



56 Prospect Street,
P.O. Box 270
Hartford, CT 06103

Deborah Denfeld
Team Lead – Transmission Siting
Tel: (860) 728-4654

October 17, 2023

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

RE: **Notice of Exempt Modification – Microwave Dish Replacements
Eversource Site # 9226
26 Chapin Road, New Milford, CT 06776
Latitude: 41-36-18.75 N / Longitude: 73-22-1.33 W**

Dear Ms. Bachman:

The Connecticut Light and Power Company doing business as Eversource Energy (“Eversource”) currently maintains multiple antennas and microwave dishes at various mounting heights on an existing 247-foot self-supporting lattice tower located at 26 Chapin Road in New Milford (“Site”). See [Attachment A](#), Parcel Map and Property Card. The tower and property are owned by Eversource. The proposed installation is part of Eversource’s continued investment in upgrading its communications infrastructure. The current microwave dishes are nearing the end of their useful lives. The replacement microwave dishes proposed at this Site will provide improved communications to the existing radio network and cellular systems utilized by Eversource for day-to-day operations.

Eversource plans to remove and replace two 8-foot diameter, single-polarity Standard Microwave dishes with two 8-foot diameter, dual-polarity, High Performance Microwave dishes.

The replacement microwave dishes are proposed to be mounted on the existing microwave dish mounts at elevations of 242 feet above ground level (“AGL”) and 146 feet AGL. The existing elliptical waveguide cabling will be reused for the new microwave dishes. Two additional elliptical waveguide cables, one per microwave dish, are proposed for potential future deployment but will not be installed as part of this initial upgrade.

Radio equipment will be modified within the existing Eversource shelter to accommodate replacement of the dishes replacement. There will be no changes to the area of the fenced compound, the tower or other existing antennas and equipment currently mounted on the tower. The tower and existing and proposed equipment are depicted in [Attachment B](#), Exempt Modification Drawings, dated October 10, 2023, and [Attachment C](#), Structural Analysis, dated July 5, 2023. The Connecticut Siting Council approved the self-supporting tower at this location in Docket No 157 in March 1993.

Please accept this letter as notification, pursuant to Regulations of Connecticut State Agencies ("R.C.S.A.") §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this notice is being delivered to the Honorable Pete Bass, Mayor for the Town of New Milford and Laura Regan, Town Planner for the Town of New Milford. See Attachment D, Proof of Delivery of Notice.

The planned modifications to the facility meet the requirements of the regulations of R.C.S.A. § 16-50j-72(b)(2), as follows:

1. There will be no change to the height of the existing tower.
2. The proposed modifications will not require any 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 new dishes will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard as shown in the attached Radio Frequency Emissions Report, dated September 29, 2023 (Attachment E – Power Density Report).
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 (Attachment C, Structural Analysis).

For the foregoing reasons, Eversource 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).

One original and two copies of this notice and a check in the amount of \$625 are enclosed. Please direct communications regarding this Notice of Exempt Modification to me at (860) 728-4654.

By:



Deborah Denfeld
Team Lead – Transmission Siting

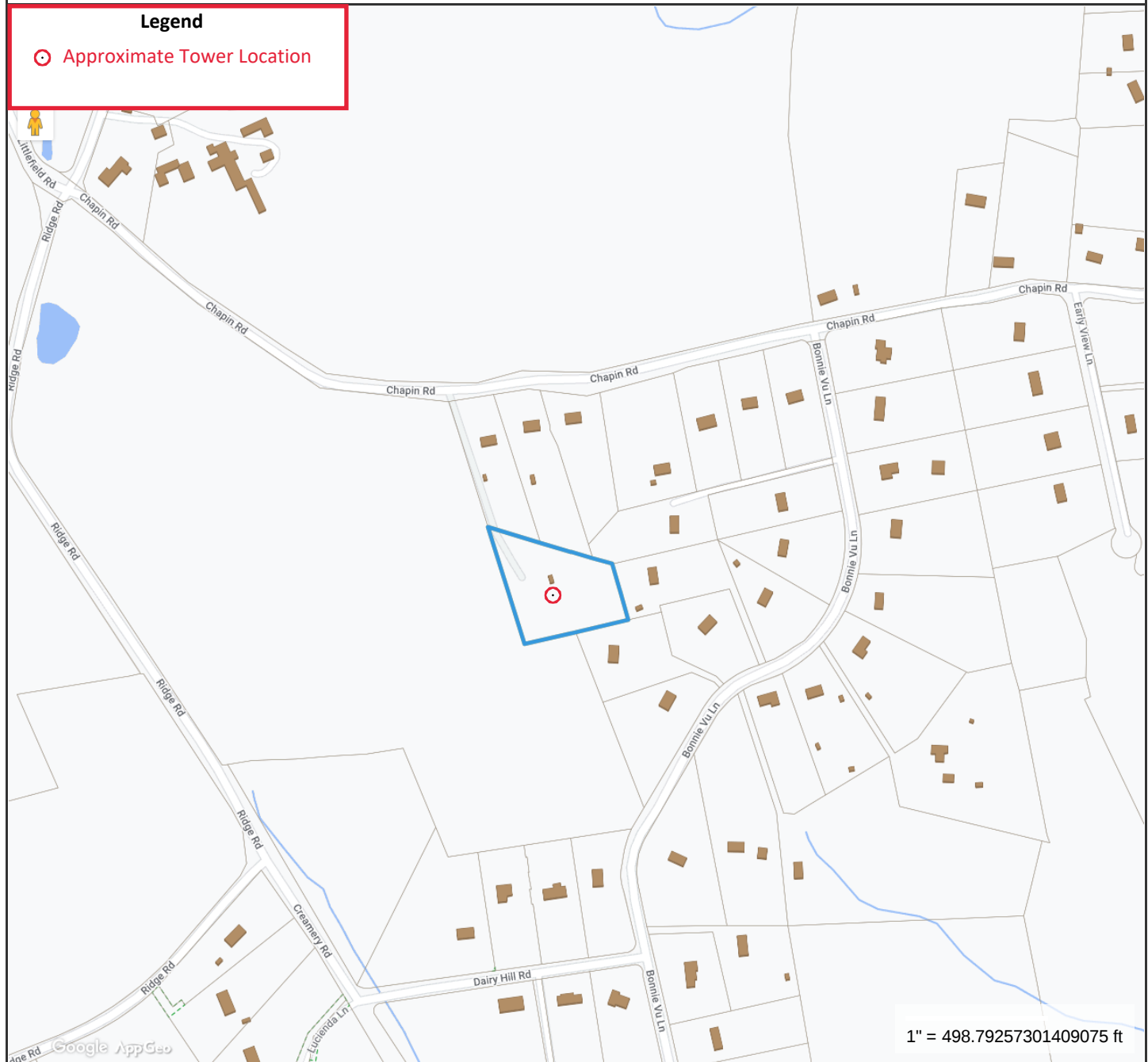
cc: Hon. Pete Bass, Mayor, Town of New Milford
Laura Regan, Town Planner, Town of New Milford

Attachments

- A. Parcel Map and Property Card
- B. Exempt Modification Drawings
- C. Structural Analysis
- D. Proof of Delivery of Notice
- E. Power Density Report

ATTACHMENT A – PARCEL MAP AND PROPERTY CARD

26 Chapin Road

**Property Information**

Property ID 51/178
Location 26 CHAPIN RD
Owner CONNECTICUT LIGHT + POWER



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

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

Geometry updated 05/22/2023
Data updated daily

Print map scale is approximate.
Critical layout or measurement
activities should not be done using
this resource.

