May 20, 2024

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 CT2075
90 Tatnic Hill Road, Brooklyn, CT 06234 (the "Property")
Latitude: 41.768131 N Longitude: 71.971416 W

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 81' cl on the existing 82 ± guyed tower ("Tower") at 90 Tatnic Hill Rd, Brooklyn, CT. The Tower & Property are owned by The Southern New England Telephone Co. AT&T intends to modify its Facility by removing (3) antennas and replacing them with (3) AIR6472 B77G B77M antennas. AT&T also intends on adding (1) DC6-48-60-18 Surge Arrestor. The height of AT&Ts existing & proposed antennas is 81' on the Tower.

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 original zoning approval or building permit for this tower could not be located for this filing.

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 the Hon. Austin Tanner, First Selectman, Town of Brooklyn, Ms. Margaret Washburn, MS, R.P.S.S, Zoning & Wetlands Enforcement Officer, Town of Brooklyn, and The Southern Connecticut Telephone Company, the Tower & 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 modifications 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 existing Tower 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. Austin Tanner, First Selectman, elected official, Town of Brooklyn
Ms. Margaret Washburn, MS, R.P.S.S, Zoning & Wetlands Enforcement Officer, Town of Brooklyn
The Southern New England Telephone Co., the Tower & Property owner

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

Calculated Radio Frequency Emissions Report

CT2075

Tatnic Hill Road, Brooklyn, CT

April 11, 2024

Table of Contents

List of Figures

List of Tables

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed addition to AT&T's antenna arrays mounted at 81' AGL on the existing tower located on Tatnic Hill Road in Brooklyn, CT. The coordinates of the tower are 41° 46' 05.27" N, 71° 58' 17.10" W.

AT&T is proposing to add the following:

1) Install three (3) antennas, one (1) per sector to support its commercial LTE network.

This report considers the planned antenna configuration for AT&T[1] to calculate the cumulative % MPE (Maximum Permissible Exposure) for the facility.

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 updated 2/27/2024.

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:

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

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

Ground reflection factor (GRF) 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)
AT&T	Alpha / 35°	763	160	15.7	5945	OPA65R-BU8D	75	0	8.0	81
		1900	160	17.8	9641	DMP65R-BU8E	67	0	8.0	
		2100	240	18.0	15143		69			
		739	160	15.0	5060		75			
		850	160	15.9	6225		63			
		3500	86.5	25.65	31770	AIR6472	11	0	2.35	
		3700	86.5	25.65	31770	AIR6472	11	0	2.35	
AT&T	Beta / 165°	763	160	14.3	4306	OPA65R-BU6D	73	0	5.9	81
		1900	160	16.6	7313	DMP65R-BU4E	70	0	4.0	
		2100	240	16.7	11226		71			
		739	160	12.9	3120		74			
		850	160	13.3	3421		63			
		3500	86.5	25.65	31770	AIR6472	11	0	2.35	
		3700	86.5	25.65	31770	AIR6472	11	0	2.35	
AT&T	Alpha / 275°	763	160	15.7	5945	OPA65R-BU8D	75	0	8.0	81
		1900	160	17.8	9641	DMP65R-BU8E	67	0	8.0	
		2100	240	18.0	15143		69			
		739	160	15.0	5060		75			
		850	160	15.9	6225		63			
		3500	86.5	25.65	31770	AIR6472	11	0	2.35	
		3700	86.5	25.65	31770	AIR6472	11	0	2.35	

Table 1: Proposed Antenna Inventory[2,3]

[2] Antenna heights are in reference to AT&T's Radio Frequency Design Sheet updated 2/27/2024.

[3] 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.

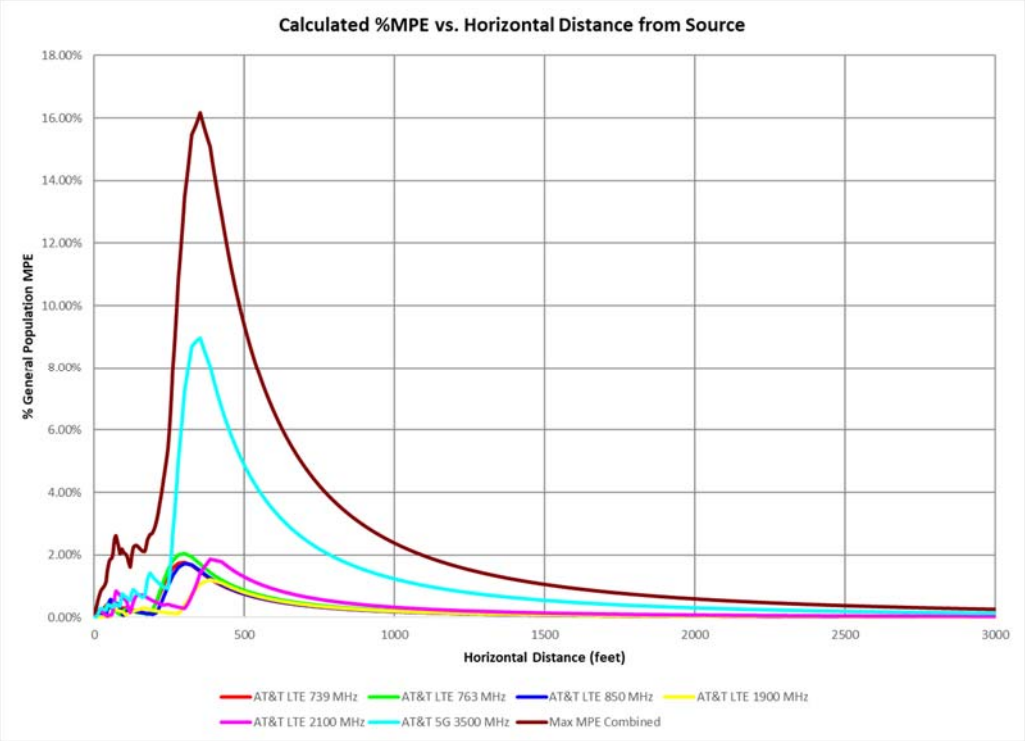


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (16.17% of the General Population limit) is calculated to occur at a horizontal distance of 353 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 353 feet from the site (reference Figure 1). To account for the cumulative % MPE for up to four operators, the same configuration was assumed with the industry standard 10-feet vertical separation between each operator's antenna arrays.

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 LTE 739 MHz	1	160.0	81.0	353	0.007251	0.493	1.47%
AT&T LTE 763 MHz	1	160.0	81.0	353	0.008718	0.509	1.71%
AT&T LTE 850 MHz	1	160.0	81.0	353	0.008519	0.567	1.50%
AT&T LTE 1900 MHz	1	160.0	81.0	353	0.010815	1.000	1.08%
AT&T LTE 2100 MHz	1	240.0	81.0	353	0.014304	1.000	1.43%
AT&T 5G 3500 MHz	1	160.0	81.0	353	0.089647	1.000	8.96%
						Total	**16.17%**

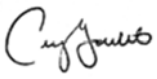
Table 2: Maximum Percent of General Population Exposure Values

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 16.17% of the FCC limit (General Population/Uncontrolled). This maximum cumulative percent of MPE value is calculated to occur 353 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.



Report Prepared By: Cory Goulet
Associate RF Engineer
C Squared Systems, LLC

April 10, 2024
Date

Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

April 11, 2024
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

AT&T's Radio Frequency Design Sheet updated 2/27/2024

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

(A) Limits for Occupational/Controlled Exposure[4]

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)

[4] 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.

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[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)
0.3-1.34	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] 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.

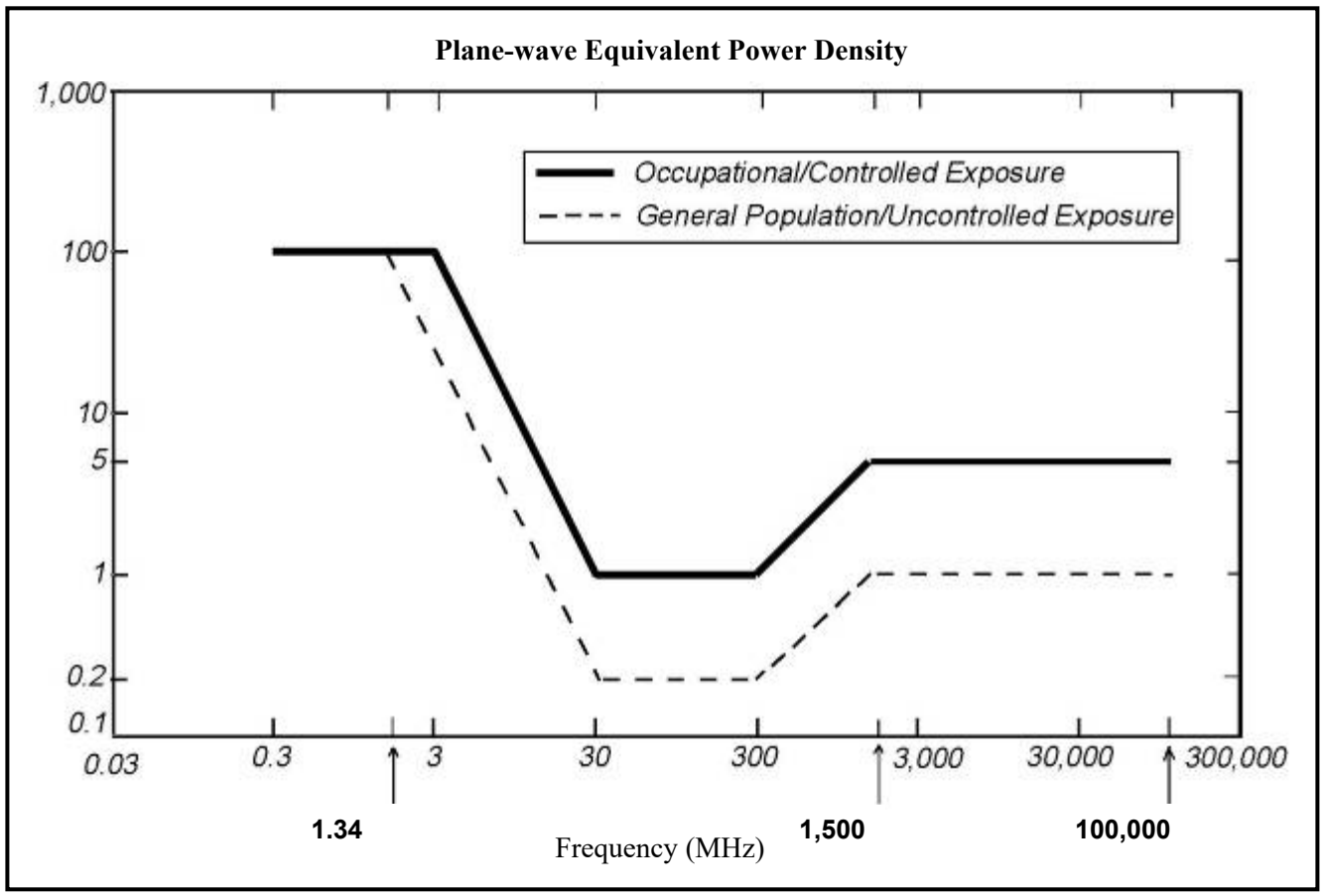
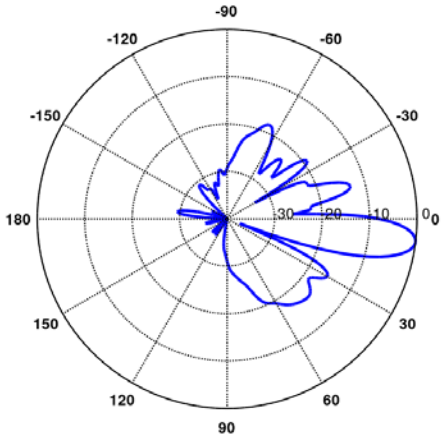


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

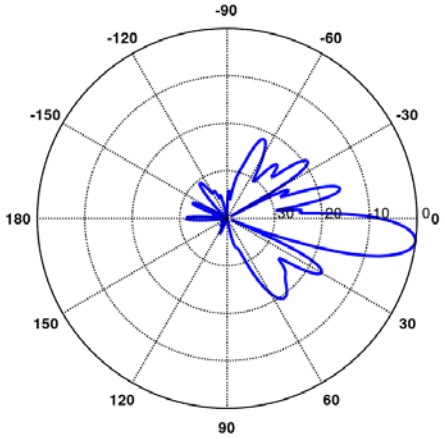
739 MHz

Manufacturer:	CCI
Model #:	DMP65R-BU8E
Frequency Band:	698-798 MHz
Gain:	15.0 dBi
Vertical Beamwidth:	9.7°
Horizontal Beamwidth:	75°
Polarization:	Dual Linear 45°
Dimensions (L x W x D):	96” x 20.7” x 9.7“



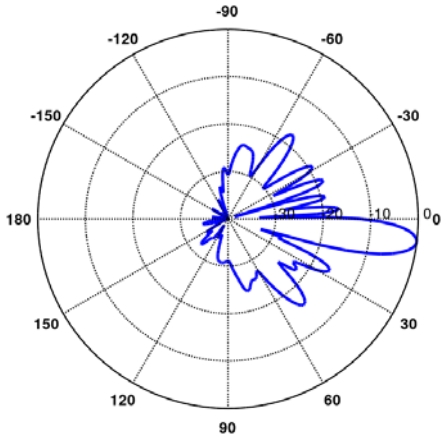
763 MHz

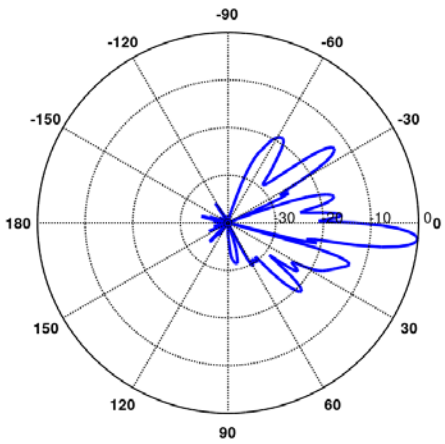
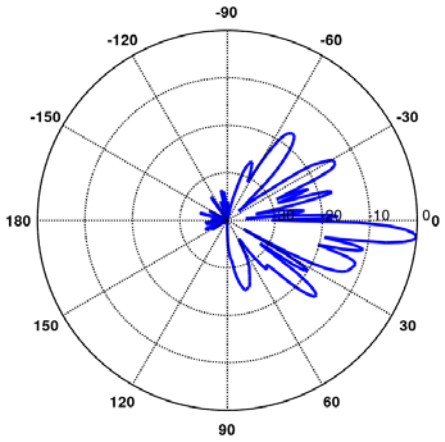
Manufacturer:	CCI
Model #:	OPA65R-BU8D
Frequency Band:	698-806 MHz
Gain:	15.7 dBi
Vertical Beamwidth:	9.5°
Horizontal Beamwidth:	75°
Polarization:	Dual Linear 45°
Dimensions (L x W x D):	96” x 20.7” x 7.7“



850 MHz

Manufacturer:	CCI
Model #:	DMP65R-BU8E
Frequency Band:	824-896 MHz
Gain:	15.9 dBi
Vertical Beamwidth:	8.0°
Horizontal Beamwidth:	62°
Polarization:	Dual Linear 45°
Dimensions (L x W x D):	96” x 20.7” x 9.7“



1900 MHz Manufacturer: CCI Model #: DMP65R-BU8E Frequency Band: 1850-1990 MHz Gain: 17.8 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 71° Polarization: Dual Linear 45° Dimensions (L x W x D): 96” x 20.7” x 9.7“	
2100 MHz Manufacturer: CCI Model #: DMP65R-BU8E Frequency Band: 1920-2180 MHz Gain: 18.0 dBi Vertical Beamwidth: 4.8° Horizontal Beamwidth: 71° Polarization: Dual Linear 45° Dimensions (L x W x D): 96” x 20.7” x 9.7“	

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING GUYED:
- •NEW AT&T ANTENNAS: AIR6472 B77G B77M (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- •NEW AT&T SURGE ARRESTOR: DC6-48-60-18 (TOTAL OF 1).
- •NEW AT&T (2) DC TRUNKS & (1) FIBER RUN.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- • INSTALL (2) 6651+XCEDE CABLE IN EXISTING LTE RACK
  FINAL: 2x6630+1xXMU+1x6651+XCEDE CABLE

ITEMS TO BE REMOVED:
- • EXISTING AT&T ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:
- • (6) ANTENNAS, (6) 1-5/8" COAX CABLE, (3) DC TRUNKS, AND (1) FIBER

SITE ADDRESS:	TATNIC HILL ROAD BROOKLYN, CT 06234
LATITUDE:	41.768131 N, 41° 46' 05.27" N
LONGITUDE:	71.971416 W, 71° 58' 17.10' W
TYPE OF SITE:	GUYED / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	82'-0"±
RAD CENTER:	81'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA PLANS & ELEVATION	1
A-3	DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN
FA CODE: 10035010
PACE ID: MRCTB070179,MRCTB070180
PROJECT: 5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

VICINITY MAP

DIRECTIONS TO SITE: (FROM AT&T ADDRESS)

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. MERGE ONTO CT-3 N VIA EXIT 25 TOWARD GLASTONBURY. MERGE ONTO CT-2 E TOWARD NORWICH. TAKE THE CT-66 EXIT, EXIT 13, TOWARD WILLIMANTIC/MARLBOROUGH. TURN LEFT ONTO HEBRON RD/CT-66. CONTINUE TO FOLLOW CT-66. CT-66 BECOMES US-6 E. TURN RIGHT ONTO WINDHAM RD. TURN LEFT ONTO TATNIC RD. TURN RIGHT ONTO TRIPP HOLLOW RD. TURN LEFT ONTO TATNIC HILL RD. END AT TATNIC HILL RD BROOKLYN, CT 06234.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

TEP NORTHEAST
TEP OPCO, LLC
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

AT&T
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/07/24	ISSUED FOR CONSTRUCTION	AM	BB	DPH
A	03/27/24	ISSUED FOR REVIEW	TR	BB	DPH

SCALE: AS SHOWN | DESIGNED BY: BB | DRAWN BY: TR

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL 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 CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE OF ANTENNA(E)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

AT&T
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/07/24	ISSUED FOR CONSTRUCTION	AM	BB	DPH
A	03/27/24	ISSUED FOR REVIEW	TR	BB	DPH

SCALE: AS SHOWN | DESIGNED BY: BB | DRAWN BY: TR

STATE OF CONNECTICUT
DANIEL P. HUNT
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

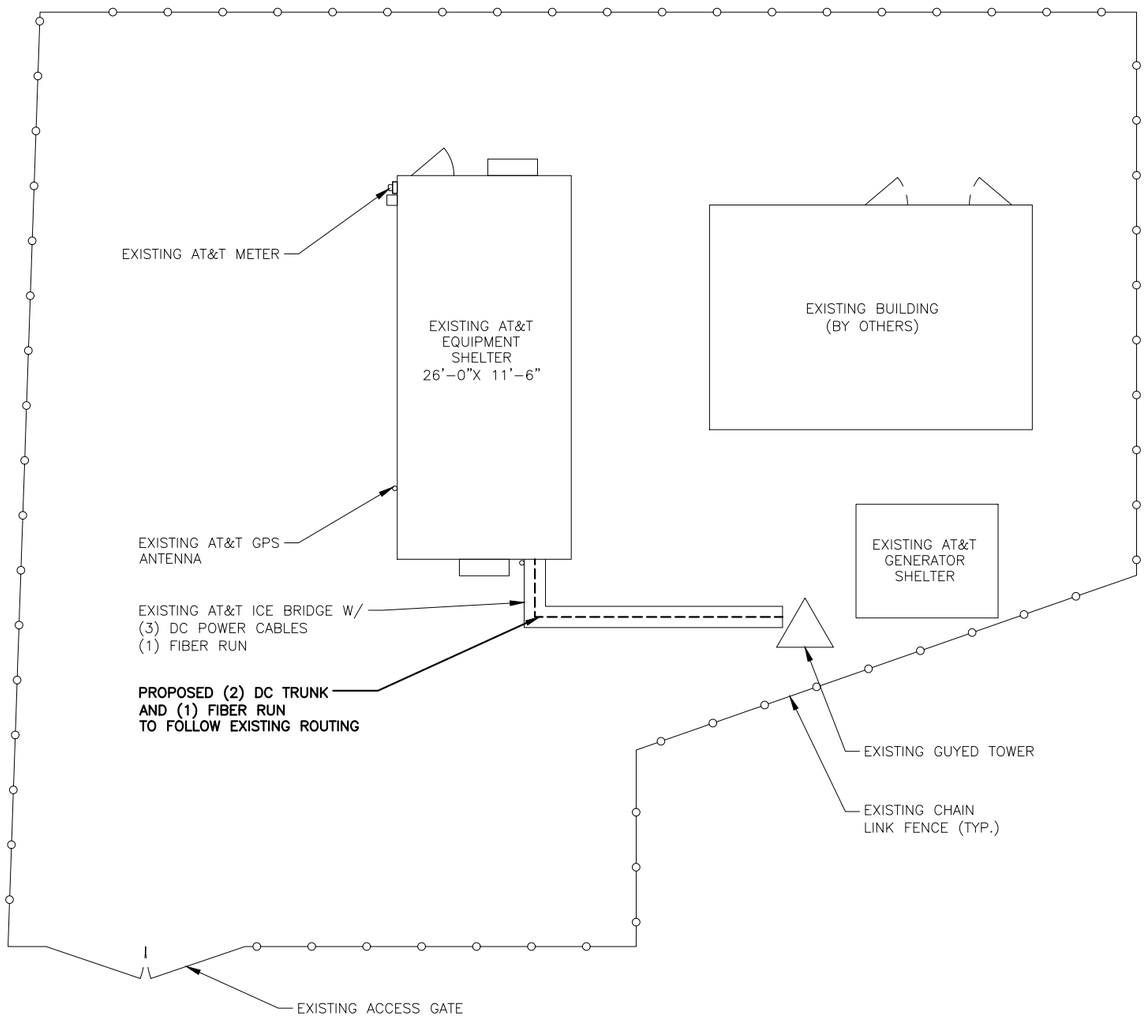
SITE NUMBER	DRAWING NUMBER	REV
CTL02075	GN-1	1

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

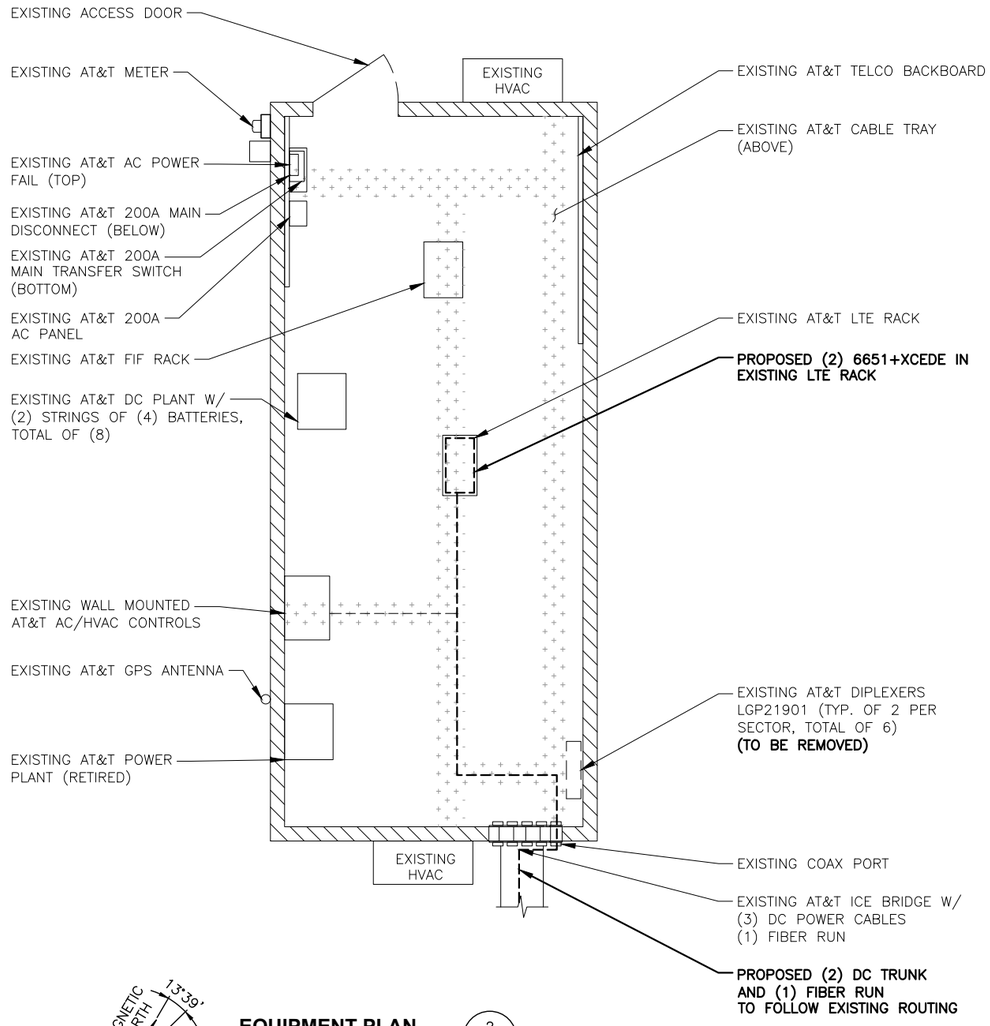
NOTE:

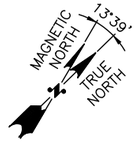
AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY GPD ENGINEERING PROFESSIONAL, CORP. DATED: APRIL 22, 2024



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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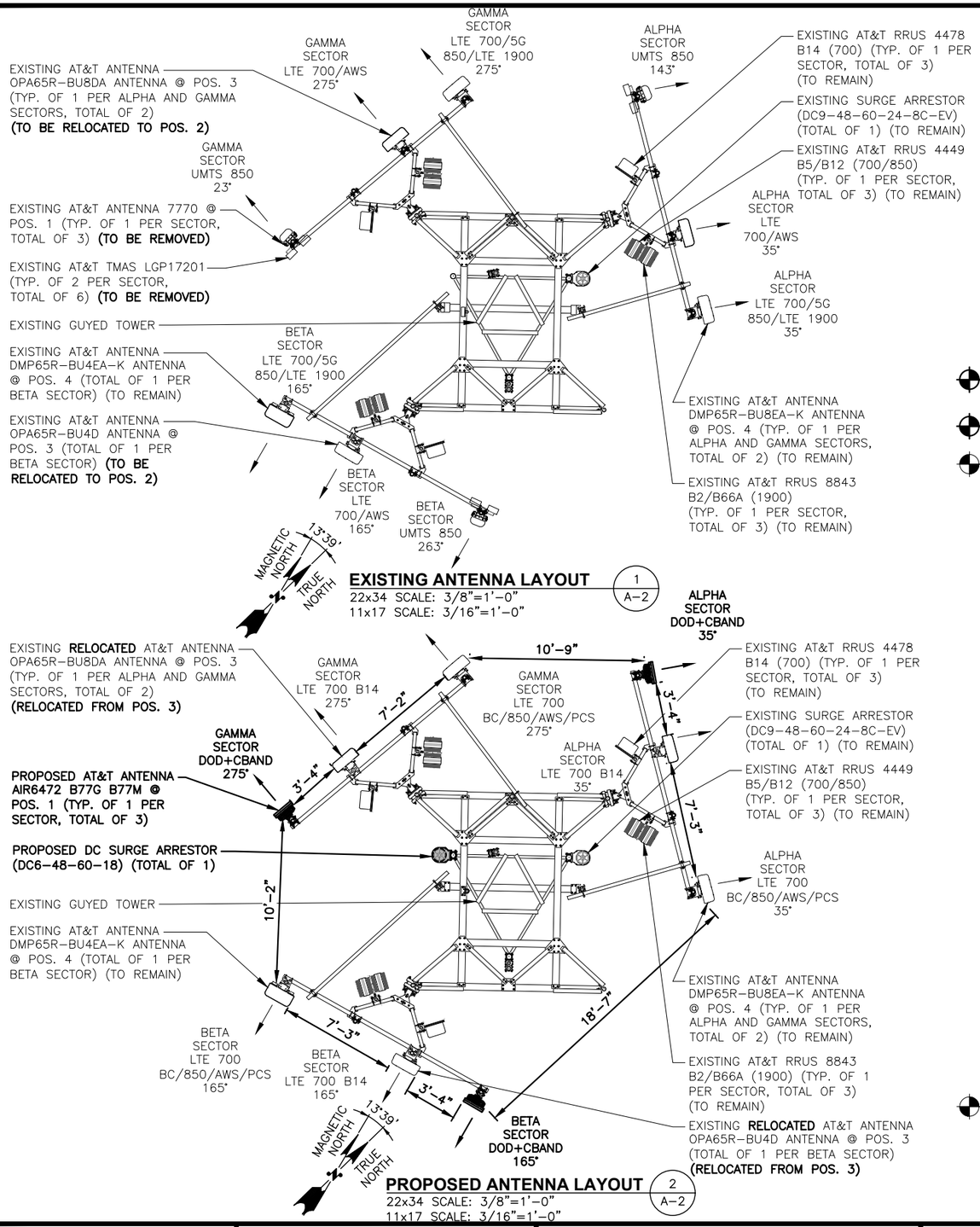
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T
COMPOUND & EQUIPMENT PLANS
5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-1	1



EXISTING ANTENNA LAYOUT

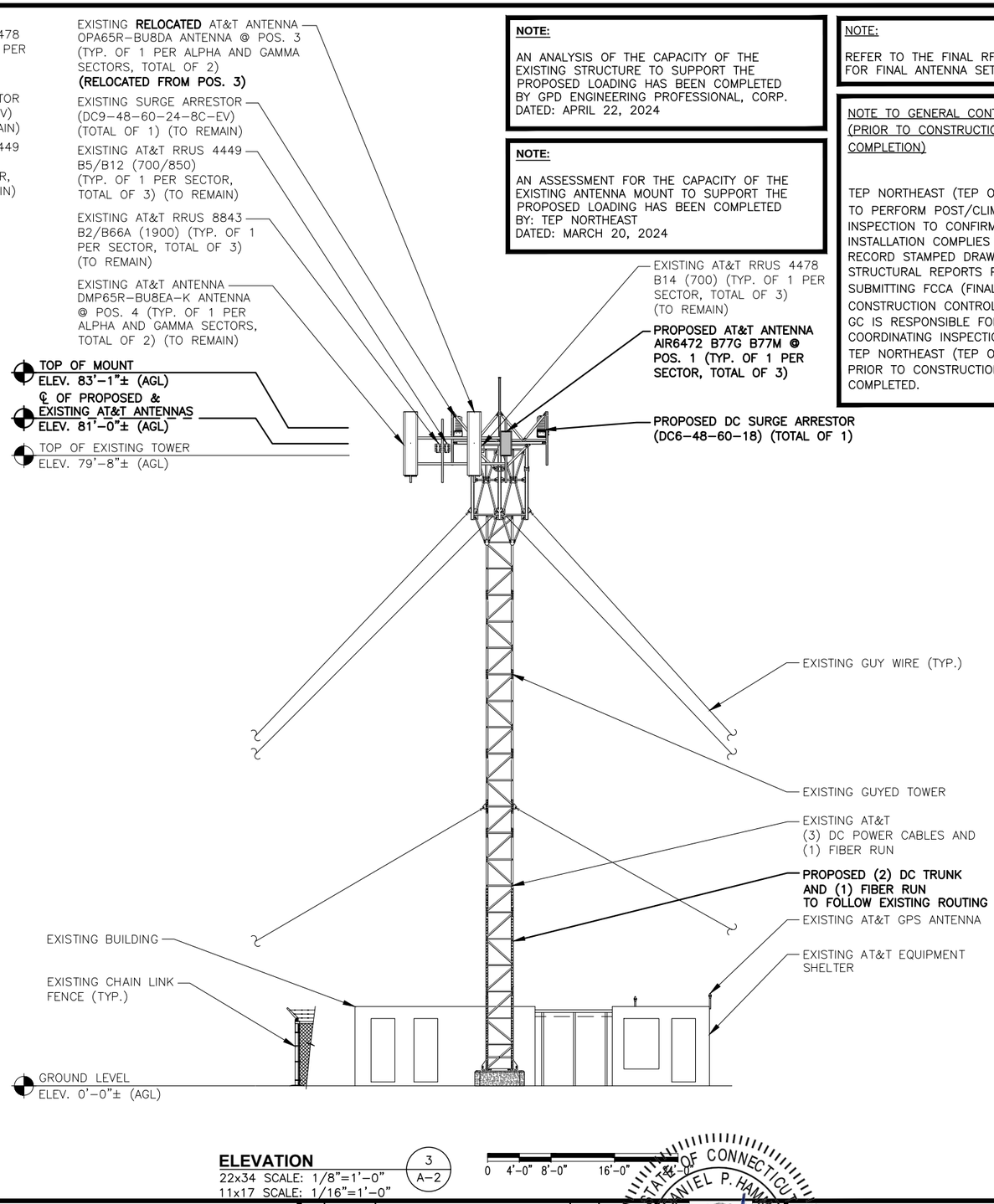
1 / A-2

22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

PROPOSED ANTENNA LAYOUT

2 / A-2

22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"



ELEVATION

3 / A-2

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0"

NOTE:

AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY GPD ENGINEERING PROFESSIONAL, CORP.
DATED: APRIL 22, 2024

NOTE:

AN ASSESSMENT FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST
DATED: MARCH 20, 2024

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

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STATE OF CONNECTICUT
DANIEL P. HAMM
No.24178
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	**PROPOSED**	**DOD+CBAND**	**AIR6472 B77G B77M**	**36.3X15.8X9.3**	**81'-0"±**	**82'-7"±**	**35°**	–	–	**–**	(2)1-5/8" COAX	(E)(1) RAYCAP DC9-48-60-24-8C-EV **(P)(1) RAYCAP DC6-48-60-18**
A2	–	–	–	–	–	–	–	–	(E)(1) 4478 B14 (700)	–	**(P)(2) DC TRUNKS & (P)(1) FIBER**	
A3	EXISTING	LTE 700 B14	OPA65R-BU8DA	96X21X7.8	81'-0"±	85'-0"±	35°	–	–	–		
A4	EXISTING	LTE 700 BC/850/AWS/PCS	DMP65R-BU8EA-K	96x20.7x7.7	81'-0"±	85'-0"±	35°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 8843 B2/B66A (AWS/PCS)	– –	(E)(3) DC TRUNKS, (E)(1) FIBER, & (2)(E) Y-CABLE	
B1	**PROPOSED**	**DOD+CBAND**	**AIR6472 B77G B77M**	**36.3X15.8X9.3**	**81'-0"±**	**82'-7"±**	**165°**	–	–	**–**	(2)1-5/8" COAX	SHARED
B2	–	–	–	–	–		–	–	(E)(1) 4478 B14 (700)	–	SHARED	
B3	EXISTING	LTE 700 B14	OPA65R-BU4D	48.2X21X7.8	81'-0"±	83'-1"±	165°	–	–	–	–	
B4	EXISTING	LTE 700 BC/850/AWS/PCS	DMP65R-BU8EA-K	96x20.7x7.7	81'-0"±	85'-0"±	165°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 8843 B2/B66A (AWS/PCS)	– –	SHARED (2)(E) Y-CABLE	
C1	**PROPOSED**	**DOD+CBAND**	**AIR6472 B77G B77M**	**36.3X15.8X9.3**	**81'-0"±**	**82'-7"±**	**275°**	–	–	**–**	(2)1-5/8" COAX	SHARED
C2	–	–	–	–	–	–	–	–	(E)(1) 4478 B14 (700)	–	SHARED	
C3	EXISTING	LTE 700 B14	OPA65R-BU8DA	96X21X7.8	81'-0"±	85'-0"±	275°	–	–	–	–	
C4	EXISTING	LTE 700 BC/850/AWS/PCS	DMP65R-BU8EA-K	96x20.7x7.7	81'-0"±	85'-0"±	275°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) 8843 B2/B66A (AWS/PCS)	– –	SHARED (2)(E) Y-CABLE	

NOTE:

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DATED: APRIL 22, 2024

NOTE:

AN ASSESSMENT FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST
DATED: MARCH 20, 2024

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)

TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

FINAL ANTENNA CONFIGURATION

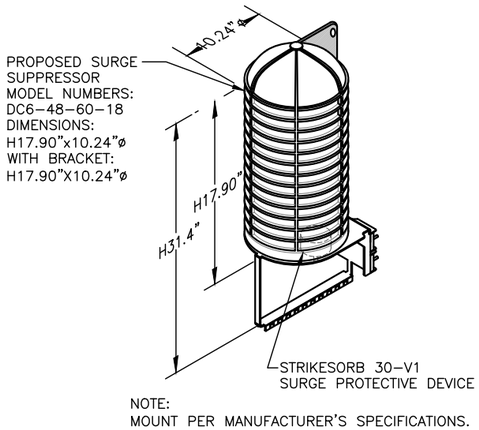
SCALE: N.T.S

(1 / A-3)

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
3(E)	4478 B14 (700)	18.1"X13.4"X8.3"
3(E)	8843 B2/B66A (1900)	14.9"x13.2"x10.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

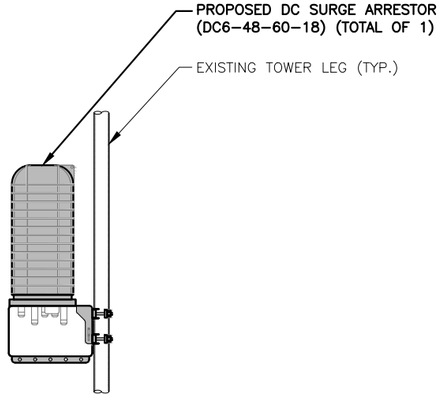


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S

(2 / A-3)



PROPOSED SURGE ARRESTOR MOUNTING DETAILS

22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

(3 / A-3)

0 0'-6" 1'-0" 2'-0" 3'-0"

PROPOSED ANTENNA @ POS. 1

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

(4 / A-3)

0 0'-8" 1'-4" 2'-8" 4'-0"

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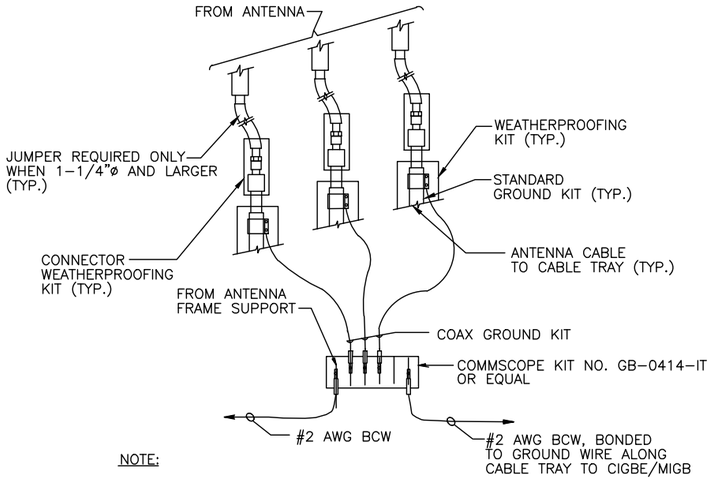
A	03/27/24	ISSUED FOR REVIEW	TR	BB	DPH

SCALE: AS SHOWN | DESIGNED BY: BB | DRAWN BY: TR

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 22178 · LICENSED PROFESSIONAL ENGINEER

AT&T
DETAILS
5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	A-3	1



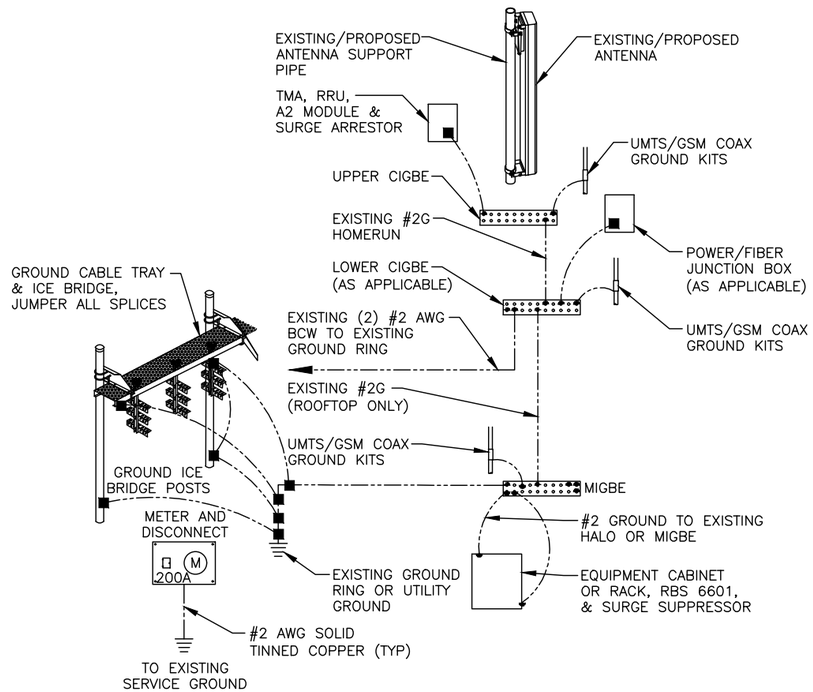
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

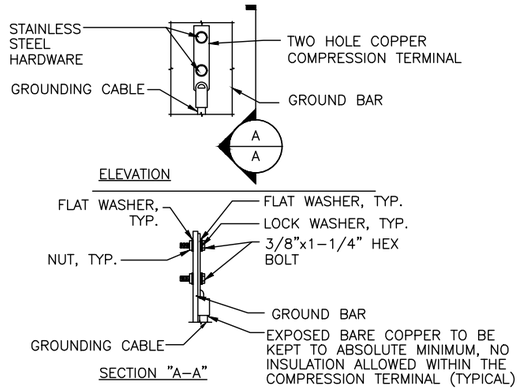
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

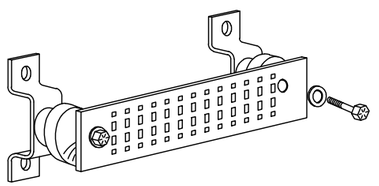
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

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SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

AT&T
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/07/24	ISSUED FOR CONSTRUCTION	AM	BB	DRH
A	03/27/24	ISSUED FOR REVIEW	TR	BB	DRH

SCALE: AS SHOWN | DESIGNED BY: BB | DRAWN BY: TR

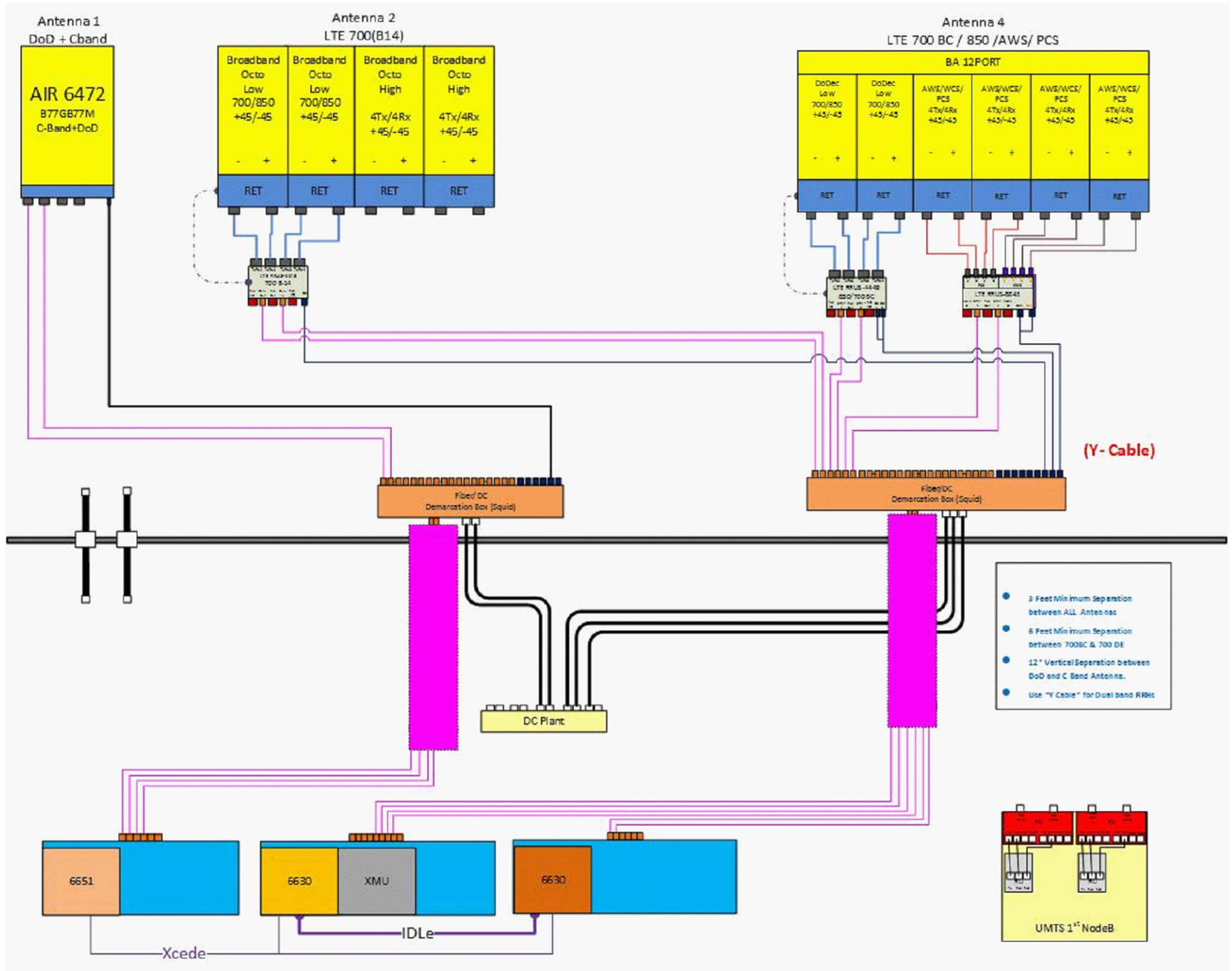
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T
GROUNDING DETAILS
5G NR 1DR-1 CBAND,5G NR 1DR-2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	G-1	1

NOTE:

REV: 2
DATED: 02/16/2024
RFDS ID: 5772535



NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

TEP NORTHEAST
TEP OPCO, LLC.
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CTL02075
SITE NAME: BROOKLYN

TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

AT&T
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/07/24	ISSUED FOR CONSTRUCTION	AM	BB	DPH
A	03/27/24	ISSUED FOR REVIEW	TR	BB	DPH

SCALE: AS SHOWN | DESIGNED BY: BB | DRAWN BY: TR

AT&T
RF PLUMBING DIAGRAM
5G NR 1DR–1 CBAND,5G NR 1DR–2 CBAND

SITE NUMBER	DRAWING NUMBER	REV
CTL02075	RF–1	1

SAI
12 Industrial Way
Salem, NH 03079

GPD Engineering and Architecture
Professional Corporation
Chad Burton
520 South Main Street, Suite 2531
Akron, OH 44311
(614) 859-1623
cburton@gpdgroup.com

GPD# 2024701.93
April 22, 2024

COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**USID #:**	**71311**
	Site FA #:	**10035010**
	Client #:	**CTL02075**
	Site Name:	**BROOKLYN**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-H & 2022 Connecticut State Building Code** **125 mph (ultimate 3-second gust) w/ 0" ice** **50 mph (3-second gust) w/ 1" ice**
SITE DATA:		**Tatnic Hill Road, Brooklyn, CT 06234, Windham County** **Latitude 41° 46' 05.27" N, Longitude 71° 58' 17.10" W** **80' Modified Guyed Tower**

To whom it may concern,

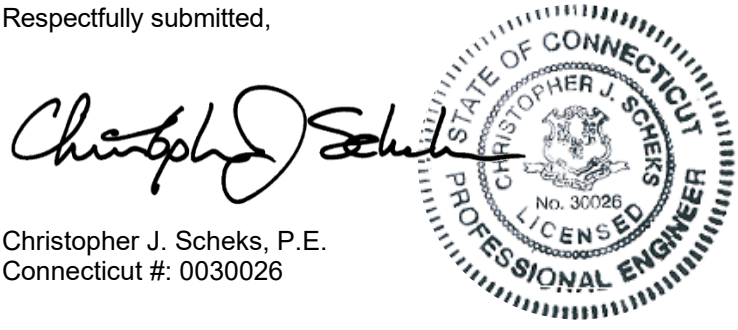
GPD is pleased to submit this Comprehensive Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	94.9%	Pass
Foundation Ratio with Proposed Equipment:	54.6%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and SAI. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

4/22/2024

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility and commissioned by SAI.

