214	-4.221	3.00	-2.437	0
215	-4.3942	3.00	-2.537	0
216	-5.346	3.00	-0.4884	0
217	-5.5192	3.00	-0.5884	0
218	0.00	-4.00	-4.00	0
219	-0.25	-4.00	-4.00	0
220	-0.25	-5.50	-4.00	0
221	-0.25	-1.50	-4.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	0	0	0
19	1	1	1	0	0	0
21	1	1	1	0	0	0
114	1	1	1	0	0	0
115	1	1	1	0	0	0
116	1	1	1	0	0	0
179	0	1	0	0	0	0
180	0	1	0	0	0	0
181	0	1	0	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	9	10		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	18	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	20	21		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	14	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	28	27		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	26	22		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	23	29		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	13	9		PL 6x3/8	A36	0.00	0.00	0.00
11	10	3		PL 6x3/8	A36	0.00	0.00	0.00
12	12	4		PL 6x3/8	A36	0.00	0.00	0.00
13	34	18		L 2X2X1_4	A36	0.00	0.00	0.00
14	36	20		L 2X2X1_4	A36	0.00	0.00	0.00
15	30	14		L 2X2X1_4	A36	0.00	0.00	0.00
16	18	35		L 2X2X1_4	A36	0.00	0.00	0.00
17	20	37		L 2X2X1_4	A36	0.00	0.00	0.00
18	14	31		L 2X2X1_4	A36	0.00	0.00	0.00
35	12	13		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
36	103	107		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
37	102	106		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	101	105		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
39	100	104		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
40	112	108		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	108	109		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
42	109	110		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
43	110	111		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	111	113		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	112	113		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
51	127	128		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
60	145	146		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
63	151	152		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
72	169	170		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
74	115	175		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
75	115	178		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
76	116	173		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
77	114	177		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
78	114	174		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	116	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
88	199	201		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	198	200		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
94	211	213		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
95	210	212		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
99	221	220		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

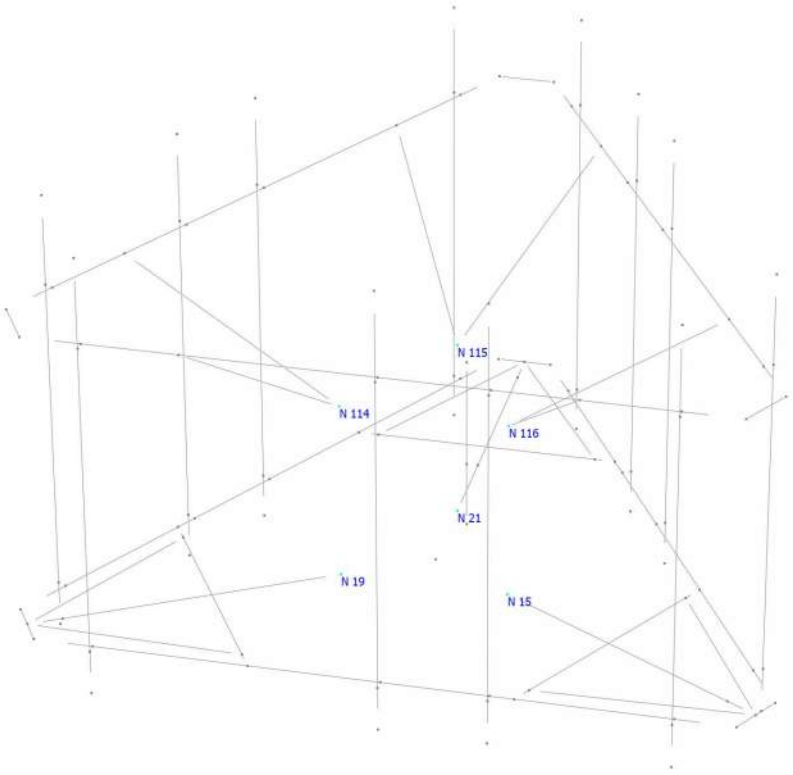
Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	180.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
45	90.00	0	0.00	0.00	0.00
88	0.00	2	-0.50	0.00	-0.866
89	0.00	2	-0.50	0.00	-0.866
94	0.00	2	-0.50	0.00	0.866
95	0.00	2	-0.50	0.00	0.866

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	3.00	0.00	0.00	3.00	0.00
14	0.00	3.00	0.00	0.00	3.00	0.00
15	0.00	3.00	0.00	0.00	3.00	0.00
16	0.00	3.00	0.00	0.00	3.00	0.00
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
74	0	0	0	0	1	1	0	0	0	0	Full
75	0	0	0	0	1	1	0	0	0	0	Full
76	0	0	0	0	1	1	0	0	0	0	Full
77	0	0	0	0	1	1	0	0	0	0	Full
78	0	0	0	0	1	1	0	0	0	0	Full
79	0	0	0	0	1	1	0	0	0	0	Full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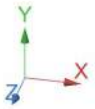
Y
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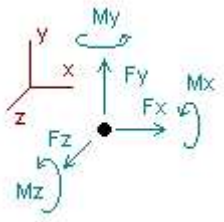
Z

