QC Development
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Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

July 23, 2021

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1169
438 Bantam Road, Litchfield, CT 06759
N 41.7361861
W 73.2181305

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 162-foot level of the existing 180-foot Self Support Tower at 438 Bantam Road, Litchfield, CT. The tower and property are owned by the State of Connecticut (Department of Public Safety). AT&T now intends to remove (3) Powerwave antennas and replace them with three (3) CCI HPA65R-BU4A antennas. AT&T will also swap three (3) Tower Mounted Amplifiers (TMA) and remove (6) diplexers. The new antennas and associated equipment will also be installed at the 162-foot level of the tower. This modification/proposal includes B2, B5, and B12 hardware that is both 4G (LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

This facility was approved by the Siting Council in Docket # 118 on February 5, 1990. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 the Denise Raap, First Selectwoman for the Town of Litchfield, the Litchfield Land Use Department, and the tower and property owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

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

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

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

4. The operation of the replacement antennas 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 its foundation can support the proposed loading.

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Denise Raap - as Elected Official
Dennis Tobin – Land Use Administrator
Brian Benito – CT DPS, as Tower/Property Owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							45.76%
AT&T GSM	2	356	162	0.0105	885	0.5900	0.18%
AT&T UMTS	1	565	162	0.0083	885	0.5900	0.14%
AT&T UMTS	1	875	162	0.0129	1900	1.0000	0.13%
AT&T LTE	1	887	162	0.0131	739	0.4927	0.27%
AT&T LTE	1	951	162	0.0141	739	0.4927	0.29%
AT&T LTE	1	1117	162	0.0165	885	0.5900	0.28%
AT&T LTE	1	1812	162	0.0268	1900	1.0000	0.27%
AT&T LTE	1	1942	162	0.0287	2100	1.0000	0.29%
AT&T LTE	1	2129	162	0.0315	2300	1.0000	0.31%
Site Total							47.91%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							45.76%
AT&T UMTS	1	565	162	0.0083	850	0.5667	0.15%
AT&T LTE	1	1476	162	0.0218	700	0.4667	0.47%
AT&T LTE	1	1000	162	0.0148	850	0.5667	0.26%
AT&T 5G	1	1000	162	0.0184	850	0.5667	0.26%
AT&T LTE	2	4842	162	0.0716	1900	1.0000	0.72%
AT&T LTE	1	4842	162	0.0716	2100	1.0000	0.72%
Site Total							48.33%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

SITE NUMBER: CT1169

SITE NAME: LITCHFIELD BANTAM ROAD

452 BANTAM ROAD
LITCHFIELD, CT 06759
LITCHFIELD COUNTY

PROJECT: LTE 3C UPGRADE
FA SITE NUMBER: 10114825 PACE ID: MRCTB018298
STRUCTURE TYPE: SELF SUPPORT TOWER

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	452 BANTAM ROAD LITCHFIELD, CT 06759
LATITUDE: LONGITUDE:	41° 44' 10" N 73° 13' 05" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
DESIGN GUIDELINE:	LTE 3C UPGRADE
SCOPE OF WORK:	ANTENNA AND RADIO POSITIONS ACCORDING TO PLUMBING DIAGRAM ON TOWER: –REMOVE (3) EXISTING POWERWAVE 7770 ANTENNAS, (1) PER SECTOR –INSTALL (3) NEW CCI HPA65R–BU4A ANTENNAS, (1) PER SECTOR –INSTALL (3) NEW COMMSCOPE TMAs, TMAT1921B68–21–43, (1) PER SECTOR ON GROUND: –INSTALL (3) NEW 4426 B66 RADIOS

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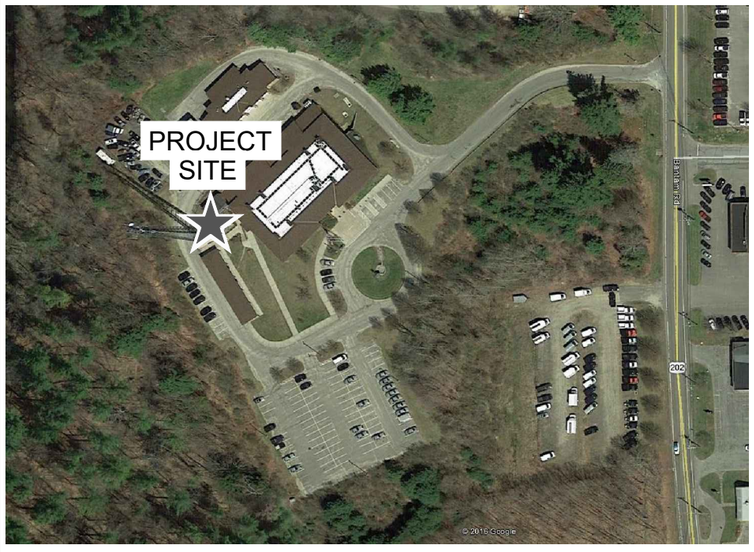
STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 29307
LICENSED
PROFESSIONAL ENGINEER

LOCUS MAP



DRIVING DIRECTIONS FROM 550 COCHITUATE ROAD, FRAMINGHAM, MA:

1. Head northeast, Turn right toward Speen St, Turn right onto Speen St, Turn right onto Cochituate Rd
2. Use the right lane to take the ramp to I–90/Masspike/Springfield/Boston
3. Keep left at the fork, follow signs for Interstate 90 W/Massachusetts Turnpike/Worchester/Springfield and merge onto I–90 W/Massachusetts Turnpike
4. Take exit 6 for I–291 toward Springfield/Hartford Connecticut
5. Use the left 2 lanes to turn left onto I–291 W (signs for Interstate 291 W/Interstate 91/Springfield)
6. Use the right 3 lanes to take exit 1A toward I–91 S/Hartford Connecticut, Merge onto I–91 S
7. Use the right 2 lanes to take exit 40 for CT–20 toward Bradley International Airport
8. Continue onto CT–20 W
9. Take the CT–20 W exit toward E Granby/Granby, Continue onto CT–20 W
10. Slight left onto CT–20 W/W Granby Rd
11. Turn left onto CT–219 S, Turn left onto CT–179 S/CT–219 S
12. Turn right onto CT–318 W, Turn left onto CT–181 S/CT–318 W
13. Turn right onto US–44 W/New Hartford Rd, Turn left onto CT–8 S (signs for Torrington/Waterbury)
14. Take exit 42 for CT–118 toward Harwinton/Litchfield
15. Turn right onto CT–118 W/Litchfield Rd, Slight left onto East St
16. Turn right onto South St, Turn left onto East St

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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

DIG SAFE SYSTEM, INC.

CALL BEFORE YOU DIG

CALL TOLL FREE: 811 OR 888–DIG–SAFE

UNDERGROUND SERVICE ALERT

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway
East Providence, RI 02914
Phone: (401) 354-2403
Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1169
SITE NAME: LITCHFIELD BANTAM ROAD
452 BANTAM ROAD
LITCHFIELD, CT 06759
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701–4681

NO.	DATE	REVISIONS	BY	CHK
0	01/10/19	ISSUED FOR REVIEW	AAB	MRC
1	02/13/19	ISSUED FOR CONSTRUCTION	AAB	MRC
2	03/01/19	REVISED	AAB	MRC
3	07/23/19	REVISED	AAB	MRC
4	07/15/21	UPDATES	AAB	MRC
5	07/20/21	UPDATES	AAB	MRC

TITLE SHEET

SHEET NO. T-1

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.

19. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.

20. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.

21. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

22. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

23. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.

24. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.

25. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

26. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

27. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.

28. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR

29. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES

30. DURING CONSTRUCTION. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS

31. FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

32. 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:

2009 INTERNATIONAL BUILDING CODE
2005 CT STATE BUILDING CODE
ELECTRICAL CODE: NEC 2014
LIGHTING CODE: NEC 2014

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, NINTH EDITION;

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

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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.

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.

3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.

6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.

8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.

9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE AND GREENLEE CONDUIT MEASURING TAPE IN EACH INSTALLED TELCO CONDUIT.

10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.

11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

12. PPC SUPPLIED BY PROJECT OWNER.

13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".

14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.

16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.

18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.

21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ (E) MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.

22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.

23.CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 29307
LICENSED
PROFESSIONAL ENGINEER

ABBREVIATIONS

AAV	ALTERNATIVE ACCESS VENDOR	EG	EQUIPMENT GROUND	N.T.S.	NOT TO SCALE
AC	ALTERNATING CURRENT	EGB	EQUIPMENT GROUND BAR	REF	REFERENCE
AGL	ABOVE GRADE LEVEL	EGR	EQUIPMENT GROUND RING	REQ	REQUIRED
ATS	AUTOMATIC TRANSFER SWITCH	(F)	FUTURE	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	GALV.	GALVANIZED	RGS	RIGID GALVANIZED STEEL
AZ	AZIMUTH	G.C.	GENERAL CONTRACTOR	RRH	REMOTE RADIO HEAD
BCW	BARE COPPER WIRE	KW	KILOWATT	TBD	TO BE DETERMINED
BEP	BUILDING ENTRY POINT	MGB	MASTER GROUND BUS	TBR	TO BE REMOVED
BTS	BASE TRANSCEIVER STATION	MIN.	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
CSC	CELL SITE CONTROLLER	(P)	PROPOSED	TYP	TYPICAL
(E)	EXISTING	PPC	POWER PROTECTION CABINET	U/G	UNDERGROUND

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403 Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1169

SITE NAME: LITCHFIELD BANTAM ROAD

452 BANTAM ROAD
LITCHFIELD, CT 06759
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

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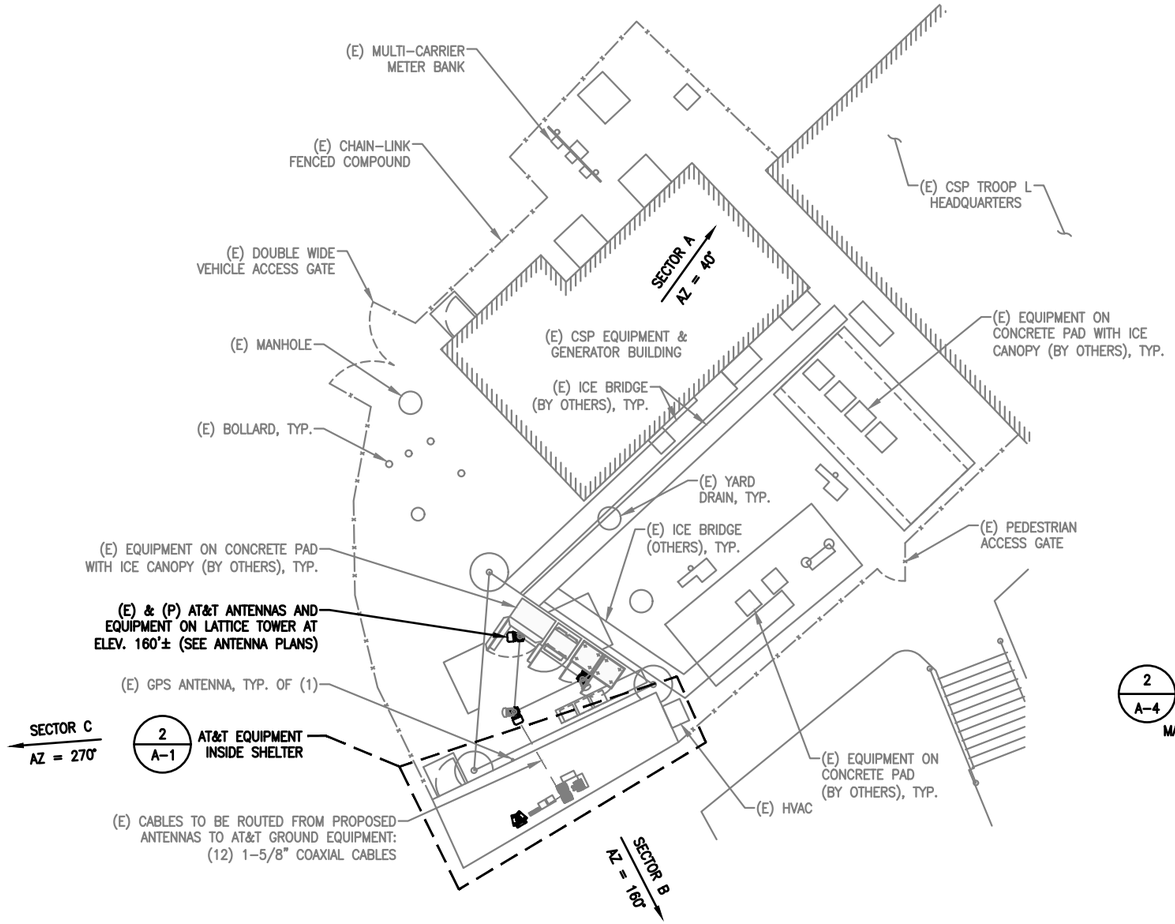
4	07/15/21	UPDATES	AAB	MRC
5	07/20/21	UPDATES	AAB	MRC

GENERAL NOTES

SHEET NO. GN-1

HALF SIZE PRINT

THIS DRAWING IS SCALEABLE AT HALF THE NOTED SCALE

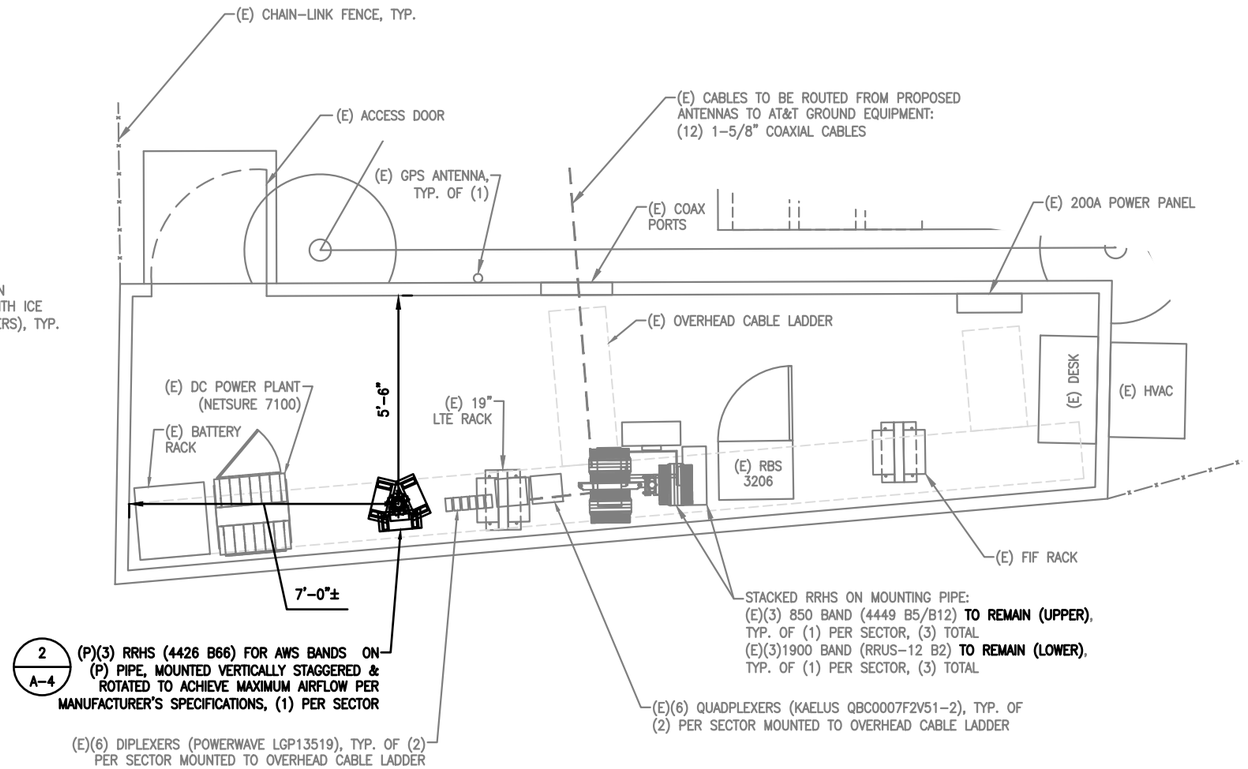


NORTH

1
A-1

COMPOUND PLAN

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



NORTH

2
A-1

EQUIPMENT SHELTER PLAN

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

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Phone: (401) 354-2403 Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1169

SITE NAME: LITCHFIELD BANTAM ROAD

452 BANTAM ROAD
LITCHFIELD, CT 06759
LITCHFIELD COUNTY

at&t
550 COCHITUATE ROAD, SUITE 13,
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COMPOUND AND EQUIPMENT PLANS

SHEET NO. **A-1**

HALF SIZE PRINT
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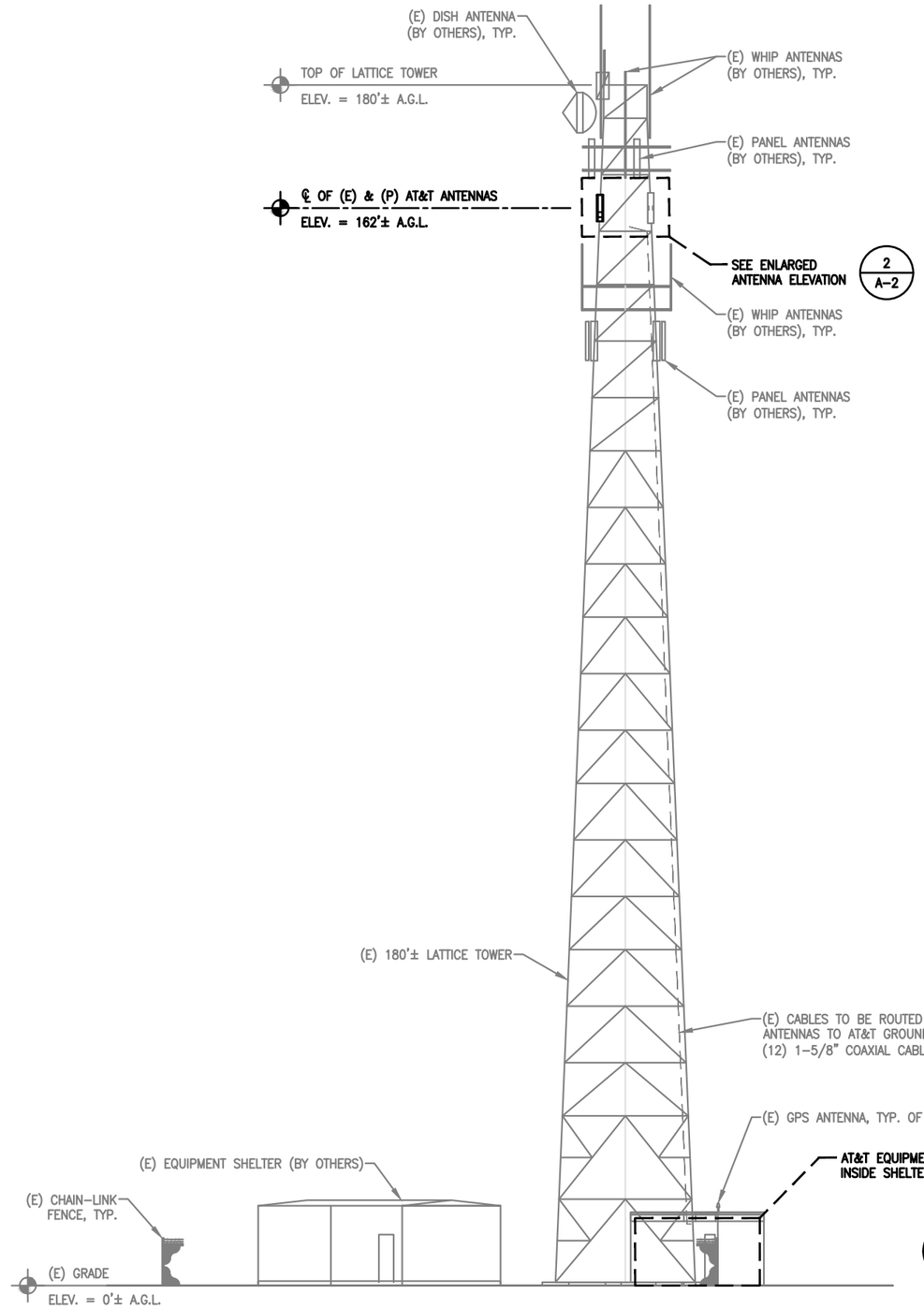
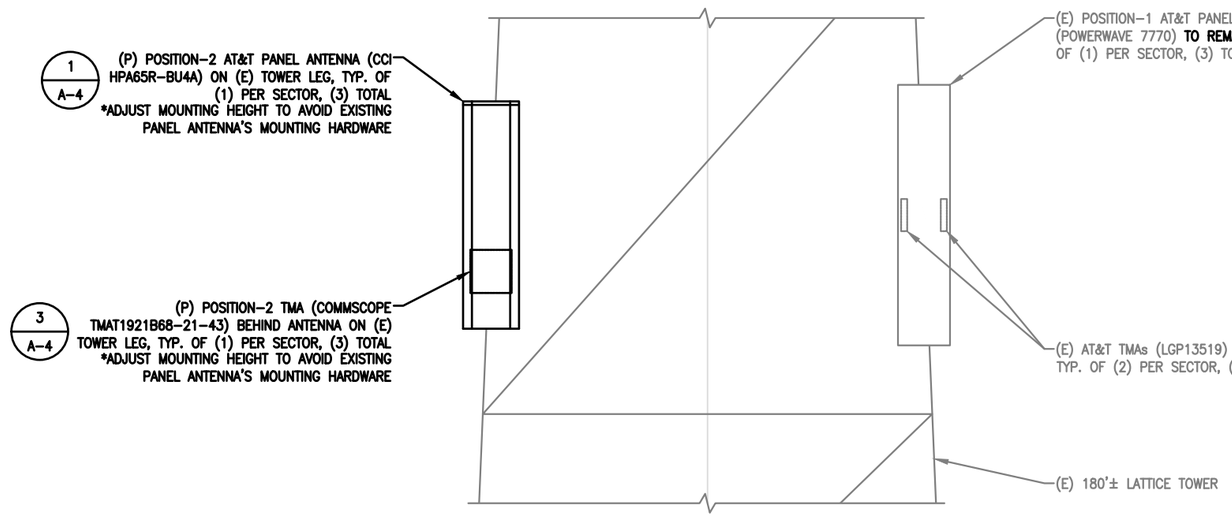


1 A-2 ELEVATION
SCALE: 3/32"=1'-0"



2 A-2 ENLARGED ANTENNA ELEVATION
SCALE: 3/4" = 1'-0"

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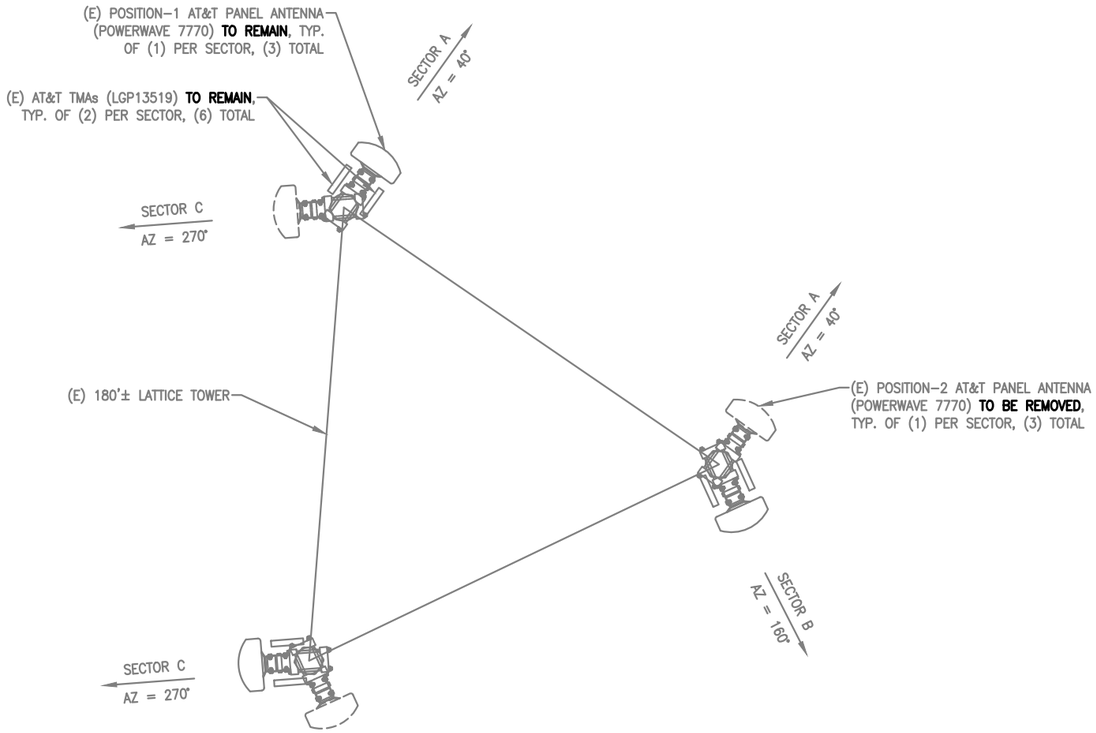
ELEVATIONS

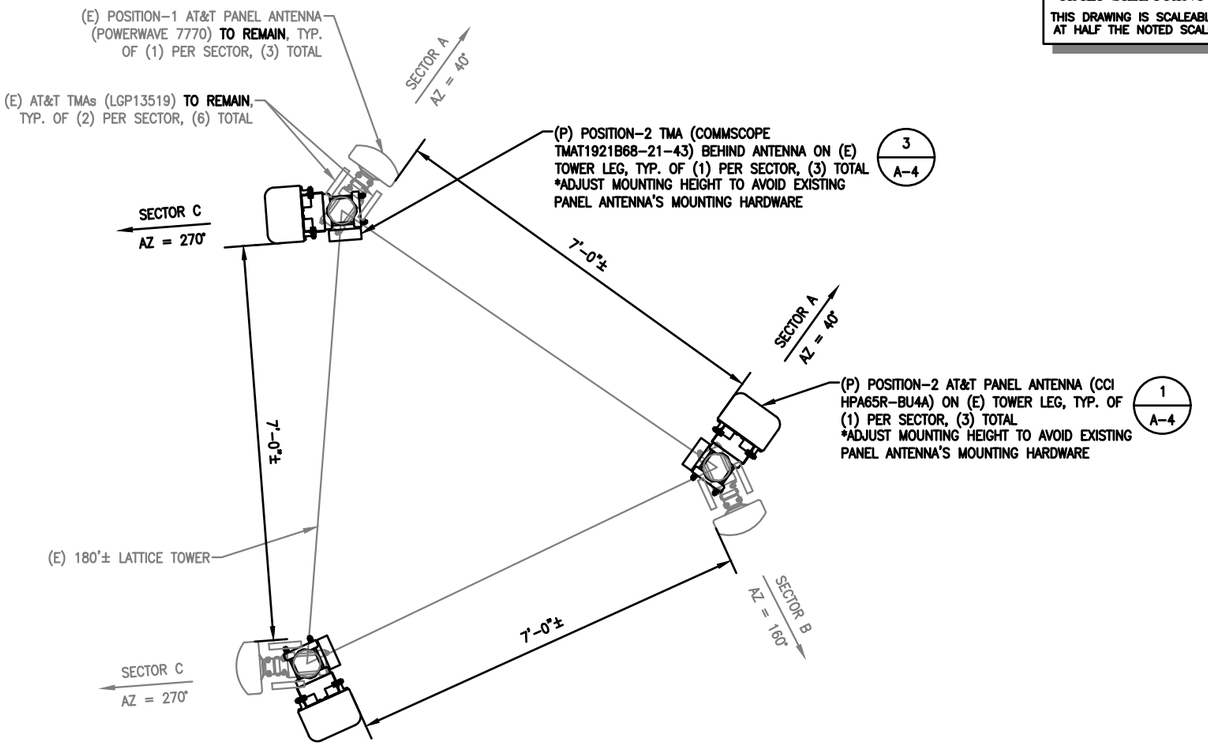
SHEET NO. A-2



NORTH

1 / A–3 EXISTING ANTENNA PLAN

SCALE: 3/4" = 1'–0"



NORTH

2 / A–3 PROPOSED ANTENNA PLAN

SCALE: 3/4" = 1'–0"

HALF SIZE PRINT

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RF SYSTEM SCHEDULE

SECTOR	ANTENNA INFORMATION					RRH INFORMATION		TMA & DIPLEXER INFORMATION		FEEDER INFO.	
	POSITION	STATUS	MODEL	AZIMUTH	RAD CTR (A.G.L.)	STATUS	MODEL	STATUS	MODEL	COAX	FIBER,DC
ALPHA	I–A	EXISTING	7770	40°	162'	(1) EXISTING	(G) RRUS–12 B2	(E)(2)(T) TMAs, (E)(2)(G) QUADPLEXERS	LGP21401, LGP13519	(E)2	–
	II–A	–	–	–	–	–	–	–	–	–	–
	III–A	–	–	–	–	–	–	–	–	–	–
	IV–A	PROPOSED	HPA65R–BU4A	40°	162'	(1) PROPOSED	(G) 4449 B5+B12, (G) 4426 B66	(P)(1)(T) TMA, (E)(2)(G) QUADPLEXERS	TMAT1921B68–21–43, QBC0007F2V51–1	(E)2	–
BETA	I–B	EXISTING	7770	160°	162'	(1) EXISTING	(G) RRUS–12 B2	(E)(2)(T) TMAs, (E)(2)(G) QUADPLEXERS	LGP21401, LGP13519	(E)2	–
	II–B	–	–	–	–	–	–	–	–	–	–
	III–B	–	–	–	–	–	–	–	–	–	–
	IV–B	PROPOSED	HPA65R–BU4A	160°	162'	(1) PROPOSED	(G) 4449 B5+B12, (G) 4426 B66	(P)(1)(T) TMA, (E)(2)(G) QUADPLEXERS	TMAT1921B68–21–43, QBC0007F2V51–1	(E)2	–
GAMMA	I–C	EXISTING	7770	270°	162'	(1) EXISTING	(G) RRUS–12 B2	(E)(2)(T) TMAs, (E)(2)(G) QUADPLEXERS	LGP21401, LGP13519	(E)2	–
	II–C	–	–	–	–	–	–	–	–	–	–
	III–C	–	–	–	–	–	–	–	–	–	–
	IV–C	PROPOSED	HPA65R–BU4A	270°	162'	(1) PROPOSED	(G) 4449 B5+B12, (G) 4426 B66	(P)(1)(T) TMA, (E)(2)(G) QUADPLEXERS	TMAT1921B68–21–43, QBC0007F2V51–1	(E)2	–

* CONTRACTOR TO VERIFY FINAL RFDS PRIOR TO CONSTRUCTION

LEGEND: (G)=GROUND, (T)=TOP

STATE OF CONNECTICUT · MARC R. CHRETIEN · No. 29307 · LICENSED PROFESSIONAL ENGINEER

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ANTENNA PLANS

SHEET NO. A-3

HALF SIZE PRINT
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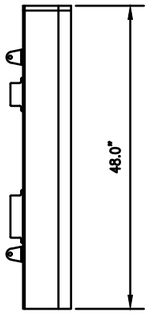
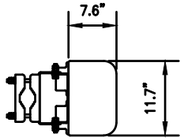
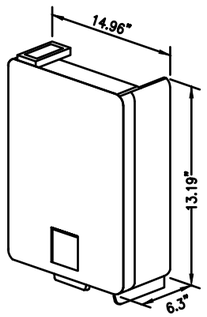




HPA65R-BU4A

MANUFACTURER: CCI
DIMENSIONS: (HxWxD) 48.0"x11.7"x7.6"
WEIGHT: 28.7 LBS.
(EXCLUDES MOUNTS & RET SYSTEM)

1 A-4 ANTENNA DETAIL
SCALE: N.T.S.



RRUS-4426 B66

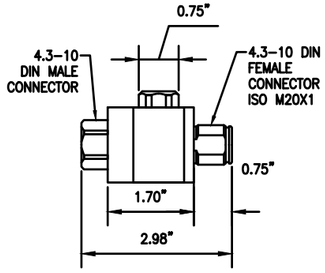
MANUFACTURER: ERICSSON
DIMENSIONS (HxWxD): 14.96"x13.19"x6.3"
WEIGHT: 48.4 LBS

2 A-4 RADIO DETAIL
SCALE: N.T.S.

TMAT1921B68-21-43

-MANUFACTURER: COMMSCOPE
-DIMENSIONS (H x W x D): 9.114" x 8.681" x 4.173"
-WEIGHT: 15.653 LBS
-OPERATING TEMP: -40°C TO +65°C

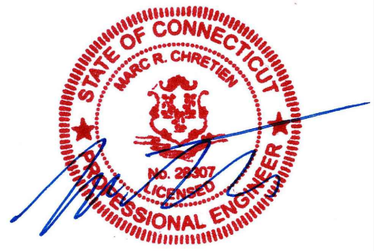
3 A-4 TMA DETAIL
SCALE: N.T.S.