26 CHAPIN RD

Location	26 CHAPIN RD	Mblu	51 / / 178 / /
Acct#	001945	Owner	CONNECTICUT LIGHT + POWER
Assessment	\$87,970	Appraisal	\$125,700
PID	9226	Building Count	1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$11,600	\$114,100	\$125,700
Assessment			
Valuation Year	Improvements	Land	Total
2020	\$8,120	\$79,850	\$87,970

Parcel Addresses

Additional Addresses
No Additional Addresses available for this parcel

Owner of Record

Owner	CONNECTICUT LIGHT + POWER	Sale Price	\$0
Co-Owner	PROPERTY TAX	Certificate	
Address	BOX 270	Book & Page	0246/0490
	HARTFORD, CT 06141-0270	Sale Date	07/06/1976

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
CONNECTICUT LIGHT + POWER	\$0		0246/0490	07/06/1976

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: \$0
Building Percent Good:
Replacement Cost
Less Depreciation: \$0

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type	
AC Type	
Total Bedrooms	
Full Bathrooms	
Half Bathrooms	
Total Xtra Fixtrs	
Total Rooms	
Bath Style	
Kitchen Style	
Num Kitchens	
Whirlpool Tub	
Fireplaces	
Fin Bsmt Area	
Bsmt Garages	
Fireplaces_1	
Solar	
Insp. Letter	
Multi-House	

Building Photo



(https://images.vgsi.com/photos/NewMilfordCTPhotos/\00\00\13\50.jpg)

Building Layout

 Building Layout (ParcelSketch.ashx?pid=9226&bid=9431)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Fndtn Cndtn	
Basement	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Parcel Information

Use Code 4350
Description Pub Utilit Land
Deeded Acres 2.4

Land

Land Use	Land Line Valuation
Use Code 4350 Description Pub Utilit Land Zone R60 Neighborhood C100 Alt Land Appr Category No	Size (Acres) 2.4 Frontage 0 Depth 0 Assessed Value \$79,850 Appraised Value \$114,100

Outbuildings

Outbuildings							Legend
Code	Description	Sub Code	Sub Description	Size	Value	Assessed Value	Bldg #
FN4	Fence 8'			200.00 L.F.	\$2,400	\$1,680	1
ANTG	Guyed Tower	R	Radio	100.00 L.F.	\$9,200	\$6,440	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$11,600	\$114,100	\$125,700

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$8,120	\$79,850	\$87,970

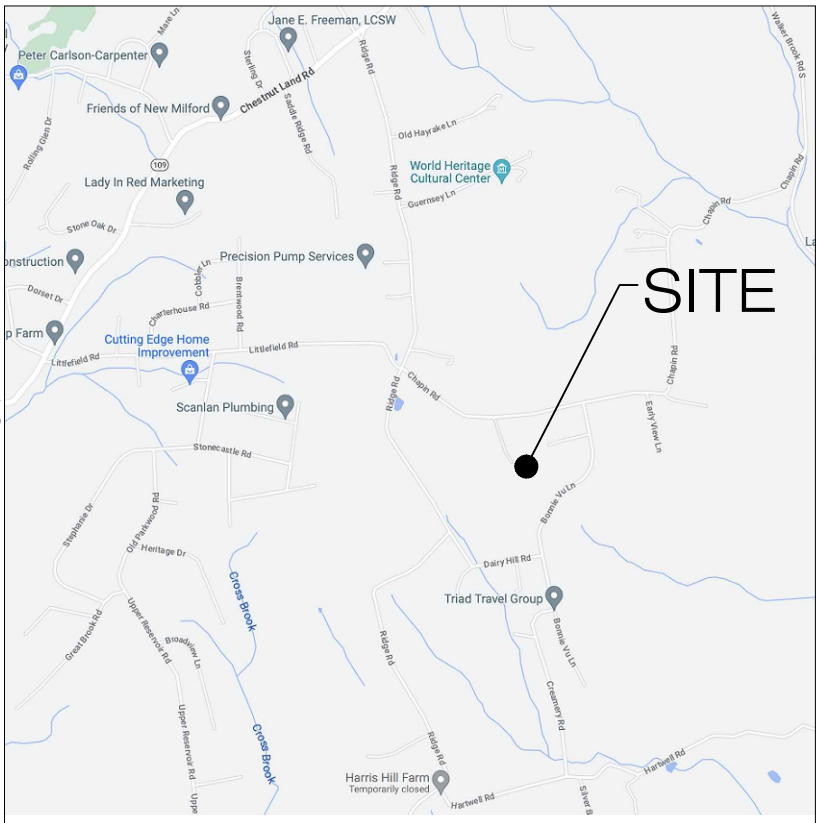
ATTACHMENT B – EXEMPT MODIFICATION DRAWINGS



NEW MILFORD
26 CHAPIN ROAD
NEW MILFORD, CT 06776

DESIGN: SITE UPGRADE
(SELF-SUPPORT TOWER)