RAM® Elements
CONNECT Edition

Current Date: 4/27/2023 4:03 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **W180=-W0**						
15	-0.72789	0.22219	-1.20328	0.00000	0.00000	0.00000
19	0.82667	0.12616	-0.88264	0.00000	0.00000	0.00000
21	-0.13130	-0.30465	-2.45658	0.00000	0.00000	0.00000
114	0.60953	-0.65611	-0.71424	0.00000	0.00000	0.00000
115	0.00603	1.27519	-1.69391	0.00000	0.00000	0.00000
116	-0.58304	-0.70046	-0.87360	0.00000	0.00000	0.00000
179	0.00000	-1.33757	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.69124	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.68394	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	-0.00008	-7.82423	0.00000	0.00000	0.00000
Condition **W210=-W30**						
15	-1.56557	0.27622	-1.17871	0.00000	0.00000	0.00000
19	-1.65885	-0.30544	1.13725	0.00000	0.00000	0.00000
21	-1.16310	0.05840	0.08643	0.00000	0.00000	0.00000
114	-1.41079	1.14071	0.59224	0.00000	0.00000	0.00000
115	-0.58899	-0.01931	0.02354	0.00000	0.00000	0.00000
116	-1.23605	-1.04078	-0.66076	0.00000	0.00000	0.00000
179	0.00000	-0.01891	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.08755	0.00000	0.00000	0.00000	0.00000
181	0.00000	-1.17844	0.00000	0.00000	0.00000	0.00000
SUM	-7.62334	0.00000	0.00000	0.00000	0.00000	0.00000
Condition **Wi180=-Wi0**						
15	-0.05677	0.02427	-0.10947	0.00000	0.00000	0.00000
19	0.07535	0.01269	-0.06603	0.00000	0.00000	0.00000
21	-0.02261	-0.03105	-0.22866	0.00000	0.00000	0.00000
114	0.07042	-0.07313	-0.06631	0.00000	0.00000	0.00000
115	-0.00254	0.13024	-0.16729	0.00000	0.00000	0.00000
116	-0.06384	-0.07611	-0.08524	0.00000	0.00000	0.00000
179	0.00000	-0.14067	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.07696	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.07680	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	0.00000	-0.72300	0.00000	0.00000	0.00000

Condition **Wi210=-Wi30**

15	-0.14292	0.02802	-0.11658	0.00000	0.00000	0.00000
19	-0.14722	-0.03160	0.11688	0.00000	0.00000	0.00000
21	-0.11335	0.00819	0.00378	0.00000	0.00000	0.00000
114	-0.13742	0.11885	0.06746	0.00000	0.00000	0.00000
115	-0.04844	-0.00198	0.00248	0.00000	0.00000	0.00000
116	-0.13165	-0.11745	-0.07402	0.00000	0.00000	0.00000
179	0.00000	-0.00119	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.12335	0.00000	0.00000	0.00000	0.00000
181	0.00000	-0.12620	0.00000	0.00000	0.00000	0.00000
SUM	-0.72100	0.00000	0.00000	0.00000	0.00000	0.00000

Condition **WL180=-WL0**

15	-0.01595	0.00731	-0.03410	0.00000	0.00000	0.00000
19	0.02328	0.00394	-0.01776	0.00000	0.00000	0.00000
21	-0.00852	-0.00940	-0.06652	0.00000	0.00000	0.00000
114	0.02132	-0.02187	-0.01935	0.00000	0.00000	0.00000
115	-0.00123	0.03897	-0.05008	0.00000	0.00000	0.00000
116	-0.01890	-0.02292	-0.02620	0.00000	0.00000	0.00000
179	0.00000	-0.04200	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.02303	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.02294	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	0.00000	-0.21400	0.00000	0.00000	0.00000

Condition **WL210=-WL30**

15	-0.03850	0.00833	-0.03639	0.00000	0.00000	0.00000
19	-0.03991	-0.00910	0.03644	0.00000	0.00000	0.00000
21	-0.03547	0.00242	0.00111	0.00000	0.00000	0.00000
114	-0.03943	0.03433	0.01998	0.00000	0.00000	0.00000
115	-0.01512	-0.00068	0.00084	0.00000	0.00000	0.00000
116	-0.03757	-0.03386	-0.02198	0.00000	0.00000	0.00000
179	0.00000	-0.00042	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.03550	0.00000	0.00000	0.00000	0.00000
181	0.00000	-0.03653	0.00000	0.00000	0.00000	0.00000
SUM	-0.20600	0.00000	0.00000	0.00000	0.00000	0.00000

Condition **LC1=1.2DL+1.6W0**

15	1.16771	-0.00426	1.92336	0.00000	0.00000	0.00000
19	-1.34232	0.14745	1.42416	0.00000	0.00000	0.00000
21	0.22081	0.87119	3.91331	0.00000	0.00000	0.00000
114	-1.05126	1.17283	1.19063	0.00000	0.00000	0.00000
115	0.00000	-1.91353	2.63521	0.00000	0.00000	0.00000
116	1.00506	1.23295	1.43210	0.00000	0.00000	0.00000
179	0.00000	3.11934	0.00000	0.00000	0.00000	0.00000
180	0.00000	-0.13640	0.00000	0.00000	0.00000	0.00000
181	0.00000	-0.13574	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.35384	12.51877	0.00000	0.00000	0.00000

Condition **LC2=1.2DL+1.6W30**

15	2.55441	-0.09570	1.87945	0.00000	0.00000	0.00000
19	2.60857	0.84040	-1.81706	0.00000	0.00000	0.00000
21	1.85473	0.29323	-0.11740	0.00000	0.00000	0.00000
114	2.17019	-1.69169	-0.92330	0.00000	0.00000	0.00000
115	0.93949	0.12692	-0.10645	0.00000	0.00000	0.00000
116	2.06997	1.79706	1.08476	0.00000	0.00000	0.00000
179	0.00000	1.03636	0.00000	0.00000	0.00000	0.00000

180	0.00000	-0.78847	0.00000	0.00000	0.00000	0.00000
181	0.00000	2.83572	0.00000	0.00000	0.00000	0.00000
SUM	12.19735	4.35384	0.00000	0.00000	0.00000	0.00000

Condition **LC3=1.2DL-1.6W0**

15	-1.15520	0.70632	-1.92022	0.00000	0.00000	0.00000
19	1.30842	0.55285	-1.40412	0.00000	0.00000	0.00000
21	-0.20770	-0.11092	-3.94080	0.00000	0.00000	0.00000
114	0.90137	-0.93723	-1.09874	0.00000	0.00000	0.00000
115	0.01234	2.15468	-2.79700	0.00000	0.00000	0.00000
116	-0.85923	-1.01050	-1.35789	0.00000	0.00000	0.00000
179	0.00000	-1.14765	0.00000	0.00000	0.00000	0.00000
180	0.00000	2.07988	0.00000	0.00000	0.00000	0.00000
181	0.00000	2.06639	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.35384	-12.51877	0.00000	0.00000	0.00000