TSXDC-4310FM

MANUFACTURER: POLYPHASER

4 A-4 SURGE ARRESTOR DETAIL
SCALE: N.T.S.



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DETAILS

SHEET NO. A-4

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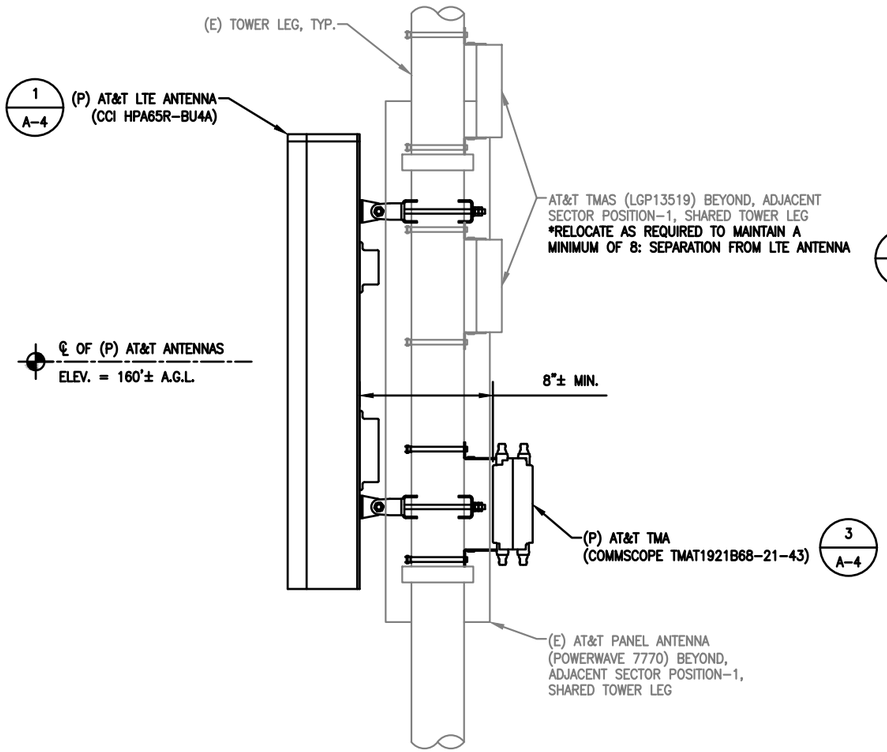
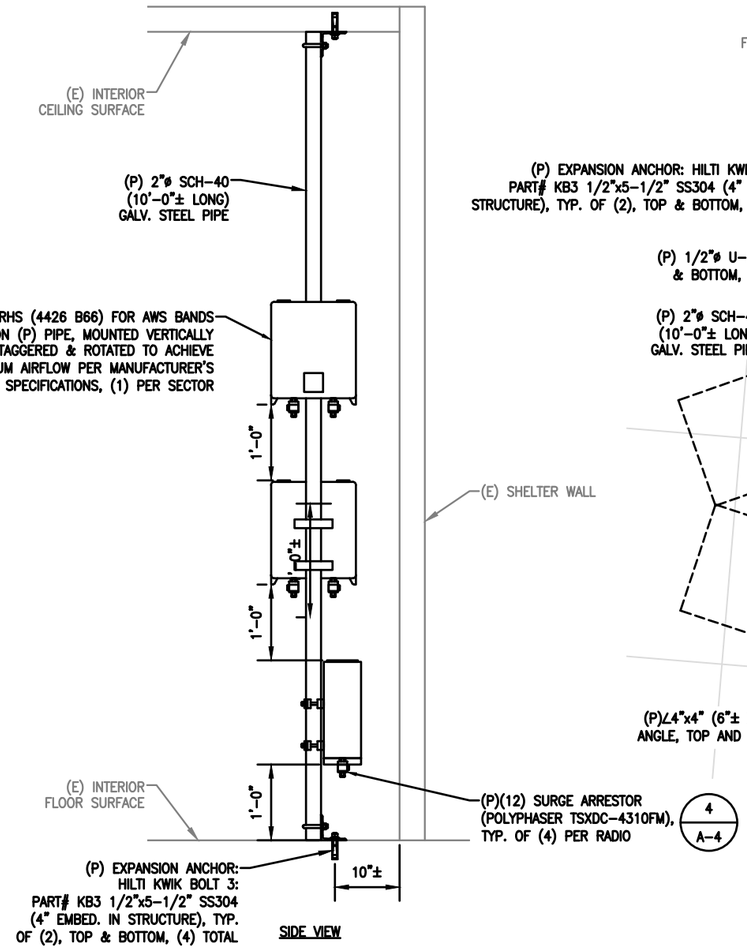
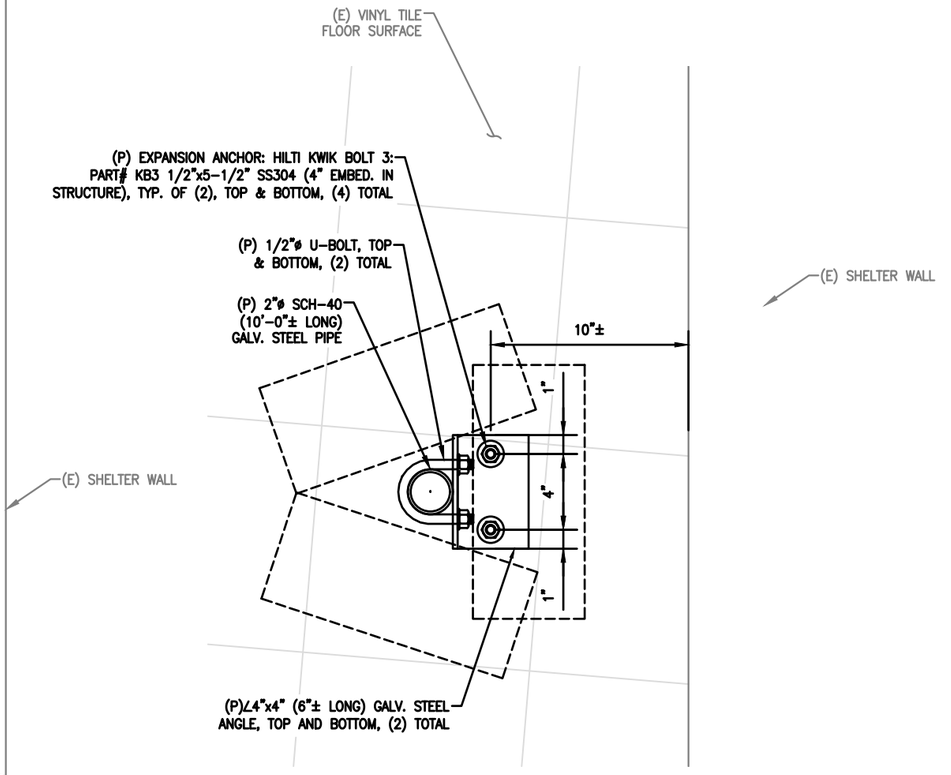


1 S-1 ANTENNA & TMA MOUNT DETAIL
SCALE: 1 1/2" = 1'-0"





2 S-1 RADIO MOUNT DETAILS
SCALE: 1 1/2" = 1'-0"

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5	07/20/21	UPDATES	AAB	MRC

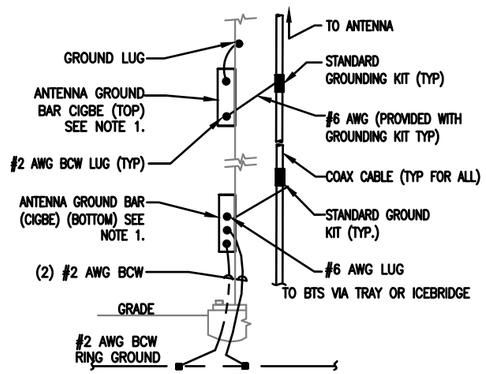
MOUNTING DETAILS

SHEET NO. S-1

	CIRCUIT BREAKER	ACCA	ANTENNA CABLE COVER ASSEMBLY
E	ELECTRIC BOX	AWG	AMERICAN WIRE GAUGE
	ELECTRICAL CONDUIT	BTCW	BARE TINNED COPPER WIRE
		C	CONDUIT
		CIGBE	COAX INSULATED GROUND BAR EXTERNAL
■	EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO	CO	CONDUIT ONLY
		DWG	DRAWING
		EGB	EXTERNAL GROUND BAR
	DISCONNECT SWITH	EMT	ELECTRICAL METALLIC TUBING
⊗	GROUND ROD	(E)	EXISTING
⊠	GROUND ROD WITH ACCESS	(F)	FUTURE
•	MECHANICAL GROUND CONN.	GEN	GENERATOR
		GFI	GROUND FAULT CIRCUIT INTERRUPTER
⊠	GROUND ACCESS WELL	GND	GROUND
G	GROUNDING WIRE	GPS	GLOBAL POSITIONING SYSTEM
		GR	GROWTH
G	GENERATOR	IGR	INTERIOR GROUND RING (HALO)
		MIGB	MASTER ISOLATED GROUND BAR
	FUSE	(P)	PROPOSED, NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE)
	GROUND BUS BAR	PCS	PERSONAL COMMUNICATION SERVICE
		PPC	POWER PROTECTION CABINET
	REVISION	PRC	PRIMARY RADIO CABINET
T	TELEPHONE BOX	PVC	POLYVINYL CHLORIDE CONDUIT
		RGS	RIGID GALVANIZED STEEL
M	UTILITY METER	RWY	RACEWAY
		S.L.D.	SINGLE LINE DIAGRAM
	XIT GROUND ROD	TEL	TELEPHONE
		TYP.	TYPICAL
		WP	WEATHERPROOF EQUIPMENT

1 G-1 ELEC. / GROUNDING LEGEND

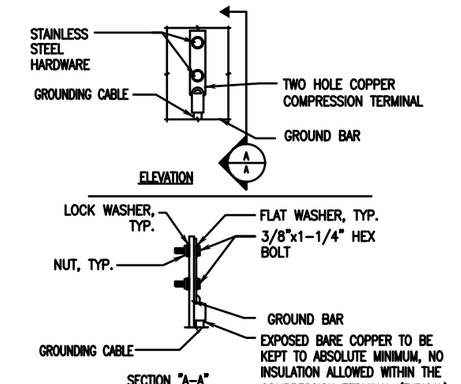
SCALE: N.T.S.



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

2 G-1 TYP. ANTENNA CABLE GROUNDING

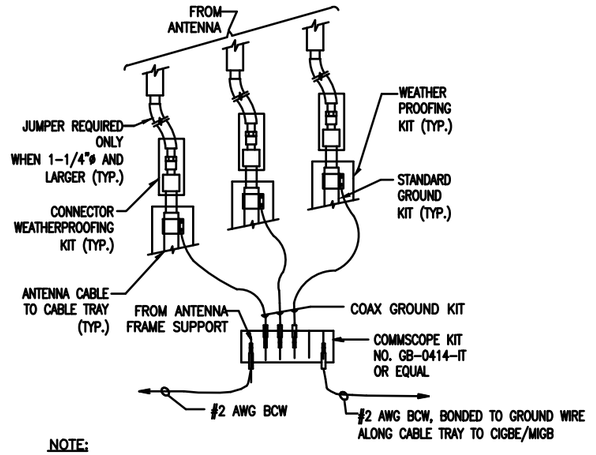
SCALE: N.T.S.



NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.
4. ALL GROUND LUGS MUST BE HEAT SHRUNK AT WIRE/LUG CONNECTION

3 G-1 TYP. GROUND BAR CONNECTION

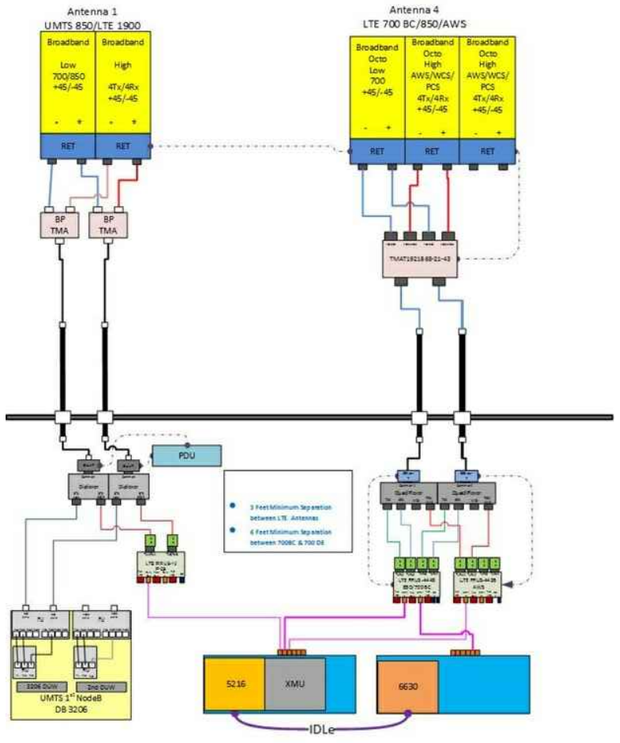
SCALE: N.T.S.



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

4 G-1 TYP. GROUND WIRE TO GROUND BAR CONN.

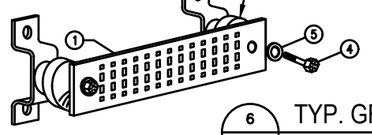
SCALE: N.T.S.



5 G-1 ONE LINE PLUMBING DIAGRAM

SCALE: N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2	———	WALL MTG. BRKT.
3	2	———	INSULATORS
4	4	———	5/8"-11x1" H.H.C.S.
5	4	———	5/8 LOCKWASHER



6 G-1 TYP. GROUND BAR CONN.

SCALE: N.T.S.

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

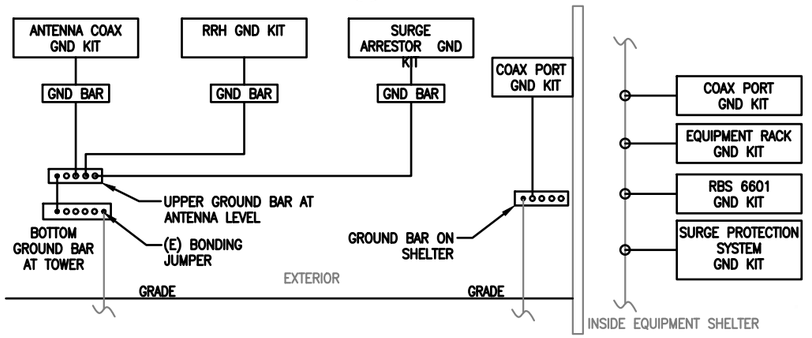
SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

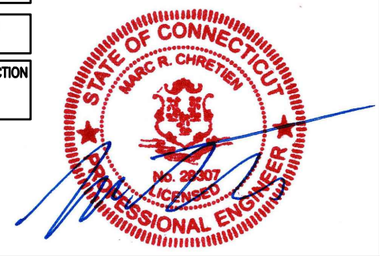
INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

GROUNDING NOTES:
ALL GROUNDING SHALL BE DONE IN ACCORDANCE WITH THE AT&T MOBILITY GROUNDING GUIDE.



7 G-1 ONE LINE GROUNDING DIAGRAM

SCALE: N.T.S.



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GROUNDING DETAILS AND ONE LINE DIAGRAM

SHEET NO. **G-1**

AECOM

Submitted to
SAI Communications, Inc.
12 Industrial Way
Salem, NH 03079

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
June 18, 2021

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 180’ SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

Site Name: CSP #07 Litchfield
Site No: CT1169
Site Address: 452 Bantam Road
Litchfield, CT

60594488
SAI-105 (Rev 1)

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the 180' self-supporting lattice tower located at 438 Bantam Road in Litchfield, Connecticut.

The structural analysis was conducted in accordance with the 2018 Connecticut State Building Code which includes the TIA-222-H[1] Standard, 2018 International Building Code, the 2018 Connecticut State Building Code Amendments to the International Building Code, the AISC[2] Load Resistance Factor Design (LRFD), the ASCE 7[3] design Code.

The antenna loading considered in the analysis consists of all the existing antennas, transmission lines and ancillary items as outlined in the Introduction Section of this report.

The proposed AT&T antenna installation is listed below:

Antenna and Other Appurtenances	Carrier	Antenna Center Elevation
Remove: **(3) Powerwave 7770 Panel Antennas** **(6) LGP 13519 Diplexers**	**AT&T (Existing)**	**@ 162'**
Install: **(3) CCI HPA65R-BU4A Panel Antennas** **(3) T1921xB68 TMAs**	**AT&T (Proposed)**	**@ 162'**

The results of the structural analysis herein in indicates:

1. The existing steel tower structure IS considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
3. The existing foundation IS considered structurally adequate for the proposed antenna loading with the load classification specified herein.
4. The maximum structural capacity rating calculated herein is **79.1%**

1. TIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version H)

2. AISC = American Institute of Steel Construction (15th Edition)

3. ASCE 7 = American Society of Civil Engineers – Standard 7 (2016 Edition)

1. EXECUTIVE SUMMARY *(continued)*

This analysis is based on:

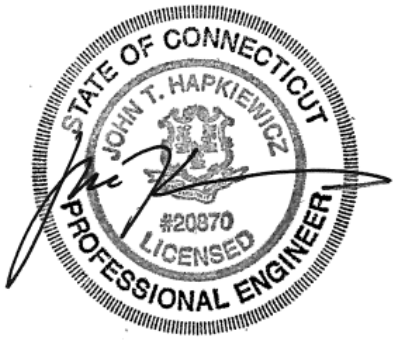
1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes utilized in the preparation of this report were taken from Tower and Foundation reports prepared by Stainless, Inc. project number 358803 dated November 23, 1993.
3) Foundation information taken from as-build drawings prepared by Stainless, Inc. project number 358803 signed and sealed March 3, 1994.
4) Geotechnical information taken from Supplemental Geotechnical Report prepared by Dr. Clarence Welti, P.E., P.C., dated February 22, 1994.
5) Previous structural analysis report prepared by URS Corporation on behalf of Verizon Wireless, project number VZ4-046 Rev 2 / 36931122, signed and sealed April 7, 2008.
6) Existing inventory taken from Tower Mapping and Inventory by Northeast Towers, Inc., climbed January 14, 2013.
7) Previous structural analysis and evaluation performed by AECOM, on behalf of Eversource, project number 60602416/EVS-013 Rev (b.1), signed and sealed September 8, 2020.
8) Proposed AT&T antenna inventory, obtained via e-mail dated May 14, 2021.
9) Antenna and mount configuration as specified within Section 2 and 6 of this report.
10) Coax cable orientation as specified in section 6 of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

AECOM,



John Hapkiewicz, P.E.
Vice President, Design Manager

JTH/kab

2. INTRODUCTION

The subject tower is located at 438 Bantam Road in Litchfield, CT. The structure is a 180' self-supporting three-legged steel tapered lattice tower designed and manufactured by Stainless Incorporated.

The tower geometry and structure member sizes were taken from the original construction drawings prepared by Stainless, Inc., dated November 23, 1993, and have considered previous tower modifications as stated in the Executive Summary of this report.

The structural analysis was conducted in accordance with the following:

- 2018 International Building Code (compliant with the TIA-222-H design loads)
- 2018 International Building Code with 2018 Connecticut State Building Code Amendments for a wind speed of 97 mph (3-second gust)
- 2016 AISC Load Resistance Factor Design (LRFD)
- 2016 ASCE 7 Minimum Design Loads for Buildings and Other Structures for the ice thickness referenced in the TIA-222-H Standard.

The inventory together with the proposed AT&T antenna arrangement is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Centerline Elevation***	***Cable***
(1) 4' Lightning Rod	n/a	10' Pipe Mount extension at Leg	192'	n/a
(1) PD-1142-30 10' Omni Antenna	CSP – 22 (existing)	6' Pipe Mount extension at Leg	191'	(1) 7/8"
(1) 5' x 2" Omni Antenna	CSP (existing)	6' Pipe Mount extension at Leg	184'	(1) 7/8"
(1) SC479-HF1LDF Omni (2) SC479-HF1LDF (Inverted Omni) (1) Bird TTA Unit	CSP-Troop L 44 to 47 (future)	6' Side-Arm Mount	180'	(3) 1-5/8" (1) 1/2"
(1) 20' x 2" Omni Antenna	LCD-9 (existing)	*Shared with Sprint Mount @ 169' (Below)*	182'	(1) 7/8"
(1) 20' x 2" Omni Antenna	LCD-28 (existing)	*Shared with Sprint Mount @ 169' (Below)*	182'	(1) 7/8"
(1) PD220 2-Bay Dipole	LCD - 27 (existing)	*Shared with Sprint Mount @ 169' (Below)*	176'	(1) 7/8"
(1) PA6-65	CSP - 3 (existing)	Leg Mount	176'	(1) EW63

Antenna Type	***Carrier***	***Mount***	***Centerline Elevation***	***Cable***
(1) DB292 Yagi Antenna	LCD – 10 (existing)	*Shared with Sprint Mount @ 169' (Below)*	170'	(1) 7/8"
(6) DB980F90E-M	Sprint (existing)	(3) 12' Wide Antenna Mount Frames	169'	(6) 1 5/8"
(3) CCI HPA65R-BU4A Panel Antennas (3) T1921xB68 TMAs	**AT&T (Proposed)**	***Shared with Below***	**162'**	**Shared with Below**
(3) Powerwave 7770.00 antennas (6) LGP 21401 TMA's	AT&T (existing)	*(3) Double Antenna Clamp Assemblies Mounted to Leg*	162'	(12) 1 5/8"
(1) PD1142-1 20' Omni	CSP (existing)	*Shared with VZW Mount @ 148'' (Below)*	158'	(1) 7/8"
(1) DB 222 Dipole (2-bay)	CSP (existing)	*Shared with VZW Mount @ 148'' (Below)*	153'	(1) 7/8"
(1) DB 586-Y Omni Antenna	CSP (existing)	*Shared with VZW Mount @ 148'' (Below)*	150.5'	(1) 7/8"
(1) TMA Unit	CSP (existing)	*Shared with VZW Mount @ 148''*	148'	(1) 1/2"
(1) 10' Dipole on 20' Pipe	CSP (existing)	*20' Pipe mounted to Shared with VZW Mount @ 148''*	148'	(1) 7/8"
(3) Amphenol BXA-185085-12CF Panels (3) Amphenol BXA-80080-6CF Panels *(Panels CL @142')*	VZW (existing)	(3) 12' Wide Antenna Mount Frames	148'	(12) 1 5/8"
(1) (inverted) DB 586-Y Omni Antenna	CSP (existing)	*Shared with VZW Mount @ 148'' (Above)*	144'	(1) 7/8"
(1) Telewave ANT220F2 Omni Antenna	Eversource (existing)	(1) SitePro USF-4U	126'	(1) 7/8" CELLFLEX LCF78-50JA-A7 Feed Line
(1) Telewave ANT220F2 Omni Antenna	Eversource (existing)	(1) SitePro USF-4U	111'	(1) 7/8" CELLFLEX LCF78-50JA-A7 Feed Line
GPS	Sprint (existing)	4' (Square Tube) Stand Off Mount	52'	(1) 1/2"
(1) DB803M Omni Antenna	CSP (existing)	Shared with Below Mount	33.5'	(1) 1/2"

Antenna Type	*Carrier*	*Mount*	*Centerline Elevation*	*Cable*
(1) DB803M Omni Antenna	CSP (existing)	2’ Stand Off Mount @ 25’	29.5’	(1) 1/2”
(1) (inverted) DB803 Omni Antenna	CSP (existing)	3’ Stand-off Mount @ 31’	27’	(1) 1/2”
(1) 2’ Yagi	CSP (existing)	Shared with Above	16’	(1) RG6

NOTES: Antenna ID Numbering obtained from Connecticut State Police inventory, dated January, 27, 2014.

This structural analysis of the communications tower was performed by AECOM, on behalf of AT&T. The purpose of this analysis was to investigate the structural integrity of the existing tower and foundation for existing antenna loads in compliance with the 2018 Connecticut State Building Code. This analysis was conducted to evaluate stress on the tower and the effect forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with, the TIA-222-H–Structural Standard for Antenna Towers and Antenna Supporting Structures and Antennas, the 2018 International Building Code with 2018 Connecticut State Building Code Amendments and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Load Resistance Factor Design (LRFD)

The structural analysis was conducted using TNX Tower version 8.0.7.4 and used the following conditions for this tower review (following the TIA-222-H Standard):

- Structure Class 3 – (Essential Communications)
  - NOTE: ASCE 7 and CT State Building Code Applied Risk Category 4 for design wind loads (see below)
- Topographic Category 1 – (No Abrupt elevation changes to location of structure)
- Exposure Class C – (Open Terrain with scattered obstructions)
- Load Conditions:
  - Two load conditions were evaluated as shown which were compared to design stresses according to AISC and TIA-222-H Standard.

Basic Wind Speed:

- IBC 2018 w/ 2018 CT State Building Code Amendment:
  - (2018) IBC Section 1609.1.1 – Determination of Wind Loads – Exception 5 "Designs using TIA-222" applies for determination of Design Wind Load obtained as "V.ult" are to be converted to "V.asd" when applying the TIA-222-H design Standard (under Section 1609.3) for Basic Wind Speed.
    - Due to tnxTower program options for TIA-222-H, the program appears to perform tower analysis with speeds according to ASCE 7-16 V.ult loads, therefore, V.ult speeds are to be used.
  - (2018) CT State Building Code Amendment to the IBC Section 1609.3 wind loads are obtained from Appendix N of the State Building Code.
    - **V.ult = 125 mph** (3-Second Gust) Wind Design Parameter for the Town of Litchfield, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police). NOTE: Because the State of Connecticut has not officially published the design wind-speeds, use the state of Connecticut wind-speeds per municipality (indicated above).

LOAD CONDITION 1 = 125 MPH (3-SECOND GUST) WIND LOAD (WITHOUT ICE) + TOWER DEAD LOAD
Load Condition 2 = 40 mph (3-second gust) Wind Load (with ice) + Ice Load + Tower Dead Load

Ice thickness used for this analysis is **1.00 inch** (assumed to start at the base of the tower) and is considered to increase in thickness with height. The initial ice thickness for design is referenced in the Annex of TIA-222-H and follows the same design criteria as the ASCE 7 Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

Seismic event consideration factors/values for design:

- S.s = 0.184 (2018 CT State Building Code – Location Specific Value)
- S.1 = 0.065 (2018 CT State Building Code – Location Specific Value)
- Site Classification = “D”
- Seismic Design Category = “C” – (2018 International Building Code)
- F.a = 1.6 (Obtained from TIA-222-H Table 2-11 Considering above conditions)
- F.v = 2.4 (Obtained from TIA-222-H Table 2-12 Considering above conditions)

Strength Limit State Load Combinations (TIA-222-H Section 2.3.2):

The structural analysis herein has considered the following load combinations within the analysis:

1. ***1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.6 Wind load without ice***
2. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Dead weight of ice due to factored ice thickness + 1.0 Concurrent wind load with factored ice thickness + 1.0 Load effects due to temperature
3. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Earthquake Load

NOTE 1: The above **bolded** load combination is considered to create the governing design loads per the results of the analysis.

NOTE 2: The above “Dead Load Guy Assemblies” are not considered as part of the analysis and are considered as a value of zero.

NOTE 3: The “Load effects due to temperature” do not apply for structures that are self-sustaining (from the TIA-222-H Standard)

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the strength design in accordance with AISC (LRFD). The results of the analysis indicated the existing tower structure has enough capacity to support the proposed loading conditions indicated herein. The results of the analysis indicated the existing tower anchor bolts and foundation have enough capacity to support the proposed loading conditions indicated herein.

Tower Base Reactions (Factored):

Description	Current (TIA-222-H)
Pier Compression (kips)	327
Pier Uplift (kips)	286
Overall Overturning (kip-ft)	5671
Overall Shear (kips)	60
Shear per Leg (kips)	34

Proposed Tower Component Stress vs. Capacity Summary

Component / (Section No.)	*Controlling Component/ Elevation*	Stress (% capacity)	Pass/Fail
Leg (T6)	HSS 5x0.5 / Compression / 50'-75'	78.7	**Pass**
Diagonal (T5)	(2L) 2-1/2x2x3/16" / Compression / 75'-100'	71.5	**Pass**
Horizontal (T4)	L2 1/2x2 1/2x3/16 / Compression / 100'-125'	74.2	**Pass**
Top Girt (T4)	L2 1/2x2 1/2x1/4 / Compression / 100'-125'	52.5	**Pass**
Redundant Horizontal Bracing (T8)	L3x3x1/4 / Compression / 0'-25'	15.7	**Pass**
Redundant Diagonal (T8)	L3x3x1/4 / Compression / 0'-25'	22.1	**Pass**
Bolt Checks	(2) 5/8" Dia A325X Bolts / Member Block Shear / Horizontal / 100'-125'	69.6	**Pass**

4. FINDINGS AND EVALUATION (cont.)

Foundation Summary

Component	Required	Computed	% Capacity	Pass/Fail
Tower Anchor Rod Capacity (TIA-222-H – 4.9.9)	Ratio < 1.0	0.626	62.6	Pass
Foundation – Drilled Pier Soil Failure – Cone Uplift Capacity	327.4 kips (factored resistance	258.8 kips	79.1	Pass

Structure Rating (Maximum from all components) =	**79.1 %**	**PASS**

Maximum Deformations – Proposed Condition

TIA-222-H Section 2.8.2 - Limit State Deformations

1. A rotation of 4 degrees about the vertical axis (twist) or any horizontal axis (sway) of the structure
2. A horizontal displacement (in feet) of 3% of the height of the structure.

Load Case Description	Current		Allowable	
	Sway (degree)	Displacement (Feet)	Sway (degree)	Displacement (Feet)
Service Wind Load	0.1827	0.351	4.0	5.4

5. CONCLUSIONS AND RECOMMENDATIONS

The results of the structural analysis herein in indicates:

1. The existing steel tower structure IS considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
3. The existing foundation IS considered structurally adequate for the proposed antenna loading with the load classification specified herein.
4. The maximum structural capacity rating calculated herein is **79.1%**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.
10. Previous Modification analysis as stated within the Executive Summary of this report are assumed constructed unless noted otherwise.

AECOM is not responsible for any modifications completed prior to or hereafter in which AECOM is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

AECOM hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact AECOM. AECOM disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

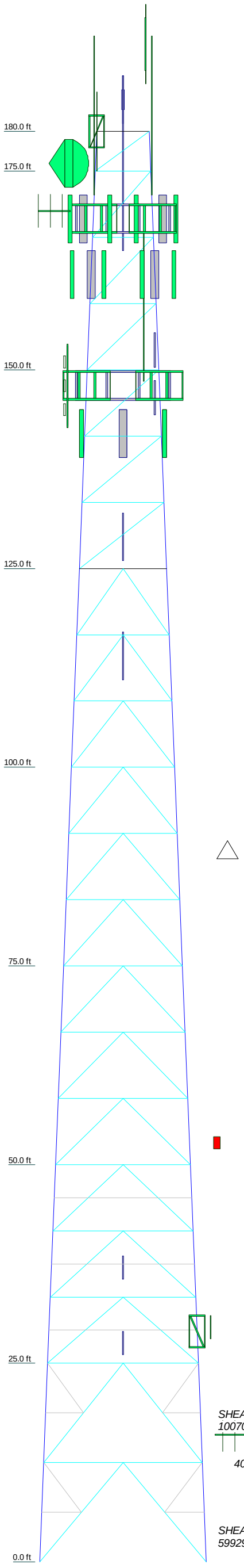
After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA-222-H Section 14.2 for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6. DRAWINGS AND DATA

TNX TOWER INPUT / OUTPUT SUMMARY

	T1	T2	T3	T4	T5	T6	T7	T8				
Section												
Legs		HSS5x0.25		HSS5x.4		HSS5x0.5		HSS6.875x0.5				
Leg Grade		A500-50				A514-60						
Diagonals		2L2 1/2x2x3/16	2L3x2 1/2x1/4	2L2 1/2x2x3/16		2L2 1/2x2 1/2x1/4	2L3x2 1/2x1/4	2L3x3x5/16				
Diagonal Grade					A36							
Top Girts	A	N.A.	N.A.	L2 1/2x2 1/2x1/4		N.A.						
Horizontals	N.A.	L2 1/2x2 1/2x3/16	L3x3x1/4	L2 1/2x2 1/2x3/16	L3x2 1/2x1/4	L3x3x1/4	L3x3x1/4	L4x4x1/4				
Red. Horizontals	N.A.			N.A.			L3x3x1/4					
Red. Diagonals	N.A.			N.A.		L2 1/2x2x3/16	L3x3x1/4	L3x3x1/4				
Red. Sub-Horizs							L3x3x1/4	N.A.				
Inner Bracing								L2 1/2x2 1/2x3/16				
Face Width (ft)	6.6	7	9	11	13	15	17	19	21			
# Panels @ (ft)	1 @ 5	18 @ 8.33333						2 @ 12.5				
Weight (lb)	391.0	1760.6	2485.0	3003.5	3449.6	4492.8	57544	6753.6	28090.7			



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4' (Lightning Rod)	192	DB586-Y (CSP @ 150.5' (Upright))	155 - 150
PD1142-30 (CSP (22) @ 191')	191	DB222 (CSP @ 153')	153
6'8"x4" Pipe Mount (CSP (22) @ 191')	191	432E-83I-01T TTA Unit (CSP @ 148' (TTA Unit))	153
2" Dia 8' Omni (CSP @ 184')	184	DB586-Y (CSP @ 148' (Inverted))	149 - 144
2'6"x4" Pipe Mount (CSP @ 184')	184	10' Dipole (Generic) (CSP @ 148')	148
3" Dia 20' Omni (CSP (LCD-9) @ 182')	182	10'6"x4" Pipe Mount (Pipe Mt. Connected to Dipole)	148
3" Dia 20' Omni (CSP (LCD-28) @ 182')	182	SitePro1 VFA12-RRU Mount Assembly (VZW)	148
10'6"x4" Pipe Mount (Extension for Lightning Rod)	180	SitePro1 VFA12-RRU Mount Assembly (VZW)	148
SC479-HF1LDF (Inverted) (CSP Troop L @ 180')	180 - 165.5	SitePro1 VFA12-RRU Mount Assembly (VZW)	148
SC479-HF1LDF (Inverted) (CSP Troop L @ 180')	180 - 165.5	BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	142
SC479-HF1LDF (CSP Troop L @ 180')	180	BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	142
432E-83I-01T TTA Unit (CSP Troop L @ 180')	180	BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	142
Pirod 4' Side Mount Standoff (1) (CSP Troop L @ 180')	180	BXA-185085-12CF Panel Antennas w/ Pipe Mount (VZW)	142
PD220 (CSP (LCD-27) @ 176')	176	BXA-185085-12CF Panel Antennas w/ Pipe Mount (VZW)	142
3'4"x4" Pipe Mount (Dish Mount (CSP-3) @ 176')	176	BXA-185085-12CF Panel Antennas w/ Pipe Mount (VZW)	142
PA6-65	176	ANT220F2 Antenna (Eversource - Proposed)	129
DB292-A (CSP (LCD-10) @ 170')	170	Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	126
SitePro1 VFA12-RRU Mount Assembly (Sprint)	169	ANT220F2 Antenna (Eversource - Proposed)	114
SitePro1 VFA12-RRU Mount Assembly (Sprint)	169	Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	111
(2) DB980F90E-M w/Mount Pipe (Sprint)	169	GPS (GPS @ 52')	52
(2) DB980F90E-M w/Mount Pipe (Sprint)	169	4' Side Arm (Sq Tube) (GPS@52)	52
(2) DB980F90E-M w/Mount Pipe (Sprint)	169	DB803M-Y (CSP @ 33.5' (Upright))	40.5 - 33.5
SitePro1 VFA12-RRU Mount Assembly (Sprint)	169	3' Side Arm Mount (Mt. for CSP @ 31', 33.5')	31
(2) LGP 21401 TMA Units (ATI)	162	DB803M-Y (CSP @ 31' (Upright))	31 - 24
7770.00 panel antenna (ATI)	162	DB803M-Y (CSP @ 29.5' (Upright))	29.5
(2) LGP 21401 TMA Units (ATI)	162	2' Side Arm Mount (Mt @ 29')	29
7770.00 panel antenna (ATI)	162	3' Yagi (CSP @ 16')	16
7770.00 panel antenna (ATI)	162		
(2) LGP 21401 TMA Units (ATI)	162		
CCI HPA65R-BU4A (ATI)	162		
CCI HPA65R-BU4A (ATI)	162		
CCI HPA65R-BU4A (ATI)	162		
T1921B68 TMA (ATI)	162		
T1921B68 TMA (ATI)	162		
T1921B68 TMA (ATI)	162		
PD1142-1 (CSP @ 158')	158		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2 1/2x2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-50	50 ksi	62 ksi	A514-60	60 ksi	80 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 78.7%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 327058 lb
SHEAR: 34377 lb

