



July 14, 2022

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 CT1141
179 Shunpike Road, Cromwell, CT 06416 (the "Property")
Latitude: 41.62322 N Longitude: -72.67903 W

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 115' level on the existing 170' self-support tower ("Tower") at 179 Shunpike Road, Cromwell, CT. The Tower and property are owned by Cromwell Fire District. AT&T intends to modify its facility by removing (6) antennas and adding (3) AIR6449 B77 antennas at the 113' level, (3) TPA65R-BU6DA-K antennas at the 115' level and (3) AIR6419 B77G antennas at the 116' 8" level of the Tower. The AIR6419 B77G & AIR6449 B77 antennas are stacked one on top of the other. AT&T also intends to add (1) 4478 B14 RRU at the 115' level on the Tower. The height of AT&T's existing antennas is 115' & the height of the proposed antennas is the 113', 115' and 116' 8" level on the Tower. The height of the existing & proposed RRUs is 115' on the Tower.

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

The Fire District erected the Tower in 1999 for its own communication needs. AT&T received CT Siting Council approval under TS-SCLP-033-010104 on January 25, 2001. This approval contained no conditions that could feasibly be violated by this modification.

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 R.C.S.A §16-50j-73, a copy of this letter is being sent to Hon. Allan Spotts, Mayor, Town of Cromwell, chief elected official, Mr. Stuart B. Popper, Director of Planning & Development, Town of Cromwell, and the Cromwell Fire District, the property and Tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and foundation can support the proposed loading.

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

Sincerely,

Hollis M. Redding

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

Enclosures

Cc:

Hon. Allan Spotts, Mayor, chief elected official, Town of Cromwell
Mr. Stuart B. Popper, Director of Planning & Development, Town of Cromwell
The Cromwell Fire District, the property & tower owner



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

Calculated Radio Frequency Exposure



CT1141

179 Shunpike Road, Cromwell, CT

July 13, 2022

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of AT&T antenna arrays on the existing monopole located at 179 Shunpike Road in Cromwell, CT. The coordinates of the existing monopole are 41-37-23.60 N, 72-40-44.53 W

AT&T is proposing the following:

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

This report considers the planned antenna configuration for AT&T¹ to derive the resulting % Maximum Permissible Exposure of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached “FCC Limits for Maximum Permissible Exposure (MPE)” in Attachment B 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 B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

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

¹ As referenced to AT&T’s Radio Frequency Design Sheet dated 05/04/22.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

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

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. 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 consider 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. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T modification to the existing monopole facility at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	% MPE
T-Mobile	125	1900	4	1028	0.1044	1.0000	1.04%
T-Mobile	125	2100	2	1028	0.0522	1.0000	0.52%
T-Mobile	125	600	2	592	0.0301	0.4000	0.75%
T-Mobile	125	700	2	649	0.0330	0.4667	0.71%
T-Mobile	125	1900	2	2057	0.1045	1.0000	1.04%
T-Mobile	125	2100	2	2308	0.1172	1.0000	1.17%
CR Police Dept	159	635	1	635	0.0098	0.4233	0.23%
CR Fire Dept	128	46	1	100	0.0024	0.2000	0.12%
CR Fire Dept	135	154	1	110	0.0024	0.2000	0.12%
CR Fire Alarm	127	460	1	500	0.0123	0.3067	0.40%
Clearwire	134	2496	2	153	0.0067	1.0000	0.07%
Clearwire	134	11 GHz	1	211	0.0046	1.0000	0.05%
Sprint	170	850	1	438	0.0059	0.5667	0.10%
Sprint	170	850	2	438	0.0117	0.5667	0.21%
Sprint	170	1900	5	623	0.0416	1.0000	0.42%
Sprint	170	1900	2	1556	0.0416	1.0000	0.42%
Sprint	170	2500	8	640	0.0685	1.0000	0.68%
Verizon	101	869	9	382	0.1370	0.5793	2.36%
Verizon	101	1970	11	446	0.1955	1.0000	1.95%
Verizon	101	2145	1	1918	0.0764	1.0000	0.76%
Verizon	101	746	1	690	0.0275	0.4973	0.55%
AT&T	115	739	1	2749	0.0083	0.4927	1.69%
AT&T	115	763	1	2450	0.0074	0.5087	1.46%
AT&T	115	885	1	2813	0.0085	0.5900	1.44%
AT&T	115	1900	3	6297	0.0572	1.0000	5.72%
AT&T	115	2100	2	10121	0.0613	1.0000	6.13%
AT&T	115	2300	1	6747	0.0204	1.0000	2.04%
AT&T	116.6	3500	1	24286	0.0714	1.0000	7.14%
AT&T	113	3500	1	24286	0.0763	1.0000	7.63%
						Total	46.95%

Table 1: Carrier Information²

² The existing record in the CSC Power Density Table for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for T-Mobile, CR Police Dept, CR Fire Dept, Clearwire, Sprint and Verizon was taken directly from the CSC database dated 01/21/2022. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed facility will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level for AT&T's equipment is **46.95% of the FCC General Population/Uncontrolled limit.**

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. 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 FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.



July 13, 2022

Date

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

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure³

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

(B) Limits for General Population/Uncontrolled Exposure⁴

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 2: FCC Limits for Maximum Permissible Exposure (MPE)

³ 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

⁴ 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

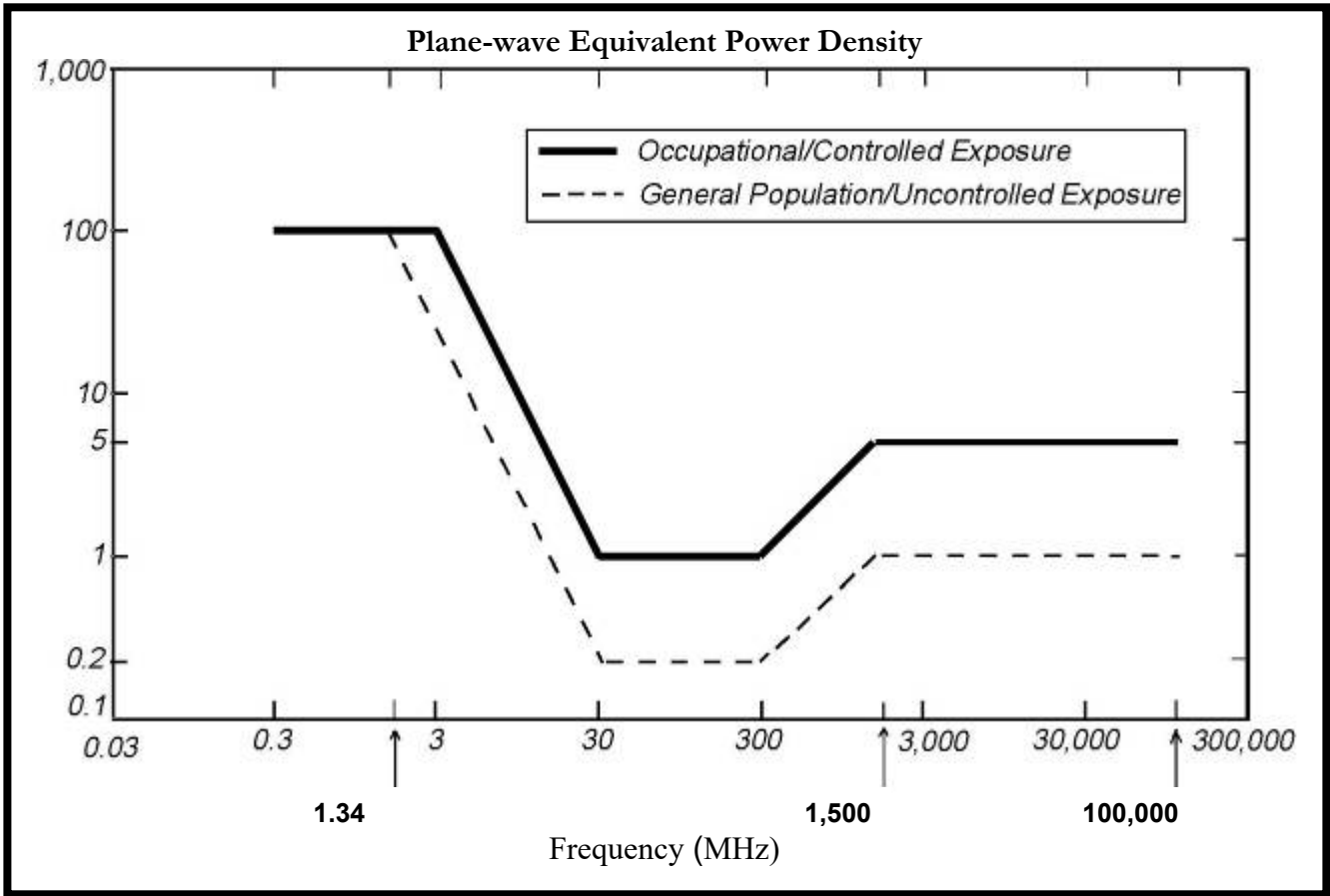
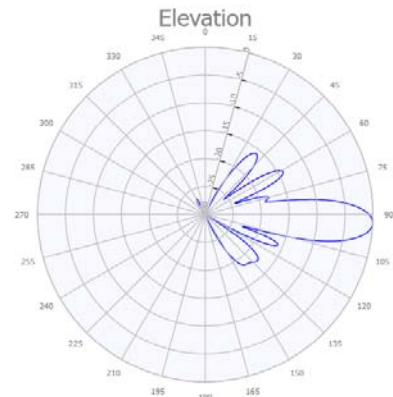
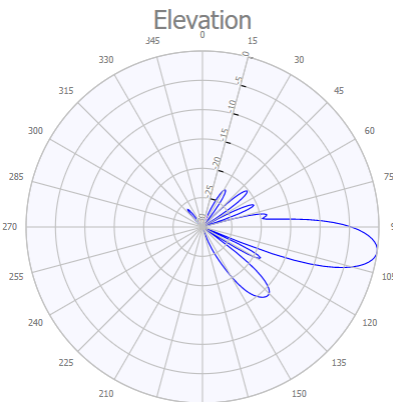
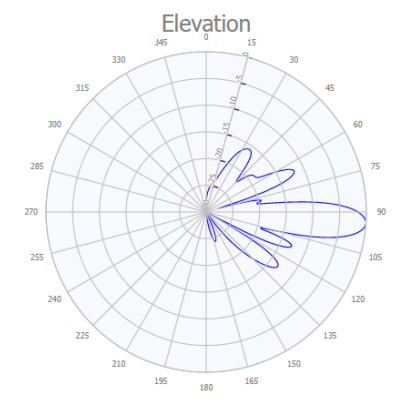
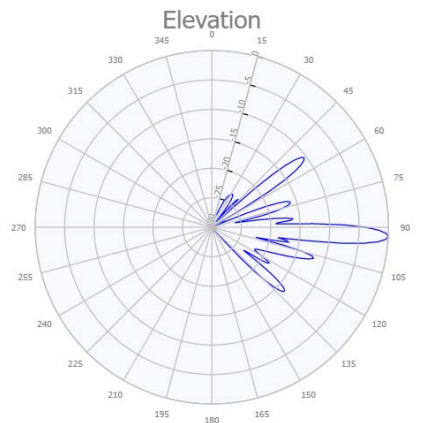
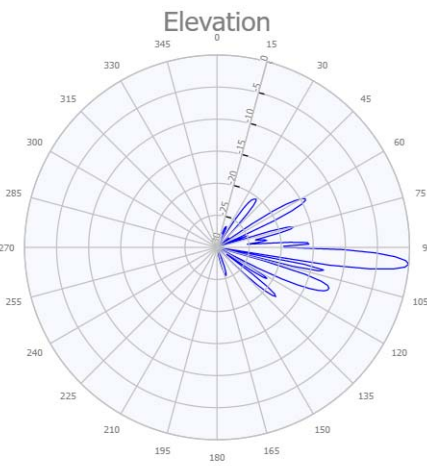
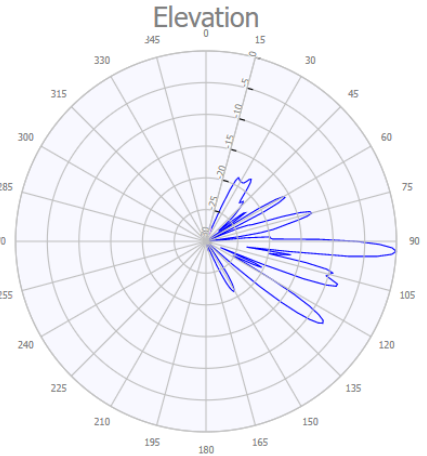


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

<p>700 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D-K Frequency Band: 698-806 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.8° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	
<p>700 MHz</p> <p>Manufacturer: CCI Products Model #: DMP65R-BU6DA Frequency Band: 698-798 MHz Gain: 14 dBi Vertical Beamwidth: 13° Horizontal Beamwidth: 74° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	
<p>885 MHz</p> <p>Manufacturer: CCI Products Model #: DMP65R-BU6DA Frequency Band: 824 - 896 MHz Gain: 14.6 dBi Vertical Beamwidth: 11.1° Horizontal Beamwidth: 63° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	

<p>1900 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D-K Frequency Band: 1850-1990 MHz Gain: 18.1 dBi Vertical Beamwidth: 5.2° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	
<p>2100 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D-K Frequency Band: 1920-2180 MHz Gain: 18.4 dBi Vertical Beamwidth: 4.8° Horizontal Beamwidth: 66° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	
<p>2300 MHz</p> <p>Manufacturer: CCI Products Model #: DMP65R-BU6DA Frequency Band: 2300-2400 MHz Gain: 18.4 dBi Vertical Beamwidth: 4.1° Horizontal Beamwidth: 54° Polarization: Dual Linear 45° Size L x W x D: 71.2" x 20.7" x 7.7"</p>	

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT:

- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: TPA65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T RRUS: 4478 B14 (700) (TOTAL OF 1 FOR GAMMA)
- EXISTING AT&T RRUS: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- EXISTING AT&T RRUS: RRUS-32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- EXISTING AT&T RRUS: 4478-B14 (700) (TYP. OF 1 PER ALPHA AND BETA SECTOR, TOTAL OF 2) (TO BE RELOCATED TO POS. 2)
- EXISTING AT&T RRUS: 8843 B2/B66A (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- NEW AT&T (6) Y CABLES.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD (1) 6648 + XCEDE CABLE.
- ADD (4) RECTIFIERS.

ITEMS TO BE REMOVED:

- EXISTING AT&T ANTENNAS: HPA-65R-BUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T DIPLEXER: DBCT108F1V92-2 (TYP. OF 2 PER SECTOR, TOTAL OF 6)

ITEMS TO REMAIN:

- (3) ANTENNAS, (11) RRU'S, (3) SURGE ARRESTOR, (6) COAX CABLE, (6) DC POWER & (3) FIBER.

SITE ADDRESS: 179 SHUNPIKE ROAD
CROMWELL, CT 06416

LATITUDE: 41.62322° N, 41° 37' 23.60" N
LONGITUDE: 72.67903° W, 72° 40' 44.53" W
TYPE OF SITE: SELF SUPPORT / INDOOR EQUIPMENT
STRUCTURE HEIGHT: 170'-0"±
RAD CENTER: 115'-0"± (LTE), 116'-8"± (DOD), 113'-0"± (C-BAND)
CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT1141

SITE NAME: CROMWELL US MIL

FA CODE: 10035331

PACE ID: MRCTB053579,MRCTB056383,MRCTB053574,MRCTB056241

PROJECT: 5G NR 1SR CBAND UPGRADE

DRAWING INDEX

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

VICINITY MAP

DIRECTIONS TO SITE:
TAKE ROUTE 17 NORTH TO RIDGEWOOD AVE. FOLLOW RIDGEWOOD AVENUE TO THE GARDEN STATE PARKWAY GET ON GOING NORTH. STAY ON THE GARDEN STATE PARKWAY NORTH UNTIL YOU GET TO THE NEW YORK STATE THRUWAY (RT. 87 SOUTH) TOWARDS THE TAPPAN ZEE BRIDGE. CROSS THE TAPPAN ZEE BRIDGE AND GET OFF AT EXIT 8 (CROSS WESTCHESTER PARKWAY /RT. 287). TAKE RT. 287 EAST TO I-95 NORTH (NEW ENGLAND THRUWAY). IN NEW HAVEN GET OFF EXIT 48 THIS WILL BE A LEFT-HAND EXIT THAT WILL PUT YOU ON I-91 NORTH. TAKE EXITS 21 (ROUTE 372). AT END OF EXIT GO LEFT ONTO ROUTE 372, FOLLOW ROUTE AND TAKE A LEFT ONTO SHUNPIKE ROAD (ROUTE 3). FOLLOW SHUNPIKE ROAD FOR ABOUT FOUR MILES. TURN LEFT ONTO SOVEREIGN RIDGE AND THEN FIRST DRIVEWAY ON RIGHT. 179 SHUNPIKE ROAD, CROMWELL CT, 06416

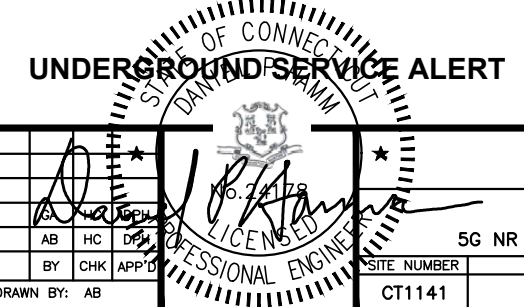


GENERAL NOTES

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



HGD HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1141
SITE NAME: CROMWELL US MIL

179 SHUNPIKE ROAD
CROMWELL, CT 06416
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/23/22	ISSUED FOR CONSTRUCTION	AB	HC	DP
A	04/29/22	ISSUED FOR REVIEW	AB	HC	DP

SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: AB

AT&T
TITLE SHEET
5G NR 1SR CBAND UPGRADE
SITE NUMBER: CT1141 DRAWING NUMBER: T-1 REV: 1

GROUNDING NOTES

- 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.
- 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.
- 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.
- 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.
- 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.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- 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.
- 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

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – SAI
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
- 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.
- 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.
- DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- "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.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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.
- 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.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

- 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.
- 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.
- CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
- 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.
- 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.
- 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.
- 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 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)**

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	REF	REFER TO DRAWING	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING				

HGD HUDSON Design Group LLC
 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553 FAX: (978) 336-5586

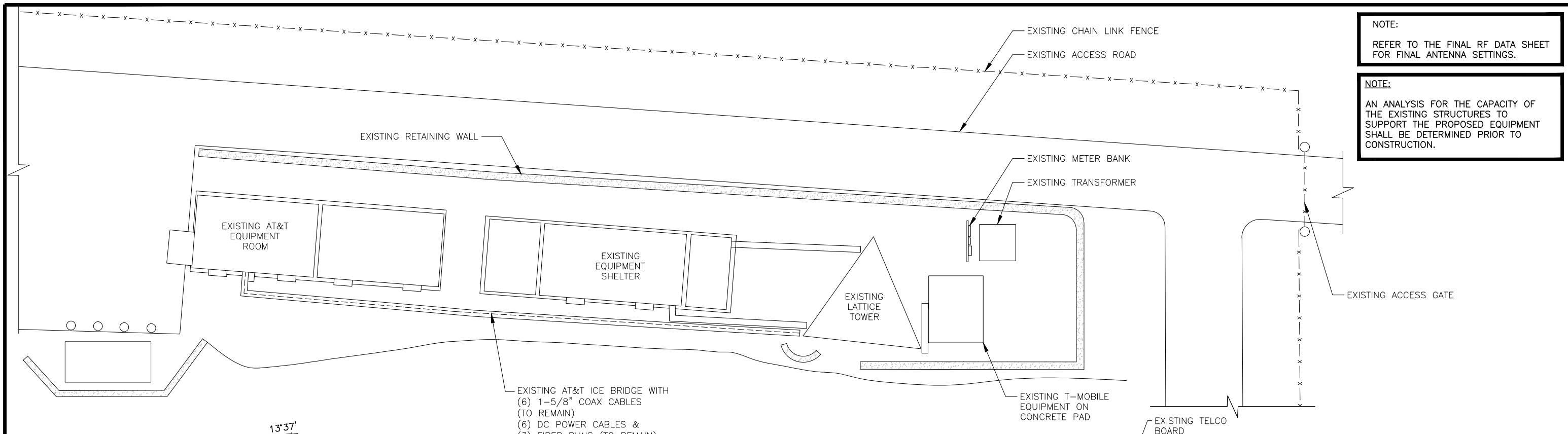
SAI
 12 INDUSTRIAL WAY SALEM, NH 03079

**SITE NUMBER: CT1141
 SITE NAME: CROMWELL US MIL**

179 SHUNPIKE ROAD CROMWELL, CT 06416 MIDDLESEX COUNTY

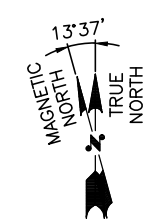
at&t
 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067

				AT&T	
				GENERAL NOTES	
				5G NR 1SR CBAND UPGRADE	
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/23/22	ISSUED FOR CONSTRUCTION	AB	HC	DP
A	04/29/22	ISSUED FOR REVIEW	AB	HC	DP
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: AB		
				SITE NUMBER	DRAWING NUMBER
				CT1141	GN-1
					1

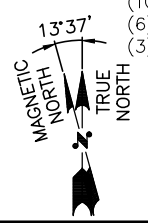
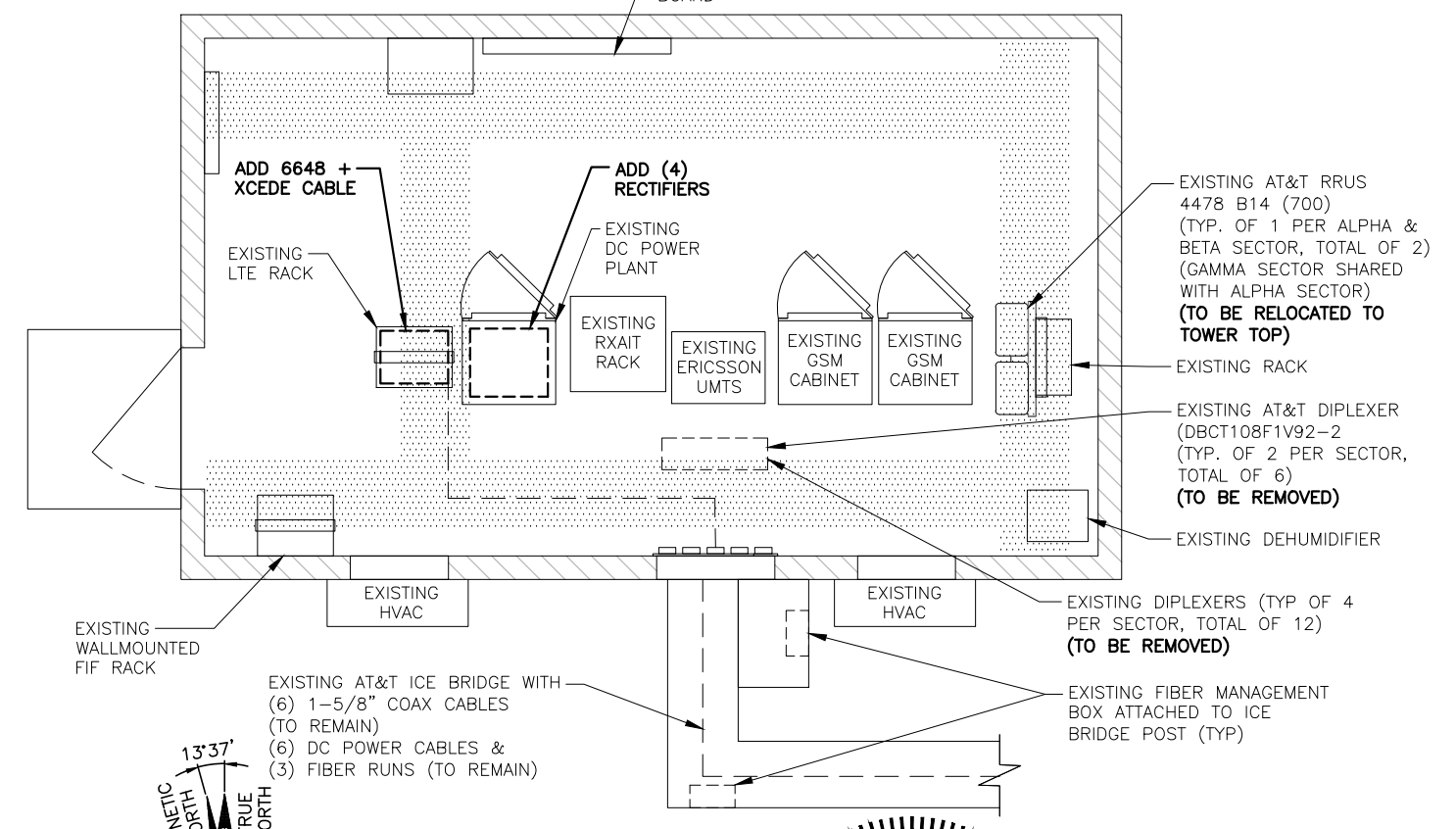


NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



COMPOUND PLAN
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"
1 A-1



EQUIPMENT PLAN
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
2 A-1

HG HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

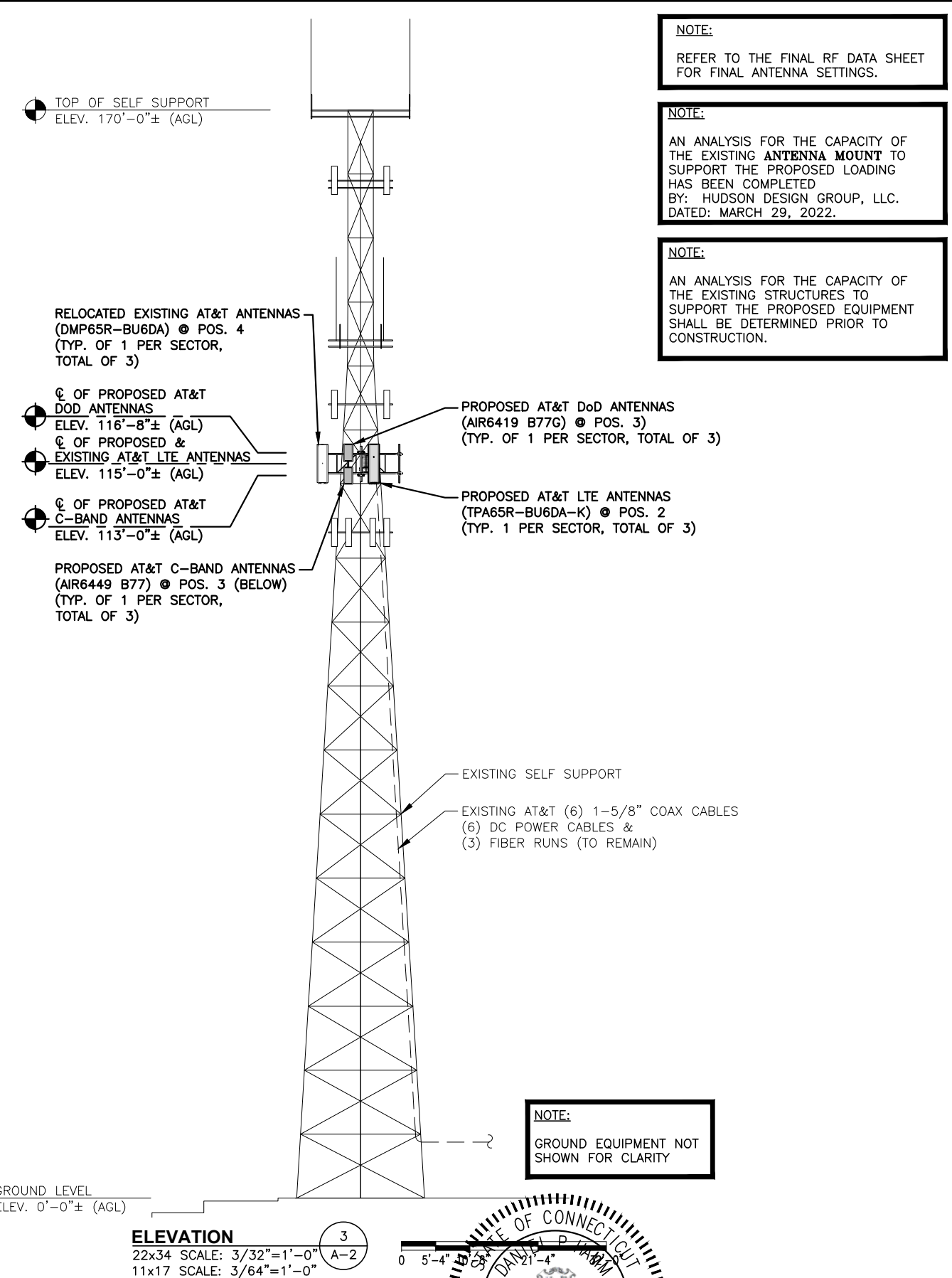
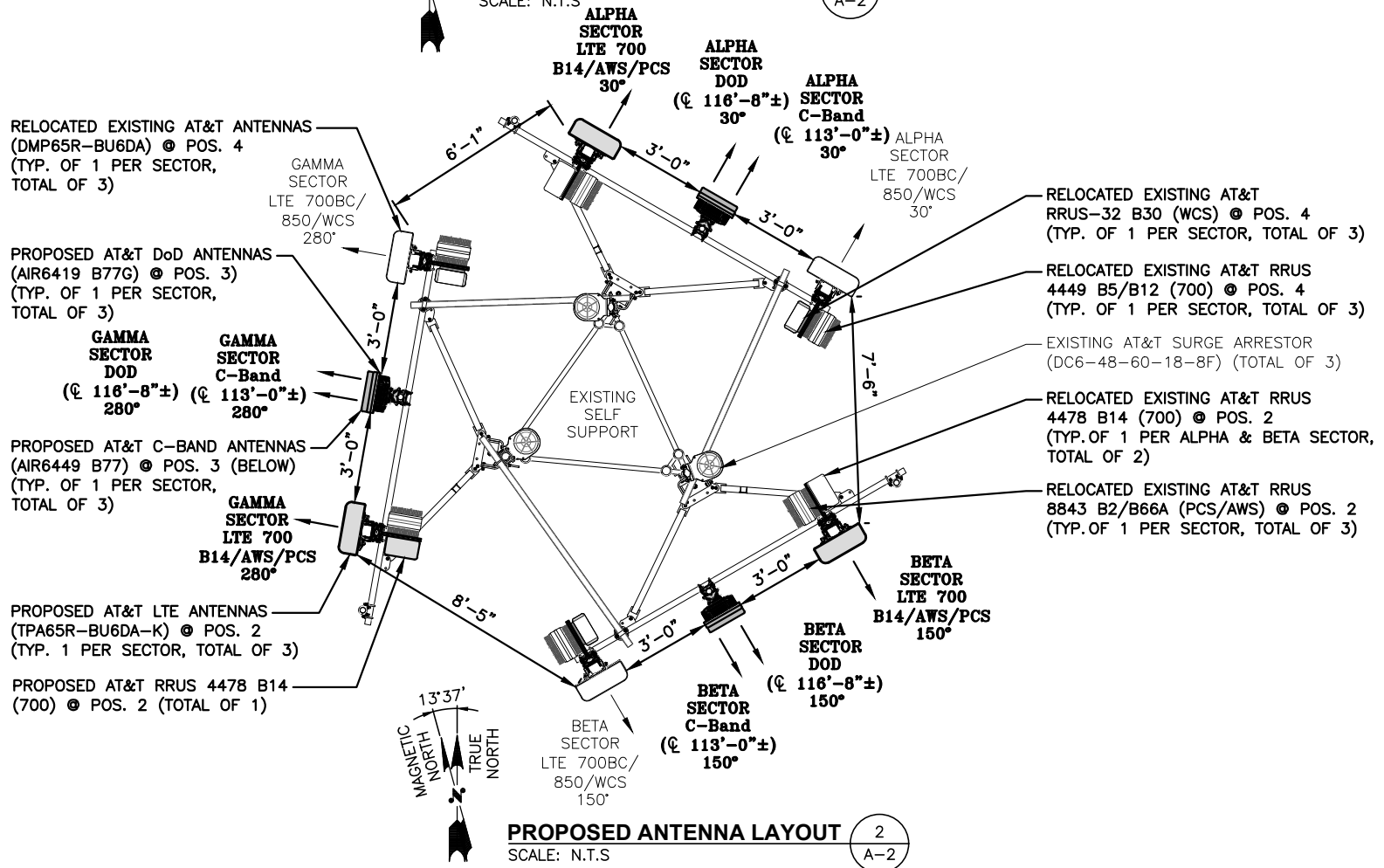
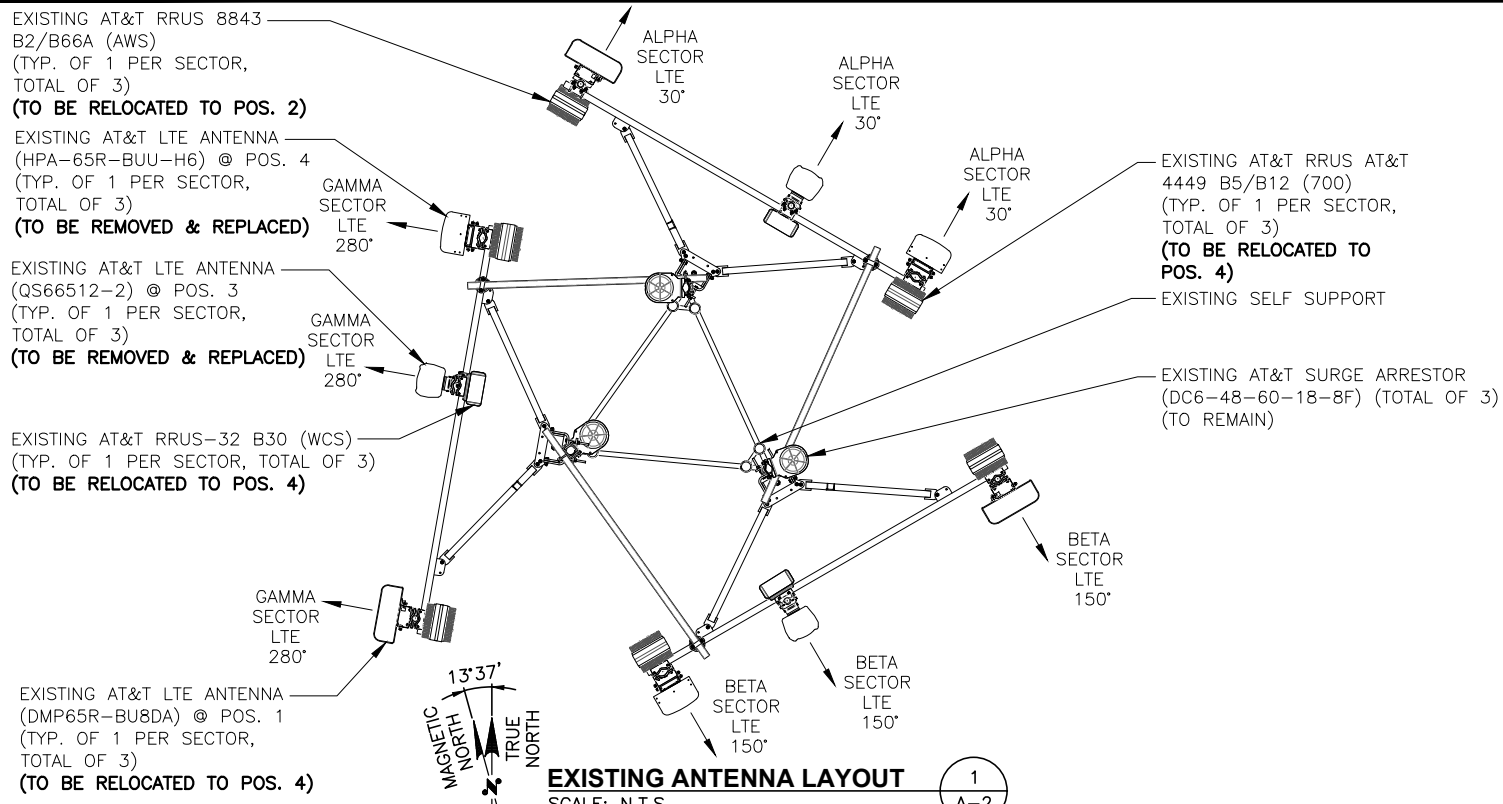
SITE NUMBER: CT1141
SITE NAME: CROMWELL US MIL
179 SHUNPIKE ROAD
CROMWELL, CT 06416
MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

STATE OF CONNECTICUT
DANIEL P. HAMM
LICENSED PROFESSIONAL ENGINEER
No. 24179

1	05/23/22	ISSUED FOR CONSTRUCTION	EA	HC	APP
A	04/29/22	ISSUED FOR REVIEW	AB	HC	APP
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: AB		

AT&T
COMPOUND & EQUIPMENT PLANS
5G NR 1SR CBAND UPGRADE
SITE NUMBER: CT1141
DRAWING NUMBER: A-1
REV: 1



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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: MARCH 29, 2022.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
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SAI
12 INDUSTRIAL WAY SALEM, NH 03079

SITE NUMBER: CT1141
SITE NAME: CROMWELL US MIL
179 SHUNPIKE ROAD CROMWELL, CT 06416 MIDDLESEX COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067

1	05/23/22	ISSUED FOR CONSTRUCTION	AB	HC	APP'D
A	04/29/22	ISSUED FOR REVIEW	AB	HC	APP'D
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: AB		

AT&T
ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND UPGRADE
SITE NUMBER: CT1141
DRAWING NUMBER: A-2
REV: 1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU6DA-K	71.2X20.7X7.7	115'-0"±	118'-0"	30°	-	(E)(1) 4478 B14(700) (E)(1) 8843 B2/B66A(PCS/AWS)	-	(E)(2) DC POWER & (1) FIBER (P)(1) Y-CABLE	
A3	PROPOSED	DOD + C-BAND	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	116'-8"± 113'-0"±	117'-11" 114'-3"	30°	-	-	-	-	
A4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	115'-0"±	118'-0"	30°	-	(E)(1) 4449 B5/B12(700) (E)(1) RRUS-32 B30 (WCS)	-	(P)(1) Y-CABLE	
B1	-	-	-	-	-	-	-	-	-	-	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU6DA-K	71.2X20.7X7.7	115'-0"±	118'-0"	150°	-	(E)(1) 4478 B14(700) (E)(1) 8843 B2/B66A(PCS/AWS)	-	(E)(2) DC POWER & (1) FIBER (P)(1) Y-CABLE	
B3	PROPOSED	DOD + C-BAND	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	116'-8"± 113'-0"±	117'-11" 114'-3"	150°	-	-	-	-	
B4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	115'-0"±	118'-0"	150°	-	(E)(1) 4449 B5/B12(700) (E)(1) RRUS-32 B30 (WCS)	-	(P)(1) Y-CABLE	
C1	-	-	-	-	-	-	-	-	-	-	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
C2	PROPOSED	LTE 700 B14/PCS/AWS	TPA65R-BU6DA-K	71.2X20.7X7.7	115'-0"±	118'-0"	280°	-	(E)(1) 8843 B2/B66A(PCS/AWS) (P)(1) 4478 B14 (700)	-	(E)(2) DC POWER & (1) FIBER (P)(1) Y-CABLE	
C3	PROPOSED	DOD + C-BAND	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	116'-8"± 113'-0"±	117'-11" 114'-3"	280°	-	-	-	-	
C4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2X20.7X7.7	115'-0"±	118'-0"	280°	-	(E)(1) 4449 B5/B12(700) (E)(1) RRUS-32 B30 (WCS)	-	(P)(1) Y-CABLE	

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: MARCH 29, 2022.

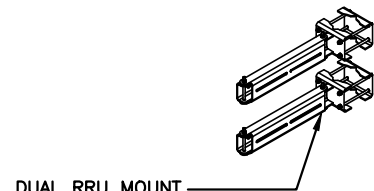
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

FINAL ANTENNA SCHEDULE
SCALE: N.T.S



QUANTITY	MODEL	SIZE (L x W x D)
(E)(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
(E)(3)	8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
(E)(2)	4478 B14 (700)	18.1"x13.4"x8.3"
(P)(1)	4478 B14 (700)	18.1"x13.4"x8.3"
(E)(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



DUAL RRU MOUNT
(ROSENBERGER PART# D220RRUDSM) (TOTAL OF 2 PER SECTOR)

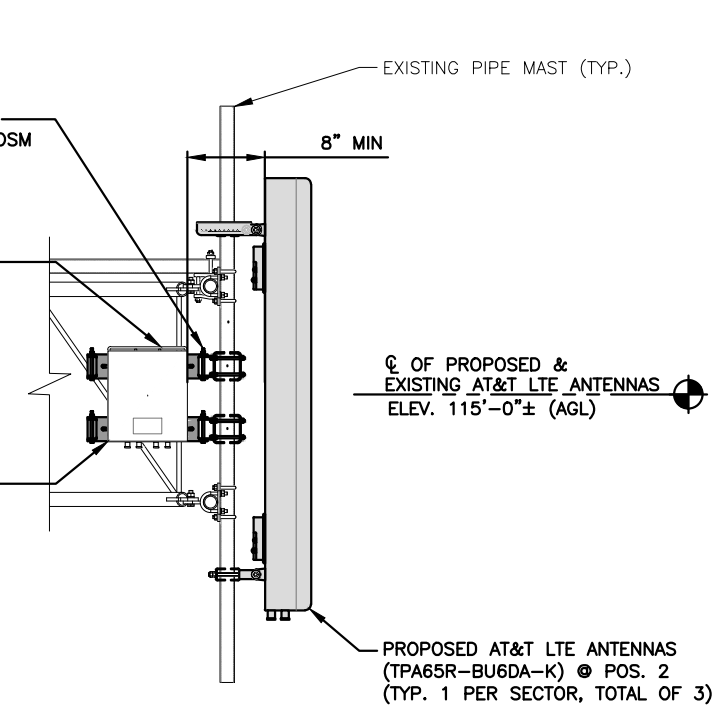
DUAL RRU MOUNT DETAIL
SCALE: N.T.S



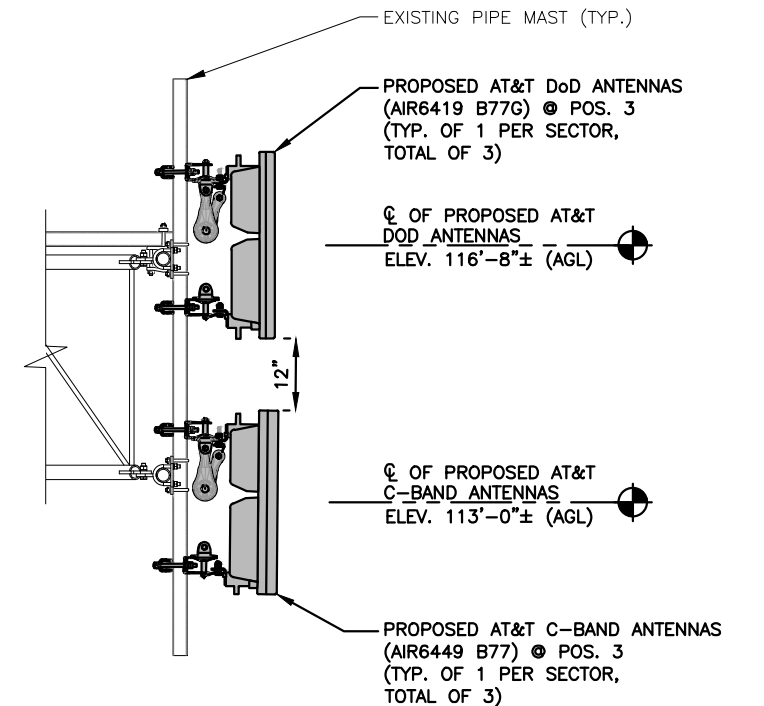
PROPOSED DUAL RRU MOUNT
ROSENBERGER P/N D220RRUDSM
(OR APPROVED EQUAL)
(TYP. OF 2 PER SECTOR,
TOTAL OF 6)

RELOCATED EXISTING AT&T
RRUS 8843 B2/B66A
(PCS/AWS) @ POS. 2
(TYP. OF 1 PER SECTOR,
TOTAL OF 3)

RELOCATED EXISTING AT&T
RRUS 4478 B14 (700)
@ POS. 2
(TYP. OF 1 PER ALPHA
& BETA SECTOR,
TOTAL OF 2)

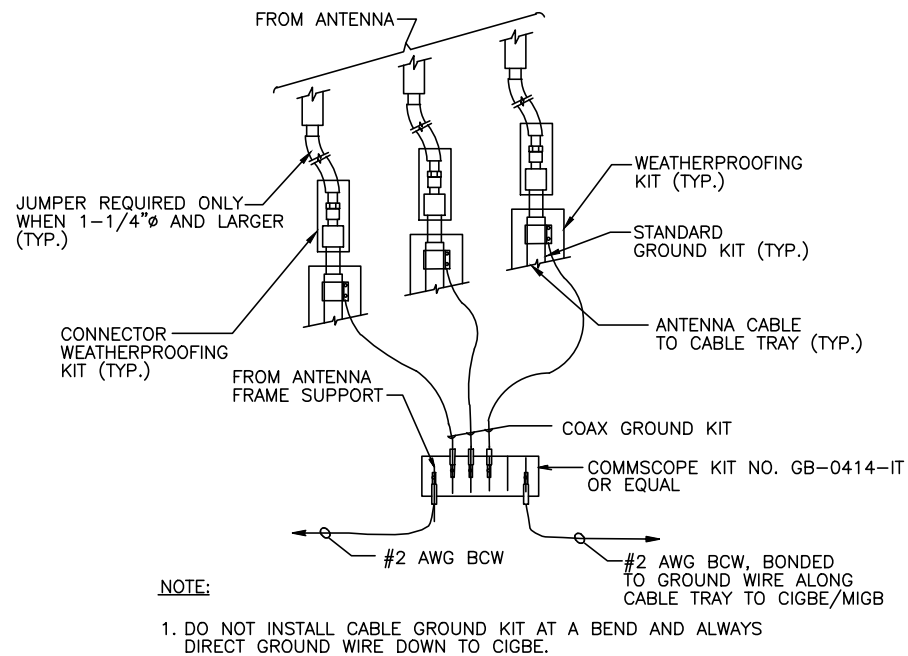


PROPOSED LTE ANTENNA MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

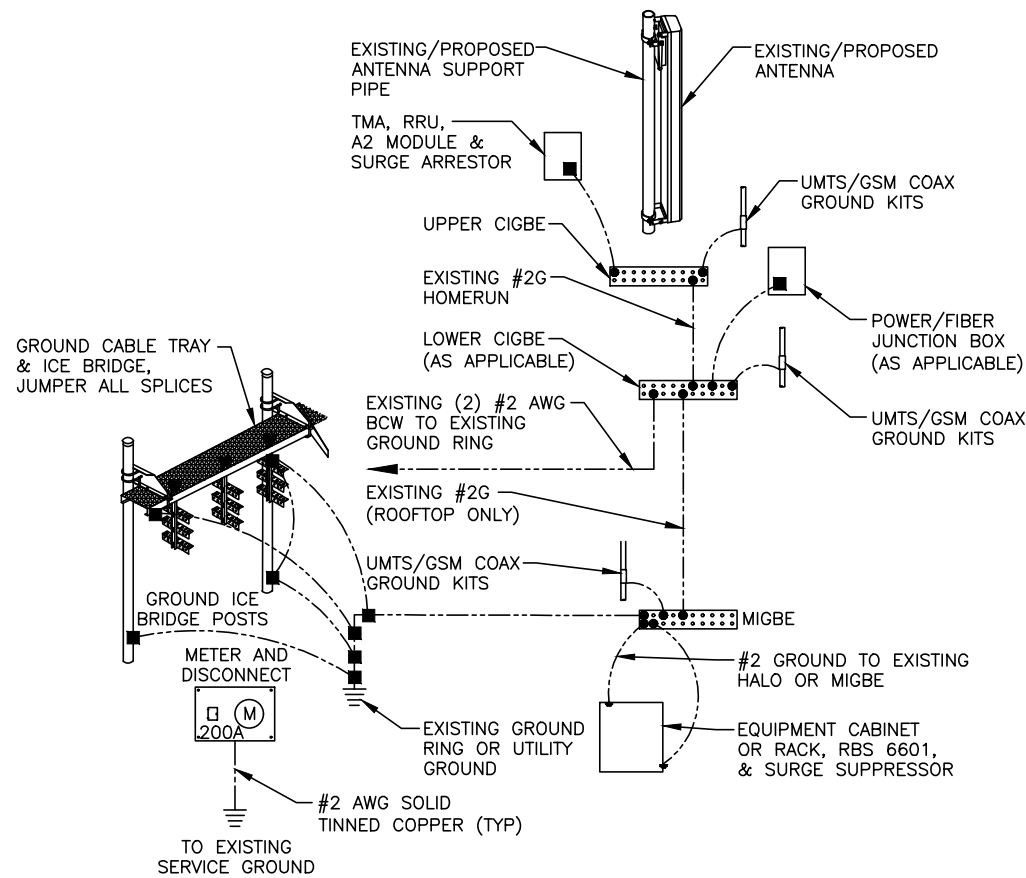


PROPOSED DoD + C-Band ANTENNA MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

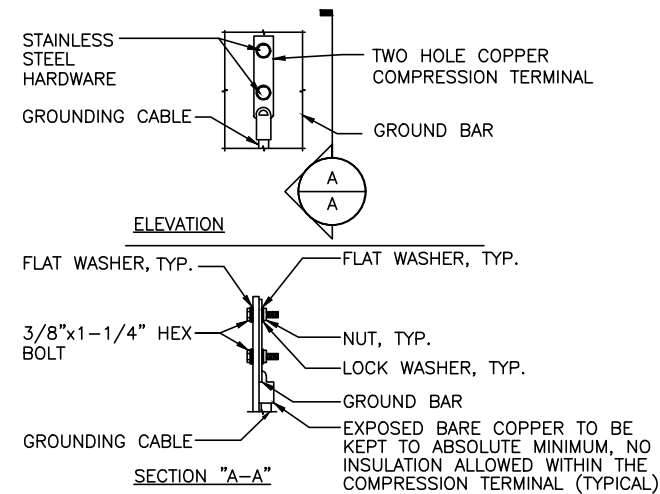




GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. 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 3
SCALE: N.T.S. G-1

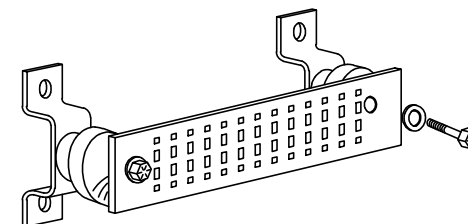
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

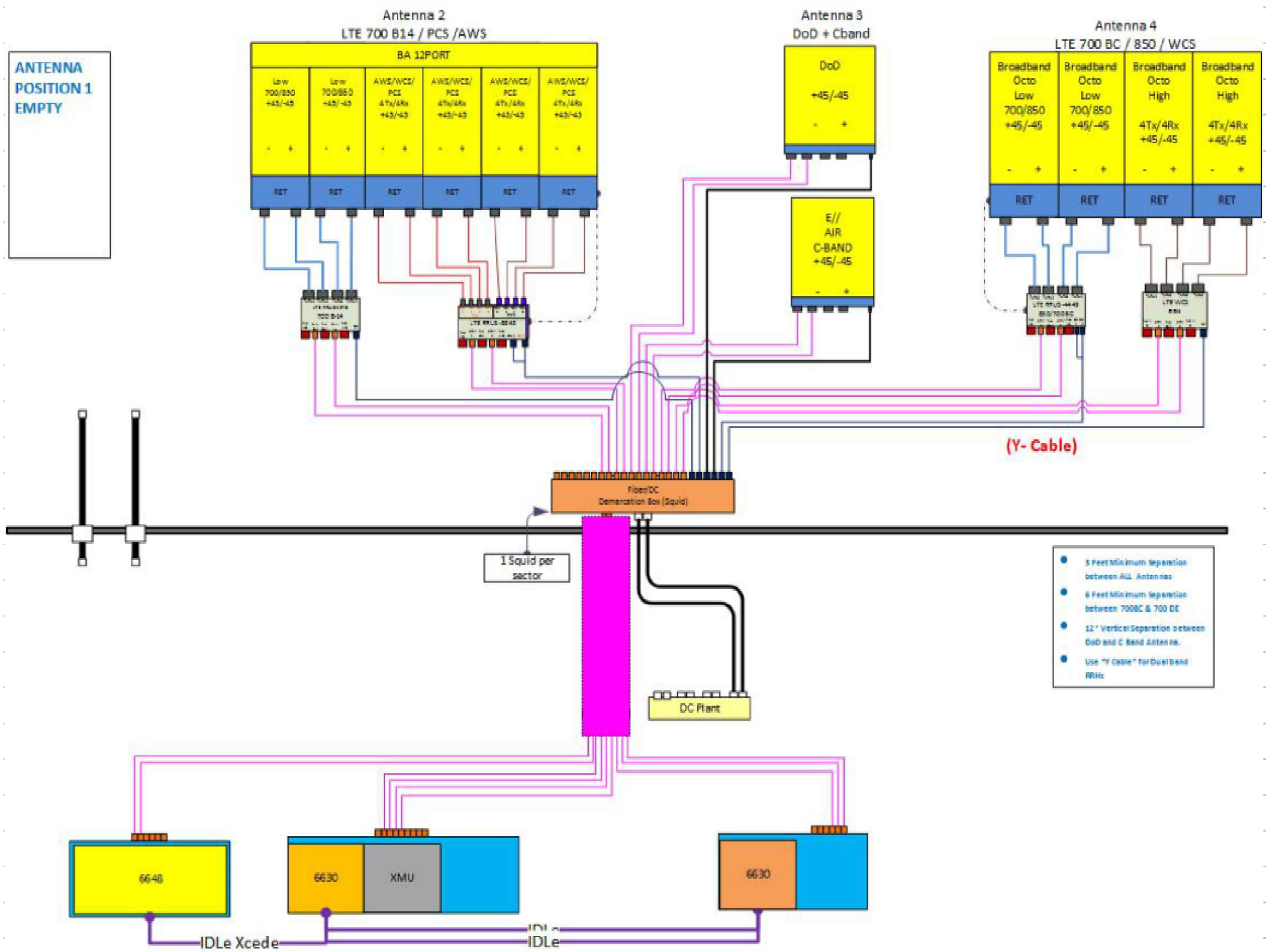
- INTERIOR GROUND RING (#2 AWG)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
- BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)
SCALE: N.T.S.