Condition **LC4=1.2DL-1.6W30**

15	-2.48275	0.79216	-1.88195	0.00000	0.00000	0.00000
19	-2.67125	-0.14031	1.82437	0.00000	0.00000	0.00000
21	-1.86268	0.47378	0.13472	0.00000	0.00000	0.00000
114	-2.33721	1.94059	0.98679	0.00000	0.00000	0.00000
115	-0.94336	0.07583	-0.04490	0.00000	0.00000	0.00000
116	-1.90009	-1.55081	-1.01902	0.00000	0.00000	0.00000
179	0.00000	0.96786	0.00000	0.00000	0.00000	0.00000
180	0.00000	2.70920	0.00000	0.00000	0.00000	0.00000
181	0.00000	-0.91447	0.00000	0.00000	0.00000	0.00000
SUM	-12.19735	4.35384	0.00000	0.00000	0.00000	0.00000

Condition **LC5=0.9DL+1.6W0**

15	1.16517	-0.09111	1.92193	0.00000	0.00000	0.00000
19	-1.33982	0.06011	1.42299	0.00000	0.00000	0.00000
21	0.22071	0.77621	3.91669	0.00000	0.00000	0.00000
114	-1.03234	1.14537	1.17960	0.00000	0.00000	0.00000
115	0.00021	-1.94095	2.65640	0.00000	0.00000	0.00000
116	0.98607	1.20551	1.42117	0.00000	0.00000	0.00000
179	0.00000	2.87061	0.00000	0.00000	0.00000	0.00000
180	0.00000	-0.38031	0.00000	0.00000	0.00000	0.00000
181	0.00000	-0.38006	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	3.26538	12.51877	0.00000	0.00000	0.00000

Condition **LC6=0.9DL+1.6W30**

15	2.55225	-0.18243	1.87802	0.00000	0.00000	0.00000
19	2.61171	0.75243	-1.81847	0.00000	0.00000	0.00000
21	1.85462	0.19888	-0.11447	0.00000	0.00000	0.00000
114	2.18841	-1.71907	-0.93415	0.00000	0.00000	0.00000
115	0.93956	0.09941	-0.08471	0.00000	0.00000	0.00000
116	2.05079	1.76956	1.07379	0.00000	0.00000	0.00000
179	0.00000	0.78750	0.00000	0.00000	0.00000	0.00000
180	0.00000	-1.03249	0.00000	0.00000	0.00000	0.00000
181	0.00000	2.59159	0.00000	0.00000	0.00000	0.00000
SUM	12.19735	3.26538	0.00000	0.00000	0.00000	0.00000

Condition **LC7=0.9DL-1.6W0**

15	-1.15795	0.61884	-1.92192	0.00000	0.00000	0.00000
19	1.31144	0.46510	-1.40572	0.00000	0.00000	0.00000
21	-0.20772	-0.20483	-3.93846	0.00000	0.00000	0.00000
114	0.91982	-0.96460	-1.10953	0.00000	0.00000	0.00000
115	0.01227	2.12709	-2.77475	0.00000	0.00000	0.00000
116	-0.87786	-1.03789	-1.36839	0.00000	0.00000	0.00000
179	0.00000	-1.39668	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.83605	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.82230	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	3.26538	-12.51877	0.00000	0.00000	0.00000

Condition **LC8=0.9DL-1.6W30**

15	-2.48589	0.70456	-1.88366	0.00000	0.00000	0.00000
19	-2.66889	-0.22742	1.82300	0.00000	0.00000	0.00000
21	-1.86269	0.37923	0.13750	0.00000	0.00000	0.00000
114	-2.31805	1.91313	0.97584	0.00000	0.00000	0.00000
115	-0.94328	0.04834	-0.02321	0.00000	0.00000	0.00000
116	-1.91856	-1.57814	-1.02948	0.00000	0.00000	0.00000
179	0.00000	0.71895	0.00000	0.00000	0.00000	0.00000
180	0.00000	2.46549	0.00000	0.00000	0.00000	0.00000
181	0.00000	-1.15876	0.00000	0.00000	0.00000	0.00000
SUM	-12.19735	3.26538	0.00000	0.00000	0.00000	0.00000

Condition **LC9=1.2DL+Di+Wi0**

15	0.11088	0.53995	0.14219	0.00000	0.00000	0.00000
19	-0.13141	0.55447	0.09561	0.00000	0.00000	0.00000
21	0.02418	0.65119	0.16664	0.00000	0.00000	0.00000
114	-0.19814	0.26708	0.14217	0.00000	0.00000	0.00000
115	0.00098	0.06430	0.01856	0.00000	0.00000	0.00000
116	0.19352	0.27000	0.15782	0.00000	0.00000	0.00000
179	0.00000	1.94028	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.68445	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.68717	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	7.65888	0.72300	0.00000	0.00000	0.00000

Condition **LC10=1.2DL+Di+Wi30**

15	0.19710	0.53610	0.14929	0.00000	0.00000	0.00000
19	0.09070	0.59901	-0.08724	0.00000	0.00000	0.00000
21	0.11481	0.61172	-0.06537	0.00000	0.00000	0.00000
114	0.00997	0.07506	0.00815	0.00000	0.00000	0.00000
115	0.04685	0.19642	-0.15143	0.00000	0.00000	0.00000
116	0.26155	0.31151	0.14661	0.00000	0.00000	0.00000
179	0.00000	1.80092	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.63796	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.89018	0.00000	0.00000	0.00000	0.00000
SUM	0.72100	7.65888	0.00000	0.00000	0.00000	0.00000

Condition **LC11=1.2DL+Di-Wi0**

15	-0.00249	0.58871	-0.07656	0.00000	0.00000	0.00000
19	0.01909	0.58000	-0.03629	0.00000	0.00000	0.00000
21	-0.02115	0.58864	-0.29012	0.00000	0.00000	0.00000
114	-0.05706	0.12068	0.00940	0.00000	0.00000	0.00000
115	-0.00406	0.32485	-0.31661	0.00000	0.00000	0.00000
116	0.06567	0.11772	-0.01281	0.00000	0.00000	0.00000
179	0.00000	1.65900	0.00000	0.00000	0.00000	0.00000

180	0.00000	1.83844	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.84087	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	7.65888	-0.72300	0.00000	0.00000	0.00000