UPLIFT: -285953 lb
SHEAR: 30969 lb

AXIAL 109485 lb
SHEAR 10070 lb *MOMENT 1004 kip-ft*
TORQUE 7 kip-ft
40 mph WIND - 1.0000 in ICE

AXIAL 45714 lb
SHEAR 59929 lb *MOMENT 5671 kip-ft*
TORQUE 21 kip-ft
REACTIONS - 125 mph WIND

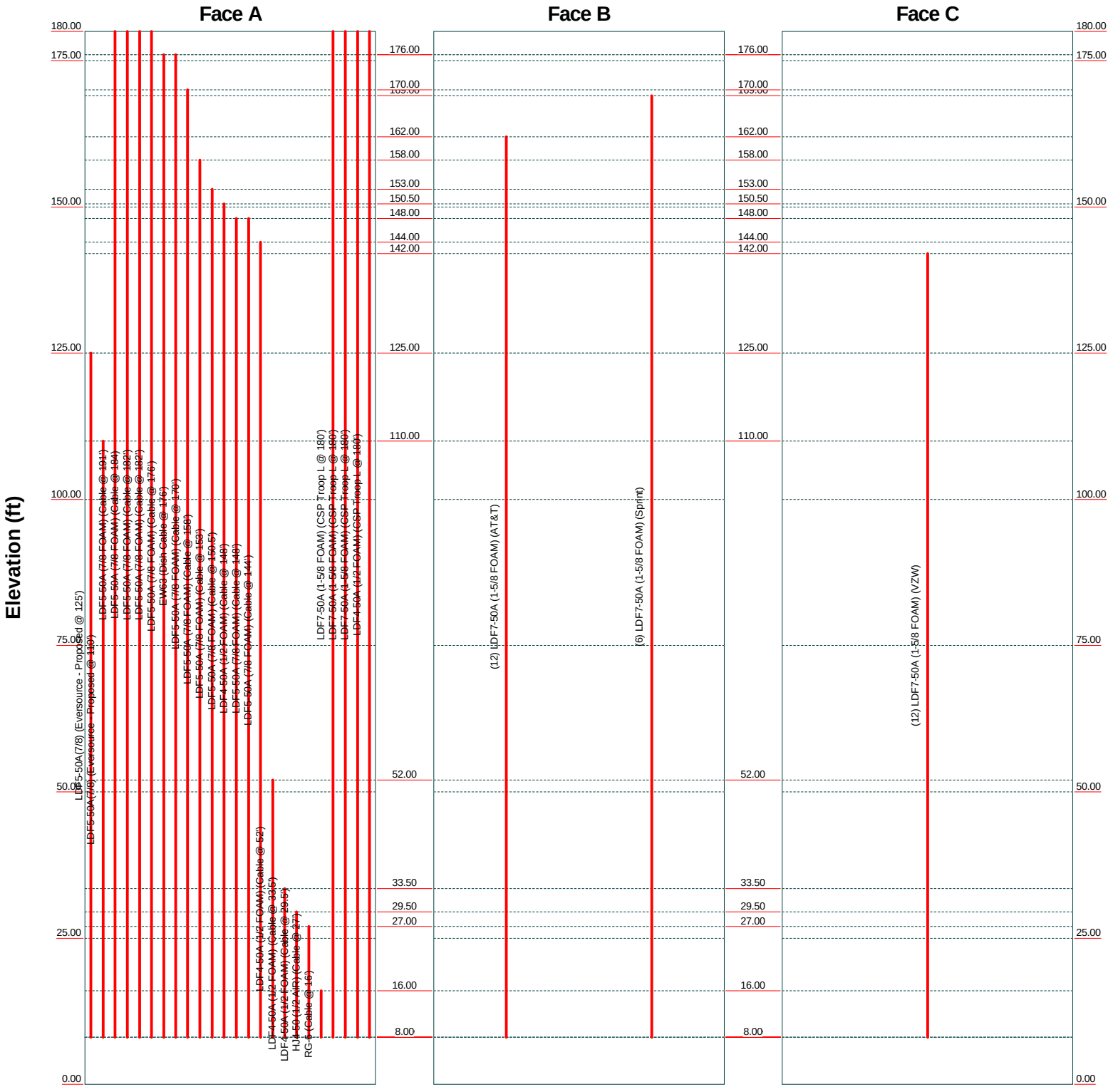
AECOM
500 Enterprise Drive
Rocky Hill, CT
Phone: (860) 529-8882
FAX:

Job: ***180' Stainless Self-Support Tower***			
Project: ***CSP Tower - Litchfield, CT***			
Client: SAI-105 / AT&T	Drawn by: KAB	App'd:	
Code: TIA-222-H	Date: 06/18/21	Scale: NTS	
Path:		Dwg No. E-1	

TNX TOWER FEEDLINE DISTRIBUTION CHART

Feed Line Distribution Chart
0' - 180'

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

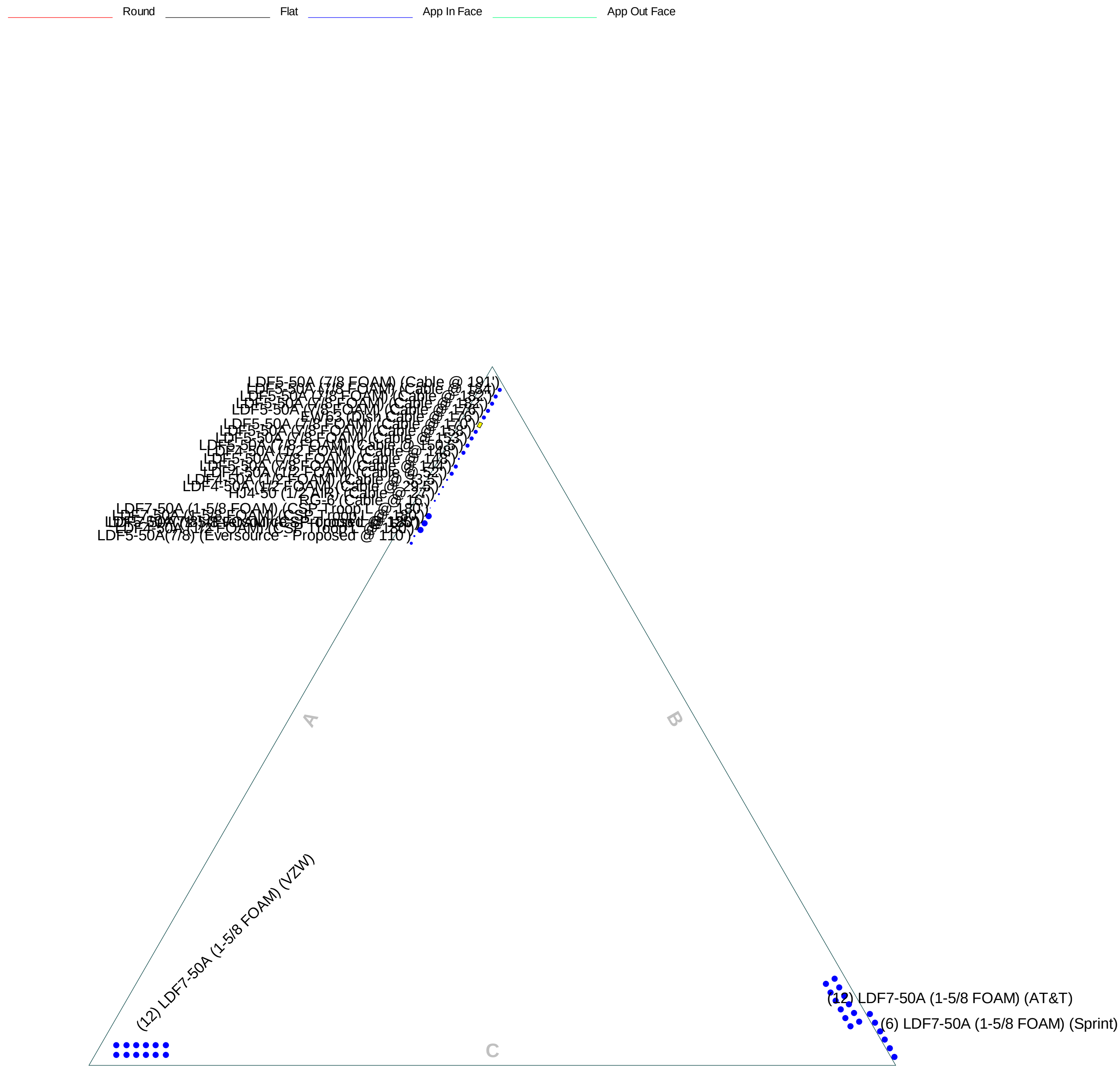


AECOM
500 Enterprise Drive
Rocky Hill, CT
Phone: (860) 529-8882
FAX:

Job: ***180' Stainless Self-Support Tower***			
Project: ***CSP Tower - Litchfield, CT***			
Client: SAI-105 / AT&T	Drawn by: KAB	App'd:	
Code: TIA-222-H	Date: 06/18/21	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER FEEDLINE PLAN

Feed Line Plan

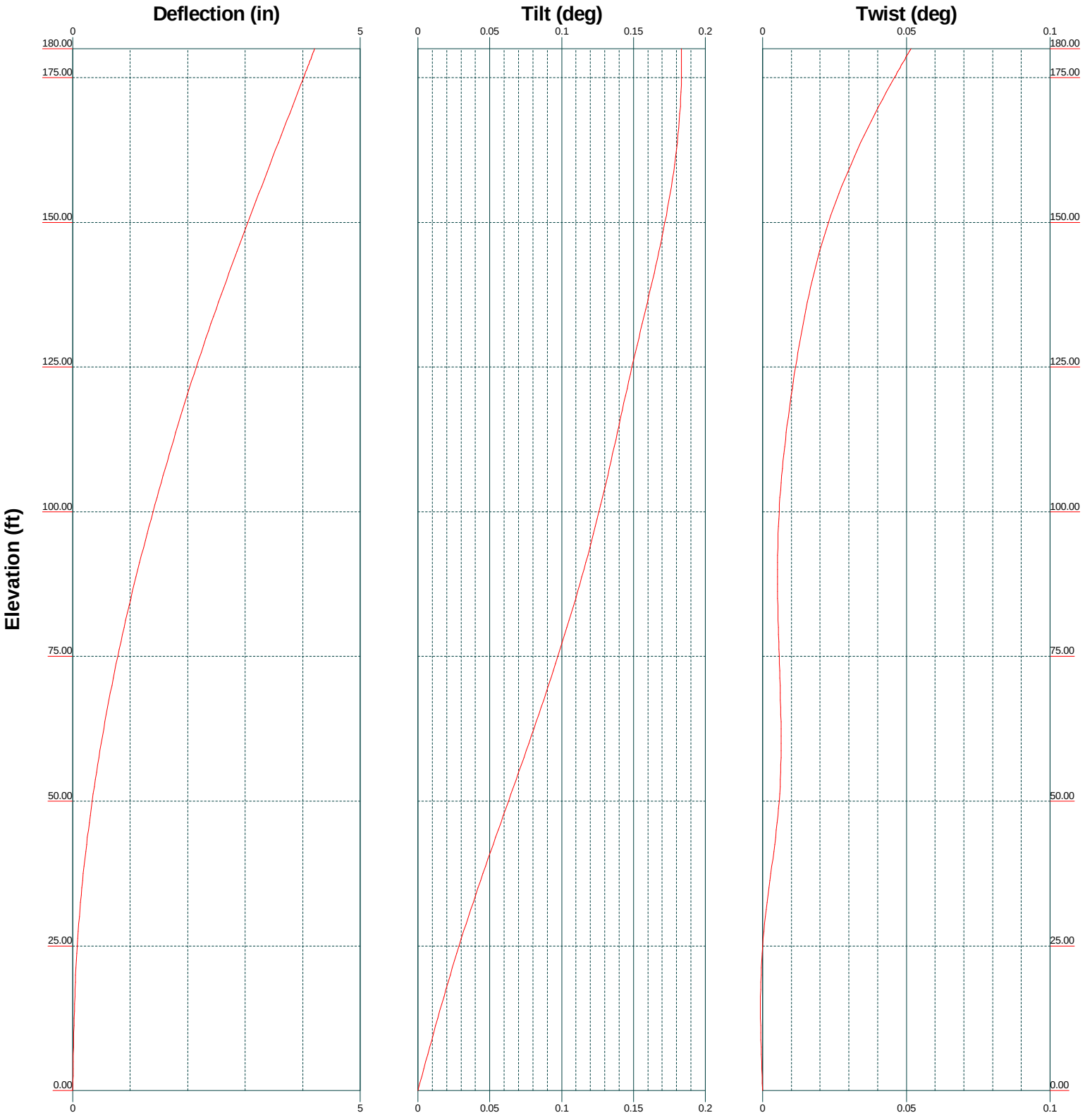


AECOM 500 Enterprise Drive Rocky Hill, CT Phone: (860) 529-8882 FAX:	Job: ***180' Stainless Self-Support Tower***		
	Project: ***CSP Tower - Litchfield, CT***		
	Client: SAI-105 / AT&T	Drawn by: KAB	App'd:
	Code: TIA-222-H	Date: 06/18/21	Scale: NTS
	Path:		Dwg No. E-7

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA-222-H - Service - 60 mph

Maximum Values



AECOM
500 Enterprise Drive
Rocky Hill, CT
Phone: (860) 529-8882
FAX:

Job: ***180' Stainless Self-Support Tower***			
Project: ***CSP Tower - Litchfield, CT***			
Client: SAI-105 / AT&T	Drawn by: KAB		App'd:
Code: TIA-222-H	Date: 06/18/21		Scale: NTS
Path:			Dwg No. E-5

TNX TOWER DETAILED OUTPUT

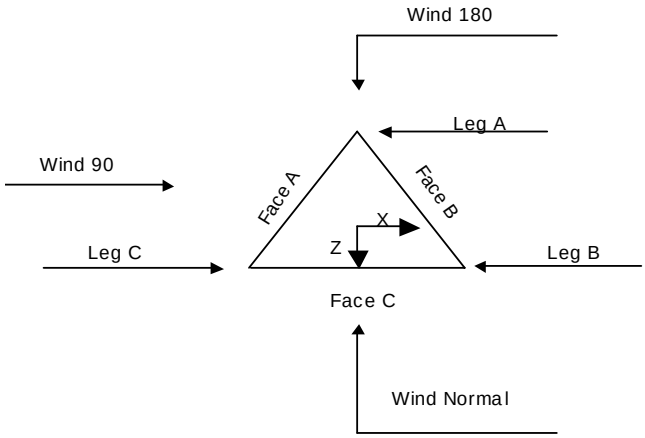
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 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 6.60 ft at the top and 21.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
Tower base elevation above sea level: 0.00 ft.
Basic wind speed of 125 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 40 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

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.00-175.00			6.60	1	5.00
T2	175.00-150.00			7.00	1	25.00
T3	150.00-125.00			9.00	1	25.00
T4	125.00-100.00			11.00	1	25.00
T5	100.00-75.00			13.00	1	25.00
T6	75.00-50.00			15.00	1	25.00
T7	50.00-25.00			17.00	1	25.00
T8	25.00-0.00			19.00	1	25.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-175.00	5.00	Diag Up	No	Yes	0.0000	0.0000
T2	175.00-150.00	8.33	Diag Up	No	Yes	0.0000	0.0000
T3	150.00-125.00	8.33	Diag Up	No	Yes	0.0000	0.0000
T4	125.00-100.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T5	100.00-75.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T6	75.00-50.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T7	50.00-25.00	8.33	K1 Down	No	Yes	0.0000	0.0000

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
T8	25.00-0.00	12.50	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-175.00	Pipe	HSS5x0.25	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T2 175.00-150.00	Pipe	HSS5x0.25	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T3 150.00-125.00	Pipe	HSS5x0.25	A500-50 (50 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T4 125.00-100.00	Pipe	HSS5x.4	A514-60 (60 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T5 100.00-75.00	Pipe	HSS5x.4	A514-60 (60 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T6 75.00-50.00	Pipe	HSS5x0.5	A514-60 (60 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 50.00-25.00	Pipe	HSS5x0.5	A514-60 (60 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T8 25.00-0.00	Pipe	HSS6.875x0.5	A514-60 (60 ksi)	Double Angle	2L3x3x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T4 125.00-100.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-175.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T2 175.00-150.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 150.00-125.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T4 125.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 100.00-75.00	None	Flat Bar		A36	Single Angle	L3x2 1/2x1/4	A36

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T6 75.00-50.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L3x3x1/4	(36 ksi) A36 (36 ksi)
T7 50.00-25.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L3x3x1/4	(36 ksi) A36 (36 ksi)
T8 25.00-0.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L4x4x1/4	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T5 100.00-75.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 75.00-50.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 50.00-25.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T8 25.00-0.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T7 50.00-25.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L3x3x1/4	1
		Sub-Horizontal	Single Angle	L3x3x1/4	1
T8 25.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L3x3x1/4	1
		Diagonal (1)	Single Angle	L3x3x1/4	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-175.00	0.00	0.0000	A36 (36 ksi)	1.05	1	1.05	Third-Pt	0.0000	0.0000
T2 175.00-150.00	0.00	0.0000	A36 (36 ksi)	1.05	1	1.05	Third-Pt	0.0000	0.0000
T3 150.00-125.00	0.00	0.0000	A36 (36 ksi)	1.05	1	1.05	Third-Pt	0.0000	0.0000
T4	0.00	0.0000	A36	1.05	1	1.05	Third-Pt	0.0000	0.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
125.00-100.00 T5	0.00	0.0000	(36 ksi) A36	1.05	1	1.05	Third-Pt	0.0000	0.0000
100.00-75.00 T6	0.00	0.0000	(36 ksi) A36	1.05	1	1.05	Third-Pt	0.0000	0.0000
75.00-50.00 T7	0.00	0.0000	(36 ksi) A36	1.05	1	1.05	Third-Pt	0.0000	0.0000
50.00-25.00 T8	0.00	0.0000	(36 ksi) A36	1.05	1	1.05	Third-Pt	0.0000	0.0000
25.00-0.00			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	No	1	1	1	1	1	1	1	1
180.00-175.00				1	1	1	1	1	1	1
T2	Yes	No	1	1	1	1	1	1	1	1
175.00-150.00				1	1	1	1	1	1	1
T3	Yes	No	1	1	1	1	1	1	1	1
150.00-125.00				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1
125.00-100.00				1	1	1	1	1	1	1
T5	Yes	No	1	1	1	1	1	1	1	1
100.00-75.00				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
75.00-50.00				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
50.00-25.00				1	1	1	1	1	1	1
T8 25.00-0.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180.00-175.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 175.00-150.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	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
T3 150.00-125.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 125.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-75.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 75.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 50.00-25.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 25.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower 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 180.00-175.00	Flange	0.7500 A325X	0	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T2 175.00-150.00	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T3 150.00-125.00	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T4 125.00-100.00	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T5 100.00-75.00	Flange	1.0000 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T6 75.00-50.00	Flange	1.0000 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0
T7 50.00-25.00	Flange	1.0000 A325X	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.7500 A325X	1
T8 25.00-0.00	Flange	1.0000 A325X	8	1.0000 A325X	1	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	2.0000 A325X	0

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
Proposed LDF5-50A(7/8) (Eversource - Proposed @ 125')	A	No	No	Ar (CaAa)	125.00 - 8.00	-5.0000	0.28	1	1	0.5000	1.0300		0.33
LDF5-50A(7/8)	A	No	No	Ar (CaAa)	110.00 - 8.00	-5.0000	0.26	1	1	0.5000	1.0300		0.33

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
(Eversource - Proposed @ 110') **Proposed** * VZW Cables - Existing LDF7-50A (1-5/8 FOAM) (VZW) * VZW Cables - Existing * AT&T Cables - Existing LDF7-50A (1-5/8 FOAM) (AT&T) * AT&T Cables - Existing * Sprint Cables - Existing LDF7-50A (1-5/8 FOAM) (Sprint) * Sprint Cables - Existing * Remaining CSP Cables LDF5-50A (7/8 FOAM) (Cable @ 191')	C	No	No	Ar (CaAa)	142.00 - 8.00	-5.0000	0.435	12	6	1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (AT&T) * AT&T Cables - Existing * Sprint Cables - Existing LDF7-50A (1-5/8 FOAM) (Sprint) * Sprint Cables - Existing * Remaining CSP Cables LDF5-50A (7/8 FOAM) (Cable @ 191')	B	No	No	Ar (CaAa)	162.00 - 8.00	-5.0000	0.4	12	6	1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (Sprint) * Sprint Cables - Existing * Remaining CSP Cables LDF5-50A (7/8 FOAM) (Cable @ 191')	B	No	No	Ar (CaAa)	169.00 - 8.00	0.0000	0.46	6	6	1.0000	1.9800		0.82
* Remaining CSP Cables LDF5-50A (7/8 FOAM) (Cable @ 191')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.48	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 184)	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.47	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 182')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.46	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 182')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.45	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 176')	A	No	No	Ar (CaAa)	176.00 - 8.00	-5.0000	0.44	1	1	1.0900	1.0900		0.33
EW63 (Dish Cable @ 176')	A	No	No	Af (CaAa)	176.00 - 8.00	-5.0000	0.43	1	1	1.5742	1.5742		0.51
LDF5-50A (7/8 FOAM) (Cable @ 170')	A	No	No	Ar (CaAa)	170.00 - 8.00	-5.0000	0.42	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @	A	No	No	Ar (CaAa)	158.00 - 8.00	-5.0000	0.41	1	1	1.0900	1.0900		0.33

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
158')													
LDF5-50A (7/8 FOAM) (Cable @ 153')	A	No	No	Ar (CaAa)	153.00 - 8.00	-5.0000	0.4	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 150.5')	A	No	No	Ar (CaAa)	150.50 - 8.00	-5.0000	0.39	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM) (Cable @ 148')	A	No	No	Ar (CaAa)	148.00 - 8.00	-5.0000	0.38	1	1	0.6300	0.6300		0.15
LDF5-50A (7/8 FOAM) (Cable @ 148')	A	No	No	Ar (CaAa)	148.00 - 8.00	-5.0000	0.37	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM) (Cable @ 144')	A	No	No	Ar (CaAa)	144.00 - 8.00	-5.0000	0.36	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM) (Cable @ 52')	A	No	No	Ar (CaAa)	52.00 - 8.00	-5.0000	0.35	1	1	0.6300	0.6300		0.15
LDF4-50A (1/2 FOAM) (Cable @ 33.5')	A	No	No	Ar (CaAa)	33.50 - 8.00	-5.0000	0.34	1	1	0.6300	0.6300		0.15
LDF4-50A (1/2 FOAM) (Cable @ 29.5')	A	No	No	Ar (CaAa)	29.50 - 8.00	-5.0000	0.33	1	1	0.6300	0.6300		0.15
HJ4-50 (1/2 AIR) (Cable @ 27')	A	No	No	Ar (CaAa)	27.00 - 8.00	-5.0000	0.32	1	1	0.5800	0.5800		0.25
RG-6 (Cable @ 16') * CSP Troop L	A	No	No	Ar (CaAa)	16.00 - 8.00	-5.0000	0.31	1	1	0.3200	0.3200		0.09
LDF7-50A (1-5/8 FOAM) (CSP Troop L @ 180')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.3	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP Troop L @ 180')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.29	1	1	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (CSP Troop L @ 180')	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.28	1	1	1.9800	1.9800		0.82
LDF4-50A (1/2 FOAM) (CSP Troop L @ 180') * CSP Troop L	A	No	No	Ar (CaAa)	180.00 - 8.00	-5.0000	0.27	1	1	0.6300	0.6300		0.15

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
Proposed								
* VZW Cables - Existing								
* AT&T Cables - Existing								
* Sprint Cables - Existing								
* CSP Troop L								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-175.00	A	0.000	0.000	5.836	0.000	20.49
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	175.00-150.00	A	0.000	0.000	40.043	0.000	129.65
		B	0.000	0.000	51.084	0.000	211.56
		C	0.000	0.000	0.000	0.000	0.00
T3	150.00-125.00	A	0.000	0.000	53.536	0.000	169.56
		B	0.000	0.000	89.100	0.000	369.00
		C	0.000	0.000	40.392	0.000	167.28
T4	125.00-100.00	A	0.000	0.000	58.139	0.000	184.05
		B	0.000	0.000	89.100	0.000	369.00
		C	0.000	0.000	59.400	0.000	246.00
T5	100.00-75.00	A	0.000	0.000	59.684	0.000	189.00
		B	0.000	0.000	89.100	0.000	369.00
		C	0.000	0.000	59.400	0.000	246.00
T6	75.00-50.00	A	0.000	0.000	59.810	0.000	189.30
		B	0.000	0.000	89.100	0.000	369.00
		C	0.000	0.000	59.400	0.000	246.00
T7	50.00-25.00	A	0.000	0.000	62.194	0.000	195.20
		B	0.000	0.000	89.100	0.000	369.00
		C	0.000	0.000	59.400	0.000	246.00
T8	25.00-0.00	A	0.000	0.000	45.040	0.000	141.14
		B	0.000	0.000	60.588	0.000	250.92
		C	0.000	0.000	40.392	0.000	167.28

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-175.00	A	1.361	0.000	0.000	17.266	0.000	211.31
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T2	175.00-150.00	A	1.349	0.000	0.000	115.977	0.000	1384.85
		B		0.000	0.000	79.338	0.000	1222.25
		C		0.000	0.000	0.000	0.000	0.00
T3	150.00-125.00	A	1.326	0.000	0.000	163.628	0.000	1899.20
		B		0.000	0.000	128.246	0.000	2066.07
		C		0.000	0.000	44.548	0.000	875.63
T4	125.00-100.00	A	1.300	0.000	0.000	177.744	0.000	2027.78
		B		0.000	0.000	127.834	0.000	2041.86
		C		0.000	0.000	65.299	0.000	1274.82
T5	100.00-75.00	A	1.268	0.000	0.000	180.124	0.000	2017.11
		B		0.000	0.000	127.331	0.000	2012.33
		C		0.000	0.000	65.038	0.000	1259.12
T6	75.00-50.00	A	1.226	0.000	0.000	176.756	0.000	1932.32
		B		0.000	0.000	126.678	0.000	1974.13
		C		0.000	0.000	64.699	0.000	1238.80
T7	50.00-25.00	A	1.165	0.000	0.000	182.168	0.000	1906.45
		B		0.000	0.000	125.729	0.000	1918.92
		C		0.000	0.000	64.207	0.000	1209.43
T8	25.00-0.00	A	1.044	0.000	0.000	128.320	0.000	1229.04
		B		0.000	0.000	84.219	0.000	1231.26
		C		0.000	0.000	42.997	0.000	783.22

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-175.00	-0.1230	-7.7324	-0.0854	-12.6006
T2	175.00-150.00	11.7601	-2.7608	10.2746	-9.2140
T3	150.00-125.00	7.8186	2.7576	8.1631	-7.7951
T4	125.00-100.00	4.9388	4.0628	6.1182	-8.5409
T5	100.00-75.00	5.3253	4.2291	6.5232	-9.8598
T6	75.00-50.00	5.8187	4.6275	7.1267	-10.7205
T7	50.00-25.00	5.2520	3.8143	6.6172	-11.4065
T8	25.00-0.00	4.4579	2.6273	5.5662	-11.1785