LOCATION MAP



SCALE : NTS SOURCE: GOOGLE MAPS



CALL BEFORE YOU DIG
811 OR
800-922-4455
2040 WHITNEY AVE.
HAMDEN, CT 06517

DRAWING INDEX

- | | |
|-----|--|
| T-1 | TITLE SHEET & INDEX |
| C-1 | SITE PLAN |
| C-2 | TOWER ELEVATIONS |
| C-3 | ANTENNA CUT SHEET & NOTES & SPECIFICATIONS |

PROJECT DESCRIPTION

1. REPLACE (2) EXIST. EVERSOURCE MICROWAVE DISHES WITH (2) NEW MICROWAVE DISHES (COMMScope HX8-6W-6GF) AT 146'-0" AND 242'-0" RAD CENTERS.
2. INSTALL (2) NEW EW63 ELLIPTICAL COAX CABLE ROUTED WITHIN EXISTING CABLE LADDER ON THE FACE OF EXISTING TOWER.

GOVERNING CODES

2022 CONNECTICUT STATE BUILDING CODE (2021 IBC BASIS)
2018 NATIONAL ELECTRIC CODE
EIA/TIA 222H

GENERAL NOTES

THE FACILITY IS AN UNMANNED FACILITY AND IS NOT FOR HUMAN HABITATION. IT IS ONLY ACCESSSED BY TRAINED TECHNICIANS FOR ROUTINE MAINTENANCE AND DOES NOT REQUIRE ANY SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL. THIS PROJECT WILL NOT INCUR ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO COMMERCIAL SIGNAGE IS PROPOSED.

SITE INFORMATION

SITE NAME:	NEW MILFORD
SITE ID NUMBER:	9226
SITE ADDRESS:	26 CHAPIN ROAD NEW MILFORD, CT 06776
MAP:	51
LOT:	178
ZONE:	R60
LATITUDE:	41° 36' 18.75" N
LONGITUDE:	73° 22' 1.33" W
ELEVATION:	980± AMSL
FIRM FLOOD DESIGNNATION:	'X'
ACREAGE:	2.4± AC (BOOK: 0246, PAGE 0490)

CONTACT INFORMATION

APPLICANT: EVERSOURCE ENERGY 107 SELDEN STREET BERLIN, CT 06037	EVERSOURCE ENERGY: PROJECT MANAGER STEVE FLORIO (860) 655-7943	POWER PROVIDER: EVERSOURCE ENERGY (800) 286-2000
PROPERTY OWNER: EVERSOURCE ENERGY 107 SELDEN STREET BERLIN, CT 06037		TELCO PROVIDER: FRONTIER (800) 921-8102
		CALL BEFORE YOU DIG: (800) 922-4455

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
OFFICE: (860) 665-6748



567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

PERMIT DOCUMENTS

NO	DATE	REVISION
0	09/29/23	FOR CLIENT REVIEW
1	10/10/23	FOR FILING
2		
3		
4		
5		
6		



DESIGN PROFESSIONAL OF RECORD

PROF: SCOTT M. CHASSE PE
COMP: ALL-POINTS TECHNOLOGY
CORPORATION, P.C.
ADD: 567 VAUXHAUL STREET
EXTENSION - SUITE 311
WATERFORD, CT 06385