Condition **LC12=1.2DL+Di-Wi30**

15	-0.08844	0.59253	-0.08366	0.00000	0.00000	0.00000
19	-0.20314	0.53546	0.14648	0.00000	0.00000	0.00000
21	-0.11188	0.62814	-0.05791	0.00000	0.00000	0.00000
114	-0.26525	0.31274	0.14327	0.00000	0.00000	0.00000
115	-0.05003	0.19254	-0.14656	0.00000	0.00000	0.00000
116	-0.00224	0.07634	-0.00163	0.00000	0.00000	0.00000
179	0.00000	1.79850	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.88480	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.63784	0.00000	0.00000	0.00000	0.00000
SUM	-0.72100	7.65888	0.00000	0.00000	0.00000	0.00000

Condition **LC13=1.2DL**

15	0.01059	0.34866	0.00629	0.00000	0.00000	0.00000
19	-0.01104	0.35017	0.00555	0.00000	0.00000	0.00000
21	0.00023	0.37777	-0.01144	0.00000	0.00000	0.00000
114	-0.07479	0.10972	0.04365	0.00000	0.00000	0.00000
115	-0.00028	0.11009	-0.08694	0.00000	0.00000	0.00000
116	0.07529	0.10973	0.04290	0.00000	0.00000	0.00000
179	0.00000	0.99546	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.97544	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.97680	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.35384	0.00000	0.00000	0.00000	0.00000

Condition **LC14=0.9DL**

15	0.00794	0.26149	0.00472	0.00000	0.00000	0.00000
19	-0.00828	0.26263	0.00416	0.00000	0.00000	0.00000
21	0.00017	0.28333	-0.00858	0.00000	0.00000	0.00000
114	-0.05610	0.08231	0.03274	0.00000	0.00000	0.00000
115	-0.00021	0.08259	-0.06522	0.00000	0.00000	0.00000
116	0.05648	0.08232	0.03219	0.00000	0.00000	0.00000
179	0.00000	0.74657	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.73156	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.73258	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	3.26538	0.00000	0.00000	0.00000	0.00000

Condition **LC15=1.2DL+1.6LL1**

15	0.02909	0.48295	0.02292	0.00000	0.00000	0.00000
19	-0.04879	0.47363	0.03010	0.00000	0.00000	0.00000
21	-0.00044	0.31385	-0.03373	0.00000	0.00000	0.00000
114	-0.06841	0.10923	0.04482	0.00000	0.00000	0.00000
115	-0.00157	0.13333	-0.11943	0.00000	0.00000	0.00000
116	0.09012	0.12807	0.05532	0.00000	0.00000	0.00000
179	0.00000	0.92422	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.09555	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.09302	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.75384	0.00000	0.00000	0.00000	0.00000

Condition **LC16=1.2DL+1.6LL2**

15	0.06193	0.32086	0.03951	0.00000	0.00000	0.00000
19	-0.06140	0.35930	0.03356	0.00000	0.00000	0.00000
21	-0.00378	0.36328	-0.06243	0.00000	0.00000	0.00000
114	-0.07016	0.10559	0.04006	0.00000	0.00000	0.00000
115	0.00022	0.11275	-0.09091	0.00000	0.00000	0.00000
116	0.07318	0.10681	0.04021	0.00000	0.00000	0.00000
179	0.00000	0.98155	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.41657	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.98713	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.75384	0.00000	0.00000	0.00000	0.00000

Condition **LC17=1.2DL+WL0+LLa1**

15	0.03971	0.36908	0.05400	0.00000	0.00000	0.00000
19	-0.05784	0.38160	0.04232	0.00000	0.00000	0.00000
21	0.00305	0.35169	0.04670	0.00000	0.00000	0.00000
114	-0.08600	0.12249	0.05348	0.00000	0.00000	0.00000
115	0.00222	0.08430	-0.05516	0.00000	0.00000	0.00000
116	0.09885	0.13733	0.07265	0.00000	0.00000	0.00000
179	0.00000	0.99675	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.42559	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.98502	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	0.21400	0.00000	0.00000	0.00000

Condition **LC18=1.2DL+WL30+LLa1**

15	0.06224	0.36805	0.05629	0.00000	0.00000	0.00000
19	0.00528	0.39470	-0.01186	0.00000	0.00000	0.00000
21	0.03000	0.33982	-0.02087	0.00000	0.00000	0.00000
114	-0.02519	0.06628	0.01411	0.00000	0.00000	0.00000
115	0.01612	0.12395	-0.10612	0.00000	0.00000	0.00000
116	0.11755	0.14830	0.06844	0.00000	0.00000	0.00000
179	0.00000	0.95515	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.41310	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.04448	0.00000	0.00000	0.00000	0.00000
SUM	0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC19=1.2DL-WL0+LLa1**

15	0.00783	0.38375	-0.01415	0.00000	0.00000	0.00000
19	-0.01133	0.38952	0.00684	0.00000	0.00000	0.00000
21	-0.01399	0.33281	-0.08623	0.00000	0.00000	0.00000
114	-0.04332	0.07875	0.01476	0.00000	0.00000	0.00000
115	-0.00022	0.16228	-0.15542	0.00000	0.00000	0.00000
116	0.06103	0.09151	0.02020	0.00000	0.00000	0.00000
179	0.00000	0.91272	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.47163	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.03087	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	-0.21400	0.00000	0.00000	0.00000

Condition **LC20=1.2DL-WL30+LLa1**

15	-0.01468	0.38478	-0.01644	0.00000	0.00000	0.00000
19	-0.07446	0.37642	0.06101	0.00000	0.00000	0.00000
21	-0.04095	0.34468	-0.01865	0.00000	0.00000	0.00000
114	-0.10413	0.13496	0.05411	0.00000	0.00000	0.00000
115	-0.01412	0.12261	-0.10445	0.00000	0.00000	0.00000
116	0.04234	0.08055	0.02441	0.00000	0.00000	0.00000
179	0.00000	0.95433	0.00000	0.00000	0.00000	0.00000

180	0.00000	1.48411	0.00000	0.00000	0.00000	0.00000
181	0.00000	0.97141	0.00000	0.00000	0.00000	0.00000
SUM	-0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC21=1.2DL+WL0+LLa2**