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	15	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	16	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	17	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	18	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	19	LDF5-50A (7/8 FOAM)	175.00 - 176.00	0.6000	0.6000
T1	20	EW63	175.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	34	LDF7-50A (1-5/8 FOAM)	176.00 175.00 - 180.00	0.6000	0.6000
T1	35	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	36	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	37	LDF4-50A (1/2 FOAM)	175.00 - 180.00	0.6000	0.6000
T2	9	LDF7-50A (1-5/8 FOAM)	150.00 - 162.00	0.6000	0.6000
T2	12	LDF7-50A (1-5/8 FOAM)	150.00 - 169.00	0.6000	0.6000
T2	15	LDF5-50A (7/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	16	LDF5-50A (7/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	17	LDF5-50A (7/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	18	LDF5-50A (7/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	19	LDF5-50A (7/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	20	EW63	150.00 - 175.00	0.6000	0.6000
T2	21	LDF5-50A (7/8 FOAM)	150.00 - 170.00	0.6000	0.6000
T2	22	LDF5-50A (7/8 FOAM)	150.00 - 158.00	0.6000	0.6000
T2	23	LDF5-50A (7/8 FOAM)	150.00 - 153.00	0.6000	0.6000
T2	24	LDF5-50A (7/8 FOAM)	150.00 - 150.50	0.6000	0.6000
T2	34	LDF7-50A (1-5/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	35	LDF7-50A (1-5/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	36	LDF7-50A (1-5/8 FOAM)	150.00 - 175.00	0.6000	0.6000
T2	37	LDF4-50A (1/2 FOAM)	150.00 - 175.00	0.6000	0.6000
T3	6	LDF7-50A (1-5/8 FOAM)	125.00 - 142.00	0.6000	0.6000
T3	9	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	12	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	15	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	16	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	17	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	18	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	19	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	20	EW63	125.00 - 150.00	0.6000	0.6000
T3	21	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T3	22	LDF5-50A (7/8 FOAM)	125.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	23	LDF5-50A (7/8 FOAM)	150.00 125.00 -	0.6000	0.6000
T3	24	LDF5-50A (7/8 FOAM)	150.00 125.00 -	0.6000	0.6000
T3	25	LDF4-50A (1/2 FOAM)	150.00 125.00 -	0.6000	0.6000
T3	26	LDF5-50A (7/8 FOAM)	148.00 125.00 -	0.6000	0.6000
T3	27	LDF5-50A (7/8 FOAM)	148.00 125.00 -	0.6000	0.6000
T3	34	LDF7-50A (1-5/8 FOAM)	144.00 125.00 -	0.6000	0.6000
T3	35	LDF7-50A (1-5/8 FOAM)	150.00 125.00 -	0.6000	0.6000
T3	36	LDF7-50A (1-5/8 FOAM)	150.00 125.00 -	0.6000	0.6000
T3	37	LDF4-50A (1/2 FOAM)	150.00 125.00 -	0.6000	0.6000
T4	2	LDF5-50A(7/8)	150.00 100.00 -	0.6000	0.6000
T4	3	LDF5-50A(7/8)	125.00 100.00 -	0.6000	0.6000
T4	6	LDF7-50A (1-5/8 FOAM)	110.00 100.00 -	0.6000	0.6000
T4	9	LDF7-50A (1-5/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	12	LDF7-50A (1-5/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	15	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	16	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	17	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	18	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	19	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	20	EW63	125.00 100.00 -	0.6000	0.6000
T4	21	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	22	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	23	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	24	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	25	LDF4-50A (1/2 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	26	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	27	LDF5-50A (7/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	34	LDF7-50A (1-5/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	35	LDF7-50A (1-5/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	36	LDF7-50A (1-5/8 FOAM)	125.00 100.00 -	0.6000	0.6000
T4	37	LDF4-50A (1/2 FOAM)	125.00 100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			125.00		
T5	2	LDF5-50A(7/8)	75.00 - 100.00	0.6000	0.6000
T5	3	LDF5-50A(7/8)	75.00 - 100.00	0.6000	0.6000
T5	6	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	9	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	12	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	15	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	16	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	17	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	18	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	19	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	20	EW63	75.00 - 100.00	0.6000	0.6000
T5	21	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	22	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	23	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	24	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	25	LDF4-50A (1/2 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	26	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	27	LDF5-50A (7/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	34	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	35	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	36	LDF7-50A (1-5/8 FOAM)	75.00 - 100.00	0.6000	0.6000
T5	37	LDF4-50A (1/2 FOAM)	75.00 - 100.00	0.6000	0.6000
T6	2	LDF5-50A(7/8)	50.00 - 75.00	0.6000	0.6000
T6	3	LDF5-50A(7/8)	50.00 - 75.00	0.6000	0.6000
T6	6	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	9	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	12	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	15	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	16	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	17	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	18	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	19	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	20	EW63	50.00 - 75.00	0.6000	0.6000
T6	21	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	22	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	23	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	24	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	25	LDF4-50A (1/2 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	26	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	27	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	28	LDF4-50A (1/2 FOAM)	50.00 - 52.00	0.6000	0.6000
T6	34	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	35	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	36	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T6	37	LDF4-50A (1/2 FOAM)	50.00 - 75.00	0.6000	0.6000
T7	2	LDF5-50A(7/8)	25.00 - 50.00	0.6000	0.6000
T7	3	LDF5-50A(7/8)	25.00 - 50.00	0.6000	0.6000
T7	6	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	9	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	12	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	15	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	16	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	17	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	18	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	19	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	20	EW63	25.00 - 50.00	0.6000	0.6000
T7	21	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	22	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	23	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	24	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	25	LDF4-50A (1/2 FOAM)	25.00 - 50.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	26	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	27	LDF5-50A (7/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	28	LDF4-50A (1/2 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	29	LDF4-50A (1/2 FOAM)	25.00 - 33.50	0.6000	0.6000
T7	30	LDF4-50A (1/2 FOAM)	25.00 - 29.50	0.6000	0.6000
T7	31	HJ4-50 (1/2 AIR)	25.00 - 27.00	0.6000	0.6000
T7	34	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	35	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	36	LDF7-50A (1-5/8 FOAM)	25.00 - 50.00	0.6000	0.6000
T7	37	LDF4-50A (1/2 FOAM)	25.00 - 50.00	0.6000	0.6000
T8	2	LDF5-50A(7/8)	8.00 - 25.00	0.6000	0.6000
T8	3	LDF5-50A(7/8)	8.00 - 25.00	0.6000	0.6000
T8	6	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	9	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	12	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	15	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	16	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	17	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	18	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	19	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	20	EW63	8.00 - 25.00	0.6000	0.6000
T8	21	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	22	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	23	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	24	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	25	LDF4-50A (1/2 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	26	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	27	LDF5-50A (7/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	28	LDF4-50A (1/2 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	29	LDF4-50A (1/2 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	30	LDF4-50A (1/2 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	31	HJ4-50 (1/2 AIR)	8.00 - 25.00	0.6000	0.6000
T8	32	RG-6	8.00 - 16.00	0.6000	0.6000
T8	34	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	35	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	36	LDF7-50A (1-5/8 FOAM)	8.00 - 25.00	0.6000	0.6000
T8	37	LDF4-50A (1/2 FOAM)	8.00 - 25.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Proposed									
ANT220F2 Antenna	A	From Leg	4.00	0.0000	114.00	No Ice	1.74	1.74	14.00
(Eversource - Proposed)			0.00			1/2" Ice	2.05	2.05	25.20
			0.00			1" Ice	2.37	2.37	40.25
ANT220F2 Antenna	A	From Leg	4.00	0.0000	129.00	No Ice	1.74	1.74	14.00
(Eversource - Proposed)			0.00			1/2" Ice	2.05	2.05	25.20
			0.00			1" Ice	2.37	2.37	40.25
Site Pro USF-4U w/ (2)	A	From Leg	0.50	0.0000	111.00	No Ice	1.25	2.50	165.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Stiff-Arm Supports			0.00			1/2" Ice	1.49	2.76	198.00
(Eversource - Proposed)			0.00			1" Ice	1.73	3.02	231.00
Site Pro USF-4U w/ (2)	A	From Leg	0.50	0.0000	126.00	No Ice	1.25	2.50	165.00
Stiff-Arm Supports			0.00			1/2" Ice	1.49	2.76	198.00
(Eversource - Proposed)			0.00			1" Ice	1.73	3.02	231.00
* AT&T Existing Inventory									
7770.00 panel antenna	A	From Leg	0.50	0.0000	162.00	No Ice	5.90	4.01	52.03
(AT&T)			-4.00			1/2" Ice	6.34	4.64	97.08
			0.00			1" Ice	6.78	5.28	148.33
(2) LGP 21401 TMA Units	A	From Leg	0.50	0.0000	162.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00			1" Ice	1.24	0.60	30.86
7770.00 panel antenna	B	From Leg	0.50	0.0000	162.00	No Ice	5.90	4.01	52.03
(AT&T)			-4.00			1/2" Ice	6.34	4.64	97.08
			0.00			1" Ice	6.78	5.28	148.33
(2) LGP 21401 TMA Units	B	From Leg	0.50	0.0000	162.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00			1" Ice	1.24	0.60	30.86
7770.00 panel antenna	C	From Leg	0.50	0.0000	162.00	No Ice	5.90	4.01	52.03
(AT&T)			-4.00			1/2" Ice	6.34	4.64	97.08
			0.00			1" Ice	6.78	5.28	148.33
(2) LGP 21401 TMA Units	C	From Leg	0.50	0.0000	162.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00			1" Ice	1.24	0.60	30.86
* Panels Have Pipes Included (5' Length) on Panels									
* AT&T Existing Inventory									
* Sprint Existing Inventory									
(2) DB980F90E-M w/Mount Pipe	A	From Leg	0.50	0.0000	169.00	No Ice	4.37	3.95	34.05
			0.00			1/2" Ice	4.96	5.04	73.52
(Sprint)			0.00			1" Ice	5.47	5.85	119.55
(2) DB980F90E-M w/Mount Pipe	B	From Leg	0.50	0.0000	169.00	No Ice	4.37	3.95	34.05
			0.00			1/2" Ice	4.96	5.04	73.52
(Sprint)			0.00			1" Ice	5.47	5.85	119.55
(2) DB980F90E-M w/Mount Pipe	C	From Leg	0.50	0.0000	169.00	No Ice	4.37	3.95	34.05
			0.00			1/2" Ice	4.96	5.04	73.52
(Sprint)			0.00			1" Ice	5.47	5.85	119.55
SitePro1 VFA12-RRU Mount Assembly	A	From Leg	0.00	0.0000	169.00	No Ice	12.02	7.98	450.00
			0.00			1/2" Ice	17.63	11.95	580.00
(Sprint)			0.00			1" Ice	23.07	15.72	769.00
SitePro1 VFA12-RRU Mount Assembly	B	From Leg	0.00	0.0000	169.00	No Ice	12.02	7.98	450.00
			0.00			1/2" Ice	17.63	11.95	580.00
(Sprint)			0.00			1" Ice	23.07	15.72	769.00
SitePro1 VFA12-RRU Mount Assembly	C	From Leg	0.00	0.0000	169.00	No Ice	12.02	7.98	450.00
			0.00			1/2" Ice	17.63	11.95	580.00
(Sprint)			0.00			1" Ice	23.07	15.72	769.00
* Sprint Existing Inventory									
* Verizon Existing Inventory									
BXA-185085-12CF Panel Antennas w/ Pipe Mount	A	From Leg	0.50	0.0000	142.00	No Ice	4.79	5.34	47.74
			0.00			1/2" Ice	5.24	6.15	93.92
(VZW)			0.00			1" Ice	5.70	6.96	148.13
BXA-185085-12CF Panel Antennas w/ Pipe Mount	B	From Leg	0.50	0.0000	142.00	No Ice	4.79	5.34	47.74
			0.00			1/2" Ice	5.24	6.15	93.92
(VZW)			0.00			1" Ice	5.70	6.96	148.13
BXA-185085-12CF Panel Antennas w/ Pipe Mount	C	From Leg	0.50	0.0000	142.00	No Ice	4.79	5.34	47.74
			0.00			1/2" Ice	5.24	6.15	93.92
(VZW)			0.00			1" Ice	5.70	6.96	148.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	A	From Leg	0.50 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice	10.84 11.46 12.08	8.45 9.39 10.36	65.74 143.51 231.28
BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	B	From Leg	0.50 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice	10.84 11.46 12.08	8.45 9.39 10.36	65.74 143.51 231.28
BXA-80080-8CF Panel Antenna w/ Pipe Mount (VZW)	C	From Leg	0.50 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice	10.84 11.46 12.08	8.45 9.39 10.36	65.74 143.51 231.28
SitePro1 VFA12-RRU Mount Assembly (VZW)	A	From Leg	0.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	12.02 17.63 23.07	7.98 11.95 15.72	450.00 580.00 769.00
SitePro1 VFA12-RRU Mount Assembly (VZW)	B	From Leg	0.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	12.02 17.63 23.07	7.98 11.95 15.72	450.00 580.00 769.00
SitePro1 VFA12-RRU Mount Assembly (VZW) * Double Antenna Clamp Attached to Leg * Panels considering Pipes for Mount * Verizon Existing Inventory * CSP Inventory - Existing	C	From Leg	0.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	12.02 17.63 23.07	7.98 11.95 15.72	450.00 580.00 769.00
10'6"x4" Pipe Mount (Extension for Lightning Rod)	C	From Leg	0.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	3.28 5.62 6.25	3.28 5.62 6.25	114.00 146.84 186.71
Lightning Rod 5/8x4' (Lightning Rod)	C	From Leg	0.00 0.00 0.00	0.0000	192.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	31.00 33.82 39.29
PD1142-30 (CSP (22) @ 191')	B	From Leg	0.00 0.00 0.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice	0.14 1.49 2.84	0.14 1.49 2.84	10.00 110.00 210.00
6'8"x4" Pipe Mount (CSP (22) @ 191')	B	From Leg	0.00 0.00 0.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice	1.93 3.01 3.42	1.93 3.01 3.42	72.00 93.13 118.95
2" Dia 8' Omni (CSP @ 184')	A	From Leg	0.50 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	2.00 3.03 4.06	2.00 3.03 4.06	5.00 18.00 31.00
2'6"x4" Pipe Mount (CSP @ 184')	A	From Leg	0.50 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice	0.64 0.91 1.09	0.64 0.91 1.09	27.00 35.41 45.95
3" Dia 20' Omni (CSP (LCD-9) @ 182')	B	From Leg	0.50 0.00 0.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	4.00 6.00 8.00	4.00 6.00 8.00	55.00 100.00 145.00
3" Dia 20' Omni (CSP (LCD-28) @ 182')	C	From Leg	0.50 0.00 0.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	4.00 6.00 8.00	4.00 6.00 8.00	55.00 100.00 145.00
PD220 (CSP (LCD-27) @ 176')	A	From Leg	0.50 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice 1" Ice	3.08 5.30 7.54	3.08 5.30 7.54	23.00 48.68 88.10
3'4"x4" Pipe Mount (Dish Mount (CSP-3) @ 176')	C	From Leg	0.00 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice 1" Ice	0.88 1.27 1.49	0.88 1.27 1.49	36.00 46.95 60.55
DB292-A (CSP (LCD-10) @ 170')	C	From Leg	0.50 5.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.80 3.24 4.68	1.80 3.24 4.68	15.00 19.50 24.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
* CSP Mounts from 170' to 182' Mt on Sprint Frame									
PD1142-1	B	From Leg	0.50	0.0000	158.00	No Ice	1.32	1.32	10.00
(CSP @ 158')			4.00			1/2" Ice	3.21	3.21	23.85
			0.00			1" Ice	5.12	5.12	49.42
DB222	A	From Leg	0.50	0.0000	153.00	No Ice	1.60	1.60	16.00
(CSP @ 153')			-4.00			1/2" Ice	2.88	2.88	20.80
			0.00			1" Ice	4.16	4.16	25.60
DB586-Y	A	From Leg	0.50	0.0000	155.00 - 150.00	No Ice	1.01	1.01	8.25
(CSP @ 150.5' (Upright))			4.00			1/2" Ice	1.28	1.28	16.59
			0.00			1" Ice	1.56	1.56	28.01
432E-83I-01T TTA Unit	A	From Leg	0.50	0.0000	153.00	No Ice	3.33	1.11	25.00
(CSP @ 148' (TTA Unit))			4.00			1/2" Ice	3.57	1.27	44.70
			0.00			1" Ice	3.82	1.45	67.39
DB586-Y	A	From Leg	0.50	0.0000	144.00 - 149.00	No Ice	1.01	1.01	8.25
(CSP @ 148' (Inverted))			4.00			1/2" Ice	1.28	1.28	16.59
			0.00			1" Ice	1.56	1.56	28.01
10' Dipole (Generic)	C	From Leg	0.50	0.0000	148.00	No Ice	4.00	4.00	55.00
(CSP @ 148')			4.00			1/2" Ice	6.00	6.00	100.00
			0.00			1" Ice	8.00	8.00	145.00
10'6"x4" Pipe Mount	C	From Leg	0.50	0.0000	148.00	No Ice	3.35	3.35	114.00
(Pipe Mt. Connected to			4.00			1/2" Ice	5.62	5.62	146.84
Dipole)			0.00			1" Ice	6.25	6.25	186.71
* CSP Mounts from 158' to 144' mounted to VZW Frame									
GPS	B	From Leg	4.00	0.0000	52.00	No Ice	1.00	1.00	10.00
(GPS @ 52')			0.00			1/2" Ice	1.50	1.50	15.00
			0.00			1" Ice	2.00	2.00	20.00
4' Side Arm (Sq Tube)	B	From Leg	0.00	0.0000	52.00	No Ice	2.72	2.72	50.00
(GPS@52)			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
DB803M-Y	A	From Leg	3.00	0.0000	40.50 - 33.50	No Ice	0.50	0.50	4.30
(CSP @ 33.5' (Upright))			0.00			1/2" Ice	0.68	0.68	8.98
			0.00			1" Ice	0.87	0.87	15.80
DB803M-Y	A	From Leg	3.00	0.0000	24.00 - 31.00	No Ice	0.50	0.50	4.30
(CSP @ 31' (Upright))			0.00			1/2" Ice	0.68	0.68	8.98
			0.00			1" Ice	0.87	0.87	15.80
3' Side Arm Mount	A	From Leg	0.00	0.0000	31.00	No Ice	2.72	2.72	50.00
(Mt. for CSP @ 31', 33.5')			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
DB803M-Y	B	From Leg	2.00	0.0000	29.50	No Ice	0.50	0.50	4.30
(CSP @ 29.5' (Upright))			0.00			1/2" Ice	0.68	0.68	8.98
			0.00			1" Ice	0.87	0.87	15.80
3' Yagi	B	From Leg	2.00	0.0000	16.00	No Ice	2.08	2.08	30.95
(CSP @ 16')			0.00			1/2" Ice	3.79	3.79	52.87
			0.00			1" Ice	5.52	5.52	85.27
2' Side Arm Mount	B	From Leg	0.00	0.0000	29.00	No Ice	2.72	2.72	50.00
(Mt @ 29')			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
*** CSP Troop L Antennas									
SC479-HF1LDF (Inverted)	C	From Leg	6.00	0.0000	165.50 - 180.00	No Ice	5.06	5.06	34.00
(CSP Troop L @ 180')			0.00			1/2" Ice	6.54	6.54	69.82
			0.00			1" Ice	8.04	8.04	114.98
SC479-HF1LDF (Inverted)	C	From Leg	3.00	0.0000	165.50 - 180.00	No Ice	5.06	5.06	34.00
(CSP Troop L @ 180')			0.00			1/2" Ice	6.54	6.54	69.82
			0.00			1" Ice	8.04	8.04	114.98
SC479-HF1LDF	C	From Leg	6.00	0.0000	180.00	No Ice	5.06	5.06	34.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(CSP Troop L @ 180')			0.00				1/2" Ice	6.54	6.54	69.82
			0.00				1" Ice	8.04	8.04	114.98
432E-83I-01T TTA Unit	C	From Leg	3.00	0.0000	180.00		No Ice	3.33	1.11	25.00
(CSP Troop L @ 180')			0.00				1/2" Ice	3.57	1.27	44.70
			0.00				1" Ice	3.82	1.45	67.39
Pirod 4' Side Mount Standoff	C	From Leg	0.00	0.0000	180.00		No Ice	2.72	2.72	50.00
(1)			0.00				1/2" Ice	4.91	4.91	89.00
(CSP Troop L @ 180')			0.00				1" Ice	7.10	7.10	128.00
CCI HPA65R-BU4A	A	From Leg	0.50	0.0000	162.00		No Ice	4.96	3.51	28.70
(AT&T)			4.00				1/2" Ice	5.28	3.81	64.01
			0.00				1" Ice	5.61	4.12	103.89
CCI HPA65R-BU4A	B	From Leg	0.50	0.0000	162.00		No Ice	4.96	3.51	28.70
(AT&T)			4.00				1/2" Ice	5.28	3.81	64.01
			0.00				1" Ice	5.61	4.12	103.89
CCI HPA65R-BU4A	C	From Leg	0.50	0.0000	162.00		No Ice	4.96	3.51	28.70
(AT&T)			4.00				1/2" Ice	5.28	3.81	64.01
			0.00				1" Ice	5.61	4.12	103.89
T1921B68 TMA	A	From Leg	0.50	0.0000	162.00		No Ice	0.66	0.32	20.00
(AT&T)			4.00				1/2" Ice	0.76	0.39	25.71
			0.00				1" Ice	0.87	0.48	33.04
T1921B68 TMA	B	From Leg	0.50	0.0000	162.00		No Ice	0.66	0.32	20.00
(AT&T)			4.00				1/2" Ice	0.76	0.39	25.71
			0.00				1" Ice	0.87	0.48	33.04
T1921B68 TMA	C	From Leg	0.50	0.0000	162.00		No Ice	0.66	0.32	20.00
(AT&T)			4.00				1/2" Ice	0.76	0.39	25.71
			0.00				1" Ice	0.87	0.48	33.04

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
PA6-65	C	Paraboloid w/Radome	From Leg	1.00	0.00	Worst		176.00	6.00	No Ice	28.27	90.00
				0.00						1/2" Ice	29.05	240.00
				0.00						1" Ice	29.83	390.00

222-H Verification Constants

Constant	Value
K_d	0.85
Ice Thickness Importance Factor	1.15
Z_g	900
α	9.5
K_{zmin}	0.85
K_c	n/a
K_t	1

Constant	Value
f	1
K_e	1

222-H Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
T1 180.00-175.00	1	HSS5x0.25	62.242	30.758	C	0.201	0.342	2.086	3.221	1.039	1.975
	1	HSS5x0.25	62.242	30.758	A	0.201	0.342	2.086	3.221	1.039	1.975
	2	HSS5x0.25	62.242	30.758	C	0.201	0.342	2.086	3.221	1.039	1.975
	2	HSS5x0.25	62.242	30.758	B	0.201	0.342	2.086	3.221	1.039	1.975
	3	HSS5x0.25	62.242	30.758	B	0.201	0.342	2.086	3.221	1.039	1.975
	3	HSS5x0.25	62.242	30.758	A	0.201	0.342	2.086	3.221	1.039	1.975
					A		Sum:	4.171	6.441	2.078	3.949
					B			4.171	6.441	2.078	3.949
					C			4.171	6.441	2.078	3.949
T2 175.00-150.00	10	HSS5x0.25	61.666	30.379	C	0.156	0.261	10.428	16.054	5.037	9.435
	10	HSS5x0.25	61.666	30.379	A	0.156	0.261	10.428	16.054	5.037	9.435
	11	HSS5x0.25	61.666	30.379	C	0.156	0.261	10.428	16.054	5.037	9.435
	11	HSS5x0.25	61.666	30.379	B	0.156	0.261	10.428	16.054	5.037	9.435
	12	HSS5x0.25	61.666	30.379	B	0.156	0.261	10.428	16.054	5.037	9.435
	12	HSS5x0.25	61.666	30.379	A	0.156	0.261	10.428	16.054	5.037	9.435
					A		Sum:	20.856	32.107	10.074	18.870
					B			20.856	32.107	10.074	18.870
					C			20.856	32.107	10.074	18.870
T3 150.00-125.00	31	HSS5x0.25	60.591	29.676	C	0.146	0.239	10.428	15.960	5.045	9.293
	31	HSS5x0.25	60.591	29.676	A	0.146	0.239	10.428	15.960	5.045	9.293
	32	HSS5x0.25	60.591	29.676	C	0.146	0.239	10.428	15.960	5.045	9.293
	32	HSS5x0.25	60.591	29.676	B	0.146	0.239	10.428	15.960	5.045	9.293
	33	HSS5x0.25	60.591	29.676	B	0.146	0.239	10.428	15.960	5.045	9.293
	33	HSS5x0.25	60.591	29.676	A	0.146	0.239	10.428	15.960	5.045	9.293
					A		Sum:	20.856	31.921	10.089	18.587
					B			20.856	31.921	10.089	18.587
					C			20.856	31.921	10.089	18.587
T4 125.00-100.00	52	HSS5x.4	59.325	28.856	C	0.133	0.23	10.428	15.850	5.057	9.198
	52	HSS5x.4	59.325	28.856	A	0.133	0.23	10.428	15.850	5.057	9.198
	53	HSS5x.4	59.325	28.856	C	0.133	0.23	10.428	15.850	5.057	9.198
	53	HSS5x.4	59.325	28.856	B	0.133	0.23	10.428	15.850	5.057	9.198
	54	HSS5x.4	59.325	28.856	B	0.133	0.23	10.428	15.850	5.057	9.198
	54	HSS5x.4	59.325	28.856	A	0.133	0.23	10.428	15.850	5.057	9.198
					A		Sum:	20.856	31.701	10.114	18.397
					B			20.856	31.701	10.114	18.397
					C			20.856	31.701	10.114	18.397
T5 100.00-75.00	82	HSS5x.4	57.776	27.864	C	0.126	0.213	10.428	15.716	5.100	9.065
	82	HSS5x.4	57.776	27.864	A	0.126	0.213	10.428	15.716	5.100	9.065
	83	HSS5x.4	57.776	27.864	C	0.126	0.213	10.428	15.716	5.100	9.065
	83	HSS5x.4	57.776	27.864	B	0.126	0.213	10.428	15.716	5.100	9.065
	84	HSS5x.4	57.776	27.864	B	0.126	0.213	10.428	15.716	5.100	9.065
	84	HSS5x.4	57.776	27.864	A	0.126	0.213	10.428	15.716	5.100	9.065
					A		Sum:	20.856	31.432	10.200	18.131
					B			20.856	31.432	10.200	18.131
					C			20.856	31.432	10.200	18.131
T6 75.00-50.00	121	HSS5x0.5	55.765	26.595	C	0.116	0.196	10.428	15.541	5.163	8.916
	121	HSS5x0.5	55.765	26.595	A	0.116	0.196	10.428	15.541	5.163	8.916

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	122	HSS5x0.5	55.765	26.595	C	0.116	0.196	10.428	15.541	5.163	8.916
	122	HSS5x0.5	55.765	26.595	B	0.116	0.196	10.428	15.541	5.163	8.916
	123	HSS5x0.5	55.765	26.595	B	0.116	0.196	10.428	15.541	5.163	8.916
	123	HSS5x0.5	55.765	26.595	A	0.116	0.196	10.428	15.541	5.163	8.916
					A		Sum:	20.856	31.082	10.326	17.833
					B			20.856	31.082	10.326	17.833
					C			20.856	31.082	10.326	17.833
T7 50.00-25.00	160	HSS5x0.5	52.846	24.79	C	0.146	0.24	10.428	15.286	5.358	8.905
	160	HSS5x0.5	52.846	24.79	A	0.146	0.24	10.428	15.286	5.358	8.905
	161	HSS5x0.5	52.846	24.79	C	0.146	0.24	10.428	15.286	5.358	8.905
	161	HSS5x0.5	52.846	24.79	B	0.146	0.24	10.428	15.286	5.358	8.905
	162	HSS5x0.5	52.846	24.79	B	0.146	0.24	10.428	15.286	5.358	8.905
	162	HSS5x0.5	52.846	24.79	A	0.146	0.24	10.428	15.286	5.358	8.905
					A		Sum:	20.856	30.573	10.716	17.809
					B			20.856	30.573	10.716	17.809
					C			20.856	30.573	10.716	17.809
T8 25.00-0.00	226	HSS6.875x0.5	66.025	27.543	C	0.138	0.203	14.338	18.691	6.593	10.748
	226	HSS6.875x0.5	66.025	27.543	A	0.138	0.203	14.338	18.691	6.593	10.748
	227	HSS6.875x0.5	66.025	27.543	C	0.138	0.203	14.338	18.691	6.593	10.748
	227	HSS6.875x0.5	66.025	27.543	B	0.138	0.203	14.338	18.691	6.593	10.748
	228	HSS6.875x0.5	66.025	27.543	B	0.138	0.203	14.338	18.691	6.593	10.748
	228	HSS6.875x0.5	66.025	27.543	A	0.138	0.203	14.338	18.691	6.593	10.748
					A		Sum:	28.676	37.382	13.187	21.497
					B			28.676	37.382	13.187	21.497
					C			28.676	37.382	13.187	21.497

222-H Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft^2
T1 180.00-175.00	177.50		1.428	1	1		49	A	0.201	2.078
								B	0.201	2.078
								C	0.201	2.078
T2 175.00-150.00	162.50		1.402	1	1		48	A	0.156	10.074
								B	0.156	10.074
								C	0.156	10.074
T3 150.00-125.00	137.50		1.353	1	1		46	A	0.146	10.089
								B	0.146	10.089
								C	0.146	10.089
T4 125.00-100.00	112.50		1.297	1	1		44	A	0.133	10.114
								B	0.133	10.114
								C	0.133	10.114
T5 100.00-75.00	87.50		1.231	1	1		42	A	0.126	10.200
								B	0.126	10.200
								C	0.126	10.200
T6 75.00-50.00	62.50		1.146	1	1		39	A	0.116	10.326
								B	0.116	10.326
								C	0.116	10.326
T7 50.00-25.00	37.50		1.029	1	1		35	A	0.146	10.716
								B	0.146	10.716
								C	0.146	10.716

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T8 25.00-0.00	12.50		0.85	1	1		29	A	0.138	13.187
								B	0.138	13.187
								C	0.138	13.187

222-H Section Verification Tables - Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-175.00	177.50	177.50	1.428	1	1	1.3607	5	A	0.342	5.911
								B	0.342	5.911
								C	0.342	5.911
T2 175.00-150.00	162.50	162.50	1.402	1	1	1.3488	5	A	0.261	26.086
								B	0.261	26.086
								C	0.261	26.086
T3 150.00-125.00	137.50	137.50	1.353	1	1	1.3264	5	A	0.239	26.978
								B	0.239	26.978
								C	0.239	26.978
T4 125.00-100.00	112.50	112.50	1.297	1	1	1.3001	5	A	0.23	30.201
								B	0.23	30.201
								C	0.23	30.201
T5 100.00-75.00	87.50	87.50	1.231	1	1	1.2678	4	A	0.213	30.782
								B	0.213	30.782
								C	0.213	30.782
T6 75.00-50.00	62.50	62.50	1.146	1	1	1.2258	4	A	0.196	31.194
								B	0.196	31.194
								C	0.196	31.194
T7 50.00-25.00	37.50	37.50	1.029	1	1	1.1648	4	A	0.24	37.843
								B	0.24	37.843
								C	0.24	37.843
T8 25.00-0.00	12.50	12.50	0.85	1	1	1.0436	3	A	0.203	36.326
								B	0.203	36.326
								C	0.203	36.326

222-H Section Verification Tables - Service

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-175.00	177.50		1.428	1	1		11	A	0.201	2.078
								B	0.201	2.078
								C	0.201	2.078
T2 175.00-150.00	162.50		1.402	1	1		11	A	0.156	10.074
								B	0.156	10.074
								C	0.156	10.074
T3 150.00-125.00	137.50		1.353	1	1		11	A	0.146	10.089
								B	0.146	10.089
								C	0.146	10.089
T4 125.00-100.00	112.50		1.297	1	1		10	A	0.133	10.114
								B	0.133	10.114
								C	0.133	10.114
T5 100.00-75.00	87.50		1.231	1	1		10	A	0.126	10.200

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								B	0.126	10.200
								C	0.126	10.200
T6 75.00-50.00	62.50		1.146	1	1		9	A	0.116	10.326
								B	0.116	10.326
								C	0.116	10.326
T7 50.00-25.00	37.50		1.029	1	1		8	A	0.146	10.716
								B	0.146	10.716
								C	0.146	10.716
T8 25.00-0.00	12.50		0.85	1	1		7	A	0.138	13.187
								B	0.138	13.187
								C	0.138	13.187