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Appendices A & B.

Modifications designed by GPD (Project #: 2013723.4.02, dated 8/21/2013) are assumed to be properly installed and considered in this analysis.

The proposed feedlines shall be installed as shown in Appendices A & B for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Legs	78.1%	Pass
Bracing	70.9%	Pass
Bolt Checks	94.9%	Pass
Guy Wires	49.2%	Pass
Torque Arm	30.0%	Pass
Guy Anchors	54.6%	Pass
Base Foundation	26.9%	Pass

RECOMMENDATIONS

The tower and its foundation(s) have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

ANALYSIS METHOD

tnxTower (Version 8.2.4.3), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various load cases. Selected output from the analysis is included the report appendices. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Construction Drawings	TEP Site #: CTL02075, Rev. A, dated 3/27/2024	SAI
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	GPD Project #: 2012801.84, dated 11/15/2012	GPD
Foundation Mapping	GPD Project #: 2012801.84, dated 11/15/2012	GPD
Tower Mapping	GPD Project #: 2012801.84, dated 12/3/2012	GPD
Modification Drawings	GPD Project #: 2013723.4.02, dated 8/21/2013	GPD
Previous Tower Analysis	GPD Project #: 2022723.21.71311.01, dated 4/22/2022	GPD
Previous Mount Analysis	TEP Project #: 320384.938832, dated 3/20/2024	SAI

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
9. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All existing and proposed loading has been taken from the available site photos as well as documents supplied to GPD at the time of generating this report. All such documents are listed in the Documents Provided Table and are assumed to be accurate. GPD is not responsible for loading scenarios outside those conveyed in the supplied documentation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a recent site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Comprehensive Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	BROOKLYN (CTL02075)
Site Number	71311
FA Number	10035010
Date of Analysis	4/22/2024
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	G	
Tower Height (top of steel AGL)	80'	
Tower Manufacturer	n/a	
Tower Model	n/a	
Tower Design	n/a	
Foundation Design	n/a	
Geotechnical Report	GPD Project #: 2012801.84	11/15/2012
Previous Tower Analysis	GPD Project #: 2022723.21.71311.01	4/22/2022
Tower Mapping	GPD Project #: 2012801.84	12/3/2012
Foundation Mapping	GPD Project #: 2012801.84	11/15/2012
Modification Drawings	GPD Project #: 2013723.4.02	8/21/2013
Previous Mount Analysis	TEP Project #: 320384.938832	3/20/2024

Design Parameters

Design Code Used	TIA-222-H & 2022 Connecticut State Building Code
Location of Tower (County, State)	Windham, CT
Wind Speed (mph)	125 (ultimate 3-second gust)
Ice Thickness (in)	1
Risk Category (I, II, III)	II
Exposure Category (B, C, D)	C
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	94.9%
Guy Wire (%)	49.2%
Foundation (%)	54.6%
Foundation Adequate?	Yes

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Face/Leg
Unknown	80	90	1	Omni	Unknown	20' Omni		1	Unknown	Platform	2	Unknown	1/2"	Face A
Unknown	80	85	1	Dipole	Unknown	10' Dipole				on the same mount				
AT&T Mobility	80	81	3*	Panel	Powerwave	7770	23/143/263	3	Site Pro 1	VFA14-H10-2120	6	Unknown	1-5/8"	Face B
AT&T Mobility	80	81	2	Panel	CCI	OPA65R-BU8DA	35/275			on the same mounts	2	DC Power	8AWG	Face B
AT&T Mobility	80	81	1	Panel	CCI	OPA65R-BU4D	165			on the same mounts	1	DC Power	6AWG	Face B
AT&T Mobility	80	81	2	Panel	CCI	DMP65R-BU8EA-K	35/275			on the same mounts	1	Fiber	24PAIR	Face B
AT&T Mobility	80	81	1	Panel	CCI	DMP65R-BU4EA-K	165			on the same mounts				
AT&T Mobility	80	81	6*	TMA	Powerwave	LGP17201				on the same mounts				
AT&T Mobility	80	81	3	RRU	Ericsson	4478 B14				on the same mounts				
AT&T Mobility	80	81	3	RRU	Ericsson	4449 B5/B12				on the same mounts				
AT&T Mobility	80	81	3	RRU	Ericsson	8843 B2/B66A				on the same mounts				
AT&T Mobility	80	81	1	Surge	Raycap	DC9-48-60-24-8C-EV				tower mounted				

*Indicates equipment/feedline quantity to be removed.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Face/Leg
AT&T Mobility	80	81	3	Panel	Ericsson	AIR6472 B77G B77M	35/165/275			on the existing mounts	2	DC Power	7/8" (ASSUMED)	Face B
AT&T Mobility	80	81	1	Surge	Raycap	DC6-48-60-18				tower mounted	1	Fiber	1/2" (ASSUMED)	Face B

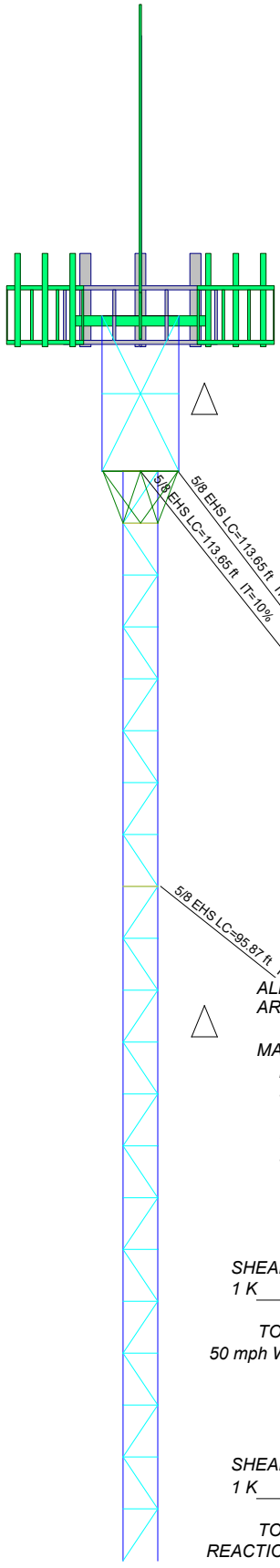
Note: The proposed loading shall be in addition to the remaining existing equipment at the same elevation.

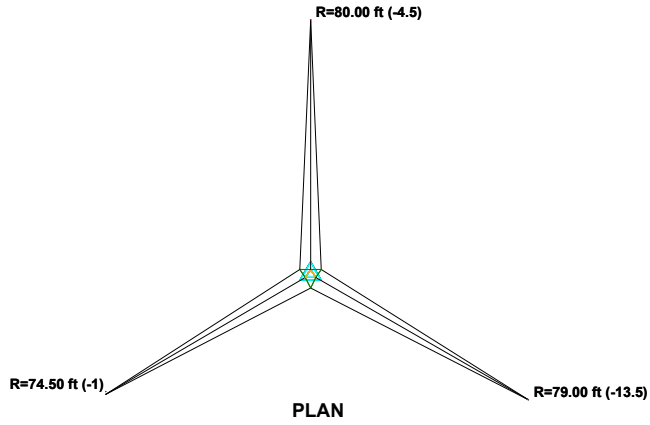
Note: The proposed coax shall be installed with the existing coax on Face B in order for this analysis to be valid.

APPENDIX B

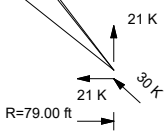
Tower Analysis Output File

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1	L1
Legs	BP 6x0.25 w/ 3.25x0.25 Flat Plate (Ineffective)					A36	BP 6x0.25			P3.5 STD
Leg Grade										A53-B-35
Diagonals		L2x2x3/16					L1 1/2x1 1/2x3/16		L2x2x3/16	L2x2x1/4
Diagonal Grade							A36			
Top Girts						N.A.			L3x2x1/4	L2x2x3/16
Bottom Girts						N.A.				L2x2x3/16
Horizontals						L1 1/4x1 1/4x1/8				2L2x2x1/8x3/16
Top Guy Pull-Offs			N.A.				L2x2x3/8	N.A.	L3x2x1/4	N.A.
Bot Guy Pull-Offs					N.A.				L2x2x3/16	N.A.
Face Width (ft)						3.10417				7
# Panels @ (ft)						21 @ 3.33333				2 @ 5
Weight (K)	4.2									





PLAN



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

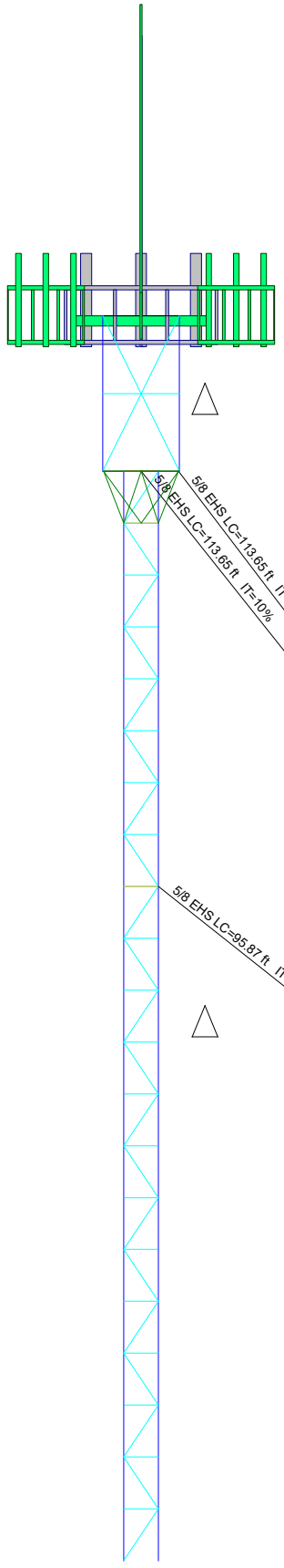
1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 94.9%

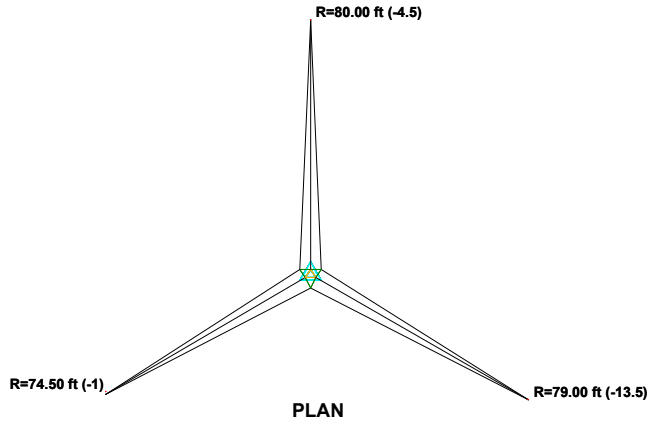
ALL REACTIONS ARE FACTORED

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: **BROOKLYN (CTL02075)**			
Project: **2024701.93**			
Client: SAI	Drawn by: bfranczkowski	App'd:	
Code: TIA-222-H	Date: 04/22/24	Scale: NTS	
Path: C:\Users\bfranczkowski\Desktop\Current tnx Model\71311\71311_BROOKLYN_CTL02075.dri		Dwg No. E-1	

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1	L1
Legs	BP 6x0.25 w/ 3.25x0.25 Flat Plate (Ineffective)					A36	BP 6x0.25			P3.5 STD
Leg Grade										A53-B-35
Diagonals		L2x2x3/16					L1 1/2x1 1/2x3/16		L2x2x3/16	L2x2x1/4
Diagonal Grade							A36			
Top Girts			N.A.			N.A.			L3x2x1/4	L2x2x3/16
Bottom Girts						N.A.				L2x2x3/16
Horizontals						L1 1/4x1 1/4x1/8				2L2x2x1/8x3/16
Top Guy Pull-Offs			N.A.				L2x2x3/8	N.A.	L3x2x1/4	N.A.
Bot Guy Pull-Offs					N.A.				L2x2x3/16	N.A.
Face Width (ft)						3.10417				7
# Panels @ (ft)						21 @ 3.33333				2 @ 5
Weight (K)	4.2									





PLAN

DESIGNED APPURTENANCE LOADING

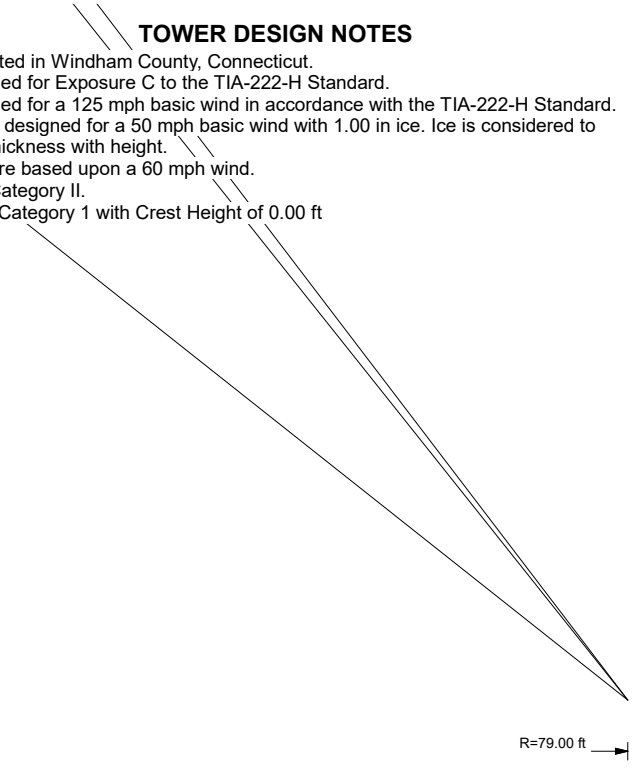
TYPE	ELEVATION	TYPE	ELEVATION
Platform	80	OPA65R-BU4D w/ Mount Pipe	80
Pipe Mast	80	OPA65R-BU8DA w/ Mount Pipe	80
Pipe Mount 3'x2.375"	80	DMP65R-BU8EA-K w/ Mount Pipe	80
Pipe Mount 3'x2.375"	80	DMP65R-BU4EA-K w/ Mount Pipe	80
20' Omni	80	DMP65R-BU8EA-K w/ Mount Pipe	80
10' Dipole	80	4478 B14	80
SITE PRO 1 VFA14-H10-2120 (3)	80	4478 B14	80
(2) Pipe Mount 10'x2.375"	80	4478 B14	80
(2) Pipe Mount 10'x2.375"	80	4449 B5/B12	80
(2) Pipe Mount 10'x2.375"	80	4449 B5/B12	80
(2) Pipe Mount 10'x2.375"	80	4449 B5/B12	80
(2) Pipe Mount 10'x2.375"	80	8843 B2/B66A	80
(2) Pipe Mount 10'x2.375"	80	8843 B2/B66A	80
AIR6472 B77G B77M	80	8843 B2/B66A	80
AIR6472 B77G B77M	80	DC9-48-60-24-8C-EV	80
AIR6472 B77G B77M	80	DC6-48-60-18	80
OPA65R-BU8DA w/ Mount Pipe	80		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

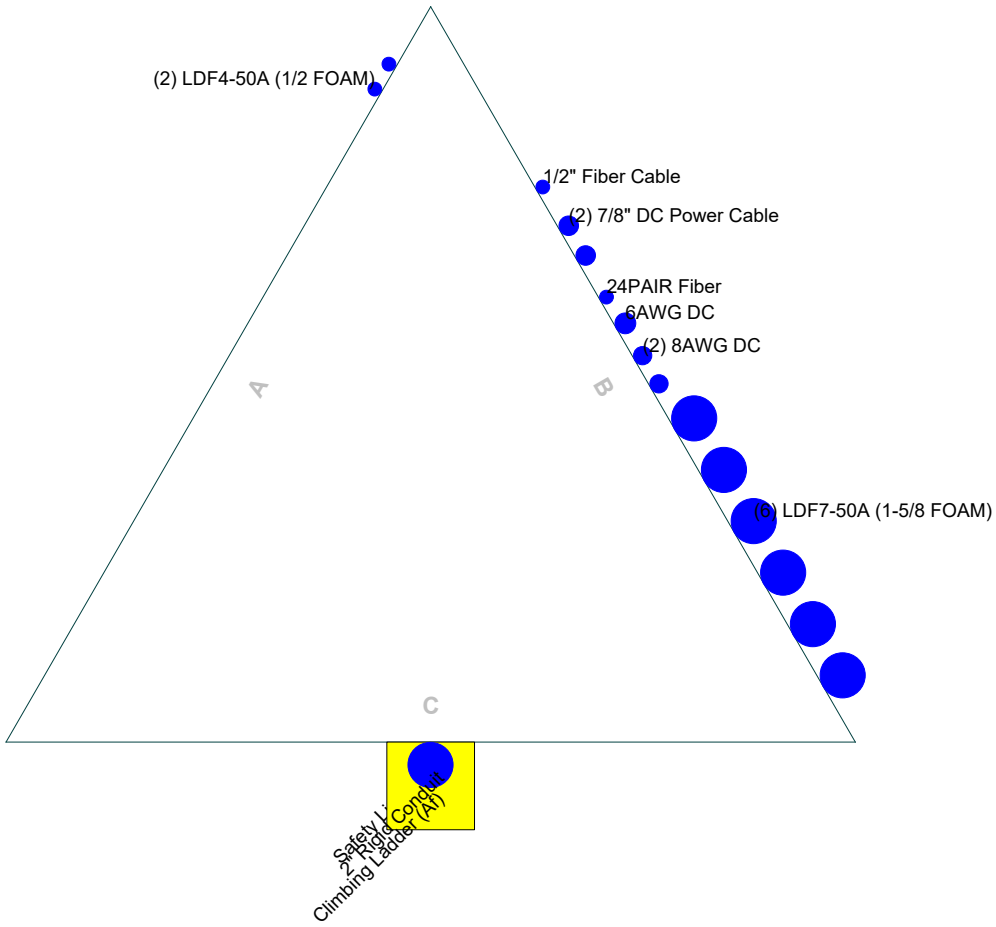


GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***BROOKLYN (CTL02075)***			
Project: ***2024701.93***			
Client: SAI	Drawn by: bfranczkowski		App'd:
Code: TIA-222-H	Date: 04/22/24		Scale: NTS
Path: C:\Users\bfranczkowski\Desktop\Current tnx Model\71311\71311_BROOKLYN_CTL02075.dri			Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face



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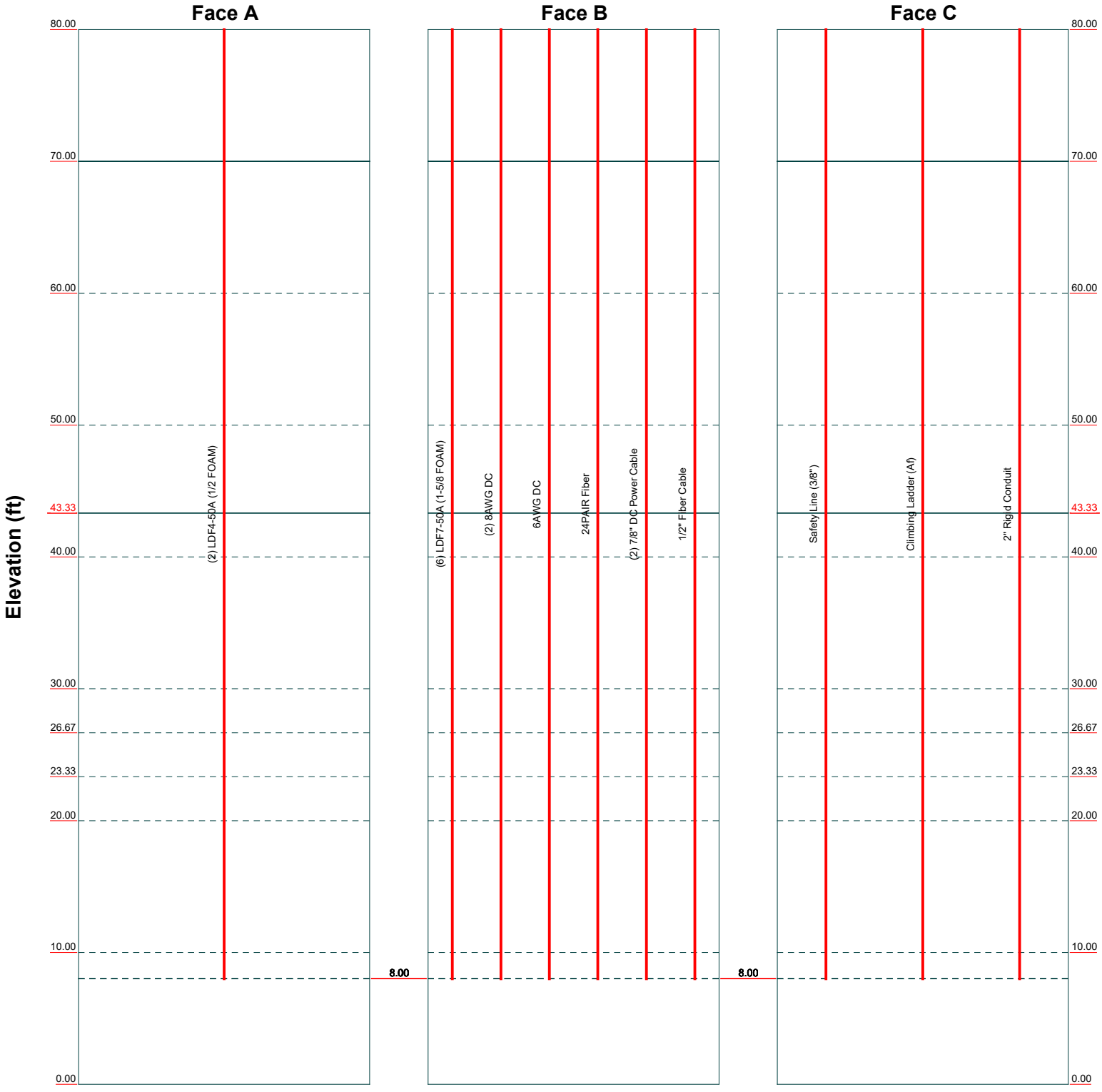
Job: ***BROOKLYN (CTL02075)***			
Project: ***2024701.93***			
Client: SAI	Drawn by: bfranczkowski	App'd:	
Code: TIA-222-H	Date: 04/22/24	Scale: NTS	
Path: C:\Users\bfranczkowski\Desktop\Current tnx Model\71311\71311_BROOKLYN_CTL02075.dri		Dwg No. E-7	

Feed Line Distribution Chart
0' - 80'

Round | Flat | App In Face | App Out Face | Truss Leg



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Path: C:\Users\bfranczkowski\Desktop\Current tnx Model\71311\71311_BROOKLYN_CTL02075.dri		Dwg No. E-7	

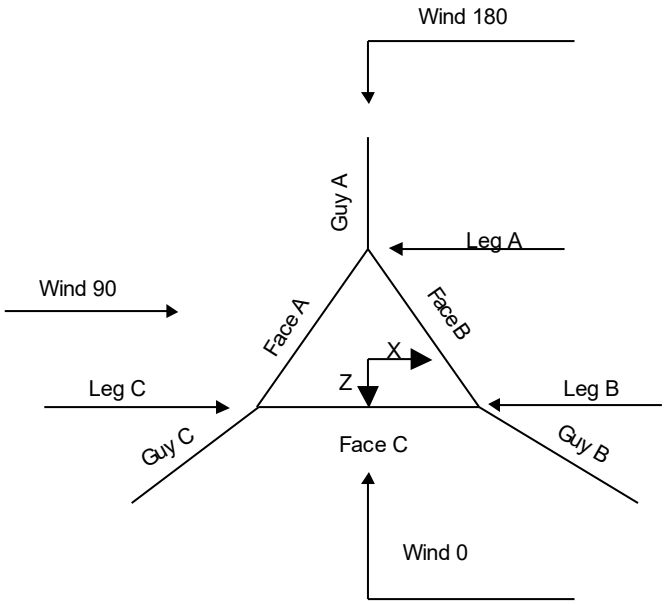
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 80.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.10 ft at the top and 3.10 ft at the base.
An index plate is provided at the 3 sided -tower connection.
There is a 3 sided latticed pole with a face width of 7.00 ft.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