15	0.02774	0.50848	0.04642	0.00000	0.00000	0.00000
19	-0.05932	0.45817	0.04883	0.00000	0.00000	0.00000
21	0.00200	0.31152	0.05151	0.00000	0.00000	0.00000
114	-0.08479	0.12356	0.05252	0.00000	0.00000	0.00000
115	0.00191	0.09717	-0.07337	0.00000	0.00000	0.00000
116	0.11245	0.15660	0.08808	0.00000	0.00000	0.00000
179	0.00000	0.95303	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.20099	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.04431	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	0.21400	0.00000	0.00000	0.00000

Condition **LC22=1.2DL+WL30+LLa2**

15	0.05028	0.50747	0.04871	0.00000	0.00000	0.00000
19	0.00381	0.47128	-0.00534	0.00000	0.00000	0.00000
21	0.02895	0.29965	-0.01605	0.00000	0.00000	0.00000
114	-0.02398	0.06737	0.01314	0.00000	0.00000	0.00000
115	0.01580	0.13682	-0.12432	0.00000	0.00000	0.00000
116	0.13116	0.16758	0.08386	0.00000	0.00000	0.00000
179	0.00000	0.91143	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.18848	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.10375	0.00000	0.00000	0.00000	0.00000
SUM	0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC23=1.2DL-WL0+LLa2**

15	-0.00414	0.52319	-0.02173	0.00000	0.00000	0.00000
19	-0.01282	0.46610	0.01336	0.00000	0.00000	0.00000
21	-0.01504	0.29264	-0.08142	0.00000	0.00000	0.00000
114	-0.04211	0.07985	0.01379	0.00000	0.00000	0.00000
115	-0.00052	0.17515	-0.17361	0.00000	0.00000	0.00000
116	0.07463	0.11082	0.03562	0.00000	0.00000	0.00000
179	0.00000	0.86900	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.24698	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.09011	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	-0.21400	0.00000	0.00000	0.00000

Condition **LC24=1.2DL-WL30+LLa2**

15	-0.02665	0.52421	-0.02401	0.00000	0.00000	0.00000
19	-0.07595	0.45300	0.06752	0.00000	0.00000	0.00000
21	-0.04200	0.30451	-0.01384	0.00000	0.00000	0.00000
114	-0.10292	0.13605	0.05316	0.00000	0.00000	0.00000
115	-0.01442	0.13547	-0.12265	0.00000	0.00000	0.00000
116	0.05594	0.09985	0.03983	0.00000	0.00000	0.00000
179	0.00000	0.91060	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.25948	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.03067	0.00000	0.00000	0.00000	0.00000
SUM	-0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC25=1.2DL+WL0+LLa3**

15	0.04848	0.50930	0.06361	0.00000	0.00000	0.00000
19	-0.08090	0.49876	0.05590	0.00000	0.00000	0.00000
21	0.00806	0.30388	0.03015	0.00000	0.00000	0.00000
114	-0.08596	0.12845	0.06129	0.00000	0.00000	0.00000
115	-0.00074	0.10029	-0.07775	0.00000	0.00000	0.00000
116	0.11106	0.15307	0.08078	0.00000	0.00000	0.00000
179	0.00000	0.94567	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.10877	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.10565	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	0.21400	0.00000	0.00000	0.00000

Condition **LC26=1.2DL+WL30+LLa3**

15	0.07103	0.50828	0.06590	0.00000	0.00000	0.00000
19	-0.01778	0.51187	0.00174	0.00000	0.00000	0.00000
21	0.03501	0.29201	-0.03741	0.00000	0.00000	0.00000
114	-0.02516	0.07226	0.02190	0.00000	0.00000	0.00000
115	0.01314	0.13994	-0.12870	0.00000	0.00000	0.00000
116	0.12977	0.16406	0.07657	0.00000	0.00000	0.00000
179	0.00000	0.90408	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.09626	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.16508	0.00000	0.00000	0.00000	0.00000
SUM	0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC27=1.2DL-WL0+LLa3**

15	0.01660	0.52401	-0.00453	0.00000	0.00000	0.00000
19	-0.03440	0.50671	0.02042	0.00000	0.00000	0.00000
21	-0.00898	0.28500	-0.10279	0.00000	0.00000	0.00000
114	-0.04328	0.08474	0.02255	0.00000	0.00000	0.00000
115	-0.00318	0.17827	-0.17798	0.00000	0.00000	0.00000
116	0.07325	0.10729	0.02833	0.00000	0.00000	0.00000
179	0.00000	0.86163	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.15475	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.15144	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	-0.21400	0.00000	0.00000	0.00000

Condition **LC28=1.2DL-WL30+LLa3**

15	-0.00591	0.52503	-0.00681	0.00000	0.00000	0.00000
19	-0.09753	0.49359	0.07458	0.00000	0.00000	0.00000
21	-0.03594	0.29687	-0.03521	0.00000	0.00000	0.00000
114	-0.10409	0.14093	0.06193	0.00000	0.00000	0.00000
115	-0.01708	0.13860	-0.12703	0.00000	0.00000	0.00000
116	0.05455	0.09631	0.03254	0.00000	0.00000	0.00000
179	0.00000	0.90324	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.16726	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.09202	0.00000	0.00000	0.00000	0.00000
SUM	-0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC29=1.2DL+WL0+LLa4**

15	0.04431	0.37694	0.05705	0.00000	0.00000	0.00000
19	-0.04547	0.36266	0.03469	0.00000	0.00000	0.00000
21	0.01333	0.35151	0.05325	0.00000	0.00000	0.00000
114	-0.09840	0.13439	0.06626	0.00000	0.00000	0.00000
115	0.00005	0.08643	-0.05799	0.00000	0.00000	0.00000
116	0.08619	0.12533	0.06074	0.00000	0.00000	0.00000
179	0.00000	0.99923	0.00000	0.00000	0.00000	0.00000

180	0.00000	0.98636	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.43100	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	0.21400	0.00000	0.00000	0.00000

Condition **LC30=1.2DL+WL30+LLa4**

15	0.06686	0.37590	0.05934	0.00000	0.00000	0.00000
19	0.01764	0.37575	-0.01948	0.00000	0.00000	0.00000
21	0.04027	0.33964	-0.01430	0.00000	0.00000	0.00000
114	-0.03761	0.07818	0.02686	0.00000	0.00000	0.00000
115	0.01393	0.12608	-0.10895	0.00000	0.00000	0.00000
116	0.10490	0.13630	0.05653	0.00000	0.00000	0.00000
179	0.00000	0.95766	0.00000	0.00000	0.00000	0.00000
180	0.00000	0.97387	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.49046	0.00000	0.00000	0.00000	0.00000
SUM	0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Condition **LC31=1.2DL-WL0+LLa4**