1		05/23/22	ISSUED FOR CONSTRUCTION	AB	HC	DP		AT&T GROUNDING DETAILS 5G NR 1SR CBAND UPGRADE
A		04/29/22	ISSUED FOR REVIEW	AB	HC	DP		
NO.	DATE	REVISIONS		BY	CHK	APP'D	SITE NUMBER	DRAWING NUMBER
				SCALE: AS SHOWN	DESIGNED BY: HC	DRAWN BY: AB	CT1141	G-1
								1

NOTE:
 REV: 2
 DATED: 12/30/2021
 RFDS ID: 4760529



ANTENNA
 POSITION 1
 EMPTY

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y-Cable" for Dual band RRHs

NOTE:
 1. CONTRACTOR TO CONFIRM ALL PARTS.
 2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.
 3. RFDS USED FOR REFERENCE.

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

RF PLUMBING DIAGRAM 1
 SCALE: N.T.S. RF-1

Structural Analysis Report

170' Existing Lattice Tower

*Proposed AT&T
Antenna Upgrade*

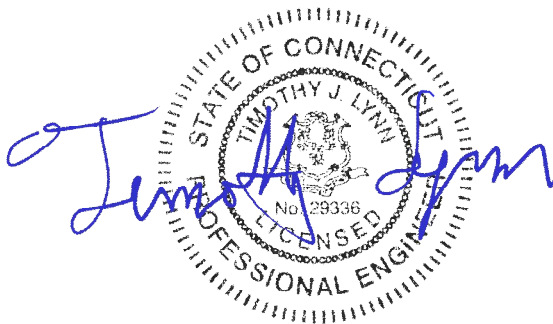
AT&T Site Ref: CT1141

*179 Shunpike Road
Cromwell, CT*

CEN TEK Project No. 22007.04

Date: April 11, 2022

Max Stress Ratio = 88.4%



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

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- ANTENNA AND APPURTENANCE SUMMARY
- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
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- TOWER CAPACITY
- FOUNDATION AND ANCHORS
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Introduction

The purpose of this report is to summarize the results of the non-linear, P- Δ structural analysis of the antenna upgrade proposed by AT&T on the existing lattice tower located in Cromwell, Connecticut.

The host tower is a 170-ft, three legged, lattice tower originally designed and manufactured by PiROD, Inc. project no. A-116398 dated 11/18/99. The tower geometry, structure member sizes and foundation information were taken from a previous structural analysis report prepared by AECOM job no. SAI-104 60588708 dated May 12, 2021. The tower has pending modifications per a previous structural analysis report prepared by AECOM job no. CFD-015 60605529 dated August 7, 2019. The reinforcements are assumed to be installed.

Antenna and appurtenance inventory was taken from the previous structural analysis report prepared by Centek job no. 21081.03 dated January 3, 2022 and information provided by AT&T.

The tower consists of nine (9) vertical sections consisting of pipe legs conforming to ASTM A572 Gr. 50 and steel angle lateral bracing. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 5-ft at the top and 20-ft at the bottom.

Antenna and Appurtenance Summary

The existing and proposed loads considered in the analysis consist of the following:

- CFD/Municipal (Existing):
Antenna: Two (2) dbSpectra DS1F03F36U-D Omni-directional antennas, one (1) 20' 8-bay dipole antenna, one (1) 101-90-08-0-01 antenna, one (1) 3-ft whip antenna, three (3) 2.5-ft Omni-directional antennas, two (2) 10' Omni-directional antennas, one (1) Telewave ANT150F6-3 Omni-directional antenna, one (1) Camera, one (1) SU-RA-HP panel antenna and one (1) PTP49600 antenna mounted on (1) halo mount to the top of the tower.
Cables: Two (2) 1-5/8"Ø, eight (8) 7/8"Ø and four (4) 1/2"Ø cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Sprint (Existing):
Antenna: Three (3) RFS APXVSP18-C-A20 panel antennas, three (3) Commscope DT-465B-2XR-V2 panel antennas, three (3) 1900MHz 4X45W RRHs, six (6) 800MHz 2X50W RRHs and three (3) three (3) TD-RRH-8x20-25 RRHs mounted on the halo mount with a RAD center elevation of ± 170 -ft above grade level.
Cables: Four (4) 1-1/4"Ø Hybriflex cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- CFD/Municipal (Existing):
Antenna: One (1) Sinclair SC420-HF1LDF Omni-directional antenna, one (1) 20-ft Omni-directional antenna, one (1) 15' Omni-directional antenna, two (2) 10' Omni-directional antennas, one (1) 2-ft microwave dish and one (1) grid dish mounted on (1) 20-ft platform with an elevation of 134-ft AGL.
Cables: One (1) 1-5/8"Ø, two (2) 7/8"Ø and three (3) 1/2"Ø cables running on a leg/face of the existing tower as specified in Section 3 of this report.

- Clearwire (Existing):
Antenna: Three (3) Argus LLPX310R panel antennas, three (3) RRHs and four (4) 2-ft microwave dishes mounted on the 20-ft platform with a RAD center elevation of ±134-ft above grade level.
Cables: Four (4) 1/2"Ø and six (6) CAT5 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- T-MOBILE (Existing):
Antennas: Three (3) Commscope LNX-6515DS panel antennas, six (6) Ericsson AIR21 panel antennas, three (3) TMAs and three (3) Ericsson RRUS-11 remote radio heads mounted on three (3) 10-ft T-frames with a RAD center elevation of ±125.5-ft above grade level.
Cables: Twelve (12) 7/8" Ø coax cables and one (1) 6x12 hybrid cable running on a face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antenna: One (1) panel antenna and one (1) TMA pipe mounted with an elevation of 87-ft AGL.
Cables: Two (2) CAT5 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antenna: One (1) 3-ft dish and one (1) TMA mounted on a 3-ft standoff with an elevation of 83-ft AGL.
Cables: Two (2) CAT5 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antenna: One (1) panel antenna and one (1) TMA mounted on a 3-ft standoff with an elevation of 80-ft AGL.
Cables: Two (2) CAT5 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antenna: One (1) camera leg mounted on with an elevation of 30-ft AGL.
Cables: Two (2) 1/2"Ø cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
Antenna: One (1) 3-ft yagi leg mounted on with an elevation of 24-ft AGL.
Cables: One (1) 1/2"Ø cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- Verizon (Existing):
Antennas: Three (3) Commscope LNX-6514DS panel antennas, six (6) JMA MX06FRO660-03 panel antennas, three (3) Samsung MT6407-77A panel antennas, three (3) Samsung XXDWMM-12.5-65-8T panel antennas, three (3) Samsung B2/B66A remote radio heads, three (3) Samsung B5/B13 remote radio heads, three (3) Samsung CBS RRH RT4401 remote radio heads and one (1) main distribution box mounted on three (3) 12-ft T-frames with a RAD center elevation of ± 100 -ft above grade level.
Cables: Six (6) 7/8" \varnothing coax cables, two (2) 1-5/8" \varnothing hybrid cable running on a face of the existing tower as specified in Section 3 of this report.
Mount Modification: Install mount modifications per Mount Modification Drawings prepared by Maser dated August 3, 2021.
- AT&T (Existing to Remain):
Antenna: Three (3) CCI DMP65R-BU6D panel antennas, three (3) Ericsson 4449 B5/B12 remote radio heads, three (3) Ericsson 8843 B2/B66A remote radio heads, three (3) Ericsson RRUS-32 remote radio heads, three (3) Ericsson 4478 B14 remote radio heads and three (3) Raycap surge arrestors mounted on three (3) 12-ft HD V-Booms with a RAD center elevation of ± 115 -ft above grade level.
Cables: Six (6) 1-5/8" \varnothing cables, three (3) fiber cable and six (6) DC cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- **AT&T (Existing to Remove):**
Antenna: Three (3) Quintel QS66512-2 panel antennas and three (3) CCI HPA-65R-BUU-H6 panel antennas mounted on three (3) 12-ft HD V-Booms with a RAD center elevation of ± 115 -ft above grade level.
- **AT&T (Proposed):**
Antenna: Three (3) CCI TPA65R-BU6D panel antennas, three (3) Ericsson AIR6449 panel antennas and three (3) Ericsson AIR6419 panel antennas mounted on three (3) 12-ft HD V-Booms with a RAD center elevation of ± 115 -ft above grade level.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables should be routed as specified in section 3 of this report.
- **Previous reinforcements per the below listed structural analysis and modification report are assumed to be installed.**
 - **Structural report prepared by AECOM job no. CFD-015 60605529 dated August 7, 2019.**

A n a l y s i s

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-H entitled “Structural Standard for Antenna Support Structures, Antennas and Small Wind Turbine Support Structures”, the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC¹ and the wind speed data available in the TIA-222-H Standard.

T o w e r L o a d i n g

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-H, gravity loads of the tower structure and its components, and the application of 1.0” radial ice on the tower structure and its components.

Load Cases:	<u>Load Case 1</u> ; 135 mph (Risk Cat III) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	<i>[Appendix N of the 2018 CT Building Code]</i>
	<u>Load Case 2</u> ; 50 mph wind speed w/ 1.00” radial ice plus gravity load – used in calculation of tower stresses.	<i>[Annex B of TIA-222-H]</i>

¹ The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower.

- Calculated stresses **were found to be within allowable limits.**

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T9)	20.0' - 40.0'	88.4%	PASS
Diagonal (T4)	100.0' – 120.0'	82.3%	PASS
Mid Girt (T4)	100.0' - 120.0'	39.7%	PASS

Foundation and Anchors

The existing foundation consists of a three (3) 5.5-ft \varnothing x 41.5-ft long reinforced concrete caissons. The sub grade conditions used in the foundation analysis were derived from aforementioned structural analysis. The base of the tower is connected to the foundation by means of (6) 1.25" \varnothing anchor bolts per leg embedded into the concrete foundation structure.

- The tower reactions developed from the governing Load Case were used in the verification of the foundation and anchor bolts:

Load Effect	Proposed Tower Reactions
Leg Shear	51 kips
Leg Compression	458 kips
Leg Tension	410 kips
Base Moment	7565 ft-kips
Base Shear	81 kips

- The anchor bolts were found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Combined Compression and Shear	68.5%	PASS

- The foundation was found to be within allowable limits.

Foundation	Design Limit	(percentage of capacity)	Result
Reinforced Concrete Caissons	Uplift	43.2%	PASS
	Bearing	43.7%	PASS

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed antenna configuration.

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Timothy J. Lynn, PE
 Structural Engineer



Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

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

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DS1F03F36U-D Omni Antenna (CFD)	170	LNX-6515DS-VTM w/ 6' 2" sch 40 Piipe Mount (T-Mobile)	125.5
DS1F03F36D 23' Omni Antenna (CFD)	170	RRUS-11 (T-Mobile)	125.5
101-90-08-0-01 ((183) Municipal - A)	170	RRUS-11 (T-Mobile)	125.5
15' Mount Pipe ((183) Municipal - A)	170	RRUS-11 (T-Mobile)	125.5
20' 8 Bay Di-Pole ((178) Municipal - E)	170	Sabre 12" HD V-Boom (ATI)	115
3' Whip (3in diameter) /w mount ((175.5) Municipal - C)	170	Sabre 12" HD V-Boom (ATI)	115
2.5' Decibel Omni ((175) Municipal - I)	170	Sabre 12" HD V-Boom (ATI)	115
2.5' Decibel Omni ((175) Municipal - I)	170	DMP65R-BU6D (ATI)	115
2.5' Decibel Omni ((175) Municipal - I)	170	AIR6449 (ATI)	115
2" Dia 10' Omni ((174.5) Municipal - H)	170	AIR6419 (ATI)	115
2" Dia 10' Omni ((174.5) Municipal - H)	170	TPA65R-BU6D (ATI)	115
ANT150F6 ((174) Municipal - B)	170	DMP65R-BU6D (ATI)	115
APXVSP18-C-A20 (Sprint)	170	AIR6449 (ATI)	115
APXVSP18-C-A20 (Sprint)	170	AIR6419 (ATI)	115
APXVSP18-C-A20 (Sprint)	170	TPA65R-BU6D (ATI)	115
Panasonic RRH 1900MHZ (Sprint)	170	DMP65R-BU6D (ATI)	115
Panasonic RRH 1900MHZ (Sprint)	170	AIR6449 (ATI)	115
Panasonic RRH 1900MHZ (Sprint)	170	AIR6419 (ATI)	115
Andrew 800MHz RRH (Sprint)	170	TPA65R-BU6D (ATI)	115
Andrew 800MHz RRH (Sprint)	170	4449 B5/B12 (ATI)	115
Andrew 800MHz RRH (Sprint)	170	4449 B5/B12 (ATI)	115
TD-RRH8x20-25 (Sprint)	170	4449 B5/B12 (ATI)	115
TD-RRH8x20-25 (Sprint)	170	8843 B2/B66A (ATI)	115
TD-RRH8x20-25 (Sprint)	170	8843 B2/B66A (ATI)	115
DT465B-2XR-V2 Panels (Commscope) (Sprint)	170	8843 B2/B66A (ATI)	115
DT465B-2XR-V2 Panels (Commscope) (Sprint)	170	RRUS-32 (ATI)	115
DT465B-2XR-V2 Panels (Commscope) (Sprint)	170	RRUS-32 (ATI)	115
Andrew 800MHz RRH (Sprint)	170	RRUS-32 (ATI)	115
Andrew 800MHz RRH (Sprint)	170	4478 B14 (ATI)	115
Andrew 800MHz RRH (Sprint)	170	4478 B14 (ATI)	115
CFD Halo Camera Bracket (Camera)	170	4478 B14 (ATI)	115
CFD Halo Mounted Camera (Camera)	170	(3) DC6-48-60-18-8F (Squid Suppressor (ATI)	115
9 Arm Halo Mount (Municipal)	168	MT6407-77A (Verizon)	101.5
SU-RA-HP-2.4 Antenna (Municipal)	168	MT6407-77A (Verizon)	101.5
PTP49600 (CPD)	168	MT6407-77A (Verizon)	101.5
SC420-HF1LDF (Municipal)	158.5	RVZDC-6627-PF-48 (Verizon)	100
2.5" x 206" Whip (Municipal)	144	CBRS RRH-RT4401-48A (Verizon)	100
2" Dia 15' Omni (Municipal)	141	LNX-6514DS (Verizon)	100
1.5" x 10' Omni (Municipal)	139	(2) MX06FRO660 (Verizon)	100
9' Whip (Municipal)	138.5	CBRS RRH-RT4401-48A (Verizon)	100
HPD2-4.7 (Updated Elevation per NET Inc. Inventory)	135	LNX-6514DS (Verizon)	100
PIROD 20' Universal Platform (Municipal)	134	LNX-6514DS (Verizon)	100
Argus LLPX310R (Clearwire)	134	(2) MX06FRO660 (Verizon)	100
Argus LLPX310R (Clearwire)	134	CBRS RRH-RT4401-48A (Verizon)	100
Argus LLPX310R (Clearwire)	134	B2/B66A RRH (Verizon)	100
Argus LLPX310R (Clearwire)	134	B2/B66A RRH (Verizon)	100
REMOTE RADIO HEAD (RRH) (Clearwire)	134	B2/B66A RRH (Verizon)	100
REMOTE RADIO HEAD (RRH) (Clearwire)	134	B5/B13 RRH (Verizon)	100
REMOTE RADIO HEAD (RRH) (Clearwire)	134	B5/B13 RRH (Verizon)	100
VHLP2.5-180 (Clearwire)	134	(2) MX06FRO660 (Verizon)	100
VHLP2.5-180 (Clearwire)	134	B5/B13 RRH (Verizon)	100
VHLP2.5-180 (Clearwire)	134	(2) Commscope VZWSMART-SFK3 (Verizon)	98.5
VHLP2.5-180 (Clearwire)	134	(2) Commscope VZWSMART-SFK3 (Verizon)	98.5
4' Grid Dish (Unknown)	134	PIROD 12' Lightweight T-Frame (Verizon)	98.5
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5	PIROD 12' Lightweight T-Frame (Verizon)	98.5
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5	PIROD 12' Lightweight T-Frame (Verizon)	98.5
PIROD 10' Lightweight T-Frame (T-Mobile)	125.5	(2) Commscope VZWSMART-SFK3 (Verizon)	98.5
AIR B2A/B4P (T-Mobile)	125.5	XXDWMM-12.5-65-8T (Verizon)	98
AIR B2A/B4P (T-Mobile)	125.5	XXDWMM-12.5-65-8T (Verizon)	98
AIR B2A/B4P (T-Mobile)	125.5	XXDWMM-12.5-65-8T (Verizon)	98
AIR B2A/B4P (T-Mobile)	125.5	3"x2"x22" Panel (Unknown)	87
AIR B2A/B4P (T-Mobile)	125.5	TMA (Unknown)	84.5
AIR B2A/B4P (T-Mobile)	125.5	3' Stand-off	83.5
Twin PCS TMA (T-Mobile)	125.5	3' Stand-off	83.5
Twin PCS TMA (T-Mobile)	125.5	3' Dish	83
Twin PCS TMA (T-Mobile)	125.5	TMA (Unknown)	82.5
LNX-6515DS-VTM w/ 6' 2" sch 40 Piipe Mount (T-Mobile)	125.5	3"x2"x22" Panel (Unknown)	80
LNX-6515DS-VTM w/ 6' 2" sch 40 Piipe Mount (T-Mobile)	125.5	TMA (Unknown)	80
Camera		Camera	30
		PC9013N	24

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105217 reinf w/ 1" dia bar		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A529-50	50 ksi	65 ksi
A36	36 ksi	58 ksi			

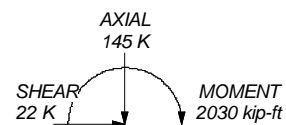
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. ARE FAC7. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 88.4%

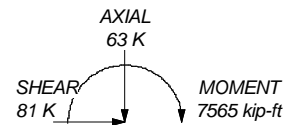
MAX. CORNER REACTIONS AT BASE:

DOWN: 458 K
SHEAR: 51 K

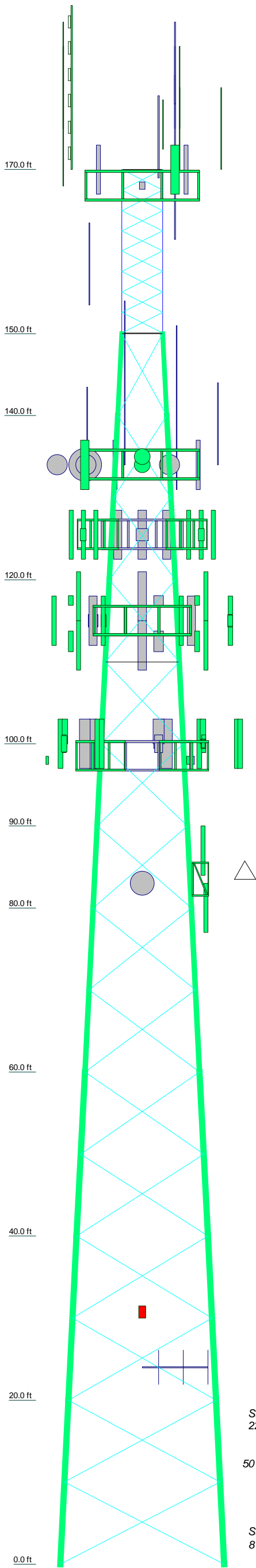
UPLIFT: -410 K
SHEAR: 47 K



TORQUE 17 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 24 kip-ft
REACTIONS - 135 mph WIND

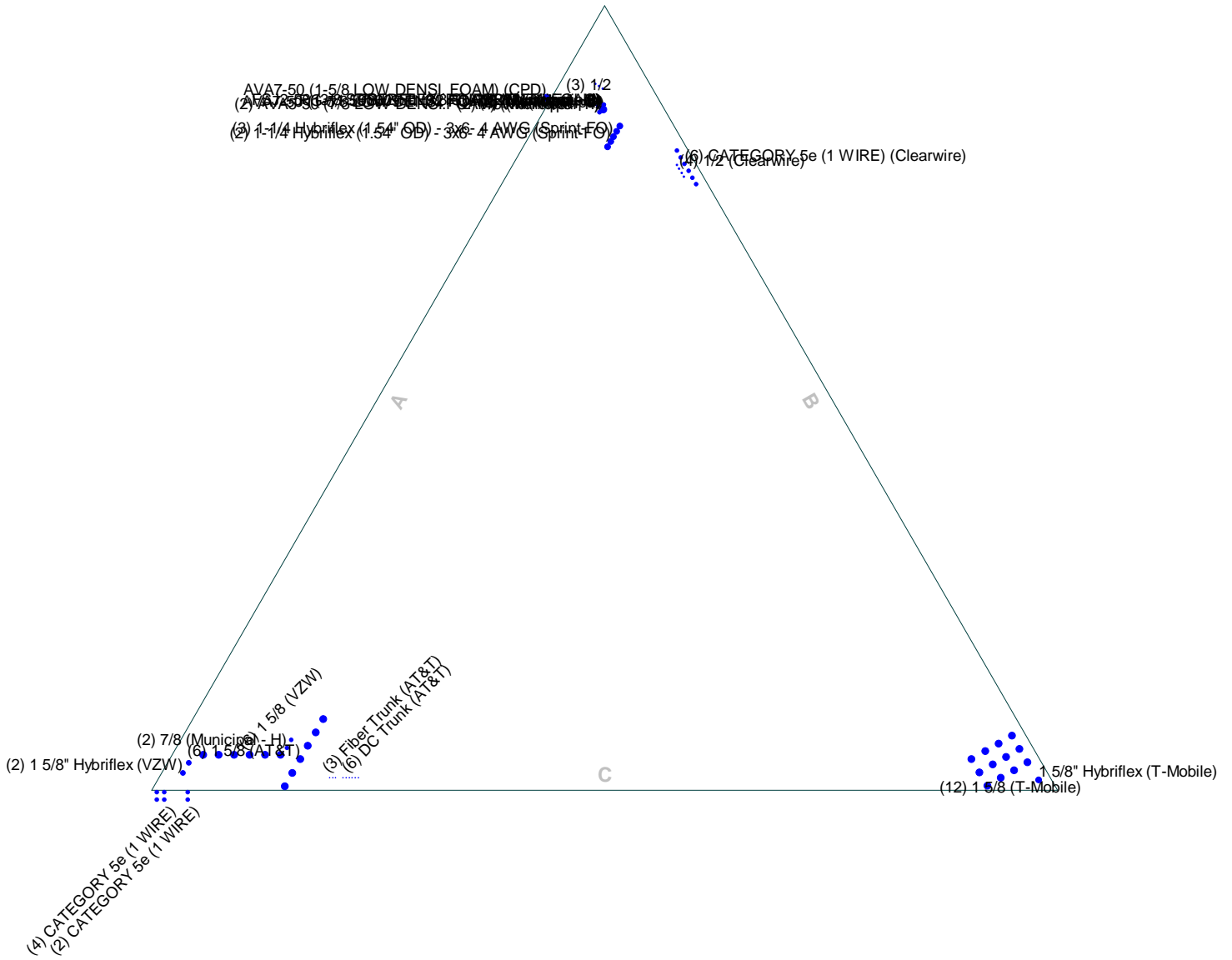


Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	SR 1 3/4	Pirod 105244	Pirod 105216	Pirod 105217		A	Pirod 105218 reinf w/ 1" dia bar	Pirod 105219	Pirod 105219 reinf w/ 1" dia bar	Pirod 105220 reinf w/ 1" dia bar
Leg Grade	SR 7/8									
Diagonals	A572-50	L2 1/2x2 1/2x3/16	L3x3x1/4	L3x3x1/4	L3x3x5/16		L3 1/2x3 1/2x5/16	L4x4x5/16	L4x4x5/16	L5x5x5/16
Diagonal Grade	A572-50	A36	A529-50	A36	A36		A529-50	A529-50	A529-50	A529-50
Top Girts	SR 7/8	L3x3x3/16	N.A.	L3x3x3/16			N.A.	N.A.	N.A.	
Mid Girts										
Bottom Girts										
Face Width (ft)	5	6	8	10	11	12	14	16	18	
# Panels @ (ft)	8 @ 2.48658	1.1	2.1	2.6	1.4	1.8	4.1	5.1	6.3	
Weight (K)	1.1	1.1	2.1	2.6	1.4	1.8	4.1	5.1	6.3	30.2

Centek Engineering Inc. Job: **22007.04 - CT1141**
 63-2 North Branford Rd. Project: **170' Lattice Tower Cromwell, CT**
 Branford, CT 06405 Client: **AT&T** Drawn by: **TJL** App'd:
 Phone: (203) 488-0580 Code: **TIA-222-H** Date: **04/11/22** Scale: **NTS**
 FAX: (203) 488-8587 Path: **22007.04-CT1141-Structural/Calculations/170' Lattice Tower.dwg** Dwg No. **E-1**

Feed Line Plan

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss-Leg

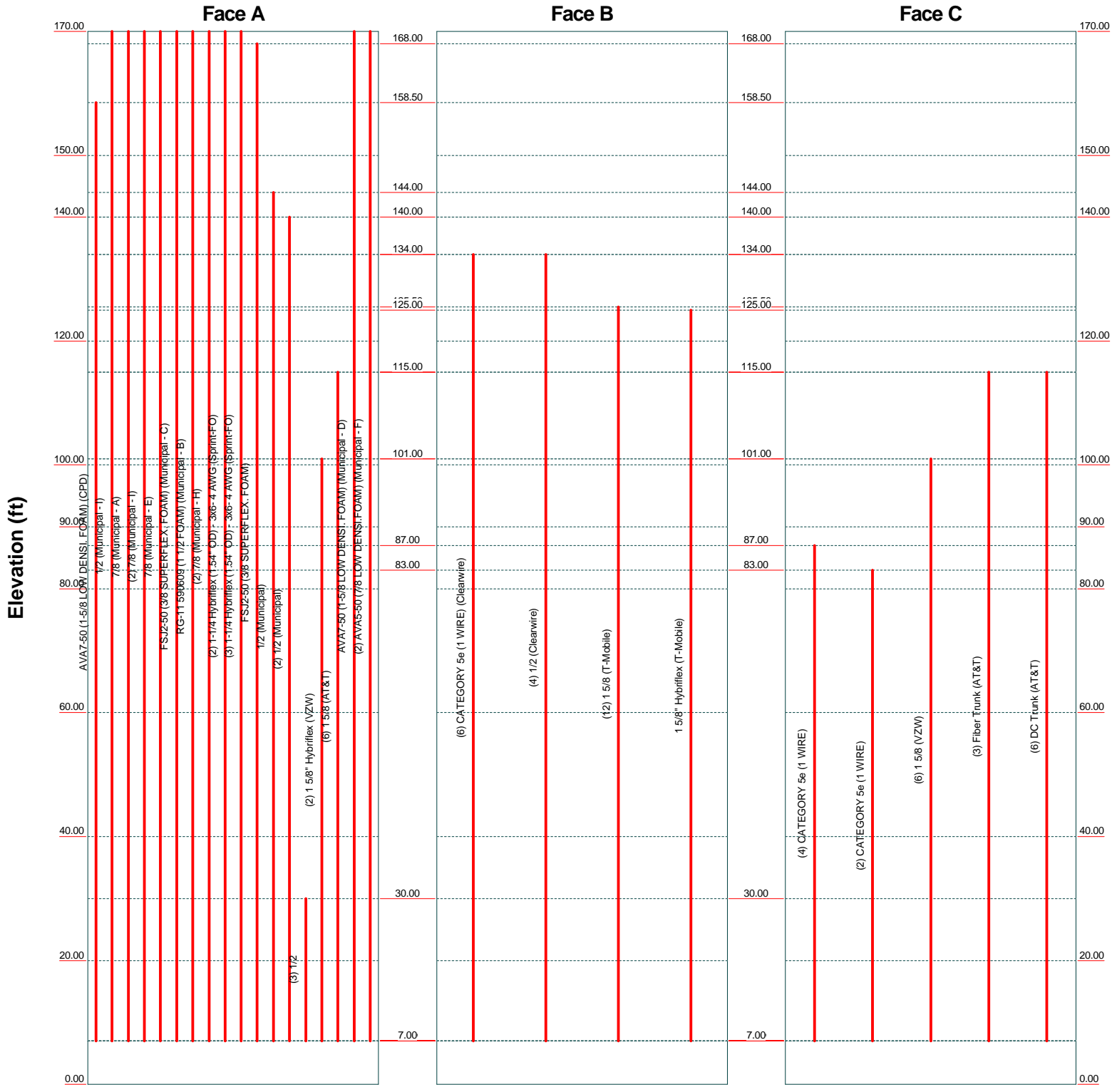


Centek Engineering Inc.		
63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587		
Job: 22007.04 - CT1141		
Project: 170' Lattice Tower Cromwell, CT		
Client: AT&T	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 04/11/22	Scale: NTS
Path:	Dwg No. E-7	
J:\Jobs\220070.W04 - CT 1141\05_Structural\Calcd\viewer\G_L50x170_P100D_Self-Supporting Lattice Tower.rvt		

Feed Line Distribution Chart

0' - 170'

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



Centek Engineering Inc.		
63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587		
Job: 22007.04 - CT1141		
Project: 170' Lattice Tower Cromwell, CT		
Client: AT&T	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 04/11/22	Scale: NTS
Path:		Dwg No. E-7

tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job 22007.04 - CT1141	Page 1 of 57
	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 170.00 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 5.00 ft at the top and 20.00 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 135 mph.

Risk Category III.

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.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

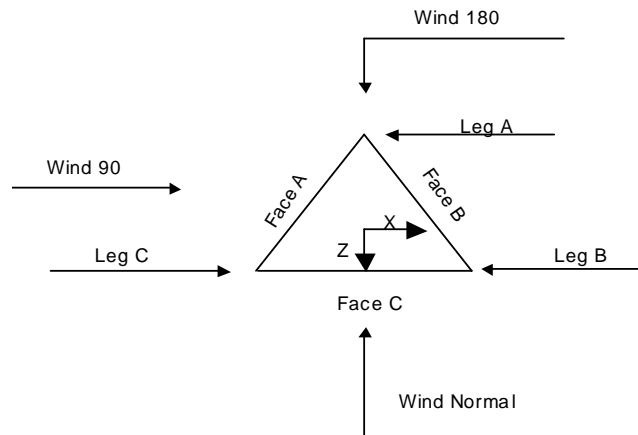
Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	170.00-150.00			5.00	1	20.00
T2	150.00-140.00		U6.0 105244	5.00	1	10.00
T3	140.00-120.00		U8.0 105216	6.00	1	20.00
T4	120.00-100.00		U10.0 105217 L3x3/16	8.00	1	20.00
T5	100.00-90.00		U12.0 105216	10.00	1	10.00
T6	90.00-80.00		U12.0 105216	11.00	1	10.00
T7	80.00-60.00		U14.0 105218	12.00	1	20.00
T8	60.00-40.00		U16.0 105219	14.00	1	20.00
T9	40.00-20.00		U18.0 105219	16.00	1	20.00
T10	20.00-0.00		U20.0 105219 L4x1/4	18.00	1	20.00

Tower 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
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	170.00-150.00	2.49	X Brace	No	No	0.0000	1.0000
T2	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T5	100.00-90.00	10.00	X Brace	No	No	0.0000	0.0000

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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
T6	90.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	10.00	X Brace	No	No	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 170.00-150.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A529-50 (50 ksi)
T4 120.00-100.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T5 100.00-90.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T6 90.00-80.00	Truss Leg	Pirod 105217 reinf w/ 1" dia bar	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A529-50 (50 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218 reinf w/ 1" dia bar	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A529-50 (50 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 reinf w/ 1" dia bar	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A529-50 (50 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105220 reinf w/ 1" dia bar	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A529-50 (50 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 170.00-150.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 150.00-140.00	Single Angle	L3x3x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

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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
T2 150.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T3 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T4 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T5 100.00-90.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T6 90.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

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 170.00-150.00	0.0000	0.75	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 150.00-140.00	0.0000	0.75	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 140.00-120.00	0.0000	0.75	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 120.00-100.00	0.0000	0.75	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 100.00-90.00	0.0000	0.75	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 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	0.75	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 60.00-40.00	0.0000	0.75	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 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.00-0.00	0.0000	0.75	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 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 170.00-150.00	Flange	0.7500	0	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 150.00-140.00	Flange	1.0000	6	1.0000	1	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 140.00-120.00	Flange	1.0000	6	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

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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.
T4 120.00-100.00	Flange	1.0000	6	1.0000	1	0.6250	0	0.6250	0	1.0000	1	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5 100.00-90.00	Flange	1.0000	6	1.0000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6 90.00-80.00	Flange	0.0000	0	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7 80.00-60.00	Flange	1.0000	6	1.0000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8 60.00-40.00	Flange	1.0000	6	1.2500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A490N		A325N		A325N		A325N		A325N		A325N		A325N	
T9 40.00-20.00	Flange	1.2500	6	1.2500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10 20.00-0.00	Flange	1.2500	6	1.2500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

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
*** (Cables in order of height from ground per Leg 05/23/2019													
AVA7-50 (1-5/8 LOW DENS. FOAM) (CPD)	A	No	No	Ar (CaAa)	158.50 - 7.00	0.0000	0.38	1	1	1.9800	1.9800		0.72
1/2 (Municipal - I)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	0.5800	0.5800		0.25
7/8 (Municipal - A)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	1.1100	1.1100		0.54
7/8 (Municipal - I)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	2	2	1.1100	1.1100		0.54
7/8 (Municipal - E)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	1.1100	1.1100		0.54
FSJ2-50 (3/8 SUPERFLEX. FOAM) (Municipal - C)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	0.4300	0.4300		0.08
RG-11 590609 (1 1/2 FOAM) (Municipal - B)	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	1.5900	1.5900		0.94
7/8 (Municipal - H)	A	No	No	Ar (CaAa)	170.00 - 7.00	-24.000 0	-0.38	2	2	1.1100	1.1100		0.54
1-1/4	A	No	No	Ar (CaAa)	170.00 -	-18.000	0.38	2	2	1.5400	1.5400		1.13

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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
Hybriflex (1.54" OD) - 3x6- 4 AWG (Sprint-FO) 1-1/4	A	No	No	Ar (CaAa)	170.00 - 7.00	-18.000 0	0.38	3	3	1.5400	1.5400		1.13
Hybriflex (1.54" OD) - 3x6- 4 AWG (Sprint-FO) FSJ2-50 (3/8 SUPERFLEX. FOAM) 1/2 (Municipal)	A	No	No	Ar (CaAa)	168.00 - 7.00	-12.000 0	0.4	1	1	0.4300	0.4300		0.08
1/2 (Municipal)	A	No	No	Ar (CaAa)	144.00 - 7.00	-12.000 0	0.4	1	1	0.5800	0.5800		0.25
1/2 (Municipal)	A	No	No	Ar (CaAa)	140.00 - 7.00	-12.000 0	0.4	2	1	0.5800	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	30.00 - 7.00	-10.000 0	0.42	3	1	0.5800	0.5800		0.25
CATEGORY 5e (1 WIRE) (Clearwire) 1/2 (Clearwire)	B	No	No	Ar (CaAa)	134.00 - 7.00	-2.0000	-0.3	6	6	1.0000	1.0000		0.21
CATEGORY 5e (1 WIRE)	B	No	No	Ar (CaAa)	134.00 - 7.00	-4.0000	-0.3	4	4	0.5800	0.5800		0.25
CATEGORY 5e (1 WIRE)	C	No	No	Ar (CaAa)	87.00 - 7.00	0.0000	0.49	4	2	1.0000	1.0000		0.21
CATEGORY 5e (1 WIRE) *** Carrier T-Mobile 1 5/8 (T-Mobile)	C	No	No	Ar (CaAa)	83.00 - 7.00	0.0000	0.46	2	1	1.0000	1.0000		0.21
1 5/8" Hybriflex (T-Mobile) *** Carrier VZW 1 5/8 (VZW)	B	No	No	Ar (CaAa)	125.50 - 7.00	-14.000 0	0.44	12	3	1.9800	1.9800		1.04
1 5/8" Hybriflex (VZW) *** Carrier AT&T 1 5/8 (AT&T)	B	No	No	Ar (CaAa)	125.00 - 7.00	-2.0000	0.48	1	1	1.5750	1.5750		1.07
Fiber Trunk (AT&T)	C	No	No	Ar (CaAa)	101.00 - 7.00	-8.0000	0.4	6	6	1.9800	1.9800		1.04
DC Trunk (AT&T) *** CFD	A	No	No	Ar (CaAa)	101.00 - 7.00	-4.0000	-0.46	2	2	1.5000	1.5000		1.07
Replacement Cables AVA7-50 (1-5/8 LOW DENSI. FOAM) (Municipal - D)	A	No	No	Ar (CaAa)	115.00 - 7.00	-28.000 0	-0.38	6	6	1.9800	1.9800		1.04
AVA5-50 (7/8 LOW	C	No	No	Ar (CaAa)	115.00 - 7.00	-3.0000	0.3	3	3	0.4000	0.4000		1.00
	C	No	No	Ar (CaAa)	115.00 - 7.00	-3.0000	0.28	6	6	0.4000	0.4000		0.11
	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	1	1	1.9800	1.9800		0.72
	A	No	No	Ar (CaAa)	170.00 - 7.00	-12.000 0	0.4	2	2	1.1000	1.1000		0.30

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	# Spacing in	Clear Diameter in	Perimeter in	Weight plf
DENSI.FOA M) (Municipal - F)												

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	170.00-150.00	A	0.000	0.000	44.737	0.000	0.24
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	150.00-140.00	A	0.000	0.000	23.782	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.000	0.000	50.580	0.000	0.26
		B	0.000	0.000	25.503	0.000	0.11
		C	0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	0.000	0.000	68.700	0.000	0.36
		B	0.000	0.000	67.310	0.000	0.32
		C	0.000	0.000	6.588	0.000	0.06
T5	100.00-90.00	A	0.000	0.000	40.170	0.000	0.21
		B	0.000	0.000	33.655	0.000	0.16
		C	0.000	0.000	15.480	0.000	0.10
T6	90.00-80.00	A	0.000	0.000	40.170	0.000	0.21
		B	0.000	0.000	33.655	0.000	0.16
		C	0.000	0.000	18.880	0.000	0.11
T7	80.00-60.00	A	0.000	0.000	80.340	0.000	0.43
		B	0.000	0.000	67.310	0.000	0.32
		C	0.000	0.000	42.960	0.000	0.22
T8	60.00-40.00	A	0.000	0.000	80.340	0.000	0.43
		B	0.000	0.000	67.310	0.000	0.32
		C	0.000	0.000	42.960	0.000	0.22
T9	40.00-20.00	A	0.000	0.000	82.080	0.000	0.44
		B	0.000	0.000	67.310	0.000	0.32
		C	0.000	0.000	42.960	0.000	0.22
T10	20.00-0.00	A	0.000	0.000	54.483	0.000	0.29
		B	0.000	0.000	43.752	0.000	0.21
		C	0.000	0.000	27.924	0.000	0.15

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	170.00-150.00	A	1.347	0.000	0.000	158.046	0.000	1.69
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	150.00-140.00	A	1.333	0.000	0.000	82.886	0.000	0.89
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	1.319	0.000	0.000	182.237	0.000	1.93

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
		B		0.000	0.000	54.058	0.000	0.81
		C		0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	1.297	0.000	0.000	228.078	0.000	2.51
		B		0.000	0.000	113.574	0.000	2.14
		C		0.000	0.000	27.648	0.000	0.27
T5	100.00-90.00	A	1.278	0.000	0.000	130.670	0.000	1.44
		B		0.000	0.000	56.563	0.000	1.06
		C		0.000	0.000	47.183	0.000	0.55
T6	90.00-80.00	A	1.264	0.000	0.000	130.036	0.000	1.42
		B		0.000	0.000	56.395	0.000	1.06
		C		0.000	0.000	56.346	0.000	0.64
T7	80.00-60.00	A	1.240	0.000	0.000	257.894	0.000	2.79
		B		0.000	0.000	112.212	0.000	2.09
		C		0.000	0.000	129.225	0.000	1.43
T8	60.00-40.00	A	1.199	0.000	0.000	254.221	0.000	2.70
		B		0.000	0.000	111.239	0.000	2.06
		C		0.000	0.000	127.862	0.000	1.39
T9	40.00-20.00	A	1.139	0.000	0.000	256.273	0.000	2.65
		B		0.000	0.000	109.824	0.000	2.01
		C		0.000	0.000	125.881	0.000	1.33
T10	20.00-0.00	A	1.021	0.000	0.000	163.981	0.000	1.60
		B		0.000	0.000	69.566	0.000	1.24
		C		0.000	0.000	79.275	0.000	0.80

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	170.00-150.00	4.3874	-9.7479	4.7224	-10.4427
T2	150.00-140.00	2.2083	-7.0825	2.0723	-6.2778
T3	140.00-120.00	4.5733	-8.3909	3.5648	-12.2897
T4	120.00-100.00	6.7576	-1.1958	2.4403	-8.0402
T5	100.00-90.00	1.1421	1.9290	-4.9953	-4.2869
T6	90.00-80.00	-0.4857	2.6703	-7.3444	-3.5642
T7	80.00-60.00	-1.9310	3.2964	-10.1872	-3.0726
T8	60.00-40.00	-2.4859	3.3140	-12.2481	-3.7500
T9	40.00-20.00	-2.9213	2.7785	-13.7116	-5.1090
T10	20.00-0.00	-2.3679	1.6587	-11.9045	-4.8829

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	150.00 - 158.50	0.6000	0.5950
T1	5		150.00 - 170.00	0.6000	0.5950
T1	6		150.00 - 170.00	0.6000	0.5950
T1	7		150.00 -	0.6000	0.5950