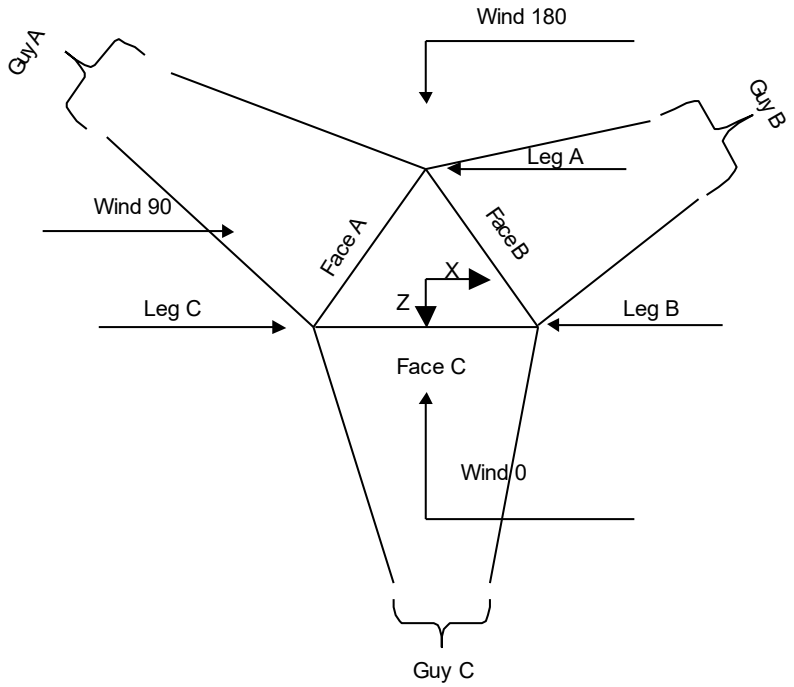
Tower is located in Windham County, Connecticut.
Tower base elevation above sea level: 547.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in lattice pole member design is 1.
Stress ratio used in tower member design is 1.
Safety factor used in guy design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Horizontals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Consider Moments - Diagonals	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Moment Magnification		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Stress Ratios	√	Retension Guys To Initial Tension		Offset Girt At Foundation
√	Use Code Safety Factors - Guys	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Escalate Ice	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Always Use Max Kz	√	Project Wind Area of Appurtenances		Use TIA-222-H Bracing Resist. Exemption
	Use Special Wind Profile		Alternative Appurt. EPA Calculation		Use TIA-222-H Tension Splice Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Pole Without Linear Attachments
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole With Shroud Or No Appurtenances
	Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules		Outside and Inside Corner Radii Are Known



Corner & Starmount Guyed Tower



Face Guyed

3 Sided Latticed Pole Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
L1	80.00-70.00			7.00	1	10.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
L1	80.00-70.00	5.00	Double K	No	Yes	0.0000	0.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 80.00-70.00	Pipe	P3.5 STD	A53-B-35 (35 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 80.00-70.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
L1 80.00-70.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2x2x1/8x3/16	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 80.00-70.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
L1 80.00-70.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 80.00-70.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 80.00-70.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L1 80.00-70.00	Sleeve DS	0.7500 A325N	0	0.5000 A325N	2	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.5000 A325N	2	0.5000 A325N	2

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	70.00-60.00			3.10	1	10.00
T2	60.00-50.00			3.10	1	10.00
T3	50.00-40.00			3.10	1	10.00
T4	40.00-30.00			3.10	1	10.00
T5	30.00-26.67			3.10	1	3.33
T6	26.67-23.33			3.10	1	3.33
T7	23.33-20.00			3.10	1	3.33
T8	20.00-10.00			3.10	1	10.00
T9	10.00-0.00			3.10	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	70.00-60.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T2	60.00-50.00	3.33	K Brace Right	No	Yes	0.0000	0.0000
T3	50.00-40.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T4	40.00-30.00	3.33	K Brace Right	No	Yes	0.0000	0.0000
T5	30.00-26.67	3.33	K Brace Left	No	Yes	0.0000	0.0000
T6	26.67-23.33	3.33	K Brace Right	No	Yes	0.0000	0.0000
T7	23.33-20.00	3.33	K Brace Left	No	Yes	0.0000	0.0000
T8	20.00-10.00	3.33	K Brace Right	No	Yes	0.0000	0.0000
T9	10.00-0.00	3.33	K Brace Left	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 70.00-60.00	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T2 60.00-50.00	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 50.00-40.00	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 40.00-30.00	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 30.00-26.67	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 26.67-23.33	60 Bent Plate	BP 6x0.25	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T7 23.33-20.00	60 Angle	V6-1/2x6-1/2x1/2	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T8 20.00-10.00	60 Angle	V6-1/2x6-1/2x1/2	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T9 10.00-0.00	60 Angle	V6-1/2x6-1/2x1/2	A36 (36 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 70.00-60.00	Single Angle	L3x2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 70.00-60.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T2 60.00-50.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T3 50.00-40.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T4 40.00-30.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T5 30.00-26.67	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T6 26.67-23.33	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T7 23.33-20.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T8 20.00-10.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)
T9 10.00-0.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/4x1 1/4x1/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 70.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 30.00-26.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 26.67-23.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T7 23.33-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 70.00-60.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 60.00-50.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 50.00-40.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 40.00-30.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 30.00-26.67	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 26.67-23.33	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 23.33-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 20.00-10.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 10.00-0.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 70.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 40.00-30.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 30.00-26.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 26.67-23.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T7 23.33-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-10.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 10.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 70.00-60.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T2 60.00-50.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T3 50.00-40.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T4 40.00-30.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T5 30.00-26.67	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T6 26.67-23.33	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T7 23.33-20.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T8 20.00-10.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T9 10.00-0.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 70.00-60.00	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T2 60.00-50.00	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T3 50.00-40.00	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T4 40.00-30.00	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T5 30.00-26.67	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T6 26.67-23.33	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T7 23.33-20.00	Sleeve DS	0.6250 A325N	12	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T8 20.00-10.00	Sleeve DS	0.7500 A325N	6	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0
T9 10.00-0.00	Sleeve DS	0.7500 A325N	6	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
70	EHS	A	5/8	4.24	10%	23000	0.813	107.84	80.00	0.0000	-4.50	100%
		B	5/8	4.24	10%	23000	0.813	113.56	79.00	0.0000	-13.50	100%
		C	5/8	4.24	10%	23000	0.813	101.47	74.50	0.0000	-1.00	100%
43.3333	EHS	A	5/8	4.24	10%	23000	0.813	91.60	80.00	0.0000	-4.50	100%
		B	5/8	4.24	10%	23000	0.813	95.80	79.00	0.0000	-13.50	100%
		C	5/8	4.24	10%	23000	0.813	85.09	74.50	0.0000	-1.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
70	Torque Arm	6.88	42.4400	Bat Ear	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x1/2
43.3333	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
70.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L3x2x1/4 L2x2x3/16
43.33	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Equal Angle	L2x2x3/8

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
70	0.09	0.09	0.08		1.11 1.8 sec/pulse	1.23 1.9 sec/pulse	0.98 1.7 sec/pulse	
43.3333	0.07	0.08	0.07		0.80 1.5 sec/pulse	0.88 1.6 sec/pulse	0.69 1.4 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
70	Yes	No	1	1	1	1	1	1
43.3333	Yes	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
70	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
43.3333	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
70	A	32.75	33	5	0.9992
	B	28.25	32	5	0.9846
	C	34.50	34	5	1.0045
43.3333	A	19.42	30	5	0.9483
	B	14.92	28	5	0.9237
	C	21.17	30	5	0.9566

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line (3/8")	C	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	0	1	1	1.0000	0.3750		0.22
Climbing Ladder (Af)	C	No	No	Af (CaAa)	80.00 - 8.00	0.0000	0	1	1	1.0000	3.8400		4.81
2" Rigid Conduit	C	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	0	1	1	1.0000	2.0000		2.80
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	0.25	6	6	0.6250	1.9800		0.82
8AWG DC	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	0	2	2	0.6250	0.8125		0.62
6AWG DC	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.0625	1	1	0.6250	0.9200		0.00
24PAIR Fiber	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.1	1	1	0.6250	0.6300		0.15
7/8" DC Power Cable	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.175	2	2	0.6250	0.8750		0.60
1/2" Fiber Cable	B	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	-0.25	1	1	0.6250 0.6300	0.6300		0.15
LDF4-50A (1/2 FOAM)	A	No	No	Ar (CaAa)	80.00 - 8.00	0.0000	0.4	2	2	0.6250	0.6300		0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	80.00-70.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T1	70.00-60.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T2	60.00-50.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T3	50.00-40.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T4	40.00-30.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T5	30.00-26.67	A	0.000	0.000	0.420	0.000	0.00
		B	0.000	0.000	5.812	0.000	0.03
		C	0.000	0.000	2.925	0.000	0.03
T6	26.67-23.33	A	0.000	0.000	0.420	0.000	0.00
		B	0.000	0.000	5.812	0.000	0.03
		C	0.000	0.000	2.925	0.000	0.03
T7	23.33-20.00	A	0.000	0.000	0.420	0.000	0.00
		B	0.000	0.000	5.812	0.000	0.03
		C	0.000	0.000	2.925	0.000	0.03
T8	20.00-10.00	A	0.000	0.000	1.260	0.000	0.00
		B	0.000	0.000	17.435	0.000	0.08
		C	0.000	0.000	8.775	0.000	0.08
T9	10.00-0.00	A	0.000	0.000	0.252	0.000	0.00
		B	0.000	0.000	3.487	0.000	0.02
		C	0.000	0.000	1.755	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	80.00-70.00	A	1.086	0.000	0.000	6.162	0.000	0.04
		B		0.000	0.000	44.289	0.000	0.42
		C		0.000	0.000	15.288	0.000	0.22
T1	70.00-60.00	A	1.070	0.000	0.000	6.108	0.000	0.04
		B		0.000	0.000	44.043	0.000	0.42
		C		0.000	0.000	15.196	0.000	0.22
T2	60.00-50.00	A	1.052	0.000	0.000	6.046	0.000	0.04
		B		0.000	0.000	43.760	0.000	0.41
		C		0.000	0.000	15.089	0.000	0.22
T3	50.00-40.00	A	1.032	0.000	0.000	5.974	0.000	0.04
		B		0.000	0.000	43.427	0.000	0.40
		C		0.000	0.000	14.964	0.000	0.21
T4	40.00-30.00	A	1.006	0.000	0.000	5.885	0.000	0.03
		B		0.000	0.000	43.019	0.000	0.39
		C		0.000	0.000	14.810	0.000	0.21
T5	30.00-26.67	A	0.985	0.000	0.000	1.937	0.000	0.01
		B		0.000	0.000	14.228	0.000	0.13
		C		0.000	0.000	4.895	0.000	0.07
T6	26.67-23.33	A	0.973	0.000	0.000	1.923	0.000	0.01
		B		0.000	0.000	14.163	0.000	0.13
		C		0.000	0.000	4.870	0.000	0.07
T7	23.33-20.00	A	0.959	0.000	0.000	1.907	0.000	0.01
		B		0.000	0.000	14.090	0.000	0.13
		C		0.000	0.000	4.843	0.000	0.07
T8	20.00-10.00	A	0.924	0.000	0.000	5.601	0.000	0.03
		B		0.000	0.000	41.718	0.000	0.37
		C		0.000	0.000	14.320	0.000	0.19
T9	10.00-0.00	A	0.828	0.000	0.000	1.054	0.000	0.01
		B		0.000	0.000	8.038	0.000	0.07
		C		0.000	0.000	2.749	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	80.00-70.00	4.3387	1.2815	5.0833	-0.9984
T1	70.00-60.00	2.3559	0.7226	2.4628	-0.4394
T2	60.00-50.00	2.6245	0.7912	2.9521	-0.5037
T3	50.00-40.00	2.5552	0.7737	2.8164	-0.4739
T4	40.00-30.00	2.6245	0.7912	2.9642	-0.4820
T5	30.00-26.67	2.6245	0.7912	2.9694	-0.4717
T6	26.67-23.33	2.5486	0.7721	2.8850	-0.4546
T7	23.33-20.00	1.9741	0.6209	2.2066	-0.3592
T8	20.00-10.00	1.9741	0.6209	2.2093	-0.3449
T9	10.00-0.00	0.5168	0.1800	0.6320	-0.0961

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line (3/8")	70.00 - 80.00	0.6000	0.6000
L1	2	Climbing Ladder (Af)	70.00 - 80.00	0.6000	0.6000
L1	3	2" Rigid Conduit	70.00 - 80.00	0.6000	0.6000
L1	4	LDF7-50A (1-5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
L1	5	8AWG DC	70.00 - 80.00	0.6000	0.6000
L1	6	6AWG DC	70.00 - 80.00	0.6000	0.6000
L1	7	24PAIR Fiber	70.00 - 80.00	0.6000	0.6000
L1	8	7/8" DC Power Cable	70.00 - 80.00	0.6000	0.6000
L1	9	1/2" Fiber Cable	70.00 - 80.00	0.6000	0.6000
L1	10	LDF4-50A (1/2 FOAM)	70.00 - 80.00	0.6000	0.6000
T1	1	Safety Line (3/8")	60.00 - 70.00	0.6000	0.4804
T1	2	Climbing Ladder (Af)	60.00 - 70.00	0.6000	0.4804
T1	3	2" Rigid Conduit	60.00 - 70.00	0.6000	0.4804
T1	4	LDF7-50A (1-5/8 FOAM)	60.00 - 70.00	0.6000	0.4804
T1	5	8AWG DC	60.00 - 70.00	0.6000	0.4804
T1	6	6AWG DC	60.00 - 70.00	0.6000	0.4804
T1	7	24PAIR Fiber	60.00 - 70.00	0.6000	0.4804
T1	8	7/8" DC Power Cable	60.00 - 70.00	0.6000	0.4804
T1	9	1/2" Fiber Cable	60.00 - 70.00	0.6000	0.4804
T1	10	LDF4-50A (1/2 FOAM)	60.00 - 70.00	0.6000	0.4804
T2	1	Safety Line (3/8")	50.00 - 60.00	0.6000	0.5747
T2	2	Climbing Ladder (Af)	50.00 - 60.00	0.6000	0.5747
T2	3	2" Rigid Conduit	50.00 - 60.00	0.6000	0.5747
T2	4	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.5747
T2	5	8AWG DC	50.00 - 60.00	0.6000	0.5747
T2	6	6AWG DC	50.00 - 60.00	0.6000	0.5747
T2	7	24PAIR Fiber	50.00 - 60.00	0.6000	0.5747
T2	8	7/8" DC Power Cable	50.00 - 60.00	0.6000	0.5747
T2	9	1/2" Fiber Cable	50.00 - 60.00	0.6000	0.5747
T2	10	LDF4-50A (1/2 FOAM)	50.00 - 60.00	0.6000	0.5747
T3	1	Safety Line (3/8")	40.00 - 50.00	0.6000	0.5504
T3	2	Climbing Ladder (Af)	40.00 - 50.00	0.6000	0.5504
T3	3	2" Rigid Conduit	40.00 - 50.00	0.6000	0.5504
T3	4	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.5504
T3	5	8AWG DC	40.00 - 50.00	0.6000	0.5504
T3	6	6AWG DC	40.00 - 50.00	0.6000	0.5504
T3	7	24PAIR Fiber	40.00 - 50.00	0.6000	0.5504
T3	8	7/8" DC Power Cable	40.00 - 50.00	0.6000	0.5504
T3	9	1/2" Fiber Cable	40.00 - 50.00	0.6000	0.5504
T3	10	LDF4-50A (1/2 FOAM)	40.00 - 50.00	0.6000	0.5504
T4	1	Safety Line (3/8")	30.00 - 40.00	0.6000	0.5830
T4	2	Climbing Ladder (Af)	30.00 - 40.00	0.6000	0.5830
T4	3	2" Rigid Conduit	30.00 - 40.00	0.6000	0.5830
T4	4	LDF7-50A (1-5/8 FOAM)	30.00 - 40.00	0.6000	0.5830
T4	5	8AWG DC	30.00 - 40.00	0.6000	0.5830
T4	6	6AWG DC	30.00 - 40.00	0.6000	0.5830
T4	7	24PAIR Fiber	30.00 - 40.00	0.6000	0.5830
T4	8	7/8" DC Power Cable	30.00 - 40.00	0.6000	0.5830
T4	9	1/2" Fiber Cable	30.00 - 40.00	0.6000	0.5830
T4	10	LDF4-50A (1/2 FOAM)	30.00 - 40.00	0.6000	0.5830
T5	1	Safety Line (3/8")	26.67 - 30.00	0.6000	0.5868
T5	2	Climbing Ladder (Af)	26.67 - 30.00	0.6000	0.5868
T5	3	2" Rigid Conduit	26.67 - 30.00	0.6000	0.5868
T5	4	LDF7-50A (1-5/8 FOAM)	26.67 - 30.00	0.6000	0.5868
T5	5	8AWG DC	26.67 - 30.00	0.6000	0.5868
T5	6	6AWG DC	26.67 - 30.00	0.6000	0.5868
T5	7	24PAIR Fiber	26.67 - 30.00	0.6000	0.5868
T5	8	7/8" DC Power Cable	26.67 - 30.00	0.6000	0.5868
T5	9	1/2" Fiber Cable	26.67 - 30.00	0.6000	0.5868

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	10	LDF4-50A (1/2 FOAM)	26.67 - 30.00	0.6000	0.5868
T6	1	Safety Line (3/8")	23.33 - 26.67	0.6000	0.5737
T6	2	Climbing Ladder (Af)	23.33 - 26.67	0.6000	0.5737
T6	3	2" Rigid Conduit	23.33 - 26.67	0.6000	0.5737
T6	4	LDF7-50A (1-5/8 FOAM)	23.33 - 26.67	0.6000	0.5737
T6	5	8AWG DC	23.33 - 26.67	0.6000	0.5737
T6	6	6AWG DC	23.33 - 26.67	0.6000	0.5737
T6	7	24PAIR Fiber	23.33 - 26.67	0.6000	0.5737
T6	8	7/8" DC Power Cable	23.33 - 26.67	0.6000	0.5737
T6	9	1/2" Fiber Cable	23.33 - 26.67	0.6000	0.5737
T6	10	LDF4-50A (1/2 FOAM)	23.33 - 26.67	0.6000	0.5737
T7	1	Safety Line (3/8")	20.00 - 23.33	0.6000	0.4865
T7	2	Climbing Ladder (Af)	20.00 - 23.33	0.6000	0.4865
T7	3	2" Rigid Conduit	20.00 - 23.33	0.6000	0.4865
T7	4	LDF7-50A (1-5/8 FOAM)	20.00 - 23.33	0.6000	0.4865
T7	5	8AWG DC	20.00 - 23.33	0.6000	0.4865
T7	6	6AWG DC	20.00 - 23.33	0.6000	0.4865
T7	7	24PAIR Fiber	20.00 - 23.33	0.6000	0.4865
T7	8	7/8" DC Power Cable	20.00 - 23.33	0.6000	0.4865
T7	9	1/2" Fiber Cable	20.00 - 23.33	0.6000	0.4865
T7	10	LDF4-50A (1/2 FOAM)	20.00 - 23.33	0.6000	0.4865
T8	1	Safety Line (3/8")	10.00 - 20.00	0.6000	0.4916
T8	2	Climbing Ladder (Af)	10.00 - 20.00	0.6000	0.4916
T8	3	2" Rigid Conduit	10.00 - 20.00	0.6000	0.4916
T8	4	LDF7-50A (1-5/8 FOAM)	10.00 - 20.00	0.6000	0.4916
T8	5	8AWG DC	10.00 - 20.00	0.6000	0.4916
T8	6	6AWG DC	10.00 - 20.00	0.6000	0.4916
T8	7	24PAIR Fiber	10.00 - 20.00	0.6000	0.4916
T8	8	7/8" DC Power Cable	10.00 - 20.00	0.6000	0.4916
T8	9	1/2" Fiber Cable	10.00 - 20.00	0.6000	0.4916
T8	10	LDF4-50A (1/2 FOAM)	10.00 - 20.00	0.6000	0.4916
T9	1	Safety Line (3/8")	8.00 - 10.00	0.6000	0.5058
T9	2	Climbing Ladder (Af)	8.00 - 10.00	0.6000	0.5058
T9	3	2" Rigid Conduit	8.00 - 10.00	0.6000	0.5058
T9	4	LDF7-50A (1-5/8 FOAM)	8.00 - 10.00	0.6000	0.5058
T9	5	8AWG DC	8.00 - 10.00	0.6000	0.5058
T9	6	6AWG DC	8.00 - 10.00	0.6000	0.5058
T9	7	24PAIR Fiber	8.00 - 10.00	0.6000	0.5058
T9	8	7/8" DC Power Cable	8.00 - 10.00	0.6000	0.5058
T9	9	1/2" Fiber Cable	8.00 - 10.00	0.6000	0.5058
T9	10	LDF4-50A (1/2 FOAM)	8.00 - 10.00	0.6000	0.5058

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform	A	None		0.0000	80.00	No Ice	25.79	25.79	1.00
						1/2" Ice	31.06	31.06	1.30
						1" Ice	36.46	36.46	1.60
Pipe Mast	A	From Leg	3.00 0.00 8.00	0.0000	80.00	No Ice	5.54	5.54	0.13
						1/2" Ice	7.24	7.24	0.17
						1" Ice	8.89	8.89	0.22
Pipe Mount 3'x2.375"	A	From Leg	0.50	0.0000	80.00	No Ice	0.58	0.58	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	0.77	0.77	0.02
			0.00				1" Ice	0.97	0.97	0.02
Pipe Mount 3'x2.375"	C	From Face	0.50		0.0000	80.00	No Ice	0.58	0.58	0.01
			0.00				1/2" Ice	0.77	0.77	0.02
			0.00				1" Ice	0.97	0.97	0.02
20' Omni	C	From Face	0.50		0.0000	80.00	No Ice	4.00	4.00	0.04
			0.00				1/2" Ice	6.03	6.03	0.07
			10.00				1" Ice	8.07	8.07	0.11
10' Dipole	A	From Leg	0.50		0.0000	80.00	No Ice	2.00	2.00	0.02
			0.00				1/2" Ice	3.02	3.02	0.04
			5.00				1" Ice	4.07	4.07	0.06
SITE PRO 1 VFA14-H10-2120 (3)	A	None			0.0000	80.00	No Ice	26.55	26.55	2.02
							1/2" Ice	40.50	40.50	2.48
							1" Ice	54.45	54.45	2.94
(2) Pipe Mount 10'x2.375"	A	From Leg	6.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
(2) Pipe Mount 10'x2.375"	B	From Leg	6.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
(2) Pipe Mount 10'x2.375"	C	From Leg	6.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
(2) Pipe Mount 10'x2.375"	A	From Leg	4.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
(2) Pipe Mount 10'x2.375"	B	From Leg	4.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
(2) Pipe Mount 10'x2.375"	C	From Leg	4.00		0.0000	80.00	No Ice	2.38	2.38	0.04
			0.00				1/2" Ice	3.40	3.40	0.06
			0.00				1" Ice	4.45	4.45	0.08
AIR6472 B77G B77M	A	From Leg	6.00		0.0000	80.00	No Ice	4.79	2.96	0.07
			0.00				1/2" Ice	5.08	3.20	0.10
			1.00				1" Ice	5.38	3.46	0.14
AIR6472 B77G B77M	B	From Leg	6.00		0.0000	80.00	No Ice	4.79	2.96	0.07
			0.00				1/2" Ice	5.08	3.20	0.10
			1.00				1" Ice	5.38	3.46	0.14
AIR6472 B77G B77M	C	From Leg	6.00		0.0000	80.00	No Ice	4.79	2.96	0.07
			0.00				1/2" Ice	5.08	3.20	0.10
			1.00				1" Ice	5.38	3.46	0.14
OPA65R-BU8DA w/ Mount Pipe	A	From Leg	6.00		0.0000	80.00	No Ice	18.09	10.10	0.03
			0.00				1/2" Ice	18.72	11.52	0.15
			1.00				1" Ice	19.36	12.80	0.28
OPA65R-BU4D w/ Mount Pipe	B	From Leg	6.00		0.0000	80.00	No Ice	8.40	4.41	0.07
			0.00				1/2" Ice	8.79	4.96	0.13
			1.00				1" Ice	9.18	5.52	0.20
OPA65R-BU8DA w/ Mount Pipe	C	From Leg	6.00		0.0000	80.00	No Ice	18.09	10.10	0.03
			0.00				1/2" Ice	18.72	11.52	0.15
			1.00				1" Ice	19.36	12.80	0.28
DMP65R-BU8EA-K w/ Mount Pipe	A	From Leg	6.00		0.0000	80.00	No Ice	18.35	10.50	0.16
			0.00				1/2" Ice	19.18	12.12	0.29
			1.00				1" Ice	20.03	13.76	0.42
DMP65R-BU4EA-K w/ Mount Pipe	B	From Leg	6.00		0.0000	80.00	No Ice	8.76	5.66	0.10
			0.00				1/2" Ice	9.31	6.47	0.17
			1.00				1" Ice	9.82	7.16	0.25
DMP65R-BU8EA-K w/	C	From Leg	6.00		0.0000	80.00	No Ice	18.35	10.50	0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	19.18	12.12	0.29
			1.00			1" Ice	20.03	13.76	0.42
4478 B14	A	From Leg	4.00	0.0000	80.00	No Ice	1.96	1.25	0.06
			0.00			1/2" Ice	2.14	1.40	0.08
			1.00			1" Ice	2.32	1.55	0.10
4478 B14	B	From Leg	4.00	0.0000	80.00	No Ice	1.96	1.25	0.06
			0.00			1/2" Ice	2.14	1.40	0.08
			1.00			1" Ice	2.32	1.55	0.10
4478 B14	C	From Leg	4.00	0.0000	80.00	No Ice	1.96	1.25	0.06
			0.00			1/2" Ice	2.14	1.40	0.08
			1.00			1" Ice	2.32	1.55	0.10
4449 B5/B12	A	From Leg	4.00	0.0000	80.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
4449 B5/B12	B	From Leg	4.00	0.0000	80.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
4449 B5/B12	C	From Leg	4.00	0.0000	80.00	No Ice	1.97	1.41	0.07
			0.00			1/2" Ice	2.14	1.56	0.09
			1.00			1" Ice	2.33	1.73	0.11
8843 B2/B66A	A	From Leg	4.00	0.0000	80.00	No Ice	1.98	1.70	0.08
			0.00			1/2" Ice	2.16	1.86	0.10
			1.00			1" Ice	2.34	2.04	0.12
8843 B2/B66A	B	From Leg	4.00	0.0000	80.00	No Ice	1.98	1.70	0.08
			0.00			1/2" Ice	2.16	1.86	0.10
			1.00			1" Ice	2.34	2.04	0.12
8843 B2/B66A	C	From Leg	4.00	0.0000	80.00	No Ice	1.98	1.70	0.08
			0.00			1/2" Ice	2.16	1.86	0.10
			1.00			1" Ice	2.34	2.04	0.12
DC9-48-60-24-8C-EV	A	From Leg	0.50	0.0000	80.00	No Ice	2.74	4.78	0.03
			0.00			1/2" Ice	2.96	5.06	0.06
			1.00			1" Ice	3.20	5.35	0.10
DC6-48-60-18	C	From Leg	0.50	0.0000	80.00	No Ice	3.81	1.37	0.05
			0.00			1/2" Ice	4.06	1.55	0.07
			1.00			1" Ice	4.32	1.74	0.10
***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy

Comb. No.	Description
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	80 - 70	0.819	37	0.1302	0.0795
T1	70 - 60	0.538	37	0.1266	0.0707
T2	60 - 50	0.331	37	0.0851	0.0573
T3	50 - 40	0.187	36	0.0569	0.0600
T4	40 - 30	0.099	36	0.0328	0.0435
T5	30 - 26.6667	0.052	36	0.0172	0.0252
T6	26.6667 - 23.3333	0.042	36	0.0133	0.0384
T7	23.3333 - 20	0.034	36	0.0094	0.0231
T8	20 - 10	0.027	36	0.0085	0.0199
T9	10 - 0	0.011	35	0.0052	0.0157

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	Platform	37	0.819	0.1302	0.0795	23221
70.00	Guy	37	0.538	0.1266	0.0707	13116
43.33	Guy	36	0.123	0.0403	0.0407	22935

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	80 - 70	5.436	10	0.8124	0.4168
T1	70 - 60	3.696	10	0.7971	0.3783
T2	60 - 50	2.290	10	0.5938	0.3149
T3	50 - 40	1.224	10	0.4201	0.2399
T4	40 - 30	0.541	10	0.2390	0.1603
T5	30 - 26.6667	0.216	10	0.1080	0.0877
T6	26.6667 - 23.3333	0.160	10	0.0749	0.0913
T7	23.3333 - 20	0.122	10	0.0451	0.0611
T8	20 - 10	0.096	10	0.0387	0.0501
T9	10 - 0	0.034	11	0.0208	0.0309

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	Platform	10	5.436	0.8124	0.4168	5480
70.00	Guy	10	3.696	0.7971	0.3783	3083
43.33	Guy	10	0.725	0.2978	0.1777	3038

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
L1	80	Latticed Pole Diagonal	A325N	0.5000	2	3.57	7.34	0.487	1	Member Block Shear
		Latticed Pole Horizontal	A325N	0.5000	2	0.10	7.34	0.014	1	Member Block Shear
		Latticed Pole Top Girt	A325N	0.5000	1	1.33	6.20	0.214	1	Member Bearing
		Latticed Pole Bottom Girt	A325N	0.5000	1	0.17	6.20	0.028	1	Member Bearing
T1	70	Leg	A325N	0.6250	12	6.04	17.40	0.347	1	Bearing
		Diagonal	A325N	0.5000	1	5.88	6.20	0.949	1	Member Bearing
		Horizontal	A325N	0.5000	1	0.96	2.45	0.392	1	Member Block Shear
		Top Girt	A325N	0.5000	1	0.64	8.27	0.077	1	Member Bearing
T2	60	Leg	A325N	0.6250	12	5.92	17.40	0.340	1	Bearing
		Diagonal	A325N	0.5000	1	1.46	4.69	0.312	1	Member Block Shear
		Horizontal	A325N	0.5000	1	0.64	2.45	0.261	1	Member Block Shear
T3	50	Leg	A325N	0.6250	12	6.36	17.40	0.365	1	Bearing
		Diagonal	A325N	0.5000	1	2.05	4.69	0.437	1	Member Block Shear
		Horizontal	A325N	0.5000	1	0.66	2.45	0.270	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T4	40	Leg	A325N	0.6250	12	4.97	17.40	0.286	1	Bearing
		Diagonal	A325N	0.5000	1	2.97	8.84	0.336	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.66	2.45	0.270	1	Member Block Shear
T5	30	Leg	A325N	0.6250	12	4.76	17.40	0.274	1	Bearing
		Diagonal	A325N	0.5000	1	1.81	8.84	0.205	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.60	2.45	0.244	1	Member Block Shear
T6	26.6667	Leg	A325N	0.6250	12	4.44	17.40	0.255	1	Bearing
		Diagonal	A325N	0.5000	1	1.82	8.84	0.206	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.49	2.45	0.202	1	Member Block Shear
T7	23.3333	Leg	A325N	0.6250	12	4.34	27.61	0.157	1	Bolt DS
		Diagonal	A325N	0.5000	1	1.32	8.84	0.149	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.47	2.45	0.191	1	Member Block Shear
T8	20	Leg	A325N	0.7500	6	8.43	39.76	0.212	1	Bolt DS
		Diagonal	A325N	0.5000	1	1.19	8.84	0.135	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.45	2.45	0.184	1	Member Block Shear
T9	10	Leg	A325N	0.7500	6	9.62	39.76	0.242	1	Bolt DS
		Diagonal	A325N	0.5000	1	1.17	6.20	0.189	1	Member Bearing
		Horizontal	A325N	0.5000	1	0.50	2.45	0.204	1	Member Block Shear

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T1	70.00 (A) (196)	5/8 EHS	4.24	42.40	11.18	25.44	1.000	2.275
	70.00 (A) (197)	5/8 EHS	4.24	42.40	11.82	25.44	1.000	2.152
	70.00 (B) (190)	5/8 EHS	4.24	42.40	11.69	25.44	1.000	2.176
	70.00 (B) (191)	5/8 EHS	4.24	42.40	12.46	25.44	1.000	2.042
	70.00 (C) (178)	5/8 EHS	4.24	42.40	12.51	25.44	1.000	2.033
	70.00 (C) (179)	5/8 EHS	4.24	42.40	11.45	25.44	1.000	2.222
T3	43.33 (A) (207)	5/8 EHS	4.24	42.40	6.17	25.44	1.000	4.123
	43.33 (B) (206)	5/8 EHS	4.24	42.40	6.50	25.44	1.000	3.915
	43.33 (C) (202)	5/8 EHS	4.24	42.40	6.22	25.44	1.000	4.093

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	P3.5 STD	10.00	5.00	44.9 K=1.00	2.6795	-10.10	76.14	0.133 [1]
T1	70 - 60	BP 6x0.25	10.00	3.33	55.0 K=1.00	1.5000	-36.80	48.87	0.753 [1]
T2	60 - 50	BP 6x0.25	10.00	3.33	55.0 K=1.00	1.5000	-35.99	48.87	0.737 [1]
T3	50 - 40	BP 6x0.25	10.00	3.33	55.0 K=1.00	1.5000	-38.15	48.87	0.781 [1]
T4	40 - 30	BP 6x0.25	10.00	3.33	55.0 K=1.00	1.5000	-34.53	48.87	0.707 [1]
T5	30 - 26.6667	BP 6x0.25	3.33	3.33	55.0 K=1.00	1.5000	-28.57	48.87	0.585 [1]
T6	26.6667 - 23.3333	BP 6x0.25	3.33	3.33	55.0 K=1.00	1.5000	-26.61	48.87	0.545 [1]
T7	23.3333 - 20	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	3.33	3.33	25.8 K=1.00	6.2500	-26.04	48.87	0.533 [1]
T8	20 - 10	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	10.00	3.33	25.8 K=1.00	6.2500	-25.30	48.87	0.518 [1]
T9	10 - 0	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	10.00	3.33	25.8 K=1.00	6.2500	-28.85	48.87	0.590 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	L2x2x1/4	6.10	5.77	155.1 K=0.88	0.9375	-7.92	11.16	0.709 [1]
T1	70 - 60	L2x2x3/16	4.55	4.35	132.5 K=1.00	0.7148	-7.07	11.66	0.606 [1]
T2	60 - 50	L1 1/2x1 1/2x3/16	4.55	4.35	177.8 K=1.00	0.5273	-2.09	4.77	0.437 [1]
T3	50 - 40	L1 1/2x1 1/2x3/16	4.55	4.35	177.8 K=1.00	0.5273	-2.78	4.77	0.582 [1]
T4	40 - 30	L1 1/2x1 1/2x3/16	4.55	4.35	177.8 K=1.00	0.5273	-2.97	4.77	0.623 [1]
T5	30 - 26.6667	L1 1/2x1 1/2x3/16	4.55	4.35	177.8 K=1.00	0.5273	-1.81	4.77	0.379 [1]
T6	26.6667 - 23.3333	L2x2x3/16	4.55	4.35	132.5 K=1.00	0.7148	-1.82	11.66	0.156 [1]
T7	23.3333 - 20	L2x2x3/16	4.55	4.35	132.5 K=1.00	0.7148	-1.32	11.66	0.113 [1]
T8	20 - 10	L2x2x3/16	4.55	4.35	132.5 K=1.00	0.7148	-1.19	11.66	0.102 [1]
T9	10 - 0	L2x2x3/16	4.55	4.35	132.5 K=1.00	0.7148	-1.61	11.66	0.138 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	2L2x2x1/8x3/16 ai/ri > 0.75(KL/r)o - 13	7.00	6.67	127.7 K=1.00	0.9688	-0.17	15.38	0.011 [1]
T1	70 - 60	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-1.15	4.25	0.271 [1]
T2	60 - 50	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.64	4.25	0.150 [1]
T3	50 - 40	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.66	4.25	0.156 [1]
T4	40 - 30	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.66	4.25	0.156 [1]
T5	30 - 26.6667	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.60	4.25	0.141 [1]
T6	26.6667 - 23.3333	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.49	4.25	0.116 [1]
T7	23.3333 - 20	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.46	4.25	0.108 [1]
T8	20 - 10	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.45	4.25	0.106 [1]
T9	10 - 0	L1 1/4x1 1/4x1/8	3.10	2.90	141.4 K=1.00	0.2969	-0.50	4.25	0.118 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	L2x2x3/16	7.00	5.04	153.6 K=1.00	0.7148	-0.95	8.67	0.109 [1]
T1	70 - 60	L3x2x1/4	3.10	2.90	100.0 K=1.25	1.1875	-0.64	29.32	0.022 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	L2x2x3/16	7.00	5.04	153.6 K=1.00	0.7148	-0.17	8.67	0.020 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60	L3x2x1/4	3.10	3.10	102.8 K=1.20	1.1875	-0.00	28.54	0.000 [1]

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60	L2x2x3/16	3.10	3.10	107.3 K=1.13	0.7150	-2.77	16.43	0.169 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60 (181)	L2 1/2x2 1/2x1/2	3.44	3.44	102.4 K=1.21	2.2500	-0.46	54.28	0.009 [1]
T1	70 - 60 (192)	L2 1/2x2 1/2x1/2	3.44	3.44	102.4 K=1.21	2.2500	-0.10	54.28	0.002 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60 (185)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-9.28	44.91	0.207 [1]
T1	70 - 60 (186)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-12.18	44.91	0.271 [1]
T1	70 - 60 (194)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-13.46	44.91	0.300 [1]
T1	70 - 60 (195)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-9.53	44.91	0.212 [1]
T1	70 - 60 (200)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-12.93	44.91	0.288 [1]
T1	70 - 60 (201)	L2 1/2x2 1/2x1/2	4.79	4.79	119.0 K=1.01	2.2500	-9.89	44.91	0.220 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	P3.5 STD	10.00	5.00	44.9	2.6795	7.33	84.41	0.087 [1]
T1	70 - 60	BP 6x0.25	10.00	3.33	48.7	1.5000	32.60	48.60	0.671 [1]
T2	60 - 50	BP 6x0.25	10.00	3.33	48.7	1.5000	10.54	48.60	0.217 [1]
T3	50 - 40	BP 6x0.25	10.00	3.33	48.7	1.5000	7.47	48.60	0.154 [1]
T4	40 - 30	BP 6x0.25	10.00	3.33	48.7	1.5000	0.45	48.60	0.009 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	L2x2x1/4	6.10	5.77	120.3	0.5859	7.15	25.49	0.280 [1]
T1	70 - 60	L2x2x3/16	4.55	4.35	88.5	0.4482	5.88	19.50	0.302 [1]
T2	60 - 50	L1 1/2x1 1/2x3/16	4.55	4.35	119.7	0.3076	1.46	13.38	0.109 [1]
T3	50 - 40	L1 1/2x1 1/2x3/16	4.55	4.35	119.7	0.3076	2.05	13.38	0.153 [1]
T4	40 - 30	L1 1/2x1 1/2x3/16	4.55	4.35	119.7	0.3076	1.51	13.38	0.113 [1]
T5	30 - 26.6667	L1 1/2x1 1/2x3/16	4.55	4.35	119.7	0.3076	0.94	13.38	0.070 [1]
T6	26.6667 - 23.3333	L2x2x3/16	4.55	4.35	88.5	0.4482	0.44	19.50	0.023 [1]
T7	23.3333 - 20	L2x2x3/16	4.55	4.35	88.5	0.4482	0.43	19.50	0.022 [1]
T8	20 - 10	L2x2x3/16	4.55	4.35	88.5	0.4482	0.23	19.50	0.012 [1]
T9	10 - 0	L2x2x3/16	4.55	4.35	88.5	0.4482	1.17	19.50	0.060 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	80 - 70	2L2x2x1/8x3/16 ai/ri > 0.75(KL/r)o - 10	7.00	6.67	70.4	0.6094	0.20	26.51	0.007 [1]
T1	70 - 60	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.96	7.14	0.135 [1]
T2	60 - 50	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.64	7.14	0.089 [1]
T3	50 - 40	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.66	7.14	0.093 [1]
T4	40 - 30	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.66	7.14	0.093 [1]
T5	30 - 26.6667	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.60	7.14	0.084 [1]
T6	26.6667 - 23.3333	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.49	7.14	0.069 [1]
T7	23.3333 - 20	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.47	7.14	0.065 [1]
T8	20 - 10	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.45	7.14	0.063 [1]
T9	10 - 0	L1 1/4x1 1/4x1/8	3.10	2.90	96.8	0.1641	0.50	7.14	0.070 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	80 - 70	L2x2x3/16	7.00	5.04	136.1	0.4482	1.33	19.50	0.068 [1]
T1	70 - 60	L3x2x1/4	3.10	2.90	64.8	0.7734	0.64	33.64	0.019 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	80 - 70	L2x2x3/16	7.00	5.04	136.1	0.4482	0.17	19.50	0.009 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	70 - 60	L3x2x1/4	3.10	3.10	64.8	1.1875	0.00	38.48	0.000 [1]
T3	50 - 40	L2x2x3/8	3.10	3.10	62.7	1.3594	2.75	44.04	0.062 [1]

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	70 - 60	L2x2x3/16	3.10	3.10	60.4	0.7150	2.31	23.17	0.100 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60 (180)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	12.98	72.90	0.178 [1]
T1	70 - 60 (181)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	14.31	72.90	0.196 [1]
T1	70 - 60 (192)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	13.28	72.90	0.182 [1]
T1	70 - 60 (193)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	11.87	72.90	0.163 [1]
T1	70 - 60 (198)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	12.86	72.90	0.176 [1]
T1	70 - 60 (199)	L2 1/2x2 1/2x1/2	3.44	3.44	55.9	2.2500	11.80	72.90	0.162 [1]

[1] $P_u / \phi P_n$ controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	70 - 60 (186)	L2 1/2x2 1/2x1/2	4.79	4.79	77.8	2.2500	0.31	72.90	0.004 [1]
T1	70 - 60 (194)	L2 1/2x2 1/2x1/2	4.79	4.79	77.8	2.2500	0.41	72.90	0.006 [1]
T1	70 - 60 (200)	L2 1/2x2 1/2x1/2	4.79	4.79	77.8	2.2500	0.03	72.90	0.000 [1]

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	80 - 70	Latticed Pole Leg	P3.5 STD	3	-10.05	76.14	14.3	Pass
L1	80 - 70	Latticed Pole Diagonal	L2x2x1/4	18	-7.92	11.16	70.9	Pass
L1	80 - 70	Latticed Pole Horizontal	2L2x2x1/8x3/16	16	-0.17	15.38	1.1 1.4 (b)	Pass
L1	80 - 70	Latticed Pole Top Girt	L2x2x3/16	5	-0.95	8.67	10.9 21.4 (b)	Pass
L1	80 - 70	Latticed Pole Bottom Girt	L2x2x3/16	8	-0.17	8.67	2.0 2.8 (b)	Pass
T1	70 - 60	Leg	BP 6x0.25	25	-36.80	48.87	75.3	Pass
T2	60 - 50	Leg	BP 6x0.25	46	-35.99	48.87	73.7	Pass
T3	50 - 40	Leg	BP 6x0.25	67	-38.15	48.87	78.1	Pass
T4	40 - 30	Leg	BP 6x0.25	88	-34.53	48.87	70.7	Pass
T5	30 - 26.6667	Leg	BP 6x0.25	109	-28.57	48.87	58.5	Pass
T6	26.6667 - 23.3333	Leg	BP 6x0.25	118	-26.61	48.87	54.5	Pass
T7	23.3333 - 20	Leg	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	127	-26.04	48.87	53.3	Pass
T8	20 - 10	Leg	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	136	-25.30	48.87	51.8	Pass
T9	10 - 0	Leg	BP 6x0.25 w/ (2) 3.25x0.25 Flat Plate (Ineffective)	157	-28.85	48.87	59.0	Pass
T1	70 - 60	Diagonal	L2x2x3/16	44	-7.07	11.66	60.6 94.9 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T2	60 - 50	Diagonal	L1 1/2x1 1/2x3/16	65	-2.09	4.77	43.7	Pass
T3	50 - 40	Diagonal	L1 1/2x1 1/2x3/16	74	-2.78	4.77	58.2	Pass
T4	40 - 30	Diagonal	L1 1/2x1 1/2x3/16	106	-2.97	4.77	62.3	Pass
T5	30 - 26.6667	Diagonal	L1 1/2x1 1/2x3/16	116	-1.81	4.77	37.9	Pass
T6	26.6667 - 23.3333	Diagonal	L2x2x3/16	124	-1.82	11.66	15.6 20.6 (b)	Pass
T7	23.3333 - 20	Diagonal	L2x2x3/16	134	-1.32	11.66	11.3 14.9 (b)	Pass
T8	20 - 10	Diagonal	L2x2x3/16	156	-1.19	11.66	10.2 13.5 (b)	Pass
T9	10 - 0	Diagonal	L2x2x3/16	171	-1.61	11.66	13.8 18.9 (b)	Pass
T1	70 - 60	Horizontal	L1 1/4x1 1/4x1/8	42	-1.15	4.25	27.1 39.2 (b)	Pass
T2	60 - 50	Horizontal	L1 1/4x1 1/4x1/8	51	-0.64	4.25	15.0 26.1 (b)	Pass
T3	50 - 40	Horizontal	L1 1/4x1 1/4x1/8	70	-0.66	4.25	15.6 27.0 (b)	Pass
T4	40 - 30	Horizontal	L1 1/4x1 1/4x1/8	91	-0.66	4.25	15.6 27.0 (b)	Pass
T5	30 - 26.6667	Horizontal	L1 1/4x1 1/4x1/8	112	-0.60	4.25	14.1 24.4 (b)	Pass
T6	26.6667 - 23.3333	Horizontal	L1 1/4x1 1/4x1/8	123	-0.49	4.25	11.6 20.2 (b)	Pass
T7	23.3333 - 20	Horizontal	L1 1/4x1 1/4x1/8	132	-0.46	4.25	10.8 19.1 (b)	Pass
T8	20 - 10	Horizontal	L1 1/4x1 1/4x1/8	139	-0.45	4.25	10.6 18.4 (b)	Pass
T9	10 - 0	Horizontal	L1 1/4x1 1/4x1/8	160	-0.50	4.25	11.8 20.4 (b)	Pass
T1	70 - 60	Top Girt	L3x2x1/4	28	-0.64	29.32	2.2 7.7 (b)	Pass
T1	70 - 60	Guy A@70	5/8	197	11.82	25.44	46.5	Pass
T3	50 - 40	Guy A@43.3333	5/8	207	6.17	25.44	24.3	Pass
T1	70 - 60	Guy B@70	5/8	191	12.46	25.44	49.0	Pass
T3	50 - 40	Guy B@43.3333	5/8	206	6.50	25.44	25.5	Pass
T1	70 - 60	Guy C@70	5/8	178	12.51	25.44	49.2	Pass
T3	50 - 40	Guy C@43.3333	5/8	202	6.22	25.44	24.4	Pass
T1	70 - 60	Top Guy Pull-Off@70	L3x2x1/4	183	-0.00	28.54	0.1	Pass
T3	50 - 40	Top Guy Pull-Off@43.3333	L2x2x3/8	203	2.75	44.04	6.2	Pass
T1	70 - 60	Bottom Guy Pull-Off@70	L2x2x3/16	189	-2.77	16.43	16.9	Pass
T1	70 - 60	Torque Arm Top@70	L2 1/2x2 1/2x1/2	181	14.31	72.90	19.6	Pass
T1	70 - 60	Torque Arm Bottom@70	L2 1/2x2 1/2x1/2	194	-13.46	44.91	30.0	Pass
							Summary	
						Latticed Pole Leg (L1)	14.3	Pass
						Latticed Pole Diagonal (L1)	70.9	Pass
						Latticed Pole Horizontal (L1)	1.4	Pass
						Latticed Pole Top	21.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Girt (L1) Latticed Pole Bottom Girt (L1)	2.8	Pass
						Leg (T3)	78.1	Pass
						Diagonal (T1)	94.9	Pass
						Horizontal (T1)	39.2	Pass
						Top Girt (T1)	7.7	Pass
						Guy A (T1)	46.5	Pass
						Guy B (T1)	49.0	Pass
						Guy C (T1)	49.2	Pass
						Top Guy Pull-Off (T3)	6.2	Pass
						Bottom Guy Pull-Off (T1)	16.9	Pass
						Torque Arm Top (T1)	19.6	Pass
						Torque Arm Bottom (T1)	30.0	Pass
						Bolt Checks	94.9	Pass
						RATING =	**94.9**	**Pass**