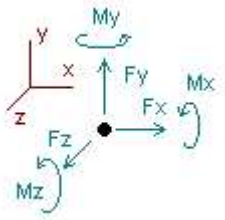
15	0.01244	0.39160	-0.01111	0.00000	0.00000	0.00000
19	0.00105	0.37057	-0.00078	0.00000	0.00000	0.00000
21	-0.00373	0.33262	-0.07968	0.00000	0.00000	0.00000
114	-0.05572	0.09065	0.02750	0.00000	0.00000	0.00000
115	-0.00241	0.16441	-0.15824	0.00000	0.00000	0.00000
116	0.04837	0.07951	0.00832	0.00000	0.00000	0.00000
179	0.00000	0.91521	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.03241	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.47686	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	4.85384	-0.21400	0.00000	0.00000	0.00000

Condition **LC32=1.2DL-WL30+LLa4**

15	-0.01008	0.39263	-0.01340	0.00000	0.00000	0.00000
19	-0.06208	0.35748	0.05338	0.00000	0.00000	0.00000
21	-0.03068	0.34450	-0.01211	0.00000	0.00000	0.00000
114	-0.11653	0.14685	0.06688	0.00000	0.00000	0.00000
115	-0.01630	0.12474	-0.10728	0.00000	0.00000	0.00000
116	0.02967	0.06855	0.01252	0.00000	0.00000	0.00000
179	0.00000	0.95680	0.00000	0.00000	0.00000	0.00000
180	0.00000	1.04488	0.00000	0.00000	0.00000	0.00000
181	0.00000	1.41739	0.00000	0.00000	0.00000	0.00000
SUM	-0.20600	4.85384	0.00000	0.00000	0.00000	0.00000

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

W180=-W0
W210=-W30
Wi180=-Wi0
Wi210=-Wi30
WL180=-WL0
WL210=-WL30
LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC15=1.2DL+1.6LL1
LC16=1.2DL+1.6LL2
LC17=1.2DL+WL0+LLa1
LC18=1.2DL+WL30+LLa1
LC19=1.2DL-WL0+LLa1
LC20=1.2DL-WL30+LLa1
LC21=1.2DL+WL0+LLa2
LC22=1.2DL+WL30+LLa2
LC23=1.2DL-WL0+LLa2
LC24=1.2DL-WL30+LLa2
LC25=1.2DL+WL0+LLa3
LC26=1.2DL+WL30+LLa3
LC27=1.2DL-WL0+LLa3
LC28=1.2DL-WL30+LLa3
LC29=1.2DL+WL0+LLa4
LC30=1.2DL+WL30+LLa4
LC31=1.2DL-WL0+LLa4
LC32=1.2DL-WL30+LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**Ic**	**Fy** [Kip]	**Ic**	**Fz** [Kip]	**Ic**	**Mx** [Kip*ft]	**Ic**	**My** [Kip*ft]	**Ic**	**Mz** [Kip*ft]	**Ic**
15	Max	2.554	LC2	0.792	LC4	1.923	LC1	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-2.486	LC8	-0.182	LC6	-1.922	LC7	0.00000	W180	0.00000	W180	0.00000	W180
19	Max	2.612	LC6	0.840	LC2	1.824	LC4	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-2.671	LC4	-0.305	W210	-1.818	LC6	0.00000	W180	0.00000	W180	0.00000	W180
21	Max	1.855	LC2	0.871	LC1	3.917	LC5	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-1.863	LC8	-0.305	W180	-3.941	LC3	0.00000	W180	0.00000	W180	0.00000	W180

114	Max	2.188	LC6	1.941	LC4	1.191	LC1	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-2.337	LC4	-1.719	LC6	-1.110	LC7	0.00000	W180	0.00000	W180	0.00000	W180
115	Max	0.940	LC6	2.155	LC3	2.656	LC5	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-0.943	LC4	-1.941	LC5	-2.797	LC3	0.00000	W180	0.00000	W180	0.00000	W180
116	Max	2.070	LC2	1.797	LC2	1.432	LC1	0.00000	W180	0.00000	W180	0.00000	W180
	Min	-1.919	LC8	-1.578	LC8	-1.368	LC7	0.00000	W180	0.00000	W180	0.00000	W180
179	Max	0.000	W180	3.119	LC1	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180
	Min	0.000	W180	-1.397	LC7	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180
180	Max	0.000	W180	2.709	LC4	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180
	Min	0.000	W180	-1.032	LC6	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180
181	Max	0.000	W180	2.836	LC2	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180
	Min	0.000	W180	-1.178	W210	0.000	W180	0.00000	W180	0.00000	W180	0.00000	W180

Connection Check

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A325 5/8" Thru Bolt

Allowable Tensile Load =

F_{Tall} = 13806 lbs.

Allowable Shear Load =

F_{vall} = 8283 lbs.

TENSILE FORCES

Reaction **F =** 3941 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1863 lbs. (See Bentley Output)
Reactions in Y direction: 871 lbs. (See Bentley Output)

Resultant: 2057 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t= 985.25 lbs. < 13806 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 514.14 lbs. < 8283 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.071	+	0.062	=	0.133	<	1.0	**Therefore, OK !**

Date: 4/27/2023
Project Name: STRATFORD NU
Project No.: CT2043
Designed By: KM **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A307 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6903 lbs.

Allowable Shear Load =

F_{vall} = 4142 lbs.

TENSILE FORCES

Reaction **F =** 3941 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1863 lbs. (See Bentley Output)
Reactions in Y direction: 871 lbs. (See Bentley Output)

Resultant: 2057 lbs.