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			170.00		
T1	9	7/8	150.00 -	0.6000	0.5950
			170.00		
T1	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	150.00 -	0.6000	0.5950
			170.00		
T1	11	RG-11 590609 (1 1/2 FOAM)	150.00 -	0.6000	0.5950
			170.00		
T1	14	7/8	150.00 -	0.6000	0.5950
			170.00		
T1	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	150.00 -	0.6000	0.5950
			170.00		
T1	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	150.00 -	0.6000	0.5950
			170.00		
T1	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	150.00 -	0.6000	0.5950
			168.00		
T1	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	150.00 -	0.6000	0.5950
			170.00		
T1	38	AVA5-50 (7/8 LOW DENS. FOAM)	150.00 -	0.6000	0.5950
			170.00		
T2	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	140.00 -	0.6000	0.3486
			150.00		
T2	5	1/2	140.00 -	0.6000	0.3486
			150.00		
T2	6	7/8	140.00 -	0.6000	0.3486
			150.00		
T2	7	7/8	140.00 -	0.6000	0.3486
			150.00		
T2	9	7/8	140.00 -	0.6000	0.3486
			150.00		
T2	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 -	0.6000	0.3486
			150.00		
T2	11	RG-11 590609 (1 1/2 FOAM)	140.00 -	0.6000	0.3486
			150.00		
T2	14	7/8	140.00 -	0.6000	0.3486
			150.00		
T2	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	140.00 -	0.6000	0.3486
			150.00		
T2	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	140.00 -	0.6000	0.3486
			150.00		
T2	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 -	0.6000	0.3486
			150.00		
T2	18	1/2	140.00 -	0.6000	0.3486
			144.00		
T2	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	140.00 -	0.6000	0.3486
			150.00		
T2	38	AVA5-50 (7/8 LOW DENS. FOAM)	140.00 -	0.6000	0.3486
			150.00		
T3	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	120.00 -	0.6000	0.4747
			140.00		
T3	5	1/2	120.00 -	0.6000	0.4747
			140.00		
T3	6	7/8	120.00 -	0.6000	0.4747
			140.00		
T3	7	7/8	120.00 -	0.6000	0.4747
			140.00		
T3	9	7/8	120.00 -	0.6000	0.4747
			140.00		
T3	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 -	0.6000	0.4747
			140.00		
T3	11	RG-11 590609 (1 1/2 FOAM)	120.00 -	0.6000	0.4747
			140.00		
T3	14	7/8	120.00 -	0.6000	0.4747

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	Client AT&T	Designed by TJL

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			140.00		
T3	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	120.00 - 140.00	0.6000	0.4747
T3	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	120.00 - 140.00	0.6000	0.4747
T3	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 140.00	0.6000	0.4747
T3	18	1/2	120.00 - 140.00	0.6000	0.4747
T3	20	1/2	120.00 - 140.00	0.6000	0.4747
T3	22	CATEGORY 5e (1 WIRE)	120.00 - 134.00	0.6000	0.4747
T3	23	1/2	120.00 - 134.00	0.6000	0.4747
T3	27	1 5/8	120.00 - 125.50	0.6000	0.4747
T3	28	1 5/8" Hybriflex	120.00 - 125.00	0.6000	0.4747
T3	37	AVA7-50 (1-5/8 LOW DENSI. FOAM)	120.00 - 140.00	0.6000	0.4747
T3	38	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 140.00	0.6000	0.4747
T4	4	AVA7-50 (1-5/8 LOW DENSI. FOAM)	100.00 - 120.00	0.6000	0.5432
T4	5	1/2	100.00 - 120.00	0.6000	0.5432
T4	6	7/8	100.00 - 120.00	0.6000	0.5432
T4	7	7/8	100.00 - 120.00	0.6000	0.5432
T4	9	7/8	100.00 - 120.00	0.6000	0.5432
T4	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 120.00	0.6000	0.5432
T4	11	RG-11 590609 (1 1/2 FOAM)	100.00 - 120.00	0.6000	0.5432
T4	14	7/8	100.00 - 120.00	0.6000	0.5432
T4	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	100.00 - 120.00	0.6000	0.5432
T4	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	100.00 - 120.00	0.6000	0.5432
T4	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 120.00	0.6000	0.5432
T4	18	1/2	100.00 - 120.00	0.6000	0.5432
T4	20	1/2	100.00 - 120.00	0.6000	0.5432
T4	22	CATEGORY 5e (1 WIRE)	100.00 - 120.00	0.6000	0.5432
T4	23	1/2	100.00 - 120.00	0.6000	0.5432
T4	27	1 5/8	100.00 - 120.00	0.6000	0.5432
T4	28	1 5/8" Hybriflex	100.00 - 120.00	0.6000	0.5432
T4	30	1 5/8	100.00 - 101.00	0.6000	0.5432
T4	31	1 5/8" Hybriflex	100.00 - 101.00	0.6000	0.5432
T4	33	1 5/8	100.00 -	0.6000	0.5432

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Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			115.00		
T4	34	Fiber Trunk	100.00 - 115.00	0.6000	0.5432
T4	35	DC Trunk	100.00 - 115.00	0.6000	0.5432
T4	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.5432
T4	38	AVA5-50 (7/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.5432
T5	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.6000
T5	5	1/2	90.00 - 100.00	0.6000	0.6000
T5	6	7/8	90.00 - 100.00	0.6000	0.6000
T5	7	7/8	90.00 - 100.00	0.6000	0.6000
T5	9	7/8	90.00 - 100.00	0.6000	0.6000
T5	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T5	11	RG-11 590609 (1 1/2 FOAM)	90.00 - 100.00	0.6000	0.6000
T5	14	7/8	90.00 - 100.00	0.6000	0.6000
T5	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	90.00 - 100.00	0.6000	0.6000
T5	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	90.00 - 100.00	0.6000	0.6000
T5	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T5	18	1/2	90.00 - 100.00	0.6000	0.6000
T5	20	1/2	90.00 - 100.00	0.6000	0.6000
T5	22	CATEGORY 5e (1 WIRE)	90.00 - 100.00	0.6000	0.6000
T5	23	1/2	90.00 - 100.00	0.6000	0.6000
T5	27	1 5/8	90.00 - 100.00	0.6000	0.6000
T5	28	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T5	30	1 5/8	90.00 - 100.00	0.6000	0.6000
T5	31	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T5	33	1 5/8	90.00 - 100.00	0.6000	0.6000
T5	34	Fiber Trunk	90.00 - 100.00	0.6000	0.6000
T5	35	DC Trunk	90.00 - 100.00	0.6000	0.6000
T5	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.6000
T5	38	AVA5-50 (7/8 LOW DENS. FOAM)	90.00 - 100.00	0.6000	0.6000
T6	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.6000
T6	5	1/2	80.00 - 90.00	0.6000	0.6000
T6	6	7/8	80.00 - 90.00	0.6000	0.6000
T6	7	7/8	80.00 - 90.00	0.6000	0.6000
T6	9	7/8	80.00 - 90.00	0.6000	0.6000
T6	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T6	11	RG-11 590609 (1 1/2 FOAM)	80.00 - 90.00	0.6000	0.6000
T6	14	7/8	80.00 - 90.00	0.6000	0.6000
T6	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	80.00 - 90.00	0.6000	0.6000
T6	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	80.00 - 90.00	0.6000	0.6000
T6	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T6	18	1/2	80.00 - 90.00	0.6000	0.6000
T6	20	1/2	80.00 - 90.00	0.6000	0.6000
T6	22	CATEGORY 5e (1 WIRE)	80.00 - 90.00	0.6000	0.6000
T6	23	1/2	80.00 - 90.00	0.6000	0.6000
T6	24	CATEGORY 5e (1 WIRE)	80.00 - 87.00	0.6000	0.6000
T6	25	CATEGORY 5e (1 WIRE)	80.00 - 83.00	0.6000	0.6000

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	27	1 5/8	80.00 - 90.00	0.6000	0.6000
T6	28	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T6	30	1 5/8	80.00 - 90.00	0.6000	0.6000
T6	31	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T6	33	1 5/8	80.00 - 90.00	0.6000	0.6000
T6	34	Fiber Trunk	80.00 - 90.00	0.6000	0.6000
T6	35	DC Trunk	80.00 - 90.00	0.6000	0.6000
T6	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.6000
T6	38	AVA5-50 (7/8 LOW DENS. FOAM)	80.00 - 90.00	0.6000	0.6000
T7	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.6000
T7	5	1/2	60.00 - 80.00	0.6000	0.6000
T7	6	7/8	60.00 - 80.00	0.6000	0.6000
T7	7	7/8	60.00 - 80.00	0.6000	0.6000
T7	9	7/8	60.00 - 80.00	0.6000	0.6000
T7	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 80.00	0.6000	0.6000
T7	11	RG-11 590609 (1 1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T7	14	7/8	60.00 - 80.00	0.6000	0.6000
T7	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	60.00 - 80.00	0.6000	0.6000
T7	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	60.00 - 80.00	0.6000	0.6000
T7	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 80.00	0.6000	0.6000
T7	18	1/2	60.00 - 80.00	0.6000	0.6000
T7	20	1/2	60.00 - 80.00	0.6000	0.6000
T7	22	CATEGORY 5e (1 WIRE)	60.00 - 80.00	0.6000	0.6000
T7	23	1/2	60.00 - 80.00	0.6000	0.6000
T7	24	CATEGORY 5e (1 WIRE)	60.00 - 80.00	0.6000	0.6000
T7	25	CATEGORY 5e (1 WIRE)	60.00 - 80.00	0.6000	0.6000
T7	27	1 5/8	60.00 - 80.00	0.6000	0.6000
T7	28	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T7	30	1 5/8	60.00 - 80.00	0.6000	0.6000
T7	31	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T7	33	1 5/8	60.00 - 80.00	0.6000	0.6000
T7	34	Fiber Trunk	60.00 - 80.00	0.6000	0.6000
T7	35	DC Trunk	60.00 - 80.00	0.6000	0.6000
T7	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.6000
T7	38	AVA5-50 (7/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.6000
T8	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	5	1/2	40.00 - 60.00	0.6000	0.6000
T8	6	7/8	40.00 - 60.00	0.6000	0.6000
T8	7	7/8	40.00 - 60.00	0.6000	0.6000
T8	9	7/8	40.00 - 60.00	0.6000	0.6000
T8	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	11	RG-11 590609 (1 1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T8	14	7/8	40.00 - 60.00	0.6000	0.6000
T8	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	40.00 - 60.00	0.6000	0.6000
T8	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	40.00 - 60.00	0.6000	0.6000
T8	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	18	1/2	40.00 - 60.00	0.6000	0.6000
T8	20	1/2	40.00 - 60.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T8	22	CATEGORY 5e (1 WIRE)	40.00 - 60.00	0.6000	0.6000
T8	23	1/2	40.00 - 60.00	0.6000	0.6000
T8	24	CATEGORY 5e (1 WIRE)	40.00 - 60.00	0.6000	0.6000
T8	25	CATEGORY 5e (1 WIRE)	40.00 - 60.00	0.6000	0.6000
T8	27	1 5/8	40.00 - 60.00	0.6000	0.6000
T8	28	1 5/8" Hybriflex	40.00 - 60.00	0.6000	0.6000
T8	30	1 5/8	40.00 - 60.00	0.6000	0.6000
T8	31	1 5/8" Hybriflex	40.00 - 60.00	0.6000	0.6000
T8	33	1 5/8	40.00 - 60.00	0.6000	0.6000
T8	34	Fiber Trunk	40.00 - 60.00	0.6000	0.6000
T8	35	DC Trunk	40.00 - 60.00	0.6000	0.6000
T8	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	40.00 - 60.00	0.6000	0.6000
T8	38	AVA5-50 (7/8 LOW DENS. FOAM)	40.00 - 60.00	0.6000	0.6000
T9	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	5	1/2	20.00 - 40.00	0.6000	0.6000
T9	6	7/8	20.00 - 40.00	0.6000	0.6000
T9	7	7/8	20.00 - 40.00	0.6000	0.6000
T9	9	7/8	20.00 - 40.00	0.6000	0.6000
T9	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	11	RG-11 590609 (1 1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T9	14	7/8	20.00 - 40.00	0.6000	0.6000
T9	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	20.00 - 40.00	0.6000	0.6000
T9	16	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	20.00 - 40.00	0.6000	0.6000
T9	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	18	1/2	20.00 - 40.00	0.6000	0.6000
T9	20	1/2	20.00 - 40.00	0.6000	0.6000
T9	21	1/2	20.00 - 30.00	0.6000	0.6000
T9	22	CATEGORY 5e (1 WIRE)	20.00 - 40.00	0.6000	0.6000
T9	23	1/2	20.00 - 40.00	0.6000	0.6000
T9	24	CATEGORY 5e (1 WIRE)	20.00 - 40.00	0.6000	0.6000
T9	25	CATEGORY 5e (1 WIRE)	20.00 - 40.00	0.6000	0.6000
T9	27	1 5/8	20.00 - 40.00	0.6000	0.6000
T9	28	1 5/8" Hybriflex	20.00 - 40.00	0.6000	0.6000
T9	30	1 5/8	20.00 - 40.00	0.6000	0.6000
T9	31	1 5/8" Hybriflex	20.00 - 40.00	0.6000	0.6000
T9	33	1 5/8	20.00 - 40.00	0.6000	0.6000
T9	34	Fiber Trunk	20.00 - 40.00	0.6000	0.6000
T9	35	DC Trunk	20.00 - 40.00	0.6000	0.6000
T9	37	AVA7-50 (1-5/8 LOW DENS. FOAM)	20.00 - 40.00	0.6000	0.6000
T9	38	AVA5-50 (7/8 LOW DENS. FOAM)	20.00 - 40.00	0.6000	0.6000
T10	4	AVA7-50 (1-5/8 LOW DENS. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	5	1/2	7.00 - 20.00	0.6000	0.6000
T10	6	7/8	7.00 - 20.00	0.6000	0.6000
T10	7	7/8	7.00 - 20.00	0.6000	0.6000
T10	9	7/8	7.00 - 20.00	0.6000	0.6000
T10	10	FSJ2-50 (3/8 SUPERFLEX. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	11	RG-11 590609 (1 1/2 FOAM)	7.00 - 20.00	0.6000	0.6000
T10	14	7/8	7.00 - 20.00	0.6000	0.6000
T10	15	1-1/4 Hybriflex (1.54" OD) - 3x6- 4 AWG	7.00 - 20.00	0.6000	0.6000
T10	16	1-1/4 Hybriflex (1.54" OD) -	7.00 - 20.00	0.6000	0.6000

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	17	3x6- 4 AWG FSJ2-50 (3/8 SUPERFLEX. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	18	1/2	7.00 - 20.00	0.6000	0.6000
T10	20	1/2	7.00 - 20.00	0.6000	0.6000
T10	21	1/2	7.00 - 20.00	0.6000	0.6000
T10	22	CATEGORY 5e (1 WIRE)	7.00 - 20.00	0.6000	0.6000
T10	23	1/2	7.00 - 20.00	0.6000	0.6000
T10	24	CATEGORY 5e (1 WIRE)	7.00 - 20.00	0.6000	0.6000
T10	25	CATEGORY 5e (1 WIRE)	7.00 - 20.00	0.6000	0.6000
T10	27	1 5/8	7.00 - 20.00	0.6000	0.6000
T10	28	1 5/8" Hybriflex	7.00 - 20.00	0.6000	0.6000
T10	30	1 5/8	7.00 - 20.00	0.6000	0.6000
T10	31	1 5/8" Hybriflex	7.00 - 20.00	0.6000	0.6000
T10	33	1 5/8	7.00 - 20.00	0.6000	0.6000
T10	34	Fiber Trunk	7.00 - 20.00	0.6000	0.6000
T10	35	DC Trunk	7.00 - 20.00	0.6000	0.6000
T10	37	AVA7-50 (1-5/8 LOW DENSI. FOAM)	7.00 - 20.00	0.6000	0.6000
T10	38	AVA5-50 (7/8 LOW DENSI.FOAM)	7.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz. Lateral Vert	Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
9 Arm Halo Mount (Municipal)	C	None		0.0000	168.00	No Ice 62.60 1/2" Ice 80.40 1" Ice 98.20	62.60 80.40 98.20	3.60 4.80 6.00
Sabre 12" HD V-Boom (AT&T)	A	None		0.0000	115.00	No Ice 9.12 1/2" Ice 11.00 1" Ice 12.88	8.00 9.60 11.20	0.60 0.75 0.90
Sabre 12" HD V-Boom (AT&T)	B	None		0.0000	115.00	No Ice 9.12 1/2" Ice 11.00 1" Ice 12.88	8.00 9.60 11.20	0.60 0.75 0.90
Sabre 12" HD V-Boom (AT&T)	C	None		0.0000	115.00	No Ice 9.12 1/2" Ice 11.00 1" Ice 12.88	8.00 9.60 11.20	0.60 0.75 0.90
DMP65R-BU6D (AT&T)	A	From Leg	4.00 -6.00 0.00	0.0000	115.00	No Ice 12.71 1/2" Ice 13.21 1" Ice 13.71	5.62 6.07 6.53	0.10 0.17 0.25
AIR6449 (AT&T)	A	From Leg	4.00 0.00 3.00	0.0000	115.00	No Ice 5.65 1/2" Ice 5.96 1" Ice 6.26	2.42 2.64 2.87	0.10 0.14 0.18
AIR6419 (AT&T)	A	From Leg	4.00 0.00 -3.00	0.0000	115.00	No Ice 3.66 1/2" Ice 3.91 1" Ice 4.16	1.66 1.85 2.05	0.07 0.09 0.12
TPA65R-BU6D (AT&T)	A	From Leg	4.00 6.00 0.00	0.0000	115.00	No Ice 12.71 1/2" Ice 13.21 1" Ice 13.71	5.62 6.07 6.53	0.08 0.15 0.23

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	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
DMP65R-BU6D (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	12.71	5.62	0.10
			-6.00			1/2" Ice	13.21	6.07	0.17
			0.00			1" Ice	13.71	6.53	0.25
AIR6449 (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	5.65	2.42	0.10
			0.00			1/2" Ice	5.96	2.64	0.14
			3.00			1" Ice	6.26	2.87	0.18
AIR6419 (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	3.66	1.66	0.07
			0.00			1/2" Ice	3.91	1.85	0.09
			-3.00			1" Ice	4.16	2.05	0.12
TPA65R-BU6D (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	12.71	5.62	0.08
			6.00			1/2" Ice	13.21	6.07	0.15
			0.00			1" Ice	13.71	6.53	0.23
DMP65R-BU6D (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	12.71	5.62	0.10
			-6.00			1/2" Ice	13.21	6.07	0.17
			0.00			1" Ice	13.71	6.53	0.25
AIR6449 (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	5.65	2.42	0.10
			0.00			1/2" Ice	5.96	2.64	0.14
			3.00			1" Ice	6.26	2.87	0.18
AIR6419 (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	3.66	1.66	0.07
			0.00			1/2" Ice	3.91	1.85	0.09
			-3.00			1" Ice	4.16	2.05	0.12
TPA65R-BU6D (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	12.71	5.62	0.08
			6.00			1/2" Ice	13.21	6.07	0.15
			0.00			1" Ice	13.71	6.53	0.23
4449 B5/B12 (AT&T)	A	From Leg	4.00	0.0000	115.00	No Ice	1.97	1.41	0.07
			-6.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
4449 B5/B12 (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	1.97	1.41	0.07
			-6.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
4449 B5/B12 (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	1.97	1.41	0.07
			-6.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
8843 B2/B66A (AT&T)	A	From Leg	4.00	0.0000	115.00	No Ice	1.64	1.35	0.07
			2.00			1/2" Ice	1.80	1.50	0.09
			2.50			1" Ice	1.97	1.65	0.11
8843 B2/B66A (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	1.64	1.35	0.07
			2.00			1/2" Ice	1.80	1.50	0.09
			2.50			1" Ice	1.97	1.65	0.11
8843 B2/B66A (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	1.64	1.35	0.07
			2.00			1/2" Ice	1.80	1.50	0.09
			2.50			1" Ice	1.97	1.65	0.11
RRUS-32 (AT&T)	A	From Leg	4.00	0.0000	115.00	No Ice	3.31	2.42	0.08
			2.00			1/2" Ice	3.56	2.64	0.10
			-2.50			1" Ice	3.81	2.86	0.14
RRUS-32 (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	3.31	2.42	0.08
			2.00			1/2" Ice	3.56	2.64	0.10
			-2.50			1" Ice	3.81	2.86	0.14
RRUS-32 (AT&T)	C	From Leg	4.00	0.0000	115.00	No Ice	3.31	2.42	0.08
			2.00			1/2" Ice	3.56	2.64	0.10
			-2.50			1" Ice	3.81	2.86	0.14
4478 B14 (AT&T)	A	From Leg	4.00	0.0000	115.00	No Ice	1.84	1.06	0.06
			-6.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
4478 B14 (AT&T)	B	From Leg	4.00	0.0000	115.00	No Ice	1.84	1.06	0.06
			-6.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09

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	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
4478 B14 (AT&T)	C	From Leg	4.00	0.0000		115.00	No Ice 1.84	1.06	0.06
			-6.00				1/2" Ice 2.01	1.20	0.08
			0.00				1" Ice 2.19	1.34	0.09
(3) DC6-48-60-18-8F (Squid) Suppressor (AT&T)	C	From Leg	0.00	0.0000		115.00	No Ice 0.79	0.79	0.02
			0.00				1/2" Ice 1.27	1.27	0.04
			0.00				1" Ice 1.45	1.45	0.05
PiROD 12' Lightweight T-Frame (Verizon)	A	From Leg	0.00	0.0000		98.50	No Ice 10.20	10.20	0.25
			0.00				1/2" Ice 16.20	16.20	0.35
			0.00				1" Ice 22.20	22.20	0.46
PiROD 12' Lightweight T-Frame (Verizon)	B	From Leg	0.00	0.0000		98.50	No Ice 10.20	10.20	0.25
			0.00				1/2" Ice 16.20	16.20	0.35
			0.00				1" Ice 22.20	22.20	0.46
PiROD 12' Lightweight T-Frame (Verizon)	C	From Leg	0.00	0.0000		98.50	No Ice 10.20	10.20	0.25
			0.00				1/2" Ice 16.20	16.20	0.35
			0.00				1" Ice 22.20	22.20	0.46
(2) Commscope VZWSMART-SFK3 (Verizon)	A	From Leg	0.00	0.0000		98.50	No Ice 5.00	5.00	0.09
			0.00				1/2" Ice 7.00	7.00	0.12
			0.00				1" Ice 9.00	9.00	0.16
(2) Commscope VZWSMART-SFK3 (Verizon)	B	From Leg	0.00	0.0000		98.50	No Ice 5.00	5.00	0.09
			0.00				1/2" Ice 7.00	7.00	0.12
			0.00				1" Ice 9.00	9.00	0.16
(2) Commscope VZWSMART-SFK3 (Verizon)	C	From Leg	0.00	0.0000		98.50	No Ice 5.00	5.00	0.09
			0.00				1/2" Ice 7.00	7.00	0.12
			0.00				1" Ice 9.00	9.00	0.16
LNX-6514DS (Verizon)	A	From Leg	4.00	0.0000		100.00	No Ice 8.17	5.41	0.04
			-6.00				1/2" Ice 8.63	5.86	0.09
			0.00				1" Ice 9.10	6.33	0.15
(2) MX06FRO660 (Verizon)	A	From Leg	4.00	0.0000		100.00	No Ice 9.87	7.34	0.06
			-2.00				1/2" Ice 10.34	7.78	0.13
			0.00				1" Ice 10.82	8.24	0.20
MT6407-77A (Verizon)	A	From Leg	4.00	0.0000		101.50	No Ice 4.71	1.84	0.00
			2.00				1/2" Ice 5.00	2.06	0.03
			0.00				1" Ice 5.29	2.29	0.06
XXDWMM-12.5-65-8T (Verizon)	A	From Leg	4.00	0.0000		98.00	No Ice 0.89	0.17	0.01
			6.00				1/2" Ice 1.01	0.25	0.01
			0.00				1" Ice 1.14	0.34	0.02
LNX-6514DS (Verizon)	B	From Leg	4.00	0.0000		100.00	No Ice 8.17	5.41	0.04
			-6.00				1/2" Ice 8.63	5.86	0.09
			0.00				1" Ice 9.10	6.33	0.15
(2) MX06FRO660 (Verizon)	B	From Leg	4.00	0.0000		100.00	No Ice 9.87	7.34	0.06
			-2.00				1/2" Ice 10.34	7.78	0.13
			0.00				1" Ice 10.82	8.24	0.20
MT6407-77A (Verizon)	B	From Leg	4.00	0.0000		101.50	No Ice 4.71	1.84	0.00
			2.00				1/2" Ice 5.00	2.06	0.03
			0.00				1" Ice 5.29	2.29	0.06
XXDWMM-12.5-65-8T (Verizon)	B	From Leg	4.00	0.0000		98.00	No Ice 0.89	0.17	0.01
			6.00				1/2" Ice 1.01	0.25	0.01
			0.00				1" Ice 1.14	0.34	0.02
LNX-6514DS (Verizon)	C	From Leg	4.00	0.0000		100.00	No Ice 8.17	5.41	0.04
			-6.00				1/2" Ice 8.63	5.86	0.09
			0.00				1" Ice 9.10	6.33	0.15
(2) MX06FRO660 (Verizon)	C	From Leg	4.00	0.0000		100.00	No Ice 9.87	7.34	0.06
			-2.00				1/2" Ice 10.34	7.78	0.13
			0.00				1" Ice 10.82	8.24	0.20
MT6407-77A (Verizon)	C	From Leg	4.00	0.0000		101.50	No Ice 4.71	1.84	0.00
			2.00				1/2" Ice 5.00	2.06	0.03
			0.00				1" Ice 5.29	2.29	0.06

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	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
XXDWMM-12.5-65-8T (Verizon)	C	From Leg	4.00	0.0000	98.00	No Ice	0.89	0.17	0.01
			6.00			1/2" Ice	1.01	0.25	0.01
			0.00			1" Ice	1.14	0.34	0.02
B2/B66A RRH (Verizon)	A	From Leg	4.00	0.0000	100.00	No Ice	2.54	1.61	0.06
			2.00			1/2" Ice	2.75	1.79	0.08
			0.00			1" Ice	2.97	1.98	0.10
B2/B66A RRH (Verizon)	B	From Leg	4.00	0.0000	100.00	No Ice	2.54	1.61	0.06
			2.00			1/2" Ice	2.75	1.79	0.08
			0.00			1" Ice	2.97	1.98	0.10
B2/B66A RRH (Verizon)	C	From Leg	4.00	0.0000	100.00	No Ice	2.54	1.61	0.06
			2.00			1/2" Ice	2.75	1.79	0.08
			0.00			1" Ice	2.97	1.98	0.10
B5/B13 RRH (Verizon)	A	From Leg	4.00	0.0000	100.00	No Ice	1.87	1.02	0.07
			2.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
B5/B13 RRH (Verizon)	B	From Leg	4.00	0.0000	100.00	No Ice	1.87	1.02	0.07
			2.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
B5/B13 RRH (Verizon)	C	From Leg	4.00	0.0000	100.00	No Ice	1.87	1.02	0.07
			2.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
CBRS RRH-RT4401-48A (Verizon)	A	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			2.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
CBRS RRH-RT4401-48A (Verizon)	B	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			2.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
CBRS RRH-RT4401-48A (Verizon)	C	From Leg	4.00	0.0000	100.00	No Ice	0.86	0.42	0.02
			2.00			1/2" Ice	0.98	0.51	0.03
			0.00			1" Ice	1.10	0.61	0.04
RVZDC-6627-PF-48 (Verizon)	C	From Leg	4.00	0.0000	100.00	No Ice	3.25	2.15	0.03
			2.00			1/2" Ice	3.48	2.35	0.06
			0.00			1" Ice	3.71	2.55	0.09
PiROD 10' Lightweight T-Frame (T-Mobile)	A	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
			0.00			1/2" Ice	14.50	14.50	0.34
			0.00			1" Ice	19.70	19.70	0.44
PiROD 10' Lightweight T-Frame (T-Mobile)	B	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
			0.00			1/2" Ice	14.50	14.50	0.34
			0.00			1" Ice	19.70	19.70	0.44
PiROD 10' Lightweight T-Frame (T-Mobile)	C	From Leg	2.00	0.0000	125.50	No Ice	9.30	9.30	0.25
			0.00			1/2" Ice	14.50	14.50	0.34
			0.00			1" Ice	19.70	19.70	0.44
AIR B2A/B4P (T-Mobile)	A	From Leg	4.00	0.0000	125.50	No Ice	6.42	4.22	0.08
			3.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P (T-Mobile)	B	From Leg	4.00	0.0000	125.50	No Ice	6.42	4.22	0.08
			3.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P (T-Mobile)	C	From Leg	4.00	0.0000	125.50	No Ice	6.42	4.22	0.08
			3.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P (T-Mobile)	A	From Leg	4.00	0.0000	125.50	No Ice	6.42	4.22	0.08
			-3.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P (T-Mobile)	B	From Leg	4.00	0.0000	125.50	No Ice	6.42	4.22	0.08
			-3.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17

tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22007.04 - CT1141	Page	20 of 57
	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
AIR B2A/B4P (T-Mobile)	C	From Leg	4.00	0.0000		125.50	No Ice 6.42	4.22	0.08
			-3.00				1/2" Ice 6.86	4.64	0.12
			0.00				1" Ice 7.30	5.06	0.17
Twin PCS TMA (T-Mobile)	A	From Leg	4.00	0.0000		125.50	No Ice 0.77	0.36	0.01
			3.00				1/2" Ice 0.96	0.52	0.02
			0.00				1" Ice 1.15	0.68	0.03
Twin PCS TMA (T-Mobile)	B	From Leg	4.00	0.0000		125.50	No Ice 0.77	0.36	0.01
			3.00				1/2" Ice 0.96	0.52	0.02
			0.00				1" Ice 1.15	0.68	0.03
Twin PCS TMA (T-Mobile)	C	From Leg	4.00	0.0000		125.50	No Ice 0.77	0.36	0.01
			3.00				1/2" Ice 0.96	0.52	0.02
			0.00				1" Ice 1.15	0.68	0.03
LNX-6515DS-VTM w/ 6' 2" sch 40 Pipe Mount (T-Mobile)	A	From Leg	4.00	0.0000		125.50	No Ice 11.45	9.12	0.07
			0.00				1/2" Ice 12.06	10.21	0.15
			0.00				1" Ice 12.69	11.18	0.24
LNX-6515DS-VTM w/ 6' 2" sch 40 Pipe Mount (T-Mobile)	B	From Leg	4.00	0.0000		125.50	No Ice 11.45	9.12	0.07
			0.00				1/2" Ice 12.06	10.21	0.15
			0.00				1" Ice 12.69	11.18	0.24
LNX-6515DS-VTM w/ 6' 2" sch 40 Pipe Mount (T-Mobile)	C	From Leg	4.00	0.0000		125.50	No Ice 11.45	9.12	0.07
			0.00				1/2" Ice 12.06	10.21	0.15
			0.00				1" Ice 12.69	11.18	0.24
RRUS-11 (T-Mobile)	A	From Leg	4.00	0.0000		125.50	No Ice 2.57	1.07	0.05
			0.00				1/2" Ice 2.76	1.21	0.07
			0.00				1" Ice 2.97	1.36	0.09
RRUS-11 (T-Mobile)	B	From Leg	4.00	0.0000		125.50	No Ice 2.57	1.07	0.05
			0.00				1/2" Ice 2.76	1.21	0.07
			0.00				1" Ice 2.97	1.36	0.09
RRUS-11 (T-Mobile)	C	From Leg	4.00	0.0000		125.50	No Ice 2.57	1.07	0.05
			0.00				1/2" Ice 2.76	1.21	0.07
			0.00				1" Ice 2.97	1.36	0.09
*** Existing T-Mobile Inventory									
*** CFD Proposed									
DS1F03F36U-D Omni Antenna (CFD)	C	From Leg	8.25	0.0000		170.00	No Ice 3.77	3.77	0.06
			0.00				1/2" Ice 5.07	5.07	0.09
			8.00				1" Ice 6.38	6.38	0.12
DS1F03F36D 23' Omni Antenna (CFD)	A	From Leg	7.00	0.0000		170.00	No Ice 6.69	6.69	0.09
			4.00				1/2" Ice 8.95	8.95	0.14
			1.50				1" Ice 11.23	11.23	0.20
*** CFD Proposed									
*** Remaining									
Antennas/Appurtenances on Halo mt.									
101-90-08-0-01 ((183') Municipal - A)	A	From Leg	7.00	0.0000		170.00	No Ice 2.77	2.77	0.04
			4.00				1/2" Ice 4.31	4.31	0.06
			13.00				1" Ice 4.93	4.93	0.09
15' Mount Pipe ((183') Municipal - A)	A	From Leg	7.00	0.0000		170.00	No Ice 4.50	4.50	0.09
			4.00				1/2" Ice 6.03	6.03	0.12
			8.00				1" Ice 7.58	7.58	0.16
20' 8 Bay Di-Pole ((178') Municipal - E)	C	From Leg	7.00	0.0000		170.00	No Ice 4.00	4.00	0.06
			0.00				1/2" Ice 6.00	6.00	0.10
			10.00				1" Ice 8.00	8.00	0.14
3' Whip (3in diameter) /w mount ((175.5') Municipal - C)	B	From Leg	0.00	0.0000		170.00	No Ice 1.27	1.27	0.02
			0.00				1/2" Ice 1.64	1.64	0.03
			5.50				1" Ice 2.04	2.04	0.05
2.5' Decibel Omni ((175') Municipal - I)	A	From Leg	7.00	0.0000		170.00	No Ice 0.41	0.41	0.01
			4.00				1/2" Ice 0.56	0.56	0.01

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	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
2.5' Decibel Omni ((175') Municipal - I)	B	From Leg	10.00		0.0000	170.00	1" Ice	0.71	0.71	0.02
			7.00				No Ice	0.41	0.41	0.01
			8.00				1/2" Ice	0.56	0.56	0.01
			10.00				1" Ice	0.71	0.71	0.02
2.5' Decibel Omni ((175') Municipal - I)	C	From Leg	8.25		0.0000	170.00	No Ice	0.41	0.41	0.01
			0.00				1/2" Ice	0.56	0.56	0.01
			10.00				1" Ice	0.71	0.71	0.02
			8.25				No Ice	2.00	2.00	0.01
2" Dia 10' Omni ((174.5') Municipal - H)	B	From Leg	0.00		0.0000	170.00	1/2" Ice	3.03	3.03	0.03
			5.00				1" Ice	4.06	4.06	0.04
			7.00				No Ice	2.00	2.00	0.01
			8.00				1/2" Ice	3.03	3.03	0.03
2" Dia 10' Omni ((174.5') Municipal - H)	B	From Leg	5.00		0.0000	170.00	1" Ice	4.06	4.06	0.04
			1.00				No Ice	4.80	4.80	0.03
			2.00				1/2" Ice	6.83	6.83	0.07
			4.00				1" Ice	8.87	8.87	0.11
*** Sprint / Ramaker Inventory 10/25/2018										
APXVSP18-C-A20 (Sprint)	A	From Face	8.25		0.0000	170.00	No Ice	8.40	5.28	0.06
			1.00				1/2" Ice	8.95	5.74	0.11
			0.00				1" Ice	9.51	6.20	0.16
APXVSP18-C-A20 (Sprint)	B	From Face	8.25		0.0000	170.00	No Ice	8.40	5.28	0.06
			-1.00				1/2" Ice	8.95	5.74	0.11
			0.00				1" Ice	9.51	6.20	0.16
APXVSP18-C-A20 (Sprint)	C	From Face	8.25		0.0000	170.00	No Ice	8.40	5.28	0.06
			-1.00				1/2" Ice	8.95	5.74	0.11
			0.00				1" Ice	9.51	6.20	0.16
Panasonic RRH 1900MHZ (Sprint)	A	From Face	6.00		0.0000	170.00	No Ice	2.49	3.06	0.09
			0.00				1/2" Ice	2.71	3.30	0.12
			0.00				1" Ice	2.93	3.54	0.15
Panasonic RRH 1900MHZ (Sprint)	B	From Face	6.00		0.0000	170.00	No Ice	2.49	3.06	0.09
			0.00				1/2" Ice	2.71	3.30	0.12
			0.00				1" Ice	2.93	3.54	0.15
Panasonic RRH 1900MHZ (Sprint)	C	From Face	6.00		0.0000	170.00	No Ice	2.49	3.06	0.09
			0.00				1/2" Ice	2.71	3.30	0.12
			0.00				1" Ice	2.93	3.54	0.15
Andrew 800MHz RRH (Sprint)	A	From Face	6.00		0.0000	170.00	No Ice	2.36	1.97	0.06
			0.00				1/2" Ice	2.57	2.17	0.08
			2.00				1" Ice	2.79	2.37	0.10
Andrew 800MHz RRH (Sprint)	B	From Face	6.00		0.0000	170.00	No Ice	2.36	1.97	0.06
			0.00				1/2" Ice	2.57	2.17	0.08
			2.00				1" Ice	2.79	2.37	0.10
Andrew 800MHz RRH (Sprint)	C	From Face	6.00		0.0000	170.00	No Ice	2.36	1.97	0.06
			0.00				1/2" Ice	2.57	2.17	0.08
			2.00				1" Ice	2.79	2.37	0.10
TD-RRH8x20-25 (Sprint)	A	From Face	7.00		0.0000	170.00	No Ice	4.05	1.53	0.07
			4.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
TD-RRH8x20-25 (Sprint)	B	From Face	7.00		0.0000	170.00	No Ice	4.05	1.53	0.07
			-4.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
TD-RRH8x20-25 (Sprint)	C	From Face	7.00		0.0000	170.00	No Ice	4.05	1.53	0.07
			-4.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
DT465B-2XR-V2 Panels (Commscope) (Sprint)	A	From Face	7.00		0.0000	170.00	No Ice	9.10	5.97	0.06
			4.00				1/2" Ice	9.56	6.43	0.12
			0.00				1" Ice	10.04	6.90	0.18

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	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight K
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	
DT465B-2XR-V2 Panels (Commscope) (Sprint)	B	From Face	7.00	0.0000	170.00	No Ice	9.10	5.97	0.06
			-4.00			1/2" Ice	9.56	6.43	0.12
			0.00			1" Ice	10.04	6.90	0.18
DT465B-2XR-V2 Panels (Commscope) (Sprint)	C	From Face	7.00	0.0000	170.00	No Ice	9.10	5.97	0.06
			-4.00			1/2" Ice	9.56	6.43	0.12
			0.00			1" Ice	10.04	6.90	0.18
Andrew 800MHz RRH (Sprint)	A	From Face	7.00	0.0000	170.00	No Ice	2.36	1.97	0.06
			4.00			1/2" Ice	2.57	2.17	0.08
			-3.00			1" Ice	2.79	2.37	0.10
Andrew 800MHz RRH (Sprint)	B	From Face	7.00	0.0000	170.00	No Ice	2.36	1.97	0.06
			-4.00			1/2" Ice	2.57	2.17	0.08
			-3.00			1" Ice	2.79	2.37	0.10
Andrew 800MHz RRH (Sprint)	C	From Face	7.00	0.0000	170.00	No Ice	2.36	1.97	0.06
			-4.00			1/2" Ice	2.57	2.17	0.08
			-3.00			1" Ice	2.79	2.37	0.10
*** Sprint / Ramaker Inventory 10/25/2018 *** Inventory Below Halo									
Mount									
SC420-HF1LDF (Municipal)	A	From Face	6.00	0.0000	158.50	No Ice	2.14	2.14	0.02
			0.00			1/2" Ice	3.02	3.02	0.03
			0.00			1" Ice	3.79	3.79	0.05
2.5" x 20'6" Whip (Municipal)	A	From Face	6.00	0.0000	144.00	No Ice	5.14	5.14	0.15
			9.00			1/2" Ice	7.24	7.24	0.19
			0.00			1" Ice	9.37	9.37	0.24
2" Dia 15' Omni (Municipal)	B	From Face	6.00	0.0000	141.00	No Ice	3.20	3.20	0.04
			-5.00			1/2" Ice	4.83	4.83	0.06
			0.00			1" Ice	6.47	6.47	0.10
1.5" x 10' Omni (Municipal)	B	From Face	6.00	0.0000	139.00	No Ice	1.50	1.50	0.06
			5.00			1/2" Ice	2.52	2.52	0.07
			0.00			1" Ice	3.56	3.56	0.09
9' Whip (Municipal)	A	From Face	6.00	0.0000	138.50	No Ice	5.85	5.85	0.12
			0.00			1/2" Ice	7.66	7.66	0.17
			0.00			1" Ice	8.90	8.90	0.23
PiROD 20' Universal Platform (Municipal)	C	None		0.0000	134.00	No Ice	33.10	33.10	2.27
						1/2" Ice	47.10	47.10	2.70
						1" Ice	61.10	61.10	3.13
Argus LLPX310R (Clearwire)	A	From Face	6.00	0.0000	134.00	No Ice	4.86	3.46	0.03
			7.00			1/2" Ice	5.22	3.80	0.06
			0.00			1" Ice	5.58	4.14	0.10
Argus LLPX310R (Clearwire)	B	From Face	6.00	0.0000	134.00	No Ice	4.86	3.46	0.03
			0.00			1/2" Ice	5.22	3.80	0.06
			0.00			1" Ice	5.58	4.14	0.10
Argus LLPX310R (Clearwire)	C	From Face	6.00	0.0000	134.00	No Ice	4.86	3.46	0.03
			7.00			1/2" Ice	5.22	3.80	0.06
			0.00			1" Ice	5.58	4.14	0.10
REMOTE RADIO HEAD (RRH) (Clearwire)	A	From Face	6.00	0.0000	134.00	No Ice	1.82	0.83	0.03
			7.00			1/2" Ice	2.00	0.97	0.04
			0.00			1" Ice	2.19	1.12	0.06
REMOTE RADIO HEAD (RRH) (Clearwire)	B	From Face	6.00	0.0000	134.00	No Ice	1.82	0.83	0.03
			0.00			1/2" Ice	2.00	0.97	0.04
			0.00			1" Ice	2.19	1.12	0.06
REMOTE RADIO HEAD (RRH) (Clearwire)	C	From Face	6.00	0.0000	134.00	No Ice	1.82	0.83	0.03
			7.00			1/2" Ice	2.00	0.97	0.04
			0.00			1" Ice	2.19	1.12	0.06
3'x2'x22" Panel (Unknown)	B	From Leg	2.00	0.0000	87.00	No Ice	0.65	0.47	0.05
			0.00			1/2" Ice	0.81	0.61	0.05

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	Project	170' Lattice Tower Cromwell, CT		Date	10:05:41 04/11/22
	Client	AT&T		Designed by	TJL

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
TMA (Unknown)	B	From Leg	0.00	2.00	0.0000	84.50	1" Ice	0.98	0.76	0.06
			0.00	0.00			No Ice	1.06	0.45	0.02
			0.00	0.00			1/2" Ice	1.21	0.57	0.03
3' Stand-off	B	From Leg	0.00	1.50	0.0000	83.50	1" Ice	1.37	0.71	0.03
			0.00	0.00			No Ice	1.00	2.00	0.05
			0.00	0.00			1/2" Ice	1.20	2.70	0.07
3' Stand-off	A	From Leg	0.00	1.50	0.0000	83.50	1" Ice	1.40	3.40	0.10
			0.00	0.00			No Ice	1.00	2.00	0.05
			0.00	0.00			1/2" Ice	1.20	2.70	0.07
TMA (Unknown)	A	From Leg	0.00	2.00	0.0000	80.00	1" Ice	1.40	3.40	0.10
			0.00	0.00			No Ice	1.06	0.45	0.02
			0.00	0.00			1/2" Ice	1.21	0.57	0.03
TMA (Unknown)	B	From Leg	0.00	2.00	0.0000	82.50	1" Ice	1.37	0.71	0.03
			0.00	0.00			No Ice	1.06	0.45	0.02
			0.00	0.00			1/2" Ice	1.21	0.57	0.03
3"x2"x22" Panel (Unknown)	B	From Leg	0.00	2.00	0.0000	80.00	1" Ice	1.37	0.71	0.03
			0.00	0.00			No Ice	0.65	0.47	0.05
			0.00	0.00			1/2" Ice	0.81	0.61	0.05
Camera	A	From Leg	0.00	0.00	0.0000	30.00	1" Ice	0.98	0.76	0.06
			0.00	0.00			No Ice	0.50	0.50	0.01
			0.00	0.00			1/2" Ice	0.60	0.60	0.02
PC9013N	A	From Leg	0.00	1.00	0.0000	24.00	1" Ice	0.70	0.70	0.03
			0.00	0.00			No Ice	0.46	0.46	0.00
			0.00	0.00			1/2" Ice	0.52	0.52	0.00
SU-RA-HP-2.4 Antenna (Municipal)	A	From Leg	0.00	7.00	0.0000	168.00	1" Ice	0.58	0.58	0.00
			0.00	0.00			No Ice	0.69	0.33	0.00
			0.00	0.00			1/2" Ice	0.79	0.41	0.01
PTP49600 (CPD)	C	From Leg	0.00	7.00	0.0000	168.00	1" Ice	0.91	0.50	0.02
			0.00	8.00			No Ice	2.04	0.53	0.01
			0.00	0.00			1/2" Ice	2.24	0.65	0.02
CFD Halo Camera Bracket (Camera)	A	From Leg	0.00	7.00	0.0000	170.00	1" Ice	2.44	0.78	0.04
			0.00	4.00			No Ice	0.72	0.24	0.00
			0.00	0.00			1/2" Ice	0.83	0.31	0.01
CFD Halo Mounted Camera (Camera)	A	From Leg	0.00	7.00	0.0000	170.00	1" Ice	0.95	0.38	0.02
			0.00	4.00			No Ice	0.32	0.32	0.02
			0.00	0.00			1/2" Ice	0.54	0.54	0.02
							1" Ice	0.66	0.66	0.03

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral	Vert							
			ft	ft	°	°	ft	ft	ft ²	K		
3' Dish	A	Paraboloid w/o Radome	From Leg	2.00	0.00	Worst		83.00	3.00	No Ice	7.07	0.23
				0.00	0.00					1/2" Ice	7.47	0.27
				0.00	0.00					1" Ice	7.86	0.31
VHLP2.5-180 (Clearwire)	A	Paraboloid w/o Radome	From Face	6.00	0.00	Worst		134.00	2.50	No Ice	4.90	0.07
				0.00	0.00					1/2" Ice	5.24	0.10
				0.00	0.00					1" Ice	5.58	0.12

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	Client	AT&T	Designed by	TJL

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
VHLP2.5-180 (Clearwire)	A	Paraboloid w/o Radome	From Face	6.00 -7.00 0.00	Worst		134.00	2.50	No Ice 1/2" Ice 1" Ice	4.90 5.24 5.58	0.07 0.10 0.12
VHLP2.5-180 (Clearwire)	B	Paraboloid w/o Radome	From Face	6.00 -7.00 0.00	Worst		134.00	2.50	No Ice 1/2" Ice 1" Ice	4.90 5.24 5.58	0.07 0.10 0.12
VHLP2-180 (Clearwire)	C	Paraboloid w/o Radome	From Face	6.00 0.00 0.00	Worst		134.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.67	0.03 0.04 0.06
HPD2-4.7 (Updated Elevation per NET Inc. Inventory)	C	Paraboloid w/Radome	From Face	9.00 0.00 0.00	Worst		135.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	0.03 0.04 0.06
4' Grid Dish (Unknown)	A	Grid	From Leg	6.00 -7.00 0.00	Worst		134.00	4.00	No Ice 1/2" Ice 1" Ice	12.57 13.10 13.62	0.06 0.11 0.17

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in ²
Pirod 105244	1026.8606	2979.3826	0.54	0.38	7.1310	20.6902	3.6816
Pirod 105216	2169.0308	5847.4851	0.45	0.69	7.5314	20.3038	3.6816
Pirod 105217	2296.2363	5903.9416	0.56	0.69	7.9730	20.4998	5.3014
Pirod 105217	2296.2363	5890.5132	0.56	0.68	7.9730	20.4532	5.3014
Pirod 105217 reinf w/ 1" dia bar	2291.5652	6237.7048	0.75	0.74	7.9568	21.6587	7.6570
Pirod 105218 reinf w/ 1" dia bar	2425.8928	6288.2175	0.90	0.74	8.4232	21.8341	9.9280
Pirod 105219	2597.9095	5977.9850	1.03	0.68	9.0205	20.7569	9.4248
Pirod 105219 reinf w /1" dia bar	2571.0468	6251.9699	1.06	0.68	8.9272	21.7082	11.7803
Pirod 105220 reinf w/ 1" dia bar	2697.7688	6212.3501	1.23	0.59	9.3673	21.5707	14.2843