APPENDIX C

Additional Calculations

Mat Foundation Analysis
BROOKLYN (CTL02075)
2024701.93

General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Apply TIA-222-H Section 15.5?	No
Soil Code	AASHTO 2012
Concrete Code	ACI 318-14
Seismic Design Category	B
Tower Height	80 ft
Bearing On	Soil
Foundation Type	Guyed Pad
Pier Type	Square
Reinforcing Known	No
Max Bearing Capacity	105%
Max Overturning Capacity	105%

Tower Reactions	
Moment, M	37 k-ft
Axial, P	48 k
Shear, V	1 k

Pad & Pier Geometry	
Pier Width, ø	4.75 ft
Pad Length, L [y]	6 ft
Pad Width, W [x]	6 ft
Pad Thickness, t	1.5 ft
Depth, D	3 ft
Height Above Grade, HG	2.5 ft
Tower Centroid, X	3 ft
Tower Centroid, Y	3 ft
Tower Eccentricity	0.0000 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete F'c	3 ksi
Pier Reinforcing Clear Cover	3 in
Shear Rebar Type	Tie
Shear Rebar Size	# 3
Pad Reinforcing Clear Cover	3 in
Reinforced Top & Bottom?	No
Pad Reinforcing Size	# 7
Pad Quantity Per Layer	4
Pier Rebar Size	# 7
Pier Quantity of Rebar	28

Soil Properties	
Soil Type	Granular
Soil Unit Weight	125 pcf
Angle of Friction, ø	42
Base Friction Coeff. Provided in Geo?	Yes
Base Friction Coefficient, μ	0.6
Bearing Type	Net
Ultimate Bearing	18 ksf
Water Table Depth	99 ft
Neglected Depth	2 ft

GPD Mat Foundation Analysis - V4.4

Bearing Summary

Case	*Demand/Limits*	*Capacity/Availability*	*Check*	*Eccentricity*	*Load Case*
Qxmax	2.92 ksf	11.03 ksf	OK, <= 105%	L/11.0	1.2D+1.0W
Qymax	2.92 ksf	11.03 ksf	OK, <= 105%	W/11.0	1.2D+1.0W
Qmax @ 45°	2.74 ksf	11.03 ksf	OK, <= 105%	W/17.1	1.2D+1.0W
Controlling Capacity		**26.5%**	**Pass**		

Overturning Summary

Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Ovtx	42.0 k-ft	231.0 k-ft	24.3%	OK	0.9D+1.0W
Ovty	42.0 k-ft	231.0 k-ft	24.3%	OK	0.9D+1.0W
Ovtxy	26.9 k-ft	173.2 k-ft	15.6%	OK	0.9D+1.0W
Controlling Capacity		**24.3%**	**Pass**		

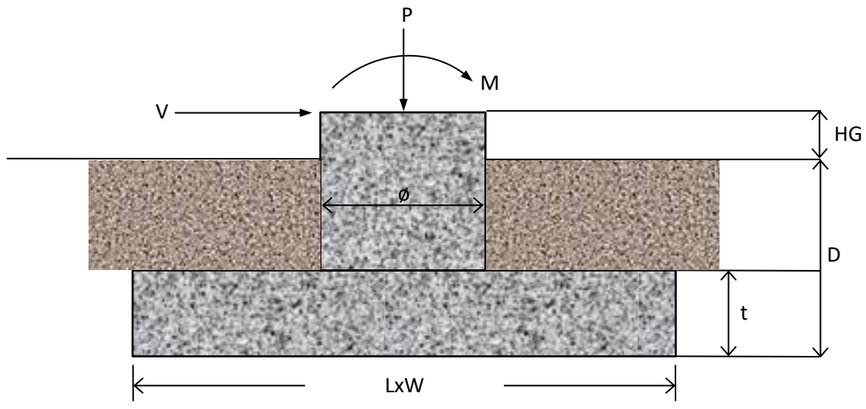
Sliding Summary

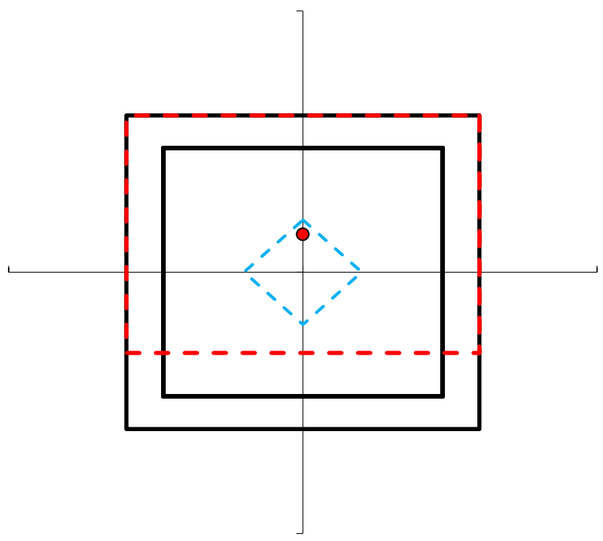
Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Slidingx	1.0 k	33.1 k	3.0%	OK	0.9D+1.0W
Slidingy	1.0 k	33.1 k	3.0%	OK	0.9D+1.0W
Controlling Capacity		**3.0%**	**Pass**		

Reinforcement Summary

Component	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Pad Flexural Bending	3.2 k-ft	143.6 k-ft	2.2%	OK	1.2D+1.0W
One-Way Shear in Pad	0.0 k	81.0 k	0.0%	OK	1.2D+1.0W
Two-Way Shear in Pad	26.2 k	625.8 k	4.2%	OK	0.9D+1.0W
Compression on Pier	64.2 k	6802.4 k	0.9%	OK	1.2D+1.0W
Moment on Pier	41.0 k-ft	1800.2 k-ft	2.3%	OK	1.2D+1.0W
Pad Flexural 2-Way	24.6 k-ft	119.7 k-ft	20.6%	OK	1.2D+1.0W
As Min Pad Met?	0.40 sq. in.	0.02 sq. in.	Yes		
As Min Pier Met?	16.80 sq. in.	16.25 sq. in.	Yes		
Controlling Capacity		**20.6%**	**Pass**		

<-- Minimum reinforcement assumed





Guyed Tower Anchor Foundation
BROOKLYN (CTL02075)
2024701.93

Guy Anchor Location	
Azimuth/Leg	A, B, C
Radius (ft)	VARIES
Tower Height (ft)	80

Tower Reactions		
Vertical	21	k
Horizontal	21	k

Capacity Summary		
Soil Capacity=	54.6%	**OK**
Reinforcing Capacity=	48.4%	**OK**
Controlling Capacity=	**54.6%**	**OK**

Minimum steel has been assumed

Anchor Block Geometry		
Width	4	ft
Height	5	ft
Length	5	ft
Depth	6.5	ft

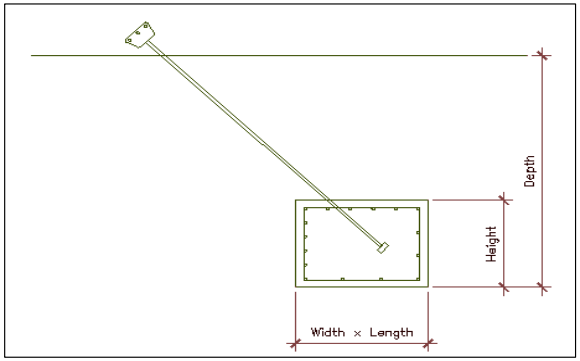
General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Soil	105%
Reinforcement/Steel	105%
Apply TIA-222-H Section 15.5?	No

Soil Properties

Layer	C_u, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	Thickness, ft	$P_{p,top}$, psf	$P_{p,bot}$, psf	f_s,psf
1			125	150	1.5			
2		36	125	150	5	2000	2000	500
3								
4								
5								
6								

Ignored Depth	1.5	ft	Consider soil for uplift	User Input Angle (°)	36
Water Table	99	ft	Granular	Angle for Uplift (°)	36

Soil Capacity Calculations			
W_s	5.89	k	
W_c	15.00	k	
Uplift Resistance	38.46	k	
Horizontal Resistance	48.11	k	
Uplift Capacity=	54.6%		**OK**
Horizontal Capacity=	43.7%		**OK**



Anchor Block Reinforcement		
Is Reinforcement Known?	assume min	
fc'	3	ksi
Fy	60	ksi

Block Moment and Shear Calculations						
Moment Check						
M_{ux}=	13.13	k-ft	M_{uy}=	13.13	k-ft	
ϕM_{nx}=	2167.29	k-ft	ϕM_{ny}=	1681.98	k-ft	
Capacity	0.6%	**OK**	Capacity	0.8%		**OK**
Shear Check						
V_{ux}=	10.50	k	V_{uy}=	10.50	k	
ϕV_{nx}=	220.84	k	ϕV_{ny}=	217.51	k	
Capacity	4.8%	**OK**	Capacity	4.8%		**OK**

Guy Anchor Shaft Calculations		
Shape of Anchor Shaft	Channel	
Anchor Shaft Size	C4X7.25	
Quantity of Members	Single	
Anchor Shaft Grade	A36	
Guy Anchor Shaft to Fan Plate	Weld	
Gross Area	2.130	in^2
Effective Net Area	2.130	in^2
Capacity	48.4%	**OK**

March 20, 2024

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:	AT&T Site Number:	CT2075 (C-Band)
	FA Number:	10035010
	PACE Number:	MRCTB070179
	PT Number:	2051A195RM
	TEP Project Number:	320384.938832
	AT&T Site Name:	BROOKLYN
	Site Address:	Tatnic Hill Road Brooklyn, CT 06234

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading.

- (2) OPA65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 79 lbs. /each)
- (1) OPA65R-BU4D Antenna (48.0"x20.7"x7.7" – Wt. = 46 lbs.)
- (2) DMP65R-BU8EA-K Antennas (96.0"x20.7"x9.7" – Wt. = 143 lbs. /each)
- (1) DMP65R-BU4EA-K Antenna (48.0"x20.7"x9.7" – Wt. = 92 lbs.)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Standoff)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each) (Standoff)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Standoff)
- (1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.) (Tower Mounted)
- **(3) AIR6472 Antennas (36.3"x15.8"x9.3" – Wt. 89 lbs. /each)**
- **(1) DC6-48-60-18 Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.) (Tower Mounted)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020, 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 125 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 1.09 in was used for this analysis.
- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- 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 0.184 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.054.
- The mounts have 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 mounts have been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mounts are secured to the existing guyed tower with threaded rods and clamps tightened around the tower leg. TEP NE considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	141	LC77	74%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020.

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 existing mounts have been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mount 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

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:






Wind & Ice
Calculations

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	81.0	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**0.930**	

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}=	**1.00**	
K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0.0	(from Table 2-5)
z=	81.0	
z_s=	547	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.98	(from 2.6.8)

(If Category 1 then K_{zt} =1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.00 in
Importance Factor = I= 1.00 (from Table 2-3)
K_{iz} = 1.09 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.09 in

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM 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=	80.0	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=	0.930	(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=	**31.02**	K_e=	0.98	(from 2.6.8)
$q_{z\ (ice)}$=	**4.96**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**1.79**	V_{max}=	125	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: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM 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		$1.2 - 2.8(r_s) \geq 0.85$	$1.4 - 4.0(r_s) \geq 0.90$	$2.0 - 6.0(r_s) \geq 1.25$
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 = **1.09** 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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.30	1.20	**148**	**29**	**9**
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**554**	**100**	**32**
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.32	1.20	**257**	**48**	**15**
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	4.64	1.30	**554**	**100**	**32**
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	2.32	1.20	**257**	**48**	**15**
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**39**	**9**	**2**
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	**43**	**10**	**3**
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	**42**	**9**	**2**
Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**48**	**10**	**3**
Plate 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	**3**		
Plate 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	**3**		
3/4" RoundBar	0.8	12.0		0.06	0.06	1.20	**2**		
5/8" RoundBar	0.6	12.0		0.05	0.05	1.20	**2**		
2" Pipe	2.4	12.0		0.20	0.20	1.20	**7**		
2-1/2" Pipe	2.8	12.0		0.23	0.23	1.20	**9**		

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.09	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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	148	92	134
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	554	252	479
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	257	109	220
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	554	300	491
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	257	131	225
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	45
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	61	48
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	44
WIND LOADS WITH ICE:												
AIR6472 Antenna	38.5	18.0	11.5	4.81	3.07	2.14	3.35	1.20	1.24	29	19	26
OPA65R-BU8DA Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	87
OPA65R-BU4D Antenna	50.2	22.9	9.9	7.98	3.45	2.19	5.08	1.20	1.31	48	22	41
DMP65R-BU8EA-K Antenna	98.2	22.9	11.9	15.61	8.11	4.29	8.26	1.28	1.44	99	58	89
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	42
4478 B14 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	10
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	10
8843 B2/B66A RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10
WIND LOADS AT 30 MPH:												
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	9	5	8
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	28
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	15	6	13
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	32	17	28
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	13
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.09	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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	148	92	106
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	554	252	328
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	257	109	146
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	554	300	364
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	257	131	163
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	57
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	61	57
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	49

WIND LOADS WITH ICE:

AIR6472 Antenna	38.5	18.0	11.5	4.81	3.07	2.14	3.35	1.20	1.24	29	19	21
OPA65R-BU8DA Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	62
OPA65R-BU4D Antenna	50.2	22.9	9.9	7.98	3.45	2.19	5.08	1.20	1.31	48	22	29
DMP65R-BU8EA-K Antenna	98.2	22.9	11.9	15.61	8.11	4.29	8.26	1.28	1.44	99	58	68
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	32
4478 B14 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	12
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	12
8843 B2/B66A RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10

WIND LOADS AT 30 MPH:

AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	9	5	6
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	19
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	15	6	8
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	32	17	21
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	9
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.09	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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	148	92	92
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	554	252	252
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	257	109	109
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	554	300	300
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	257	131	131
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	63
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	61	61
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	51

WIND LOADS WITH ICE:

AIR6472 Antenna	38.5	18.0	11.5	4.81	3.07	2.14	3.35	1.20	1.24	29	19	19
OPA65R-BU8DA Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	50
OPA65R-BU4D Antenna	50.2	22.9	9.9	7.98	3.45	2.19	5.08	1.20	1.31	48	22	22
DMP65R-BU8EA-K Antenna	98.2	22.9	11.9	15.61	8.11	4.29	8.26	1.28	1.44	99	58	58
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	26
4478 B14 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	13
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	13
8843 B2/B66A RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	11

WIND LOADS AT 30 MPH:

AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	9	5	5
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	15
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	15	6	6
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	32	17	17
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	8
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.09	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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	148	92	106
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	554	252	328
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	257	109	146
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	554	300	364
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	257	131	163
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	57
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	61	57
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	49

WIND LOADS WITH ICE:

AIR6472 Antenna	38.5	18.0	11.5	4.81	3.07	2.14	3.35	1.20	1.24	29	19	21
OPA65R-BU8DA Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	62
OPA65R-BU4D Antenna	50.2	22.9	9.9	7.98	3.45	2.19	5.08	1.20	1.31	48	22	29
DMP65R-BU8EA-K Antenna	98.2	22.9	11.9	15.61	8.11	4.29	8.26	1.28	1.44	99	58	68
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	32
4478 B14 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	12
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	12
8843 B2/B66A RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10

WIND LOADS AT 30 MPH:

AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	9	5	6
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	19
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	15	6	8
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	32	17	21
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	9
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM Checked By: MSC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.09	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)
AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	148	92	134
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	554	252	479
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	257	109	220
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	554	300	491
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	257	131	225
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	45
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	43	61	48
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	44

WIND LOADS WITH ICE:

AIR6472 Antenna	38.5	18.0	11.5	4.81	3.07	2.14	3.35	1.20	1.24	29	19	26
OPA65R-BU8DA Antenna	98.2	22.9	9.9	15.61	6.74	4.29	9.93	1.28	1.50	99	50	87
OPA65R-BU4D Antenna	50.2	22.9	9.9	7.98	3.45	2.19	5.08	1.20	1.31	48	22	41
DMP65R-BU8EA-K Antenna	98.2	22.9	11.9	15.61	8.11	4.29	8.26	1.28	1.44	99	58	89
DMP65R-BU4EA-K Antenna	50.2	22.9	11.9	7.98	4.14	2.19	4.22	1.20	1.28	48	26	42
4478 B14 RRH (Side)	20.3	10.5	15.6	1.48	2.20	1.93	1.30	1.20	1.20	9	13	10
4449 B5/B12 RRH (Side)	20.1	11.6	15.4	1.62	2.15	1.73	1.31	1.20	1.20	10	13	10
8843 B2/B66A RRH (Side)	17.1	13.1	15.4	1.55	1.83	1.31	1.11	1.20	1.20	9	11	10

WIND LOADS AT 30 MPH:

AIR6472 Antenna	36.3	15.8	9.3	3.98	2.34	2.30	3.90	1.20	1.26	9	5	8
OPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	32	15	28
OPA65R-BU4D Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	15	6	13
DMP65R-BU8EA-K Antenna	96.0	20.7	9.7	13.80	6.47	4.64	9.90	1.30	1.50	32	17	28
DMP65R-BU4EA-K Antenna	48.0	20.7	9.7	6.90	3.23	2.32	4.95	1.20	1.31	15	8	13
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	2	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	2	3	3

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.09 in.
Density of ice: 56 pcf

AIR6472 Antenna
Weight of ice based on total radial SF area:
Height (in): 36.3
Width (in): 15.8
Depth (in): 9.3
Total weight of ice on object: 78 lbs
Weight of object: 89.0 lbs
Combined weight of ice and object: 167 lbs

OPA65R-BU8DA Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 247 lbs
Weight of object: 79.0 lbs
Combined weight of ice and object: 326 lbs

OPA65R-BU4D Antenna
Weight of ice based on total radial SF area:
Height (in): 48.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 123 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 169 lbs

DMP65R-BU8EA-K Antenna
Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 20.7
Depth (in): 9.7
Total weight of ice on object: 255 lbs
Weight of object: 143.0 lbs
Combined weight of ice and object: 398 lbs

DMP65R-BU4EA-K Antenna
Weight of ice based on total radial SF area:
Height (in): 48.0
Width (in): 20.7
Depth (in): 9.7
Total weight of ice on object: 128 lbs
Weight of object: 92.0 lbs
Combined weight of ice and object: 220 lbs

4478 B14 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 34 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 94 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 34 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 107 lbs

8843 B2/B66A RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 30 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 102 lbs

Surge Arrestor
Weight of ice based on total radial SF area:
Height (in): 31.4
Diameter(in): 10.2
Total weight of ice on object: 39 lbs
Weight of object: 29.0 lbs
Combined weight of ice and object: 68 lbs

3/4" Round Bar
Per foot weight of ice:
diameter (in): 0.75
Per foot weight of ice on object: 2 plf

5/8" Round Bar
Per foot weight of ice:
diameter (in): 0.625
Per foot weight of ice on object: 2 plf

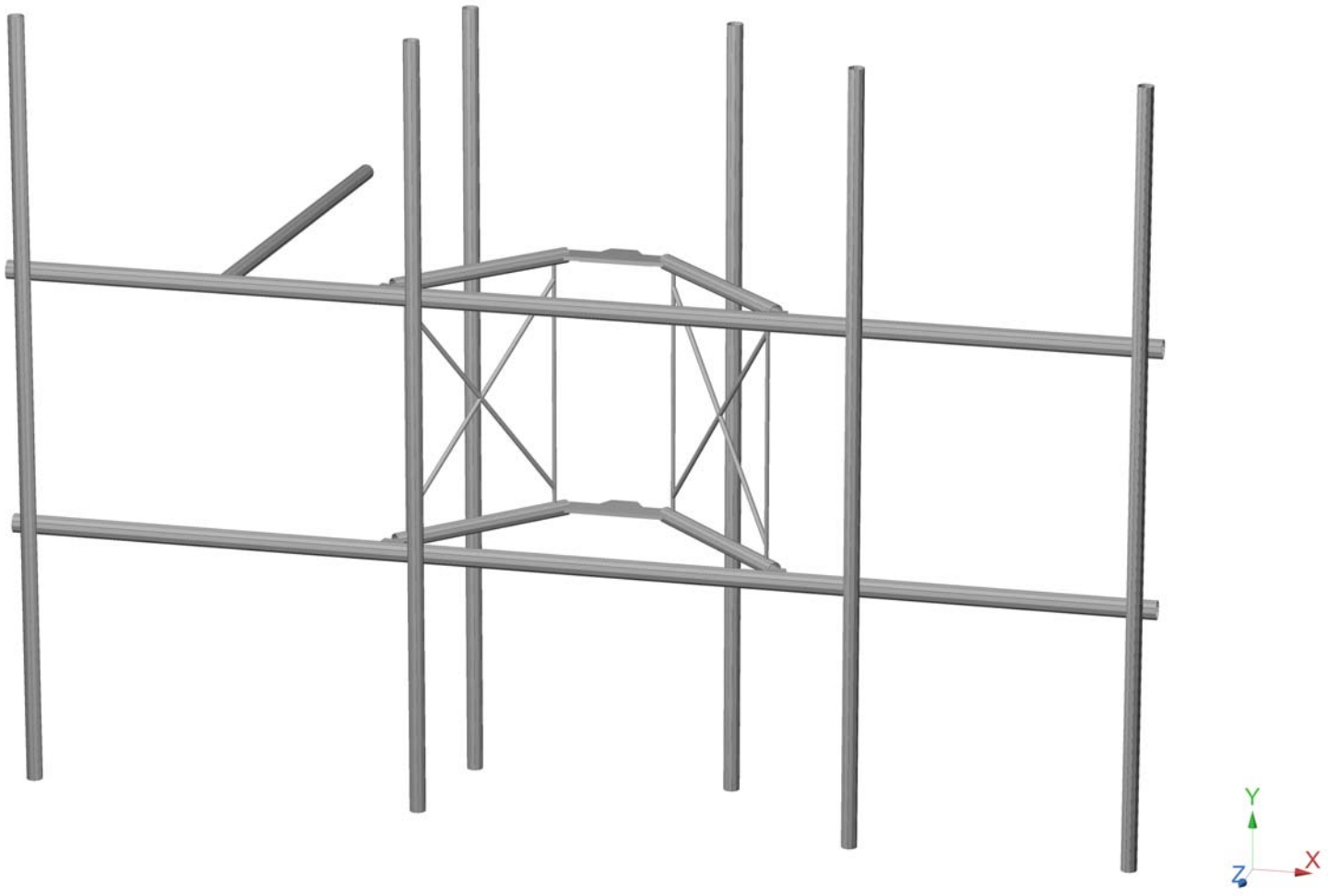
PL 11-1/4x5/8
Weight of ice based on total radial SF area:
Height (in): 11.25
Width (in): 0.63
Per foot weight of ice on object: 16 plf

2" Pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 5 plf

PL 3-1/2x5/8
Weight of ice based on total radial SF area:
Height (in): 3.5
Width (in): 0.63
Per foot weight of ice on object: 6 plf