No. of Supports = 1
No. of Bolts / Support = 3

Tension Design Load /Bolts =

f_t= 1313.67 lbs. < 6903 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 685.52 lbs. < 4142 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.190	+	0.166	=	0.356	<	1.0	**Therefore, OK !**

CHAPEL ST

Location	CHAPEL ST	**Mblu**	50/17 1/ 32/ /
Acct#	0332100	**Owner**	CONNECTICUT LIGHT & POWER CO
PBN		**Assessment**	$480,130
Appraisal	$685,900	**PID**	3414
Building Count	1	**Sewer Use**	E00
EPA Action			

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$685,900	$685,900
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$0	$480,130	$480,130

Owner of Record

Owner	CONNECTICUT LIGHT & POWER CO	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 270 HARTFORD, CT 06141	**Book**	0106
		Page	0281
		Sale Date	10/24/1922

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Sale Date**	**Book**	**Page**
CONNECTICUT LIGHT & POWER CO	$0		10/24/1922	0106	0281

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Percent Good:

Building Attributes	
Field	**Description**
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Total Kitchens	
Whirlpool Tub	
Fireplaces	
Rec Room Area	
Rec Room Quality	
Num Park	
Fireplaces 2	
Fndtn Cndtn	
Basement	

Building Photo

Building Photo
(https://images.vgsi.com/photos/StratfordCTPhotos///0087/IMG_0025_876

Building Layout

Building Layout (ParcelSketch.ashx?pid=3414&bid=3414)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	423R
Description	Elec Trsmn
Zone	
Neighborhood	6
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	15.27
Frontage	0
Depth	0
Assessed Value	$480,130
Appraised Value	$685,900

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

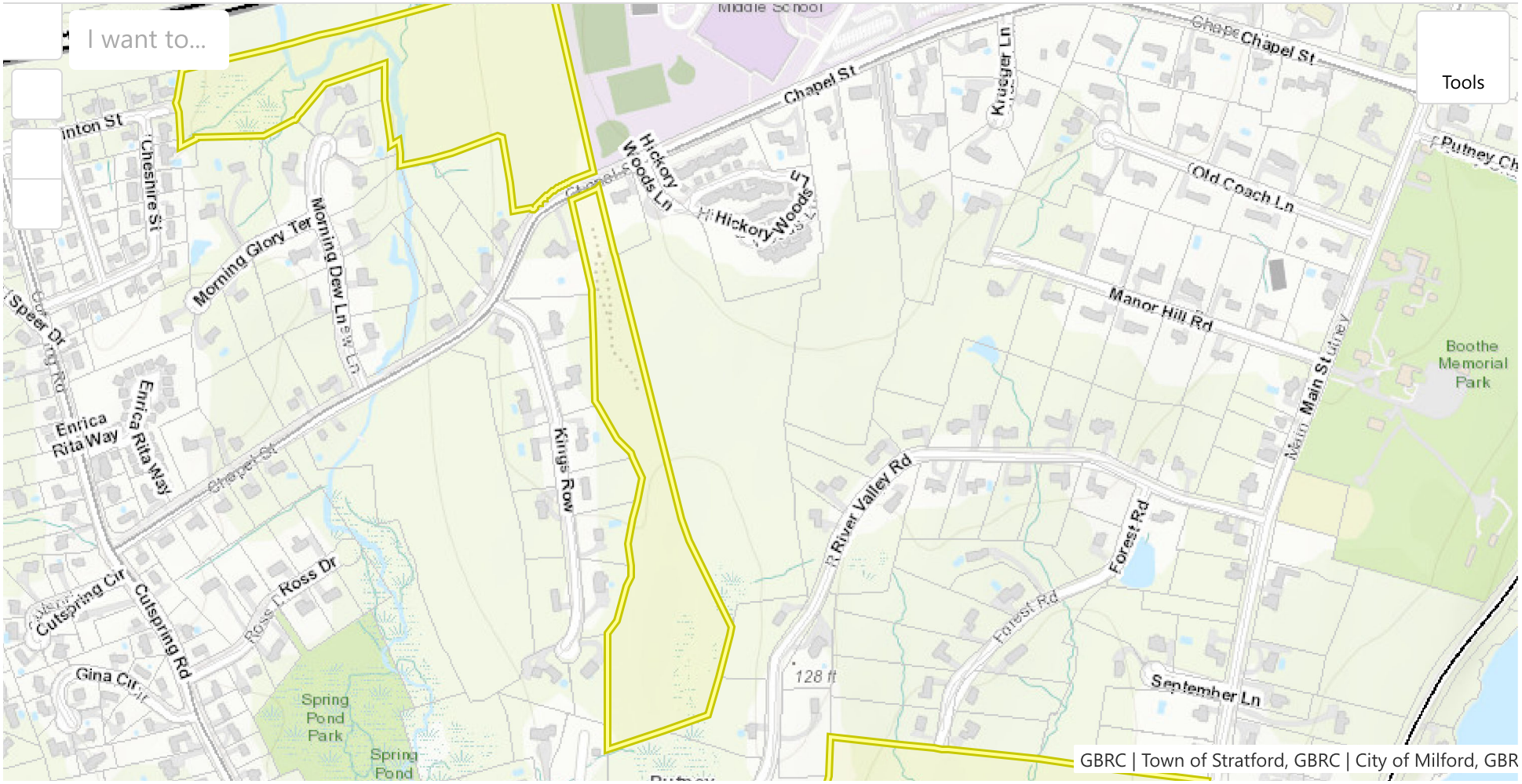
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$0	$685,900	$685,900
2021	$0	$685,900	$685,900
2020	$0	$685,900	$685,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$0	$480,130	$480,130
2021	$0	$480,130	$480,130
2020	$0	$480,130	$480,130

Search...

I want to...

Tools



WORLD ...

0 300 600ft

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL & CERTIFIED MAIL
RETURN RECEIPT REQUESTED

October 13, 2023

Deborah Denfeld
Team Lead – Transmission Siting
Eversource Energy
P.O. Box 270
Hartford, CT 06141
deborah.denfeld@eversource.com

RE: **PETITION NO. 1582 -** The Connecticut Light and Power Company d/b/a Eversource Energy petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed Pootatuck to West Devon Rebuild Project consisting of the replacement and reconductoring of electric transmission line structures along approximately 3.3 miles of its existing electric transmission line right-of-way shared by its existing 115-kilovolt (kV) 1580, 1241, 1483 and 1545 Lines between The United Illuminating Company's (UI) Pootatuck Substation in Shelton, UI's Trap Falls Substation in Shelton and Eversource's West Devon Junction in Stratford, traversing the municipalities of Shelton and Stratford, Connecticut, and related electric transmission line and substation improvements.