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	177.50	1.428	49	36.085	A	3.086	4.171	4.171	57.48	5.836	0.000
180.00-175.00					B	3.086	4.171		57.48	0.000	0.000
					C	3.086	4.171		57.48	0.000	0.000
T2	162.50	1.402	48	210.425	A	11.948	20.856	20.856	63.58	40.043	0.000
175.00-150.00					B	11.948	20.856		63.58	51.084	0.000
					C	11.948	20.856		63.58	0.000	0.000
T3	137.50	1.353	46	260.425	A	17.112	20.856	20.856	54.93	53.536	0.000
150.00-125.00					B	17.112	20.856		54.93	89.100	0.000
					C	17.112	20.856		54.93	40.392	0.000
T4	112.50	1.297	44	310.425	A	20.535	20.856	20.856	50.39	58.139	0.000
125.00-100.00					B	20.535	20.856		50.39	89.100	0.000
					C	20.535	20.856		50.39	59.400	0.000
T5	87.50	1.231	42	360.425	A	24.445	20.856	20.856	46.04	59.684	0.000
100.00-75.00					B	24.445	20.856		46.04	89.100	0.000
					C	24.445	20.856		46.04	59.400	0.000
T6 75.00-50.00	62.50	1.146	39	410.425	A	26.937	20.856	20.856	43.64	59.810	0.000
					B	26.937	20.856		43.64	89.100	0.000
					C	26.937	20.856		43.64	59.400	0.000
T7 50.00-25.00	37.50	1.029	35	460.425	A	46.504	20.856	20.856	30.96	62.194	0.000
					B	46.504	20.856		30.96	89.100	0.000
					C	46.504	20.856		30.96	59.400	0.000
T8 25.00-0.00	12.50	0.85	29	514.334	A	42.230	28.676	28.676	40.44	45.040	0.000
					B	42.230	28.676		40.44	60.588	0.000
					C	42.230	28.676		40.44	40.392	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 ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	177.50	1.428	5	1.3607	37.220	A	3.086	9.641	6.441	50.61	17.266	0.000
180.00-175.00						B	3.086	9.641		50.61	0.000	0.000
						C	3.086	9.641		50.61	0.000	0.000
T2	162.50	1.402	5	1.3488	216.049	A	11.948	44.385	32.107	56.99	115.977	0.000
175.00-150.00						B	11.948	44.385		56.99	79.338	0.000
						C	11.948	44.385		56.99	0.000	0.000
T3	137.50	1.353	5	1.3264	265.956	A	17.112	46.332	31.921	50.31	163.628	0.000
150.00-125.00						B	17.112	46.332		50.31	128.246	0.000
						C	17.112	46.332		50.31	44.548	0.000
T4	112.50	1.297	5	1.3001	315.846	A	20.535	52.041	31.701	43.68	177.744	0.000
125.00-100.00						B	20.535	52.041		43.68	127.834	0.000
						C	20.535	52.041		43.68	65.299	0.000
T5 100.00-75.00	87.50	1.231	4	1.2678	365.712	A	24.445	53.365	31.432	40.40	180.124	0.000
						B	24.445	53.365		40.40	127.331	0.000
						C	24.445	53.365		40.40	65.038	0.000
T6 75.00-50.00	62.50	1.146	4	1.2258	415.537	A	26.937	54.371	31.082	38.23	176.756	0.000
						B	26.937	54.371		38.23	126.678	0.000
						C	26.937	54.371		38.23	64.699	0.000
T7 50.00-25.00	37.50	1.029	4	1.1648	465.282	A	46.504	64.965	30.573	27.43	182.168	0.000
						B	46.504	64.965		27.43	125.729	0.000
						C	46.504	64.965		27.43	64.207	0.000
T8 25.00-0.00	12.50	0.85	3	1.0436	518.686	A	42.230	63.170	37.382	35.47	128.320	0.000
						B	42.230	63.170		35.47	84.219	0.000
						C	42.230	63.170		35.47	42.997	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	177.50	1.428	11	36.085	A	3.086	4.171	4.171	57.48	5.836	0.000
180.00-175.00					B	3.086	4.171		57.48	0.000	0.000
					C	3.086	4.171		57.48	0.000	0.000
T2	162.50	1.402	11	210.425	A	11.948	20.856	20.856	63.58	40.043	0.000
175.00-150.00					B	11.948	20.856		63.58	51.084	0.000
					C	11.948	20.856		63.58	0.000	0.000
T3	137.50	1.353	11	260.425	A	17.112	20.856	20.856	54.93	53.536	0.000
150.00-125.00					B	17.112	20.856		54.93	89.100	0.000
					C	17.112	20.856		54.93	40.392	0.000
T4	112.50	1.297	10	310.425	A	20.535	20.856	20.856	50.39	58.139	0.000
125.00-100.00					B	20.535	20.856		50.39	89.100	0.000
					C	20.535	20.856		50.39	59.400	0.000
T5	87.50	1.231	10	360.425	A	24.445	20.856	20.856	46.04	59.684	0.000
100.00-75.00					B	24.445	20.856		46.04	89.100	0.000
					C	24.445	20.856		46.04	59.400	0.000
T6 75.00-50.00	62.50	1.146	9	410.425	A	26.937	20.856	20.856	43.64	59.810	0.000
					B	26.937	20.856		43.64	89.100	0.000
					C	26.937	20.856		43.64	59.400	0.000
T7 50.00-25.00	37.50	1.029	8	460.425	A	46.504	20.856	20.856	30.96	62.194	0.000
					B	46.504	20.856		30.96	89.100	0.000
					C	46.504	20.856		30.96	59.400	0.000
T8 25.00-0.00	12.50	0.85	7	514.334	A	42.230	28.676	28.676	40.44	45.040	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					B	42.230	28.676		40.44	60.588	0.000
					C	42.230	28.676		40.44	40.392	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	49	1	1	5.164	697.05	139.41	C
180.00-175.00			B	0.201	2.592		1	1	5.164			
			C	0.201	2.592		1	1	5.164			
T2	341.20	1760.62	A	0.156	2.75	48	1	1	22.023	4668.54	186.74	C
175.00-150.00			B	0.156	2.75		1	1	22.023			
			C	0.156	2.75		1	1	22.023			
T3	705.84	2485.05	A	0.146	2.787	46	1	1	27.202	7260.46	290.42	C
150.00-125.00			B	0.146	2.787		1	1	27.202			
			C	0.146	2.787		1	1	27.202			
T4	799.05	3003.52	A	0.133	2.834	44	1	1	30.648	7905.15	316.21	C
125.00-100.00			B	0.133	2.834		1	1	30.648			
			C	0.133	2.834		1	1	30.648			
T5	804.00	3449.63	A	0.126	2.863	42	1	1	34.645	7969.53	318.78	C
100.00-75.00			B	0.126	2.863		1	1	34.645			
			C	0.126	2.863		1	1	34.645			
T6	804.30	4492.81	A	0.116	2.899	39	1	1	37.262	7719.50	308.78	C
75.00-50.00			B	0.116	2.899		1	1	37.262			
			C	0.116	2.899		1	1	37.262			
T7	810.20	5754.39	A	0.146	2.785	35	1	1	57.219	8502.72	340.11	C
50.00-25.00			B	0.146	2.785		1	1	57.219			
			C	0.146	2.785		1	1	57.219			
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	29	1	1	55.417	5986.57	239.46	C
			B	0.138	2.817		1	1	55.417			
			C	0.138	2.817		1	1	55.417			
Sum Weight:	4844.43	28090.66						OTM	4343.49 kip-ft	50709.52		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	49	0.8	1	4.547	631.01	126.20	C
180.00-175.00			B	0.201	2.592		0.8	1	4.547			
			C	0.201	2.592		0.8	1	4.547			
T2	341.20	1760.62	A	0.156	2.75	48	0.8	1	19.633	4402.32	176.09	C
175.00-150.00			B	0.156	2.75		0.8	1	19.633			
			C	0.156	2.75		0.8	1	19.633			
T3	705.84	2485.05	A	0.146	2.787	46	0.8	1	23.779	6887.38	275.50	C
150.00-125.00			B	0.146	2.787		0.8	1	23.779			
			C	0.146	2.787		0.8	1	23.779			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T4	799.05	3003.52	A	0.133	2.834	44	0.8	1	26.541	7468.79	298.75	C
125.00-100.00			B	0.133	2.834		0.8	1	26.541			
			C	0.133	2.834		0.8	1	26.541			
T5	804.00	3449.63	A	0.126	2.863	42	0.8	1	29.756	7471.75	298.87	C
100.00-75.00			B	0.126	2.863		0.8	1	29.756			
			C	0.126	2.863		0.8	1	29.756			
T6	804.30	4492.81	A	0.116	2.899	39	0.8	1	31.875	7202.10	288.08	C
75.00-50.00			B	0.116	2.899		0.8	1	31.875			
			C	0.116	2.899		0.8	1	31.875			
T7	810.20	5754.39	A	0.146	2.785	35	0.8	1	47.919	7732.01	309.28	C
50.00-25.00			B	0.146	2.785		0.8	1	47.919			
			C	0.146	2.785		0.8	1	47.919			
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	29	0.8	1	46.971	5402.18	216.09	C
			B	0.138	2.817		0.8	1	46.971			
			C	0.138	2.817		0.8	1	46.971			
Sum Weight:	4844.43	28090.66						OTM	4076.02 kip-ft	47197.54		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	49	0.85	1	4.701	647.52	129.50	C
180.00-175.00			B	0.201	2.592		0.85	1	4.701			
			C	0.201	2.592		0.85	1	4.701			
T2	341.20	1760.62	A	0.156	2.75	48	0.85	1	20.230	4468.87	178.75	C
175.00-150.00			B	0.156	2.75		0.85	1	20.230			
			C	0.156	2.75		0.85	1	20.230			
T3	705.84	2485.05	A	0.146	2.787	46	0.85	1	24.635	6980.65	279.23	C
150.00-125.00			B	0.146	2.787		0.85	1	24.635			
			C	0.146	2.787		0.85	1	24.635			
T4	799.05	3003.52	A	0.133	2.834	44	0.85	1	27.568	7577.88	303.12	C
125.00-100.00			B	0.133	2.834		0.85	1	27.568			
			C	0.133	2.834		0.85	1	27.568			
T5	804.00	3449.63	A	0.126	2.863	42	0.85	1	30.979	7596.20	303.85	C
100.00-75.00			B	0.126	2.863		0.85	1	30.979			
			C	0.126	2.863		0.85	1	30.979			
T6	804.30	4492.81	A	0.116	2.899	39	0.85	1	33.222	7331.45	293.26	C
75.00-50.00			B	0.116	2.899		0.85	1	33.222			
			C	0.116	2.899		0.85	1	33.222			
T7	810.20	5754.39	A	0.146	2.785	35	0.85	1	50.244	7924.69	316.99	C
50.00-25.00			B	0.146	2.785		0.85	1	50.244			
			C	0.146	2.785		0.85	1	50.244			
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	29	0.85	1	49.082	5548.28	221.93	C
			B	0.138	2.817		0.85	1	49.082			
			C	0.138	2.817		0.85	1	49.082			
Sum Weight:	4844.43	28090.66						OTM	4142.89 kip-ft	48075.54		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	211.31	967.75	A	0.342	2.19	5	1	1	8.997	127.07	25.41	C
180.00-175.00			B	0.342	2.19		1	1	8.997			
			C	0.342	2.19		1	1	8.997			
T2	2607.10	4189.84	A	0.261	2.406	5	1	1	38.034	865.73	34.63	C
175.00-150.00			B	0.261	2.406		1	1	38.034			
			C	0.261	2.406		1	1	38.034			
T3	4840.90	5431.48	A	0.239	2.472	5	1	1	44.091	1245.03	49.80	C
150.00-125.00			B	0.239	2.472		1	1	44.091			
			C	0.239	2.472		1	1	44.091			
T4	5344.46	6429.24	A	0.23	2.5	5	1	1	50.735	1341.28	53.65	C
125.00-100.00			B	0.23	2.5		1	1	50.735			
			C	0.23	2.5		1	1	50.735			
T5	5288.56	7511.08	A	0.213	2.554	4	1	1	55.228	1327.52	53.10	C
100.00-75.00			B	0.213	2.554		1	1	55.228			
			C	0.213	2.554		1	1	55.228			
T6	5145.25	8773.91	A	0.196	2.611	4	1	1	58.131	1264.18	50.57	C
75.00-50.00			B	0.196	2.611		1	1	58.131			
			C	0.196	2.611		1	1	58.131			
T7	5034.80	11651.31	A	0.24	2.469	4	1	1	84.347	1314.72	52.59	C
50.00-25.00			B	0.24	2.469		1	1	84.347			
			C	0.24	2.469		1	1	84.347			
T8 25.00-0.00	3243.52	11618.53	A	0.203	2.585	3	1	1	78.556	896.54	35.86	C
			B	0.203	2.585		1	1	78.556			
			C	0.203	2.585		1	1	78.556			
Sum Weight:	31715.90	56573.14						OTM	741.00 kip-ft	8382.08		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	211.31	967.75	A	0.342	2.19	5	0.8	1	8.379	121.36	24.27	C
180.00-175.00			B	0.342	2.19		0.8	1	8.379			
			C	0.342	2.19		0.8	1	8.379			
T2	2607.10	4189.84	A	0.261	2.406	5	0.8	1	35.644	841.88	33.68	C
175.00-150.00			B	0.261	2.406		0.8	1	35.644			
			C	0.261	2.406		0.8	1	35.644			
T3	4840.90	5431.48	A	0.239	2.472	5	0.8	1	40.668	1211.14	48.45	C
150.00-125.00			B	0.239	2.472		0.8	1	40.668			
			C	0.239	2.472		0.8	1	40.668			
T4	5344.46	6429.24	A	0.23	2.5	5	0.8	1	46.628	1301.87	52.07	C
125.00-100.00			B	0.23	2.5		0.8	1	46.628			
			C	0.23	2.5		0.8	1	46.628			
T5	5288.56	7511.08	A	0.213	2.554	4	0.8	1	50.339	1282.05	51.28	C
100.00-75.00			B	0.213	2.554		0.8	1	50.339			
			C	0.213	2.554		0.8	1	50.339			
T6	5145.25	8773.91	A	0.196	2.611	4	0.8	1	52.744	1216.47	48.66	C
75.00-50.00			B	0.196	2.611		0.8	1	52.744			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.196	2.611		0.8	1	52.744			
T7	5034.80	11651.31	A	0.24	2.469	4	0.8	1	75.046	1244.75	49.79	C
50.00-25.00			B	0.24	2.469		0.8	1	75.046			
			C	0.24	2.469		0.8	1	75.046			
T8 25.00-0.00	3243.52	11618.53	A	0.203	2.585	3	0.8	1	70.110	841.62	33.66	C
			B	0.203	2.585		0.8	1	70.110			
			C	0.203	2.585		0.8	1	70.110			
Sum Weight:	31715.90	56573.14						OTM	716.75 kip-ft	8061.14		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	211.31	967.75	A	0.342	2.19	5	0.85	1	8.534	122.78	24.56	C
180.00-175.00			B	0.342	2.19		0.85	1	8.534			
			C	0.342	2.19		0.85	1	8.534			
T2	2607.10	4189.84	A	0.261	2.406	5	0.85	1	36.242	847.85	33.91	C
175.00-150.00			B	0.261	2.406		0.85	1	36.242			
			C	0.261	2.406		0.85	1	36.242			
T3	4840.90	5431.48	A	0.239	2.472	5	0.85	1	41.524	1219.61	48.78	C
150.00-125.00			B	0.239	2.472		0.85	1	41.524			
			C	0.239	2.472		0.85	1	41.524			
T4	5344.46	6429.24	A	0.23	2.5	5	0.85	1	47.655	1311.72	52.47	C
125.00-100.00			B	0.23	2.5		0.85	1	47.655			
			C	0.23	2.5		0.85	1	47.655			
T5	5288.56	7511.08	A	0.213	2.554	4	0.85	1	51.561	1293.42	51.74	C
100.00-75.00			B	0.213	2.554		0.85	1	51.561			
			C	0.213	2.554		0.85	1	51.561			
T6	5145.25	8773.91	A	0.196	2.611	4	0.85	1	54.091	1228.40	49.14	C
75.00-50.00			B	0.196	2.611		0.85	1	54.091			
			C	0.196	2.611		0.85	1	54.091			
T7	5034.80	11651.31	A	0.24	2.469	4	0.85	1	77.371	1262.24	50.49	C
50.00-25.00			B	0.24	2.469		0.85	1	77.371			
			C	0.24	2.469		0.85	1	77.371			
T8 25.00-0.00	3243.52	11618.53	A	0.203	2.585	3	0.85	1	72.221	855.35	34.21	C
			B	0.203	2.585		0.85	1	72.221			
			C	0.203	2.585		0.85	1	72.221			
Sum Weight:	31715.90	56573.14						OTM	722.81 kip-ft	8141.37		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	11	1	1	5.164	160.60	32.12	C
180.00-175.00			B	0.201	2.592		1	1	5.164			
			C	0.201	2.592		1	1	5.164			
T2	341.20	1760.62	A	0.156	2.75	11	1	1	22.023	1075.63	43.03	C
175.00-150.00			B	0.156	2.75		1	1	22.023			
			C	0.156	2.75		1	1	22.023			
T3	705.84	2485.05	A	0.146	2.787	11	1	1	27.202	1672.81	66.91	C
150.00-125.00			B	0.146	2.787		1	1	27.202			
			C	0.146	2.787		1	1	27.202			
T4	799.05	3003.52	A	0.133	2.834	10	1	1	30.648	1821.35	72.85	C
125.00-100.00			B	0.133	2.834		1	1	30.648			
			C	0.133	2.834		1	1	30.648			
T5	804.00	3449.63	A	0.126	2.863	10	1	1	34.645	1836.18	73.45	C
100.00-75.00			B	0.126	2.863		1	1	34.645			
			C	0.126	2.863		1	1	34.645			
T6	804.30	4492.81	A	0.116	2.899	9	1	1	37.262	1778.57	71.14	C
75.00-50.00			B	0.116	2.899		1	1	37.262			
			C	0.116	2.899		1	1	37.262			
T7	810.20	5754.39	A	0.146	2.785	8	1	1	57.219	1959.03	78.36	C
50.00-25.00			B	0.146	2.785		1	1	57.219			
			C	0.146	2.785		1	1	57.219			
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	7	1	1	55.417	1379.31	55.17	C
			B	0.138	2.817		1	1	55.417			
			C	0.138	2.817		1	1	55.417			
Sum Weight:	4844.43	28090.66						OTM	1000.74 kip-ft	11683.47		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	11	0.8	1	4.547	145.39	29.08	C
180.00-175.00			B	0.201	2.592		0.8	1	4.547			
			C	0.201	2.592		0.8	1	4.547			
T2	341.20	1760.62	A	0.156	2.75	11	0.8	1	19.633	1014.29	40.57	C
175.00-150.00			B	0.156	2.75		0.8	1	19.633			
			C	0.156	2.75		0.8	1	19.633			
T3	705.84	2485.05	A	0.146	2.787	11	0.8	1	23.779	1586.85	63.47	C
150.00-125.00			B	0.146	2.787		0.8	1	23.779			
			C	0.146	2.787		0.8	1	23.779			
T4	799.05	3003.52	A	0.133	2.834	10	0.8	1	26.541	1720.81	68.83	C
125.00-100.00			B	0.133	2.834		0.8	1	26.541			
			C	0.133	2.834		0.8	1	26.541			
T5	804.00	3449.63	A	0.126	2.863	10	0.8	1	29.756	1721.49	68.86	C
100.00-75.00			B	0.126	2.863		0.8	1	29.756			
			C	0.126	2.863		0.8	1	29.756			
T6	804.30	4492.81	A	0.116	2.899	9	0.8	1	31.875	1659.36	66.37	C
75.00-50.00			B	0.116	2.899		0.8	1	31.875			
			C	0.116	2.899		0.8	1	31.875			
T7	810.20	5754.39	A	0.146	2.785	8	0.8	1	47.919	1781.45	71.26	C
50.00-25.00			B	0.146	2.785		0.8	1	47.919			
			C	0.146	2.785		0.8	1	47.919			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	7	0.8	1	46.971	1244.66	49.79	C
			B	0.138	2.817		0.8	1	46.971			
			C	0.138	2.817		0.8	1	46.971			
Sum Weight:	4844.43	28090.66						OTM	939.12 kip-ft	10874.31		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	20.49	391.02	A	0.201	2.592	11	0.85	1	4.701	149.19	29.84	C
180.00-175.00			B	0.201	2.592		0.85	1	4.701			
			C	0.201	2.592		0.85	1	4.701			
T2	341.20	1760.62	A	0.156	2.75	11	0.85	1	20.230	1029.63	41.19	C
175.00-150.00			B	0.156	2.75		0.85	1	20.230			
			C	0.156	2.75		0.85	1	20.230			
T3	705.84	2485.05	A	0.146	2.787	11	0.85	1	24.635	1608.34	64.33	C
150.00-125.00			B	0.146	2.787		0.85	1	24.635			
			C	0.146	2.787		0.85	1	24.635			
T4	799.05	3003.52	A	0.133	2.834	10	0.85	1	27.568	1745.94	69.84	C
125.00-100.00			B	0.133	2.834		0.85	1	27.568			
			C	0.133	2.834		0.85	1	27.568			
T5	804.00	3449.63	A	0.126	2.863	10	0.85	1	30.979	1750.16	70.01	C
100.00-75.00			B	0.126	2.863		0.85	1	30.979			
			C	0.126	2.863		0.85	1	30.979			
T6	804.30	4492.81	A	0.116	2.899	9	0.85	1	33.222	1689.17	67.57	C
75.00-50.00			B	0.116	2.899		0.85	1	33.222			
			C	0.116	2.899		0.85	1	33.222			
T7	810.20	5754.39	A	0.146	2.785	8	0.85	1	50.244	1825.85	73.03	C
50.00-25.00			B	0.146	2.785		0.85	1	50.244			
			C	0.146	2.785		0.85	1	50.244			
T8 25.00-0.00	559.34	6753.61	A	0.138	2.817	7	0.85	1	49.082	1278.32	51.13	C
			B	0.138	2.817		0.85	1	49.082			
			C	0.138	2.817		0.85	1	49.082			
Sum Weight:	4844.43	28090.66						OTM	954.52 kip-ft	11076.60		

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
ANT220F2 Antenna	0.0000	14.00	0.00	-10.86	114.00	1.301	44	1.74	1.74
ANT220F2 Antenna	0.0000	14.00	0.00	-10.17	129.00	1.335	45	1.74	1.74
Site Pro USF-4U w/ (2) Stiff-Arm Supports	0.0000	165.00	0.00	-7.50	111.00	1.294	44	1.25	2.50
Site Pro USF-4U w/ (2)	0.0000	165.00	0.00	-6.80	126.00	1.329	45	1.25	2.50

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Stiff-Arm Supports									
7770.00 panel antenna	0.0000	52.03	-4.00	-5.14	162.00	1.401	48	5.90	4.01
LGP 21401 TMA Units	0.0000	35.00	0.00	-5.14	162.00	1.401	48	1.91	0.73
7770.00 panel antenna	120.0000	52.03	6.45	-0.89	162.00	1.401	48	5.90	4.01
LGP 21401 TMA Units	120.0000	35.00	4.45	2.57	162.00	1.401	48	1.91	0.73
7770.00 panel antenna	240.0000	52.03	-2.45	6.04	162.00	1.401	48	5.90	4.01
LGP 21401 TMA Units	240.0000	35.00	-4.45	2.57	162.00	1.401	48	1.91	0.73
DB980F90E-M w/Mount Pipe	0.0000	68.10	0.00	-4.82	169.00	1.413	48	8.74	7.91
DB980F90E-M w/Mount Pipe	120.0000	68.10	4.17	2.41	169.00	1.413	48	8.74	7.91
DB980F90E-M w/Mount Pipe	240.0000	68.10	-4.17	2.41	169.00	1.413	48	8.74	7.91
SitePro1 VFA12-RRU Mount Assembly	0.0000	450.00	0.00	-4.32	169.00	1.413	48	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	120.0000	450.00	3.74	2.16	169.00	1.413	48	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	240.0000	450.00	-3.74	2.16	169.00	1.413	48	12.02	7.98
BXA-185085-12CF Panel Antennas w/ Pipe Mount	0.0000	47.74	0.00	-6.07	142.00	1.363	46	4.79	5.34
BXA-185085-12CF Panel Antennas w/ Pipe Mount	120.0000	47.74	5.25	3.03	142.00	1.363	46	4.79	5.34
BXA-185085-12CF Panel Antennas w/ Pipe Mount	240.0000	47.74	-5.25	3.03	142.00	1.363	46	4.79	5.34
BXA-80080-8CF Panel Antenna w/ Pipe Mount	0.0000	65.74	0.00	-6.07	142.00	1.363	46	10.84	8.45
BXA-80080-8CF Panel Antenna w/ Pipe Mount	120.0000	65.74	5.25	3.03	142.00	1.363	46	10.84	8.45
BXA-80080-8CF Panel Antenna w/ Pipe Mount	240.0000	65.74	-5.25	3.03	142.00	1.363	46	10.84	8.45
SitePro1 VFA12-RRU Mount Assembly	0.0000	450.00	0.00	-5.29	148.00	1.375	47	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	120.0000	450.00	4.58	2.64	148.00	1.375	47	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	240.0000	450.00	-4.58	2.64	148.00	1.375	47	12.02	7.98
10'6"x4" Pipe Mount	240.0000	114.00	-3.30	1.91	180.00	1.432	49	3.28	3.28
Lightning Rod 5/8x4'	240.0000	31.00	-2.82	1.63	192.00	1.452	49	0.25	0.25
PD1142-30	120.0000	10.00	2.86	1.65	191.00	1.450	49	0.14	0.14
6'8"x4" Pipe Mount	120.0000	72.00	2.86	1.65	191.00	1.450	49	1.93	1.93
2" Dia 8' Omni	0.0000	5.00	0.00	-4.13	184.00	1.439	49	2.00	2.00
2'6"x4" Pipe Mount	0.0000	27.00	0.00	-4.13	184.00	1.439	49	0.64	0.64
3" Dia 20' Omni	120.0000	55.00	3.65	2.11	182.00	1.436	49	4.00	4.00
3" Dia 20' Omni	240.0000	55.00	-3.65	2.11	182.00	1.436	49	4.00	4.00
PD220	0.0000	23.00	0.00	-4.50	176.00	1.426	48	3.08	3.08
3'4"x4" Pipe Mount	240.0000	36.00	-3.46	2.00	176.00	1.426	48	0.88	0.88
DB292-A	240.0000	15.00	-6.63	-1.94	170.00	1.415	48	1.80	1.80
PD1142-1	120.0000	10.00	2.61	6.13	158.00	1.394	47	1.32	1.32
DB222	0.0000	16.00	-4.00	-5.56	153.00	1.384	47	1.60	1.60
DB586-Y	0.0000	8.25	4.00	-5.58	152.50	1.383	47	1.01	1.01
432E-83I-01T TTA Unit	0.0000	25.00	4.00	-5.56	153.00	1.384	47	3.33	1.11
DB586-Y	0.0000	8.25	4.00	-5.86	146.50	1.372	47	1.01	1.01
10' Dipole (Generic)	240.0000	55.00	-7.01	-0.57	148.00	1.375	47	4.00	4.00
10'6"x4" Pipe Mount	240.0000	114.00	-7.01	-0.57	148.00	1.375	47	3.35	3.35
GPS	120.0000	10.00	11.88	6.86	52.00	1.103	37	1.00	1.00
4' Side Arm (Sq Tube)	120.0000	50.00	8.42	4.86	52.00	1.103	37	2.72	2.72
DB803M-Y	0.0000	4.30	0.00	-13.42	37.00	1.027	35	0.50	0.50

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
DB803M-Y	0.0000	4.30	0.00	-13.85	27.50	0.964	33	0.50	0.50
3' Side Arm Mount	0.0000	50.00	0.00	-10.69	31.00	0.989	34	2.72	2.72
DB803M-Y	120.0000	4.30	11.05	6.38	29.50	0.979	33	0.50	0.50
3' Yagi	120.0000	30.95	11.59	6.69	16.00	0.860	29	2.08	2.08
2' Side Arm Mount	120.0000	50.00	9.34	5.39	29.00	0.975	33	2.72	2.72
SC479-HF1LDF (Inverted)	240.0000	34.00	-8.79	5.07	172.75	1.420	48	5.06	5.06
SC479-HF1LDF (Inverted)	240.0000	34.00	-6.19	3.57	172.75	1.420	48	5.06	5.06
SC479-HF1LDF	240.0000	34.00	-8.50	4.91	180.00	1.432	49	5.06	5.06
432E-83I-01T TTA Unit	240.0000	25.00	-5.90	3.41	180.00	1.432	49	3.33	1.11
Pirod 4' Side Mount Standoff (1)	240.0000	50.00	-3.30	1.91	180.00	1.432	49	2.72	2.72
CCI HPA65R-BU4A	0.0000	28.70	4.00	-5.14	162.00	1.401	48	4.96	3.51
CCI HPA65R-BU4A	120.0000	28.70	2.45	6.04	162.00	1.401	48	4.96	3.51
CCI HPA65R-BU4A	240.0000	28.70	-6.45	-0.89	162.00	1.401	48	4.96	3.51
T1921B68 TMA	0.0000	20.00	4.00	-5.14	162.00	1.401	48	0.66	0.32
T1921B68 TMA	120.0000	20.00	2.45	6.04	162.00	1.401	48	0.66	0.32
T1921B68 TMA	240.0000	20.00	-6.45	-0.89	162.00	1.401	48	0.66	0.32
	Sum Weight:	5070.28							

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
ANT220F2 Antenna	0.0000	53.07	0.00	-10.86	114.00	1.301	5	2.56	2.56	1.3018
ANT220F2 Antenna	0.0000	53.75	0.00	-10.17	129.00	1.335	5	2.57	2.57	1.3180
Site Pro USF-4U w/ (2) Stiff-Arm Supports	0.0000	250.69	0.00	-7.50	111.00	1.294	5	1.87	3.18	1.2983
Site Pro USF-4U w/ (2) Stiff-Arm Supports	0.0000	251.78	0.00	-6.80	126.00	1.329	5	1.88	3.18	1.3149
7770.00 panel antenna	0.0000	191.49	-4.00	-5.14	162.00	1.401	5	7.10	5.75	1.3483
LGP 21401 TMA Units	0.0000	76.39	0.00	-5.14	162.00	1.401	5	2.71	1.39	1.3483
7770.00 panel antenna	120.0000	191.49	6.45	-0.89	162.00	1.401	5	7.10	5.75	1.3483
LGP 21401 TMA Units	120.0000	76.39	4.45	2.57	162.00	1.401	5	2.71	1.39	1.3483
7770.00 panel antenna	240.0000	191.49	-2.45	6.04	162.00	1.401	5	7.10	5.75	1.3483
LGP 21401 TMA Units	240.0000	76.39	-4.45	2.57	162.00	1.401	5	2.71	1.39	1.3483
DB980F90E-M w/Mount Pipe	0.0000	320.81	0.00	-4.82	169.00	1.413	5	11.68	12.86	1.3541
DB980F90E-M w/Mount Pipe	120.0000	320.81	4.17	2.41	169.00	1.413	5	11.68	12.86	1.3541
DB980F90E-M w/Mount Pipe	240.0000	320.81	-4.17	2.41	169.00	1.413	5	11.68	12.86	1.3541
SitePro1 VFA12-RRU Mount Assembly	0.0000	902.83	0.00	-4.32	169.00	1.413	5	26.92	18.39	1.3541
SitePro1 VFA12-RRU Mount Assembly	120.0000	902.83	3.74	2.16	169.00	1.413	5	26.92	18.39	1.3541
SitePro1 VFA12-RRU Mount Assembly	240.0000	902.83	-3.74	2.16	169.00	1.413	5	26.92	18.39	1.3541
BXA-185085-12CF Panel Antennas w/ Pipe Mount	0.0000	191.43	0.00	-6.07	142.00	1.363	5	6.01	7.52	1.3307
BXA-185085-12CF Panel Antennas w/ Pipe Mount	120.0000	191.43	5.25	3.03	142.00	1.363	5	6.01	7.52	1.3307
BXA-185085-12CF	240.0000	191.43	-5.25	3.03	142.00	1.363	5	6.01	7.52	1.3307

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Panel Antennas w/ Pipe Mount										
BXA-80080-8CF Panel Antenna w/ Pipe Mount	0.0000	298.74	0.00	-6.07	142.00	1.363	5	12.49	11.01	1.3307
BXA-80080-8CF Panel Antenna w/ Pipe Mount	120.0000	298.74	5.25	3.03	142.00	1.363	5	12.49	11.01	1.3307
BXA-80080-8CF Panel Antenna w/ Pipe Mount	240.0000	298.74	-5.25	3.03	142.00	1.363	5	12.49	11.01	1.3307
SitePro1 VFA12-RRU Mount Assembly	0.0000	896.08	0.00	-5.29	148.00	1.375	5	26.73	18.25	1.3362
SitePro1 VFA12-RRU Mount Assembly	120.0000	896.08	4.58	2.64	148.00	1.375	5	26.73	18.25	1.3362
SitePro1 VFA12-RRU Mount Assembly	240.0000	896.08	-4.58	2.64	148.00	1.375	5	26.73	18.25	1.3362
10'6"x4" Pipe Mount	240.0000	223.48	-3.30	1.91	180.00	1.432	5	6.72	6.72	1.3626
Lightning Rod 5/8x4'	240.0000	46.55	-2.82	1.63	192.00	1.452	5	1.17	1.17	1.3714
PD1142-30	120.0000	284.14	2.86	1.65	191.00	1.450	5	3.84	3.84	1.3707
6'8"x4" Pipe Mount	120.0000	143.52	2.86	1.65	191.00	1.450	5	3.74	3.74	1.3707
2" Dia 8' Omni	0.0000	40.51	0.00	-4.13	184.00	1.439	5	4.81	4.81	1.3656
2'6"x4" Pipe Mount	0.0000	56.23	0.00	-4.13	184.00	1.439	5	1.23	1.23	1.3656
3" Dia 20' Omni	120.0000	177.77	3.65	2.11	182.00	1.436	5	9.46	9.46	1.3641
3" Dia 20' Omni	240.0000	177.77	-3.65	2.11	182.00	1.436	5	9.46	9.46	1.3641
PD220	0.0000	131.47	0.00	-4.50	176.00	1.426	5	9.16	9.16	1.3596
3'4"x4" Pipe Mount	240.0000	73.40	-3.46	2.00	176.00	1.426	5	1.67	1.67	1.3596
DB292-A	240.0000	27.19	-6.63	-1.94	170.00	1.415	5	5.70	5.70	1.3549
PD1142-1	120.0000	79.38	2.61	6.13	158.00	1.394	5	6.46	6.46	1.3450
DB222	0.0000	28.87	-4.00	-5.56	153.00	1.384	5	5.03	5.03	1.3407
DB586-Y	0.0000	39.14	4.00	-5.58	152.50	1.383	5	1.76	1.76	1.3402
432E-83I-01T TTA Unit	0.0000	86.16	4.00	-5.56	153.00	1.384	5	4.00	1.58	1.3407
DB586-Y	0.0000	38.96	4.00	-5.86	146.50	1.372	5	1.75	1.75	1.3348
10' Dipole (Generic)	240.0000	175.26	-7.01	-0.57	148.00	1.375	5	9.34	9.34	1.3362
10'6"x4" Pipe Mount	240.0000	220.80	-7.01	-0.57	148.00	1.375	5	6.69	6.69	1.3362
GPS	120.0000	22.04	11.88	6.86	52.00	1.103	4	2.20	2.20	1.2035
4' Side Arm (Sq Tube)	120.0000	143.87	8.42	4.86	52.00	1.103	4	7.99	7.99	1.2035
DB803M-Y	0.0000	19.18	0.00	-13.42	37.00	1.027	4	0.94	0.94	1.1632
DB803M-Y	0.0000	18.48	0.00	-13.85	27.50	0.964	3	0.93	0.93	1.1292
3' Side Arm Mount	0.0000	139.14	0.00	-10.69	31.00	0.989	3	7.73	7.73	1.1428
DB803M-Y	120.0000	18.64	11.05	6.38	29.50	0.979	3	0.93	0.93	1.1372
3' Yagi	120.0000	92.12	11.59	6.69	16.00	0.860	3	5.76	5.76	1.0697
2' Side Arm Mount	120.0000	138.55	9.34	5.39	29.00	0.975	3	7.69	7.69	1.1352
SC479-HF1LDF (Inverted)	240.0000	157.45	-8.79	5.07	172.75	1.420	5	9.03	9.03	1.3570
SC479-HF1LDF (Inverted)	240.0000	157.45	-6.19	3.57	172.75	1.420	5	9.03	9.03	1.3570
SC479-HF1LDF	240.0000	158.11	-8.50	4.91	180.00	1.432	5	9.04	9.04	1.3626
432E-83I-01T TTA Unit	240.0000	87.37	-5.90	3.41	180.00	1.432	5	4.01	1.59	1.3626
Pirod 4' Side Mount Standoff (1)	240.0000	156.28	-3.30	1.91	180.00	1.432	5	8.69	8.69	1.3626
CCI HPA65R-BU4A	0.0000	136.71	4.00	-5.14	162.00	1.401	5	5.85	4.35	1.3483
CCI HPA65R-BU4A	120.0000	136.71	2.45	6.04	162.00	1.401	5	5.85	4.35	1.3483
CCI HPA65R-BU4A	240.0000	136.71	-6.45	-0.89	162.00	1.401	5	5.85	4.35	1.3483
T1921B68 TMA	0.0000	40.11	4.00	-5.14	162.00	1.401	5	0.96	0.55	1.3483
T1921B68 TMA	120.0000	40.11	2.45	6.04	162.00	1.401	5	0.96	0.55	1.3483
T1921B68 TMA	240.0000	40.11	-6.45	-0.89	162.00	1.401	5	0.96	0.55	1.3483
	Sum Weight:	13132.35								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
ANT220F2 Antenna	0.0000	14.00	0.00	-10.86	114.00	1.301	10	1.74	1.74
ANT220F2 Antenna	0.0000	14.00	0.00	-10.17	129.00	1.335	10	1.74	1.74
Site Pro USF-4U w/ (2) Stiff-Arm Supports	0.0000	165.00	0.00	-7.50	111.00	1.294	10	1.25	2.50
Site Pro USF-4U w/ (2) Stiff-Arm Supports	0.0000	165.00	0.00	-6.80	126.00	1.329	10	1.25	2.50
7770.00 panel antenna	0.0000	52.03	-4.00	-5.14	162.00	1.401	11	5.90	4.01
LGP 21401 TMA Units	0.0000	35.00	0.00	-5.14	162.00	1.401	11	1.91	0.73
7770.00 panel antenna	120.0000	52.03	6.45	-0.89	162.00	1.401	11	5.90	4.01
LGP 21401 TMA Units	120.0000	35.00	4.45	2.57	162.00	1.401	11	1.91	0.73
7770.00 panel antenna	240.0000	52.03	-2.45	6.04	162.00	1.401	11	5.90	4.01
LGP 21401 TMA Units	240.0000	35.00	-4.45	2.57	162.00	1.401	11	1.91	0.73
DB980F90E-M w/Mount Pipe	0.0000	68.10	0.00	-4.82	169.00	1.413	11	8.74	7.91
DB980F90E-M w/Mount Pipe	120.0000	68.10	4.17	2.41	169.00	1.413	11	8.74	7.91
DB980F90E-M w/Mount Pipe	240.0000	68.10	-4.17	2.41	169.00	1.413	11	8.74	7.91
SitePro1 VFA12-RRU Mount Assembly	0.0000	450.00	0.00	-4.32	169.00	1.413	11	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	120.0000	450.00	3.74	2.16	169.00	1.413	11	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	240.0000	450.00	-3.74	2.16	169.00	1.413	11	12.02	7.98
BXA-185085-12CF Panel Antennas w/ Pipe Mount	0.0000	47.74	0.00	-6.07	142.00	1.363	11	4.79	5.34
BXA-185085-12CF Panel Antennas w/ Pipe Mount	120.0000	47.74	5.25	3.03	142.00	1.363	11	4.79	5.34
BXA-185085-12CF Panel Antennas w/ Pipe Mount	240.0000	47.74	-5.25	3.03	142.00	1.363	11	4.79	5.34
BXA-80080-8CF Panel Antenna w/ Pipe Mount	0.0000	65.74	0.00	-6.07	142.00	1.363	11	10.84	8.45
BXA-80080-8CF Panel Antenna w/ Pipe Mount	120.0000	65.74	5.25	3.03	142.00	1.363	11	10.84	8.45
BXA-80080-8CF Panel Antenna w/ Pipe Mount	240.0000	65.74	-5.25	3.03	142.00	1.363	11	10.84	8.45
SitePro1 VFA12-RRU Mount Assembly	0.0000	450.00	0.00	-5.29	148.00	1.375	11	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	120.0000	450.00	4.58	2.64	148.00	1.375	11	12.02	7.98
SitePro1 VFA12-RRU Mount Assembly	240.0000	450.00	-4.58	2.64	148.00	1.375	11	12.02	7.98
10'6"x4" Pipe Mount	240.0000	114.00	-3.30	1.91	180.00	1.432	11	3.28	3.28
Lightning Rod 5/8x4'	240.0000	31.00	-2.82	1.63	192.00	1.452	11	0.25	0.25
PD1142-30	120.0000	10.00	2.86	1.65	191.00	1.450	11	0.14	0.14
6'8"x4" Pipe Mount	120.0000	72.00	2.86	1.65	191.00	1.450	11	1.93	1.93
2" Dia 8' Omni	0.0000	5.00	0.00	-4.13	184.00	1.439	11	2.00	2.00
2'6"x4" Pipe Mount	0.0000	27.00	0.00	-4.13	184.00	1.439	11	0.64	0.64
3" Dia 20' Omni	120.0000	55.00	3.65	2.11	182.00	1.436	11	4.00	4.00
3" Dia 20' Omni	240.0000	55.00	-3.65	2.11	182.00	1.436	11	4.00	4.00
PD220	0.0000	23.00	0.00	-4.50	176.00	1.426	11	3.08	3.08
3'4"x4" Pipe Mount	240.0000	36.00	-3.46	2.00	176.00	1.426	11	0.88	0.88
DB292-A	240.0000	15.00	-6.63	-1.94	170.00	1.415	11	1.80	1.80
PD1142-1	120.0000	10.00	2.61	6.13	158.00	1.394	11	1.32	1.32
DB222	0.0000	16.00	-4.00	-5.56	153.00	1.384	11	1.60	1.60
DB586-Y	0.0000	8.25	4.00	-5.58	152.50	1.383	11	1.01	1.01
432E-83I-01T TTA Unit	0.0000	25.00	4.00	-5.56	153.00	1.384	11	3.33	1.11