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
170.00-150.00	160.00	1.397	55	102.917	A	0.000	12.868	5.833	45.33	44.737	0.000
					B	0.000	12.868			0.000	0.000
					C	0.000	12.868			0.000	0.000
150.00-140.00	145.00	1.369	54	66.055	A	4.893	11.905	11.905	70.87	23.782	0.000
					B	4.893	11.905			0.000	0.000
					C	4.893	11.905			0.000	0.000
T3	130.00	1.337	53	162.111	A	10.467	25.146	25.146	70.61	50.580	0.000

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	Client	AT&T	Designed by	TJL

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
140.00-120.00					B	10.467	25.146		70.61	25.503	0.000
					C	10.467	25.146		70.61	0.000	0.000
T4 120.00-100.00	110.00	1.291	51	202.528	A	13.964	26.621	26.621	65.59	68.700	0.000
					B	13.964	26.621		65.59	67.310	0.000
					C	13.964	26.621		65.59	6.588	0.000
T5 100.00-90.00	95.00	1.252	50	116.264	A	6.561	13.311	13.311	66.98	40.170	0.000
					B	6.561	13.311		66.98	33.655	0.000
					C	6.561	13.311		66.98	15.480	0.000
T6 90.00-80.00	85.00	1.223	49	126.517	A	8.119	13.283	13.283	62.07	40.170	0.000
					B	8.119	13.283		62.07	33.655	0.000
					C	8.119	13.283		62.07	18.880	0.000
T7 80.00-60.00	70.00	1.174	47	283.450	A	17.668	28.124	28.124	61.42	80.340	0.000
					B	17.668	28.124		61.42	67.310	0.000
					C	17.668	28.124		61.42	42.960	0.000
T8 60.00-40.00	50.00	1.094	43	323.362	A	19.635	30.118	30.118	60.54	80.340	0.000
					B	19.635	30.118		60.54	67.310	0.000
					C	19.635	30.118		60.54	42.960	0.000
T9 40.00-20.00	30.00	0.982	39	363.756	A	24.755	29.807	29.807	54.63	82.080	0.000
					B	24.755	29.807		54.63	67.310	0.000
					C	24.755	29.807		54.63	42.960	0.000
T10 20.00-0.00	10.00	0.85	34	404.134	A	33.906	31.276	31.276	47.98	54.483	0.000
					B	33.906	31.276		47.98	43.752	0.000
					C	33.906	31.276		47.98	27.924	0.000

Tower Pressure - With Ice

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 170.00-150.00	160.00	1.397	8	1.3467	107.406	A	0.000	43.497	14.811	34.05	158.046	0.000
						B	0.000	43.497		34.05	0.000	0.000
						C	0.000	43.497		34.05	0.000	0.000
T2 150.00-140.00	145.00	1.369	7	1.3335	68.281	A	4.893	39.583	34.541	77.66	82.886	0.000
						B	4.893	39.583		77.66	0.000	0.000
						C	4.893	39.583		77.66	0.000	0.000
T3 140.00-120.00	130.00	1.337	7	1.3190	166.513	A	10.467	76.996	67.792	77.51	182.237	0.000
						B	10.467	76.996		77.51	54.058	0.000
						C	10.467	76.996		77.51	0.000	0.000
T4 120.00-100.00	110.00	1.291	7	1.2971	206.857	A	13.964	80.522	68.446	72.44	228.078	0.000
						B	13.964	80.522		72.44	113.574	0.000
						C	13.964	80.522		72.44	27.648	0.000
T5 100.00-90.00	95.00	1.252	7	1.2783	118.397	A	6.561	39.737	34.145	73.75	130.670	0.000
						B	6.561	39.737		73.75	56.563	0.000
						C	6.561	39.737		73.75	47.183	0.000
T6 90.00-80.00	85.00	1.223	7	1.2641	128.626	A	8.119	42.022	36.158	72.11	130.036	0.000
						B	8.119	42.022		72.11	56.395	0.000
						C	8.119	42.022		72.11	56.346	0.000
T7 80.00-60.00	70.00	1.174	6	1.2398	287.588	A	17.668	85.419	72.901	70.72	257.894	0.000
						B	17.668	85.419		70.72	112.212	0.000
						C	17.668	85.419		70.72	129.225	0.000
T8 60.00-40.00	50.00	1.094	6	1.1988	327.363	A	19.635	82.755	69.305	67.69	254.221	0.000
						B	19.635	82.755		67.69	111.239	0.000
						C	19.635	82.755		67.69	127.862	0.000

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T9 40.00-20.00	30.00	0.982	5	1.1391	367.558	A	24.755	86.580	72.481	65.10	256.273	0.000
						B	24.755	86.580		65.10	109.824	0.000
						C	24.755	86.580		65.10	125.881	0.000
T10 20.00-0.00	10.00	0.85	5	1.0206	407.540	A	33.906	85.864	72.022	60.13	163.981	0.000
						B	33.906	85.864		60.13	69.566	0.000
						C	33.906	85.864		60.13	79.275	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 170.00-150.00	160.00	1.397	11	102.917	A	0.000	12.868	5.833	45.33	44.737	0.000
					B	0.000	12.868		45.33	0.000	0.000
					C	0.000	12.868		45.33	0.000	0.000
T2 150.00-140.00	145.00	1.369	11	66.055	A	4.893	11.905	11.905	70.87	23.782	0.000
					B	4.893	11.905		70.87	0.000	0.000
					C	4.893	11.905		70.87	0.000	0.000
T3 140.00-120.00	130.00	1.337	10	162.111	A	10.467	25.146	25.146	70.61	50.580	0.000
					B	10.467	25.146		70.61	25.503	0.000
					C	10.467	25.146		70.61	0.000	0.000
T4 120.00-100.00	110.00	1.291	10	202.528	A	13.964	26.621	26.621	65.59	68.700	0.000
					B	13.964	26.621		65.59	67.310	0.000
					C	13.964	26.621		65.59	6.588	0.000
T5 100.00-90.00	95.00	1.252	10	116.264	A	6.561	13.311	13.311	66.98	40.170	0.000
					B	6.561	13.311		66.98	33.655	0.000
					C	6.561	13.311		66.98	15.480	0.000
T6 90.00-80.00	85.00	1.223	10	126.517	A	8.119	13.283	13.283	62.07	40.170	0.000
					B	8.119	13.283		62.07	33.655	0.000
					C	8.119	13.283		62.07	18.880	0.000
T7 80.00-60.00	70.00	1.174	9	283.450	A	17.668	28.124	28.124	61.42	80.340	0.000
					B	17.668	28.124		61.42	67.310	0.000
					C	17.668	28.124		61.42	42.960	0.000
T8 60.00-40.00	50.00	1.094	9	323.362	A	19.635	30.118	30.118	60.54	80.340	0.000
					B	19.635	30.118		60.54	67.310	0.000
					C	19.635	30.118		60.54	42.960	0.000
T9 40.00-20.00	30.00	0.982	8	363.756	A	24.755	29.807	29.807	54.63	82.080	0.000
					B	24.755	29.807		54.63	67.310	0.000
					C	24.755	29.807		54.63	42.960	0.000
T10 20.00-0.00	10.00	0.85	7	404.134	A	33.906	31.276	31.276	47.98	54.483	0.000
					B	33.906	31.276		47.98	43.752	0.000
					C	33.906	31.276		47.98	27.924	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	55	1	1	7.276	2.25	112.32	C
			B	0.125	2.866		1	1	7.276			
			C	0.125	2.866		1	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	54	1	1	11.870	1.99	198.61	C
			B	0.254	2.425		1	1	11.870			
			C	0.254	2.425		1	1	11.870			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	53	1	1	25.007	4.91	245.62	C
			B	0.22	2.532		1	1	25.007			
			C	0.22	2.532		1	1	25.007			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	51	1	1	29.259	7.03	351.44	C
			B	0.2	2.595		1	1	29.259			
			C	0.2	2.595		1	1	29.259			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	50	1	1	14.148	3.87	387.13	C
			B	0.171	2.696		1	1	14.148			
			C	0.171	2.696		1	1	14.148			
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	49	1	1	15.687	4.04	404.08	C
			B	0.169	2.702		1	1	15.687			
			C	0.169	2.702		1	1	15.687			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	47	1	1	33.666	8.16	408.14	C
			B	0.162	2.729		1	1	33.666			
			C	0.162	2.729		1	1	33.666			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	43	1	1	36.740	7.95	397.59	C
			B	0.154	2.757		1	1	36.740			
			C	0.154	2.757		1	1	36.740			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	39	1	1	41.672	7.65	382.27	C
			B	0.15	2.772		1	1	41.672			
			C	0.15	2.772		1	1	41.672			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	34	1	1	51.696	6.21	310.66	C
			B	0.161	2.73		1	1	51.696			
			C	0.161	2.73		1	1	51.696			
Sum Weight:	5.96	30.16						OTM	4030.88 kip-ft	54.06		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	55	0.825	1	7.276	2.25	112.32	C
			B	0.125	2.866		0.825	1	7.276			
			C	0.125	2.866		0.825	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	54	0.825	1	11.014	1.89	189.03	C
			B	0.254	2.425		0.825	1	11.014			
			C	0.254	2.425		0.825	1	11.014			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	53	0.825	1	23.175	4.70	235.16	C
			B	0.22	2.532		0.825	1	23.175			
			C	0.22	2.532		0.825	1	23.175			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	51	0.825	1	26.816	6.75	337.64	C
			B	0.2	2.595		0.825	1	26.816			
			C	0.2	2.595		0.825	1	26.816			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	50	0.825	1	13.000	3.74	374.06	C
			B	0.171	2.696		0.825	1	13.000			
			C	0.171	2.696		0.825	1	13.000			

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	49	0.825	1	14.266	3.88	388.26	C
			B	0.169	2.702		0.825	1	14.266			
			C	0.169	2.702		0.825	1	14.266			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	47	0.825	1	30.574	7.83	391.44	C
			B	0.162	2.729		0.825	1	30.574			
			C	0.162	2.729		0.825	1	30.574			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	43	0.825	1	33.304	7.60	380.13	C
			B	0.154	2.757		0.825	1	33.304			
			C	0.154	2.757		0.825	1	33.304			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	39	0.825	1	37.340	7.25	362.39	C
			B	0.15	2.772		0.825	1	37.340			
			C	0.15	2.772		0.825	1	37.340			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	34	0.825	1	45.762	5.75	287.45	C
			B	0.161	2.73		0.825	1	45.762			
			C	0.161	2.73		0.825	1	45.762			
Sum Weight:	5.96	30.16						OTM	3876.17 kip-ft	51.64		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	55	0.8	1	7.276	2.25	112.32	C
			B	0.125	2.866		0.8	1	7.276			
			C	0.125	2.866		0.8	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	54	0.8	1	10.891	1.88	187.66	C
			B	0.254	2.425		0.8	1	10.891			
			C	0.254	2.425		0.8	1	10.891			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	53	0.8	1	22.913	4.67	233.67	C
			B	0.22	2.532		0.8	1	22.913			
			C	0.22	2.532		0.8	1	22.913			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	51	0.8	1	26.467	6.71	335.66	C
			B	0.2	2.595		0.8	1	26.467			
			C	0.2	2.595		0.8	1	26.467			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	50	0.8	1	12.836	3.72	372.19	C
			B	0.171	2.696		0.8	1	12.836			
			C	0.171	2.696		0.8	1	12.836			
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	49	0.8	1	14.063	3.86	385.99	C
			B	0.169	2.702		0.8	1	14.063			
			C	0.169	2.702		0.8	1	14.063			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	47	0.8	1	30.132	7.78	389.06	C
			B	0.162	2.729		0.8	1	30.132			
			C	0.162	2.729		0.8	1	30.132			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	43	0.8	1	32.813	7.55	377.63	C
			B	0.154	2.757		0.8	1	32.813			
			C	0.154	2.757		0.8	1	32.813			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	39	0.8	1	36.721	7.19	359.55	C
			B	0.15	2.772		0.8	1	36.721			
			C	0.15	2.772		0.8	1	36.721			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	34	0.8	1	44.915	5.68	284.13	C
			B	0.161	2.73		0.8	1	44.915			
			C	0.161	2.73		0.8	1	44.915			

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	Client AT&T	Designed by TJL

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
Sum Weight:	5.96	30.16						OTM	3854.07 kip-ft	51.30		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	55	0.85	1	7.276	2.25	112.32	C
			B	0.125	2.866		0.85	1	7.276			
			C	0.125	2.866		0.85	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	54	0.85	1	11.136	1.90	190.40	C
			B	0.254	2.425		0.85	1	11.136			
			C	0.254	2.425		0.85	1	11.136			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	53	0.85	1	23.437	4.73	236.66	C
			B	0.22	2.532		0.85	1	23.437			
			C	0.22	2.532		0.85	1	23.437			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	51	0.85	1	27.165	6.79	339.61	C
			B	0.2	2.595		0.85	1	27.165			
			C	0.2	2.595		0.85	1	27.165			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	50	0.85	1	13.164	3.76	375.93	C
			B	0.171	2.696		0.85	1	13.164			
			C	0.171	2.696		0.85	1	13.164			
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	49	0.85	1	14.469	3.91	390.52	C
			B	0.169	2.702		0.85	1	14.469			
			C	0.169	2.702		0.85	1	14.469			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	47	0.85	1	31.015	7.88	393.83	C
			B	0.162	2.729		0.85	1	31.015			
			C	0.162	2.729		0.85	1	31.015			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	43	0.85	1	33.795	7.65	382.62	C
			B	0.154	2.757		0.85	1	33.795			
			C	0.154	2.757		0.85	1	33.795			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	39	0.85	1	37.959	7.30	365.23	C
			B	0.15	2.772		0.85	1	37.959			
			C	0.15	2.772		0.85	1	37.959			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	34	0.85	1	46.610	5.82	290.76	C
			B	0.161	2.73		0.85	1	46.610			
			C	0.161	2.73		0.85	1	46.610			
Sum Weight:	5.96	30.16						OTM	3898.27 kip-ft	51.99		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1	1.69	2.50	A	0.405	2.054	8	1	1	27.769	0.98	48.81	C

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
170.00-150.00			B	0.405	2.054		1	1	27.769			
			C	0.405	2.054		1	1	27.769			
T2	0.89	2.32	A	0.651	1.781	7	1	1	35.664	0.58	58.49	C
150.00-140.00			B	0.651	1.781		1	1	35.664			
			C	0.651	1.781		1	1	35.664			
T3	2.74	5.46	A	0.525	1.869	7	1	1	64.284	1.44	71.85	C
140.00-120.00			B	0.525	1.869		1	1	64.284			
			C	0.525	1.869		1	1	64.284			
T4	4.93	6.31	A	0.457	1.963	7	1	1	67.319	1.99	99.33	C
120.00-100.00			B	0.457	1.963		1	1	67.319			
			C	0.457	1.963		1	1	67.319			
T5	3.05	3.13	A	0.391	2.082	7	1	1	31.691	1.20	119.63	C
100.00-90.00			B	0.391	2.082		1	1	31.691			
			C	0.391	2.082		1	1	31.691			
T6	3.12	3.77	A	0.39	2.085	7	1	1	34.672	1.23	123.25	C
90.00-80.00			B	0.39	2.085		1	1	34.672			
			C	0.39	2.085		1	1	34.672			
T7	6.31	8.17	A	0.358	2.152	6	1	1	70.565	2.45	122.55	C
80.00-60.00			B	0.358	2.152		1	1	70.565			
			C	0.358	2.152		1	1	70.565			
T8	6.15	8.65	A	0.313	2.263	6	1	1	69.536	2.29	114.64	C
60.00-40.00			B	0.313	2.263		1	1	69.536			
			C	0.313	2.263		1	1	69.536			
T9	5.99	9.39	A	0.303	2.288	5	1	1	76.689	2.14	106.89	C
40.00-20.00			B	0.303	2.288		1	1	76.689			
			C	0.303	2.288		1	1	76.689			
T10	3.64	10.73	A	0.294	2.312	5	1	1	85.171	1.51	75.59	C
20.00-0.00			B	0.294	2.312		1	1	85.171			
			C	0.294	2.312		1	1	85.171			
Sum Weight:	38.51	60.43						OTM	1230.19 kip-ft	15.81		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1	1.69	2.50	A	0.405	2.054	8	0.825	1	27.769	0.98	48.81	C
170.00-150.00			B	0.405	2.054		0.825	1	27.769			
			C	0.405	2.054		0.825	1	27.769			
T2	0.89	2.32	A	0.651	1.781	7	0.825	1	34.807	0.58	57.52	C
150.00-140.00			B	0.651	1.781		0.825	1	34.807			
			C	0.651	1.781		0.825	1	34.807			
T3	2.74	5.46	A	0.525	1.869	7	0.825	1	62.452	1.42	70.79	C
140.00-120.00			B	0.525	1.869		0.825	1	62.452			
			C	0.525	1.869		0.825	1	62.452			
T4	4.93	6.31	A	0.457	1.963	7	0.825	1	64.875	1.96	97.90	C
120.00-100.00			B	0.457	1.963		0.825	1	64.875			
			C	0.457	1.963		0.825	1	64.875			
T5	3.05	3.13	A	0.391	2.082	7	0.825	1	30.543	1.18	118.24	C
100.00-90.00			B	0.391	2.082		0.825	1	30.543			
			C	0.391	2.082		0.825	1	30.543			
T6	3.12	3.77	A	0.39	2.085	7	0.825	1	33.251	1.22	121.58	C

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
90.00-80.00			B	0.39	2.085		0.825	1	33.251			
			C	0.39	2.085		0.825	1	33.251			
T7	6.31	8.17	A	0.358	2.152	6	0.825	1	67.473	2.41	120.74	C
80.00-60.00			B	0.358	2.152		0.825	1	67.473			
			C	0.358	2.152		0.825	1	67.473			
T8	6.15	8.65	A	0.313	2.263	6	0.825	1	66.100	2.25	112.67	C
60.00-40.00			B	0.313	2.263		0.825	1	66.100			
			C	0.313	2.263		0.825	1	66.100			
T9	5.99	9.39	A	0.303	2.288	5	0.825	1	72.356	2.09	104.64	C
40.00-20.00			B	0.303	2.288		0.825	1	72.356			
			C	0.303	2.288		0.825	1	72.356			
T10	3.64	10.73	A	0.294	2.312	5	0.825	1	79.237	1.46	72.89	C
20.00-0.00			B	0.294	2.312		0.825	1	79.237			
			C	0.294	2.312		0.825	1	79.237			
Sum Weight:	38.51	60.43						OTM	1213.76 kip-ft	15.54		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1	1.69	2.50	A	0.405	2.054	8	0.8	1	27.769	0.98	48.81	C
170.00-150.00			B	0.405	2.054		0.8	1	27.769			
			C	0.405	2.054		0.8	1	27.769			
T2	0.89	2.32	A	0.651	1.781	7	0.8	1	34.685	0.57	57.38	C
150.00-140.00			B	0.651	1.781		0.8	1	34.685			
			C	0.651	1.781		0.8	1	34.685			
T3	2.74	5.46	A	0.525	1.869	7	0.8	1	62.190	1.41	70.64	C
140.00-120.00			B	0.525	1.869		0.8	1	62.190			
			C	0.525	1.869		0.8	1	62.190			
T4	4.93	6.31	A	0.457	1.963	7	0.8	1	64.526	1.95	97.70	C
120.00-100.00			B	0.457	1.963		0.8	1	64.526			
			C	0.457	1.963		0.8	1	64.526			
T5	3.05	3.13	A	0.391	2.082	7	0.8	1	30.379	1.18	118.04	C
100.00-90.00			B	0.391	2.082		0.8	1	30.379			
			C	0.391	2.082		0.8	1	30.379			
T6	3.12	3.77	A	0.39	2.085	7	0.8	1	33.048	1.21	121.34	C
90.00-80.00			B	0.39	2.085		0.8	1	33.048			
			C	0.39	2.085		0.8	1	33.048			
T7	6.31	8.17	A	0.358	2.152	6	0.8	1	67.031	2.41	120.48	C
80.00-60.00			B	0.358	2.152		0.8	1	67.031			
			C	0.358	2.152		0.8	1	67.031			
T8	6.15	8.65	A	0.313	2.263	6	0.8	1	65.609	2.25	112.39	C
60.00-40.00			B	0.313	2.263		0.8	1	65.609			
			C	0.313	2.263		0.8	1	65.609			
T9	5.99	9.39	A	0.303	2.288	5	0.8	1	71.738	2.09	104.32	C
40.00-20.00			B	0.303	2.288		0.8	1	71.738			
			C	0.303	2.288		0.8	1	71.738			
T10	3.64	10.73	A	0.294	2.312	5	0.8	1	78.389	1.45	72.51	C
20.00-0.00			B	0.294	2.312		0.8	1	78.389			
			C	0.294	2.312		0.8	1	78.389			
Sum Weight:	38.51	60.43						OTM	1211.42	15.50		

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJJ

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
									kip-ft			

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1	1.69	2.50	A	0.405	2.054	8	0.85	1	27.769	0.98	48.81	C
170.00-150.00			B	0.405	2.054		0.85	1	27.769			
			C	0.405	2.054		0.85	1	27.769			
T2	0.89	2.32	A	0.651	1.781	7	0.85	1	34.930	0.58	57.66	C
150.00-140.00			B	0.651	1.781		0.85	1	34.930			
			C	0.651	1.781		0.85	1	34.930			
T3	2.74	5.46	A	0.525	1.869	7	0.85	1	62.714	1.42	70.94	C
140.00-120.00			B	0.525	1.869		0.85	1	62.714			
			C	0.525	1.869		0.85	1	62.714			
T4	4.93	6.31	A	0.457	1.963	7	0.85	1	65.225	1.96	98.11	C
120.00-100.00			B	0.457	1.963		0.85	1	65.225			
			C	0.457	1.963		0.85	1	65.225			
T5	3.05	3.13	A	0.391	2.082	7	0.85	1	30.707	1.18	118.44	C
100.00-90.00			B	0.391	2.082		0.85	1	30.707			
			C	0.391	2.082		0.85	1	30.707			
T6	3.12	3.77	A	0.39	2.085	7	0.85	1	33.454	1.22	121.82	C
90.00-80.00			B	0.39	2.085		0.85	1	33.454			
			C	0.39	2.085		0.85	1	33.454			
T7	6.31	8.17	A	0.358	2.152	6	0.85	1	67.915	2.42	121.00	C
80.00-60.00			B	0.358	2.152		0.85	1	67.915			
			C	0.358	2.152		0.85	1	67.915			
T8	6.15	8.65	A	0.313	2.263	6	0.85	1	66.591	2.26	112.95	C
60.00-40.00			B	0.313	2.263		0.85	1	66.591			
			C	0.313	2.263		0.85	1	66.591			
T9	5.99	9.39	A	0.303	2.288	5	0.85	1	72.975	2.10	104.96	C
40.00-20.00			B	0.303	2.288		0.85	1	72.975			
			C	0.303	2.288		0.85	1	72.975			
T10	3.64	10.73	A	0.294	2.312	5	0.85	1	80.085	1.47	73.28	C
20.00-0.00			B	0.294	2.312		0.85	1	80.085			
			C	0.294	2.312		0.85	1	80.085			
Sum Weight:	38.51	60.43						OTM	1216.11	15.58		
									kip-ft			

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1	0.24	1.10	A	0.125	2.866	11	1	1	7.276	0.44	22.19	C
170.00-150.00			B	0.125	2.866		1	1	7.276			

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	Project 170' Lattice Tower Cromwell, CT	Date 10:05:41 04/11/22
	Client AT&T	Designed by TJL

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T2 150.00-140.00	0.12	1.07	C	0.125	2.866	11	1	1	7.276	0.39	39.23	C
			A	0.254	2.425				11.870			
			B	0.254	2.425				11.870			
T3 140.00-120.00	0.37	2.07	C	0.254	2.425	10	1	1	11.870	0.97	48.52	C
			A	0.22	2.532				25.007			
			B	0.22	2.532				25.007			
T4 120.00-100.00	0.73	2.57	C	0.22	2.532	10	1	1	25.007	1.39	69.42	C
			A	0.2	2.595				29.259			
			B	0.2	2.595				29.259			
T5 100.00-90.00	0.47	1.37	C	0.2	2.595	10	1	1	29.259	0.76	76.47	C
			A	0.171	2.696				14.148			
			B	0.171	2.696				14.148			
T6 90.00-80.00	0.48	1.77	C	0.171	2.696	10	1	1	14.148	0.80	79.82	C
			A	0.169	2.702				15.687			
			B	0.169	2.702				15.687			
T7 80.00-60.00	0.97	4.11	C	0.169	2.702	9	1	1	15.687	1.61	80.62	C
			A	0.162	2.729				33.666			
			B	0.162	2.729				33.666			
T8 60.00-40.00	0.97	4.65	C	0.162	2.729	9	1	1	33.666	1.57	78.54	C
			A	0.154	2.757				36.740			
			B	0.154	2.757				36.740			
T9 40.00-20.00	0.98	5.11	C	0.154	2.757	8	1	1	36.740	1.51	75.51	C
			A	0.15	2.772				41.672			
			B	0.15	2.772				41.672			
T10 20.00-0.00	0.64	6.34	C	0.15	2.772	7	1	1	41.672	1.23	61.36	C
			A	0.161	2.73				51.696			
			B	0.161	2.73				51.696			
Sum Weight:	5.96	30.16	C	0.161	2.73				51.696	10.68		
								OTM	796.22 kip-ft			

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	11	0.825	1	7.276	0.44	22.19	C
			B	0.125	2.866				7.276			
			C	0.125	2.866				7.276			
T2 150.00-140.00	0.12	1.07	A	0.125	2.866	11	0.825	1	7.276	0.37	37.34	C
			B	0.254	2.425				11.014			
			C	0.254	2.425				11.014			
T3 140.00-120.00	0.37	2.07	A	0.254	2.425	10	0.825	1	11.014	0.93	46.45	C
			B	0.22	2.532				23.175			
			C	0.22	2.532				23.175			
T4 120.00-100.00	0.73	2.57	A	0.22	2.532	10	0.825	1	23.175	1.33	66.69	C
			B	0.2	2.595				26.816			
			C	0.2	2.595				26.816			
T5 100.00-90.00	0.47	1.37	A	0.2	2.595	10	0.825	1	26.816	0.74	73.89	C
			B	0.171	2.696				13.000			
			C	0.171	2.696				13.000			
T6 90.00-80.00	0.48	1.77	A	0.171	2.696	10	0.825	1	13.000	0.77	76.69	C
			B	0.169	2.702				14.266			
			B	0.169	2.702				14.266			

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T7 80.00-60.00	0.97	4.11	C	0.169	2.702		0.825	1	14.266			
			A	0.162	2.729	9	0.825	1	30.574	1.55	77.32	C
			B	0.162	2.729		0.825	1	30.574			
T8 60.00-40.00	0.97	4.65	C	0.162	2.729		0.825	1	30.574			
			A	0.154	2.757	9	0.825	1	33.304	1.50	75.09	C
			B	0.154	2.757		0.825	1	33.304			
			C	0.154	2.757		0.825	1	33.304			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	8	0.825	1	37.340	1.43	71.58	C
			B	0.15	2.772		0.825	1	37.340			
			C	0.15	2.772		0.825	1	37.340			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	7	0.825	1	45.762	1.14	56.78	C
			B	0.161	2.73		0.825	1	45.762			
			C	0.161	2.73		0.825	1	45.762			
Sum Weight:	5.96	30.16						OTM	765.66 kip-ft	10.20		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	11	0.8	1	7.276	0.44	22.19	C
			B	0.125	2.866		0.8	1	7.276			
			C	0.125	2.866		0.8	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	11	0.8	1	10.891	0.37	37.07	C
			B	0.254	2.425		0.8	1	10.891			
			C	0.254	2.425		0.8	1	10.891			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	10	0.8	1	22.913	0.92	46.16	C
			B	0.22	2.532		0.8	1	22.913			
			C	0.22	2.532		0.8	1	22.913			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	10	0.8	1	26.467	1.33	66.30	C
			B	0.2	2.595		0.8	1	26.467			
			C	0.2	2.595		0.8	1	26.467			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	10	0.8	1	12.836	0.74	73.52	C
			B	0.171	2.696		0.8	1	12.836			
			C	0.171	2.696		0.8	1	12.836			
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	10	0.8	1	14.063	0.76	76.25	C
			B	0.169	2.702		0.8	1	14.063			
			C	0.169	2.702		0.8	1	14.063			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	9	0.8	1	30.132	1.54	76.85	C
			B	0.162	2.729		0.8	1	30.132			
			C	0.162	2.729		0.8	1	30.132			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	9	0.8	1	32.813	1.49	74.59	C
			B	0.154	2.757		0.8	1	32.813			
			C	0.154	2.757		0.8	1	32.813			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	8	0.8	1	36.721	1.42	71.02	C
			B	0.15	2.772		0.8	1	36.721			
			C	0.15	2.772		0.8	1	36.721			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	7	0.8	1	44.915	1.12	56.12	C
			B	0.161	2.73		0.8	1	44.915			
			C	0.161	2.73		0.8	1	44.915			
Sum Weight:	5.96	30.16						OTM	761.30 kip-ft	10.13		

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Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 170.00-150.00	0.24	1.10	A	0.125	2.866	11	0.85	1	7.276	0.44	22.19	C
			B	0.125	2.866		0.85	1	7.276			
			C	0.125	2.866		0.85	1	7.276			
T2 150.00-140.00	0.12	1.07	A	0.254	2.425	11	0.85	1	11.136	0.38	37.61	C
			B	0.254	2.425		0.85	1	11.136			
			C	0.254	2.425		0.85	1	11.136			
T3 140.00-120.00	0.37	2.07	A	0.22	2.532	10	0.85	1	23.437	0.93	46.75	C
			B	0.22	2.532		0.85	1	23.437			
			C	0.22	2.532		0.85	1	23.437			
T4 120.00-100.00	0.73	2.57	A	0.2	2.595	10	0.85	1	27.165	1.34	67.08	C
			B	0.2	2.595		0.85	1	27.165			
			C	0.2	2.595		0.85	1	27.165			
T5 100.00-90.00	0.47	1.37	A	0.171	2.696	10	0.85	1	13.164	0.74	74.26	C
			B	0.171	2.696		0.85	1	13.164			
			C	0.171	2.696		0.85	1	13.164			
T6 90.00-80.00	0.48	1.77	A	0.169	2.702	10	0.85	1	14.469	0.77	77.14	C
			B	0.169	2.702		0.85	1	14.469			
			C	0.169	2.702		0.85	1	14.469			
T7 80.00-60.00	0.97	4.11	A	0.162	2.729	9	0.85	1	31.015	1.56	77.79	C
			B	0.162	2.729		0.85	1	31.015			
			C	0.162	2.729		0.85	1	31.015			
T8 60.00-40.00	0.97	4.65	A	0.154	2.757	9	0.85	1	33.795	1.51	75.58	C
			B	0.154	2.757		0.85	1	33.795			
			C	0.154	2.757		0.85	1	33.795			
T9 40.00-20.00	0.98	5.11	A	0.15	2.772	8	0.85	1	37.959	1.44	72.14	C
			B	0.15	2.772		0.85	1	37.959			
			C	0.15	2.772		0.85	1	37.959			
T10 20.00-0.00	0.64	6.34	A	0.161	2.73	7	0.85	1	46.610	1.15	57.43	C
			B	0.161	2.73		0.85	1	46.610			
			C	0.161	2.73		0.85	1	46.610			
Sum Weight:	5.96	30.16						OTM	770.03 kip-ft	10.27		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	18.97					
Bracing Weight	11.19					
Total Member Self-Weight	30.16					
Total Weight	52.68			-5.95	0.53	
Wind 0 deg - No Ice		0.04	-80.56	-7526.50	-5.48	-5.50
Wind 30 deg - No Ice		39.30	-68.00	-6407.10	-3700.45	-16.75
Wind 45 deg - No Ice		55.32	-55.29	-5218.63	-5214.70	-20.84

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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Wind 60 deg - No Ice		67.44	-38.93	-3683.02	-6365.46	-23.51
Wind 90 deg - No Ice		78.54	-0.04	-11.95	-7391.02	-23.97
Wind 120 deg - No Ice		69.79	40.25	3749.13	-6512.58	-18.00
Wind 135 deg - No Ice		56.24	56.21	5260.75	-5268.73	-13.05
Wind 150 deg - No Ice		39.24	67.96	6389.20	-3690.05	-7.22
Wind 180 deg - No Ice		-0.04	77.80	7337.79	6.53	5.50
Wind 210 deg - No Ice		-39.30	68.00	6395.20	3701.50	16.75
Wind 225 deg - No Ice		-55.32	55.29	5206.73	5215.76	20.84
Wind 240 deg - No Ice		-69.83	40.31	3759.52	6519.64	23.51
Wind 270 deg - No Ice		-78.54	0.04	0.05	7392.07	23.97
Wind 300 deg - No Ice		-67.40	-38.87	-3672.62	6360.51	18.00
Wind 315 deg - No Ice		-55.26	-55.23	-5210.14	5207.27	13.05
Wind 330 deg - No Ice		-39.24	-67.96	-6401.10	3691.10	7.22
Member Ice	30.27					
Total Weight Ice	134.27			-19.20	3.51	
Wind 0 deg - Ice		0.01	-21.50	-2005.98	2.37	-9.81
Wind 30 deg - Ice		10.65	-18.43	-1728.17	-984.20	-15.17
Wind 45 deg - Ice		15.03	-15.02	-1413.25	-1391.07	-16.38
Wind 60 deg - Ice		18.37	-10.61	-1004.19	-1702.04	-16.47
Wind 90 deg - Ice		21.28	-0.01	-20.34	-1969.93	-13.36
Wind 120 deg - Ice		18.62	10.74	973.21	-1717.16	-6.66
Wind 135 deg - Ice		15.12	15.12	1379.88	-1396.09	-2.51
Wind 150 deg - Ice		10.63	18.42	1688.64	-982.22	1.82
Wind 180 deg - Ice		-0.01	21.20	1948.81	4.64	9.81
Wind 210 deg - Ice		-10.65	18.43	1689.78	991.21	15.17
Wind 225 deg - Ice		-15.03	15.02	1374.86	1398.08	16.38
Wind 240 deg - Ice		-18.63	10.76	975.18	1725.31	16.47
Wind 270 deg - Ice		-21.28	0.01	-18.06	1976.94	13.36
Wind 300 deg - Ice		-18.36	-10.59	-1002.22	1707.91	6.66
Wind 315 deg - Ice		-15.02	-15.01	-1411.64	1396.47	2.51
Wind 330 deg - Ice		-10.63	-18.42	-1727.04	989.24	-1.82
Total Weight	52.68			-5.95	0.53	
Wind 0 deg - Service		0.01	-15.92	-1495.09	-0.78	-1.07
Wind 30 deg - Service		7.77	-13.44	-1273.84	-731.14	-3.32
Wind 45 deg - Service		10.93	-10.92	-1038.93	-1030.46	-4.14
Wind 60 deg - Service		13.33	-7.69	-735.40	-1257.92	-4.68
Wind 90 deg - Service		15.52	-0.01	-9.76	-1460.63	-4.79
Wind 120 deg - Service		13.79	7.95	733.66	-1286.98	-3.61
Wind 135 deg - Service		11.11	11.11	1032.45	-1041.13	-2.63
Wind 150 deg - Service		7.75	13.43	1255.51	-729.09	-1.47
Wind 180 deg - Service		-0.01	15.37	1443.02	1.59	1.07
Wind 210 deg - Service		-7.77	13.44	1256.70	731.95	3.32
Wind 225 deg - Service		-10.93	10.92	1021.78	1031.26	4.14
Wind 240 deg - Service		-13.80	7.97	735.71	1288.97	4.68
Wind 270 deg - Service		-15.52	0.01	-7.39	1461.44	4.79
Wind 300 deg - Service		-13.32	-7.68	-733.34	1257.54	3.61
Wind 315 deg - Service		-10.92	-10.91	-1037.25	1029.58	2.63
Wind 330 deg - Service		-7.75	-13.43	-1272.66	729.89	1.47

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice

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Comb. No.	Description
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 45 deg - No Ice
7	0.9 Dead+1.0 Wind 45 deg - No Ice
8	1.2 Dead+1.0 Wind 60 deg - No Ice
9	0.9 Dead+1.0 Wind 60 deg - No Ice
10	1.2 Dead+1.0 Wind 90 deg - No Ice
11	0.9 Dead+1.0 Wind 90 deg - No Ice
12	1.2 Dead+1.0 Wind 120 deg - No Ice
13	0.9 Dead+1.0 Wind 120 deg - No Ice
14	1.2 Dead+1.0 Wind 135 deg - No Ice
15	0.9 Dead+1.0 Wind 135 deg - No Ice
16	1.2 Dead+1.0 Wind 150 deg - No Ice
17	0.9 Dead+1.0 Wind 150 deg - No Ice
18	1.2 Dead+1.0 Wind 180 deg - No Ice
19	0.9 Dead+1.0 Wind 180 deg - No Ice
20	1.2 Dead+1.0 Wind 210 deg - No Ice
21	0.9 Dead+1.0 Wind 210 deg - No Ice
22	1.2 Dead+1.0 Wind 225 deg - No Ice
23	0.9 Dead+1.0 Wind 225 deg - No Ice
24	1.2 Dead+1.0 Wind 240 deg - No Ice
25	0.9 Dead+1.0 Wind 240 deg - No Ice
26	1.2 Dead+1.0 Wind 270 deg - No Ice
27	0.9 Dead+1.0 Wind 270 deg - No Ice
28	1.2 Dead+1.0 Wind 300 deg - No Ice
29	0.9 Dead+1.0 Wind 300 deg - No Ice
30	1.2 Dead+1.0 Wind 315 deg - No Ice
31	0.9 Dead+1.0 Wind 315 deg - No Ice
32	1.2 Dead+1.0 Wind 330 deg - No Ice
33	0.9 Dead+1.0 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service

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Comb. No.	Description
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft		
T1	170 - 150	Leg	Max Tension	9	39.73	-0.06	0.06		
			Max. Compression	2	-44.76	0.03	0.51		
			Max. Mx	24	-43.17	0.39	-0.34		
			Max. My	2	-44.76	0.03	0.51		
			Max. Vy	24	-3.83	0.39	-0.34		
			Max. Vx	2	-4.97	0.03	0.51		
		Diagonal	Max Tension	30	4.92	0.00	0.00		
			Max. Compression	14	-4.97	0.00	0.00		
			Max. Mx	35	0.93	-0.01	0.00		
			Max. My	28	-4.60	-0.00	0.00		
			Max. Vy	35	0.01	-0.01	0.00		
			Max. Vx	28	0.00	0.00	0.00		
		Top Girt	Max Tension	13	0.43	0.00	0.00		
			Max. Compression	18	-0.47	0.00	0.00		
			Max. Mx	43	-0.11	0.02	0.00		
			Max. My	10	0.03	0.00	-0.00		
			Max. Vy	43	-0.02	0.00	0.00		
			Max. Vx	10	0.00	0.00	0.00		
		Bottom Girt	Max Tension	8	0.23	0.00	0.00		
			Max. Compression	2	-0.23	0.00	0.00		
			Max. Mx	34	-0.02	0.02	0.00		
			Max. My	10	-0.01	0.00	-0.00		
			Max. Vy	34	-0.02	0.00	0.00		
			Max. Vx	10	0.00	0.00	0.00		
T2	150 - 140	Leg	Max Tension	9	43.88	-0.49	0.10		
			Max. Compression	2	-49.38	3.79	0.23		
			Max. Mx	8	43.50	-4.15	1.07		
			Max. My	10	-4.45	-0.17	6.19		
			Max. Vy	18	0.64	-4.09	-0.21		
			Max. Vx	10	-1.17	-0.17	6.19		
		Diagonal	Max Tension	29	7.07	0.05	-0.01		
			Max. Compression	12	-7.66	0.00	0.00		
			Max. Mx	8	2.48	0.05	0.01		
			Max. My	12	-7.64	-0.03	0.05		
			Max. Vy	38	0.02	0.03	0.01		
			Max. Vx	12	-0.01	0.00	0.00		
		Top Girt	Max Tension	8	0.61	0.00	0.00		
			Max. Compression	3	-0.56	0.00	0.00		
			Max. Mx	34	0.04	-0.04	0.00		
			Max. My	39	0.04	0.00	0.00		
			Max. Vy	34	0.03	0.00	0.00		
			Max. Vx	39	0.00	0.00	0.00		
		T3	140 - 120	Leg	Max Tension	9	78.29	-4.87	0.60
					Max. Compression	2	-89.09	3.91	-0.13
					Max. Mx	2	-68.05	5.01	0.43
					Max. My	4	-4.93	-0.41	-7.02
					Max. Vy	18	1.12	-4.79	-0.46
					Max. Vx	10	1.35	-0.17	6.19
Diagonal	Max Tension			6	10.92	0.00	0.00		
	Max. Compression			22	-11.32	0.00	0.00		
	Max. Mx			2	5.85	0.15	0.01		
	Max. My			26	-5.99	0.01	-0.05		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft		
T4	120 - 100	Leg	Max. Vy	35	-0.04	0.09	0.01		
			Max. Vx	26	0.01	0.00	0.00		
			Max Tension	9	126.81	-6.02	0.01		
			Max. Compression	2	-142.96	3.39	-0.05		
			Max. Mx	2	-115.43	6.76	-0.02		
			Max. My	26	-9.24	-0.38	-7.40		
		Diagonal	Max. Vy	2	-1.17	6.76	-0.02		
			Max. Vx	4	-1.55	-0.41	-7.02		
			Max Tension	9	12.82	0.00	0.00		
			Max. Compression	24	-13.75	0.00	0.00		
			Max. Mx	2	7.43	0.13	0.01		
			Max. My	24	-13.72	-0.08	-0.06		
		Mid Girt	Max. Vy	38	0.05	0.08	0.01		
			Max. Vx	24	0.01	0.00	0.00		
			Max Tension	8	4.03	0.00	0.00		
			Max. Compression	3	-3.51	0.00	0.00		
			Max. Mx	34	0.62	-0.13	0.00		
			Max. My	39	0.61	0.00	0.00		
T5	100 - 90	Leg	Max. Vy	34	-0.06	0.00	0.00		
			Max. Vx	39	0.00	0.00	0.00		
			Max Tension	9	157.38	-3.95	0.15		
			Max. Compression	2	-176.79	5.85	-0.01		
			Max. Mx	2	-176.79	5.85	-0.01		
			Max. My	26	-10.00	-0.38	-7.40		
		Diagonal	Max. Vy	8	-1.68	-4.06	0.17		
			Max. Vx	32	2.01	-0.39	7.17		
			Max Tension	6	14.48	0.00	0.00		
			Max. Compression	14	-14.86	0.00	0.00		
			Max. Mx	2	11.32	0.17	0.01		
			Max. My	10	-8.22	0.03	0.02		
		T6	90 - 80	Leg	Max. Vy	35	-0.06	0.13	0.01
					Max. Vx	47	0.00	0.00	0.00
					Max Tension	9	187.72	-5.56	0.11
					Max. Compression	2	-210.02	5.46	-0.01
					Max. Mx	2	-209.20	5.85	-0.01
					Max. My	26	-11.32	0.14	-5.33
Diagonal	Max. Vy			18	0.33	-5.42	0.01		
	Max. Vx			10	-0.38	-0.01	4.56		
	Max Tension			20	14.48	0.00	0.00		
	Max. Compression			14	-14.98	0.00	0.00		
	Max. Mx			2	11.66	0.21	0.01		
	Max. My			27	-11.90	-0.09	-0.03		
T7	80 - 60			Leg	Max. Vy	35	-0.07	0.16	0.02
					Max. Vx	38	-0.00	0.00	0.00
					Max Tension	9	245.65	-5.46	-0.00
					Max. Compression	2	-272.82	5.95	0.02
					Max. Mx	2	-272.82	5.95	0.02
					Max. My	32	-12.62	0.00	5.54
		Diagonal	Max. Vy	8	0.22	-5.83	0.01		
			Max. Vx	14	0.31	-1.46	-5.31		
			Max Tension	20	14.76	0.00	0.00		
			Max. Compression	14	-15.19	0.00	0.00		
			Max. Mx	2	11.99	0.18	0.01		
			Max. My	8	-13.34	0.00	0.03		
		Leg	Max. Vy	38	0.08	0.15	0.02		
			Max. Vx	47	0.01	0.00	0.00		
			Max Tension	9	299.64	-5.56	-0.01		
			Max. Compression	2	-332.15	6.84	0.03		
			Max. Mx	2	-332.15	6.84	0.03		
			Max. My	32	-13.87	-0.13	6.44		
T8	60 - 40	Leg	Max. Vy	2	-0.31	6.84	0.03		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T9	40 - 20	Diagonal	Max. Vx	32	-0.29	-0.13	6.44
			Max Tension	20	15.04	0.00	0.00
			Max. Compression	20	-15.57	0.00	0.00
			Max. Mx	2	12.24	0.20	0.01
			Max. My	8	-13.48	0.01	0.03
			Max. Vy	38	0.09	0.18	0.02
		Leg	Max. Vx	46	0.01	0.00	0.00
			Max Tension	9	350.53	-5.65	-0.03
			Max. Compression	2	-389.03	8.05	0.03
			Max. Mx	38	54.96	-8.59	0.09
			Max. My	32	-16.38	-0.22	6.40
			Max. Vy	38	1.07	-8.59	0.09
			Max. Vx	32	0.32	-0.22	6.40
			Diagonal	Max Tension	20	15.55	0.00
Max. Compression	20	-16.14		0.00	0.00		
Max. Mx	2	12.56		0.25	0.01		
Max. My	38	-4.36		0.16	0.03		
Max. Vy	38	0.11		0.22	0.03		
Max. Vx	38	-0.01		0.00	0.00		
T10	20 - 0	Leg	Max Tension	9	397.76	-6.16	-0.01
			Max. Compression	2	-442.98	0.00	0.00
			Max. Mx	35	-149.25	11.51	-0.00
			Max. My	4	-19.46	-0.45	-11.34
			Max. Vy	38	-1.75	-8.59	0.09
			Max. Vx	32	1.29	-0.45	11.33
		Diagonal	Max Tension	7	17.11	0.00	0.00
			Max. Compression	14	-17.96	0.00	0.00
			Max. Mx	35	0.80	0.43	0.04
			Max. My	38	-6.95	0.31	0.05
			Max. Vy	38	0.15	0.42	0.04
			Max. Vx	38	-0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	24	457.69	44.00	-26.18
	Max. H _x	24	457.69	44.00	-26.18
	Max. H _z	7	-397.09	-38.44	24.12
	Min. Vert	9	-410.35	-40.19	23.99
	Min. H _x	9	-410.35	-40.19	23.99
	Min. H _z	24	457.69	44.00	-26.18
Leg B	Max. Vert	12	457.02	-44.03	-26.02
	Max. H _x	29	-409.79	40.23	23.83
	Max. H _z	31	-396.46	38.51	23.90
	Min. Vert	29	-409.79	40.23	23.83
	Min. H _x	12	457.02	-44.03	-26.02
	Min. H _z	12	457.02	-44.03	-26.02
Leg A	Max. Vert	2	457.83	-0.16	51.16
	Max. H _x	27	15.78	4.70	1.29
	Max. H _z	2	457.83	-0.16	51.16
	Min. Vert	19	-409.45	0.16	-46.75
	Min. H _x	11	16.48	-4.70	1.34
	Min. H _z	19	-409.45	0.16	-46.75