2-1/2" Pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 5 plf

Mount Calculations
(Existing Conditions)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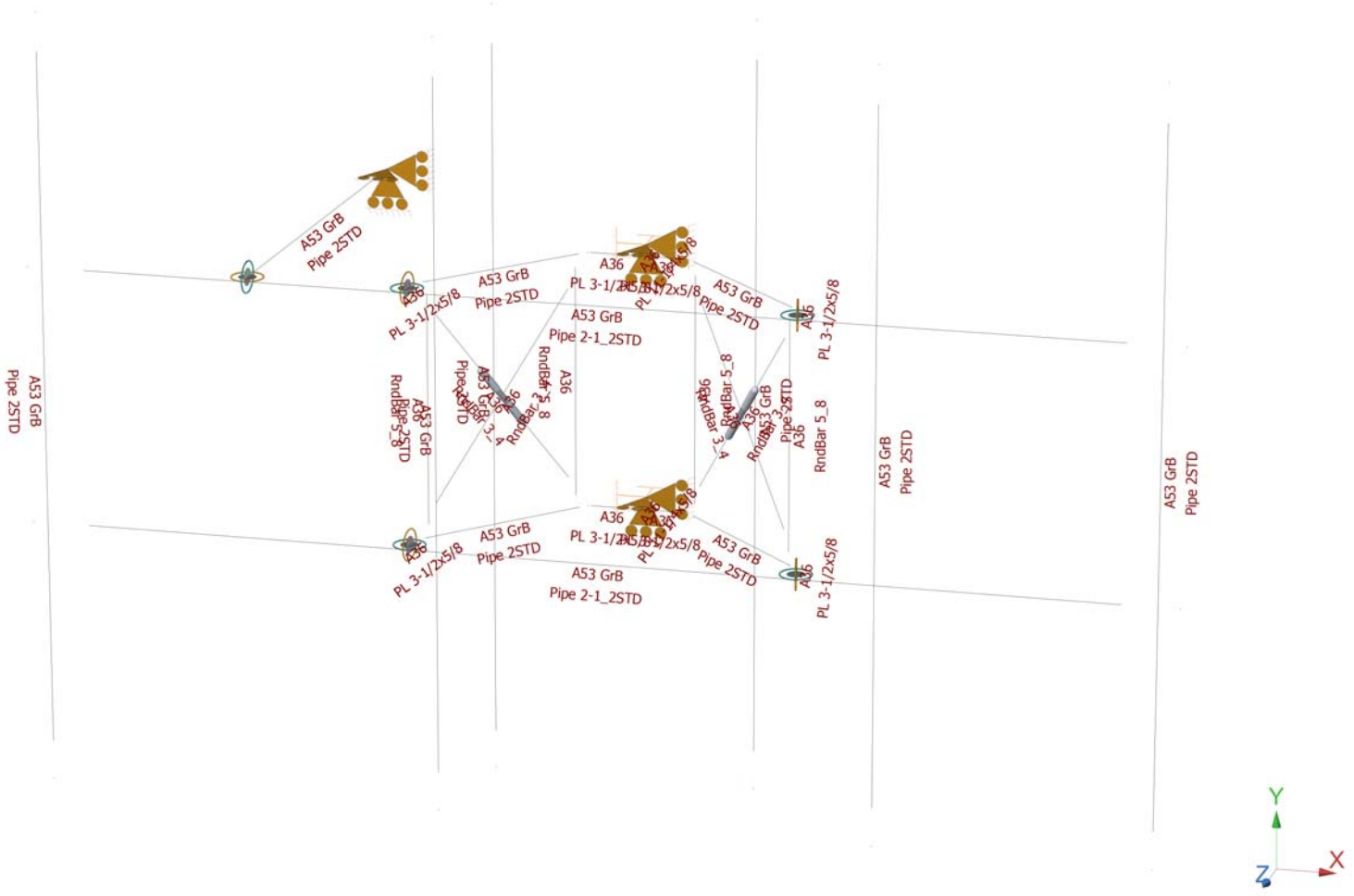
X
Z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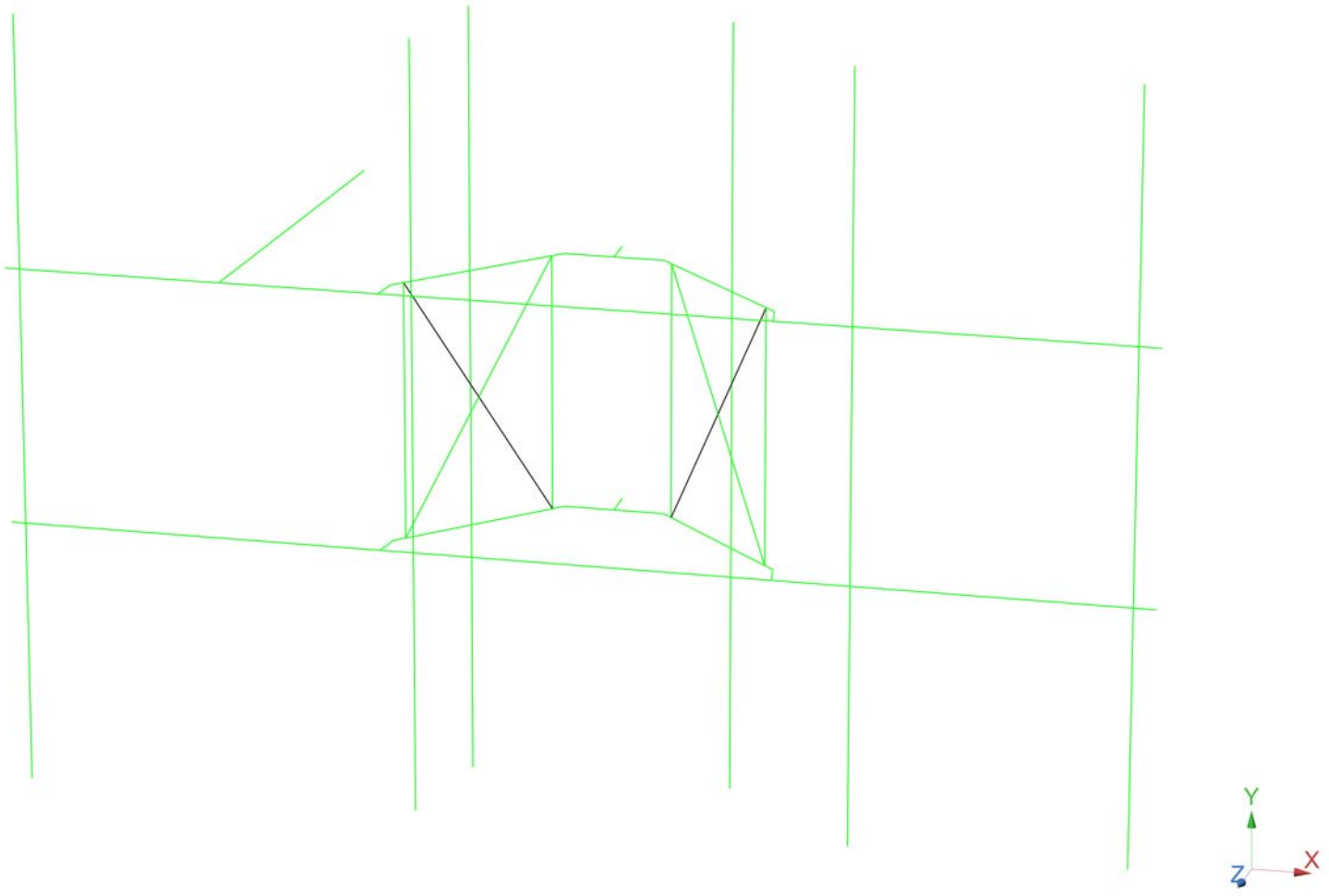
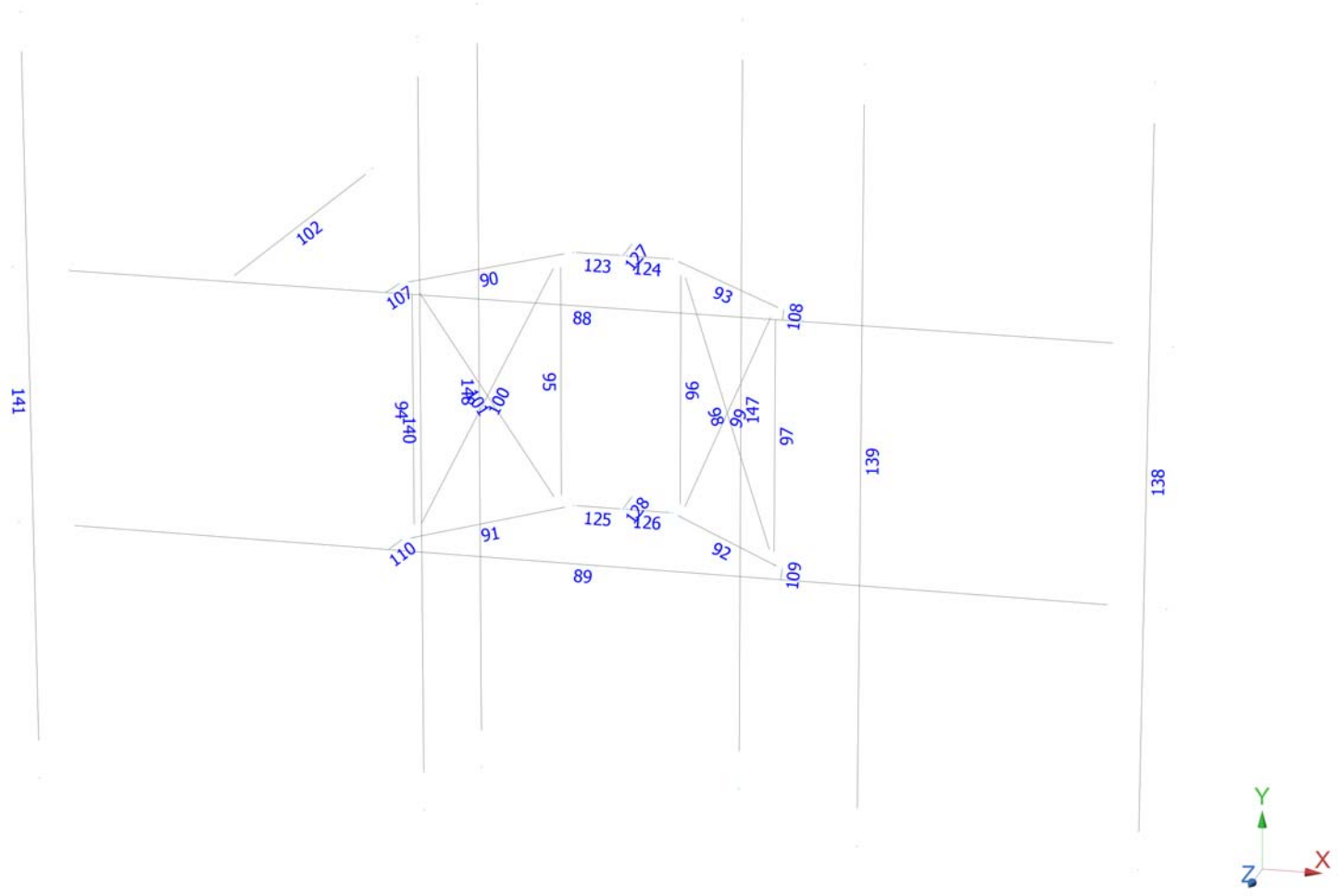
Pipe 2STD
A36
PL 3-1/2x5/8
A53 GrB
Pipe 2-1_2STD
RndBar 5_8
RndBar 3_4
Y
Z
X


Y
X
Z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107
90
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124
93
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88
141
140
100
95
96
98
99
147
97
139
138
125
128
126
91
92
110
89
109
Y
Z
X

RAM Elements

Current Date: 3/19/2024 8:02 PM
Units system: English

Load data

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members

Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	88	z	-0.009	0.00	0.00	No	0.00	No
	89	z	-0.009	0.00	0.00	No	0.00	No
	90	z	-0.007	0.00	0.00	No	0.00	No
	91	z	-0.007	0.00	0.00	No	0.00	No
	92	z	-0.007	0.00	0.00	No	0.00	No
	93	z	-0.007	0.00	0.00	No	0.00	No
	94	z	-0.002	0.00	0.00	No	0.00	No
	95	z	-0.002	0.00	0.00	No	0.00	No
	96	z	-0.002	0.00	0.00	No	0.00	No
	97	z	-0.002	0.00	0.00	No	0.00	No
	98	z	-0.002	0.00	0.00	No	0.00	No
	99	z	-0.002	0.00	0.00	No	0.00	No
	100	z	-0.002	0.00	0.00	No	0.00	No
	101	z	-0.002	0.00	0.00	No	0.00	No
	102	z	-0.007	0.00	0.00	No	0.00	No

	107	z	-0.003	0.00	0.00	No	0.00	No
	108	z	-0.003	0.00	0.00	No	0.00	No
	109	z	-0.003	0.00	0.00	No	0.00	No
	110	z	-0.003	0.00	0.00	No	0.00	No
	123	z	-0.003	0.00	0.00	No	0.00	No
	124	z	-0.003	0.00	0.00	No	0.00	No
	125	z	-0.003	0.00	0.00	No	0.00	No
	126	z	-0.003	0.00	0.00	No	0.00	No
	127	z	-0.003	0.00	0.00	No	0.00	No
	128	z	-0.003	0.00	0.00	No	0.00	No
	138	z	-0.007	-0.007	0.00	No	2.50	No
		z	-0.007	-0.007	5.50	No	10.00	No
	139	z	-0.007	0.00	0.00	No	0.00	No
	140	z	-0.007	-0.007	8.00	No	10.00	No
	141	z	-0.007	-0.007	8.00	No	10.00	No
	147	z	-0.007	0.00	0.00	No	0.00	No
	148	z	-0.007	0.00	0.00	No	0.00	No
W30	88	z	-0.009	0.00	0.00	No	0.00	No
	89	z	-0.009	0.00	0.00	No	0.00	No
	90	z	-0.007	0.00	0.00	No	0.00	No
	91	z	-0.007	0.00	0.00	No	0.00	No
	92	z	-0.007	0.00	0.00	No	0.00	No
	93	z	-0.007	0.00	0.00	No	0.00	No
	94	z	-0.002	0.00	0.00	No	0.00	No
	95	z	-0.002	0.00	0.00	No	0.00	No
	96	z	-0.002	0.00	0.00	No	0.00	No
	97	z	-0.002	0.00	0.00	No	0.00	No
	98	z	-0.002	0.00	0.00	No	0.00	No
	99	z	-0.002	0.00	0.00	No	0.00	No
	100	z	-0.002	0.00	0.00	No	0.00	No
	101	z	-0.002	0.00	0.00	No	0.00	No
	102	z	-0.007	0.00	0.00	No	0.00	No
	107	z	-0.003	0.00	0.00	No	0.00	No
	108	z	-0.003	0.00	0.00	No	0.00	No
	109	z	-0.003	0.00	0.00	No	0.00	No
	110	z	-0.003	0.00	0.00	No	0.00	No
	123	z	-0.003	0.00	0.00	No	0.00	No
	124	z	-0.003	0.00	0.00	No	0.00	No
	125	z	-0.003	0.00	0.00	No	0.00	No
	126	z	-0.003	0.00	0.00	No	0.00	No
	127	z	-0.003	0.00	0.00	No	0.00	No
	128	z	-0.003	0.00	0.00	No	0.00	No
	138	z	-0.007	0.00	0.00	No	0.00	No
	139	z	-0.007	0.00	0.00	No	0.00	No
	140	z	-0.007	0.00	0.00	No	0.00	No
	141	z	-0.007	0.00	0.00	No	0.00	No
	147	z	-0.007	0.00	0.00	No	0.00	No
	148	z	-0.007	0.00	0.00	No	0.00	No
W60	88	x	-0.009	0.00	0.00	No	0.00	No
	89	x	-0.009	0.00	0.00	No	0.00	No
	90	x	-0.007	0.00	0.00	No	0.00	No
	91	x	-0.007	0.00	0.00	No	0.00	No
	92	x	-0.007	0.00	0.00	No	0.00	No
	93	x	-0.007	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No
	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.002	0.00	0.00	No	0.00	No
	99	x	-0.002	0.00	0.00	No	0.00	No
	100	x	-0.002	0.00	0.00	No	0.00	No
	101	x	-0.002	0.00	0.00	No	0.00	No

	102	x	-0.007	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	138	x	-0.007	0.00	0.00	No	0.00	No
	139	x	-0.007	0.00	0.00	No	0.00	No
	140	x	-0.007	0.00	0.00	No	0.00	No
	141	x	-0.007	0.00	0.00	No	0.00	No
	147	x	-0.007	0.00	0.00	No	0.00	No
	148	x	-0.007	0.00	0.00	No	0.00	No
W90	90	x	-0.007	0.00	0.00	No	0.00	No
	91	x	-0.007	0.00	0.00	No	0.00	No
	92	x	-0.007	0.00	0.00	No	0.00	No
	93	x	-0.007	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No
	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.002	0.00	0.00	No	0.00	No
	99	x	-0.002	0.00	0.00	No	0.00	No
	100	x	-0.002	0.00	0.00	No	0.00	No
	101	x	-0.002	0.00	0.00	No	0.00	No
	102	x	-0.007	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No
	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	138	x	-0.007	0.00	0.00	No	0.00	No
	139	x	-0.007	0.00	0.00	No	0.00	No
	140	x	-0.007	0.00	0.00	No	0.00	No
	141	x	-0.007	0.00	0.00	No	0.00	No
	147	x	-0.007	0.00	0.00	No	0.00	No
	148	x	-0.007	0.00	0.00	No	0.00	No
W120	88	x	-0.009	0.00	0.00	No	0.00	No
	89	x	-0.009	0.00	0.00	No	0.00	No
	90	x	-0.007	0.00	0.00	No	0.00	No
	91	x	-0.007	0.00	0.00	No	0.00	No
	92	x	-0.007	0.00	0.00	No	0.00	No
	93	x	-0.007	0.00	0.00	No	0.00	No
	94	x	-0.002	0.00	0.00	No	0.00	No
	95	x	-0.002	0.00	0.00	No	0.00	No
	96	x	-0.002	0.00	0.00	No	0.00	No
	97	x	-0.002	0.00	0.00	No	0.00	No
	98	x	-0.002	0.00	0.00	No	0.00	No
	99	x	-0.002	0.00	0.00	No	0.00	No
	100	x	-0.002	0.00	0.00	No	0.00	No
	101	x	-0.002	0.00	0.00	No	0.00	No
	102	x	-0.007	0.00	0.00	No	0.00	No
	107	x	-0.003	0.00	0.00	No	0.00	No

	108	x	-0.003	0.00	0.00	No	0.00	No
	109	x	-0.003	0.00	0.00	No	0.00	No
	110	x	-0.003	0.00	0.00	No	0.00	No
	123	x	-0.003	0.00	0.00	No	0.00	No
	124	x	-0.003	0.00	0.00	No	0.00	No
	125	x	-0.003	0.00	0.00	No	0.00	No
	126	x	-0.003	0.00	0.00	No	0.00	No
	127	x	-0.003	0.00	0.00	No	0.00	No
	128	x	-0.003	0.00	0.00	No	0.00	No
	138	x	-0.007	0.00	0.00	No	0.00	No
	139	x	-0.007	0.00	0.00	No	0.00	No
	140	x	-0.007	0.00	0.00	No	0.00	No
	141	x	-0.007	0.00	0.00	No	0.00	No
	147	x	-0.007	0.00	0.00	No	0.00	No
	148	x	-0.007	0.00	0.00	No	0.00	No
W150	88	z	0.009	0.00	0.00	No	0.00	No
	89	z	0.009	0.00	0.00	No	0.00	No
	90	z	0.007	0.00	0.00	No	0.00	No
	91	z	0.007	0.00	0.00	No	0.00	No
	92	z	0.007	0.00	0.00	No	0.00	No
	93	z	0.007	0.00	0.00	No	0.00	No
	94	z	0.002	0.00	0.00	No	0.00	No
	95	z	0.002	0.00	0.00	No	0.00	No
	96	z	0.002	0.00	0.00	No	0.00	No
	97	z	0.002	0.00	0.00	No	0.00	No
	98	z	0.002	0.00	0.00	No	0.00	No
	99	z	0.002	0.00	0.00	No	0.00	No
	100	z	0.002	0.00	0.00	No	0.00	No
	101	z	0.002	0.00	0.00	No	0.00	No
	102	z	0.007	0.00	0.00	No	0.00	No
	107	z	0.003	0.00	0.00	No	0.00	No
	108	z	0.003	0.00	0.00	No	0.00	No
	109	z	0.003	0.00	0.00	No	0.00	No
	110	z	0.003	0.00	0.00	No	0.00	No
	123	z	0.003	0.00	0.00	No	0.00	No
	124	z	0.003	0.00	0.00	No	0.00	No
	125	z	0.003	0.00	0.00	No	0.00	No
	126	z	0.003	0.00	0.00	No	0.00	No
	127	z	0.003	0.00	0.00	No	0.00	No
	128	z	0.003	0.00	0.00	No	0.00	No
	138	z	0.007	0.00	0.00	No	0.00	No
	139	z	0.007	0.00	0.00	No	0.00	No
	140	z	0.007	0.00	0.00	No	0.00	No
	141	z	0.007	0.00	0.00	No	0.00	No
	147	z	0.007	0.00	0.00	No	0.00	No
	148	z	0.007	0.00	0.00	No	0.00	No
Di	88	y	-0.005	0.00	0.00	No	0.00	No
	89	y	-0.005	0.00	0.00	No	0.00	No
	90	y	-0.005	0.00	0.00	No	0.00	No
	91	y	-0.005	0.00	0.00	No	0.00	No
	92	y	-0.005	0.00	0.00	No	0.00	No
	93	y	-0.005	0.00	0.00	No	0.00	No
	94	y	-0.002	0.00	0.00	No	0.00	No
	95	y	-0.002	0.00	0.00	No	0.00	No
	96	y	-0.002	0.00	0.00	No	0.00	No
	97	y	-0.002	0.00	0.00	No	0.00	No
	98	y	-0.002	0.00	0.00	No	0.00	No
	99	y	-0.002	0.00	0.00	No	0.00	No
	100	y	-0.002	0.00	0.00	No	0.00	No
	101	y	-0.002	0.00	0.00	No	0.00	No
	102	y	-0.005	0.00	0.00	No	0.00	No
	107	y	-0.006	0.00	0.00	No	0.00	No

	108	y	-0.006	0.00	0.00	No	0.00	No
	109	y	-0.006	0.00	0.00	No	0.00	No
	110	y	-0.006	0.00	0.00	No	0.00	No
	123	y	-0.006	0.00	0.00	No	0.00	No
	124	y	-0.006	0.00	0.00	No	0.00	No
	125	y	-0.006	0.00	0.00	No	0.00	No
	126	y	-0.006	0.00	0.00	No	0.00	No
	127	y	-0.016	0.00	0.00	No	0.00	No
	128	y	-0.016	0.00	0.00	No	0.00	No
	138	y	-0.005	0.00	0.00	No	0.00	No
	139	y	-0.005	0.00	0.00	No	0.00	No
	140	y	-0.005	0.00	0.00	No	0.00	No
	141	y	-0.005	0.00	0.00	No	0.00	No
	147	y	-0.005	0.00	0.00	No	0.00	No
	148	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members

Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	138	y	-0.045	3.00	No
		y	-0.045	5.00	No
	140	y	-0.04	0.50	No
		y	-0.04	7.50	No
	141	y	-0.072	0.50	No
		y	-0.072	7.50	No
	147	y	-0.06	2.50	No
	148	y	-0.073	2.50	No
		y	-0.072	2.50	No
Wo	138	z	-0.075	3.00	No
		z	-0.075	5.00	No
	140	z	-0.278	0.50	No
		z	-0.278	7.50	No
	141	z	-0.278	0.50	No
		z	-0.278	7.50	No
	147	z	-0.039	2.50	No
	148	z	-0.043	2.50	No
		z	-0.042	2.50	No
W30	138	3	-0.068	3.00	No
		3	-0.068	5.00	No
	140	3	-0.24	0.50	No
		3	-0.24	7.50	No
	141	3	-0.246	0.50	No
		3	-0.246	7.50	No
	147	3	-0.045	2.50	No
	148	3	-0.048	2.50	No
W60	138	3	-0.053	3.00	No
		3	-0.053	5.00	No
	140	3	-0.164	0.50	No
		3	-0.164	7.50	No
	141	3	-0.182	0.50	No
		3	-0.182	7.50	No
	147	3	-0.057	2.50	No
	148	3	-0.057	2.50	No
W90	138	x	-0.046	3.00	No
		x	-0.046	5.00	No
	140	x	-0.126	0.50	No
		x	-0.126	7.50	No