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
DB586-Y	0.0000	8.25	4.00	-5.86	146.50	1.372	11	1.01	1.01
10' Dipole (Generic)	240.0000	55.00	-7.01	-0.57	148.00	1.375	11	4.00	4.00
10'6"x4" Pipe Mount	240.0000	114.00	-7.01	-0.57	148.00	1.375	11	3.35	3.35
GPS	120.0000	10.00	11.88	6.86	52.00	1.103	9	1.00	1.00
4' Side Arm (Sq Tube)	120.0000	50.00	8.42	4.86	52.00	1.103	9	2.72	2.72
DB803M-Y	0.0000	4.30	0.00	-13.42	37.00	1.027	8	0.50	0.50
DB803M-Y	0.0000	4.30	0.00	-13.85	27.50	0.964	8	0.50	0.50
3' Side Arm Mount	0.0000	50.00	0.00	-10.69	31.00	0.989	8	2.72	2.72
DB803M-Y	120.0000	4.30	11.05	6.38	29.50	0.979	8	0.50	0.50
3' Yagi	120.0000	30.95	11.59	6.69	16.00	0.860	7	2.08	2.08
2' Side Arm Mount	120.0000	50.00	9.34	5.39	29.00	0.975	8	2.72	2.72
SC479-HF1LDF (Inverted)	240.0000	34.00	-8.79	5.07	172.75	1.420	11	5.06	5.06
SC479-HF1LDF (Inverted)	240.0000	34.00	-6.19	3.57	172.75	1.420	11	5.06	5.06
SC479-HF1LDF	240.0000	34.00	-8.50	4.91	180.00	1.432	11	5.06	5.06
432E-83I-01T TTA Unit	240.0000	25.00	-5.90	3.41	180.00	1.432	11	3.33	1.11
Pirod 4' Side Mount Standoff (1)	240.0000	50.00	-3.30	1.91	180.00	1.432	11	2.72	2.72
CCI HPA65R-BU4A	0.0000	28.70	4.00	-5.14	162.00	1.401	11	4.96	3.51
CCI HPA65R-BU4A	120.0000	28.70	2.45	6.04	162.00	1.401	11	4.96	3.51
CCI HPA65R-BU4A	240.0000	28.70	-6.45	-0.89	162.00	1.401	11	4.96	3.51
T1921B68 TMA	0.0000	20.00	4.00	-5.14	162.00	1.401	11	0.66	0.32
T1921B68 TMA	120.0000	20.00	2.45	6.04	162.00	1.401	11	0.66	0.32
T1921B68 TMA	240.0000	20.00	-6.45	-0.89	162.00	1.401	11	0.66	0.32
	Sum Weight:	5070.28							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
176.00	PA6-65	240.0000	90.00	-4.33	2.50	1.426	28.27	48
		Sum Weight:	90.00					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf	t_z in
176.00	PA6-65	240.0000	444.67	-4.33	2.50	1.426	30.11	5	1.1822
		Sum Weight:	444.67						

Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
176.00	PA6-65	240.0000	90.00	-4.33	2.50	1.426	28.27	11

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	K_z	A_A ft^2	q_z psf
		Sum Weight:	90.00					

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	11226.91					
Bracing Weight	16863.75					
Total Member Self-Weight	28090.66			3.56	-3.70	
Total Weight	38095.36			3.56	-3.70	
Wind 0 deg - No Ice		39.73	-59859.05	-5773.19	-10.85	16.36
Wind 30 deg - No Ice		28672.91	-49578.22	-4829.10	-2800.93	21.33
Wind 60 deg - No Ice		48862.84	-28207.94	-2757.27	-4783.58	20.59
Wind 90 deg - No Ice		57277.01	-39.73	-3.59	-5585.77	14.33
Wind 120 deg - No Ice		51864.58	29895.12	2885.74	-5008.07	4.23
Wind 150 deg - No Ice		28604.09	49538.49	4829.07	-2788.54	-7.00
Wind 180 deg - No Ice		-39.73	56347.07	5512.84	3.45	-16.36
Wind 210 deg - No Ice		-28672.91	49578.22	4836.22	2793.53	-21.33
Wind 240 deg - No Ice		-51904.31	29963.93	2898.13	5007.82	-20.59
Wind 270 deg - No Ice		-57277.01	39.73	10.71	5578.38	-14.33
Wind 300 deg - No Ice		-48823.11	-28139.12	-2744.89	4769.04	-4.23
Wind 330 deg - No Ice		-28604.09	-49538.49	-4821.95	2781.15	7.00
Member Ice	28482.48					
Total Weight Ice	101866.06			-12.54	-24.60	
Wind 0 deg - Ice		4.46	-10064.44	-1014.61	-25.40	3.53
Wind 30 deg - Ice		4918.41	-8509.83	-865.00	-517.54	-0.04
Wind 60 deg - Ice		8444.99	-4875.61	-502.14	-872.34	-3.60
Wind 90 deg - Ice		9829.09	-4.46	-13.35	-1009.08	-6.20
Wind 120 deg - Ice		8718.47	5028.36	487.79	-892.54	-7.13
Wind 150 deg - Ice		4910.69	8505.37	839.11	-516.15	-6.16
Wind 180 deg - Ice		-4.46	9743.50	965.27	-23.80	-3.53
Wind 210 deg - Ice		-4918.41	8509.83	839.92	468.34	0.04
Wind 240 deg - Ice		-8722.93	5036.08	489.18	844.14	3.60
Wind 270 deg - Ice		-9829.09	4.46	-11.74	959.88	6.20
Wind 300 deg - Ice		-8440.53	-4867.89	-500.75	822.33	7.13
Wind 330 deg - Ice		-4910.69	-8505.37	-864.20	466.95	6.16
Total Weight	38095.36			3.56	-3.70	
Wind 0 deg - Service		9.15	-13791.52	-1332.47	-0.07	3.77
Wind 30 deg - Service		6606.24	-11422.82	-1114.96	-642.91	4.91
Wind 60 deg - Service		11258.00	-6499.11	-637.61	-1099.71	4.74
Wind 90 deg - Service		13196.62	-9.15	-3.16	-1284.53	3.30
Wind 120 deg - Service		11949.60	6887.83	662.54	-1151.43	0.97
Wind 150 deg - Service		6590.38	11413.67	1110.29	-640.05	-1.61
Wind 180 deg - Service		-9.15	12982.36	1267.83	3.22	-3.77
Wind 210 deg - Service		-6606.24	11422.82	1111.93	646.06	-4.91
Wind 240 deg - Service		-11958.75	6903.69	665.40	1156.23	-4.74
Wind 270 deg - Service		-13196.62	9.15	0.14	1287.69	-3.30
Wind 300 deg - Service		-11248.84	-6483.25	-634.75	1101.21	-0.97
Wind 330 deg - Service		-6590.38	-11413.67	-1113.31	643.20	1.61

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
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 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 175	Leg	Max Tension	23	1326.57	-0.45	0.08
			Max. Compression	34	-2484.31	0.03	-0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	22	1266.25	-0.45	0.08
			Max. My	24	148.32	-0.04	0.55
			Max. Vy	6	482.20	-0.45	0.01
			Max. Vx	24	-864.25	-0.04	0.55
		Diagonal	Max Tension	10	1902.22	0.00	0.00
			Max. Compression	22	-1856.59	0.00	0.00
			Max. Mx	30	437.34	0.13	0.00
			Max. My	35	41.09	0.00	-0.00
			Max. Vy	30	-59.66	0.00	0.00
			Max. Vx	35	1.82	0.00	0.00
		Top Girt	Max Tension	23	895.50	0.00	0.00
			Max. Compression	10	-926.72	0.00	0.00
			Max. Mx	26	-18.90	-0.06	0.00
			Max. My	36	108.88	0.00	0.00
			Max. Vy	26	-36.47	0.00	0.00
			Max. Vx	36	0.84	0.00	0.00
T2	175 - 150	Leg	Max Tension	23	19945.61	-0.24	-0.07
			Max. Compression	10	-23750.95	0.52	0.11
			Max. Mx	22	11248.53	-0.76	-0.02
			Max. My	16	-451.09	-0.05	0.73
			Max. Vy	6	631.08	-0.75	-0.03
			Max. Vx	12	637.75	-0.01	-0.71
		Diagonal	Max Tension	8	8886.30	0.00	0.00
			Max. Compression	20	-8852.67	0.00	0.00
			Max. Mx	30	1646.57	0.23	0.00
			Max. My	35	127.19	0.00	-0.01
			Max. Vy	30	75.59	0.00	0.00
			Max. Vx	35	2.59	0.00	0.00
		Horizontal	Max Tension	20	5965.74	0.00	0.00
			Max. Compression	10	-6008.89	0.00	0.00
			Max. Mx	26	91.60	-0.10	0.00
			Max. My	36	1003.45	0.00	0.00
			Max. Vy	26	49.64	0.00	0.00
			Max. Vx	36	-1.15	0.00	0.00
T3	150 - 125	Leg	Max Tension	23	54686.29	-0.21	-0.05
			Max. Compression	18	-63143.19	0.49	-0.17
			Max. Mx	14	28066.01	-0.57	-0.07
			Max. My	8	693.55	-0.04	0.57
			Max. Vy	6	632.64	-0.41	-0.05
			Max. Vx	4	644.00	0.00	-0.42
		Diagonal	Max Tension	8	13793.74	0.00	0.00
			Max. Compression	20	-13781.16	0.00	0.00
			Max. Mx	30	2369.38	0.42	0.00
			Max. My	35	200.65	0.00	-0.01
			Max. Vy	30	123.64	0.00	0.00
			Max. Vx	35	3.77	0.00	0.00
		Horizontal	Max Tension	20	10379.16	0.00	0.00
			Max. Compression	8	-10481.91	0.00	0.00
			Max. Mx	29	284.99	-0.20	0.00
			Max. My	36	1726.93	0.00	0.00
			Max. Vy	29	78.51	0.00	0.00
			Max. Vx	36	1.81	0.00	0.00
T4	125 - 100	Leg	Max Tension	7	88233.65	-0.37	0.02
			Max. Compression	18	-100788.02	0.39	0.05
			Max. Mx	19	-69427.28	0.49	-0.16
			Max. My	22	-36061.85	0.14	-0.55
			Max. Vy	11	-127.19	0.38	-0.01
			Max. Vx	10	-151.48	-0.20	0.37
		Diagonal	Max Tension	8	11105.32	0.00	0.00
			Max. Compression	8	-11242.84	0.00	0.00
			Max. Mx	28	1875.52	0.15	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	31	11.51	0.00	0.01
			Max. Vy	28	-55.21	0.00	0.00
			Max. Vx	31	-2.20	0.00	0.00
		Horizontal	Max Tension	8	6857.73	0.00	0.00
			Max. Compression	20	-6887.63	0.02	0.01
			Max. Mx	29	401.93	0.06	0.02
			Max. My	31	215.39	0.06	0.02
			Max. Vy	29	46.04	0.06	0.02
			Max. Vx	31	-3.98	0.00	0.00
		Top Girt	Max Tension	20	10950.42	0.02	0.01
			Max. Compression	8	-11068.05	0.02	0.01
			Max. Mx	29	29.61	0.06	0.01
			Max. My	36	-1031.66	0.05	0.02
			Max. Vy	29	46.04	0.06	0.01
			Max. Vx	36	-4.02	0.00	0.00
T5	100 - 75	Leg	Max Tension	7	131810.88	-0.38	-0.03
			Max. Compression	18	-149250.35	0.52	0.04
			Max. Mx	19	-147221.26	0.52	0.04
			Max. My	16	-6931.05	-0.01	0.55
			Max. Vy	3	-102.61	0.52	-0.03
			Max. Vx	4	127.90	-0.01	-0.55
		Diagonal	Max Tension	9	12492.69	0.00	0.00
			Max. Compression	8	-12706.38	0.00	0.00
			Max. Mx	28	1972.74	0.18	0.00
			Max. My	31	-34.32	0.00	0.01
			Max. Vy	28	-62.53	0.00	0.00
			Max. Vx	31	-2.24	0.00	0.00
		Horizontal	Max Tension	8	8367.80	0.00	0.00
			Max. Compression	9	-8442.23	0.03	-0.00
			Max. Mx	29	554.62	0.11	0.00
			Max. My	18	886.06	-0.01	-0.02
			Max. Vy	29	-63.87	0.11	0.00
			Max. Vx	18	2.83	-0.01	-0.01
		Inner Bracing	Max Tension	3	4.26	0.00	0.00
			Max. Compression	6	-8.08	0.00	0.00
			Max. Mx	26	-5.12	-0.07	0.00
			Max. My	18	3.50	0.00	-0.00
			Max. Vy	26	-37.23	0.00	0.00
			Max. Vx	18	0.11	0.00	0.00
T6	75 - 50	Leg	Max Tension	7	177279.38	-0.44	-0.05
			Max. Compression	18	-200637.12	0.55	0.05
			Max. Mx	19	-198064.74	0.55	0.05
			Max. My	16	-7291.60	-0.01	0.55
			Max. Vy	22	125.95	-0.55	0.00
			Max. Vx	4	171.67	-0.02	-0.53
		Diagonal	Max Tension	21	13711.97	0.00	0.00
			Max. Compression	20	-14017.28	0.00	0.00
			Max. Mx	28	2070.37	0.25	0.00
			Max. My	31	-63.48	0.00	0.01
			Max. Vy	28	-83.05	0.00	0.00
			Max. Vx	31	-2.74	0.00	0.00
		Horizontal	Max Tension	20	9824.91	0.06	-0.00
			Max. Compression	21	-9906.99	0.04	-0.00
			Max. Mx	29	726.84	0.14	0.00
			Max. My	18	197.54	0.01	-0.02
			Max. Vy	29	-75.59	0.14	0.00
			Max. Vx	18	3.77	-0.00	-0.02
		Inner Bracing	Max Tension	11	5.56	0.00	0.00
			Max. Compression	6	-10.69	0.00	0.00
			Max. Mx	26	-6.16	-0.08	0.00
			Max. My	18	5.30	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	26	-41.24	0.00	0.00
			Max. Vx	18	0.10	0.00	0.00
T7	50 - 25	Leg	Max Tension	7	223708.12	-0.66	-0.01
			Max. Compression	18	-254128.00	-1.66	0.08
			Max. Mx	10	-253838.89	-1.66	0.00
			Max. My	16	-11696.25	-0.26	2.08
			Max. Vy	18	588.22	0.53	-0.02
			Max. Vx	16	-556.97	-0.26	2.08
		Diagonal	Max Tension	21	15099.83	0.00	0.00
			Max. Compression	20	-15557.22	0.00	0.00
			Max. Mx	38	-3048.92	-0.09	0.02
			Max. My	37	-2732.37	-0.08	0.02
			Max. Vy	38	64.52	-0.09	0.02
			Max. Vx	37	4.53	0.00	0.00
		Horizontal	Max Tension	20	11481.92	0.07	-0.00
			Max. Compression	21	-11387.19	0.05	-0.00
			Max. Mx	29	888.07	0.16	0.00
			Max. My	18	239.72	0.02	-0.02
			Max. Vy	29	-81.46	0.16	0.00
			Max. Vx	18	3.50	0.01	-0.02
		Redund Horz 1 Bracing	Max Tension	18	4405.14	0.00	0.00
			Max. Compression	18	-4405.14	0.00	0.00
			Max. Mx	35	153.25	-0.04	0.00
			Max. My	31	1266.39	0.00	0.00
			Max. Vy	35	31.77	0.00	0.00
			Max. Vx	31	0.73	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	7	518.53	0.00	0.00
			Max. Compression	18	-620.61	0.00	0.00
			Max. Mx	26	-158.16	-0.16	0.00
			Max. My	31	-110.43	0.00	0.00
			Max. Vy	26	65.86	0.00	0.00
			Max. Vx	31	-1.52	0.00	0.00
		Inner Bracing	Max Tension	11	3.94	0.00	0.00
			Max. Compression	6	-10.92	0.00	0.00
			Max. Mx	26	-8.20	-0.10	0.00
			Max. My	18	3.37	0.00	-0.00
			Max. Vy	26	44.38	0.00	0.00
			Max. Vx	18	0.07	0.00	0.00
T8	25 - 0	Leg	Max Tension	7	260496.43	5.55	-0.13
			Max. Compression	18	-298920.51	-0.00	-0.00
			Max. Mx	18	-298772.70	7.92	-0.10
			Max. My	16	-13912.97	-0.55	3.81
			Max. Vy	18	2461.01	7.91	-0.10
			Max. Vx	16	-974.04	-0.55	3.81
		Diagonal	Max Tension	21	20198.35	-0.19	0.01
			Max. Compression	20	-20554.33	0.00	0.00
			Max. Mx	6	14537.17	-0.27	0.02
			Max. My	18	-19260.81	0.14	-0.03
			Max. Vy	29	80.05	-0.13	-0.03
			Max. Vx	38	6.01	0.00	0.00
		Horizontal	Max Tension	21	11987.15	0.09	-0.00
			Max. Compression	21	-12496.53	0.09	-0.00
			Max. Mx	29	-1036.83	0.24	0.00
			Max. My	18	703.48	-0.00	-0.05
			Max. Vy	29	-105.22	0.24	0.00
			Max. Vx	18	5.78	-0.02	-0.05
		Redund Horz 1 Bracing	Max Tension	18	5181.59	0.00	0.00
			Max. Compression	18	-5181.59	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	38	1348.63	-0.04	0.00
			Max. My	31	1481.42	0.00	0.00
			Max. Vy	38	32.28	0.00	0.00
			Max. Vx	31	-0.75	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	18	4201.35	0.00	0.00
			Max. Compression	18	-4201.35	0.00	0.00
			Max. Mx	31	1163.14	-0.06	0.00
			Max. My	31	344.88	0.00	-0.00
			Max. Vy	31	30.67	0.00	0.00
			Max. Vx	31	-1.18	0.00	0.00
		Inner Bracing	Max Tension	19	6.08	0.00	0.00
			Max. Compression	22	-16.64	0.00	0.00
			Max. Mx	26	-10.50	-0.12	0.00
			Max. My	18	4.85	0.00	-0.00
			Max. Vy	26	48.53	0.00	0.00
			Max. Vx	18	0.04	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	327058.33	30047.75	-16700.42
	Max. H_x	18	327058.33	30047.75	-16700.42
	Max. H_z	5	-249250.74	-22205.58	15742.73
	Min. Vert	7	-285953.30	-27103.32	14983.41
	Min. H_x	7	-285953.30	-27103.32	14983.41
	Min. H_z	18	327058.33	30047.75	-16700.42
Leg B	Max. Vert	10	326796.95	-29793.42	-17065.67
	Max. H_x	23	-284952.93	26834.76	15353.89
	Max. H_z	25	-248142.84	21770.38	16403.30
	Min. Vert	23	-284952.93	26834.76	15353.89
	Min. H_x	10	326796.95	-29793.42	-17065.67
	Min. H_z	12	275622.11	-23223.86	-17080.58
Leg A	Max. Vert	2	326329.50	442.22	34326.92
	Max. H_x	21	10856.09	5732.59	761.16
	Max. H_z	2	326329.50	442.22	34326.92
	Min. Vert	15	-285472.56	-454.09	-30920.59
	Min. H_x	9	11645.43	-5727.96	810.96
	Min. H_z	15	-285472.56	-454.09	-30920.59

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	38095.36	-0.00	-0.00	3.56	-3.70	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45714.37	39.75	-59853.91	-5657.67	-11.66	16.35
0.9 Dead+1.0 Wind 0 deg - No Ice	34285.77	39.74	-59855.17	-5653.58	-10.54	16.35
1.2 Dead+1.0 Wind 30 deg - No	45714.38	28670.57	-49573.94	-4733.39	-2746.96	21.34

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Ice						
0.9 Dead+1.0 Wind 30 deg - No Ice	34285.78	28671.23	-49575.01	-4730.12	-2743.33	21.33
1.2 Dead+1.0 Wind 60 deg - No Ice	45714.38	48858.77	-28205.57	-2702.56	-4690.93	20.62
0.9 Dead+1.0 Wind 60 deg - No Ice	34285.79	48859.88	-28206.22	-2701.15	-4685.51	20.62
1.2 Dead+1.0 Wind 90 deg - No Ice	45714.38	57272.10	-39.79	-2.88	-5476.88	14.35
0.9 Dead+1.0 Wind 90 deg - No Ice	34285.78	57273.37	-39.84	-3.94	-5470.75	14.35
1.2 Dead+1.0 Wind 120 deg - No Ice	45714.37	51860.11	29892.58	2829.06	-4909.38	4.23
0.9 Dead+1.0 Wind 120 deg - No Ice	34285.77	51861.20	29893.21	2825.41	-4903.79	4.22
1.2 Dead+1.0 Wind 150 deg - No Ice	45714.38	28601.56	49534.32	4734.82	-2734.41	-7.01
0.9 Dead+1.0 Wind 150 deg - No Ice	34285.78	28602.16	49535.43	4729.41	-2730.80	-7.01
1.2 Dead+1.0 Wind 180 deg - No Ice	45714.38	-39.73	56342.36	5405.64	2.71	-16.36
0.9 Dead+1.0 Wind 180 deg - No Ice	34285.79	-39.73	56343.65	5399.60	3.81	-16.36
1.2 Dead+1.0 Wind 210 deg - No Ice	45714.38	-28670.36	49574.04	4742.04	2737.92	-21.34
0.9 Dead+1.0 Wind 210 deg - No Ice	34285.78	-28670.96	49575.15	4736.62	2736.52	-21.34
1.2 Dead+1.0 Wind 240 deg - No Ice	45714.37	-51899.83	29961.38	2841.54	4907.66	-20.63
0.9 Dead+1.0 Wind 240 deg - No Ice	34285.77	-51900.93	29962.01	2837.88	4904.29	-20.62
1.2 Dead+1.0 Wind 270 deg - No Ice	45714.38	-57272.12	39.64	11.50	5468.00	-14.36
0.9 Dead+1.0 Wind 270 deg - No Ice	34285.78	-57273.38	39.60	10.41	5464.09	-14.35
1.2 Dead+1.0 Wind 300 deg - No Ice	45714.38	-48819.05	-28136.78	-2690.15	4674.85	-4.23
0.9 Dead+1.0 Wind 300 deg - No Ice	34285.79	-48820.16	-28137.41	-2688.75	4671.66	-4.23
1.2 Dead+1.0 Wind 330 deg - No Ice	45714.38	-28601.74	-49534.21	-4726.23	2725.58	7.01
0.9 Dead+1.0 Wind 330 deg - No Ice	34285.78	-28602.41	-49535.28	-4722.97	2724.19	7.01
1.2 Dead+1.0 Ice+1.0 Temp	109485.13	-0.02	0.01	-11.85	-25.38	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	109485.12	4.40	-10061.94	-1000.20	-26.37	3.56
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	109485.12	4917.14	-8507.69	-852.80	-511.78	-0.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	109485.12	8442.84	-4874.36	-494.91	-861.74	-3.60
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	109485.12	9826.61	-4.41	-12.79	-996.60	-6.21
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	109485.12	8716.28	5027.17	481.42	-881.52	-7.16
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	109485.12	4909.42	8503.32	828.03	-510.38	-6.19
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	109485.12	-4.52	9741.13	952.49	-24.74	-3.56
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	109485.12	-4917.25	8507.77	828.85	460.67	0.03
1.2 Dead+1.0 Wind 240	109485.12	-8720.86	5034.89	482.84	831.22	3.60

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	109485.12	-9826.73	4.49	-11.16	945.49	6.21
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	109485.12	-8438.50	-4866.65	-493.51	809.83	7.16
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	109485.12	-4909.54	-8503.24	-851.99	459.26	6.19
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	38095.36	9.15	-13790.54	-1300.16	-5.36	3.77
Dead+Wind 30 deg - Service	38095.36	6605.77	-11422.00	-1087.36	-635.17	4.92
Dead+Wind 60 deg - Service	38095.36	11257.19	-6498.65	-619.71	-1082.80	4.75
Dead+Wind 90 deg - Service	38095.36	13195.67	-9.16	1.91	-1263.81	3.30
Dead+Wind 120 deg - Service	38095.36	11948.74	6887.34	654.00	-1133.13	0.98
Dead+Wind 150 deg - Service	38095.36	6589.90	11412.85	1092.84	-632.32	-1.61
Dead+Wind 180 deg - Service	38095.36	-9.15	12981.44	1247.27	-2.05	-3.77
Dead+Wind 210 deg - Service	38095.36	-6605.76	11422.00	1094.48	627.79	-4.92
Dead+Wind 240 deg - Service	38095.36	-11957.90	6903.19	656.88	1127.37	-4.75
Dead+Wind 270 deg - Service	38095.36	-13195.67	9.14	5.23	1256.41	-3.31
Dead+Wind 300 deg - Service	38095.36	-11248.04	-6482.79	-616.85	1073.74	-0.98
Dead+Wind 330 deg - Service	38095.36	-6589.92	-11412.85	-1085.70	624.92	1.61

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-38095.36	0.00	0.00	38095.36	0.00	0.000%
2	39.73	-45714.43	-59859.05	-39.75	45714.37	59853.91	0.007%
3	39.73	-34285.83	-59859.05	-39.74	34285.77	59855.17	0.006%
4	28672.91	-45714.43	-49578.22	-28670.57	45714.38	49573.94	0.007%
5	28672.91	-34285.83	-49578.22	-28671.23	34285.78	49575.01	0.005%
6	48862.84	-45714.43	-28207.94	-48858.77	45714.38	28205.57	0.006%
7	48862.84	-34285.83	-28207.94	-48859.88	34285.79	28206.22	0.005%
8	57277.01	-45714.43	-39.73	-57272.10	45714.38	39.79	0.007%
9	57277.01	-34285.83	-39.73	-57273.37	34285.78	39.84	0.005%
10	51864.58	-45714.43	29895.12	-51860.11	45714.37	-29892.58	0.007%
11	51864.58	-34285.83	29895.12	-51861.20	34285.77	-29893.21	0.006%
12	28604.09	-45714.43	49538.49	-28601.56	45714.38	-49534.32	0.007%
13	28604.09	-34285.83	49538.49	-28602.16	34285.78	-49535.43	0.005%
14	-39.73	-45714.43	56347.07	39.73	45714.38	-56342.36	0.006%
15	-39.73	-34285.83	56347.07	39.73	34285.79	-56343.65	0.005%
16	-28672.91	-45714.43	49578.22	28670.36	45714.38	-49574.04	0.007%
17	-28672.91	-34285.83	49578.22	28670.96	34285.78	-49575.15	0.005%
18	-51904.31	-45714.43	29963.93	51899.83	45714.37	-29961.38	0.007%
19	-51904.31	-34285.83	29963.93	51900.93	34285.77	-29962.01	0.006%
20	-57277.01	-45714.43	39.73	57272.12	45714.38	-39.64	0.007%
21	-57277.01	-34285.83	39.73	57273.38	34285.78	-39.60	0.005%
22	-48823.11	-45714.43	-28139.12	48819.05	45714.38	28136.78	0.006%
23	-48823.11	-34285.83	-28139.12	48820.16	34285.79	28137.41	0.005%
24	-28604.09	-45714.43	-49538.49	28601.74	45714.38	49534.21	0.007%
25	-28604.09	-34285.83	-49538.49	28602.41	34285.78	49535.28	0.005%
26	0.00	-109485.13	-0.00	0.02	109485.13	-0.01	0.000%
27	4.46	-109485.13	-10064.44	-4.40	109485.12	10061.94	0.002%
28	4918.41	-109485.13	-8509.83	-4917.14	109485.12	8507.69	0.002%
29	8444.99	-109485.13	-4875.61	-8442.84	109485.12	4874.36	0.002%
30	9829.09	-109485.13	-4.46	-9826.61	109485.12	4.41	0.002%
31	8718.47	-109485.13	5028.36	-8716.28	109485.12	-5027.17	0.002%
32	4910.69	-109485.13	8505.37	-4909.42	109485.12	-8503.32	0.002%
33	-4.46	-109485.13	9743.50	4.52	109485.12	-9741.13	0.002%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
34	-4918.41	-109485.13	8509.83	4917.25	109485.12	-8507.77	0.002%
35	-8722.93	-109485.13	5036.08	8720.86	109485.12	-5034.89	0.002%
36	-9829.09	-109485.13	4.46	9826.73	109485.12	-4.49	0.002%
37	-8440.53	-109485.13	-4867.89	8438.50	109485.12	4866.65	0.002%
38	-4910.69	-109485.13	-8505.37	4909.54	109485.12	8503.24	0.002%
39	9.15	-38095.36	-13791.53	-9.15	38095.36	13790.54	0.002%
40	6606.24	-38095.36	-11422.82	-6605.77	38095.36	11422.00	0.002%
41	11258.00	-38095.36	-6499.11	-11257.19	38095.36	6498.65	0.002%
42	13196.62	-38095.36	-9.15	-13195.67	38095.36	9.16	0.002%
43	11949.60	-38095.36	6887.83	-11948.74	38095.36	-6887.34	0.002%
44	6590.38	-38095.36	11413.67	-6589.90	38095.36	-11412.85	0.002%
45	-9.15	-38095.36	12982.36	9.15	38095.36	-12981.44	0.002%
46	-6606.24	-38095.36	11422.82	6605.76	38095.36	-11422.00	0.002%
47	-11958.75	-38095.36	6903.69	11957.90	38095.36	-6903.19	0.002%
48	-13196.62	-38095.36	9.15	13195.67	38095.36	-9.14	0.002%
49	-11248.84	-38095.36	-6483.25	11248.04	38095.36	6482.79	0.002%
50	-6590.38	-38095.36	-11413.67	6589.92	38095.36	11412.85	0.002%

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	0.00033360
3	Yes	4	0.00000001	0.00025270
4	Yes	4	0.00000001	0.00031500
5	Yes	4	0.00000001	0.00023443
6	Yes	4	0.00000001	0.00029833
7	Yes	4	0.00000001	0.00021774
8	Yes	4	0.00000001	0.00031714
9	Yes	4	0.00000001	0.00023649
10	Yes	4	0.00000001	0.00033317
11	Yes	4	0.00000001	0.00025231
12	Yes	4	0.00000001	0.00031497
13	Yes	4	0.00000001	0.00023440
14	Yes	4	0.00000001	0.00029838
15	Yes	4	0.00000001	0.00021774
16	Yes	4	0.00000001	0.00031734
17	Yes	4	0.00000001	0.00023663
18	Yes	4	0.00000001	0.00033360
19	Yes	4	0.00000001	0.00025266
20	Yes	4	0.00000001	0.00031543
21	Yes	4	0.00000001	0.00023477
22	Yes	4	0.00000001	0.00029853
23	Yes	4	0.00000001	0.00021786
24	Yes	4	0.00000001	0.00031758
25	Yes	4	0.00000001	0.00023688
26	Yes	4	0.00000001	0.00000755
27	Yes	4	0.00000001	0.00062455
28	Yes	4	0.00000001	0.00062026
29	Yes	4	0.00000001	0.00061701
30	Yes	4	0.00000001	0.00061905
31	Yes	4	0.00000001	0.00062222
32	Yes	4	0.00000001	0.00061126
33	Yes	4	0.00000001	0.00060343
34	Yes	4	0.00000001	0.00060493

35	Yes	4	0.00000001	0.00061118
36	Yes	4	0.00000001	0.00060569
37	Yes	4	0.00000001	0.00060553
38	Yes	4	0.00000001	0.00061420
39	Yes	4	0.00000001	0.00026072
40	Yes	4	0.00000001	0.00025646
41	Yes	4	0.00000001	0.00025278
42	Yes	4	0.00000001	0.00025670
43	Yes	4	0.00000001	0.00026052
44	Yes	4	0.00000001	0.00025637
45	Yes	4	0.00000001	0.00025309
46	Yes	4	0.00000001	0.00025739
47	Yes	4	0.00000001	0.00026106
48	Yes	4	0.00000001	0.00025686
49	Yes	4	0.00000001	0.00025325
50	Yes	4	0.00000001	0.00025708

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 175	4.208	47	0.1827	0.0513
T2	175 - 150	4.015	47	0.1824	0.0483
T3	150 - 125	3.046	47	0.1745	0.0236
T4	125 - 100	2.150	47	0.1500	0.0089
T5	100 - 75	1.397	43	0.1278	0.0074
T6	75 - 50	0.782	43	0.0977	0.0054
T7	50 - 25	0.339	43	0.0655	0.0035
T8	25 - 0	0.078	47	0.0285	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	Lightning Rod 5/8x4'	47	4.208	0.1827	0.0513	158757
191.00	PD1142-30	47	4.208	0.1827	0.0513	158757
184.00	2" Dia 8' Omni	47	4.208	0.1827	0.0513	158757
182.00	3" Dia 20' Omni	47	4.208	0.1827	0.0513	158757
180.00	10'6"x4" Pipe Mount	47	4.208	0.1827	0.0513	158757
176.00	PA6-65	47	4.054	0.1825	0.0490	158757
172.75	SC479-HF1LDF (Inverted)	47	3.928	0.1822	0.0467	158576
170.00	DB292-A	47	3.821	0.1820	0.0443	216770
169.00	(2) DB980F90E-M w/Mount Pipe	47	3.782	0.1818	0.0434	257944
165.50	SC479-HF1LDF (Inverted)	47	3.646	0.1812	0.0398	769544
162.00	7770.00 panel antenna	47	3.509	0.1803	0.0360	395879
158.00	PD1142-1	47	3.353	0.1789	0.0315	184723
155.00	DB586-Y	47	3.237	0.1775	0.0280	131941
153.00	DB222	47	3.160	0.1764	0.0261	111037
152.50	DB586-Y	47	3.141	0.1761	0.0257	106942
150.00	DB586-Y	47	3.046	0.1745	0.0236	91534
149.00	DB586-Y	47	3.008	0.1737	0.0228	87267
148.00	SitePro1 VFA12-RRU Mount Assembly	47	2.970	0.1730	0.0220	83733
146.50	DB586-Y	47	2.914	0.1717	0.0208	79359