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Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overtuning Moment, M _x	Overtuning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	52.68	0.00	0.00	-5.98	0.52	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	63.21	0.04	-80.56	-7564.83	-5.39	-5.50
0.9 Dead+1.0 Wind 0 deg - No Ice	47.41	0.04	-80.56	-7553.63	-5.53	-5.50
1.2 Dead+1.0 Wind 30 deg - No Ice	63.21	39.30	-68.00	-6440.11	-3718.60	-16.80
0.9 Dead+1.0 Wind 30 deg - No Ice	47.41	39.30	-68.00	-6430.27	-3714.12	-16.77
1.2 Dead+1.0 Wind 45 deg - No Ice	63.21	55.32	-55.29	-5245.86	-5240.38	-20.92
0.9 Dead+1.0 Wind 45 deg - No Ice	47.41	55.32	-55.29	-5237.49	-5234.00	-20.89
1.2 Dead+1.0 Wind 60 deg - No Ice	63.21	67.44	-38.93	-3702.71	-6396.88	-23.64
0.9 Dead+1.0 Wind 60 deg - No Ice	47.41	67.44	-38.93	-3696.26	-6389.05	-23.61
1.2 Dead+1.0 Wind 90 deg - No Ice	63.21	78.54	-0.04	-13.51	-7427.51	-24.16
0.9 Dead+1.0 Wind 90 deg - No Ice	47.41	78.54	-0.04	-11.65	-7418.41	-24.12
1.2 Dead+1.0 Wind 120 deg - No Ice	63.21	69.79	40.25	3766.16	-6544.63	-18.15
0.9 Dead+1.0 Wind 120 deg - No Ice	47.41	69.79	40.25	3763.33	-6536.68	-18.11
1.2 Dead+1.0 Wind 135 deg - No Ice	63.21	56.24	56.21	5285.35	-5294.69	-13.14
0.9 Dead+1.0 Wind 135 deg - No Ice	47.41	56.24	56.21	5280.62	-5288.27	-13.11
1.2 Dead+1.0 Wind 150 deg - No Ice	63.21	39.24	67.96	6419.48	-3708.24	-7.27
0.9 Dead+1.0 Wind 150 deg - No Ice	47.41	39.24	67.96	6413.32	-3703.79	-7.25
1.2 Dead+1.0 Wind 180 deg - No Ice	63.21	-0.04	77.80	7372.89	6.70	5.50
0.9 Dead+1.0 Wind 180 deg - No Ice	47.41	-0.04	77.80	7365.53	6.53	5.50
1.2 Dead+1.0 Wind 210 deg - No Ice	63.21	-39.30	68.00	6425.50	3720.00	16.80
0.9 Dead+1.0 Wind 210 deg - No Ice	47.41	-39.30	68.00	6419.33	3715.21	16.78
1.2 Dead+1.0 Wind 225 deg - No Ice	63.21	-55.32	55.29	5231.12	5241.77	20.92
0.9 Dead+1.0 Wind 225 deg - No Ice	47.41	-55.32	55.29	5226.44	5235.09	20.89
1.2 Dead+1.0 Wind 240 deg - No Ice	63.21	-69.83	40.31	3776.61	6551.94	23.65
0.9 Dead+1.0 Wind 240 deg - No Ice	47.41	-69.83	40.31	3773.76	6543.67	23.61
1.2 Dead+1.0 Wind 270 deg - No Ice	63.21	-78.54	0.04	-1.42	7428.77	24.16
0.9 Dead+1.0 Wind 270 deg - No Ice	47.41	-78.54	0.04	0.41	7419.36	24.12
1.2 Dead+1.0 Wind 300 deg - No Ice	63.21	-67.40	-38.87	-3692.23	6392.11	18.14

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 300 deg - No Ice	47.41	-67.40	-38.87	-3685.79	6383.98	18.11
1.2 Dead+1.0 Wind 315 deg - No Ice	63.21	-55.26	-55.23	-5237.29	5233.12	13.15
0.9 Dead+1.0 Wind 315 deg - No Ice	47.41	-55.26	-55.23	-5228.94	5226.44	13.12
1.2 Dead+1.0 Wind 330 deg - No Ice	63.21	-39.24	-67.96	-6434.05	3709.43	7.27
0.9 Dead+1.0 Wind 330 deg - No Ice	47.41	-39.24	-67.96	-6424.22	3704.65	7.25
1.2 Dead+1.0 Ice+1.0 Temp	144.80	0.00	0.00	-21.03	3.55	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	144.80	0.01	-21.50	-2029.68	2.39	-9.79
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	144.80	10.65	-18.43	-1748.89	-995.00	-15.22
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	144.80	15.03	-15.02	-1430.53	-1406.34	-16.46
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	144.80	18.37	-10.61	-1016.99	-1720.73	-16.57
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	144.80	21.28	-0.01	-22.37	-1991.54	-13.48
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	144.80	18.62	10.74	982.04	-1735.97	-6.78
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	144.80	15.12	15.12	1393.18	-1411.40	-2.60
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	144.80	10.63	18.42	1705.34	-993.01	1.74
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	144.80	-0.01	21.20	1968.37	4.69	9.79
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	144.80	-10.65	18.43	1706.48	1002.08	15.22
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	144.80	-15.03	15.02	1388.11	1413.41	16.45
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	144.80	-18.63	10.76	984.02	1744.19	16.57
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	144.80	-21.28	0.01	-20.07	1998.60	13.48
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	144.80	-18.36	-10.59	-1015.00	1726.64	6.78
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	144.80	-15.02	-15.01	-1428.90	1411.77	2.61
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	144.80	-10.63	-18.42	-1747.73	1000.07	-1.74
Dead+Wind 0 deg - Service	52.68	0.01	-15.92	-1498.70	-0.67	-1.07
Dead+Wind 30 deg - Service	52.68	7.77	-13.44	-1276.56	-734.06	-3.34
Dead+Wind 45 deg - Service	52.68	10.93	-10.92	-1040.68	-1034.62	-4.16
Dead+Wind 60 deg - Service	52.68	13.33	-7.69	-735.89	-1263.03	-4.70
Dead+Wind 90 deg - Service	52.68	15.52	-0.01	-7.24	-1466.58	-4.81
Dead+Wind 120 deg - Service	52.68	13.79	7.95	739.25	-1292.19	-3.64
Dead+Wind 135 deg - Service	52.68	11.11	11.11	1039.29	-1045.32	-2.66
Dead+Wind 150 deg - Service	52.68	7.75	13.43	1263.29	-732.00	-1.49
Dead+Wind 180 deg - Service	52.68	-0.01	15.37	1451.59	1.72	1.07
Dead+Wind 210 deg - Service	52.68	-7.77	13.44	1264.48	735.11	3.34
Dead+Wind 225 deg - Service	52.68	-10.93	10.92	1028.59	1035.67	4.16
Dead+Wind 240 deg - Service	52.68	-13.80	7.97	741.32	1294.43	4.70
Dead+Wind 270 deg - Service	52.68	-15.52	0.01	-4.85	1467.63	4.81
Dead+Wind 300 deg - Service	52.68	-13.32	-7.68	-733.82	1262.89	3.64
Dead+Wind 315 deg - Service	52.68	-10.92	-10.91	-1038.99	1033.98	2.65
Dead+Wind 330 deg - Service	52.68	-7.75	-13.43	-1275.37	733.04	1.49

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Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-52.68	0.00	0.00	52.68	0.00	0.000%
2	0.04	-63.21	-80.56	-0.04	63.21	80.56	0.000%
3	0.04	-47.41	-80.56	-0.04	47.41	80.56	0.000%
4	39.30	-63.21	-68.00	-39.30	63.21	68.00	0.000%
5	39.30	-47.41	-68.00	-39.30	47.41	68.00	0.000%
6	55.32	-63.21	-55.29	-55.32	63.21	55.29	0.000%
7	55.32	-47.41	-55.29	-55.32	47.41	55.29	0.000%
8	67.44	-63.21	-38.93	-67.44	63.21	38.93	0.000%
9	67.44	-47.41	-38.93	-67.44	47.41	38.93	0.000%
10	78.54	-63.21	-0.04	-78.54	63.21	0.04	0.000%
11	78.54	-47.41	-0.04	-78.54	47.41	0.04	0.000%
12	69.79	-63.21	40.25	-69.79	63.21	-40.25	0.000%
13	69.79	-47.41	40.25	-69.79	47.41	-40.25	0.000%
14	56.24	-63.21	56.21	-56.24	63.21	-56.21	0.000%
15	56.24	-47.41	56.21	-56.24	47.41	-56.21	0.000%
16	39.24	-63.21	67.96	-39.24	63.21	-67.96	0.000%
17	39.24	-47.41	67.96	-39.24	47.41	-67.96	0.000%
18	-0.04	-63.21	77.80	0.04	63.21	-77.80	0.000%
19	-0.04	-47.41	77.80	0.04	47.41	-77.80	0.000%
20	-39.30	-63.21	68.00	39.30	63.21	-68.00	0.000%
21	-39.30	-47.41	68.00	39.30	47.41	-68.00	0.000%
22	-55.32	-63.21	55.29	55.32	63.21	-55.29	0.000%
23	-55.32	-47.41	55.29	55.32	47.41	-55.29	0.000%
24	-69.83	-63.21	40.31	69.83	63.21	-40.31	0.000%
25	-69.83	-47.41	40.31	69.83	47.41	-40.31	0.000%
26	-78.54	-63.21	0.04	78.54	63.21	-0.04	0.000%
27	-78.54	-47.41	0.04	78.54	47.41	-0.04	0.000%
28	-67.40	-63.21	-38.87	67.40	63.21	38.87	0.000%
29	-67.40	-47.41	-38.87	67.40	47.41	38.87	0.000%
30	-55.26	-63.21	-55.23	55.26	63.21	55.23	0.000%
31	-55.26	-47.41	-55.23	55.26	47.41	55.23	0.000%
32	-39.24	-63.21	-67.96	39.24	63.21	67.96	0.000%
33	-39.24	-47.41	-67.96	39.24	47.41	67.96	0.000%
34	0.00	-144.80	0.00	0.00	144.80	-0.00	0.000%
35	0.01	-144.80	-21.50	-0.01	144.80	21.50	0.000%
36	10.65	-144.80	-18.43	-10.65	144.80	18.43	0.000%
37	15.03	-144.80	-15.02	-15.03	144.80	15.02	0.000%
38	18.37	-144.80	-10.61	-18.37	144.80	10.61	0.000%
39	21.28	-144.80	-0.01	-21.28	144.80	0.01	0.000%
40	18.62	-144.80	10.74	-18.62	144.80	-10.74	0.000%
41	15.12	-144.80	15.12	-15.12	144.80	-15.12	0.000%
42	10.63	-144.80	18.42	-10.63	144.80	-18.42	0.000%
43	-0.01	-144.80	21.20	0.01	144.80	-21.20	0.000%
44	-10.65	-144.80	18.43	10.65	144.80	-18.43	0.000%
45	-15.03	-144.80	15.02	15.03	144.80	-15.02	0.000%
46	-18.63	-144.80	10.76	18.63	144.80	-10.76	0.000%
47	-21.28	-144.80	0.01	21.28	144.80	-0.01	0.000%
48	-18.36	-144.80	-10.59	18.36	144.80	10.59	0.000%
49	-15.02	-144.80	-15.01	15.02	144.80	15.01	0.000%
50	-10.63	-144.80	-18.42	10.63	144.80	18.42	0.000%
51	0.01	-52.68	-15.92	-0.01	52.68	15.92	0.000%
52	7.77	-52.68	-13.44	-7.77	52.68	13.44	0.000%
53	10.93	-52.68	-10.92	-10.93	52.68	10.92	0.000%
54	13.33	-52.68	-7.69	-13.33	52.68	7.69	0.000%
55	15.52	-52.68	-0.01	-15.52	52.68	0.01	0.000%
56	13.79	-52.68	7.95	-13.79	52.68	-7.95	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
57	11.11	-52.68	11.11	-11.11	52.68	-11.11	0.000%
58	7.75	-52.68	13.43	-7.75	52.68	-13.43	0.000%
59	-0.01	-52.68	15.37	0.01	52.68	-15.37	0.000%
60	-7.77	-52.68	13.44	7.77	52.68	-13.44	0.000%
61	-10.93	-52.68	10.92	10.93	52.68	-10.92	0.000%
62	-13.80	-52.68	7.97	13.80	52.68	-7.97	0.000%
63	-15.52	-52.68	0.01	15.52	52.68	-0.01	0.000%
64	-13.32	-52.68	-7.68	13.32	52.68	7.68	0.000%
65	-10.92	-52.68	-10.91	10.92	52.68	10.91	0.000%
66	-7.75	-52.68	-13.43	7.75	52.68	13.43	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000076
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000062
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000076
9	Yes	4	0.00000001	0.00000062
10	Yes	4	0.00000001	0.00000127
11	Yes	4	0.00000001	0.00000113
12	Yes	4	0.00000001	0.00000129
13	Yes	4	0.00000001	0.00000120
14	Yes	4	0.00000001	0.00000098
15	Yes	4	0.00000001	0.00000086
16	Yes	4	0.00000001	0.00000081
17	Yes	4	0.00000001	0.00000061
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000075
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000079
23	Yes	4	0.00000001	0.00000067
24	Yes	4	0.00000001	0.00000108
25	Yes	4	0.00000001	0.00000099
26	Yes	4	0.00000001	0.00000128
27	Yes	4	0.00000001	0.00000114
28	Yes	4	0.00000001	0.00000084
29	Yes	4	0.00000001	0.00000075
30	Yes	4	0.00000001	0.00000066
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000083
33	Yes	4	0.00000001	0.00000063
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000526
36	Yes	4	0.00000001	0.00000542
37	Yes	4	0.00000001	0.00000552
38	Yes	4	0.00000001	0.00000556
39	Yes	4	0.00000001	0.00000537
40	Yes	4	0.00000001	0.00000509
41	Yes	4	0.00000001	0.00000506

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42	Yes	4	0.00000001	0.00000511
43	Yes	4	0.00000001	0.00000520
44	Yes	4	0.00000001	0.00000508
45	Yes	4	0.00000001	0.00000502
46	Yes	4	0.00000001	0.00000504
47	Yes	4	0.00000001	0.00000533
48	Yes	4	0.00000001	0.00000553
49	Yes	4	0.00000001	0.00000550
50	Yes	4	0.00000001	0.00000540
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 150	4.301	51	0.2503	0.0940
T2	150 - 140	3.272	51	0.2232	0.0633
T3	140 - 120	2.813	51	0.2068	0.0453
T4	120 - 100	2.012	51	0.1669	0.0250
T5	100 - 90	1.360	51	0.1326	0.0136
T6	90 - 80	1.092	51	0.1125	0.0105
T7	80 - 60	0.863	51	0.0974	0.0084
T8	60 - 40	0.485	51	0.0722	0.0049
T9	40 - 20	0.218	51	0.0437	0.0025
T10	20 - 0	0.061	51	0.0200	0.0010

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.00	DS1F03F36U-D Omni Antenna	51	4.301	0.2503	0.0940	99197
168.00	9 Arm Halo Mount	51	4.195	0.2477	0.0912	99197
158.50	SC420-HF1LDF	51	3.697	0.2352	0.0774	43129
144.00	2.5" x 20'6" Whip	51	2.991	0.2138	0.0521	27903
141.00	2" Dia 15' Omni	51	2.857	0.2086	0.0469	29509
139.00	1.5" x 10' Omni	51	2.769	0.2050	0.0437	30305
138.50	9' Whip	51	2.747	0.2040	0.0430	30452
135.00	HPD2-4.7	51	2.598	0.1972	0.0383	31138
134.00	VHLP2.5-180	51	2.557	0.1951	0.0371	31294

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.50	PiROD 10' Lightweight T-Frame	51	2.217	0.1776	0.0290	32687
115.00	Sabre 12" HD V-Boom	51	1.835	0.1582	0.0216	32739
101.50	MT6407-77A	51	1.403	0.1355	0.0142	30485
100.00	LNX-6514DS	51	1.360	0.1326	0.0136	30230
98.50	PiROD 12' Lightweight T-Frame	51	1.317	0.1296	0.0130	29961
98.00	XXDWMM-12.5-65-8T	51	1.303	0.1286	0.0129	29869
87.00	3"x2"x22" Panel	51	1.020	0.1074	0.0098	32937
84.50	TMA	51	0.962	0.1036	0.0093	37723
83.50	3' Stand-off	51	0.939	0.1021	0.0091	40050
83.00	3' Dish	51	0.928	0.1014	0.0090	41262
82.50	TMA	51	0.917	0.1007	0.0089	42485
80.00	TMA	51	0.863	0.0974	0.0084	47807
30.00	Camera	51	0.125	0.0311	0.0017	42824
24.00	PC9013N	51	0.083	0.0243	0.0012	41825

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 150	21.386	2	1.2178	0.4686
T2	150 - 140	16.349	2	1.0976	0.3167
T3	140 - 120	14.082	2	1.0211	0.2271
T4	120 - 100	10.106	2	0.8321	0.1255
T5	100 - 90	6.842	2	0.6643	0.0683
T6	90 - 80	5.498	2	0.5644	0.0530
T7	80 - 60	4.347	2	0.4893	0.0423
T8	60 - 40	2.444	2	0.3634	0.0247
T9	40 - 20	1.098	2	0.2203	0.0127
T10	20 - 0	0.308	24	0.1010	0.0049

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.00	DS1F03F36U-D Omni Antenna	2	21.386	1.2178	0.4686	21843
168.00	9 Arm Halo Mount	2	20.868	1.2066	0.4548	21843
158.50	SC420-HF1LDF	2	18.434	1.1519	0.3865	9497
144.00	2.5" x 20'6" Whip	2	14.964	1.0539	0.2615	5990
141.00	2" Dia 15' Omni	2	14.299	1.0296	0.2352	6263
139.00	1.5" x 10' Omni	2	13.866	1.0124	0.2194	6401
138.50	9' Whip	2	13.758	1.0079	0.2157	6427
135.00	HPD2-4.7	2	13.020	0.9756	0.1922	6560
134.00	VHLP2.5-180	2	12.814	0.9660	0.1863	6592
125.50	PiROD 10' Lightweight T-Frame	2	11.129	0.8831	0.1457	6860
115.00	Sabre 12" HD V-Boom	2	9.222	0.7902	0.1087	6776
101.50	MT6407-77A	2	7.061	0.6785	0.0714	6156
100.00	LNX-6514DS	2	6.842	0.6643	0.0683	6094
98.50	PiROD 12' Lightweight T-Frame	2	6.627	0.6495	0.0655	6033
98.00	XXDWMM-12.5-65-8T	2	6.557	0.6444	0.0646	6013
87.00	3"x2"x22" Panel	2	5.135	0.5389	0.0495	6614

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
84.50	TMA	2	4.845	0.5200	0.0468	7571
83.50	3' Stand-off	2	4.732	0.5129	0.0458	8036
83.00	3' Dish	2	4.676	0.5094	0.0453	8279
82.50	TMA	2	4.620	0.5059	0.0447	8523
80.00	TMA	2	4.347	0.4893	0.0423	9583
30.00	Camera	24	0.633	0.1569	0.0084	8502
24.00	PC9013N	24	0.421	0.1227	0.0062	8299

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
T1	170	Diagonal	A325N	0.6250	1	4.97	13.81	0.360 ✓	1	Bolt Shear
T2	150	Leg	A325N	1.0000	6	7.31	54.52	0.134 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7.07	10.66	0.663 ✓	1	Member Block Shear
		Top Girt	A325N	1.0000	1	0.86	10.16	0.084 ✓	1	Member Block Shear
T3	140	Leg	A325N	1.0000	6	9.96	54.52	0.183 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10.92	18.89	0.578 ✓	1	Member Block Shear
T4	120	Leg	A325N	1.0000	6	16.94	54.52	0.311 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	12.82	15.58	0.823 ✓	1	Member Block Shear
		Mid Girt	A325N	1.0000	1	4.03	10.16	0.397 ✓	1	Member Block Shear
T5	100	Leg	A325N	1.0000	6	26.23	54.52	0.481 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	14.48	19.47	0.744 ✓	1	Member Block Shear
T6	90	Diagonal	A325N	1.0000	1	14.48	22.85	0.634 ✓	1	Member Block Shear
T7	80	Leg	A325N	1.0000	6	36.19	54.52	0.664 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	14.76	22.85	0.646 ✓	1	Member Block Shear
T8	60	Leg	A490N	1.0000	6	45.54	68.15	0.668 ✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	15.04	20.54	0.732 ✓	1	Member Block Shear
T9	40	Leg	A325N	1.2500	6	54.30	87.22	0.623 ✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	15.55	23.23	0.669 ✓	1	Member Block Shear
T10	20	Leg	A325N	1.2500	6	62.60	87.22	0.718 ✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	17.11	36.56	0.468 ✓	1	Member Block Shear

Compression Checks

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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 P _u / φP _n
T1	170 - 150	1 3/4	20.00	2.49	68.3 K=1.00	2.4053	-44.76	76.97	0.581 ¹
T2	150 - 140	Pirod 105244	10.02	10.02	45.4 K=1.00	3.6816	-49.38	142.49	0.347 ¹
T3	140 - 120	Pirod 105216	20.03	10.02	45.4 K=1.00	3.6816	-89.09	142.49	0.625 ¹
T4	120 - 100	Pirod 105217	20.03	10.02	37.8 K=1.00	5.3014	-142.96	214.86	0.665 ¹
T5	100 - 90	Pirod 105217	10.02	10.02	37.8 K=1.00	5.3014	-176.79	214.86	0.823 ¹
T6	90 - 80	Pirod 105217 reinf w/ 1" dia bar	10.02	10.02	57.7 K=1.00	7.6570	-210.02	270.18	0.777 ¹
T7	80 - 60	Pirod 105218 reinf w/ 1" dia bar	20.03	10.02	52.4 K=1.00	9.9280	-272.82	365.45	0.747 ¹
T8	60 - 40	Pirod 105219	20.03	10.02	28.4 K=1.00	9.4248	-332.15	399.87	0.831 ¹
T9	40 - 20	Pirod 105219 reinf w/ 1" dia bar	20.03	10.02	50.5 K=1.00	11.7803	-389.03	439.99	0.884 ¹
T10	20 - 0	Pirod 105220 reinf w/ 1" dia bar	20.03	10.02	47.6 K=1.00	14.2843	-442.98	544.59	0.813 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	165.67	0.1963	1.17	3.39	0.347
T3	140 - 120	0.5	1.48	121.0	165.67	0.1963	1.45	3.29	0.441
T4	120 - 100	0.5	1.47	120.0	238.57	0.1963	1.55	3.34	0.466
T5	100 - 90	0.5	1.47	120.0	238.57	0.1963	2.01	3.34	0.602
T6	90 - 80	0.5	1.46	118.8	344.57	0.1963	0.41	3.39	0.121
T7	80 - 60	0.5	1.44	117.8	446.76	0.1963	0.31	3.43	0.092
T8	60 - 40	0.625	1.45	94.4	424.12	0.3068	0.31	6.96	0.045
T9	40 - 20	0.625	1.44	93.7	530.11	0.3068	1.07	8.13	0.132
T10	20 - 0	0.625	1.42	93.0	642.79	0.3068	1.75	7.06	0.248

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Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
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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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.59	2.71	133.9 K=0.90	0.6013	-4.97	7.58	0.656 ¹ ✓
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	4.98	120.8 K=1.00	0.9020	-7.66	17.58	0.436 ¹ ✓
T3	140 - 120	L3x3x1/4	12.50	5.63	115.5 K=1.01	1.4400	-11.32	30.87	0.367 ¹ ✓
T4	120 - 100	L3x3x1/4	13.80	6.33	128.3 K=1.00	1.4400	-13.75	25.06	0.549 ¹ ✓
T5	100 - 90	L3x3x5/16	14.50	6.70	136.5 K=1.00	1.7800	-14.86	27.36	0.543 ¹ ✓
T6	90 - 80	L3 1/2x3 1/2x5/16	15.24	7.12	123.9 K=1.00	2.0900	-14.98	38.98	0.384 ¹ ✓
T7	80 - 60	L3 1/2x3 1/2x5/16	16.80	7.92	137.8 K=1.00	2.0900	-15.19	31.50	0.482 ¹ ✓
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.73	151.8 K=1.00	2.0900	-15.57	25.96	0.600 ¹ ✓
T9	40 - 20	L4x4x5/16	20.16	9.59	145.5 K=1.00	2.4000	-16.14	32.43	0.498 ¹ ✓
T10	20 - 0	L5x5x5/16	21.92	10.43	125.9 K=1.00	3.0300	-17.96	54.73	0.328 ¹ ✓

¹ $P_u / \phi P_n$ 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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.00	4.85	186.4 K=0.70	0.6013	-0.47	3.91	0.119 ¹ ✓
T2	150 - 140	L3x3x3/16	5.00	3.67	96.9 K=1.31	1.0900	-0.86	27.09	0.032 ¹ ✓

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

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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	170 - 150	7/8	5.00	4.85	186.4 K=0.70	0.6013	-0.78	3.91	0.198 ¹ ✓

¹ P_u / φP_n controls

Mid 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 $\frac{P_u}{\phi P_n}$
T4	120 - 100	L3x3x3/16	9.00	7.67	154.4 K=1.00	1.0900	-3.51	13.09	0.268 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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	1 3/4	20.00	2.49	68.3	2.4053	39.73	108.24	0.367 ¹ ✓
T2	150 - 140	Piroad 105244	10.02	10.02	45.4	3.6816	43.88	165.67	0.265 ¹ ✓
T3	140 - 120	Piroad 105216	20.03	10.02	45.4	3.6816	78.29	165.67	0.473 ¹ ✓
T4	120 - 100	Piroad 105217	20.03	10.02	37.8	5.3014	126.81	238.57	0.532 ¹ ✓
T5	100 - 90	Piroad 105217	10.02	10.02	37.8	5.3014	157.38	238.57	0.660 ¹ ✓
T6	90 - 80	Piroad 105217 reinf w/ 1" dia bar	10.02	10.02	57.7	7.6570	187.72	344.57	0.545 ¹ ✓
T7	80 - 60	Piroad 105218 reinf w/ 1" dia bar	20.03	10.02	52.4	9.9280	245.65	446.76	0.550 ¹ ✓
T8	60 - 40	Piroad 105219	20.03	10.02	28.4	9.4248	299.64	424.12	0.707 ¹ ✓
T9	40 - 20	Piroad 105219 reinf w/ 1" dia bar	20.03	10.02	50.5	11.7803	350.53	530.11	0.661 ¹ ✓
T10	20 - 0	Piroad 105220 reinf w/ 1" dia bar	20.03	10.02	47.6	14.2843	397.76	642.79	0.619 ¹ ✓

¹ P_u / φP_n controls

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Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T2	150 - 140	0.5	1.48	121.0	165.67	0.1963	1.17	3.39	0.347
T3	140 - 120	0.5	1.48	121.0	165.67	0.1963	1.45	3.29	0.441
T4	120 - 100	0.5	1.47	120.0	238.57	0.1963	1.55	3.34	0.466
T5	100 - 90	0.5	1.47	120.0	238.57	0.1963	2.01	3.34	0.602
T6	90 - 80	0.5	1.46	118.8	344.57	0.1963	0.41	3.39	0.121
T7	80 - 60	0.5	1.44	117.8	446.76	0.1963	0.31	3.43	0.092
T8	60 - 40	0.625	1.45	94.4	424.12	0.3068	0.31	6.96	0.045
T9	40 - 20	0.625	1.44	93.7	530.11	0.3068	1.07	8.13	0.132
T10	20 - 0	0.625	1.42	93.0	642.79	0.3068	1.75	7.06	0.248

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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.59	2.71	148.7	0.6013	4.92	27.06	0.182 ¹
T2	150 - 140	L2 1/2x2 1/2x3/16	11.42	4.98	80.1	0.9020	7.07	29.22	0.242 ¹
T3	140 - 120	L3x3x1/4	12.50	5.63	75.3	1.1588	10.92	56.49	0.193 ¹
T4	120 - 100	L3x3x1/4	13.80	6.33	84.3	1.4400	12.82	46.66	0.275 ¹
T5	100 - 90	L3x3x5/16	14.50	6.70	89.9	1.7800	14.48	57.67	0.251 ¹
T6	90 - 80	L3 1/2x3 1/2x5/16	15.24	7.12	81.0	1.7384	14.48	84.75	0.171 ¹
T7	80 - 60	L3 1/2x3 1/2x5/16	16.80	7.92	89.9	1.7384	14.76	84.75	0.174 ¹
T8	60 - 40	L3 1/2x3 1/2x5/16	18.45	8.73	99.2	2.0900	15.04	67.72	0.222 ¹
T9	40 - 20	L4x4x5/16	20.16	9.59	94.8	1.9703	15.55	96.05	0.162 ¹
T10	20 - 0	L5x5x5/16	21.92	10.43	81.6	2.6003	17.11	126.77	0.135 ¹

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¹ $P_u / \phi P_n$ controls

Top Girt 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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.00	4.85	266.3	0.6013	0.43	27.06	0.016 ¹
T2	150 - 140	L3x3x3/16	5.00	3.67	51.1	1.0900	0.86	35.32	0.024 ¹

¹ $P_u / \phi P_n$ controls

Bottom Girt 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 $\frac{P_u}{\phi P_n}$
T1	170 - 150	7/8	5.00	4.85	266.3	0.6013	0.78	27.06	0.029 ¹

¹ $P_u / \phi P_n$ controls

Mid Girt 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 $\frac{P_u}{\phi P_n}$
T4	120 - 100	L3x3x3/16	9.00	7.67	102.2	1.0900	4.03	35.32	0.114 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
T1	170 - 150	Leg	1 3/4	1	-43.17	76.97	56.1	Pass
		Leg	1 3/4	2	-43.38	76.97	56.4	Pass
		Leg	1 3/4	3	-44.76	76.97	58.1	Pass
T2	150 - 140	Leg	Pirod 105244	58	-47.23	142.49	33.1	Pass
		Leg	Pirod 105244	59	-47.33	142.49	33.2	Pass
		Leg	Pirod 105244	60	-49.38	142.49	34.7	Pass
T3	140 - 120	Leg	Pirod 105216	70	-87.16	142.49	61.2	Pass
		Leg	Pirod 105216	71	-86.60	142.49	60.8	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T4	120 - 100	Leg	Pirod 105216	72	-89.09	142.49	62.5	Pass
		Leg	Pirod 105217	85	-141.50	214.86	65.9	Pass
		Leg	Pirod 105217	86	-141.05	214.86	65.6	Pass
T5	100 - 90	Leg	Pirod 105217	87	-142.96	214.86	66.5	Pass
		Leg	Pirod 105217	103	-175.59	214.86	81.7	Pass
		Leg	Pirod 105217	104	-175.04	214.86	81.5	Pass
T6	90 - 80	Leg	Pirod 105217	105	-176.79	214.86	82.3	Pass
		Leg	Pirod 105217 reinf w/ 1" dia bar	112	-208.63	270.18	77.2	Pass
		Leg	Pirod 105217 reinf w/ 1" dia bar	113	-208.24	270.18	77.1	Pass
T7	80 - 60	Leg	Pirod 105217 reinf w/ 1" dia bar	114	-210.02	270.18	77.7	Pass
		Leg	Pirod 105218 reinf w/ 1" dia bar	121	-271.84	365.45	74.4	Pass
		Leg	Pirod 105218 reinf w/ 1" dia bar	122	-271.42	365.45	74.3	Pass
T8	60 - 40	Leg	Pirod 105218 reinf w/ 1" dia bar	123	-272.82	365.45	74.7	Pass
		Leg	Pirod 105219	136	-331.53	399.87	82.9	Pass
		Leg	Pirod 105219	137	-331.01	399.87	82.8	Pass
T9	40 - 20	Leg	Pirod 105219	138	-332.15	399.87	83.1	Pass
		Leg	Pirod 105219 reinf w/ 1" dia bar	151	-388.68	439.99	88.3	Pass
		Leg	Pirod 105219 reinf w/ 1" dia bar	152	-388.07	439.99	88.2	Pass
T10	20 - 0	Leg	Pirod 105219 reinf w/ 1" dia bar	153	-389.03	439.99	88.4	Pass
		Leg	Pirod 105220 reinf w/ 1" dia bar	166	-442.82	544.59	81.3	Pass
		Leg	Pirod 105220 reinf w/ 1" dia bar	167	-442.16	544.59	81.2	Pass
T1	170 - 150	Leg	Pirod 105220 reinf w/ 1" dia bar	168	-442.98	544.59	81.3	Pass
		Diagonal	7/8	10	-2.27	7.58	29.9	Pass
		Diagonal	7/8	11	-2.22	7.58	29.2	Pass
		Diagonal	7/8	12	-4.97	7.58	65.6	Pass
		Diagonal	7/8	13	-4.87	7.58	64.3	Pass
		Diagonal	7/8	14	-4.23	7.58	55.8	Pass
		Diagonal	7/8	15	-4.33	7.58	57.2	Pass
		Diagonal	7/8	16	-2.11	7.58	27.9	Pass
		Diagonal	7/8	17	-2.11	7.58	27.9	Pass
		Diagonal	7/8	18	-4.74	7.58	62.5	Pass
		Diagonal	7/8	19	-4.80	7.58	63.3	Pass
		Diagonal	7/8	20	-4.17	7.58	55.0	Pass
		Diagonal	7/8	21	-4.11	7.58	54.3	Pass
		Diagonal	7/8	22	-2.08	7.58	27.4	Pass
		Diagonal	7/8	23	-2.06	7.58	27.1	Pass
		Diagonal	7/8	24	-4.69	7.58	61.9	Pass
		Diagonal	7/8	25	-4.63	7.58	61.1	Pass
		Diagonal	7/8	26	-4.04	7.58	53.2	Pass
		Diagonal	7/8	27	-4.10	7.58	54.0	Pass
		Diagonal	7/8	28	-1.97	7.58	26.0	Pass
		Diagonal	7/8	29	-1.97	7.58	26.0	Pass
		Diagonal	7/8	30	-4.48	7.58	59.2	Pass
		Diagonal	7/8	31	-4.52	7.58	59.6	Pass
		Diagonal	7/8	32	-3.86	7.58	50.8	Pass
		Diagonal	7/8	33	-3.82	7.58	50.4	Pass
		Diagonal	7/8	34	-1.99	7.58	26.3	Pass
		Diagonal	7/8	35	-1.91	7.58	25.2	Pass
		Diagonal	7/8	36	-4.41	7.58	58.2	Pass
Diagonal	7/8	37	-4.35	7.58	57.4	Pass		
Diagonal	7/8	38	-3.66	7.58	48.2	Pass		
Diagonal	7/8	39	-3.73	7.58	49.3	Pass		
Diagonal	7/8	40	-1.80	7.58	23.8	Pass		
Diagonal	7/8	41	-1.84	7.58	24.3	Pass		
Diagonal	7/8	42	-4.19	7.58	55.2	Pass		
Diagonal	7/8	43	-4.24	7.58	55.9	Pass		
Diagonal	7/8	44	-3.59	7.58	47.3	Pass		
Diagonal	7/8	45	-3.52	7.58	46.4	Pass		
Diagonal	7/8	46	-1.91	7.58	25.1	Pass		
Diagonal	7/8	47	-1.85	7.58	24.4	Pass		
Diagonal	7/8	48	-4.23	7.58	55.8	Pass		

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T2	150 - 140	Diagonal	7/8	49	-4.19	7.58	55.2	Pass
		Diagonal	7/8	50	-3.55	7.58	46.8	Pass
		Diagonal	7/8	51	-3.60	7.58	47.5	Pass
		Diagonal	7/8	52	-1.33	7.58	17.6	Pass
		Diagonal	7/8	53	-0.71	7.58	9.3	Pass
		Diagonal	7/8	54	-3.15	7.58	41.6	Pass
		Diagonal	7/8	55	-2.89	7.58	38.1	Pass
		Diagonal	7/8	56	-2.08	7.58	27.4	Pass
		Diagonal	7/8	57	-2.63	7.58	34.6	Pass
		Diagonal	L2 1/2x2 1/2x3/16	64	-3.51	17.58	20.0	Pass
		Diagonal	L2 1/2x2 1/2x3/16	65	-1.99	17.58	11.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	66	-7.66	17.58	43.6	Pass
		T3	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	67	-6.26	17.58
Diagonal	L2 1/2x2 1/2x3/16			68	-4.74	17.58	35.6	Pass
Diagonal	L2 1/2x2 1/2x3/16			69	-4.74	17.58	55.1 (b)	Pass
Diagonal	L2 1/2x2 1/2x3/16			70	-4.74	17.58	26.9	Pass
Diagonal	L2 1/2x2 1/2x3/16			71	-6.95	17.58	41.4 (b)	Pass
Diagonal	L3x3x1/4			72	-6.95	30.87	39.5	Pass
Diagonal	L3x3x1/4			73	-4.95	30.87	60.5 (b)	Pass
Diagonal	L3x3x1/4			74	-5.22	30.87	16.0	Pass
Diagonal	L3x3x1/4			75	-10.60	30.87	24.6 (b)	Pass
Diagonal	L3x3x1/4			76	-9.75	30.87	25.6 (b)	Pass
Diagonal	L3x3x1/4			77	-10.69	30.87	34.3	Pass
Diagonal	L3x3x1/4			78	-11.32	30.87	53.6 (b)	Pass
Diagonal	L3x3x1/4			79	-2.84	32.96	31.6	Pass
T4	120 - 100	Diagonal	L3x3x1/4	80	-2.85	32.96	51.1 (b)	Pass
		Diagonal	L3x3x1/4	81	-8.88	32.96	34.6	Pass
		Diagonal	L3x3x1/4	82	-8.38	32.96	55.6 (b)	Pass
		Diagonal	L3x3x1/4	83	-8.24	32.96	36.7	Pass
		Diagonal	L3x3x1/4	84	-8.78	32.96	57.8 (b)	Pass
		Diagonal	L3x3x1/4	85	-8.78	32.96	8.6	Pass
		Diagonal	L3x3x1/4	86	-8.78	32.96	13.9 (b)	Pass
		Diagonal	L3x3x1/4	87	-8.78	32.96	8.6	Pass
		Diagonal	L3x3x1/4	88	-8.88	32.96	13.9 (b)	Pass
		Diagonal	L3x3x1/4	89	-8.88	32.96	8.6	Pass
		Diagonal	L3x3x1/4	90	-8.88	32.96	13.9 (b)	Pass
		Diagonal	L3x3x1/4	91	-9.34	25.06	26.9	Pass
		Diagonal	L3x3x1/4	92	-9.44	25.06	45.3 (b)	Pass
Diagonal	L3x3x1/4	93	-13.63	25.06	25.4	Pass		
Diagonal	L3x3x1/4	94	-12.40	25.06	44.3 (b)	Pass		
Diagonal	L3x3x1/4	95	-12.60	25.06	25.0	Pass		
Diagonal	L3x3x1/4	96	-13.75	25.06	43.3 (b)	Pass		
Diagonal	L3x3x1/4	97	-7.88	27.60	26.7	Pass		
Diagonal	L3x3x1/4	98	-8.17	27.60	44.8 (b)	Pass		
Diagonal	L3x3x1/4	99	-8.17	27.60	37.3	Pass		
Diagonal	L3x3x1/4	100	-8.17	27.60	55.2 (b)	Pass		
Diagonal	L3x3x1/4	101	-8.17	27.60	37.7	Pass		
Diagonal	L3x3x1/4	102	-8.17	27.60	55.7 (b)	Pass		
Diagonal	L3x3x1/4	103	-8.17	27.60	54.4	Pass		
Diagonal	L3x3x1/4	104	-8.17	27.60	81.6 (b)	Pass		
Diagonal	L3x3x1/4	105	-8.17	27.60	49.5	Pass		
Diagonal	L3x3x1/4	106	-8.17	27.60	75.3 (b)	Pass		
Diagonal	L3x3x1/4	107	-8.17	27.60	50.3	Pass		
Diagonal	L3x3x1/4	108	-8.17	27.60	76.5 (b)	Pass		
Diagonal	L3x3x1/4	109	-8.17	27.60	54.9	Pass		
Diagonal	L3x3x1/4	110	-8.17	27.60	82.3 (b)	Pass		
Diagonal	L3x3x1/4	111	-8.17	27.60	28.6	Pass		
Diagonal	L3x3x1/4	112	-8.17	27.60	47.1 (b)	Pass		
Diagonal	L3x3x1/4	113	-8.17	27.60	29.6	Pass		
Diagonal	L3x3x1/4	114	-8.17	27.60	48.6 (b)	Pass		

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail		
T5	100 - 90	Diagonal	L3x3x1/4	99	-12.93	27.60	46.9	Pass		
		Diagonal	L3x3x1/4	100	-11.84	27.60	78.4 (b) 42.9	Pass		
		Diagonal	L3x3x1/4	101	-12.36	27.60	73.4 (b) 44.8	Pass		
		Diagonal	L3x3x1/4	102	-13.24	27.60	76.7 (b) 48.0	Pass		
		Diagonal	L3x3x5/16	106	-11.55	27.36	81.1 (b) 42.2	Pass		
		Diagonal	L3x3x5/16	107	-11.55	27.36	57.6 (b) 42.2	Pass		
		Diagonal	L3x3x5/16	108	-14.86	27.36	57.5 (b) 54.3	Pass		
		Diagonal	L3x3x5/16	109	-14.58	27.36	73.9 (b) 53.3	Pass		
		Diagonal	L3x3x5/16	110	-14.68	27.36	73.6 (b) 53.7	Pass		
		Diagonal	L3x3x5/16	111	-14.81	27.36	74.1 (b) 54.1	Pass		
T6	90 - 80	Diagonal	L3 1/2x3 1/2x5/16	115	-12.08	38.98	74.4 (b) 31.0	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	116	-12.08	38.98	51.0 (b) 31.0	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	117	-14.98	38.98	51.0 (b) 38.4	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	118	-14.81	38.98	63.0 (b) 38.0	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	119	-14.84	38.98	63.2 (b) 38.1	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	120	-14.90	38.98	63.4 (b) 38.2	Pass		
T7	80 - 60	Diagonal	L3 1/2x3 1/2x5/16	124	-12.79	31.50	63.1 (b) 40.6	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	125	-12.79	31.50	54.2 (b) 40.6	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	126	-15.19	31.50	54.3 (b) 48.2	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	127	-15.04	31.50	64.1 (b) 47.7	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	128	-15.09	31.50	64.4 (b) 47.9	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	129	-15.14	31.50	64.6 (b) 48.1	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	130	-12.27	34.82	64.3 (b) 35.2	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	131	-12.26	34.82	52.3 (b) 35.2	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	132	-15.15	34.82	52.4 (b) 43.5	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	133	-14.93	34.82	64.1 (b) 42.9	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	134	-14.90	34.82	64.3 (b) 42.8	Pass		
		Diagonal	L3 1/2x3 1/2x5/16	135	-14.97	34.82	64.2 (b) 43.0	Pass		
		T8	60 - 40	Diagonal	L3 1/2x3 1/2x5/16	139	-13.71	25.96	64.0 (b) 52.8	Pass
				Diagonal	L3 1/2x3 1/2x5/16	140	-13.71	25.96	64.2 (b) 52.8	Pass
Diagonal	L3 1/2x3 1/2x5/16			141	-15.53	25.96	64.2 (b) 59.8	Pass		

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L3 1/2x3 1/2x5/16	142	-15.38	25.96	72.3 (b) 59.2	Pass
		Diagonal	L3 1/2x3 1/2x5/16	143	-15.54	25.96	72.5 (b) 59.8	Pass
		Diagonal	L3 1/2x3 1/2x5/16	144	-15.57	25.96	73.2 (b) 60.0	Pass
		Diagonal	L3 1/2x3 1/2x5/16	145	-13.22	28.58	73.0 (b) 46.2	Pass
		Diagonal	L3 1/2x3 1/2x5/16	146	-13.21	28.58	62.3 (b) 46.2	Pass
		Diagonal	L3 1/2x3 1/2x5/16	147	-15.23	28.58	62.4 (b) 53.3	Pass
		Diagonal	L3 1/2x3 1/2x5/16	148	-15.16	28.58	71.9 (b) 53.1	Pass
		Diagonal	L3 1/2x3 1/2x5/16	149	-15.26	28.58	72.1 (b) 53.4	Pass
		Diagonal	L3 1/2x3 1/2x5/16	150	-15.31	28.58	72.6 (b) 53.6	Pass
T9	40 - 20	Diagonal	L4x4x5/16	154	-14.59	32.43	72.4 (b) 45.0	Pass
		Diagonal	L4x4x5/16	155	-14.59	32.43	60.3 (b) 45.0	Pass
		Diagonal	L4x4x5/16	156	-16.06	32.43	60.3 (b) 49.5	Pass
		Diagonal	L4x4x5/16	157	-15.86	32.43	65.7 (b) 48.9	Pass
		Diagonal	L4x4x5/16	158	-16.11	32.43	65.9 (b) 49.7	Pass
		Diagonal	L4x4x5/16	159	-16.14	32.43	66.9 (b) 49.8	Pass
		Diagonal	L4x4x5/16	160	-14.12	35.52	66.8 (b) 39.8	Pass
		Diagonal	L4x4x5/16	161	-14.12	35.52	59.2 (b) 39.8	Pass
		Diagonal	L4x4x5/16	162	-15.63	35.52	59.3 (b) 44.0	Pass
		Diagonal	L4x4x5/16	163	-15.60	35.52	65.6 (b) 43.9	Pass
		Diagonal	L4x4x5/16	164	-15.81	35.52	65.8 (b) 44.5	Pass
		Diagonal	L4x4x5/16	165	-15.84	35.52	66.7 (b) 44.6	Pass
T10	20 - 0	Diagonal	L5x5x5/16	169	-16.15	54.73	66.5 (b) 29.5	Pass
		Diagonal	L5x5x5/16	170	-16.23	54.73	42.2 (b) 29.7	Pass
		Diagonal	L5x5x5/16	171	-17.96	54.73	42.2 (b) 32.8	Pass
		Diagonal	L5x5x5/16	172	-17.19	54.73	46.1 (b) 31.4	Pass
		Diagonal	L5x5x5/16	173	-17.49	54.73	45.1 (b) 32.0	Pass
		Diagonal	L5x5x5/16	174	-17.86	54.73	45.9 (b) 32.6	Pass
		Diagonal	L5x5x5/16	175	-14.52	59.65	46.8 (b) 24.3	Pass
		Diagonal	L5x5x5/16	176	-14.52	59.65	38.9 (b) 24.3	Pass
		Diagonal	L5x5x5/16	177	-15.72	59.65	38.9 (b) 26.4	Pass
							42.2 (b)	

tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	22007.04 - CT1141	Page	57 of 57
	Project	170' Lattice Tower Cromwell, CT	Date	10:05:41 04/11/22
	Client	AT&T	Designed by	TJL

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
		Diagonal	L5x5x5/16	178	-15.69	59.65	26.3	Pass	
		Diagonal	L5x5x5/16	179	-15.99	59.65	42.9 (b) 26.8	Pass	
		Diagonal	L5x5x5/16	180	-16.01	59.65	43.0 (b) 26.8	Pass	
T1	170 - 150	Top Girt	7/8	4	-0.47	3.91	42.9 (b) 11.9	Pass	
		Top Girt	7/8	5	-0.46	3.91	11.8	Pass	
		Top Girt	7/8	6	-0.46	3.91	11.8	Pass	
T2	150 - 140	Top Girt	L3x3x3/16	61	-0.82	27.09	3.0	Pass	
		Top Girt	L3x3x3/16	62	-0.86	27.09	8.1 (b) 3.2	Pass	
		Top Girt	L3x3x3/16	63	-0.82	27.09	8.4 (b) 3.0	Pass	
T1	170 - 150	Bottom Girt	7/8	7	-0.75	3.91	8.1 (b) 19.2	Pass	
		Bottom Girt	7/8	8	-0.78	3.91	19.8	Pass	
		Bottom Girt	7/8	9	-0.75	3.91	19.1	Pass	
T4	120 - 100	Mid Girt	L3x3x3/16	88	-3.51	13.09	26.8	Pass	
		Mid Girt	L3x3x3/16	89	-3.48	13.09	39.1 (b) 26.6	Pass	
		Mid Girt	L3x3x3/16	90	-3.46	13.09	39.7 (b) 26.4	Pass	
							39.6 (b)		
							Summary		
							Leg (T9)	88.4	Pass
							Diagonal (T4)	82.3	Pass
							Top Girt (T1)	11.9	Pass
							Bottom Girt (T1)	19.8	Pass
							Mid Girt (T4)	39.7	Pass
							Bolt Checks	82.3	Pass
							RATING =	88.4	Pass