Dear Deborah Denfeld:

At a public meeting held on October 12, 2023, the Connecticut Siting Council (Council) considered and ruled that the above-referenced proposal would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need with the following conditions:

1. Approval of any project changes be delegated to Council staff;

2. Submit a copy of the Department of Energy and Environmental Protection (DEEP) Stormwater Permit prior to commencement of construction;

3. Submit a copy of the Final DEEP Natural Diversity Database (NDDB) Determination Letter prior to commencement of construction;

4. Incorporate pollinator habitat in the restoration of disturbed areas consistent with CGS §16-50hh, where feasible;

5. An environmental monitor shall oversee construction activities in sensitive resource areas;

6. Implement the Vernal Pool Protection Plan;

7. Submit a Post-Construction Temporary Wetland Impact Restoration Report for project areas where temporary matting is utilized;

8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed within three years from the date of the mailing of the Council's decision, this decision shall be void,

and the facility owner/operator shall dismantle the facility and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The facility owner/operator shall provide written notice to the Executive Director of any schedule changes as soon as is practicable;

9. The Council shall be notified in writing at least two weeks prior to the commencement of site construction activities;

10. Any request for extension of the time period to fully construct the facility shall be filed with the Council not later than 60 days prior to the expiration date of this decision and shall be served on all parties and intervenors, if applicable, and the City of Shelton and the Town of Stratford;

11. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed **along with a representative photograph of the project**;

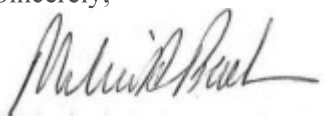
12. The facility owner/operator shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v; and

13. This Declaratory Ruling may be transferred or partially transferred, provided both the facility owner/operator/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. The Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer. Both the facility owner/operator/transferor and the transferee shall provide the Council with a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition dated July 3, 2023, and additional information dated August 17, 2023.

Enclosed for your information is a copy of the staff report on this project.

Sincerely,



Melanie A. Bachman
Executive Director

MAB/MP/dll

Enclosure: Staff Report dated October 12, 2023

c: The Honorable Mark A. Lauretti, Mayor, City of Shelton (shelton01@cityofshelton.org)
The Honorable Laura R. Hoydick, Mayor, Town of Stratford (mayor@townofstratford.com)
Kathleen Shanley, Eversource Energy (Kathleen.shanley@eversource.com)

STATE OF CONNECTICUT)

: ss. Southington, Connecticut October 13, 2023

COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Decision and Staff Report in Petition No. 1582 issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Melanie A. Bachman
Executive Director
Connecticut Siting Council

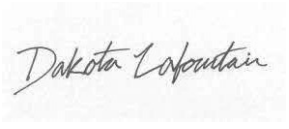
STATE OF CONNECTICUT)

: ss. New Britain, Connecticut October 13, 2023

COUNTY OF HARTFORD)

I certify that a copy of the Connecticut Siting Council Decision and Staff Report in Petition No. 1582 has been forwarded by Certified First Class Return Receipt Requested mail, on October 13, 2023, to each party and intervenor, or its authorized representative, as listed on the attached service list, dated July 3, 2023.

ATTEST:



Dakota LaFountain
Clerk Typist
Connecticut Siting Council

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

November 8, 2001

Christopher B. Fisher, Esq.
Cuddy & Feder & Worby
90 Maple Avenue
White Plains, NY 10601-5196

Re: PETITION NO. 528 - AT&T Wireless PCS, LLC d/b/a AT&T Wireless petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the modification of an existing Connecticut Light and Power electric transmission facility located on Chapel Street, Stratford, Connecticut.

Dear Attorney Fisher:

At a public meeting held on November 7, 2001, the Connecticut Siting Council (Council) considered and ruled that this proposal would not have a substantial adverse environmental effect, and pursuant to General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated October 11, 2001.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/CML

Enclosure: Staff Report dated November 7, 2001

c: Mark S. Barnhart, Town Manager, Town of Stratford
Gary Lorentson, Planning and Zoning Administration, Town of Stratford

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

Petition No. 528
AT&T Wireless PCS, Inc.
Stratford, Connecticut
Staff Report
November 7, 2001

On November 5, 2001, Connecticut Siting Council (Council) member Gerald J. Heffernan and Christina Lepage and Robert Mercier of the Council staff met with AT&T Wireless PCS, Inc. (AT&T) representative Peter Carbone on Chapel Street, Stratford, Connecticut for inspection of an electric transmission structure. The property and structure is owned by Connecticut Light and Power Co. (CL&P). AT&T, with the agreement of CL&P, proposes to modify the structure by installing antennas and associated equipment for telecommunications use and is petitioning the Council for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the modification.

AT&T proposes the installation of nine panel antennas on a Power Mount. The antennas will extend approximately 17-feet above the existing 80-foot transmission line lattice structure (# 279). The height at the top of the antennas will be 97-feet above ground level (AGL), with a centerline of 95-feet AGL. SNET and VoiceStream both have antennas mounted on the adjacent tower at heights greater than those proposed by AT&T.

A 12-foot by 20-foot equipment cabinet will be located on a concrete pad near the base of the structure. The equipment will be enclosed within a 32-foot by 35-foot area with an 8-foot high chain link fence. An underground conduit from an existing utility pole will provide power and telephone service to the site. An existing dirt road and a proposed gravel drive will be used to access the site.

The proposed site is located north of Chapel Street. The zoning designation of this site is One Family Residence (RS-1). AT&T identified surrounding land uses including transmission towers, high voltage lines, right-of-way, the Merrit Parkway and sparse residential development. A stone wall and vegetation will provide a buffer from the proposed site. The nearest residence is approximately 500 feet to the southwest.

The worst-case power density for the telecommunications operations at the site has been calculated to be 3.51% of the applicable standard for uncontrolled environments.

AT&T contends that the proposed modification of the structure will not cause a substantial adverse environmental impact and will eliminate the need for AT&T to construct additional towers to provide coverage to the area. AT&T also states that the structure will not be out of scale with the surrounding landscape.

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MELANIE BACHMAN EXECUTIVE DIRECTOR
CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

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