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144.00	DB586-Y	47	2.820	0.1695	0.0189	73410
142.00	BXA-185085-12CF Panel Antennas w/ Pipe Mount	47	2.746	0.1676	0.0174	69284
129.00	ANT220F2 Antenna	47	2.285	0.1540	0.0103	50756
126.00	Site Pro USF-4U w/ (2) Stiff-Arm Supports	47	2.183	0.1510	0.0092	48386
114.00	ANT220F2 Antenna	43	1.801	0.1403	0.0093	52106
111.00	Site Pro USF-4U w/ (2) Stiff-Arm Supports	43	1.711	0.1378	0.0090	53738
52.00	GPS	43	0.368	0.0684	0.0037	44380
40.50	DB803M-Y	43	0.217	0.0514	0.0028	38950
37.00	DB803M-Y	43	0.178	0.0461	0.0025	37130
33.50	DB803M-Y	43	0.144	0.0408	0.0022	35472
31.00	DB803M-Y	43	0.122	0.0370	0.0020	34376
29.50	DB803M-Y	43	0.109	0.0349	0.0019	33752
29.00	2' Side Arm Mount	43	0.105	0.0341	0.0019	33559
27.50	DB803M-Y	43	0.094	0.0320	0.0017	33134
24.00	DB803M-Y	47	0.072	0.0272	0.0015	34117
16.00	3' Yagi	47	0.035	0.0173	0.0009	50004

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 175	18.259	18	0.7883	0.1604
T2	175 - 150	17.427	18	0.7877	0.1486
T3	150 - 125	13.230	18	0.7560	0.0654
T4	125 - 100	9.344	18	0.6515	0.0384
T5	100 - 75	6.066	18	0.5553	0.0320
T6	75 - 50	3.396	18	0.4244	0.0234
T7	50 - 25	1.473	18	0.2845	0.0154
T8	25 - 0	0.337	18	0.1238	0.0067

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	Lightning Rod 5/8x4'	18	18.259	0.7883	0.1604	38768
191.00	PD1142-30	18	18.259	0.7883	0.1604	38768
184.00	2" Dia 8' Omni	18	18.259	0.7883	0.1604	38768
182.00	3" Dia 20' Omni	18	18.259	0.7883	0.1604	38768
180.00	10'6"x4" Pipe Mount	18	18.259	0.7883	0.1604	38768
176.00	PA6-65	18	17.594	0.7879	0.1512	38768
172.75	SC479-HF1LDF (Inverted)	18	17.051	0.7872	0.1422	39104
170.00	DB292-A	18	16.588	0.7863	0.1333	54995
169.00	(2) DB980F90E-M w/Mount Pipe	18	16.420	0.7858	0.1299	66707
165.50	SC479-HF1LDF (Inverted)	18	15.829	0.7836	0.1171	261941
162.00	7770.00 panel antenna	18	15.237	0.7802	0.1038	110596
158.00	PD1142-1	18	14.563	0.7745	0.0884	45885
155.00	DB586-Y	18	14.061	0.7688	0.0774	31890

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
153.00	DB222	18	13.727	0.7642	0.0717	26554
152.50	DB586-Y	18	13.644	0.7629	0.0706	25523
150.00	DB586-Y	18	13.230	0.7560	0.0654	21680
149.00	DB586-Y	18	13.066	0.7529	0.0635	20627
148.00	SitePro1 VFA12-RRU Mount Assembly	18	12.902	0.7496	0.0616	19760
146.50	DB586-Y	18	12.657	0.7444	0.0589	18691
144.00	DB586-Y	18	12.253	0.7350	0.0548	17245
142.00	BXA-185085-12CF Panel Antennas w/ Pipe Mount	18	11.932	0.7269	0.0518	16246
129.00	ANT220F2 Antenna	18	9.928	0.6688	0.0406	11806
126.00	Site Pro USF-4U w/ (2) Stiff-Arm Supports	18	9.489	0.6557	0.0388	11241
114.00	ANT220F2 Antenna	18	7.826	0.6096	0.0371	12053
111.00	Site Pro USF-4U w/ (2) Stiff-Arm Supports	18	7.433	0.5987	0.0362	12415
52.00	GPS	18	1.599	0.2967	0.0161	10219
40.50	DB803M-Y	18	0.940	0.2231	0.0121	8974
37.00	DB803M-Y	18	0.773	0.1999	0.0109	8555
33.50	DB803M-Y	18	0.624	0.1768	0.0096	8173
31.00	DB803M-Y	18	0.528	0.1607	0.0087	7921
29.50	DB803M-Y	18	0.475	0.1512	0.0082	7777
29.00	2' Side Arm Mount	18	0.458	0.1481	0.0080	7733
27.50	DB803M-Y	18	0.410	0.1388	0.0075	7635
24.00	DB803M-Y	18	0.311	0.1180	0.0064	7862
16.00	3' Yagi	19	0.152	0.0750	0.0041	11523

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.7500	1	1902.22	17943.80	0.106 ✔	1	Member Block Shear
T2	175	Leg	A325X	0.7500	6	903.68	30101.40	0.030 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	8886.30	17943.80	0.495 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	2982.87	7187.70	0.415 ✔	1	Member Block Shear
T3	150	Leg	A325X	0.7500	6	4968.53	30101.40	0.165 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	13793.70	25230.00	0.547 ✔	1	Member Bearing
		Horizontal	A325X	0.6250	2	5189.58	10263.30	0.506 ✔	1	Member Block Shear
T4	125	Leg	A325X	0.7500	6	10185.50	30101.40	0.338 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	11105.30	17943.80	0.619 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	3428.87	7187.70	0.477 ✔	1	Member Block Shear
T5	100	Leg	A325X	1.0000	6	17077.70	54517.00	0.313 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	12492.70	17943.80	0.696 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	4183.90	10263.30	0.408 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T6	75	Leg	A325X	1.0000	6	24470.90	54517.00	0.449 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	13712.00	23925.00	0.573 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	4912.46	10263.30	0.479 ✔	1	Member Block Shear
T7	50	Leg	A325X	1.0000	6	32112.90	54517.00	0.589 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	15099.80	25230.00	0.598 ✔	1	Member Bearing
		Horizontal	A325X	0.6250	2	5740.96	10263.30	0.559 ✔	1	Member Block Shear
T8	25	Leg	A325X	1.0000	8	29554.40	54517.00	0.542 ✔	1	Bolt Tension
		Diagonal	A325X	1.0000	1	20198.30	33878.90	0.596 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	5993.58	11622.70	0.516 ✔	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $P_u / \phi P_n$
T1	180 - 175	HSS5x0.25	5.01	5.01	35.6 K=1.00	3.4894	-2484.31	143130.00	0.017 [1] ✔
T2	175 - 150	HSS5x0.25	25.03	8.34	59.3 K=1.00	3.4894	-23751.00	121395.00	0.196 [1] ✔
T3	150 - 125	HSS5x0.25	25.03	8.34	59.3 K=1.00	3.4894	-63143.20	121395.00	0.520 [1] ✔
T4	125 - 100	HSS5x.4	25.03	8.34	61.3 K=1.00	5.7805	-100788.00	224425.00	0.449 [1] ✔
T5	100 - 75	HSS5x.4	25.03	8.34	61.3 K=1.00	5.7805	-149250.00	224425.00	0.665 [1] ✔
T6	75 - 50	HSS5x0.5	25.03	8.34	62.1 K=1.00	6.6249	-200637.00	255022.00	0.787 [1] ✔
T7	50 - 25	HSS5x0.5	25.03	4.17	31.1 K=1.00	6.6249	-254128.00	328719.00	0.773 [1] ✔
T8	25 - 0	HSS6.875x0.5	25.03	6.26	33.0 K=1.00	9.3640	-298921.00	459464.00	0.651 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	2L2 1/2x2x3/16	8.44	7.65	116.3 K=1.00	1.6200	-1856.59	33537.00	0.055 [1] ✔
T2	175 - 150	2L2 1/2x2x3/16	12.02	11.18	169.8 K=1.00	1.6200	-8852.67	16089.50	0.550 [1] ✔
T3	150 - 125	2L3x2 1/2x1/4	13.54	12.74	161.8 K=1.00	2.6300	-13781.20	28771.80	0.479 [1] ✔
T4	125 - 100	2L2 1/2x2x3/16	10.57	9.96	151.3 K=1.00	1.6200	-11242.80	20254.10	0.555 [1] ✔
T5	100 - 75	2L2 1/2x2x3/16	11.21	10.63	161.5 K=1.00	1.6200	-12706.40	17781.70	0.715 [1] ✔
T6	75 - 50	2L2 1/2x2 1/2x1/4	11.91	11.34	177.0 K=1.00	2.3800	-14017.30	21744.20	0.645 [1] ✔
T7	50 - 25	2L3x2 1/2x1/4	12.64	12.09	145.1 K=1.00	2.6300	-15557.20	35760.10	0.435 [1] ✔
T8	25 - 0	2L3x3x5/16	16.33	15.55	148.1 K=1.00	3.5500	-20210.00	46335.30	0.436 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 150	L2 1/2x2 1/2x3/16	8.33	7.52	158.3 K=0.87	0.9020	-6008.89	10298.80	0.583 [1] ✔
T3	150 - 125	L3x3x1/4	10.33	9.52	164.9 K=0.85	1.4400	-10481.90	15159.30	0.691 [1] ✔
T4	125 - 100	L2 1/2x2 1/2x3/16	12.33	5.76	135.0 K=0.97	0.9020	-6887.63	14163.40	0.486 [1] ✔
T5	100 - 75	L3x2 1/2x1/4	14.33	6.76	145.7 K=0.95	1.3100	-8442.23	17667.70	0.478 [1] ✔
T6	75 - 50	L3x3x1/4	16.33	7.76	148.5 K=0.94	1.4400	-9906.99	18698.20	0.530 [1] ✔
T7	50 - 25	L3x3x1/4	18.33	8.76	163.9 K=0.92	1.4400	-11387.20	15340.30	0.742 [1] ✔
T8	25 - 0	L4x4x1/4	20.00	9.52	138.0 K=0.96	1.9400	-12496.50	29136.80	0.429 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L2 1/2x2x3/16	6.60	6.18	153.1	0.8090	-926.72	9882.63	0.094 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	125 - 100	L2 1/2x2 1/2x1/4	11.00	5.29	K=0.88 127.1 K=0.98	1.1900	-11068.00	21068.20	0.525 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	50 - 25	L3x3x1/4	4.58	4.38	104.3 K=1.18	1.4400	-4405.14	34093.10	0.129 [1] ✔
T8	25 - 0	L3x3x1/4	5.00	4.71	107.8 K=1.13	1.4400	-5181.59	32906.80	0.157 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	25 - 0	L3x3x1/4	7.85	7.38	149.6 K=1.00	1.4400	-4068.32	18426.40	0.221 [1] ✔

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	50 - 25	L3x3x1/4	9.50	9.50	192.6 K=1.00	1.4400	-620.61	11114.60	0.056 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	100 - 75	L2 1/2x2x3/16	7.17	7.17	201.4 K=1.00	0.8090	-7.80	5708.28	0.001 [1] ✔
T6	75 - 50	L2 1/2x2x3/16	8.17	8.17	229.5 K=1.00	0.8090	-10.16	4395.92	0.002 [1] ✔
T7	50 - 25	L2 1/2x2x3/16	9.17	9.17	257.6 K=1.00	0.8090	-10.48	3489.13	0.003 [1] ✔
T8	25 - 0	KL/R > 250 (C) - 183 L2 1/2x2 1/2x3/16	10.00	10.00	242.4 K=1.00	0.9020	-16.29	4392.91	0.004 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	HSS5x0.25	5.01	5.01	35.6	3.4894	1326.57	157023.00	0.008 [1] ✔
T2	175 - 150	HSS5x0.25	25.03	8.34	59.3	3.4894	19945.60	157023.00	0.127 [1] ✔
T3	150 - 125	HSS5x0.25	25.03	8.34	59.3	3.4894	54686.30	157023.00	0.348 [1] ✔
T4	125 - 100	HSS5x.4	25.03	8.34	61.3	5.7805	88233.60	312149.00	0.283 [1] ✔
T5	100 - 75	HSS5x.4	25.03	8.34	61.3	5.7805	131811.00	312149.00	0.422 [1] ✔
T6	75 - 50	HSS5x0.5	25.03	8.34	62.1	6.6249	177279.00	357745.00	0.496 [1] ✔
T7	50 - 25	HSS5x0.5	25.03	4.17	31.1	6.6249	223708.00	357745.00	0.625 [1] ✔
T8	25 - 0	HSS6.875x0.5	25.03	6.26	33.0	9.3640	260496.00	505655.00	0.515 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	2L2 1/2x2x3/16	8.44	7.65	120.4	0.9689	1902.22	42147.40	0.045 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 150	2L2 1/2x2x3/16	12.02	11.18	173.9	0.9689	8886.30	42147.40	0.211 [1] ✔
T3	150 - 125	2L3x2 1/2x1/4	13.54	12.74	165.2	1.6444	13793.70	71530.30	0.193 [1] ✔
T4	125 - 100	2L2 1/2x2x3/16	10.57	9.96	155.4	0.9689	11105.30	42147.40	0.263 [1] ✔
T5	100 - 75	2L2 1/2x2x3/16	11.21	10.63	165.6	0.9689	12492.70	42147.40	0.296 [1] ✔
T6	75 - 50	2L2 1/2x2 1/2x1/4	11.91	11.34	181.2	1.4569	13712.00	63374.10	0.216 [1] ✔
T7	50 - 25	2L3x2 1/2x1/4	12.64	12.09	148.3	1.6444	15099.80	71530.30	0.211 [1] ✔
T8	25 - 0	2L3x3x5/16	16.01	15.23	148.2	2.1352	20198.30	92879.30	0.217 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 150	L2 1/2x2 1/2x3/16	8.33	7.52	122.1	0.5710	5965.74	24839.90	0.240 [1] ✔
T3	150 - 125	L3x3x1/4	10.33	9.52	128.0	0.9394	10379.20	40862.80	0.254 [1] ✔
T4	125 - 100	L2 1/2x2 1/2x3/16	12.33	5.76	137.9	0.5710	6857.73	24839.90	0.276 [1] ✔
T5	100 - 75	L3x2 1/2x1/4	14.33	6.76	111.1	0.8419	8367.80	36621.60	0.228 [1] ✔
T6	75 - 50	L3x3x1/4	16.33	7.76	102.7	0.9394	9824.92	40862.80	0.240 [1] ✔
T7	50 - 25	L3x3x1/4	18.33	8.76	115.6	0.9394	11481.90	40862.80	0.281 [1] ✔
T8	25 - 0	L4x4x1/4	20.00	9.52	93.3	1.3144	11987.20	57175.30	0.210 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L2 1/2x2x3/16	6.60	6.18	123.7	0.8090	895.50	26211.60	0.034 [1] ✔
T4	125 - 100	L2 1/2x2 1/2x1/4	11.00	5.29	123.9	1.1900	10950.40	38556.00	0.284 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	50 - 25	L3x3x1/4	4.58	4.38	56.5	1.4400	4405.14	46656.00	0.094 [1]
T8	25 - 0	L3x3x1/4	5.00	4.71	60.8	1.4400	5181.59	46656.00	0.111 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	25 - 0	L3x3x1/4	7.70	7.23	93.3	1.4400	4201.35	46656.00	0.090 [1]

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	50 - 25	L3x3x1/4	9.50	9.50	122.6	1.4400	518.53	46656.00	0.011 [1]

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	100 - 75	L2 1/2x2x3/16	6.50	6.50	130.1	0.8090	4.26	26211.60	0.000 [1] ✔
T6	75 - 50	L2 1/2x2x3/16	7.50	7.50	150.1	0.8090	5.56	26211.60	0.000 [1] ✔
T7	50 - 25	L2 1/2x2x3/16	8.50	8.50	170.1	0.8090	3.94	26211.60	0.000 [1] ✔
T8	25 - 0	L2 1/2x2 1/2x3/16	9.50	9.50	146.5	0.9020	6.08	29224.80	0.000 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 175	Leg	HSS5x0.25	1	-2484.31	143130.00	1.8	Pass
		Leg	HSS5x0.25	2	-1749.47	143130.00	1.3	Pass
		Leg	HSS5x0.25	3	-671.48	143130.00	1.3	Pass
T2	175 - 150	Leg	HSS5x0.25	10	-23266.10	121395.00	19.2	Pass
		Leg	HSS5x0.25	11	-23751.00	121395.00	19.6	Pass
		Leg	HSS5x0.25	12	-21869.90	121395.00	18.0	Pass
T3	150 - 125	Leg	HSS5x0.25	31	-63143.20	121395.00	52.0	Pass
		Leg	HSS5x0.25	32	-63083.50	121395.00	52.0	Pass
		Leg	HSS5x0.25	33	-62590.10	121395.00	51.6	Pass
T4	125 - 100	Leg	HSS5x.4	52	-100788.00	224425.00	44.9	Pass
		Leg	HSS5x.4	53	-100173.00	224425.00	44.6	Pass
		Leg	HSS5x.4	54	-100537.00	224425.00	44.8	Pass
T5	100 - 75	Leg	HSS5x.4	82	-149250.00	224425.00	66.5	Pass
		Leg	HSS5x.4	83	-148699.00	224425.00	66.3	Pass
		Leg	HSS5x.4	84	-148810.00	224425.00	66.3	Pass
T6	75 - 50	Leg	HSS5x0.5	121	-200637.00	255022.00	78.7	Pass
		Leg	HSS5x0.5	122	-200226.00	255022.00	78.5	Pass
		Leg	HSS5x0.5	123	-200047.00	255022.00	78.4	Pass
T7	50 - 25	Leg	HSS5x0.5	160	-254128.00	328719.00	77.3	Pass
		Leg	HSS5x0.5	161	-253839.00	328719.00	77.2	Pass
		Leg	HSS5x0.5	162	-253490.00	328719.00	77.1	Pass
T8	25 - 0	Leg	HSS6.875x0.5	226	-298921.00	459464.00	65.1	Pass
		Leg	HSS6.875x0.5	227	-298696.00	459464.00	65.0	Pass
		Leg	HSS6.875x0.5	228	-298211.00	459464.00	64.9	Pass
T1	180 - 175	Diagonal	2L2 1/2x2x3/16	7	-1856.59	33537.00	5.5 10.6 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	8	-188.25	33537.00	0.6 1.2 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	9	-1839.47	33537.00	5.5 10.0 (b)	Pass
T2	175 - 150	Diagonal	2L2 1/2x2x3/16	16	-8852.67	16089.50	55.0	Pass
		Diagonal	2L2 1/2x2x3/16	17	-6524.83	16089.50	40.6	Pass
		Diagonal	2L2 1/2x2x3/16	18	-8686.78	16089.50	54.0	Pass
		Diagonal	2L2 1/2x2x3/16	22	-8129.54	17537.30	46.4	Pass
		Diagonal	2L2 1/2x2x3/16	23	-4956.49	17537.30	28.3	Pass
		Diagonal	2L2 1/2x2x3/16	24	-8196.86	17537.30	46.7	Pass
		Diagonal	2L2 1/2x2x3/16	28	-5551.38	19114.70	29.0 31.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	29	-1734.13	19114.70	9.1 9.7 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x3/16	30	-5761.89	19114.70	30.1 31.4 (b)	Pass
T3	150 - 125	Diagonal	2L3x2 1/2x1/4	37	-13781.20	28771.80	47.9 54.7 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	38	-12483.70	28771.80	43.4 49.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	39	-13374.00	28771.80	46.5 52.9 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	43	-13045.30	31267.00	41.7 52.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	44	-11416.60	31267.00	36.5 45.4 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	45	-12863.20	31267.00	41.1 51.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	49	-10587.10	34019.90	31.1 42.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	50	-8789.15	34019.90	25.8 34.9 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	51	-10676.00	34019.90	31.4 42.3 (b)	Pass
T4	125 - 100	Diagonal	2L2 1/2x2x3/16	59	-11234.30	20254.10	55.5 61.9 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	60	-11242.80	20254.10	55.5 61.8 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	62	-10722.60	20254.10	52.9 58.9 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	63	-10715.10	20254.10	52.9 59.0 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	65	-10743.40	20254.10	53.0 59.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	66	-10746.30	20254.10	53.1 59.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	68	-10698.20	21099.70	50.7 58.9 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	69	-10702.40	21099.70	50.7 58.9 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	71	-10073.20	21099.70	47.7 55.4 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	72	-10063.30	21099.70	47.7 55.4 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	74	-10264.70	21099.70	48.6 56.4 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	75	-10253.40	21099.70	48.6 56.5 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	76	-10214.30	21967.60	46.5 56.2 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	77	-10209.60	21967.60	46.5 56.2 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	78	-9476.61	21967.60	43.1 52.0 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	79	-9455.85	21967.60	43.0 52.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	80	-9852.77	21967.60	44.9 54.0 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	81	-9826.92	21967.60	44.7 54.2 (b)	Pass
T5	100 - 75	Diagonal	2L2 1/2x2x3/16	86	-12705.40	17781.70	71.5	Pass
		Diagonal	2L2 1/2x2x3/16	87	-12706.40	17781.70	71.5	Pass
		Diagonal	2L2 1/2x2x3/16	89	-12227.30	17781.70	68.8	Pass
		Diagonal	2L2 1/2x2x3/16	90	-12228.40	17781.70	68.8	Pass
		Diagonal	2L2 1/2x2x3/16	92	-11886.00	17781.70	66.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x3/16	93	-11883.60	17781.70	66.8	Pass
		Diagonal	2L2 1/2x2x3/16	98	-12261.60	18541.70	66.1 67.2 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	99	-12264.50	18541.70	66.1 67.2 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	101	-11769.30	18541.70	63.5 64.5 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	102	-11767.80	18541.70	63.5 64.5 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	104	-11533.90	18541.70	62.2 63.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	105	-11532.50	18541.70	62.2 63.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	110	-11781.50	19329.50	61.0 64.6 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	111	-11786.00	19329.50	61.0 64.6 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	113	-11269.20	19329.50	58.3 61.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	114	-11264.50	19329.50	58.3 61.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	116	-11153.20	19329.50	57.7 61.1 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	117	-11152.00	19329.50	57.7 61.1 (b)	Pass
T6	75 - 50	Diagonal	2L2 1/2x2 1/2x1/4	125	-14017.30	21744.20	64.5	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	126	-14013.20	21744.20	64.4	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	128	-13566.50	21744.20	62.4	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	129	-13574.90	21744.20	62.4	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	131	-12949.90	21744.20	59.6	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	132	-12945.20	21744.20	59.5	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	137	-13601.80	22676.70	60.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	138	-13599.80	22676.70	60.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	140	-13144.40	22676.70	58.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	141	-13150.00	22676.70	58.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	143	-12629.80	22676.70	55.7	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	144	-12625.80	22676.70	55.7	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	149	-13236.50	23649.30	56.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	150	-13235.90	23649.30	56.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	152	-12766.10	23649.30	54.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	153	-12769.70	23649.30	54.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	155	-12325.50	23649.30	52.1	Pass
		Diagonal	2L2 1/2x2 1/2x1/4	156	-12322.20	23649.30	52.1	Pass
T7	50 - 25	Diagonal	2L3x2 1/2x1/4	164	-15557.20	35760.10	43.5 59.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	166	-15546.80	35760.10	43.5 59.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	170	-15199.60	35760.10	42.5 58.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	172	-15214.10	35760.10	42.5 58.4 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	176	-14328.60	35760.10	40.1 55.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	178	-14324.20	35760.10	40.1 55.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	185	-15015.90	37277.30	40.3 57.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	187	-15007.40	37277.30	40.3 57.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	191	-14588.30	37277.30	39.1 56.2 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	2L3x2 1/2x1/4	193	-14602.40	37277.30	39.2 56.1 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	197	-13789.40	37277.30	37.0 53.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	199	-13783.40	37277.30	37.0 53.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	206	-14587.30	38866.00	37.5 56.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	208	-14579.50	38866.00	37.5 56.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	212	-14145.30	38866.00	36.4 54.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	214	-14158.10	38866.00	36.4 54.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	218	-13384.00	38866.00	34.4 51.4 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	220	-13378.80	38866.00	34.4 51.4 (b)	Pass
T8	25 - 0	Diagonal	2L3x3x5/16	230	-20210.00	46335.30	43.6 58.8 (b)	Pass
		Diagonal	2L3x3x5/16	233	-20189.80	46335.30	43.6 58.8 (b)	Pass
		Diagonal	2L3x3x5/16	237	-19846.20	46335.30	42.8 57.8 (b)	Pass
		Diagonal	2L3x3x5/16	240	-19869.00	46335.30	42.9 57.8 (b)	Pass
		Diagonal	2L3x3x5/16	244	-18645.00	46335.30	40.2 54.3 (b)	Pass
		Diagonal	2L3x3x5/16	247	-18642.10	46335.30	40.2 54.3 (b)	Pass
		Diagonal	2L3x3x5/16	254	-20554.30	48283.80	42.6 59.6 (b)	Pass
		Diagonal	2L3x3x5/16	257	-20535.80	48283.80	42.5 59.6 (b)	Pass
		Diagonal	2L3x3x5/16	261	-20171.30	48283.80	41.8 58.6 (b)	Pass
		Diagonal	2L3x3x5/16	264	-20190.30	48283.80	41.8 58.5 (b)	Pass
		Diagonal	2L3x3x5/16	268	-19036.90	48283.80	39.4 55.2 (b)	Pass
		Diagonal	2L3x3x5/16	271	-19036.10	48283.80	39.4 55.2 (b)	Pass
T2	175 - 150	Horizontal	L2 1/2x2 1/2x3/16	13	-2986.97	13468.50	22.2	Pass
		Horizontal	L2 1/2x2 1/2x3/16	14	-900.05	13468.50	6.7	Pass
		Horizontal	L2 1/2x2 1/2x3/16	15	-2483.33	13468.50	18.4	Pass
		Horizontal	L2 1/2x2 1/2x3/16	19	-6008.89	10298.80	58.3	Pass
		Horizontal	L2 1/2x2 1/2x3/16	20	-4076.18	10298.80	39.6	Pass
		Horizontal	L2 1/2x2 1/2x3/16	21	-5915.01	10298.80	57.4	Pass
		Horizontal	L2 1/2x2 1/2x3/16	25	-5085.30	11724.60	43.4	Pass
		Horizontal	L2 1/2x2 1/2x3/16	26	-2455.62	11724.60	20.9	Pass
		Horizontal	L2 1/2x2 1/2x3/16	27	-4651.65	11724.60	39.7	Pass
T3	150 - 125	Horizontal	L3x3x1/4	34	-7208.63	18748.70	38.4	Pass
		Horizontal	L3x3x1/4	35	-5691.06	18748.70	30.4	Pass
		Horizontal	L3x3x1/4	36	-7134.91	18748.70	38.1	Pass
		Horizontal	L3x3x1/4	40	-10481.90	15159.30	69.1	Pass
		Horizontal	L3x3x1/4	41	-9333.10	15159.30	61.6	Pass
		Horizontal	L3x3x1/4	42	-10207.40	15159.30	67.3	Pass
		Horizontal	L3x3x1/4	46	-9018.71	16811.20	53.6	Pass
		Horizontal	L3x3x1/4	47	-7702.15	16811.20	45.8	Pass
		Horizontal	L3x3x1/4	48	-8929.72	16811.20	53.1	Pass
T4	125 - 100	Horizontal	L2 1/2x2 1/2x3/16	58	-6887.63	14163.40	48.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Horizontal	L2 1/2x2 1/2x3/16	61	-6577.72	14163.40	46.4	Pass
		Horizontal	L2 1/2x2 1/2x3/16	64	-6584.81	14163.40	46.5	Pass
		Horizontal	L2 1/2x2 1/2x3/16	67	-6357.98	15549.40	40.9	Pass
							44.1 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	70	-5977.12	15549.40	38.4	Pass
							41.5 (b)	
		Horizontal	L2 1/2x2 1/2x3/16	73	-6093.86	15549.40	39.2	Pass
							42.3 (b)	
T5	100 - 75	Horizontal	L3x2 1/2x1/4	85	-8442.23	17667.70	47.8	Pass
		Horizontal	L3x2 1/2x1/4	88	-8123.27	17667.70	46.0	Pass
		Horizontal	L3x2 1/2x1/4	91	-7895.56	17667.70	44.7	Pass
		Horizontal	L3x2 1/2x1/4	97	-7932.93	19155.80	41.4	Pass
		Horizontal	L3x2 1/2x1/4	100	-7611.76	19155.80	39.7	Pass
		Horizontal	L3x2 1/2x1/4	103	-7460.11	19155.80	38.9	Pass
		Horizontal	L3x2 1/2x1/4	109	-7428.79	20840.10	35.6	Pass
							35.8 (b)	
		Horizontal	L3x2 1/2x1/4	112	-7098.44	20840.10	34.1	Pass
							34.3 (b)	
		Horizontal	L3x2 1/2x1/4	115	-7027.20	20840.10	33.7	Pass
							33.9 (b)	
T6	75 - 50	Horizontal	L3x3x1/4	124	-9906.99	18698.20	53.0	Pass
		Horizontal	L3x3x1/4	127	-9591.39	18698.20	51.3	Pass
		Horizontal	L3x3x1/4	130	-9148.73	18698.20	48.9	Pass
		Horizontal	L3x3x1/4	136	-9417.88	20065.80	46.9	Pass
		Horizontal	L3x3x1/4	139	-9101.87	20065.80	45.4	Pass
		Horizontal	L3x3x1/4	142	-8740.26	20065.80	43.6	Pass
		Horizontal	L3x3x1/4	148	-8996.07	21589.10	41.7	Pass
							43.2 (b)	
		Horizontal	L3x3x1/4	151	-8674.80	21589.10	40.2	Pass
							41.7 (b)	
		Horizontal	L3x3x1/4	154	-8371.58	21589.10	38.8	Pass
							40.2 (b)	
T7	50 - 25	Horizontal	L3x3x1/4	163	-11387.20	15340.30	74.2	Pass
		Horizontal	L3x3x1/4	169	-11129.30	15340.30	72.5	Pass
		Horizontal	L3x3x1/4	175	-10468.40	15340.30	68.2	Pass
		Horizontal	L3x3x1/4	184	-10804.80	16351.40	66.1	Pass
		Horizontal	L3x3x1/4	190	-10499.70	16351.40	64.2	Pass
		Horizontal	L3x3x1/4	196	-9902.56	16351.40	60.6	Pass
		Horizontal	L3x3x1/4	205	-10409.20	17465.80	59.6	Pass
		Horizontal	L3x3x1/4	211	-10097.30	17465.80	57.8	Pass
		Horizontal	L3x3x1/4	217	-9538.99	17465.80	54.6	Pass
T8	25 - 0	Horizontal	L4x4x1/4	229	-12496.50	29136.80	42.9	Pass
							51.6 (b)	
		Horizontal	L4x4x1/4	236	-12269.10	29136.80	42.1	Pass
							50.6 (b)	
		Horizontal	L4x4x1/4	243	-11470.20	29136.80	39.4	Pass
							47.1 (b)	
		Horizontal	L4x4x1/4	253	-12251.40	31725.00	38.6	Pass
							51.6 (b)	
		Horizontal	L4x4x1/4	260	-12016.40	31725.00	37.9	Pass
							50.6 (b)	
		Horizontal	L4x4x1/4	267	-11272.40	31725.00	35.5	Pass
							47.4 (b)	
T1	180 - 175	Top Girt	L2 1/2x2x3/16	4	-926.72	9882.63	9.4	Pass
		Top Girt	L2 1/2x2x3/16	5	-325.95	9882.63	3.3	Pass
		Top Girt	L2 1/2x2x3/16	6	-665.81	9882.63	6.7	Pass
T4	125 - 100	Top Girt	L2 1/2x2 1/2x1/4	55	-11068.00	21068.20	52.5	Pass
		Top Girt	L2 1/2x2 1/2x1/4	56	-10132.00	21068.20	48.1	Pass
		Top Girt	L2 1/2x2 1/2x1/4	57	-10683.00	21068.20	50.7	Pass
T7	50 - 25	Redund Horz 1 Bracing	L3x3x1/4	165	-4405.14	34093.10	12.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Redund Horz 1 Bracing	L3x3x1/4	167	-4400.13	34093.10	12.9	Pass
		Redund Horz 1 Bracing	L3x3x1/4	171	-4400.13	34093.10	12.9	Pass
		Redund Horz 1 Bracing	L3x3x1/4	173	-4394.08	34093.10	12.9	Pass
		Redund Horz 1 Bracing	L3x3x1/4	177	-4394.08	34093.10	12.9	Pass
		Redund Horz 1 Bracing	L3x3x1/4	179	-4405.14	34093.10	12.9	Pass
		Redund Horz 1 Bracing	L3x3x1/4	186	-4405.14	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	188	-4400.13	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	192	-4400.13	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	194	-4394.08	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	198	-4394.08	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	200	-4405.14	34663.10	12.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	207	-4405.14	35223.80	12.5	Pass
		Redund Horz 1 Bracing	L3x3x1/4	209	-4400.13	35223.80	12.5	Pass
		Redund Horz 1 Bracing	L3x3x1/4	213	-4400.13	35223.80	12.5	Pass
		Redund Horz 1 Bracing	L3x3x1/4	215	-4394.08	35223.80	12.5	Pass
		Redund Horz 1 Bracing	L3x3x1/4	219	-4394.08	35223.80	12.5	Pass
		Redund Horz 1 Bracing	L3x3x1/4	221	-4405.14	35223.80	12.5	Pass
T8	25 - 0	Redund Horz 1 Bracing	L3x3x1/4	231	-5181.59	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	234	-5177.71	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	238	-5177.71	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	241	-5169.29	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	245	-5169.29	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	248	-5181.59	32906.80	15.7	Pass
		Redund Horz 1 Bracing	L3x3x1/4	255	-5181.59	33786.60	15.3	Pass
		Redund Horz 1 Bracing	L3x3x1/4	258	-5177.71	33786.60	15.3	Pass
		Redund Horz 1 Bracing	L3x3x1/4	262	-5177.71	33786.60	15.3	Pass
		Redund Horz 1 Bracing	L3x3x1/4	265	-5169.29	33786.60	15.3	Pass
		Redund Horz 1 Bracing	L3x3x1/4	269	-5169.29	33786.60	15.3	Pass
		Redund Horz 1 Bracing	L3x3x1/4	272	-5181.59	33786.60	15.3	Pass
T8	25 - 0	Redund Diag 1 Bracing	L3x3x1/4	232	-4068.32	18426.40	22.1	Pass
		Redund Diag 1	L3x3x1/4	235	-4065.27	18426.40	22.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing						
		Redund Diag 1 Bracing	L3x3x1/4	239	-4065.27	18426.40	22.1	Pass
		Redund Diag 1 Bracing	L3x3x1/4	242	-4058.66	18426.40	22.0	Pass
		Redund Diag 1 Bracing	L3x3x1/4	246	-4058.66	18426.40	22.0	Pass
		Redund Diag 1 Bracing	L3x3x1/4	249	-4068.32	18426.40	22.1	Pass
		Redund Diag 1 Bracing	L3x3x1/4	256	-4201.35	19192.00	21.9	Pass
		Redund Diag 1 Bracing	L3x3x1/4	259	-4198.20	19192.00	21.9	Pass
		Redund Diag 1 Bracing	L3x3x1/4	263	-4198.20	19192.00	21.9	Pass
		Redund Diag 1 Bracing	L3x3x1/4	266	-4191.38	19192.00	21.8	Pass
		Redund Diag 1 Bracing	L3x3x1/4	270	-4191.38	19192.00	21.8	Pass
		Redund Diag 1 Bracing	L3x3x1/4	273	-4201.35	19192.00	21.9	Pass
T7	50 - 25	Redund Sub Horz Bracing	L3x3x1/4	168	-618.34	11114.60	5.6	Pass
		Redund Sub Horz Bracing	L3x3x1/4	174	-620.61	11114.60	5.6	Pass
		Redund Sub Horz Bracing	L3x3x1/4	180	-618.27	11114.60	5.6	Pass
		Redund Sub Horz Bracing	L3x3x1/4	189	-235.54	11937.60	2.0	Pass
		Redund Sub Horz Bracing	L3x3x1/4	195	-236.83	11937.60	2.0	Pass
		Redund Sub Horz Bracing	L3x3x1/4	201	-235.31	11937.60	2.0	Pass
		Redund Sub Horz Bracing	L3x3x1/4	210	-238.99	12855.60	1.9	Pass
		Redund Sub Horz Bracing	L3x3x1/4	216	-239.97	12855.60	1.9	Pass
		Redund Sub Horz Bracing	L3x3x1/4	222	-239.75	12855.60	1.9	Pass
T5	100 - 75	Inner Bracing	L2 1/2x2x3/16	94	-7.78	5708.28	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	95	-7.77	5708.28	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	96	-7.80	5708.28	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	106	-7.93	6278.77	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	107	-7.92	6278.77	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	108	-7.95	6278.77	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	118	-8.06	6939.25	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	119	-8.06	6939.25	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	120	-8.08	6939.25	0.4	Pass
T6	75 - 50	Inner Bracing	L2 1/2x2x3/16	133	-10.14	4395.92	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	134	-10.14	4395.92	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	135	-10.16	4395.92	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	145	-10.36	4778.00	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	146	-10.36	4778.00	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	147	-10.39	4778.00	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	157	-10.67	5212.15	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	158	-10.67	5212.15	0.4	Pass
		Inner Bracing	L2 1/2x2x3/16	159	-10.69	5212.15	0.4	Pass
T7	50 - 25	Inner Bracing	L2 1/2x2x3/16	181	-10.45	3489.13	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	182	-10.46	3489.13	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	183	-10.48	3489.13	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	202	-10.54	3757.42	0.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Inner Bracing	L2 1/2x2x3/16	203	-10.55	3757.42	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	204	-10.57	3757.42	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	223	-10.89	4057.90	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	224	-10.90	4057.90	0.5	Pass
		Inner Bracing	L2 1/2x2x3/16	225	-10.92	4057.90	0.5	Pass
T8	25 - 0	Inner Bracing	L2 1/2x2 1/2x3/16	250	-16.26	4392.91	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	251	-16.27	4392.91	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	252	-16.29	4392.91	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	274	-16.64	4867.49	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	275	-16.56	4867.49	0.5	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	276	-16.57	4867.49	0.5	Pass
							Summary	
						Leg (T6)	78.7	Pass
						Diagonal (T5)	71.5	Pass
						Horizontal (T7)	74.2	Pass
						Top Girt (T4)	52.5	Pass
						Redund Horz 1 Bracing (T8)	15.7	Pass
						Redund Diag 1 Bracing (T8)	22.1	Pass
						Redund Sub Horz Bracing (T7)	5.6	Pass
						Inner Bracing (T8)	0.5	Pass
						Bolt Checks	69.6	Pass
						RATING =	**78.7**	**Pass**