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 410-kips	(Input From trnTower)
Compression Force =	Compression := 458-kips	(Input From trnTower)
Shear Force =	Shear := 51-kips	(Input From trnTower)

Anchor Bolt Data:

ASTMA687

Number of Anchor Bolts =	N := 6	(User Input)
Bolt Ultimate Strength =	$F_u := 150$ -ksi	(User Input)
Bolt Yield Strength =	$F_y := 105$ -ksi	(User Input)
Bolt Modulus =	E := 29000-ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.25-in	(User Input)
Threads per Inch =	n := 7	(User Input)
Length from Top of Pier to Bottom of Leveling Nut =	$L_{ar} := 1$ -in	(User Input)

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 1.227 \cdot \text{in}^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot \text{in}}{n} \right)^2 = 0.969 \cdot \text{in}^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.111 \cdot \text{in}$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.278 \cdot \text{in}$

Elastic Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.135 \cdot \text{in}^3$

Plastic Section Modulus of Bolt = $Z_x := \frac{D_n^3}{6} = 0.228 \cdot \text{in}^3$

Anchor Bolt Design Strength:

Resistance Factor for Flexure = $\phi_f := 0.9$

Resistance Factor for Compression = $\phi_c := 0.9$

Resistance Factor for Tension = $\phi_t := 0.75$

Resistance Factor for Shear = $\phi_v := 0.75$

Design Tensile Strength = $\Phi R_{nt} := \phi_t \cdot F_u \cdot A_n = 109 \cdot \text{k}$

Design Compression Strength = $\Phi R_{nc} := \phi_c \cdot F_y \cdot A_g = 116 \cdot \text{k}$

Design Shear Strength (Tension) = $\Phi R_{nv} := \phi_v \cdot 0.5 F_u \cdot A_g = 69 \cdot \text{k}$

Design Shear Strength (Compression) = $\Phi R_{nvc} := \phi_c \cdot 0.6 F_y \cdot A_g \cdot 0.75 = 52.2 \cdot \text{k}$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $P_{ut} := \frac{\text{Tension}}{N} = 68.3\text{-kips}$

Maximum Compressive Force = $P_{uc} := \frac{\text{Compression}}{N} = 76.3\text{-kips}$

Maximum Shear Force = $V_u := \frac{\text{Shear}}{N} = 8.5\text{-kips}$

Condition1 =
$$\text{Condition1} := \text{if} \left[\left[\left(\frac{P_{ut}}{\Phi R_{nt}} \right)^2 + \left(\frac{V_u}{\Phi R_{nv}} \right)^2 \right] \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right]$$

Condition1 = "OK"

Condition2 =
$$\text{Condition2} := \text{if} \left[\left[\left(\frac{P_{uc}}{\Phi R_{nc}} \right) + \left(\frac{V_u}{\Phi R_{nvc}} \right)^2 \right] \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right]$$

Condition2 = "OK"

Bolt % of Capacity =
$$\max \left[\left(\frac{P_{ut}}{\Phi R_{nt}} \right)^2 + \left(\frac{V_u}{\Phi R_{nv}} \right)^2, \left(\frac{P_{uc}}{\Phi R_{nc}} \right) + \left(\frac{V_u}{\Phi R_{nvc}} \right)^2 \right] = 68.5\%$$

Caisson Foundation:

Input Data:

Tower Data

Uplift =	Uplift := 410-kips	(User Input)
Compression =	Comp := 458-kips	(User Input)
Shear Force =	Shear := 51-kips	(User Input)
Tower Height =	H _t := 170-ft	(User Input)

Footing Data:

Length of Caisson =	L _c := 41.5-ft	(User Input)
Extension of Caisson Above Grade =	L _{cag} := 0.5-ft	(User Input)
Diameter of Caisson =	d _c := 5.5-ft	(User Input)
Length of Caisson Above Wate Table =	L _{c.AWT} := 41.5-ft	(User Input)
Length of Caisson Above Wate Table =	L _{c.BWT} := 0-ft	(User Input)

Material Properties:

Concrete Compressive Strength =	f _c := 4000-psi	(User Input)
Steel Reinforcement Yield Strength =	f _y := 60000-psi	(User Input)
Ultimate Skin Friction =	μ := 1.8-ksf	(User Input)
Ultimate Bearing Capacity =	q _u := 32000-psf	(User Input)
Unit Weight of Soil =	γ _{soil} := 100-pcf	(User Input)
Unit Weight of Concrete =	γ _{conc} := 150-pcf	(User Input)
Depth to Neglect =	n := 6-ft	(User Input)
Resistance Factor for Bearing =	Φ _{sBearing} := 0.75	(TIA-222-G 9.4.1)
Resistance Factor for Friction =	Φ _{sFriction} := 0.75	(TIA-222-G 9.4.1)

Calculated Properties:

Adjusted Concrete Unit Weight = $\gamma_c := \gamma_{\text{conc}} - 62.4 \text{pcf} = 87.6 \text{pcf}$

Weight of Concrete Caisson (no water) = $WT_{\text{c.comp}} := \frac{\pi}{4} \cdot (d_c^2 L_c) \cdot \gamma_{\text{conc}} = 147.895 \text{ kips}$

Weight of Concrete Caisson (water) = $WT_{\text{c.uplift}} := \frac{\pi}{4} \cdot \left[(d_c^2 L_{\text{c.AWT}}) \cdot \gamma_{\text{conc}} + (d_c^2 L_{\text{c.BWT}}) \cdot \gamma_c \right] = 147.895 \text{ kips}$

Check Uplift:

Uplift Resistance from Concrete Weight = $Uplift_{\text{conc}} := WT_{\text{c.uplift}} \cdot 0.9 = 133.106 \text{ kips}$

Uplift Resistance from Skin Friction = $Uplift_{\text{SF}} := \pi \cdot d_c \cdot (L_c - L_{\text{cag}} - n) \cdot \mu \cdot \Phi_{\text{SFriction}} = 816.421 \text{ kips}$

Total Uplift Resistance = $Uplift_R := Uplift_{\text{conc}} + Uplift_{\text{SF}} = 949.527 \text{ kips}$

Uplift Check = $\frac{Uplift}{Uplift_R} = 43.18\%$

$Uplift_Check := \text{if} \left(\frac{Uplift_R}{Uplift} \geq 1.0, \text{"Okay"}, \text{"No Good"} \right)$

Uplift_Check = "Okay"

Check Compression:

Total Compression Force = $Comp_{\text{tot}} := WT_{\text{c.comp}} + Comp = 605.895 \text{ kips}$

Compression Resistance from Bearing = $Comp_{\text{bearing}} := \frac{\pi}{4} \cdot d_c^2 \cdot q_u \cdot \Phi_{\text{SBearing}} = 570.199 \text{ kips}$

Compression Resistance from Skin Friction = $Comp_{\text{SF}} := \pi \cdot d_c \cdot (L_c - L_{\text{cag}} - n) \cdot \mu \cdot \Phi_{\text{SFriction}} = 816.421 \text{ kips}$

Total Compression Resistance = $Comp_R := Comp_{\text{bearing}} + Comp_{\text{SF}} = 1386.6 \text{ kips}$

Compression Check = $\frac{Comp_{\text{tot}}}{Comp_R} = 43.7\%$

$Compression_Check := \text{if} \left(\frac{Comp_R}{Comp_{\text{tot}}} \geq 1.0, \text{"Okay"}, \text{"No Good"} \right)$

Compression_Check = "Okay"

Section 1 - RFDS GENERAL INFORMATION											
RFDS NAME:	CTLD1141	DATE:	6/17/2020	RF DESIGN ENG:	Mazen Mohammed	RF PERFORMER:		RFDS PROGRAM TYPE:	2021 5G NR Radio	RF PERFORMER PHONE:	
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	2107767382	RF PERFORMER EMAIL:		RFDS TECHNOLOGY:	5G NR 15R CBAND	STATUS:	Preliminary/Approved
REVISION:	Preliminary	RF MANAGER:	John Benedetto	RF DESIGN EMAIL:	mm023g@afl.com	RF PERFORMER:		STATUS:	Preliminary/Approved	RFDS ID:	4397233
ADDITIONAL WORKFLOW NOTIFICATIONS:						RFDS ID: 4397233					
RFDS VERSION:			2.00	Created By:	mm023g	Updated By:			mm023g		
LIMITS FREQUENCY:				Created:	3/4/2021	Updated:			12/16/2021		
LTE FREQUENCY:			200.1900.AWS.WCS	Estimated SQM:	15.914	Expiration:					
5G FREQUENCY:			300.1900.AWS.CBAND.D0-D	RER Initiative:		Calculation ID:			202112161951144354		
IPLAN JOB # 1:			ER_RCTB21-05216	PRD SUB GRP #1:	5G NR Software Radio 5G NR Activation						
IPLAN JOB # 2:			ER_RCTB21-05124	PRD SUB GRP #2:	5G NR Radio 5G NR 15R CBAND						
IPLAN JOB # 3:			ER_RCTB21-05214	PRD SUB GRP #3:	5G NR Software Radio 5G NR Activation						
IPLAN JOB # 4:			ER_RCTB21-05126	PRD SUB GRP #4:	5G NR Radio 5G NR 15R CBAND						
IPLAN JOB # 5:				PRD SUB GRP #5:							
IPLAN JOB # 6:				PRD SUB GRP #6:							
IPLAN JOB # 7:				PRD SUB GRP #7:							
IPLAN JOB # 8:				PRD SUB GRP #8:							
CBAND + D0D											
Section 2 - LOCATION INFORMATION											
URID:	5814	FA LOCATION CODE:	H0035331	LOCATION NAME:	CROMWELL US MIL	ORACLE PRJT # 1:		PAGE JOB #1:	MRC78053579		
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PRJT # 2:	2051A11LEN	PAGE JOB #2:	MRC78056383		
ADDRESS:	179 SHUNPIKE ROAD	CITY:	CROMWELL	STATE:	CT	ORACLE PRJT # 3:		PAGE JOB #3:	MRC78053574		
ZIP CODE:	06416	COUNTY:	MIDDLESEX	LONG (DEC. DEG.):	-72.6790381	ORACLE PRJT # 4:	2051A11LEP	PAGE JOB #4:	MRC78056241		
LATITUDE (D-M-S):	41d 37m 23.60316s	LONGITUDE (D-M-S):	72d -40m 44.53716s	LAT (DEC. DEG.):	41.6232231	ORACLE PRJT # 5:		PAGE JOB #5:			
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:						ORACLE PRJT # 6:		PAGE JOB #6:			
<p>UPDATED STEVE S08/11/2021 TAKE EXT 23 OF RTE 91 WEST STREET GO 1.4 MILE TO RTE 3 GO SOUTH ON RTE 3 APPROX 2 MILES TO 179 SOVEREIGN RIDGE ACCESS ROAD ENTRANCE IS ON THE RIGHT BETWEEN 2 FIRE HYDRANTS 1.4 MILE LONG ACCESS ROAD UP A SLIGHT HILL TO SITE TOWER VISIBLE FROM RTE 3 WHEN HEADING SOUTH TAKE ROUTE 17 NORTH TO RIDGEWOOD AVE FOLLOW RIDGEWOOD AVENUE TO THE GARDEN STATE PARKWAY GET ON GONGS NORTH STAY ON THE GARDEN STATE PARKWAY NORTH UNTIL YOU GET TO THE NEW YORK STATE THRUWAY (RT 87 SOUTH) TOWARDS THE TAPPAN ZEE BRIDGE CROSS THE TAPPAN ZEE BRIDGE AND GET OFF EXT 8 (CROSS WESTCHESTER PARKWAY RT 287) TAKE RT 287 EAST TO 85 NORTH (NEW ENGLAND THRUWAY) IN NEW HAVEN GET OFF EXT 48 THIS WILL BE A LEFT HAND EXIT THAT WILL PUT YOU ON B1 NORTH TAKE EXITS 21 (ROUTE 372) AT END OF EXT GO LEFT ONTO ROUTE 372 FOLLOW ROUTE AND TAKE A LEFT ONTO SHUNPIKE ROAD (ROUTE 3) FOLLOW SHUNPIKE ROAD FOR ABOUT FOUR MILES TURN LEFT ONTO SOBERIGN RIDGE AND THEN FIRST DRIVEWAY ON RIGHT WHEN YOU GET UP TO THE TOP OF THE HILL BEFORE THE GATE ON YOUR LEFT HAND SIDE YOU WILL SEE A CALL BOX WITH INSTRUCTIONS BELOW IT FOLLOW THE INSTRUCTIONS AND YOU WILL BE GIVE ACCESS REMOTELY WHEN LEAVING THE COMPOUND THE GATE WILL OPEN AUTOMATICALLY THIS SITE HAS A FIXED GENERATOR THAT RUNS OUR GEAR THAT IS MAINTAINED BY THE CROMWELL FIRE DEPARTMENT DO NOT RUN OR THROW COMMERCIAL POWER TO RUN THE GENERATOR PER THE FIRE DEPARTMENT ADDRESS: 179 SHUNPIKE ROAD CROMWELL CT 06416 ACCESS: 24/7 CONTACT: CROMWELL FIRE DISTRICT 8606355211 OR 8606352256 POWER COMPANY: EVERSOURCE ENERGY (800) 2862000 METER: 89592977FRE: (860) 3422320 POLICE: (860) 3478941</p>						ORACLE PRJT # 7:		PAGE JOB #7:			
						ORACLE PRJT # 8:		PAGE JOB #8:			
BORDER CELL WITH COORDINATE:						SEARCH RING NAME:					
AM STUDY REQ'D (Y/N):						No	SEARCH RING ID:				
PRD COORD:						ETA:	MSA / RSA:				
						LAC (UMTS):		05986			
RF DISTRICT:						TBD	RNC (UMTS):		MIDDLETOWN RNC06		
RF ZONE:						TBD	MME POOL ID (LTE):		FF01		
PARENT NAME (UMTS):						MDTWC TNCR BR06					
Section 3 - LICENSE COVERAGE/FILING INFORMATION											
CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:		CGSA CALL SIGNS:					
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:		-KNL8312z_KNL8312z_KNL8312					
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:									
Section 4 - TOWER/REGULATORY INFORMATION											
STRUCTURE AT A T OWNED?:	No	GROUND ELEVATION (ft):		STRUCTURE TYPE:	SELF SUPPORT	MARKET LOCATION 700 Mhz Band:					
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	0.00	FCI ASR NUMBER:		MARKET LOCATION 850 Mhz Band:					
SUB-LEASE RIGHTS?:	No	STRUCTURE HEIGHT (ft):	170.00			MARKET LOCATION 1900 Mhz Band:					
LIGHTING TYPE:	NOT REQUIRED										
						MARKET LOCATION AWS Band:					
						MARKET LOCATION WCS Band:					
						MARKET LOCATION Future Band:					
Section 5 - E-911 INFORMATION - existing											
SECTOR A	E-911	PSAP NAME:		PSAP ID:		E911 PHASE:		MPC SVC PROVIDER:		LMU REQUIRED:	
SECTOR B						INTRADO				0	
SECTOR C						INTRADO				0	
SECTOR D						INTRADO				0	
SECTOR E											
SECTOR F											
OMN											
Section 5 - E-911 INFORMATION - final											
SECTOR A	E-911	PSAP NAME:		PSAP ID:		E911 PHASE:		MPC SVC PROVIDER:		LMU REQUIRED:	
SECTOR B						INTRADO				0	
SECTOR C						INTRADO				0	
SECTOR D						INTRADO				0	
SECTOR E											
SECTOR F											
OMN											

Section 6/7 - BBU INFORMATION - existing

	BBU 1	BBU 2	BBU 3	BBU 4
BBU ID:	172451	246976	366901	568403
TECHNOLOGY:	LIMITS	LIMITS	LTE	LTE 5G
BBU NAME:	CTU1141	CTU1141	CTU01141	CTU00141R,CTN001141
BBU USID:	5814	5814	5814	5814
CELL ID / BCF:	CTU1141	CTU1141	CTU1141	CTU00141R
BT/AT/D:	184V	184U	184L	184L
4-9 DIGIT SITE ID:	1141	1141	1141	0141
COW OR TOY?	No	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	OVERLAY	BASE	BASE
EQUIPMENT NAME:	CROMWELL US MML - LIMITS	CROMWELL - FIRE DEPT.	CROMWELL US MML	CROMWELL US MML
DISASTER PRIORITY:	2	0	0	2
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE (Mod46):			6601 INDOOR MU	6601 INDOOR MU
BASEBAND CONFIGURATION:				1x6601 / 2x6630 / 1xUMR03 + 1DLc
MARKET STATE CODE:			CT	CT,CTC
NODE B NUMBER:	0	0	1141	141,1141
SIDEHAUL SWITCH VENDOR:				
SIDEHAUL SWITCH MODEL:				
SIDEHAUL SWITCH NAME:				
CSS - CTS COMMON ID:	CTU1141	CTU1141	CTU01141	CTU00141R
CSS - SECONDARY FUNCTION ID:				CTN001141

Section 6/7 - BBU INFORMATION - final

	BBU 1	BBU 2	BBU 3
BBU ID:	366901	0	568403
TECHNOLOGY:	LTE	5G	LTE 5G
BBU NAME:	CTU01141	CTN01141	CTU00141R,CTN001141
BBU USID:	5814	5814	5814
CELL ID / BCF:	CTU01141	CTN01141	CTU00141R
BT/AT/D:	184L	184L	184L
4-9 DIGIT SITE ID:	1141	1401141	0141
COW OR TOY?	No	No	No
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED
SITE TYPE:	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL
BTS LOCATION ID:	INTERNAL	INTERNAL	INTERNAL
BASE STATION TYPE:	BASE	OVERLAY	BASE
EQUIPMENT NAME:	CROMWELL US MML	CTN01141	CROMWELL US MML
DISASTER PRIORITY:	3	0	0
EQUIPMENT VENDOR:	ERICSSON	ERICSSON	ERICSSON
EQUIPMENT TYPE (Mod46):	BASEBAND 6630	BASEBAND 6648	BASEBAND 6630
BASEBAND CONFIGURATION:	1x6601 / 1x6630 / 1xUMR03	xxxxx / 1x6648 / xxxxx + 1DLc	xxxxx / 1x6630 Mixed Mode / xxxxx + 1
MARKET STATE CODE:	CT	CTC	CT,CTC
NODE B NUMBER:	1141	11141	141,1141
SIDEHAUL SWITCH VENDOR:			
SIDEHAUL SWITCH MODEL:			
SIDEHAUL SWITCH NAME:			
CSS - CTS COMMON ID:	CTU01141		CTU00141R
CSS - SECONDARY FUNCTION ID:			CTN001141

Section 7b - Radio INFORMATION - existing

Section 7b - Radio INFORMATION - final

Section 8 - RBS/SECTOR ASSOCIATION - existing

	BBU 1	BBU 2	BBU 3	BBU 4
CTS Common ID	CTU1141	CTV1141	CTU1141	CTU00141R,CTN001141
Soft Sector IDs	CTU11414	CTV11411	CTU1141_2A_2	CTN001141_N005A_1
	CTU11415	CTV11412	CTU1141_2B_2	CTN001141_N005B_1
	CTU11416	CTV11413	CTU1141_2C_2	CTN001141_N005C_1
	CTU11417	CTV1141A	CTU1141_3A_1	CTU00141_2A_2
	CTU11418	CTV1141B	CTU1141_3B_1	CTU00141_2B_2
	CTU11419	CTV1141C	CTU1141_3C_1	CTU00141_2C_2
			CTU1141_7A_1	CTU00141_3B_1
			CTU1141_7A_3 F	CTU00141_7B_1
			CTU1141_7B_1	CTU00141_4A_1
			CTU1141_7B_3 F	CTU00141_4A_2
			CTU1141_7C_1	CTU00141_4B_1
			CTU1141_7C_3 F	CTU00141_4B_2
			CTU1141_8A_1	CTU00141_4C_1
			CTU1141_8B_1	CTU00141_4C_2
			CTU1141_8C_1	
			CTU1141_9A_1	
			CTU1141_9A_2	
			CTU1141_9A_3	
			CTU1141_9B_1	
			CTU1141_9B_2	
			CTU1141_9B_3	
			CTU1141_9C_1	
			CTU1141_9C_2	
			CTU1141_9C_3	

Section 8 - RBS/SECTOR ASSOCIATION - final

	BBU 1	BBU 2	BBU 3
CTS Common ID	CTU0141	CTN01141	CTU0141R,CTN001141
Soft Sector IDs	CTU0141_3A_1	CTN01141_N077A_1	CTN001141_N002A_1
	CTU0141_3B_1	CTN01141_N077A_2	CTN001141_N002B_1
	CTU0141_3C_1	CTN01141_N077B_1	CTN001141_N002C_1
	CTU0141_7A_1	CTN01141_N077B_2	CTN001141_N005A_1
	CTU0141_7A_3 F	CTN01141_N077C_1	CTN001141_N005B_1
	CTU0141_7B_1	CTN01141_N077C_2	CTN001141_N005C_1
	CTU0141_7B_3 F		CTN001141_N066A_1
	CTU0141_7C_1		CTN001141_N066B_1
	CTU0141_7C_3 F		CTN001141_N066C_1
			CTU00141_2A_2
			CTU00141_2B_2
			CTU00141_2C_2
			CTU00141_4A_1
			CTU00141_4A_2
			CTU00141_4B_1
			CTU00141_4B_2
			CTU00141_4C_1
			CTU00141_4C_2

Section 9 - SOFT SECTOR ID - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 3RD 700	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND	
USBD (excluding Hard Sector)	S814 850 3G.1	S814 1900 3G.1	S814 850 3G.2	S814 1900 3G.2																			
SECTOR A SOFT SECTOR ID	CTV11411	CTU11417	CTV1141A	CTU11414	CTU1141_7A_1	CTU1141_8A_1	CTU1141_9A_1	CTU00141_2A_2	CTU1141_3A_1	CTU1141_3A_3 F	CTU00141_4A_1	CTU1141_4A_2	CTU1141_4B_1	CTU1141_4B_2	CTU1141_4B_3	CTU00141_4B_1	CTU1141_4B_2	CTU1141_4B_3	CTU00141_4B_1	CTU1141_4B_2	CTU00141_4B_1	CTU1141_4B_2	CTU00141_4B_1
SECTOR B	CTV11412	CTU11418	CTV1141B	CTU11415	CTU1141_7B_1	CTU1141_8B_1	CTU1141_9B_1	CTU00141_2B_2	CTU1141_3B_1	CTU1141_3B_3 F	CTU00141_4B_2	CTU1141_4B_3	CTU00141_4B_2	CTU00141_4B_3	CTU00141_4B_3	CTU00141_4B_2	CTU1141_4B_1	CTU00141_4B_1	CTU1141_4B_2	CTU00141_4B_2	CTU1141_4B_3	CTU00141_4B_3	CTU00141_4B_2
SECTOR C	CTV11413	CTU11419	CTV1141C	CTU11416	CTU1141_7C_1	CTU1141_8C_1	CTU1141_9C_1	CTU00141_2C_2	CTU1141_3C_1	CTU1141_3C_3 F	CTU00141_4C_2	CTU1141_4C_2	CTU00141_4C_2	CTU00141_4C_3	CTU00141_4C_3	CTU00141_4C_1	CTU1141_4C_1	CTU00141_4C_1	CTU1141_4C_2	CTU00141_4C_2	CTU00141_4C_2	CTU00141_4C_2	CTU00141_4C_2
SECTOR D																							
SECTOR E																							
SECTOR F																							
OMNI																							

Section 9 - SOFT SECTOR ID - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 3RD 700	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST CBAND	5G 2ND CBAND	
USBD (excluding Hard Sector)																							
SECTOR A SOFT SECTOR ID					CTU1141_7A_1			CTU00141_2A_2	CTU1141_3A_1	CTU1141_3A_3 F	CTU00141_4A_2						CTU00141_4A_1	CTN001141_N005	CTN001141_N002	CTN001141_N066	CTN001141_N077	CTN01141_N077A_2	
SECTOR B					CTU1141_7B_1			CTU00141_2B_2	CTU1141_3B_1	CTU1141_3B_3 F	CTU00141_4B_2						CTU00141_4B_1	CTN001141_N005	CTN001141_N002	CTN001141_N066	CTN01141_N077	CTN01141_N077B_2	
SECTOR C					CTU1141_7C_1			CTU00141_2C_2	CTU1141_3C_1	CTU1141_3C_3 F	CTU00141_4C_2						CTU00141_4C_1	CTN001141_N005	CTN001141_N002	CTN001141_N066	CTN01141_N077	CTN01141_N077C_2	
SECTOR D																							
SECTOR E																							
SECTOR F																							
OMNI																							

Section 9 - Cell Number - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 3RD 700	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST GRAND	5G 2ND GRAND	
USBD (excluding Hard Sector)	5814 850 3G.1	5814 1900 3G.1	5814 850 3G.2	5814 1900 3G.2																			
SECTOR A CELL NUMBER					15	1	8	192	149	171	178	192				199	8	178	25				
SECTOR B					16	2	9	193	150	172	179	193	150	16		200	9	179	49				
SECTOR C					17	3	10	194	151	173	180	194				201	10	180	73				
SECTOR D																							
SECTOR E																							
SECTOR F																							
OMNI																							

Section 9 - Cell Number - final

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 3RD 700	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST GRAND	5G 2ND GRAND	
USBD (excluding Hard Sector)																							
SECTOR A CELL NUMBER					15			192	149	171	178					8		25	26	27	28	29	
SECTOR B					16			193	150	172	179					9		49	50	51	52	53	
SECTOR C					17			194	151	173	180					10		73	74	75	76	77	
SECTOR D																							
SECTOR E																							
SECTOR F																							
OMNI																							

Section 10 - CID/SAC - existing

	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	UMTS 2ND 1900	LTE 1ST 700	LTE 1ST 850	LTE 1ST 1900	LTE 1ST AWS	LTE 1ST WCS	LTE 2ND 700	LTE 2ND 1900	LTE 2ND AWS	LTE 2ND WCS	LTE 3RD 700	LTE 3RD 1900	LTE 4TH 1900	LTE 5TH 1900	5G 1ST 850	5G 1ST 1900	5G 1ST AWS	5G 1ST GRAND	5G 2ND GRAND	
SECTOR A CID/SAC	11411	11412	11411	11414																			
SECTOR B	11412	11418	11412	11415																			
SECTOR C	11413	11419	11413	11416																			
SECTOR D																							
SECTOR E																							
SECTOR F																							
OMNI																							

Section 10 - CID/SAC - final

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

Section 11 - CURRENT RADIO COUNTS existing

Section 12 - CURRENT T1 COUNTS existing

Section 13 - NEW/PROPOSED RADIO COUNTS

Section 14 - NEW/PROPOSED T1 COUNTS

Section 15A - CURRENT TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION N LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	DMPE6R-BUEDA		GS66512-2	HPA60SR-BULU-H6			
ANTENNA VENDOR	CCI		Quintel	CCI Products			
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7		72X12X6.6	72X14.8X9			
ANTENNA WEIGHT	79.4		111	51			
AZIMUTH	30		30	30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115		115	115			
ANTENNA TIP HEIGHT	118		118	118			
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT			Fiber + 2 Coax				
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # if of inches)							
Antenna RET Motor (QTY/MODEL)	Built in		Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)			4	TSXDC-4310FM			
DUPLEXER (QTY/MODEL)			2	DRCT108FV92-1			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAs (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)	1	DC6-48-60-8F	1	DC6-48-60-18-8F	1	DC6-48-60-18-8F	
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4449 90B12	1	4478 B14			
RRH - 850 band (QTY/MODEL)		with another band		with another band			
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)					1	8843 B2/866A	
RRH - WCS band (QTY/MODEL)			1	8RU5-32 B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FEILDS	PORT NUMBER	USEID (CSSmg)	USEID (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SGP/AMCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSSmg)	
ANTENNA POSITION 1	PORT 1			CTL01141_7A_1	CTL01141_7A_1		LTE 700	BU6D_720MHz_06DT	12.8	30	6	TOP	FIBER	0					1475.7065			3		
	PORT 2			CTL01141_8A_1	CTL01141_8A_1		LTE 850	BU6D_850MHz_06DT	13.2	30	6	TOP	FIBER	0					1000			3		
	PORT 5			CTCN001141_N 205A_1	CTCN001141_N 205A_1		5G 850	BU6D_850MHz_06DT	13.2	30	6	TOP	FIBER	0					1000			3		
ANTENNA POSITION 3	PORT 1			CTV11411	CTV11411		UMTS 850	GS66512-2350.06	13.5	30	6	None	RFS 1-5/8	200		2	TPX-070821			247.74			1	
	PORT 2			CTL01141_7A_3 F	CTL01141_7A_3 F	FN	LTE 700	2_776MHz_06D T	13.5	30	6	Bottom	RFS 1-5/8	200					2951.413			5		
	PORT 3			CTL00141_9A_1	CTL00141_9A_1		LTE 1900	2_1930MHz_06 DT	15.9	30	6	TOP	FIBER	0					7328.7514			6		
	PORT 4			CTL00141_9A_2	CTL00141_9A_2		LTE 1900	2_1930MHz_06 DT	15.9	30	6	TOP	FIBER	0						7328.7514			6	
	PORT 8			CTL01141_3A_1	CTL01141_3A_1		LTE WCS	2_2350MHz_03 DT	16.7	30	3	TOP	FIBER	0					1286.2866			6		
PORT 9			CTV11411	CTV11411		UMTS 850	GS66512-2850.06	13.5	30	6	None	RFS 1-5/8	200			2	TPX-070821			247.74			1	
ANTENNA POSITION 4	PORT 3			CTL00141_2A_2	CTL00141_2A_2		LTE AWS	HE_2170MHz_0 6DT	0	30	6	TOP	FIBER	0					5070.2572			3		

Section 15B - CURRENT TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION N LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	DMPE6R-BUEDA		GS66512-2	HPA65R-BULU-H6			
ANTENNA VENDOR	CCI		Quintel	CCI Products			
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7		72X12X6.6	72X14.8X9			
ANTENNA WEIGHT	79.4		111	51			
AZIMUTH	150		150	150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115		115	115			
ANTENNA TIP HEIGHT	118		118	118			
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT			Fiber + 2 Coax				
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # if of inches)							
Antenna RET Motor (QTY/MODEL)	Built in		Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)			4	TSXDC-4310FM			
DUPLEXER (QTY/MODEL)			2	DRCT108FV92-1			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4449 B0B12 with another band	1	4478 B14 with another band			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)				1	8843 B2B66A		
RRH - WCS band (QTY/MODEL)			1	8RU5-3Z B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FEIDS	PORT NUMBER	USEID (CSSmg)	USEID (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SGP/AMCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSSmg)		
ANTENNA POSITION 1	PORT 1			CTL01141_7B_1	CTL01141_7B_1		LTE 700	BU6D_720MHz_08DT	12.8	150	8	TOP	FIBER	0					1475.7065			11			
	PORT 2			CTL01141_8B_1	CTL01141_8B_1		LTE 850	BU6D_850MHz_08DT	13.4	150	8	TOP	FIBER	0					1000			11			
	PORT 5			CTCN001141_N 205B_1	CTCN001141_N 205B_1		5G 850	BU6D_850MHz_08DT	13.4	150	8	TOP	FIBER	0					1000			11			
ANTENNA POSITION 3	PORT 1			CTV11412	CTV11412		UMTS 850	GS66512-2350.08	13.5	150	8	None	RFS 1-5/8	200		2	TPX-070821			284.45			8		
	PORT 2			CTL01141_7B_3 F	CTL01141_7B_3 F	FN	LTE 700	2_776MHz_08D T	13.6	150	8	Bottom	RFS 1-5/8	200						2951.413			13		
	PORT 3			CTL00141_9B_1	CTL00141_9B_1		LTE 1900	2_1930MHz_05 DT	15.6	150	5	TOP	FIBER	0						7328.7514			14		
	PORT 4			CTL00141_9B_2	CTL00141_9B_2		LTE 1900	2_1930MHz_05 DT	15.6	150	5	TOP	FIBER	0							7328.7514			14	
	PORT 8			CTL01141_3B_1	CTL01141_3B_1		LTE WCS	2_2350MHz_03 DT	16.7	150	3	TOP	FIBER	0							1285.2866			14	
PORT 9			CTV11412	CTV11412		UMTS 850	GS66512-2850.08	13.5	150	8	None	RFS 1-5/8	200		2	TPX-070821				284.45			9		
ANTENNA POSITION 4	PORT 3			CTL00141_2B_2	CTL00141_2B_2		LTE AWS	HE_2170MHz_0 RDT	17.12	150	8	TOP	FIBER	0						5070.2572			16		

Section 15C - CURRENT TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION N LEFT TO RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	DMPE6R-BUEDA		GS66512-2	HPA65R-BULU-H6			
ANTENNA VENDOR	CCI		Quintel	CCI Products			
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7		72X12X6.6	72X14.8X9			
ANTENNA WEIGHT	79.4		111	51			
AZIMUTH	280		280	280			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115		115	115			
ANTENNA TIP HEIGHT	118		118	118			
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT			Fiber + 2 Coax				
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # if of inches)							
Antenna RET Motor (QTY/MODEL)	Built in		Built in	Built in			
SURGE ARRESTOR (QTY/MODEL)							
DUPLEXER (QTY/MODEL)			2	DIRCT108F1V92-1			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4449 906B12	1	with another sector			
RRH - 850 band (QTY/MODEL)		with another band					
RRH - 1900 band (QTY/MODEL)				with another band			
RRH - AWS band (QTY/MODEL)					1	8843 B2866A	
RRH - WCS band (QTY/MODEL)			1	RRUS-32 B30			
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FEILDS	PORT NUMBER	USEID (CSS/Sig)	USEID (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SGPAM/CPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSS/Sig)	
ANTENNA POSITION 1	PORT 1			CTL01141_7C_1	CTL01141_7C_1		LTE 700	BU6D_720MHz_10DT	12.7	280	10	TOP	FIBER	0					1475.7065			19		
	PORT 2			CTL01141_9C_1	CTL01141_9C_1		LTE 850	BU6D_850MHz_10DT	13.3	280	10	TOP	FIBER	0					1000			19		
	PORT 5			CTCN001141_N205C_1	CTCN001141_N205C_1		5G 850	BU6D_850MHz_10DT	13.3	280	10	TOP	FIBER	0					1000			19		
ANTENNA POSITION 3	PORT 1			CTV11413	CTV11413		UMTS 850	GS66512-2850.08	13.5	280	8	None	RFS 1-5/8	200		2	TPX-070821			284.45			17	
	PORT 2			CTL01141_7C_3_F	CTL01141_7C_3_F	PN	LTE 700	2_776MHz_10D	13.7	280	10	Bottom	RFS 1-5/8	200					2851.413			21		
	PORT 3			CTL00141_9C_1	CTL00141_9C_1		LTE 1900	2_1930MHz_06 DT	15.9	280	6	TOP	FIBER	0					7328.7514			22		
	PORT 4			CTL00141_9C_2	CTL00141_9C_2		LTE 1900	2_1930MHz_06 DT	15.9	280	6	TOP	FIBER	0						7328.7514			22	
	PORT 8			CTL01141_3C_1	CTL01141_3C_1		LTE WCS	2_2355MHz_03 DT	16.7	280	3	TOP	FIBER	0						1285.2866			22	
	PORT 9			CTV11413	CTV11413		UMTS 850	GS66512-2850.08	13.5	280	8	None	RFS 1-5/8	200		2	TPX-070821			284.45			17	
ANTENNA POSITION 4	PORT 3			CTL00141_2C_2	CTL00141_2C_2		LTE AWS	HE_2170MHz_0 RDT	0	280	8	TOP	FIBER	0					5070.2572			24		

Section 16A - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION N LEFT TO RIGHT FROM BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE / MODEL	TPA65R-BUEDA-K		ARR449 B77D+ARR6419 B77G STACKED				
ANTENNA VENDOR	DCI		Ericsson				
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7		30.4X15.9X8.1				
ANTENNA WEIGHT	69		81.6				
AZIMUTH	30		30				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115		115				
ANTENNA TIP HEIGHT	118		118				
MECHANICAL DOWNTILT							
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMALNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMA5 (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1		Integrated within: ARR6419 B77G		
Additional RRH #2 - any band (QTY/MODEL)			1		Integrated within: ARR6419 B77G		
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2	Y-cable					
Additional Component 2 (QTY/MODEL)			1		DLc Xcords Gateway (PHG) 6648		
Additional Component 3 (QTY/MODEL)			1				
Local Market Note 1	Follow Antenna/RRHs positions as per PDS. Keep Pos-1 Empty for future SOW.						
Local Market Note 2							
Local Market Note 3	146501 / 146530 / 146503 @ xxxxx / 146530 Mbed-Mode / xxxxx + / 146548+DLc Xcords.						

PORT SPECIFIC RELEDS	PORT NUMBER	USBD (CS/SSg)	USED (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/MCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSSg)	
ANTENNA POSITION 2	PORT 3			CTL00141_9A_1	CTL00141_9A_1		LTE 1900	K_1930MHz_03 DT		30	3	TOP	FIBER	0										
	PORT 4			CTL00141_9A_2	CTL00141_9A_2		LTE 1900	K_1930MHz_03 DT		30	3	TOP	FIBER	0										
	PORT 8			CTL00141_2A_2	CTL00141_2A_2		LTE AWS	K_2170MHz_05 DT		30	5	TOP	FIBER	0										
	PORT 11			CTCN001141_N 002A_1	CTCN001141_N 002A_1		5G 1900	K_1930MHz_05 DT		30	5	TOP	FIBER	0										
	PORT 12			CTCN001141_N 066A_1	CTCN001141_N 066A_1		5G AWS	K_2170MHz_05 DT		30	5	TOP	FIBER	0										
ANTENNA POSITION 3	PORT 1			CTCN011141_N 077A_1	CTCN011141_N 077A_1		5G CBAND	B77D+ARR6419 B77G STACKED		30	0	TOP	FIBER	0										
	PORT 5			CTCN011141_N 077A_2	CTCN011141_N 077A_2		5G DoD	B77D+ARR6419 B77G STACKED		30	0	TOP	FIBER	0										

Section 16B - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION N LEFT TO RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE / MODEL	TPA65R-BUEDA-K		ARR440 B77D+ARR419 B77G STACKED				
ANTENNA VENDOR	DCI		Ericsson				
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7		30.4X15.9X8.1				
ANTENNA WEIGHT	69		81.6				
AZIMUTH	150		150				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115		115				
ANTENNA TIP HEIGHT	118		118				
MECHANICAL DOWNTILT							
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMALNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMA5 (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1			Integrated within: ARR440 B77G	
Additional RRH #2 - any band (QTY/MODEL)						Integrated within: ARR419 B77G	
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2	Y-cable					
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Follow Antenna/RRHs positions as per PDs. Keep Pos-1 Empty for future SOW.						
Local Market Note 2							
Local Market Note 3	146501 / 146530 / 146503 @ xxxxx / 146530 Mbed-Mode / xxxxx + / 146548+DLG Xcde.						

PORT SPECIFIC RELOS	PORT NUMBER	USED (CS/SSg)	USED (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/MCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CS/SSg)	
ANTENNA POSITION 2	PORT 3			CTL00141_9B_1	CTL00141_9B_1		LTE 1900	K_1930MHz_03 DT		150	3	TOP	FIBER	0										
	PORT 4			CTL00141_9B_2	CTL00141_9B_2		LTE 1900	K_1930MHz_03 DT		150	3	TOP	FIBER	0										
	PORT 8			CTL00141_2B_2	CTL00141_2B_2		LTE AWS	K_2170MHz_05 DT		150	5	TOP	FIBER	0										
	PORT 11			CTCN001141_N 0028_1	CTCN001141_N 0028_1		4G 1900	K_1930MHz_05 DT		150	5	TOP	FIBER	0										
	PORT 12			CTCN001141_N 066B_1	CTCN001141_N 066B_1		4G AWS	K_2170MHz_05 DT		150	5	TOP	FIBER	0										
ANTENNA POSITION 3	PORT 1			CTCN011141_N 077A_1	CTCN011141_N 077A_1		4G CBAND	B77D+ARR419 B77G STACKED		150	0	TOP	FIBER	0										
	PORT 5			CTCN011141_N 077A_2	CTCN011141_N 077A_2		4G DoD	B77D+ARR419 B77G STACKED		150	0	TOP	FIBER	0										

Section 16C - PLANNED/PROPOSED TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION N LEFT TO RIGHT FROM BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE / MODEL	TPA65R-BUEDA-K	ARR640 B77D+ARR6419 B77G STACKED					
ANTENNA VENDOR	DCI	Ericsson					
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7	30.4X15.9X8.1					
ANTENNA WEIGHT	69	81.6					
AZIMUTH	280	280					
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115	115					
ANTENNA TIP HEIGHT	118	118					
MECHANICAL DOWNTILT							
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMALNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMA5 (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)	1	DC6-48-60-18					
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)			1		Integrated within: ARR640 B77D		
Additional RRH #2 - any band (QTY/MODEL)					Integrated within: ARR6419 B77G		
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	2	Y-cable					
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	Follow Antenna/RRHs positions as per PDS. Keep Pos-1 Empty for future SOW.						
Local Market Note 2							
Local Market Note 3	146501 / 146530 / 146503 @ xxxxx / 146530 Mbed-Mode / xxxxx + / 146548+DLs Xcde.						

PORT SPECIFIC RELEDS	PORT NUMBER	USED (CS/Sp)	USED (AofB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLER or LLC (QTY)	TRIPLER or LLC (MODEL)	SCP/AMCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CS/Sp)	
ANTENNA POSITION 2	PORT 3			CTL00141_9C_1	CTL00141_9C_1		LTE 1900	K_1930MHz_03 DT	280	3	TOP	FIBER	0											
	PORT 4			CTL00141_9C_2	CTL00141_9C_2		LTE 1900	K_1930MHz_03 DT	280	3	TOP	FIBER	0											
	PORT 8			CTL00141_2C_2	CTL00141_2C_2		LTE AWS	K_2170MHz_05 DT	280	5	TOP	FIBER	0											
	PORT 11			CTCN001141_N 802C_1	CTCN001141_N 802C_1		5G 1900	K_1930MHz_05 DT	280	5	TOP	FIBER	0											
	PORT 12			CTCN001141_N 066C_1	CTCN001141_N 066C_1		5G AWS	K_2170MHz_05 DT	280	5	TOP	FIBER	0											
ANTENNA POSITION 3	PORT 1			CTCN011141_N 077A_1	CTCN011141_N 077A_1		5G CBAND	B77D+ARR6419 B77G STACKED	280	0	TOP	FIBER	0											
	PORT 9			CTCN011141_N 077A_2	CTCN011141_N 077A_2		5G DoD	B77D+ARR6419 B77G STACKED	280	0	TOP	FIBER	0											

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

Section 17A - FINAL TOWER CONFIGURATION - SECTOR A (OR OMNI)

ANTENNA POSITION is LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE / MODEL		TPA6SR-BUEDA-K	ARR449 B77D+ARR6419 B77G STACKED	DMP6SR-BUEDA			
ANTENNA VENDOR		CCI	Ericsson	CCI			
ANTENNA SIZE (H x W x D)		71.2X20.7X7.7	30.4X15.9X8.1	71.2X20.7X7.7			
ANTENNA WEIGHT		69	81.6	79.4			
AZIMUTH		30	30	30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)		115	115	115			
ANTENNA TIP HEIGHT		118	118	118			
MECHANICAL DOWNTILT							
FEEDER AMOUNT		2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMALNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMA5 (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)		1	DC6-48-60-18				
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4478 B14		1	4449 B5B12		
RRH - 850 band (QTY/MODEL)					with another band		
RRH - 1900 band (QTY/MODEL)	1	8843 B2B66A					
RRH - AWS band (QTY/MODEL)	1	with another band					
RRH - WCS band (QTY/MODEL)				1	RRUS-32 B30		
Additional RRH #1 - any band (QTY/MODEL)			1	integrated within: ARR6449 B77D			
Additional RRH #2 - any band (QTY/MODEL)			1	integrated within: ARR6419 B77G			
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	1	Y-cable		1	Y-cable		
Additional Component 2 (QTY/MODEL)			1	DL6 Xcords			
Additional Component 3 (QTY/MODEL)			1	gateway (FHG) 6648			
Local Market Note 1	- Follow Antenna/RRHs positions as per PDS. Keep Pos-1 Empty for future SOW.						
Local Market Note 2							
Local Market Note 3	146501 / 146530 / 146503 @ xxxxx / 146530 Mbed-Mode / xxxxx + / 146548+DL6 Xcords.						

PORT SPECIFIC RELEDS	PORT NUMBER	USBD (CSB/Sg)	USED (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCP/MCPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CS/Sg)	
ANTENNA POSITION 2	PORT 2	5814.A.700.4G.5		CTL01141_7A_3	CTL01141_7A_3		LTE 700	K_719MHz_03D		30	3	TOP	FIBER	0										
	PORT 3	5814.A.1900.4G		CTL00141_9A_1	CTL00141_9A_1		LTE 1900	K_1930MHz_03		30	3	TOP	FIBER	0										
	PORT 4	5814.A.1900.4G		CTL00141_9A_2	CTL00141_9A_2		LTE 1900	K_1930MHz_03		30	3	TOP	FIBER	0										
	PORT 5	5814.A.AWS.4G		CTL00141_2A_2	CTL00141_2A_2		LTE AWS	K_2170MHz_05		30	5	TOP	FIBER	0										
	PORT 11	5814.A.1900.5G.1		CTCN001141.N	CTCN001141.N		5G 1900	K_1930MHz_05		30	5	TOP	FIBER	0										
	PORT 12	5814.A.AWS.5G.1		CTCN001141.N	CTCN001141.N		5G AWS	K_2170MHz_05		30	5	TOP	FIBER	0										
ANTENNA POSITION 3	PORT 1	5814.A.CBAND.5G.m-p.1		CTCN001141.N	CTCN001141.N		5G CBAND	B77D+ARR6419 B77G STACKED		30	0	TOP	FIBER	0										
	PORT 9	5814.A.CBAND.5G.m-p.2		CTCN001141.N	CTCN001141.N		5G DoD	B77D+ARR6419 B77G STACKED		30	0	TOP	FIBER	0										
ANTENNA POSITION 4	PORT 1	5814.A.700.4G.1		CTL01141_7A_1	CTL01141_7A_1		LTE 700	BUEDA_719MHz_08DT		30	8	TOP	FIBER	0										
	PORT 3	5814.A.WCS.4G		CTL01141_3A_1	CTL01141_3A_1		LTE WCS	BUEDA_2355MHz_2_03DT		30	3	TOP	FIBER	0										
	PORT 5	5814.A.850.5G.1		CTCN001141.N	CTCN001141.N		5G 850	BUEDA_849MHz_04DT		30	4	TOP	FIBER	0										

Section 17B - FINAL TOWER CONFIGURATION - SECTOR B

ANTENNA POSITION N LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE / MODEL	TPAESR-BUEDAK	AR6449 B7D+AR6419 B77G STACKED	AR6449 B7D+AR6419 B77G STACKED	DMP6SR-BUEDA			
ANTENNA VENDOR	CCI	Ericsson	CCI				
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7	30.4X15.9X8.1	71.2X20.7X7.7				
ANTENNA WEIGHT	69	81.6	79.4				
AZMUTH	150	150	150				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115	115	115				
ANTENNA TIP HEIGHT	118	118	118				
MECHANICAL DOWNTILT							
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # if of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAs (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)	1	DC6-48-60-18					
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4478 B14		1	4449 BK812		
RRH - 850 band (QTY/MODEL)					with another band		
RRH - 1900 band (QTY/MODEL)	1	8843 B2B66A					
RRH - AWS band (QTY/MODEL)	1	with another band					
RRH - WCS band (QTY/MODEL)				1	RRUS-32 B30		
Additional RRH #1 - any band (QTY/MODEL)			1	Integrated within: AR6449 B7D			
Additional RRH #2 - any band (QTY/MODEL)				1	Integrated within: AR6419 B77G		
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	1	Y-cable		1	Y-cable		
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
- Follow Antenna/RRHs positions as per PDs.							
Local Market Note 1: Keep Pos-1 Empty for future SGW.							
Local Market Note 2:							
Local Market Note 3: 1x6601 / 1x6630 / 1x6633 xxxxx / 1x6630 Mised-Mode / xxxxx + 1x6648+DLc Xcnds.							