	141	x	-0.151	0.50	No
		x	-0.151	7.50	No
	147	x	-0.063	2.50	No
	148	x	-0.061	2.50	No
W120	138	2	-0.053	3.00	No
		2	-0.053	5.00	No
	140	2	-0.164	0.50	No
		2	-0.164	7.50	No
	141	2	-0.182	0.50	No
		2	-0.182	7.50	No
	147	2	-0.057	2.50	No
	148	2	-0.057	2.50	No
W150	138	2	-0.068	3.00	No
		2	-0.068	5.00	No
	140	2	-0.24	0.50	No
		2	-0.24	7.50	No
	141	2	-0.246	0.50	No
		2	-0.246	7.50	No
	147	2	-0.045	2.50	No
	148	2	-0.048	2.50	No
Di	138	y	-0.04	3.00	No
		y	-0.04	5.00	No
	140	y	-0.124	0.50	No
		y	-0.124	7.50	No
	141	y	-0.128	0.50	No
		y	-0.128	7.50	No
	147	y	-0.034	2.50	No
	148	y	-0.034	2.50	No
		y	-0.03	2.50	No
WI0	138	z	-0.015	3.00	No
		z	-0.015	5.00	No
	140	z	-0.051	0.50	No
		z	-0.051	7.50	No
	141	z	-0.051	0.50	No
		z	-0.051	7.50	No
	147	z	-0.009	2.50	No
	148	z	-0.01	2.50	No
		z	-0.009	2.50	No
WI30	138	3	-0.014	3.00	No
		3	-0.014	5.00	No
	140	3	-0.044	0.50	No
		3	-0.044	7.50	No
	141	3	-0.045	0.50	No
		3	-0.045	7.50	No
	147	3	-0.01	2.50	No
	148	3	-0.01	2.50	No
WI60	138	3	-0.011	3.00	No
		3	-0.011	5.00	No
	140	3	-0.032	0.50	No
		3	-0.032	7.50	No
	141	3	-0.035	0.50	No
		3	-0.035	7.50	No
	147	3	-0.012	2.50	No
	148	3	-0.012	2.50	No
WI90	138	x	-0.01	3.00	No
		x	-0.01	5.00	No
	140	x	-0.026	0.50	No
		x	-0.026	7.50	No
	141	x	-0.03	0.50	No
		x	-0.03	7.50	No
	147	x	-0.013	2.50	No
	148	x	-0.013	2.50	No

WI120	138	2	-0.011	3.00	No
		2	-0.011	5.00	No
	140	2	-0.032	0.50	No
		2	-0.032	7.50	No
	141	2	-0.035	0.50	No
		2	-0.035	7.50	No
	147	2	-0.012	2.50	No
	148	2	-0.012	2.50	No
WI150	138	2	-0.014	3.00	No
		2	-0.014	5.00	No
	140	2	-0.044	0.50	No
		2	-0.044	7.50	No
	141	2	-0.045	0.50	No
		2	-0.045	7.50	No
	147	2	-0.01	2.50	No
	148	2	-0.01	2.50	No
WL0	138	z	-0.005	3.00	No
		z	-0.005	5.00	No
	140	z	-0.016	0.50	No
		z	-0.016	7.50	No
	141	z	-0.016	0.50	No
		z	-0.016	7.50	No
	147	z	-0.002	2.50	No
	148	z	-0.003	2.50	No
		z	-0.002	2.50	No
WL30	138	3	-0.004	3.00	No
		3	-0.004	5.00	No
	140	3	-0.014	0.50	No
		3	-0.014	7.50	No
	141	3	-0.015	0.50	No
		3	-0.015	7.50	No
	147	3	-0.003	2.50	No
	148	3	-0.003	2.50	No
WL60	138	3	-0.004	3.00	No
		3	-0.004	5.00	No
	140	3	-0.01	0.50	No
		3	-0.01	7.50	No
	141	3	-0.011	0.50	No
		3	-0.011	7.50	No
	147	3	-0.003	2.50	No
	148	3	-0.003	2.50	No
WL90	138	x	-0.003	3.00	No
		x	-0.003	5.00	No
	140	x	-0.008	0.50	No
		x	-0.008	7.50	No
	141	x	-0.009	0.50	No
		x	-0.009	7.50	No
	147	x	-0.004	2.50	No
	148	x	-0.004	2.50	No
WL120	138	2	-0.004	3.00	No
		2	-0.004	5.00	No
	140	2	-0.01	0.50	No
		2	-0.01	7.50	No
	141	2	-0.011	0.50	No
		2	-0.011	7.50	No
	147	2	-0.003	2.50	No
	148	2	-0.003	2.50	No
WL150	138	2	-0.004	3.00	No
		2	-0.004	5.00	No
	140	2	-0.014	0.50	No
		2	-0.014	7.50	No
	141	2	-0.015	0.50	No

		2	-0.015	7.50	No
	147	2	-0.003	2.50	No
	148	2	-0.003	2.50	No
LL1	88	y	-0.25	50.00	Yes
LL2	88	y	-0.25	100.00	Yes
LL3	88	y	-0.25	0.00	Yes
LLa1	138	y	-0.50	50.00	Yes
LLa2	139	y	-0.50	50.00	Yes
LLa3	140	y	-0.50	50.00	Yes
LLa4	141	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

		Self weight multiplier			
Condition	**Description**	**Comb.**	**MultX**	**MultY**	**MultZ**
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	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 Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Glossary

Comb : Indicates if load condition is a load combination

RAM Elements

Current Date: 3/19/2024 8:03 PM
Units system: English

Steel Code Check
Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2

LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	Pipe 2-1_2STD	**88**	LC81 at 32.90%	0.50	OK	
		89	LC87 at 32.90%	**0.53**	**OK**	
	Pipe 2STD	**90**	LC81 at 92.73%	0.36	OK	
		91	LC87 at 92.73%	0.30	OK	
		92	LC40 at 92.73%	0.26	OK	
		93	LC44 at 92.73%	0.31	OK	
		102	LC2 at 100.00%	0.05	OK	
		138	LC46 at 66.67%	0.59	OK	
		139	LC46 at 66.67%	0.50	OK	
		140	LC7 at 33.33%	0.60	OK	
		141	LC77 at 66.67%	**0.74**	**OK**	
		147	LC49 at 33.33%	0.12	OK	
		148	LC79 at 33.33%	0.16	OK	
	PL 11-1/4x5/8	**127**	LC30 at 100.00%	**0.41**	**OK**	
		128	LC30 at 100.00%	0.32	OK	
	PL 3-1/2x5/8	**107**	LC76 at 100.00%	0.38	OK	
		108	LC40 at 100.00%	0.33	OK	
		109	LC45 at 100.00%	0.37	OK	
		110	LC82 at 100.00%	0.43	OK	
		123	LC81 at 100.00%	0.53	OK	
		124	LC51 at 0.00%	0.45	OK	
		125	LC82 at 100.00%	**0.55**	**OK**	
		126	LC41 at 0.00%	0.47	OK	

RndBar 3_4	**98**	LC40 at 0.00%	0.17	OK
	99	LC40 at 0.00%	0.19	With warnings
	100	LC81 at 100.00%	0.22	OK
	101	LC76 at 100.00%	**0.23**	**With warnings**
RndBar 5_8	**94**	LC76 at 87.50%	0.64	OK
	95	LC82 at 12.50%	**0.66**	**OK**
	96	LC40 at 12.50%	0.55	OK
	97	LC40 at 87.50%	0.52	OK

RAM Elements

Current Date: 3/19/2024 8:03 PM
Units system: English

Geometry data

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
142	0.00	0.00	0.1833	0
143	-0.6362	0.00	0.6617	0
144	0.00	-3.3333	0.1833	0
145	-0.6362	-3.3333	0.6617	0
146	0.6362	-3.3333	0.6617	0
147	0.6362	0.00	0.6617	0
158	-7.25	0.00	2.8133	0
159	7.25	0.00	2.8133	0
160	-7.25	-3.3333	2.8133	0
161	7.25	-3.3333	2.8133	0
162	-2.4126	0.00	2.4208	0
163	-2.4126	-3.3333	2.4208	0
164	2.4126	-3.3333	2.4208	0
165	2.4126	0.00	2.4208	0
166	-2.2835	0.00	2.2929	0
167	-2.2835	-3.3333	2.2929	0
168	-0.7653	0.00	0.7895	0
169	-0.7653	-3.3333	0.7895	0
170	0.7653	0.00	0.7895	0
171	0.7653	-3.3333	0.7895	0
172	2.2835	0.00	2.2929	0
173	2.2835	-3.3333	2.2929	0
174	-4.50	0.00	2.8133	0
175	-4.00	0.00	-2.3167	0
184	-2.4792	0.00	2.8133	0
185	2.4792	0.00	2.8133	0
186	2.4792	-3.3333	2.8133	0
187	-2.4792	-3.3333	2.8133	0
208	0.00	0.00	0.6617	0
209	0.00	-3.3333	0.6617	0
231	7.00	3.3333	3.0133	0
232	7.00	-6.6667	3.0133	0
233	3.50	3.3333	3.0133	0
234	3.50	-6.6667	3.0133	0
235	-2.00	3.3333	3.0133	0
236	-2.00	-6.6667	3.0133	0
237	-7.00	3.3333	3.0133	0
238	-7.00	-6.6667	3.0133	0
249	1.6651	3.3333	1.3991	0
250	1.6651	-6.6667	1.3991	0
251	-1.6651	3.3333	1.3991	0
252	-1.6651	-6.6667	1.3991	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
142	1	1	1	1	0	1
144	1	1	1	1	0	1
175	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
88	158	159		Pipe 2-1_2STD	A53 GrB	0.00	0.00	0.00
89	160	161		Pipe 2-1_2STD	A53 GrB	0.00	0.00	0.00
90	162	143		Pipe 2STD	A53 GrB	0.00	0.00	0.00
91	163	145		Pipe 2STD	A53 GrB	0.00	0.00	0.00
92	164	146		Pipe 2STD	A53 GrB	0.00	0.00	0.00
93	165	147		Pipe 2STD	A53 GrB	0.00	0.00	0.00
94	166	167		RndBar 5_8	A36	0.00	0.00	0.00
95	168	169		RndBar 5_8	A36	0.00	0.00	0.00
96	170	171		RndBar 5_8	A36	0.00	0.00	0.00
97	172	173		RndBar 5_8	A36	0.00	0.00	0.00
98	170	173		RndBar 3_4	A36	0.00	0.00	0.00
99	171	172		RndBar 3_4	A36	0.00	0.00	0.00
100	167	168		RndBar 3_4	A36	0.00	0.00	0.00
101	166	169		RndBar 3_4	A36	0.00	0.00	0.00
102	174	175		Pipe 2STD	A53 GrB	0.00	0.00	0.00
107	162	184		PL 3-1/2x5/8	A36	0.00	0.00	0.00
108	165	185		PL 3-1/2x5/8	A36	0.00	0.00	0.00
109	164	186		PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	163	187		PL 3-1/2x5/8	A36	0.00	0.00	0.00
123	143	208		PL 3-1/2x5/8	A36	0.00	0.00	0.00
124	208	147		PL 3-1/2x5/8	A36	0.00	0.00	0.00
125	145	209		PL 3-1/2x5/8	A36	0.00	0.00	0.00
126	209	146		PL 3-1/2x5/8	A36	0.00	0.00	0.00
127	208	142		PL 11-1/4x5/8	A36	11.25	4.00	0.00
128	209	144		PL 11-1/4x5/8	A36	11.25	4.00	0.00
138	231	232		Pipe 2STD	A53 GrB	0.00	0.00	0.00
139	233	234		Pipe 2STD	A53 GrB	0.00	0.00	0.00
140	235	236		Pipe 2STD	A53 GrB	0.00	0.00	0.00
141	237	238		Pipe 2STD	A53 GrB	0.00	0.00	0.00
147	249	250		Pipe 2STD	A53 GrB	0.00	0.00	0.00
148	251	252		Pipe 2STD	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
94	0.00	2	0.00	0.00	1.00
95	0.00	2	0.00	0.00	1.00
96	0.00	2	0.00	0.00	1.00
97	0.00	2	0.00	0.00	1.00
107	90.00	0	0.00	0.00	0.00
108	90.00	0	0.00	0.00	0.00
109	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00

126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00
128	90.00	0	0.00	0.00	0.00
138	315.00	0	0.00	0.00	0.00
140	315.00	0	0.00	0.00	0.00
141	315.00	0	0.00	0.00	0.00
147	315.00	0	0.00	0.00	0.00
148	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
98	0.00	-3.50	0.00	0.00	3.50	0.00
99	0.00	3.50	0.00	0.00	-3.50	0.00
100	0.00	3.50	0.00	0.00	-3.50	0.00
101	0.00	-3.50	0.00	0.00	3.50	0.00
127	0.00	-0.625	0.00	0.00	-0.625	0.00
128	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

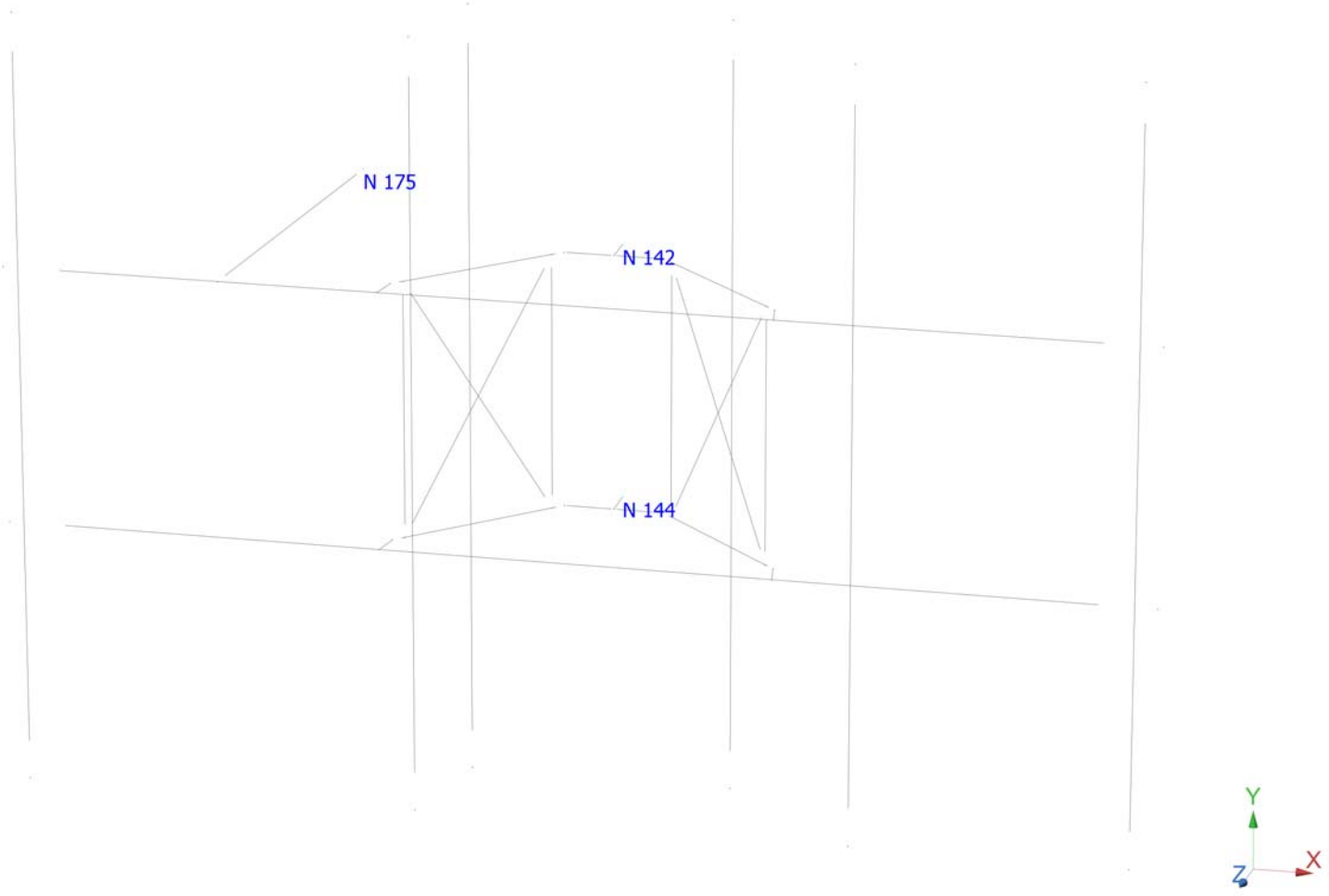
	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
99	0	0	0	0	0	0	0	0	0	0	Tension only
101	0	0	0	0	0	0	0	0	0	0	Tension only
102	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
108	1	1	0	0	0	0	0	0	0	0	Full
109	1	1	0	0	0	0	0	0	0	0	Full
110	1	1	0	0	0	0	0	0	0	0	Full

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

Connection Check


N 175
N 142
N 144
Y
X
Z

RAM Elements

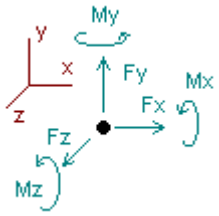
Current Date: 3/19/2024 8:05 PM
Units system: English

Analysis result

Nodes

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2

LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
142	Max	1.789	LC77	1.157	LC36	0.603	LC24	-0.12438	LC18	0.00000	LC1	0.18197	LC41
	Min	-1.368	LC47	0.469	LC16	-1.775	LC6	-0.35729	LC36	0.00000	LC1	-0.27239	LC83
144	Max	1.327	LC45	1.023	LC26	1.308	LC25	-0.14638	LC20	0.00000	LC1	0.23190	LC40
	Min	-1.748	LC87	0.415	LC22	-0.079	LC19	-0.39575	LC26	0.00000	LC1	-0.33653	LC82
175	Max	0.107	LC8	0.024	LC32	1.096	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.107	LC2	0.007	LC14	-1.098	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 3/19/2024
Project Name: BROOKLYN
Project No.: CT2075
Designed By: KSBM **Checked By:** MSC

CHECK EXISTING CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Anchor Type = A36 5/8" Threaded Rod

Allowable Tensile Load =
F_{Tall} = 6673 lbs.

Allowable Shear Load =
F_{vall} = 4004 lbs.

CONNECTION PLATE CONFIGURATION (4-BOLTS)

$N_{ROD\ ROWS}$	=	2	rows	d_Y	=	4.5 in
N_{RODS}	=	2	rods/row	d_X	=	11 in

TENSILE FORCES

Moment in X axis:	396	lb-ft.	(See Bentley Output)
Couple Reaction from M_X:	2112	lbs.	
Moment in Y axis:	0	lb-ft.	(See Bentley Output)
Couple Reaction from M_Y:	0	lbs.	
Reaction in Z direction:	1308	lbs.	(See Bentley Output)
Resultant per rod:	1383	lbs.	

SHEAR FORCES

Moment in Z axis:	337	lb-ft.	(See Bentley Output)
Couple Reaction from M_Z:	736	lbs.	
Reaction in X direction:	1748	lbs.	(See Bentley Output)
Reaction in Y direction:	1023	lbs.	(See Bentley Output)
Resultant per rod:	874	lbs.	

Tension Design Load / Rods =

f_t= 1383.00 lbs. < 6672.8 lbs. **Therefore, OK !**

Shear Design Load / Rods =

f_v= 874.34 lbs. < 4003.7 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.207	+	0.218	=	0.426	<	1.0	**Therefore, OK !**

90 TATNIC HILL RD

Location	90 TATNIC HILL RD	**Mblu**	15/ / 17/ /
Acct#	00258500	**Owner**	SOUTHERN NEW ENGLAND TELEPHONE CO
Assessment	$260,700	**Appraisal**	$372,300
PID	2887	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$259,800	$112,500	$372,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$181,900	$78,800	$260,700

Owner of Record

Owner	SOUTHERN NEW ENGLAND TELEPHONE CO	**Sale Price**	$3,000
Co-Owner	C/O KROLL	**Certificate**	
Care Of		**Book**	0035
Address	PO BOX 2629 ADDISON, TX 75001	**Page**	0127
		Sale Date	12/30/1959
		Instrument	
		Qualified	U

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
SOUTHERN NEW ENGLAND TELEPHONE CO	$3,000			12/30/1959	0035	0127
HALE JANET D	$0			11/15/1954	0032	0232

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0

Building Percent Good:

Replacement Cost

Less Depreciation: $0

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:	
Num Kitchens	
Cndtn	
Num Park	
Fireplaces	

Building Photo

(https://images.vgsi.com/photos/BrooklynCTPhotos//\00\00\23\21.JPG)

Building Layout

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 4300

Land Line Valuation

Size (Acres) 1.5

Description	TEL TWR MDL00	**Frontage**	
Zone	RA	**Depth**	
Neighborhood	500	**Assessed Value**	$78,800
Alt Land Appr	No	**Appraised Value**	$112,500
Category			

Outbuildings

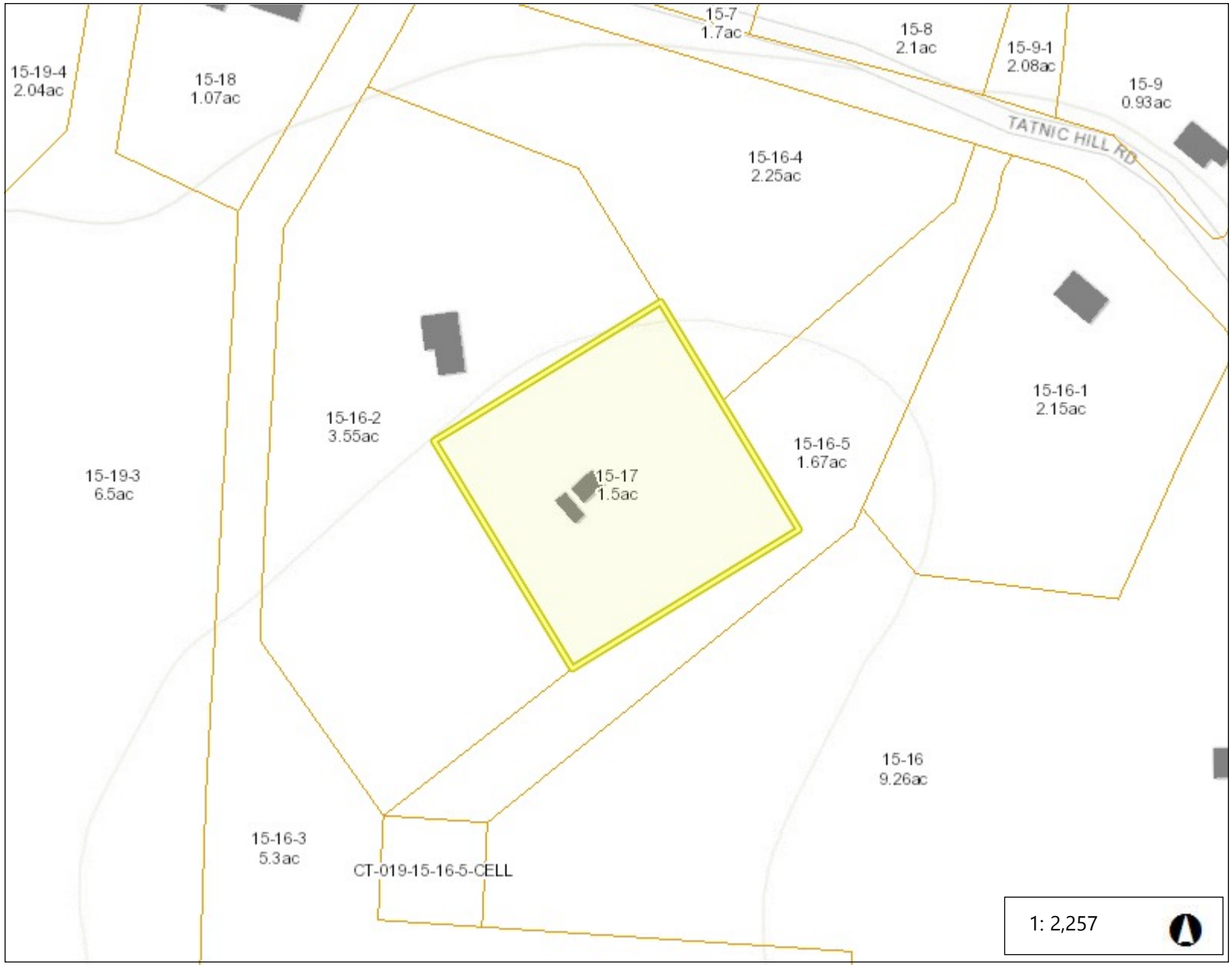
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD5	Cell Shed			360.00 SF	$81,000	1
FN4	FENCE-8' CHAIN			430.00 L.F.	$2,400	1
SHD5	Cell Shed			384.00 SF	$86,400	1
TWR	CELL TOWER			1.00 UNITS	$90,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$259,800	$112,500	$372,300
2021	$259,800	$112,500	$372,300
2020	$259,800	$112,500	$372,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$181,900	$78,800	$260,700
2021	$181,900	$78,800	$260,700
2020	$181,900	$78,800	$260,700

Neccog GIS Site



Legend

- Town
- Buildings 2012
- Parcels

Notes

90 Tatnic Hill Rd

0.1 0 0.04 0.1 Miles

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22 May 2024 ⓘ

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