ANCHOR BOLT ANALYSIS

JOB TITLE Anchor Rod Analysis - Litchfield CSP-07

JOB NO. SAI-105 R1 CALCULATION NO. _____ ORIGINATOR K.Barker DATE 06/18/2021

SHEET _____ OF _____ REVIEWER _____ DATE _____

TNX Output / Max Leg Reactions

Max Compression	$Compression := 327.1kip$	
Concurrent Shear	$Shear_c := 34.4kip$	
Max Uplift	$Uplift := 286.0kip$	
Concurrent Shear	$Shear_u := 31.0kip$	

Anchor Rod Data

Diameter of Anchor Rod	$D := 1.5in$	
Number of Anchor Rods	$N := 6$	
Length from Top of Conc to Bottom of Anchor Rod Leveling Nut	$l_{ar} := 1.25in$	[assumed, does not effect capacity if less than anchor rod diameter]
Threads per Inch	$n := 6$	
Anchor Rod Ultimate Strength	$F_u := 58ksi$	[A36]
Anchor Rod Yield Strength	$F_y := 36ksi$	[A36]
Modulus of Elasticity of Steel	$E := 29000ksi$	
Include Grout	$Grout := "Yes"$	[per TIA-222-H, Addendum 1, Section 15.7, Item 7, "Section 4.9.9 Cementitious grout need not be ignored for determining anchor rod forces" for existing structures designed under previous version of TIA]

Anchor Rod Section Properties

Gross Area of Rod	$A_g := \frac{\pi}{4}\cdot D^2 = 1.767\cdot in^2$
Net Area of Rod	$A_n := \frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2 = 1.405\cdot in^2$
Net Diameter of Rod	$D_n := D - \frac{0.9743in}{n} = 1.338\cdot in$
Radius of Gyration of Rod	$r := \frac{D_n}{4} = 0.334\cdot in$
Plastic Section Modulus of Rod	$Z := \frac{D_n^3}{6} = 0.399\cdot in^3$

Anchor Rod Capacities

Design Tensile Strength [4.9.6.1]

Nominal Tensile Strength $R_{nt} := F_u \cdot A_n = 81.504 \cdot kip$

Resistance Factor - Tension $\phi_t := 0.75$

Design Tensile Strength $\phi R_{nt} := \phi_t \cdot R_{nt} = 61.128 \cdot kip$

Design Compression Yield Strength [4.9.9]

Nominal Compression Yield Strength $R_{nc} := F_y \cdot A_n = 50.589 \cdot kip$

Resistance Factor - Compression $\phi_c := 1.0$

Design Compression Yield Strength $\phi R_{nc} := \phi_c \cdot R_{nc} = 50.589 \cdot kip$

Design Buckling Strength [4.5.4.2]

Column Effective Length Factor [4.9.9] $k := 1.2$

Elastic Critical Buckling Stress $F_e := \frac{\pi^2 \cdot E}{\left(\frac{k \cdot l_{ar}}{r}\right)^2} = 14225.21 \cdot ksi$

Critical Compressive Stress $F_{cr} := 0.658^{\frac{F_y}{F_e}} \cdot F_y = 35.962 \cdot ksi$

Nominal Buckling Strength $R_{nb} := F_{cr} \cdot A_n = 50.535 \cdot kip$

Design Buckling Strength $\phi R_{nb} := \phi_c \cdot R_{nb} = 50.535 \cdot kip$

Design Shear Rupture Strength [4.9.9]

Nominal Shear Rupture Strength $R_{nv} := 0.5 \cdot F_u \cdot A_g = 51.247 \cdot kip$

Resistance Factor - Shear $\phi_v := 0.75$

Design Shear Rupture Strength $\phi R_{nv} := \phi_v \cdot R_{nv} = 38.435 \cdot kip$

Design Shear Yield Strength [4.9.9]

Nominal Shear Yield Strength $R_{nvc} := 0.6 \cdot F_y \cdot \frac{A_n}{2} = 15.177 \cdot kip$

Design Shear Yield Strength $\phi R_{nvc} := \phi_c \cdot R_{nvc} = 15.177 \cdot kip$

Design Flexural Strength [4.9.9]

Nominal Flexural Strength $M_n := F_y \cdot Z = 1.197 \cdot ft \cdot kip$

Resistance Factor - Flexure $\phi_f := 0.90$

Design Flexural Strength $\phi M_n := \phi_f \cdot M_n = 12.924 \cdot in \cdot kip$

Anchor Rod Demands

Uplift

Tension Demand $P_{ut} := \frac{Uplift}{N} = 47.667 \cdot kip$

Shear Demand $V_{ut} := \frac{Shear_u}{N} = 5.167 \cdot kip$

Flexure Demand [4.9.9] $M_{ut} := 0.65 \cdot l_{ar} \cdot V_{ut} = 4.198 \cdot in \cdot kip$

Compression

Compression Demand $P_{uc} := if\left(Grout = "Yes", 0kip, \frac{Compression}{N}\right) = 0 \cdot kip$

Shear Demand $V_{uc} := \frac{Shear_c}{N} = 5.733 \cdot kip$

Flexure Demand [4.9.9] $M_{uc} := 0.65 \cdot l_{ar} \cdot V_{uc} = 4.658 \cdot in \cdot kip$

Anchor Rod Interaction Equations

$$Inter_t := \begin{cases} \left(\frac{P_{ut}}{\phi R_{nt}}\right)^2 + \left(\frac{V_{ut}}{\phi R_{nv}}\right)^2 & \text{if } l_{ar} \le D \\ \left(\frac{P_{ut}}{\phi R_{nt}} + \frac{M_{ut}}{\phi M_n}\right)^2 + \left(\frac{V_{ut}}{\phi R_{nv}}\right)^2 & \text{if } l_{ar} \ge 4 \cdot D \\ \left(\frac{P_{ut}}{\phi R_{nt}} + \frac{M_{ut}}{\phi M_n}\right)^2 + \left(\frac{V_{ut}}{\phi R_{nv}}\right)^2 & \text{otherwise} \end{cases} = 0.626$$

$$Inter_c := \begin{cases} \left(\frac{P_{uc}}{\phi R_{nc}}\right) + \left(\frac{V_{uc}}{\phi R_{nvc}}\right)^2 & \text{if } l_{ar} \le D \\ \left(\frac{P_{uc}}{\phi R_{nb}} + \frac{M_{uc}}{\phi M_n}\right) + \left(\frac{V_{uc}}{\phi R_{nvc}}\right)^2 & \text{if } l_{ar} \ge 4 \cdot D \\ \left(\frac{P_{uc}}{\phi R_{nc}} + \frac{M_{uc}}{\phi M_n}\right) + \left(\frac{V_{uc}}{\phi R_{nvc}}\right)^2 & \text{otherwise} \end{cases} = 0.143$$

FOUNDATION ANALYSIS

JOB TITLE Foundation Analysis - TIA-H - Litchfield CSP-07

JOB NO. SAI-105 R1 CALCULATION NO. _____ ORIGINATOR K.Barker DATE 06/18/2021

SHEET _____ OF _____ REVIEWER _____ DATE _____

Legend

Input Design Check

TNX Output / Max Leg Reactions

Leg Compression $P_{comp} := 327.1kip$

Leg Uplift $P_{uplift} := 286.0kip$

Caisson Data

Dia of Caisson $d_{caisson} := 3.5ft$

Extension above Grade $E := 1ft$

Length of Caisson $L_{caisson} := 23ft$

Soil Data

Unit Weight Soil $\pi := 120pcf$

Ultimate Gross Bearing Capacity - Tip of Caisson $Q_{ult} := 48ksf$

[Welti Geotech Report Dated 2/22/1994, Allowable bearing 12 Tons/SF at 20' or deeper]

Friction Angle $\phi := 30deg$

Neglected Depth $N := 4ft$

Depth to Groundwater $gw := 17ft$

[Welti Geotech Report Dated 1/11/1994, Groundwater at 17' to 30' below grade]

Coefficient of Lateral Soil Pressure $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)} = 3$

Ultimate Skin Friction - Caisson to Soil $fl := 6000psf$

[Welti Geotech Report Dated 2/22/1994, Allowable skin friction 3 kip/sf]

Material Properties

Concrete Density $\gamma_c := 150pcf$

Water Density $\gamma_w := 62.4pcf$

Load Factors/Resistance Factors

Min Dead Load Factor $\pi_{DL.min} := 0.9$

Max Dead Load Factor $\pi_{DL.max} := 1.2$

Resistance Factor for Pullout on Rock/Soil $\phi_s := 0.75$

Resistance Factor for Bearing on Rock/Soil $\phi_{s.brg} := 0.5$

JOB TITLE Foundation Analysis - TIA-H - Litchfield CSP-07

JOB NO. SAI-105 R1 CALCULATION NO. _____ ORIGINATOR K.Barker DATE 06/18/2021

SHEET _____ OF _____ REVIEWER _____ DATE _____

Vertical Demand to Soil

Length of Caisson Below Groundwater $L_{c.below} := \max\left(L_{caisson} - E - gw, 0\right) = 5\,ft$

Length of Caisson Above Groundwater $L_{c.above} := L_{caisson} - L_{c.below} = 18\,ft$

Total Weight of Concrete $Wt_{conc} := \delta \cdot \frac{d_{caisson}^{2}}{4} \cdot \left[L_{c.above} \cdot \gamma_c + L_{c.below} \cdot \left(\gamma_c - \gamma_w\right)\right] = 30.2 \cdot kip$

Wt Conc Max Load Factor $Wt_{conc.1.2} := Wt_{conc} \cdot \pi_{DL.max} = 36.229 \cdot kip$

Wt Conc Min Load Factor $Wt_{conc.0.9} := Wt_{conc} \cdot \pi_{DL.min} = 27.172 \cdot kip$

Uplift to Soil $Up_{soil} := P_{uplift} - Wt_{conc.0.9} = 258.828 \cdot kip$

Compression to Soil $Comp_{soil} := P_{comp} + Wt_{conc.1.2} = 363.329 \cdot kip$

Uplift Capacity

Nominal Soil Resistance - Skin Friction $R_{s.up.sf} := \delta \cdot d_{caisson} \cdot \left(L_{caisson} - E - N\right) \cdot fl = 1187.5 \cdot kip$

Design Soil Resistance - Skin Friction $\phi R_{s.up.sf} := \phi_s \cdot R_{s.up.sf} = 890.6 \cdot kip$

Nom. Soil Resist - Cone Failure $R_{s.up.cone} := \left[\left(L_{caisson} - E - N\right) \cdot \tan(30deg) + d_{caisson}\right]^2 \cdot \delta \cdot \frac{L_{caisson} - E - N}{3} \cdot \pi$

Design Soil Resist - Cone Failure $\phi R_{s.up.cone} := \phi_s \cdot R_{s.up.cone} = 327.4 \cdot kip$

Design Soil Resistance $\phi R_{s.up} := \min\left(\phi R_{s.up.sf}, \phi R_{s.up.cone}\right) = 327.4 \cdot kip$

Check $Check_{up} := if\left(\phi R_{s.up} > Up_{soil}, "OK", "NG"\right) = "OK"$

$\frac{Up_{soil}}{\phi R_{s.up}} = 79.1 \cdot \%$

Compression Capacity

Nominal Caisson End Bearing Resistance $R_{s.comp.brg} := \frac{\delta \cdot d_{caisson}^{2}}{4} \cdot Q_{ult} = 461.814 \cdot kip$

Design Caisson End Bearing Resistance $\phi R_{s.comp.brg} := \phi_{s.brg} \cdot R_{s.comp.brg} = 230.907 \cdot kip$

Design Caisson Compressive Resistance $\phi R_{s.comp} := \phi R_{s.up.sf} + \phi R_{s.comp.brg} = 1121.5 \cdot kip$

Note: Skin friction similar to uplift capacity calc.

Check $Check_{comp} := if\left(\phi R_{s.comp} > Comp_{soil}, "OK", "NG"\right) = "OK"$

$\frac{Comp_{soil}}{\phi R_{s.comp}} = 32.4 \cdot \%$

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

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500 Enterprise Drive, Suite 3B
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860-529-8882
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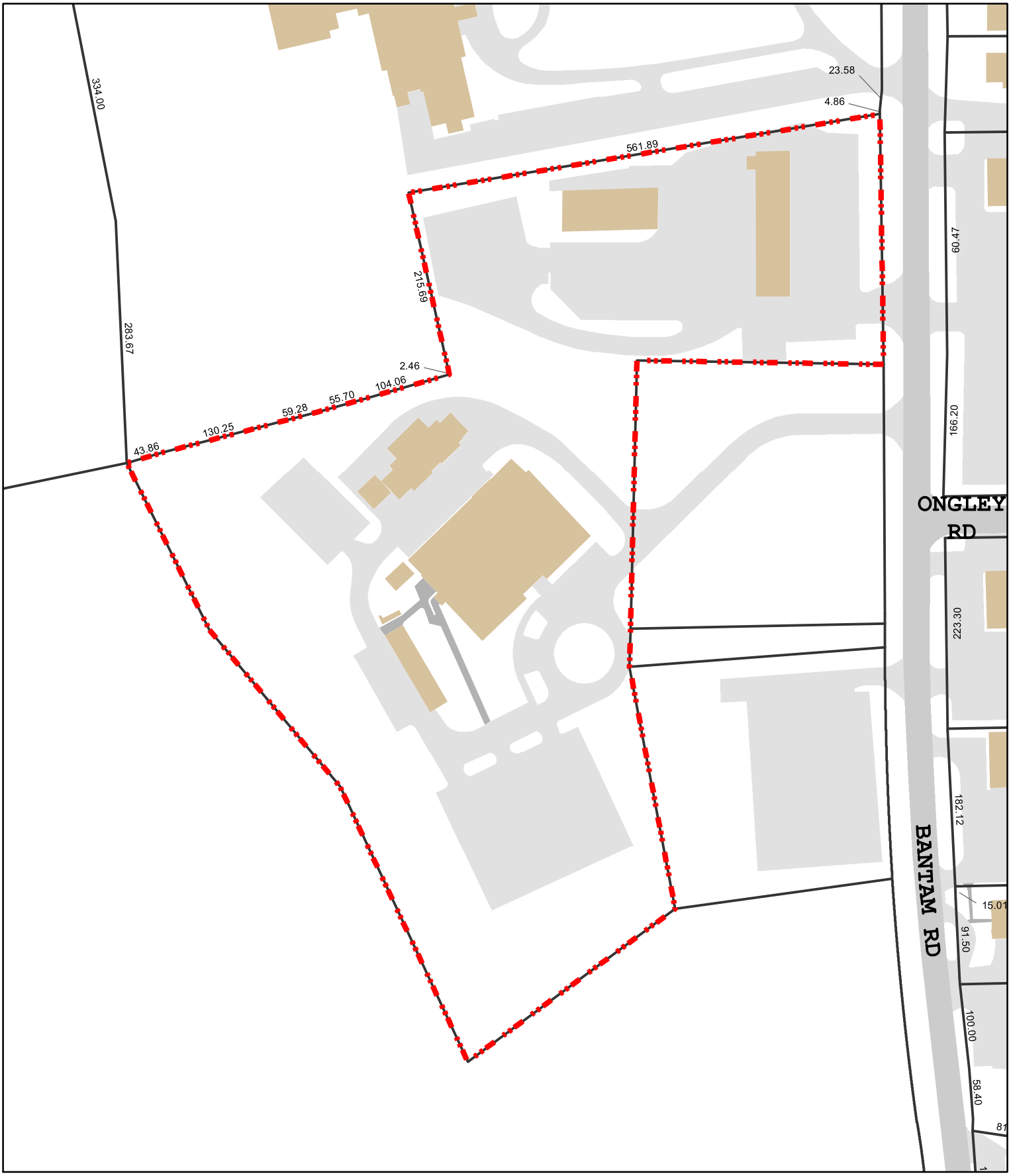
Town of Litchfield, CT: Parcel Map

MBL: 085-067-032 LOCATION: 438 BANTAM RD



Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Litchfield and its mapping contractors assume
no legal responsibility for the information contained herein.

1 inch = 200 feet

0 100 200 300 400 Feet

Map Produced
May 2021

Town of Litchfield, CT

Property Listing Report

Map Block Lot	085-067-032	Building #	1	Section #	1	Account	030050

Property Information

Property Location	438 BANTAM RD
Owner	CONNECTICUT STATE OF
Co-Owner	na
Mailing Address	2800 BERLIN TURNPIKE NEWINGTON CT 06111-4113
Land Use	920 Exempt Comm
Land Class	E
Zoning Code	9
Census Tract	3

Street Index	200
Acreage	10.92
Utilities	UNKNOWN
Lot Setting/Desc	UNKNOWN UNKNOWN
Additional Info	

Photo

Sketch

Primary Construction Details

Year Built	1949
Stories	1
Building Style	Comm Garage
Building Use	Comm/Ind
Building Condition	G
Interior Floors 1	Concrete
Interior Floors 2	NA
Total Rooms	0
Basement Garages	0
Occupancy	1.00
Building Grade	

Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Bath Style	NA
Kitchen Style	NA
Roof Style	Flat
Roof Cover	Tar & Gravel
AC Type	Partial
Fireplaces	0

Exterior Walls	Brick
Exterior Walls 2	NA
Interior Walls	Minimum
Interior Walls 2	NA
Heating Type	Forced Hot Air
Heating Fuel	Oil
Sq. Ft. Basement	
Fin BSMT Quality	
Extra Kitchens	

Report Created On 7/23/2021

An application of The Department of Public Safety, Division of State Police for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of telecommunications facilities located in the Towns of North Canaan, Norfolk, Litchfield, and Sharon, Connecticut.	:	Docket 118 Connecticut Siting Council February 5, 1990

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council finds that the effects associated with the construction, operation, and maintenance of telecommunications towers at the proposed North Canaan, Norfolk, and Litchfield, Connecticut, sites including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS), be issued to Department of Public Safety, Division of State Police, for the construction, operation, and maintenance of telecommunications towers, associated equipment, and buildings at the proposed sites of Troop "B" in North Canaan, Riggs Hill in Norfolk, and Troop "L" in Litchfield, Connecticut.

The facilities shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The self-supporting lattice towers shall be no taller than neccessary to provide the proposed communications and in no event shall the North Canaan, Troop "B", tower exceed 127 feet, the Norfolk, Riggs Hill, tower exceed 193 feet, and the Litchfield, Troop "L", tower exceed 187 feet with antennas and all appurtenances.

2. All facilities shall be constructed in accordance with the State of Connecticut Basic Building Code.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for these sites in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall include detailed plans for site preparation, site access, and erosion and sedimentation controls. For the Norfolk, Riggs Hill site the D&M plan shall also include consideration of alternate construction methods and/or an alternate route for access to the site.

4. The Certificate Holder shall comply with any future radio frequency (RF) standard, promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.

5. The Certificate Holder or its successor shall provide the Council a recalculated report of power density if and when circumstances in operation cause a change in power density above the levels originally calculated in the application.

6. The Certificate Holder or its successor shall permit public or private entities to share space on the proposed towers for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. If any facility does not initially provide, or permanently ceases to provide telecommunications service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years after the completion of any appeal from this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below. A notice of issuance shall be published in the Register Citizen, the Waterbury Republican and American, and the Litchfield County Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with section 16-50j-17 of the Regulations of State Agencies.

The parties or intervenors to this proceeding are:

Department of Public Safety (Party)
Division of State Police

Captain Ronald P. Milkulka (Its Representatives)
Commanding Officer
Connecticut State Police
Police Support Services
294 Colony Street
Building No. 5
Meriden, Connecticut 06450

L.D. McCallum and Robert F. Vachelli
Assistant Attorneys General
MacKenzie Hall
110 Sherman Street
Hartford, Connecticut 06105

Town of Sharon (Party)
Conservation Commission
Sharon, Connecticut 06069

Phyllis Fillow, Chairman (Its Representative)
Cicily Hajek, Vice Chairman
Conservation Commission
Town of Sharon
Sharon, Connecticut 06069

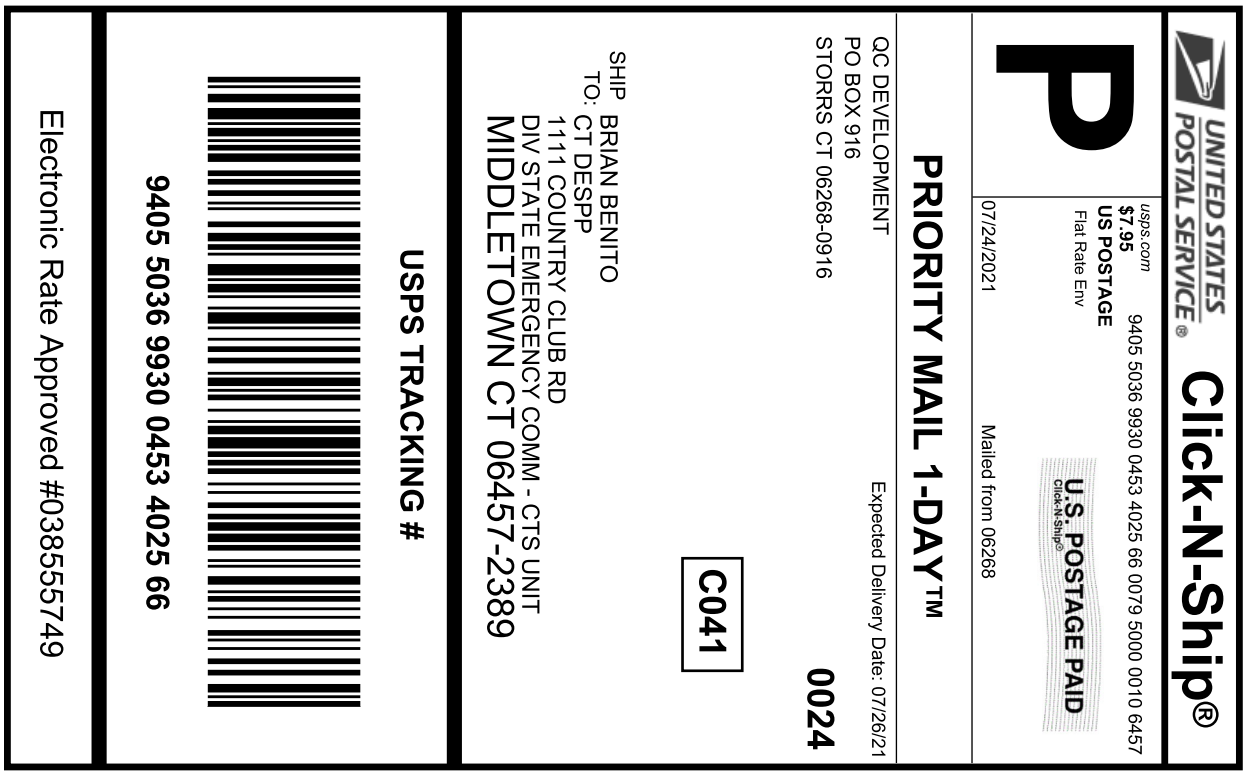
3830E-13-15

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 118 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 5th day of February 1990.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	YES
Commissioner Peter Boucher Designee: Robert A. Pulito	YES
Commissioner Leslie Carothers Designee: Brian Emerick	YES
Harry E. Covey	ABSTAIN
Mortimer A. Gelston	YES
Daniel P. Lynch, Jr.	YES
Paulann H. Sheets	ABSENT
William H. Smith	YES
Colin C. Tait	ABSTAIN



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2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

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9405 5036 9930 0453 4025 66

Trans. #:	539104008
Print Date:	07/23/2021
Ship Date:	07/24/2021
Expected Delivery Date:	07/26/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

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DIV STATE EMERGENCY COMM - CTS UNIT
MIDDLETOWN CT 06457-2389

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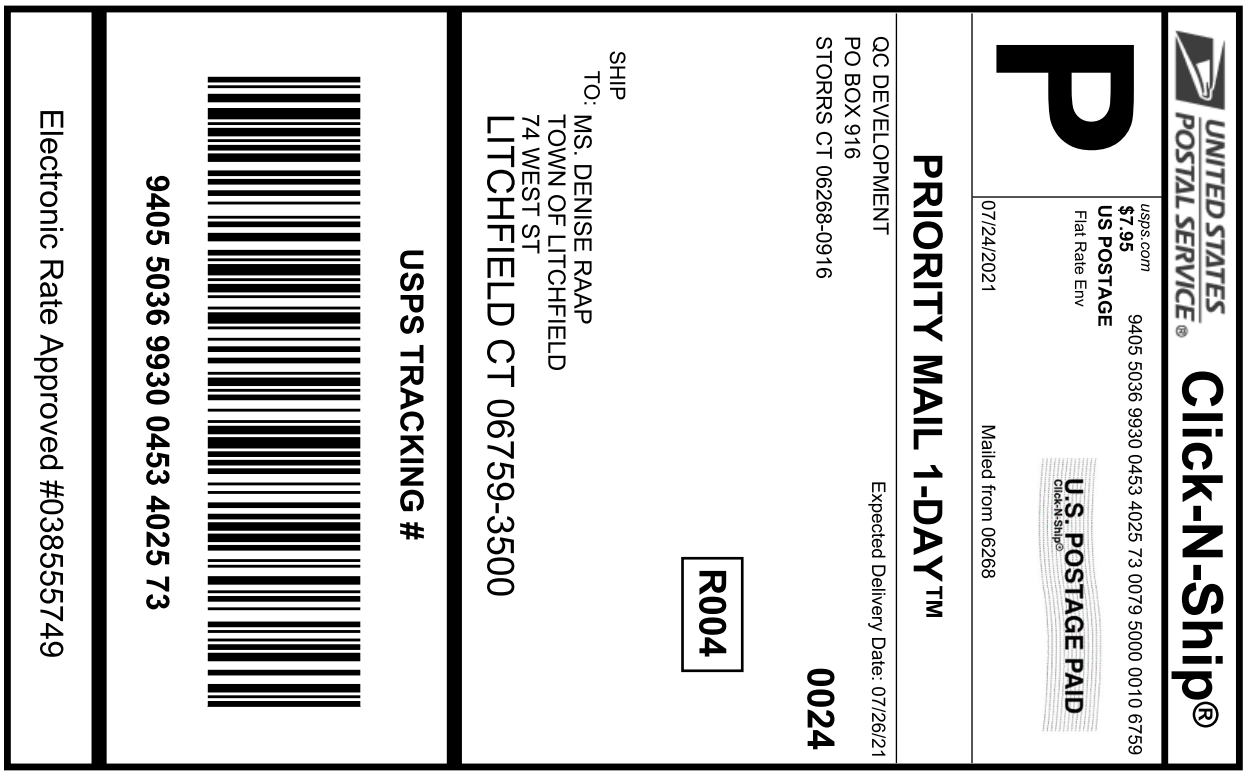

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0453 4025 73

Trans. #:	539104008
Print Date:	07/23/2021
Ship Date:	07/24/2021
Expected Delivery Date:	07/26/2021

Priority Mail® Postage:	**$7.95**
Total:	**$7.95**

From: QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: MS. DENISE RAAP
TOWN OF LITCHFIELD
74 WEST ST
LITCHFIELD CT 06759-3500

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

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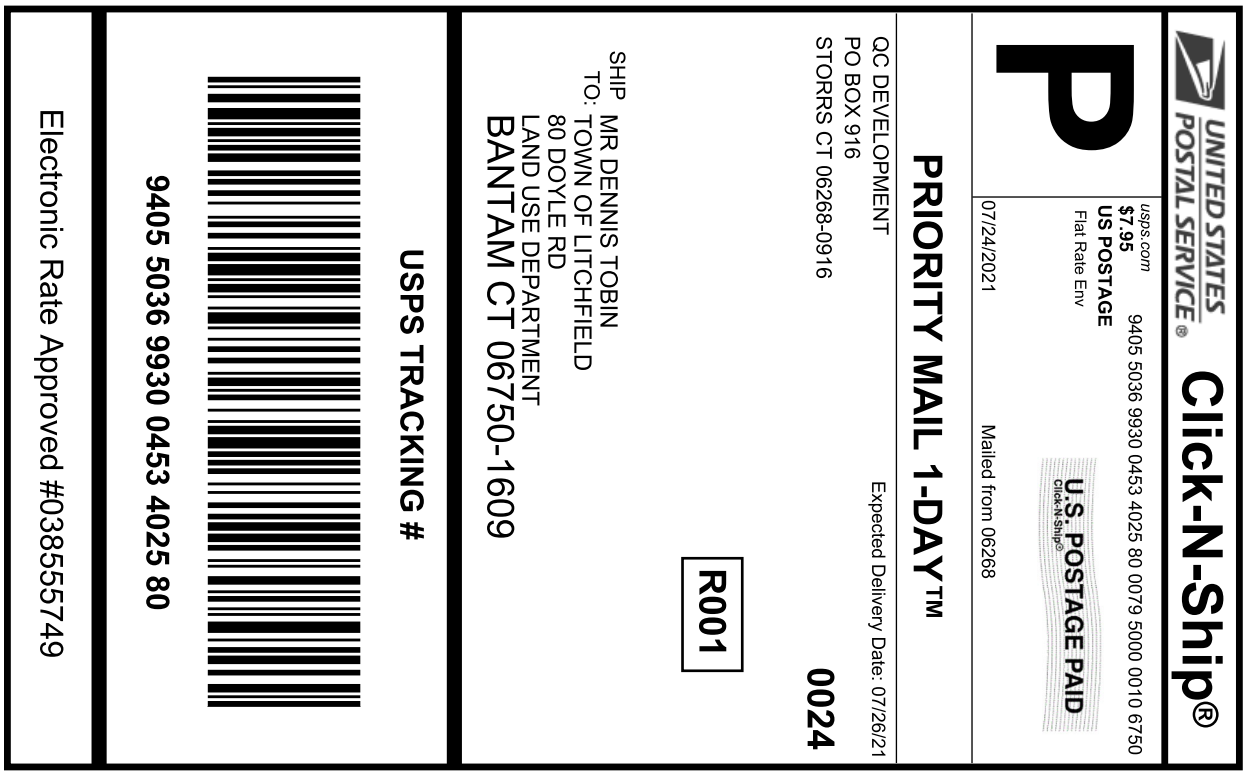

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Total:	**$7.95**

From: QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: MR DENNIS TOBIN
TOWN OF LITCHFIELD
80 DOYLE RD
LAND USE DEPARTMENT
BANTAM CT 06750-1609

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