PORT SPECIFIC FEILDS	PORT NUMBER	USED (CSSng)	USED (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SGPAM/CPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSSng)	
ANTENNA POSITION 2	PORT 2	5814.B.700.4G.5		CTL01141_7B_3	CTL01141_7B_3	F	LTE 700	K_719MHz_03D		150	3	TOP	FIBER	0										
	PORT 3	5814.B.1900.4G.2		CTL00141_9B_1	CTL00141_9B_1	F	LTE 1900	K_1930MHz_03DT		150	3	TOP	FIBER	0										
	PORT 4	5814.B.1900.4G.7		CTL00141_9B_2	CTL00141_9B_2	F	LTE 1900	K_1930MHz_03DT		150	3	TOP	FIBER	0										
	PORT 8	5814.B.AWS.4G.5		CTL00141_2B_2	CTL00141_2B_2	F	LTE AWS	K_2170MHz_05DT		150	5	TOP	FIBER	0										
	PORT 11	5814.B.1900.5G.1mp1		CTCN001141_N 0028_1	CTCN001141_N 0028_1	F	5G 1900	K_1930MHz_05DT		150	5	TOP	FIBER	0										
	PORT 12	5814.B.AWS.5G.1mp1		CTCN001141_N 066B_1	CTCN001141_N 066B_1	F	5G AWS	K_2170MHz_05DT		150	5	TOP	FIBER	0										
ANTENNA POSITION 3	PORT 1	5mp1, 5814.B.CBAND.5		CTCN011141_N 077B_1	CTCN011141_N 077B_1	F	5G CBAND	B77D+AR6419 B77G STACKED		150	0	TOP	FIBER	0										
	PORT 2	5mp2, 5814.B.CBAND.5		CTCN011141_N 077B_2	CTCN011141_N 077B_2	F	5G DoD	B77D+AR6419 B77G STACKED		150	0	TOP	FIBER	0										
	PORT 3	5814.B.CBAND.5																						
ANTENNA POSITION 4	PORT 1	5814.B.700.4G.1		CTL01141_7B_1	CTL01141_7B_1	F	LTE 700	BURDA_719MHz_03DT		150	8	TOP	FIBER	0										
	PORT 3	5814.B.WCS.4G.1		CTL01141_3B_1	CTL01141_3B_1	F	LTE WCS	BURDA_2350MHz_03DT		150	3	TOP	FIBER	0										
	PORT 5	5814.B.850.5G.1		CTCN001141_N 0028_1	CTCN001141_N 0028_1	F	5G 850	BURDA_849MHz_04DT		150	4	TOP	FIBER	0										

Section 17C - FINAL TOWER CONFIGURATION - SECTOR C

ANTENNA POSITION N LEFT to RIGHT from BACK OF ANTENNA (unless otherwise specified)	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE / MODEL	TPAESR-BUEDAK	AR6449 B7D+AR6419 B77G STACKED	AR6449 B7D+AR6419 B77G STACKED	DMPESR-BUEDA			
ANTENNA VENDOR	CCI	Ericsson	CCI				
ANTENNA SIZE (H x W x D)	71.2X20.7X7.7	30.4X15.9X8.1	71.2X20.7X7.7				
ANTENNA WEIGHT	69	81.6	79.4				
AZMUTH	280	280	280				
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	115	115	115				
ANTENNA TIP HEIGHT	118	118	118				
MECHANICAL DOWNTILT							
FEEDER AMOUNT	2						
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # if not inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/NA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAs (QTY/MODEL)							
FILTER (QTY/MODEL)							
SOLID (QTY/MODEL)	1	DCB-48-60-18					
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
REPEATER (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)	1	4478 B14		1	4449 BK812		
RRH - 850 band (QTY/MODEL)					with another band		
RRH - 1900 band (QTY/MODEL)	1	8843 B2B66A					
RRH - AWS band (QTY/MODEL)	1	with another band					
RRH - WCS band (QTY/MODEL)				1	RRUS-32 B30		
Additional RRH #1 - any band (QTY/MODEL)			1	integrated within: AR6449 B77G			
Additional RRH #2 - any band (QTY/MODEL)				integrated within: AR6419 B77G			
RRH_7B_1 (QTY/MODEL)							
RRH_7B_2 (QTY/MODEL)							
RRH_7B_3 (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)	1	Y-cable		1	Y-cable		
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
- Follow Antenna/RRHs positions as per PDs.							
Local Market Note 1: Keep Pos-1 Empty for future S/W.							
Local Market Note 2:							
Local Market Note 3: 146601 / 146630 / 146633 xxxxx / 146630 Mised-Mode / xxxxx + / 146648+DLc Xcnds.							

PORT SPECIFIC FIELDS	PORT NUMBER	USED (CSSng)	USED (AtoB)	ATOLL TXID	ATOLL CELL ID	TXRX?	TECHNOLOGY / FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RX/IT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SGPAM/CPA MODULE?	HATCH/PLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID(CSSng)		
ANTENNA POSITION 2	PORT 2	5814.C.700.4G.5		CTL01141_7C_3_F	CTL01141_7C_3_F		LTE 700	K_719MHz_03D		280	3	TOP	FIBER	0											
	PORT 3	5814.C.1900.4G.2		CTL00141_9C_1	CTL00141_9C_1		LTE 1900	K_1930MHz_03DT		280	3	TOP	FIBER	0											
	PORT 4	5814.C.1900.4G.5		CTL00141_9C_2	CTL00141_9C_2		LTE 1900	K_1930MHz_03DT		280	3	TOP	FIBER	0											
	PORT 8	5814.C.AWS.4G.5		CTL00141_2C_2	CTL00141_2C_2		LTE AWS	K_2170MHz_05DT		280	5	TOP	FIBER	0											
	PORT 11	5814.C.1900.5G.1mp1		CTCN001141_N 205C_1	CTCN001141_N 205C_1		5G 1900	K_1930MHz_05DT		280	5	TOP	FIBER	0											
	PORT 12	5814.C.AWS.5G.1mp1		CTCN001141_N 206C_1	CTCN001141_N 206C_1		5G AWS	K_2170MHz_05DT		280	5	TOP	FIBER	0											
ANTENNA POSITION 3	PORT 1	Gmp1-5814.C.CBAND.		CTCN001141_N 077C_1	CTCN001141_N 077C_1		5G CBAND	B77D+AR6419 B77G STACKED		280	0	TOP	FIBER	0											
	PORT 2	Gmp2-5814.C.CBAND.		CTCN001141_N 077C_2	CTCN001141_N 077C_2		5G DoD	B77D+AR6419 B77G STACKED		280	0	TOP	FIBER	0											
	PORT 3	Gmp3-5814.C.CBAND.		CTCN001141_N 077C_3	CTCN001141_N 077C_3		5G DoD	B77D+AR6419 B77G STACKED		280	0	TOP	FIBER	0											
ANTENNA POSITION 4	PORT 1	5814.C.700.4G.1		CTL01141_7C_1	CTL01141_7C_1		LTE 700	BURDA_719MHz_03DT		280	8	TOP	FIBER	0											
	PORT 3	5814.C.WCS.4G.1		CTL01141_3C_1	CTL01141_3C_1		LTE WCS	BURDA_2305MHz_03DT		280	3	TOP	FIBER	0											
	PORT 5	5814.C.850.5G.1		CTCN001141_N 205C_1	CTCN001141_N 205C_1		5G 850	BURDA_849MHz_04DT		280	4	TOP	FIBER	0											

March 29, 2022



SAI Communications
12 Industrial Way
Salem NH, 03079

RE: Site Number: CT1141
 FA Number: 10035331
 PACE Number: MRCTB056241
 PT Number: 2051A11LEP
 Site Name: Cromwell US MIL
 Site Address: 179 Shunpike Road
 Cromwell, CT 06416

To Whom It May Concern:

Hudson Design Group LLC (HDG) 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:

- (3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)
- (3) DC6-48-60-18 Surge Arrestor (24.0"x9.7"Ø – Wt. = 33 lbs.)
- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each) (AT&T)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. each)**
- **(3) TPA65R-BU6A-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**

**Proposed equipment shown in bold.*

Fabrication drawings prepared by Sabre Industries Towers and Poles, P/N C10857001C, dated January 20, 2017, were available for the existing mounts. HDG conducted a ground audit of the existing antenna mounts on March 3, 2022.

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 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG 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 N 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 1.5 in. An escalated ice thickness of 1.70 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.181 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.063.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 50 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing self supporting tower with threaded rods and steel plates tightened around the tower leg. HDG 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	23	LC2	55%	PASS

Reference Documents:

- Fabrication drawings prepared by Sabre Industries Towers and Poles, P/N C10857001C, dated January 20, 2017

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG 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 mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG 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,
Hudson Design Group LLC



Michael Cabral
Vice President



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:







HUDSON
Design Group LLC

Wind & Ice Calculations

ANSI/TIA-222H - WIND, ICE & SEISMIC LOAD CALCULATIONS

Site Code/Name
State
County
Structure Class
Exposure Category
Topographic Category
Mean Elevation of base of structure
Height Above Ground

CT1141 - Cromwell US Mil	
Connecticut	
Middlesex	
II	
C	
1 - Kzt = 1	
z _s	278.56 ft
z	115 ft

Reference

Table 2-1

Section 2.6.5.1.2

Section 2.6.6.2.1

ASCE7-10 Hazards

Wind Parameters	
Basic wind speed	
Wind direction probability factor	
Gust effect factor	
Velocity Pressure (K _a = 0.9)	

V	125	mph
K _d	0.95	
G _h	1	
	44.13	psf

Appendix N of the Connecticut State Building Code

Section 16.6

Section 16.6

Section 2.6.11.6

Wind & Ice Parameters	
Base windspeed in conjunction with ice, V _i	
Base Ice thickness	
Ice Velocity Pressure (K _a = 0.9)	
Design Ice Thickness	

	50	mph
t _i	1.50	in
q _{ice}	7.06	psf
t _{iz}	1.70	in

ASCE7-10 Hazards Tool

ASCE7-10 Hazards Tool

Section 2.6.11.6

Section 2.6.10

Seismic Parameters	
Site Soil Class	
Seismic Design Category	
Spectral Response at Short Periods	
Spectral Response at 1sec	
Long Period Transition Period	
Seismic Importance Factor	
Response modification coefficient	
Short-Period Site Coefficient	
Design Spectral Response at Short Periods	
Seismic Response Coefficient	

	D - Default
	B
S _s	0.181
S ₁	0.063
T _L	6
I _s	1
R	2
F _a	1.6
S _{DS}	0.193
C _s	0.097

Table 2-10

ASCE7-10 Hazards Tool

Appendix N of the Connecticut State Building Code

Appendix N of the Connecticut State Building Code

ASCE7-10 Hazards Tool

Table 2-3

Section 16.7

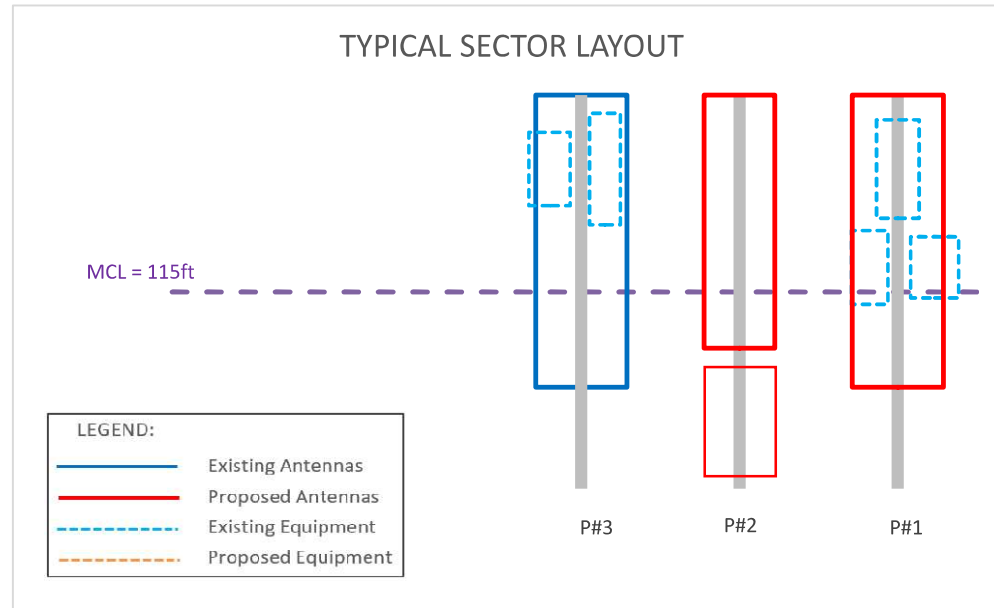
Table 2-11

Section 2.7.5

Section 2.7.7.1

TYPICAL SECTOR

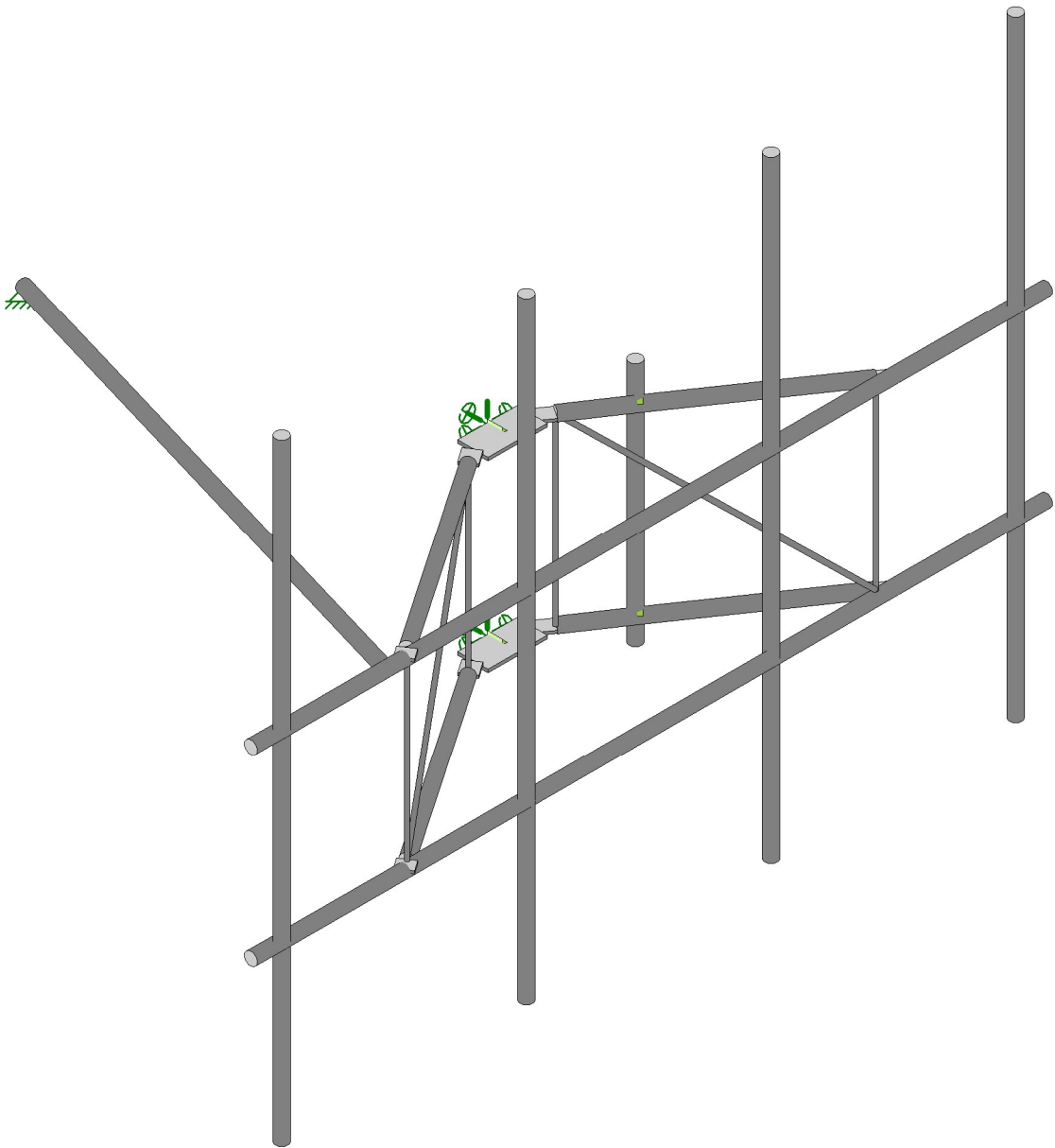
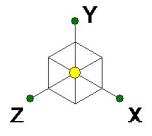
Position	Appurtenance properties						Wind		Ice	Seismic
	Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E _H [lbs]
1	CCI	TPA65R-BU6DA-K	71.2	20.7	7.7	69.0	560.9	247.8	300.0	6.7
2	Ericsson	AIR6449 B77D + AIR6419 B77G	61.7	16.1	10.4	148.0	383.3	266.0	228.9	14.3
3	CCI	DMP65R-BU6DA	71.2	20.7	7.7	80.0	560.9	247.8	300.0	7.7
1	Raycap	DC6-48-60-18	24.0	9.7	9.7	33.0	85.6	85.6	68.6	3.2
1	Ericsson	RRUS 4478 B14	18.0	13.4	8.3	60.0	54.9	88.7	59.5	5.8
1	Ericsson	RRUS 8843 B2/B66A	14.9	13.2	10.9	72.0	59.7	72.3	54.0	7.0
3	Ericsson	RRUS 4449 B5/B12	17.9	13.2	9.4	73.0	61.9	86.9	60.7	7.0
3	Ericsson	RRUS-32 B30	27.2	12.1	7.0	60.0	73.6	121.0	78.4	5.8





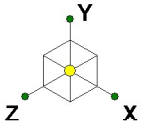
HUDSON
Design Group LLC

**Mount Calculations
(Existing Conditions)**



Envelope Only Solution

Hudson Design Group	Cromwell US Mil	SK - 1
AV		Mar 29, 2022 at 2:03 PM
CT1141		C10857001C UPDATED.r3d



Envelope Only Solution

Hudson Design Group

AV

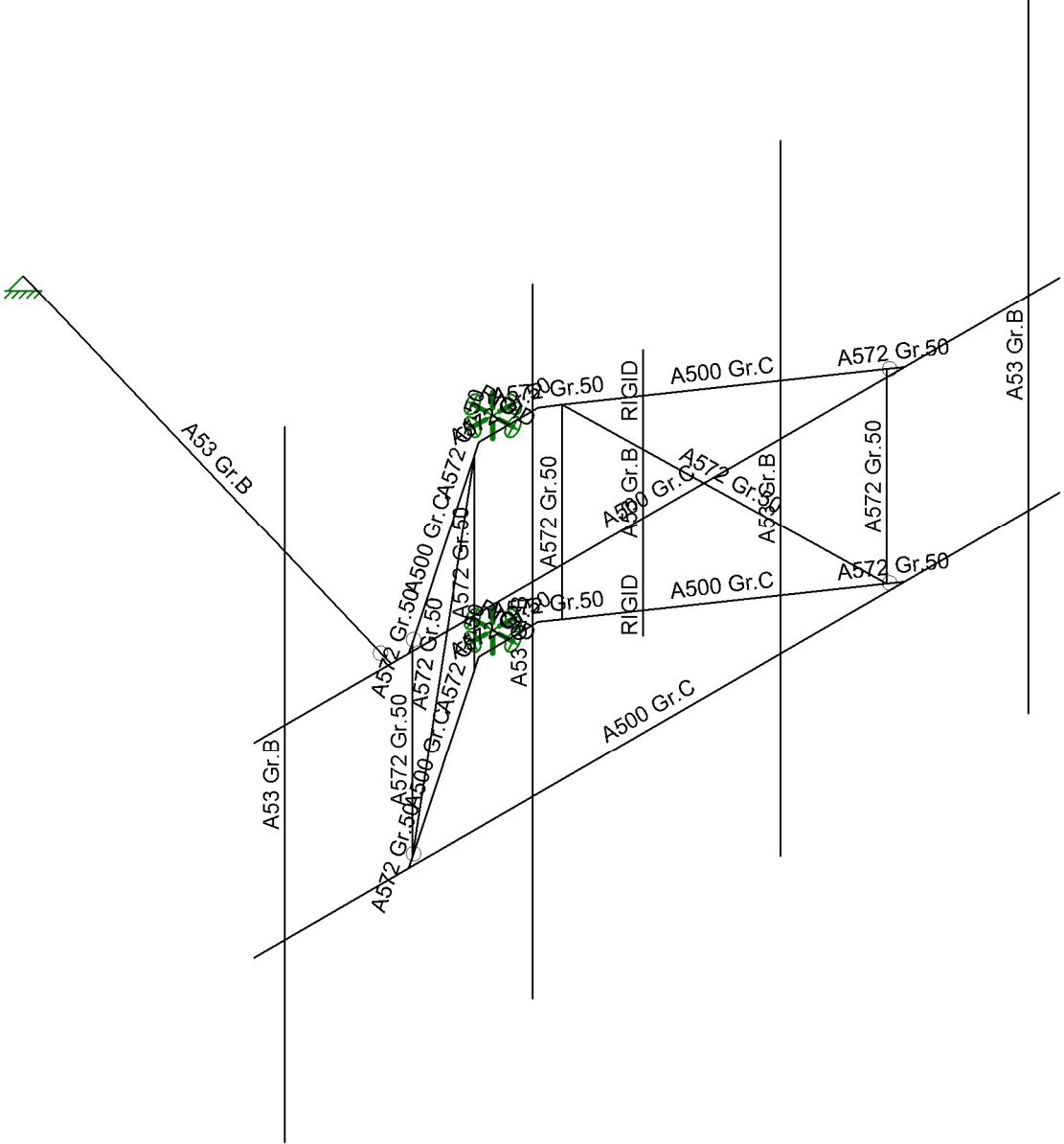
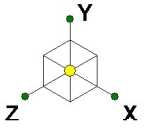
CT1141

Cromwell US Mill

SK - 2

Mar 29, 2022 at 2:06 PM

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Hudson Design Group

AV

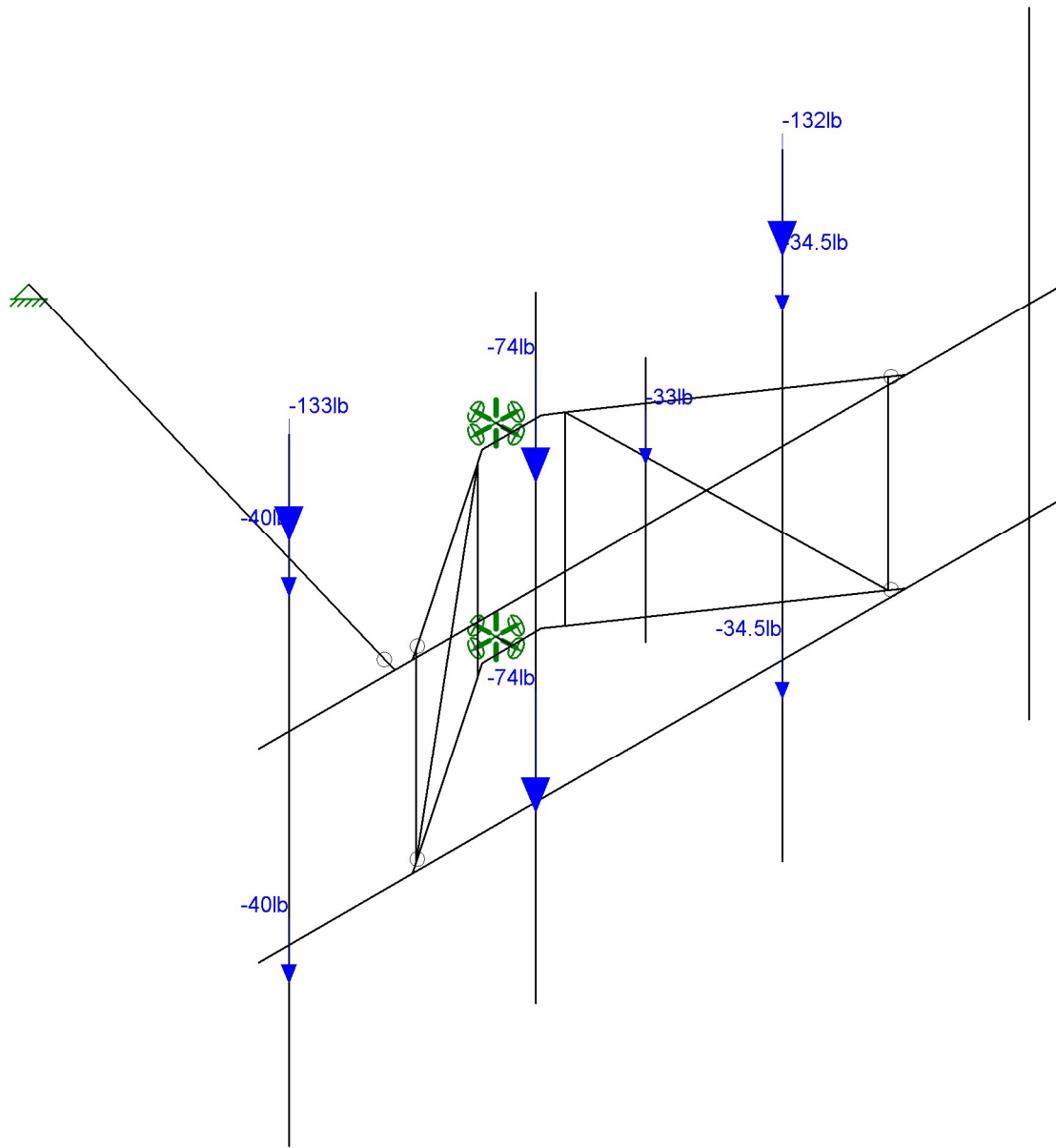
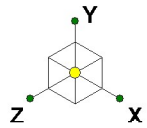
CT1141

Cromwell US Mil

SK - 3

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Loads: BLC 2, We
Envelope Only Solution

Hudson Design Group

AV

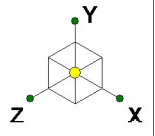
CT1141

Cromwell US Mil

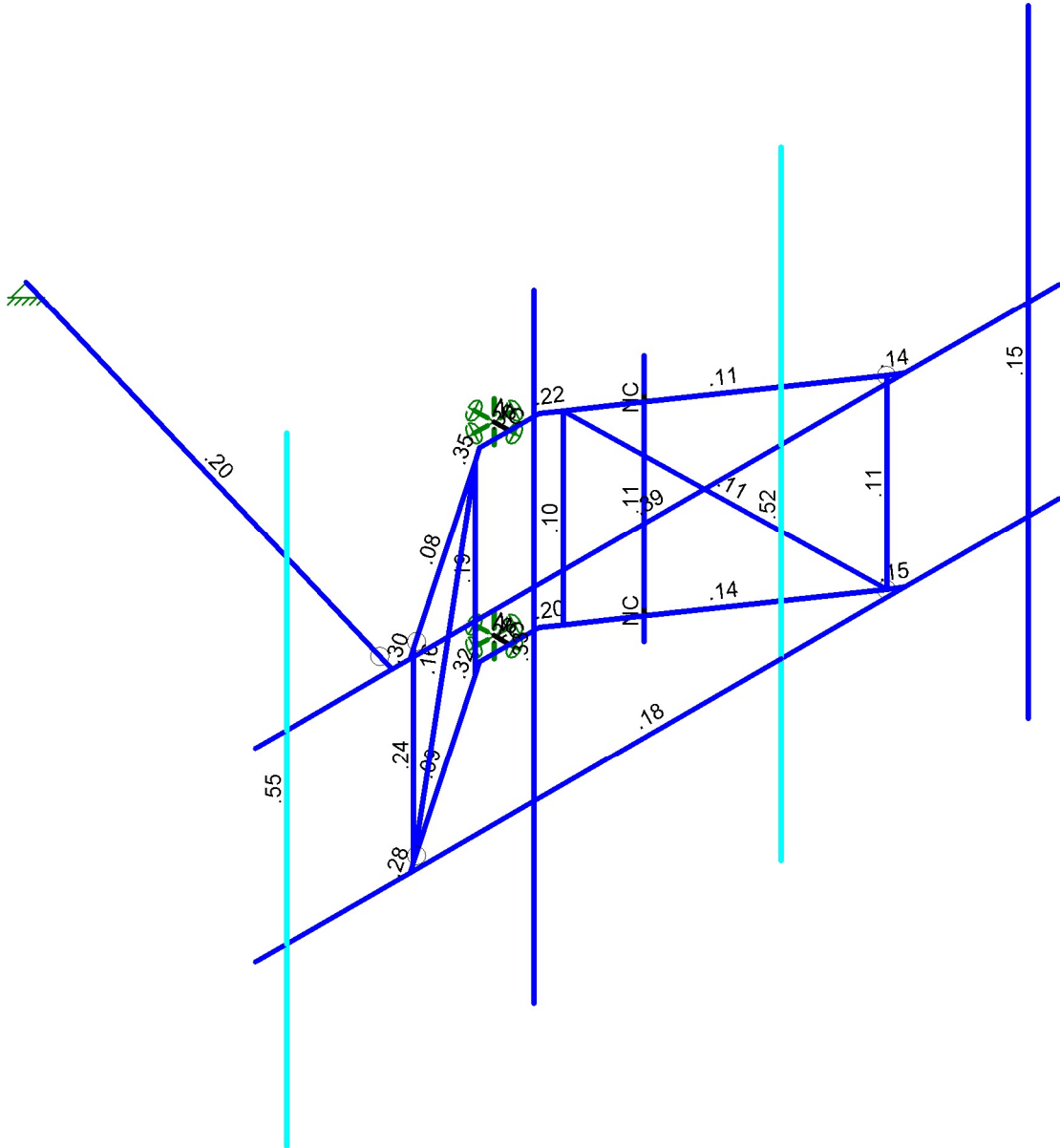
SK - 4

Mar 29, 2022 at 2:06 PM

C10857001C UPDATED.r3d

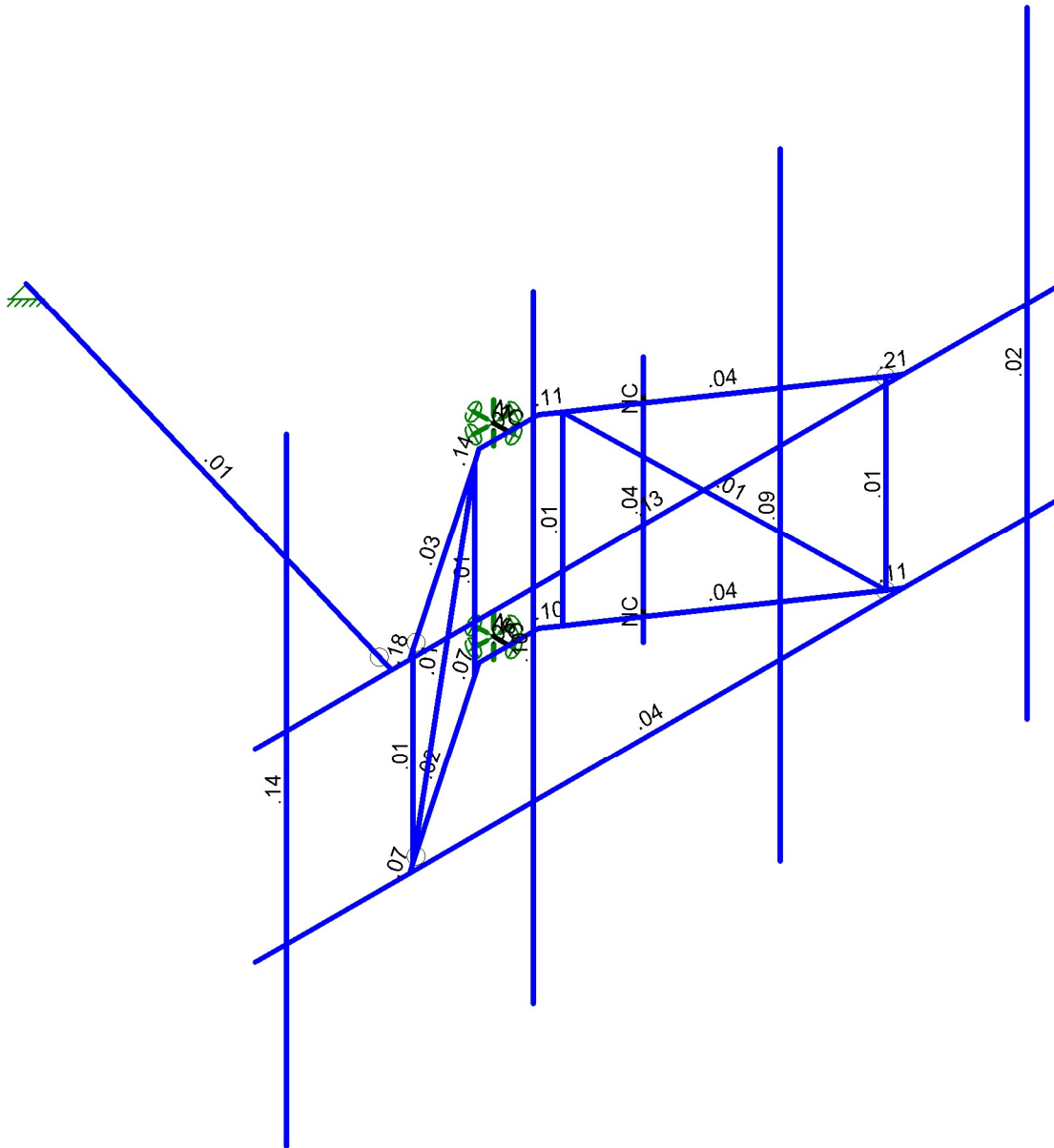
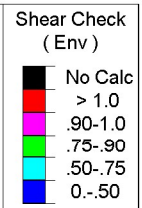
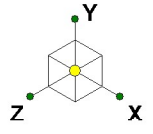


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)
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Hudson Design Group	Cromwell US Mil	SK - 5
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CT1141		C10857001C UPDATED.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Hudson Design Group	Cromwell US Mil	SK - 6
AV		Mar 29, 2022 at 2:06 PM
CT1141		C10857001C UPDATED.r3d



Company : Hudson Design Group
 Designer : AV
 Job Number : CT1141
 Model Name : Cromwell US Mill

Mar 29, 2022
 2:07 PM
 Checked By: _____

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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



(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr.C	29000	11154	.3	.65	.527	46	1.4	62	1.3

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipes	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	Stabilizer	PIPE 2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Bracing	0.75" SR	VBrace	BAR	A572 Gr.50	Typical	.442	.016	.016	.031
4	Standoff Arm	HSS2.375X0...	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
5	Frame Rail	HSS2.375X0...	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
6	Plate	3"x.5"	Beam	RECT	A572 Gr.50	Typical	1.5	.031	1.125	.112
7	Connection ...	PL6x0.625	Beam	RECT	A572 Gr.50	Typical	3.75	.122	11.25	.456



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Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	CF1	162T125-18	Beam	None	A653 SS Gr33	Typical	.078	.013	.042	9e-6

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		4	10.8	0
3	Total General		4	10.8	0
4					
5	Hot Rolled Steel				
6	A500 Gr.C	HSS2.375X0.218	6	493	.209
7	A53 Gr.B	PIPE 2.0	6	648.7	.188
8	A572 Gr.50	0.75" SR	6	259.6	.033
9	A572 Gr.50	3"x.5"	8	23.3	.01
10	A572 Gr.50	PL6x0.625	2	23.1	.025
11	Total HR Steel		28	1447.7	.464

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N36	Reaction	Reaction	Reaction	Reaction		Reaction
2	N37	Reaction	Reaction	Reaction	Reaction		Reaction
3	N48	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N6			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
2	M2	N4	N5			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
3	M3	N6	N5			Bracing	VBrace	BAR	A572 Gr.50	Typical
4	M4	N3	N4			Bracing	VBrace	BAR	A572 Gr.50	Typical
5	M5	N4	N6			Bracing	VBrace	BAR	A572 Gr.50	Typical
6	M6	N12	N10			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
7	M7	N11	N9			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
8	M8	N16	N15			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
9	M9	N5	N17		90	Plate	Beam	RECT	A572 Gr.50	Typical
10	M10	N6	N18		90	Plate	Beam	RECT	A572 Gr.50	Typical
11	M11	N2	N4		90	Plate	Beam	RECT	A572 Gr.50	Typical
12	M12	N1	N3		90	Plate	Beam	RECT	A572 Gr.50	Typical
13	M13	N19	N22			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
14	M14	N20	N21			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
15	M15	N22	N21			Bracing	VBrace	BAR	A572 Gr.50	Typical
16	M16	N19	N20			Bracing	VBrace	BAR	A572 Gr.50	Typical
17	M17	N20	N22			Bracing	VBrace	BAR	A572 Gr.50	Typical
18	M18	N21	N23		90	Plate	Beam	RECT	A572 Gr.50	Typical
19	M19	N22	N24		90	Plate	Beam	RECT	A572 Gr.50	Typical
20	M20	N8	N20		90	Plate	Beam	RECT	A572 Gr.50	Typical
21	M21	N7	N19		90	Plate	Beam	RECT	A572 Gr.50	Typical
22	M22	N29	N28			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
23	M23	N33	N32			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
24	M24	N8	N2		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
25	M25	N7	N1		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
26	M26	N34	N36			RIGID	None	None	RIGID	Typical
27	M27	N35	N37			RIGID	None	None	RIGID	Typical



Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
28	M28	N41	N40			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
29	M29	N25	N48			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
30	M30	N43	N45			RIGID	None	None	RIGID	Typical
31	M31	N42	N44			RIGID	None	None	RIGID	Typical
32	M32	N46	N47			Mount Pipes	Column	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes				None
7	M7						Yes				None
8	M8						Yes	** NA **			None
9	M9		BenPIN				Yes				None
10	M10		BenPIN				Yes				None
11	M11						Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14						Yes				None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18		BenPIN				Yes				None
19	M19		BenPIN				Yes				None
20	M20						Yes				None
21	M21						Yes				None
22	M22						Yes	** NA **			None
23	M23						Yes	** NA **			None
24	M24						Yes				None
25	M25						Yes				None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes	** NA **			None
29	M29	BenPIN					Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Arm	45.25			Lbyy						Lateral
2	M2	Standoff Arm	45.25			Lbyy						Lateral
3	M3	Bracing	36						.7	.7		Lateral
4	M4	Bracing	36						.7	.7		Lateral
5	M5	Bracing	57.824						.7	.7		Lateral
6	M6	Frame Rail	156	96		Lbyy						Lateral
7	M7	Frame Rail	156	96		Lbyy						Lateral
8	M8	Mount Pipes	120									Lateral
9	M9	Plate	2.5			Lbyy						Lateral
10	M10	Plate	2.5			Lbyy						Lateral
11	M11	Plate	3.312			Lbyy						Lateral



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Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
12	M12	Plate	3.312			Lbyy						Lateral
13	M13	Standoff Arm	45.25			Lbyy						Lateral
14	M14	Standoff Arm	45.25			Lbyy						Lateral
15	M15	Bracing	36						.7	.7		Lateral
16	M16	Bracing	36						.7	.7		Lateral
17	M17	Bracing	57.824						.7	.7		Lateral
18	M18	Plate	2.5			Lbyy						Lateral
19	M19	Plate	2.5			Lbyy						Lateral
20	M20	Plate	3.313			Lbyy						Lateral
21	M21	Plate	3.313			Lbyy						Lateral
22	M22	Mount Pipes	120									Lateral
23	M23	Mount Pipes	120									Lateral
24	M24	Connection ...	11.562									Lateral
25	M25	Connection ...	11.562									Lateral
26	M28	Mount Pipes	120									Lateral
27	M29	Stabilizer	120.655									Lateral
28	M32	Mount Pipes	48									Lateral

Cold Formed Steel Design Parameters

Label	Shape	Length...	Lbyy[in]	Lbzz[in]	Lcomp t...	Lcomp ...	L-torque...	Kyy	Kzz	Cm-...Cm-...	Cb	R	a[in]	y sw...z sw...
No Data to Print ...														

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Self We	DL		-1.1					
2	We	DL					11		
3	Ice We	DL					11	20	
4	W0	WL					11	20	
5	W30	WL					22	40	
6	W60	WL					22	40	
7	W90	WL					11	20	
8	W120	WL					22	40	
9	W150	WL					22	40	
10	W0 + Ice	WL					11	20	
11	W30 + Ice	WL					22	40	
12	W60 + Ice	WL					22	40	
13	W90 + Ice	WL					11	20	
14	W120 + Ice	WL					22	40	
15	W150 + Ice	WL					22	40	
16	500lbs LM 1	LL				1			
17	500lbs LM 2	LL				1			
18	500lbs LM 3	LL				1			
19	500lbs LM 4	LL							
20	250lbs LV 5	LL				1			
21	250lbs LV 6	LL				1			
22	E0	EL	-.1				11		
23	E90	EL			.1		11		

Load Combinations

	Description	Sol..PD..SR..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..
1	Dead	Yes Y	1	1.4	2	1.4	0	0				
2	Dead + Wi..	Yes Y	1	1.2	2	1.2	4	1	0			



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Load Combinations (Continued)

	Description	Sol.	PD	SR	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
3	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	1	0			
4	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	1	0			
5	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	1	0			
6	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	1	0			
7	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	1	0			
8	Dead + Wi...	Yes	Y		1	1.2	2	1.2	4	-1	0			
9	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	-1	0			
10	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	-1	0			
11	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	-1	0			
12	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	-1	0			
13	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	-1	0			
14	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	1	3	1		
15	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	1	3	1		
16	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	1	3	1		
17	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	1	3	1		
18	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	1	3	1		
19	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	1	3	1		
20	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	-1	3	1		
21	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	-1	3	1		
22	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	-1	3	1		
23	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	-1	3	1		
24	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	-1	3	1		
25	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	-1	3	1		
26	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.058		
27	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.058		
28	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.058		
29	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.058		
30	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.058		
31	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.058		
32	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-.058		
33	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-.058		
34	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-.058		
35	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-.058		
36	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-.058		
37	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-.058		
38	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.058		
39	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.058		
40	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.058		
41	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.058		
42	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.058		
43	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.058		
44	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-.058		
45	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-.058		
46	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-.058		
47	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-.058		
48	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-.058		
49	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-.058		
50	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.058		
51	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.058		
52	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.058		
53	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.058		
54	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.058		
55	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.058		
56	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-.058		
57	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-.058		
58	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	-.058		
59	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	-.058		



Load Combinations (Continued)

	Description	Sol.	PD	SR	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact	BLC Fact
60	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	-.058			
61	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	-.058			
62	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	.058			
63	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	.058			
64	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	.058			
65	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	.058			
66	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	.058			
67	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	.058			
68	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	-.058			
69	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	-.058			
70	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	-.058			
71	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	-.058			
72	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	-.058			
73	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	-.058			
74	Dead + LV...	Yes	Y		1	1.2	2	1.2	20	1.5	0				
75	Dead + LV...	Yes	Y		1	1.2	2	1.2	21	1.5	0				
76	Service 60...	Yes	Y		1	1	2	1	4	.23	0				
77	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	1	23				
78	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	.866	23	.5			
79	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	.5	23	.866			
80	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22		23	1			
81	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	-.5	23	.866			
82	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	-.866	23	.5			
83	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	-1	23				
84	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	-.866	23	-.5			
85	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	-.5	23	-.866			
86	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22		23	-1			
87	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	.5	23	-.866			
88	(1.2 + 0.2...	Yes	Y		1	1.239	2	1.239	22	.866	23	-.5			

Member Point Loads (BLC 2 : We)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
1	M8	Y	-34.5	27.4
2	M28	Y	-74	32.15
3	M23	Y	-40	27.4
4	M8	Y	-34.5	92.6
5	M28	Y	-74	87.85
6	M23	Y	-40	92.6
7	M32	Y	-33	18
8	M8	Y	-60	18
9	M8	Y	-72	18
10	M23	Y	-73	18
11	M23	Y	-60	18

Member Point Loads (BLC 3 : Ice We)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
1	M8	Y	-150.005	27.4
2	M28	Y	-114.447	32.15
3	M23	Y	-150.005	27.4
4	M8	Y	-150.005	92.6
5	M28	Y	-114.447	87.85
6	M23	Y	-150.005	92.6
7	M32	Y	-68.555	18
8	M8	Y	-59.518	18
9	M8	Y	-54.047	18



Member Point Loads (BLC 3 : Ice We) (Continued)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
10	M23	Y	-60.717	18
11	M23	Y	-78.396	18

Member Point Loads (BLC 4 : W0)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
1	M8	X	-280.43	27.4
2	M28	X	-191.666	32.15
3	M23	X	-280.43	27.4
4	M8	X	-280.43	92.6
5	M28	X	-191.666	87.85
6	M23	X	-280.43	92.6
7	M32	X	-85.611	18
8	M8	X	-54.941	18
9	M8	X	-59.725	18
10	M23	X	-61.877	18
11	M23	X	-73.612	18

Member Point Loads (BLC 5 : W30)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
1	M8	X	-208.969	27.4
2	M28	X	-153.284	32.15
3	M23	X	-208.969	27.4
4	M8	X	-208.969	92.6
5	M28	X	-153.284	87.85
6	M23	X	-208.969	92.6
7	M32	X	-74.141	18
8	M8	X	-54.889	18
9	M8	X	-54.452	18
10	M23	X	-59.003	18
11	M23	X	-74.017	18
12	M8	Z	120.648	27.4
13	M28	Z	88.498	32.15
14	M23	Z	120.648	27.4
15	M8	Z	120.648	92.6
16	M28	Z	88.498	87.85
17	M23	Z	120.648	92.6
18	M32	Z	42.806	18
19	M8	Z	31.69	18
20	M8	Z	31.438	18
21	M23	Z	34.065	18
22	M23	Z	42.734	18

Member Point Loads (BLC 6 : W60)

	Member Label	Direction	Magnitude[lb,k-in]	Location[in,%]
1	M8	X	-81.516	27.4
2	M28	X	-73.829	32.15
3	M23	X	-81.516	27.4
4	M8	X	-81.516	92.6
5	M28	X	-73.829	87.85
6	M23	X	-81.516	92.6
7	M32	X	-42.806	18
8	M8	X	-40.13	18
9	M8	X	-34.589	18
10	M23	X	-40.319	18
11	M23	X	-54.589	18



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Member Point Loads (BLC 6 : W60) (Continued)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
12	M8	Z	141.189	27.4
13	M28	Z	127.875	32.15
14	M23	Z	141.189	27.4
15	M8	Z	141.189	92.6
16	M28	Z	127.875	87.85
17	M23	Z	141.189	92.6
18	M32	Z	74.141	18
19	M8	Z	69.508	18
20	M8	Z	59.909	18
21	M23	Z	69.834	18
22	M23	Z	94.55	18

Member Point Loads (BLC 7 : W90)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	Z	123.899	27.4
2	M28	Z	132.988	32.15
3	M23	Z	123.899	27.4
4	M8	Z	123.899	92.6
5	M28	Z	132.988	87.85
6	M23	Z	123.899	92.6
7	M32	Z	85.611	18
8	M8	Z	88.7	18
9	M8	Z	72.328	18
10	M23	Z	86.891	18
11	M23	Z	121.032	18

Member Point Loads (BLC 8 : W120)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	81.516	27.4
2	M28	X	73.829	32.15
3	M23	X	81.516	27.4
4	M8	X	81.516	92.6
5	M28	X	73.829	87.85
6	M23	X	81.516	92.6
7	M32	X	42.806	18
8	M8	X	40.13	18
9	M8	X	34.589	18
10	M23	X	40.319	18
11	M23	X	54.589	18
12	M8	Z	141.189	27.4
13	M28	Z	127.875	32.15
14	M23	Z	141.189	27.4
15	M8	Z	141.189	92.6
16	M28	Z	127.875	87.85
17	M23	Z	141.189	92.6
18	M32	Z	74.141	18
19	M8	Z	69.508	18
20	M8	Z	59.909	18
21	M23	Z	69.834	18
22	M23	Z	94.55	18

Member Point Loads (BLC 9 : W150)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	208.969	27.4
2	M28	X	153.284	32.15



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Member Point Loads (BLC 9 : W150) (Continued)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in.%]
3	M23	X	208.969	27.4
4	M8	X	208.969	92.6
5	M28	X	153.284	87.85
6	M23	X	208.969	92.6
7	M32	X	74.141	18
8	M8	X	54.889	18
9	M8	X	54.452	18
10	M23	X	59.003	18
11	M23	X	74.017	18
12	M8	Z	120.648	27.4
13	M28	Z	88.498	32.15
14	M23	Z	120.648	27.4
15	M8	Z	120.648	92.6
16	M28	Z	88.498	87.85
17	M23	Z	120.648	92.6
18	M32	Z	42.806	18
19	M8	Z	31.69	18
20	M8	Z	31.438	18
21	M23	Z	34.065	18
22	M23	Z	42.734	18

Member Point Loads (BLC 10 : W0 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in.%]
1	M8	X	-54.056	27.4
2	M28	X	-38.504	32.15
3	M23	X	-54.056	27.4
4	M8	X	-54.056	92.6
5	M28	X	-38.504	87.85
6	M23	X	-54.056	92.6
7	M32	X	-21.117	18
8	M8	X	-14.73	18
9	M8	X	-15.396	18
10	M23	X	-16.04	18
11	M23	X	-19.029	18

Member Point Loads (BLC 11 : W30 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in.%]
1	M8	X	-41.209	27.4
2	M28	X	-31.201	32.15
3	M23	X	-41.209	27.4
4	M8	X	-41.209	92.6
5	M28	X	-31.201	87.85
6	M23	X	-41.209	92.6
7	M32	X	-18.288	18
8	M8	X	-14.147	18
9	M8	X	-13.869	18
10	M23	X	-14.922	18
11	M23	X	-18.401	18
12	M8	Z	23.792	27.4
13	M28	Z	18.014	32.15
14	M23	Z	23.792	27.4
15	M8	Z	23.792	92.6
16	M28	Z	18.014	87.85
17	M23	Z	23.792	92.6
18	M32	Z	10.559	18
19	M8	Z	8.168	18



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Member Point Loads (BLC 11 : W30 + Ice) (Continued)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
20	M8	Z	8.007	18
21	M23	Z	8.615	18
22	M23	Z	10.624	18

Member Point Loads (BLC 12 : W60 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	-17.319	27.4
2	M28	X	-15.537	32.15
3	M23	X	-17.319	27.4
4	M8	X	-17.319	92.6
5	M28	X	-15.537	87.85
6	M23	X	-17.319	92.6
7	M32	X	-10.559	18
8	M8	X	-9.773	18
9	M8	X	-8.626	18
10	M23	X	-9.806	18
11	M23	X	-12.843	18
12	M8	Z	29.998	27.4
13	M28	Z	26.911	32.15
14	M23	Z	29.998	27.4
15	M8	Z	29.998	92.6
16	M28	Z	26.911	87.85
17	M23	Z	29.998	92.6
18	M32	Z	18.288	18
19	M8	Z	16.927	18
20	M8	Z	14.941	18
21	M23	Z	16.984	18
22	M23	Z	22.244	18

Member Point Loads (BLC 13 : W90 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	Z	28.167	27.4
2	M28	Z	28.598	32.15
3	M23	Z	28.167	27.4
4	M8	Z	28.167	92.6
5	M28	Z	28.598	87.85
6	M23	Z	28.167	92.6
7	M32	Z	21.117	18
8	M8	Z	21.151	18
9	M8	Z	17.872	18
10	M23	Z	20.802	18
11	M23	Z	27.904	18

Member Point Loads (BLC 14 : W120 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	17.319	27.4
2	M28	X	15.537	32.15
3	M23	X	17.319	27.4
4	M8	X	17.319	92.6
5	M28	X	15.537	87.85
6	M23	X	17.319	92.6
7	M32	X	10.559	18
8	M8	X	9.773	18
9	M8	X	8.626	18
10	M23	X	9.806	18



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Member Point Loads (BLC 14 : W120 + Ice) (Continued)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
11	M23	X	12.843	18
12	M8	Z	29.998	27.4
13	M28	Z	26.911	32.15
14	M23	Z	29.998	27.4
15	M8	Z	29.998	92.6
16	M28	Z	26.911	87.85
17	M23	Z	29.998	92.6
18	M32	Z	18.288	18
19	M8	Z	16.927	18
20	M8	Z	14.941	18
21	M23	Z	16.984	18
22	M23	Z	22.244	18

Member Point Loads (BLC 15 : W150 + Ice)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	41.209	27.4
2	M28	X	31.201	32.15
3	M23	X	41.209	27.4
4	M8	X	41.209	92.6
5	M28	X	31.201	87.85
6	M23	X	41.209	92.6
7	M32	X	18.288	18
8	M8	X	14.147	18
9	M8	X	13.869	18
10	M23	X	14.922	18
11	M23	X	18.401	18
12	M8	Z	23.792	27.4
13	M28	Z	18.014	32.15
14	M23	Z	23.792	27.4
15	M8	Z	23.792	92.6
16	M28	Z	18.014	87.85
17	M23	Z	23.792	92.6
18	M32	Z	10.559	18
19	M8	Z	8.168	18
20	M8	Z	8.007	18
21	M23	Z	8.615	18
22	M23	Z	10.624	18

Member Point Loads (BLC 22 : E0)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	X	-3.33	27.4
2	M28	X	-7.143	32.15
3	M23	X	-3.861	27.4
4	M8	X	-3.33	92.6
5	M28	X	-7.143	87.85
6	M23	X	-3.861	92.6
7	M32	X	-3.186	18
8	M8	X	-5.792	18
9	M8	X	-6.95	18
10	M23	X	-7.047	18
11	M23	X	-5.792	18

Member Point Loads (BLC 23 : E90)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
1	M8	Z	3.33	27.4



Member Point Loads (BLC 23 : E90) (Continued)

	Member Label	Direction	Magnitude[lb.k-in]	Location[in,%]
2	M28	Z	7.143	32.15
3	M23	Z	3.861	27.4
4	M8	Z	3.33	92.6
5	M28	Z	7.143	87.85
6	M23	Z	3.861	92.6
7	M32	Z	3.186	18
8	M8	Z	5.792	18
9	M8	Z	6.95	18
10	M23	Z	7.047	18
11	M23	Z	5.792	18

Member Distributed Loads (BLC 3 : Ice We)

	Member Label	Direction	Start Magnitude[lb/in,...]	End Magnitude[lb/in,...]	Start Location[in,%]	End Location[in,%]
1	M22	Y	-.705	-.705	0	0
2	M8	Y	-.705	-.705	0	0
3	M28	Y	-.705	-.705	0	0
4	M23	Y	-.705	-.705	0	0
5	M32	Y	-.705	-.705	0	0
6	M3	Y	-.424	-.424	0	0
7	M4	Y	-.424	-.424	0	0
8	M15	Y	-.424	-.424	0	0
9	M16	Y	-.424	-.424	0	0
10	M6	Y	-.705	-.705	0	0
11	M7	Y	-.705	-.705	0	0
12	M25	Y	-1.338	-1.338	0	0
13	M24	Y	-1.338	-1.338	0	0
14	M29	Y	-.705	-.705	0	0
15	M1	Y	-.705	-.705	0	0
16	M2	Y	-.705	-.705	0	0
17	M13	Y	-.705	-.705	0	0
18	M14	Y	-.705	-.705	0	0
19	M5	Y	-.424	-.424	0	0
20	M17	Y	-.424	-.424	0	0

Member Distributed Loads (BLC 4 : W0)

	Member Label	Direction	Start Magnitude[lb/in,...]	End Magnitude[lb/in,...]	Start Location[in,%]	End Location[in,%]
1	M22	X	-.873	-.873	0	0
2	M8	X	-.873	-.873	0	0
3	M28	X	-.873	-.873	0	0
4	M23	X	-.873	-.873	0	0
5	M32	X	-.796	-.796	0	0
6	M3	X	-.276	-.276	0	0
7	M4	X	-.276	-.276	0	0
8	M15	X	-.276	-.276	0	0
9	M16	X	-.276	-.276	0	0
10	M6	X	-.873	-.873	0	0
11	M7	X	-.873	-.873	0	0
12	M25	X	-2.206	-2.206	0	0
13	M24	X	-2.206	-2.206	0	0
14	M29	X	-.102	-.102	0	0
15	M1	X	-.389	-.389	0	0
16	M2	X	-.389	-.389	0	0
17	M13	X	-.389	-.389	0	0
18	M14	X	-.389	-.389	0	0
19	M5	X	-.276	-.276	0	0



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Member Distributed Loads (BLC 4 : W0) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
20	M17	X	- .276	- .276	0	0

Member Distributed Loads (BLC 5 : W30)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	- .756	- .756	0	0
2	M8	X	- .756	- .756	0	0
3	M28	X	- .756	- .756	0	0
4	M23	X	- .756	- .756	0	0
5	M32	X	- .689	- .689	0	0
6	M3	X	- .239	- .239	0	0
7	M4	X	- .239	- .239	0	0
8	M15	X	- .239	- .239	0	0
9	M16	X	- .239	- .239	0	0
10	M6	X	- .567	- .567	0	0
11	M7	X	- .567	- .567	0	0
12	M25	X	- 1.433	- 1.433	0	0
13	M24	X	- 1.433	- 1.433	0	0
14	M29	X	- .023	- .023	0	0
15	M1	X	- .045	- .045	0	0
16	M2	X	- .045	- .045	0	0
17	M13	X	- .628	- .628	0	0
18	M14	X	- .628	- .628	0	0
19	M5	X	- .239	- .239	0	0
20	M17	X	- .239	- .239	0	0
21	M22	Z	.437	.437	0	0
22	M8	Z	.437	.437	0	0
23	M28	Z	.437	.437	0	0
24	M23	Z	.437	.437	0	0
25	M32	Z	.398	.398	0	0
26	M3	Z	.138	.138	0	0
27	M4	Z	.138	.138	0	0
28	M15	Z	.138	.138	0	0
29	M16	Z	.138	.138	0	0
30	M6	Z	.328	.328	0	0
31	M7	Z	.328	.328	0	0
32	M25	Z	.827	.827	0	0
33	M24	Z	.827	.827	0	0
34	M29	Z	.013	.013	0	0
35	M1	Z	.026	.026	0	0
36	M2	Z	.026	.026	0	0
37	M13	Z	.363	.363	0	0
38	M14	Z	.363	.363	0	0
39	M5	Z	.138	.138	0	0
40	M17	Z	.138	.138	0	0

Member Distributed Loads (BLC 6 : W60)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	- .437	- .437	0	0
2	M8	X	- .437	- .437	0	0
3	M28	X	- .437	- .437	0	0
4	M23	X	- .437	- .437	0	0
5	M32	X	- .398	- .398	0	0
6	M3	X	- .138	- .138	0	0
7	M4	X	- .138	- .138	0	0
8	M15	X	- .138	- .138	0	0
9	M16	X	- .138	- .138	0	0



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Member Distributed Loads (BLC 6 : W60) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
10	M6	X	-.109	-.109	0	0
11	M7	X	-.109	-.109	0	0
12	M25	X	-.276	-.276	0	0
13	M24	X	-.276	-.276	0	0
14	M29	X	-.18	-.18	0	0
15	M1	X	-.026	-.026	0	0
16	M2	X	-.026	-.026	0	0
17	M13	X	-.363	-.363	0	0
18	M14	X	-.363	-.363	0	0
19	M5	X	-.138	-.138	0	0
20	M17	X	-.138	-.138	0	0
21	M22	Z	.756	.756	0	0
22	M8	Z	.756	.756	0	0
23	M28	Z	.756	.756	0	0
24	M23	Z	.756	.756	0	0
25	M32	Z	.689	.689	0	0
26	M3	Z	.239	.239	0	0
27	M4	Z	.239	.239	0	0
28	M15	Z	.239	.239	0	0
29	M16	Z	.239	.239	0	0
30	M6	Z	.189	.189	0	0
31	M7	Z	.189	.189	0	0
32	M25	Z	.478	.478	0	0
33	M24	Z	.478	.478	0	0
34	M29	Z	.313	.313	0	0
35	M1	Z	.045	.045	0	0
36	M2	Z	.045	.045	0	0
37	M13	Z	.628	.628	0	0
38	M14	Z	.628	.628	0	0
39	M5	Z	.239	.239	0	0
40	M17	Z	.239	.239	0	0

Member Distributed Loads (BLC 7 : W90)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	Z	.873	.873	0	0
2	M8	Z	.873	.873	0	0
3	M28	Z	.873	.873	0	0
4	M23	Z	.873	.873	0	0
5	M32	Z	.796	.796	0	0
6	M3	Z	.276	.276	0	0
7	M4	Z	.276	.276	0	0
8	M15	Z	.276	.276	0	0
9	M16	Z	.276	.276	0	0
10	M6	Z	0	0	0	0
11	M7	Z	0	0	0	0
12	M25	Z	0	0	0	0
13	M24	Z	0	0	0	0
14	M29	Z	.771	.771	0	0
15	M1	Z	.389	.389	0	0
16	M2	Z	.389	.389	0	0
17	M13	Z	.389	.389	0	0
18	M14	Z	.389	.389	0	0
19	M5	Z	.276	.276	0	0
20	M17	Z	.276	.276	0	0



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Member Distributed Loads (BLC 8 : W120)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	.437	.437	0	0
2	M8	X	.437	.437	0	0
3	M28	X	.437	.437	0	0
4	M23	X	.437	.437	0	0
5	M32	X	.398	.398	0	0
6	M3	X	.138	.138	0	0
7	M4	X	.138	.138	0	0
8	M15	X	.138	.138	0	0
9	M16	X	.138	.138	0	0
10	M6	X	.109	.109	0	0
11	M7	X	.109	.109	0	0
12	M25	X	.276	.276	0	0
13	M24	X	.276	.276	0	0
14	M29	X	.424	.424	0	0
15	M1	X	.363	.363	0	0
16	M2	X	.363	.363	0	0
17	M13	X	.026	.026	0	0
18	M14	X	.026	.026	0	0
19	M5	X	.138	.138	0	0
20	M17	X	.138	.138	0	0
21	M22	Z	.756	.756	0	0
22	M8	Z	.756	.756	0	0
23	M28	Z	.756	.756	0	0
24	M23	Z	.756	.756	0	0
25	M32	Z	.689	.689	0	0
26	M3	Z	.239	.239	0	0
27	M4	Z	.239	.239	0	0
28	M15	Z	.239	.239	0	0
29	M16	Z	.239	.239	0	0
30	M6	Z	.189	.189	0	0
31	M7	Z	.189	.189	0	0
32	M25	Z	.478	.478	0	0
33	M24	Z	.478	.478	0	0
34	M29	Z	.734	.734	0	0
35	M1	Z	.628	.628	0	0
36	M2	Z	.628	.628	0	0
37	M13	Z	.045	.045	0	0
38	M14	Z	.045	.045	0	0
39	M5	Z	.239	.239	0	0
40	M17	Z	.239	.239	0	0

Member Distributed Loads (BLC 9 : W150)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	.756	.756	0	0
2	M8	X	.756	.756	0	0
3	M28	X	.756	.756	0	0
4	M23	X	.756	.756	0	0
5	M32	X	.689	.689	0	0
6	M3	X	.239	.239	0	0
7	M4	X	.239	.239	0	0
8	M15	X	.239	.239	0	0
9	M16	X	.239	.239	0	0
10	M6	X	.567	.567	0	0
11	M7	X	.567	.567	0	0
12	M25	X	1.433	1.433	0	0
13	M24	X	1.433	1.433	0	0



Member Distributed Loads (BLC 9 : W150) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
14	M29	X	.444	.444	0	0
15	M1	X	.628	.628	0	0
16	M2	X	.628	.628	0	0
17	M13	X	.045	.045	0	0
18	M14	X	.045	.045	0	0
19	M5	X	.239	.239	0	0
20	M17	X	.239	.239	0	0
21	M22	Z	.437	.437	0	0
22	M8	Z	.437	.437	0	0
23	M28	Z	.437	.437	0	0
24	M23	Z	.437	.437	0	0
25	M32	Z	.398	.398	0	0
26	M3	Z	.138	.138	0	0
27	M4	Z	.138	.138	0	0
28	M15	Z	.138	.138	0	0
29	M16	Z	.138	.138	0	0
30	M6	Z	.328	.328	0	0
31	M7	Z	.328	.328	0	0
32	M25	Z	.827	.827	0	0
33	M24	Z	.827	.827	0	0
34	M29	Z	.256	.256	0	0
35	M1	Z	.363	.363	0	0
36	M2	Z	.363	.363	0	0
37	M13	Z	.026	.026	0	0
38	M14	Z	.026	.026	0	0
39	M5	Z	.138	.138	0	0
40	M17	Z	.138	.138	0	0

Member Distributed Loads (BLC 10 : W0 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	-.317	-.317	0	0
2	M8	X	-.317	-.317	0	0
3	M28	X	-.317	-.317	0	0
4	M23	X	-.317	-.317	0	0
5	M32	X	-.238	-.238	0	0
6	M3	X	-.174	-.174	0	0
7	M4	X	-.174	-.174	0	0
8	M15	X	-.174	-.174	0	0
9	M16	X	-.174	-.174	0	0
10	M6	X	-.34	-.34	0	0
11	M7	X	-.34	-.34	0	0
12	M25	X	-.553	-.553	0	0
13	M24	X	-.553	-.553	0	0
14	M29	X	-.042	-.042	0	0
15	M1	X	-.125	-.125	0	0
16	M2	X	-.125	-.125	0	0
17	M13	X	-.125	-.125	0	0
18	M14	X	-.125	-.125	0	0
19	M5	X	-.198	-.198	0	0
20	M17	X	-.198	-.198	0	0

Member Distributed Loads (BLC 11 : W30 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	-.274	-.274	0	0
2	M8	X	-.274	-.274	0	0
3	M28	X	-.274	-.274	0	0



Member Distributed Loads (BLC 11 : W30 + Ice) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....]	End Magnitude[lb/in....]	Start Location[in,%]	End Location[in,%]
4	M23	X	-.274	-.274	0	0
5	M32	X	-.207	-.207	0	0
6	M3	X	-.151	-.151	0	0
7	M4	X	-.151	-.151	0	0
8	M15	X	-.151	-.151	0	0
9	M16	X	-.151	-.151	0	0
10	M6	X	-.222	-.222	0	0
11	M7	X	-.222	-.222	0	0
12	M25	X	-.386	-.386	0	0
13	M24	X	-.386	-.386	0	0
14	M29	X	-.013	-.013	0	0
15	M1	X	-.025	-.025	0	0
16	M2	X	-.025	-.025	0	0
17	M13	X	-.191	-.191	0	0
18	M14	X	-.191	-.191	0	0
19	M5	X	-.171	-.171	0	0
20	M17	X	-.171	-.171	0	0
21	M22	Z	.158	.158	0	0
22	M8	Z	.158	.158	0	0
23	M28	Z	.158	.158	0	0
24	M23	Z	.158	.158	0	0
25	M32	Z	.119	.119	0	0
26	M3	Z	.087	.087	0	0
27	M4	Z	.087	.087	0	0
28	M15	Z	.087	.087	0	0
29	M16	Z	.087	.087	0	0
30	M6	Z	.128	.128	0	0
31	M7	Z	.128	.128	0	0
32	M25	Z	.223	.223	0	0
33	M24	Z	.223	.223	0	0
34	M29	Z	.007	.007	0	0
35	M1	Z	.014	.014	0	0
36	M2	Z	.014	.014	0	0
37	M13	Z	.11	.11	0	0
38	M14	Z	.11	.11	0	0
39	M5	Z	.099	.099	0	0
40	M17	Z	.099	.099	0	0

Member Distributed Loads (BLC 12 : W60 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....]	End Magnitude[lb/in....]	Start Location[in,%]	End Location[in,%]
1	M22	X	-.158	-.158	0	0
2	M8	X	-.158	-.158	0	0
3	M28	X	-.158	-.158	0	0
4	M23	X	-.158	-.158	0	0
5	M32	X	-.119	-.119	0	0
6	M3	X	-.087	-.087	0	0
7	M4	X	-.087	-.087	0	0
8	M15	X	-.087	-.087	0	0
9	M16	X	-.087	-.087	0	0
10	M6	X	-.044	-.044	0	0
11	M7	X	-.044	-.044	0	0
12	M25	X	-.116	-.116	0	0
13	M24	X	-.116	-.116	0	0
14	M29	X	-.067	-.067	0	0
15	M1	X	-.014	-.014	0	0
16	M2	X	-.014	-.014	0	0



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 Designer : AV
 Job Number : CT1141
 Model Name : Cromwell US Mil

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Member Distributed Loads (BLC 12 : W60 + Ice) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
17	M13	X	-.11	-.11	0	0
18	M14	X	-.11	-.11	0	0
19	M5	X	-.099	-.099	0	0
20	M17	X	-.099	-.099	0	0
21	M22	Z	.274	.274	0	0
22	M8	Z	.274	.274	0	0
23	M28	Z	.274	.274	0	0
24	M23	Z	.274	.274	0	0
25	M32	Z	.207	.207	0	0
26	M3	Z	.151	.151	0	0
27	M4	Z	.151	.151	0	0
28	M15	Z	.151	.151	0	0
29	M16	Z	.151	.151	0	0
30	M6	Z	.076	.076	0	0
31	M7	Z	.076	.076	0	0
32	M25	Z	.201	.201	0	0
33	M24	Z	.201	.201	0	0
34	M29	Z	.116	.116	0	0
35	M1	Z	.025	.025	0	0
36	M2	Z	.025	.025	0	0
37	M13	Z	.191	.191	0	0
38	M14	Z	.191	.191	0	0
39	M5	Z	.171	.171	0	0
40	M17	Z	.171	.171	0	0

Member Distributed Loads (BLC 13 : W90 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	Z	.317	.317	0	0
2	M8	Z	.317	.317	0	0
3	M28	Z	.317	.317	0	0
4	M23	Z	.317	.317	0	0
5	M32	Z	.238	.238	0	0
6	M3	Z	.174	.174	0	0
7	M4	Z	.174	.174	0	0
8	M15	Z	.174	.174	0	0
9	M16	Z	.174	.174	0	0
10	M6	Z	.004	.004	0	0
11	M7	Z	.004	.004	0	0
12	M25	Z	.126	.126	0	0
13	M24	Z	.126	.126	0	0
14	M29	Z	.281	.281	0	0
15	M1	Z	.125	.125	0	0
16	M2	Z	.125	.125	0	0
17	M13	Z	.125	.125	0	0
18	M14	Z	.125	.125	0	0
19	M5	Z	.198	.198	0	0
20	M17	Z	.198	.198	0	0

Member Distributed Loads (BLC 14 : W120 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	.158	.158	0	0
2	M8	X	.158	.158	0	0
3	M28	X	.158	.158	0	0
4	M23	X	.158	.158	0	0
5	M32	X	.119	.119	0	0
6	M3	X	.087	.087	0	0



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Member Distributed Loads (BLC 14 : W120 + Ice) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
7	M4	X	.087	.087	0	0
8	M15	X	.087	.087	0	0
9	M16	X	.087	.087	0	0
10	M6	X	.044	.044	0	0
11	M7	X	.044	.044	0	0
12	M25	X	.116	.116	0	0
13	M24	X	.116	.116	0	0
14	M29	X	.154	.154	0	0
15	M1	X	.11	.11	0	0
16	M2	X	.11	.11	0	0
17	M13	X	.014	.014	0	0
18	M14	X	.014	.014	0	0
19	M5	X	.099	.099	0	0
20	M17	X	.099	.099	0	0
21	M22	Z	.274	.274	0	0
22	M8	Z	.274	.274	0	0
23	M28	Z	.274	.274	0	0
24	M23	Z	.274	.274	0	0
25	M32	Z	.207	.207	0	0
26	M3	Z	.151	.151	0	0
27	M4	Z	.151	.151	0	0
28	M15	Z	.151	.151	0	0
29	M16	Z	.151	.151	0	0
30	M6	Z	.076	.076	0	0
31	M7	Z	.076	.076	0	0
32	M25	Z	.201	.201	0	0
33	M24	Z	.201	.201	0	0
34	M29	Z	.267	.267	0	0
35	M1	Z	.191	.191	0	0
36	M2	Z	.191	.191	0	0
37	M13	Z	.025	.025	0	0
38	M14	Z	.025	.025	0	0
39	M5	Z	.171	.171	0	0
40	M17	Z	.171	.171	0	0

Member Distributed Loads (BLC 15 : W150 + Ice)

	Member Label	Direction	Start Magnitude[lb/in....	End Magnitude[lb/in....	Start Location[in, %]	End Location[in, %]
1	M22	X	.274	.274	0	0
2	M8	X	.274	.274	0	0
3	M28	X	.274	.274	0	0
4	M23	X	.274	.274	0	0
5	M32	X	.207	.207	0	0
6	M3	X	.151	.151	0	0
7	M4	X	.151	.151	0	0
8	M15	X	.151	.151	0	0
9	M16	X	.151	.151	0	0
10	M6	X	.222	.222	0	0
11	M7	X	.222	.222	0	0
12	M25	X	.386	.386	0	0
13	M24	X	.386	.386	0	0
14	M29	X	.163	.163	0	0
15	M1	X	.191	.191	0	0
16	M2	X	.191	.191	0	0
17	M13	X	.025	.025	0	0
18	M14	X	.025	.025	0	0
19	M5	X	.171	.171	0	0



Member Distributed Loads (BLC 15 : W150 + Ice) (Continued)

	Member Label	Direction	Start Magnitude[lb/in....]	End Magnitude[lb/in....]	Start Location[in.%]	End Location[in.%]
20	M17	X	.171	.171	0	0
21	M22	Z	.158	.158	0	0
22	M8	Z	.158	.158	0	0
23	M28	Z	.158	.158	0	0
24	M23	Z	.158	.158	0	0
25	M32	Z	.119	.119	0	0
26	M3	Z	.087	.087	0	0
27	M4	Z	.087	.087	0	0
28	M15	Z	.087	.087	0	0
29	M16	Z	.087	.087	0	0
30	M6	Z	.128	.128	0	0
31	M7	Z	.128	.128	0	0
32	M25	Z	.223	.223	0	0
33	M24	Z	.223	.223	0	0
34	M29	Z	.094	.094	0	0
35	M1	Z	.11	.11	0	0
36	M2	Z	.11	.11	0	0
37	M13	Z	.014	.014	0	0
38	M14	Z	.014	.014	0	0
39	M5	Z	.099	.099	0	0
40	M17	Z	.099	.099	0	0

Envelope Joint Reactions

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC		
1	N36	max	1039.881	13	1796.795	21	1641.178	11	1.595	51	0	88	7.103	21
2		min	-2834.422	19	544.7	3	-2481.57	5	-2.711	21	0	1	1.632	3
3	N37	max	2442.981	14	1609.428	23	1233.722	22	1.54	51	0	88	6.326	24
4		min	369.353	8	515.291	76	-42.725	27	-2.483	21	0	1	2.067	76
5	N48	max	1781.273	3	212.295	3	655.796	3	0	88	0	88	0	88
6		min	-1786.449	9	-166.221	9	-656.851	9	0	1	0	1	0	1
7	Totals:	max	2776.053	2	3421.93	21	1908.569	11						
8		min	-2776.054	8	1104.974	76	-1908.569	5						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M23	PIPE 2.0	.545	50	2	.141	50	13	9836.597	32130	22.459	22.459	2...	H1-1b
2	M8	PIPE 2.0	.519	50	2	.086	50	13	9836.597	32130	22.459	22.459	2...	H1-1b
3	M7	HSS2.375X0...	.388	30.875	7	.135	29.25	12	7649.232	57546	39.744	39.744	2...	H1-1b
4	M20	3"x.5"	.346	3.313	21	.138	0	y 7	64929.826	67500	8.46	50.625	1...	H1-1b
5	M28	PIPE 2.0	.330	50	8	.102	50	9	9836.597	32130	22.459	22.459	2...	H1-1b
6	M21	3"x.5"	.322	3.313	21	.074	0	y 3	64929.826	67500	8.46	50.625	1...	H1-1b
7	M18	3"x.5"	.299	0	22	.185	0	y 8	66023.816	67500	8.46	50.625	1...	H1-1b
8	M24	PL6x0.625	.295	5.781	20	.074	5.781	y 19	124976.9...	168750	26.367	253.125	1...	H1-1b
9	M19	3"x.5"	.280	0	17	.066	0	y 2	66023.816	67500	8.46	50.625	1...	H1-1b
10	M25	PL6x0.625	.277	5.781	24	.063	5.781	y 22	124976.9...	168750	26.367	253.125	1...	H1-1b
11	M15	0.75" SR	.236	0	23	.009	36	9	5525.431	19880.37	2.982	2.982	2...	H1-1a
12	M11	3"x.5"	.217	3.312	18	.109	0	y 22	64929.826	67500	8.46	50.625	1...	H1-1b
13	M12	3"x.5"	.197	3.312	15	.103	0	y 57	64929.826	67500	8.46	50.625	1...	H1-1b
14	M29	PIPE 2.0	.196	120.6...	3	.007	120.6...	17	9730.011	32130	22.459	22.459	1...	H1-1b*
15	M16	0.75" SR	.187	0	21	.009	0	9	5525.431	19880.37	2.982	2.982	2...	H1-1b*
16	M6	HSS2.375X0...	.183	30.875	20	.044	29.25	3	7649.232	57546	39.744	39.744	2...	H1-1b
17	M17	0.75" SR	.156	57.824	23	.009	0	13	2141.715	19880.37	2.982	2.982	2...	H1-1b
18	M10	3"x.5"	.152	0	18	.113	0	y 25	66023.816	67500	8.46	50.625	1...	H1-1b
19	M22	PIPE 2.0	.146	50	2	.015	50	27	9836.597	32130	22.459	22.459	2...	H1-1b



Company : Hudson Design Group
 Designer : AV
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Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
20	M9	3"x.5"	.145	0	24	.215	0	y	8	66023.816	67500	8.46	50.625	1... H1-1b
21	M1	HSS2.375X0...	.144	11.313	51	.039	0		57	45615.157	57546	39.744	39.744	1... H1-1b
22	M32	PIPE 2.0	.114	6	59	.042	6		9	26521.424	32130	22.459	22.459	1... H1-1b
23	M2	HSS2.375X0...	.112	11.313	57	.040	11.313		8	45615.157	57546	39.744	39.744	1... H1-1b
24	M5	0.75" SR	.108	57.824	15	.006	57.824		3	2141.715	19880.37	2.982	2.982	2... H1-1b
25	M3	0.75" SR	.106	0	23	.010	0		9	5525.431	19880.37	2.982	2.982	2... H1-1b*
26	M4	0.75" SR	.098	0	23	.009	36		9	5525.431	19880.37	2.982	2.982	2... H1-1b*
27	M13	HSS2.375X0...	.090	0	22	.015	45.25		3	45615.157	57546	39.744	39.744	2... H1-1b
28	M14	HSS2.375X0...	.076	0	24	.030	45.25		8	45615.157	57546	39.744	39.744	2... H1-1b

Envelope AISI S100-12: LRFD Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																



HUDSON
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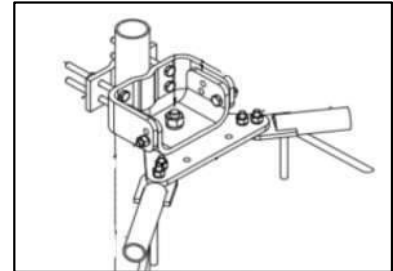
Connection Check

SITE DETAILS

Site Name/Code	Cromwell US Mil
Date	03/29/2022
Engineer	AV

CONNECTION PARAMETERS

Loadcase #	19
Number of bolts	4
Bolt Diameter	d 1/2 in
Tensile Area	A _b 0.20 in ²
Tensile Area	A _n 0.14 in ²
Grade	A325
Bolt Ultimate Strength	F _{ub} 120 ksi
Connection length reduction factor	R _b 1



Connection Sketch/Photo

FLANGE LOADS

Bending Moment	M _{zz}	7.01 kips-in
Bending Moment	M _{yy}	0.00 kips-in
Torsional Moment	M _{xx}	2.35 kips-in
Shear Force	V _y	2.83 kips
Shear Force	V _z	1.40 kips
Axial Force	P _x	1.77 kips

SOFTWARE REACTIONS TABLE

L...	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-in]	MY [k-in]	MZ [k-in]
19	N36	-2834.422	-1768.424	-1395.49	-2.346	0	7.009
19	N37	2155.839	1579.379	1020.634	-2.165	0	6.171
19	N48	71.242	74.127	24.207	0	0	0
19	Totals:	-607.342	3421.93	-350.649			

BOLT CHECK

Bolt Tension Capacity

$$\phi R_{nt} = 0.75 * F_{ub} * A_n$$

$$\phi R_{nt} = 12.8 \text{ kips}$$

Bolt Shear Capacity

$$\phi R_{nv} = 0.75 * 0.45 * F_{ub} * A_b * R_b$$

$$\phi R_{nv} = 8.8 \text{ kips}$$

Maximum Bolt Tension

$$T_{ub} = F_{Mxx} + F_{Mzz} + T_y/4$$

$$T_{ub} = 1.32 \text{ kips}$$

Maximum Bolt Shear

$$V_{ub} = \text{sqrt}((V_x/4)^2 + (V_y/4)^2) + F_{Myy}$$

$$V_{ub} = 0.98 \text{ kips}$$

Tension Ratio: 10.3 %
PASS

Shear Ratio: 11.1 %
PASS

$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$ OK Ratio 2.3% PASS



Patriot Properties Inc.

Parcel ID: 00109100 Location: 179 SHUNPIKE ROAD Map-Lot 24-17B Last Revaluation - October 1, 2017

Use Code	Land Value	PA 490 Value	Building Value	Outbuildings	Total Value	Total Assessed
920	120,300	0	0	0	120,300	84,210
TOTAL	120,300	0	0	0	120,300	84,210

Current Owner: CROMWELL FIRE DISTRICT
 Percent: 100
 Previous Owner(s): CROMWELL CT 06416

Previous Value Information

Tax Yr	Land Value	Bldg Value	Outbuildings	Total Value	Total Assessment
2018	120,300	0	0	120,300	84,210
2017	120,300	0	0	120,300	84,210
2016	118,140	0	0	118,140	82,700
2015	118,140	0	0	118,140	82,700
2014	118,140	0	0	118,140	82,700
2013	118,140	0	0	118,140	82,700

General Notes
 Communication Tower Fire Dept

Activity Information

Date	Results	Visited By
09/07/2017	Change - Value Change Company	John Valente
05/19/2017	No Change - Field Review	Dave Stannard
11/13/2014	Permit- Miscellaneous	AO
01/31/2013	Permit- Miscellaneous	AO
01/07/2013	Permit- Miscellaneous	AO
07/31/2012	Permit - Measure Exterior	AO
09/11/2012	Permit - Miscellaneous	AO
09/11/2012	Permit - Miscellaneous	AO
10/22/2010	Permit- Miscellaneous	AO
04/12/2010	Permit- Miscellaneous	AO
04/06/2009	Permit- Miscellaneous	AO

Sales Information

Grantee	Vol-Page	Type	SaleDate	SalePrice	Sale Verif	GeneralNotes
CROMWELL FIRE DISTRICT	86-469		09/21/1970	0		

Property Factors
 Census: 5701
 Flood:
 Topo: 84,210
 Street: Paved
 Dev. Map
 Dev. Map
Zoning Data
 Desc. %
 R-25 100.00
Utilities
 6 Septic
 9 Well-Pot Wat
BAA

Building Permit Information

Date	Permit #	Description	Amount	% Comp	Visit Date	CO Date	GeneralNotes
11/13/2014	23012	Other	15,000	100	11/13/2014	08/11/2015	Modifications to existing
01/31/2013	21434	Other	5,000	100	01/31/2013		Rpic & insll 2 Telecom ca
01/07/2013	21382	Other	15,000	100	01/07/2013	02/21/2013	Swap 12 of 12 existing an
07/31/2012	20958	Other	25,000	100	09/11/2012		Add 3 new antennas to exs
10/22/2010	19434	Electric	8,000	100	10/22/2010		Feed for cell towers
04/12/2010	18982	Electric	0	100	04/12/2010		Disconnect & re-connect c
04/13/2009	18277	Electric	15,000	100	04/06/2009		rep 6 antennas & modifyjn
11/17/2008	18085	Electric	15,000	100	11/06/2008		Electric work at cell sit

Land Data

Use	Description	Units	Tvae	Neiah	Land Adjustments	Special Land Calc	Appraised Value	PA 490 Asmt	Neigh Order	Notes
920	Mun Land Com	43,580	SF	ED			85,000	0	2700	
920	Mun Land Com	3,000	AC	ED			35,300	0	2700	
Total Area: 4.00										
Total Appraised: 120,300										
PA 490 Use Asmt: 0										
Assessed Value: 84,210										

Exterior Information

Name:
 Style:
 Location:
 Tot Units:

General Information

Year Blt:
 Grade:
 Remodeled Yr:
 Rem. Kitchen Yr:
 Rem. Bath Yr:

Depreciation %

Phys Cond Average 0.00
 Func
 Econ
 Spec
 OV
 Total %Dep: 0.00

Calculation

Basic \$/SQ
 Replacement Cost
 Depreciation
 Depreciated Value
 Final Total (Rounded) 0

Interior Information

Prime Wall:
 Sec. Wall:
 Floor Type:
 Sec. Floor:
 Heat Fuel:
 Heat Type:
 Sec. Ht Type:
 % A/C:
 % Sprinkled:
 Bsmt. Gar:
 Kitchens: 0 Add. Kit: 0
 Fireplaces: 0 Gas: 0
 Int. Condition: Typical

Room Count

Total Rooms:
 Bedrooms:

Bath Features

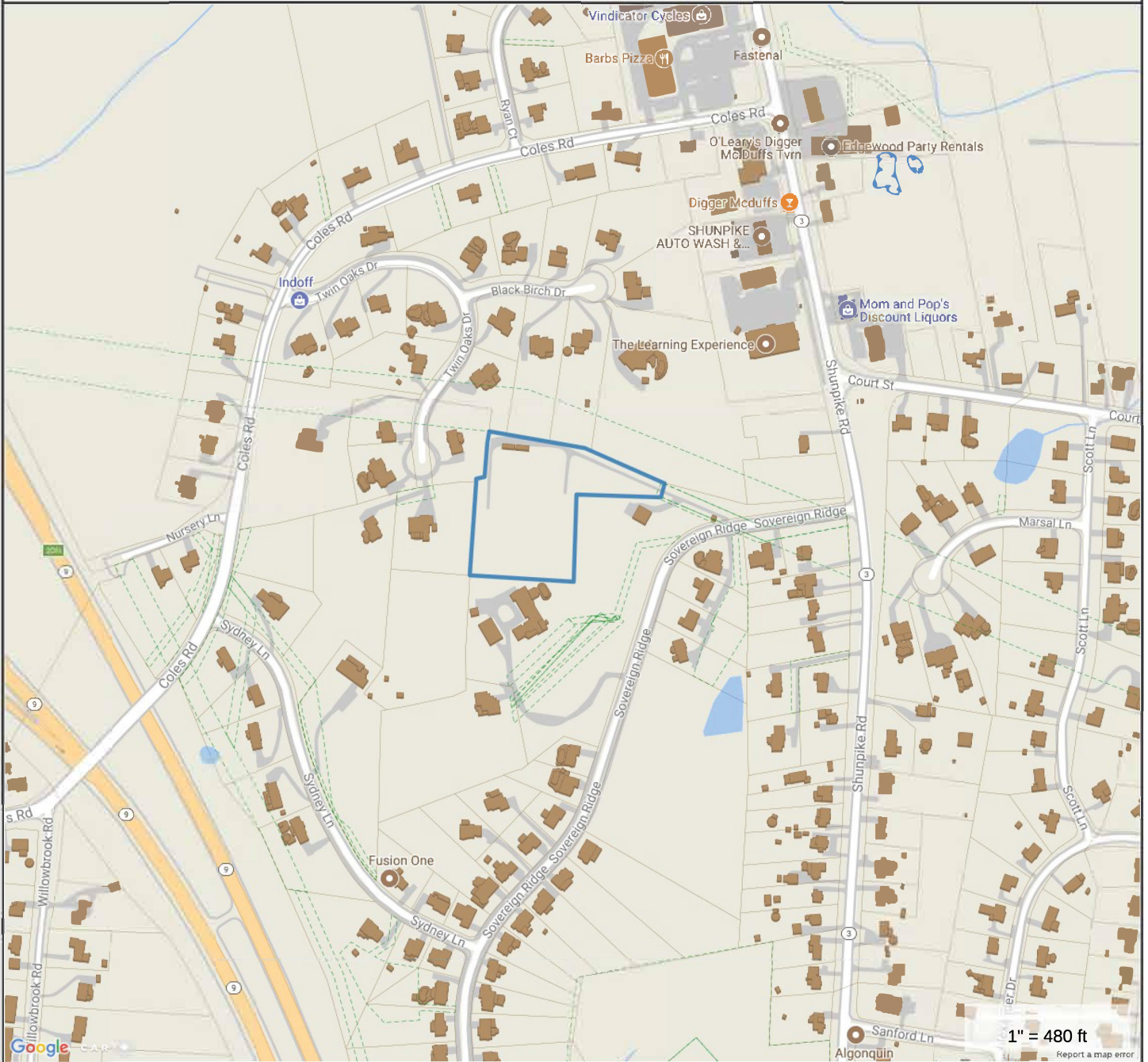
Full Baths: 0
 Addl. Full Baths: 0
 Half Baths: 0
 Addl. Half Baths: 0
 Full Bths Below: 0
 Half Bths Below: 0
 Other Fixtures: 0
 Total Baths: 0 0

Code	Description	Qty	Size	Cond.	Year	Unit Price	Dep%	UndepValue	Appraised Value	Assessment
------	-------------	-----	------	-------	------	------------	------	------------	-----------------	------------

Code	Desc.	Living	Gross Area
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Total Sp. Features: Total Yard Items Total Appraised: Total Assessed Value

179 SHUNPIKE ROAD, CROMWELL



Property Information

Property ID 00109100
Location 179 SHUNPIKE ROAD
Owner CROMWELL FIRE DISTRICT



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of Cromwell, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

January 26, 2001

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

Peter W. van Wilgen
Springwich Cellular Limited Partnership
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **TS-SCLP-033-010104** - Springwich Cellular Limited Partnership request for an order to approve tower sharing at an existing telecommunications facility located at 179 Shunpike Road, Cromwell, Connecticut.

Dear Mr. van Wilgen:

At a public meeting held January 25, 2001, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

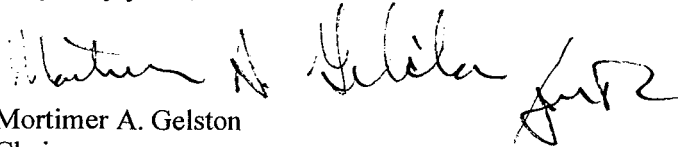
This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated January 4, 2001.

Thank you for your attention and cooperation.

Very truly yours,



Mortimer A. Gelston
Chairman

MAG/RKE/laf

c: Honorable Stanley A. Terry, Jr., First Selectman, Town of Cromwell
Planning and Zoning Department
Frank Salerno, Director of Finance, Cromwell Fire District
Christopher B. Fisher, Esq., Cuddy & Feder & Worby LLP
Michael Fulton, VoiceStream Wireless Corporation



July 11, 2022

SENT VIA EMAIL

Cromwell Fire District
Attn: Mr. Angel Alvarado
IT Systems Specialist
1 West Street
Cromwell, CT 06416
aalvarado@cromwellfd.com

RE: AT&T Wireless Equipment at 179 Shunpike Road, Cromwell, CT
Site Name: Cromwell US MIL Site Number: CT1141 FA Code: 10035331

Dear Mr. Alvarado:

SAI Communications is a contractor for New Cingular Wireless PCS, LLC ("AT&T"). In order to maintain AT&T's commitment to the highest standards of service and technology, AT&T will need to make modifications to their equipment at the above referenced wireless communications facility.

Pursuant to the Lease Agreement, dated November 22, 2000, as amended, your consent is required for these modifications. AT&T will be modifying their existing antenna configuration which may include, but is not limited to, adding antennas and ancillary equipment within AT&T's leased premises. The improvements are described in the enclosed construction drawings by Hudson Design Group LLC, Revision 1, dated May 23, 2022.

As the Landlord, I hereby consent to this work and authorize AT&T Wireless, its agents or representatives, to apply for any and all permits that may be required for this project.

If you have any questions, please don't hesitate to contact me directly at (860) 834-6964. Please indicate your consent by signing below and returning the letter to me either by email or the address listed below. Thank you for your attention to this matter. I appreciate your time.

Sincerely,

Hollis M. Redding

Hollis M. Redding
Site Acquisition Specialist

Enclosure

Landlord/Authorized Agent's Consent

DocuSigned by:	<i>Angel M. Alvarado</i>
Signature:	_____
	8BD690210D1544B...
Name:	Angel M. Alvarado

Date:	7/11/2022

Phone #:	(860) 635-4420 x1010



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07/14/2022

Mailed from 03079

PRIORITY MAIL®

HOLLIS M REDDING

Expected Delivery Date: 07/16/22

SAI GROUP

Ref#: CT1141

12 INDUSTRIAL WAY

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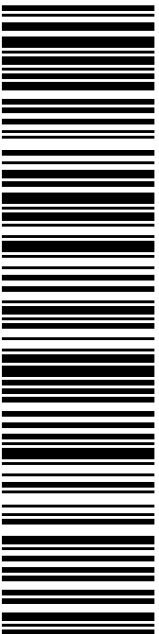
SALEM NH 03079-2837

C003



HON ALLAN SPOTTS, MAYOR STUART B.
CROMWELL TOWN HALL
41 WEST ST
CROMWELL CT 06416-2180

USPS TRACKING #



9405 5036 9930 0295 7165 24

Electronic Rate Approved #038555749



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07/14/2022

Mailed from 03079

PRIORITY MAIL®

HOLLIS M REDDING

Expected Delivery Date: 07/16/22

SAI GROUP

Ref#: CT1141

12 INDUSTRIAL WAY

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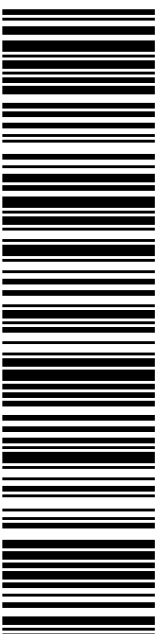
SALEM NH 03079-2837

C003



ANGEL M ALVARADO
CROMWELL FIRE DISTRICT
1 WEST ST
CROMWELL CT 06416-2123

USPS TRACKING #



9405 5036 9930 0295 7165 48

Electronic Rate Approved #038555749



Cut on dotted line.



From: auto-reply@usps.com
Sent: Thursday, July 14, 2022 12:02 PM
To: Hollis Redding
Subject: USPS® Expected Delivery by Friday, July 15, 2022 arriving by 9:00pm
9405503699300295716524

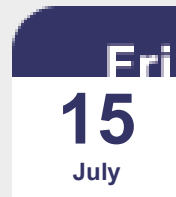


Hello **HOLLIS M REDDING**,

USPS is now in possession of your item as of 11:48 am on July 14, 2022 in MERIDEN, CT

Tracking Number: [9405503699300295716524](#)

Expected Delivery By



By 9:00pm



Tracking & Delivery Options

[My Account](#)

From: auto-reply@usps.com
Sent: Thursday, July 14, 2022 12:03 PM
To: Hollis Redding
Subject: USPS® Expected Delivery by Friday, July 15, 2022 arriving by 9:00pm
9405503699300295716548

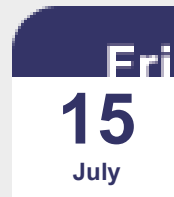


Hello **HOLLIS M REDDING**,

USPS is now in possession of your item as of 11:48 am on July 14, 2022 in MERIDEN, CT

Tracking Number: [9405503699300295716548](#)

Expected Delivery By



By 9:00pm



Tracking & Delivery Options

[My Account](#)