NEW MILFORD SITE UPGRADE

SITE 26 CHAPIN ROAD
ADDRESS: NEW MILFORD, CT 06776

APT FILING NUMBER: CT2592932

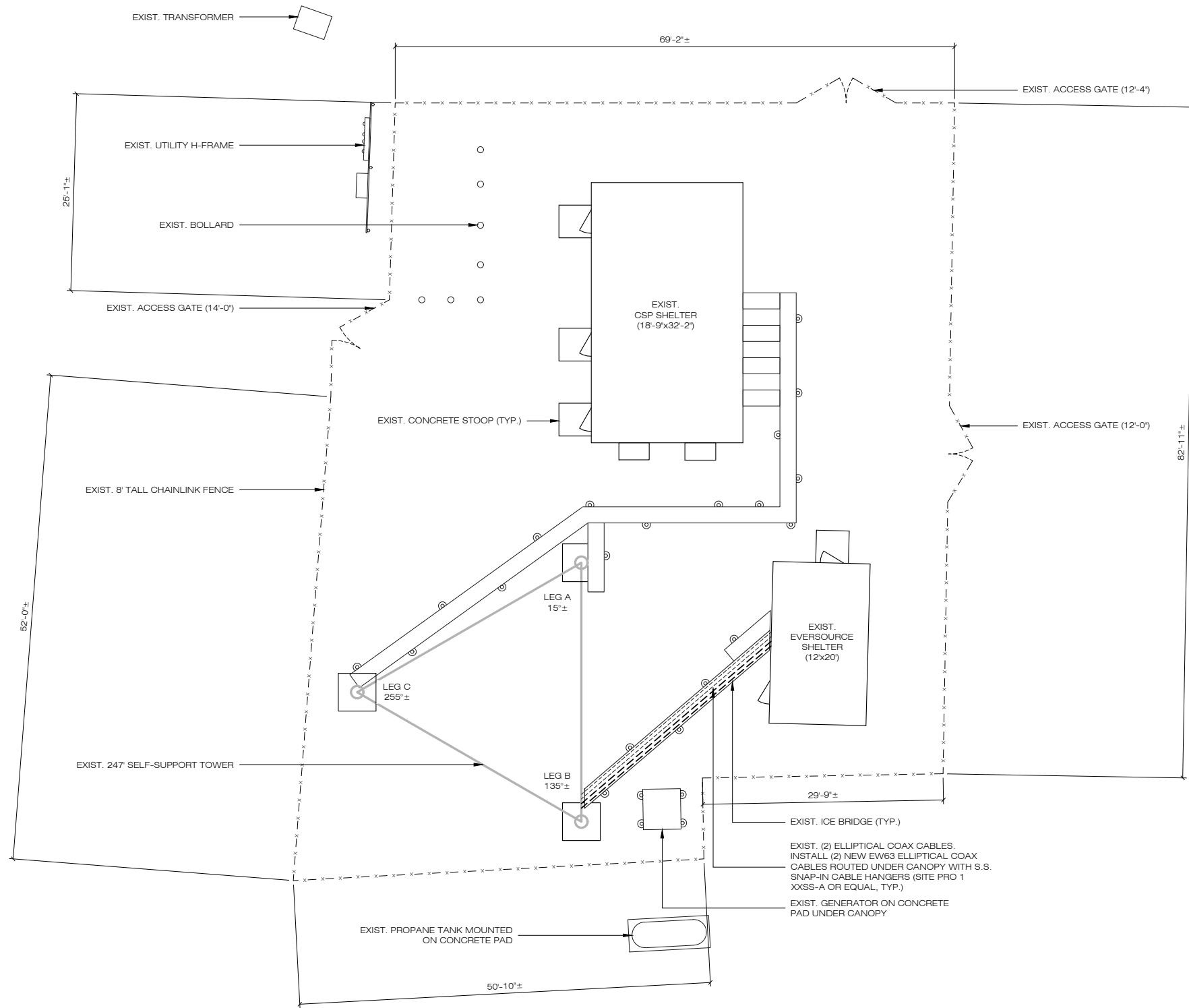
	DRAWN BY: CDC
DATE: 09/29/23	CHECKED BY: KB

SHEET TITLE:

TITLE SHEET
& INDEX

SHEET NUMBER:

T-1



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



EVERSOURCE
ENERGY

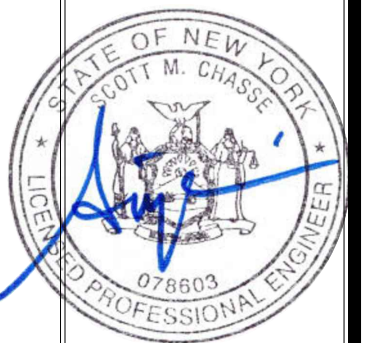
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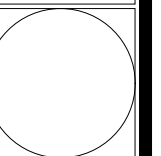
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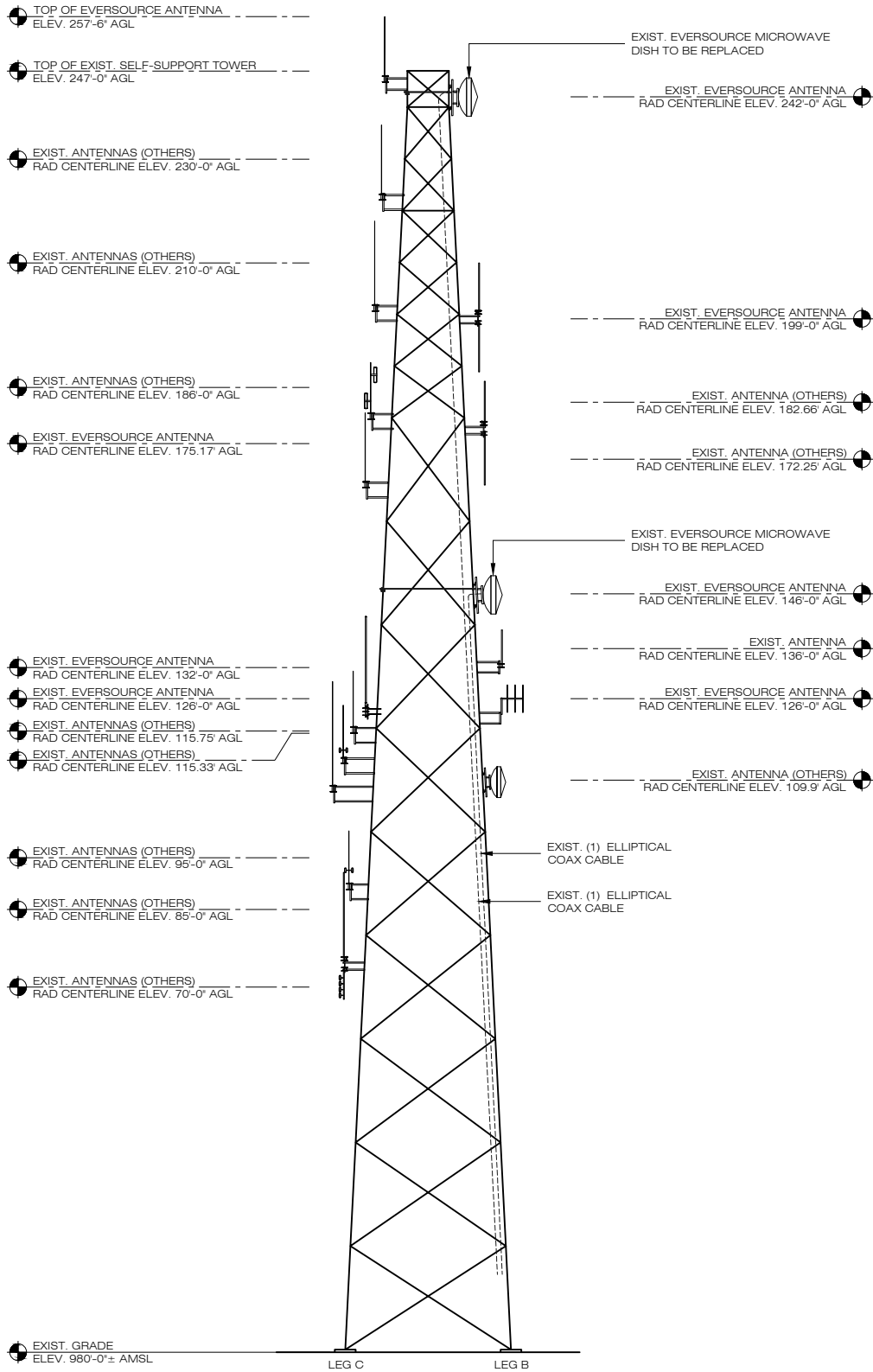
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SITE PLAN

SHEET NUMBER:

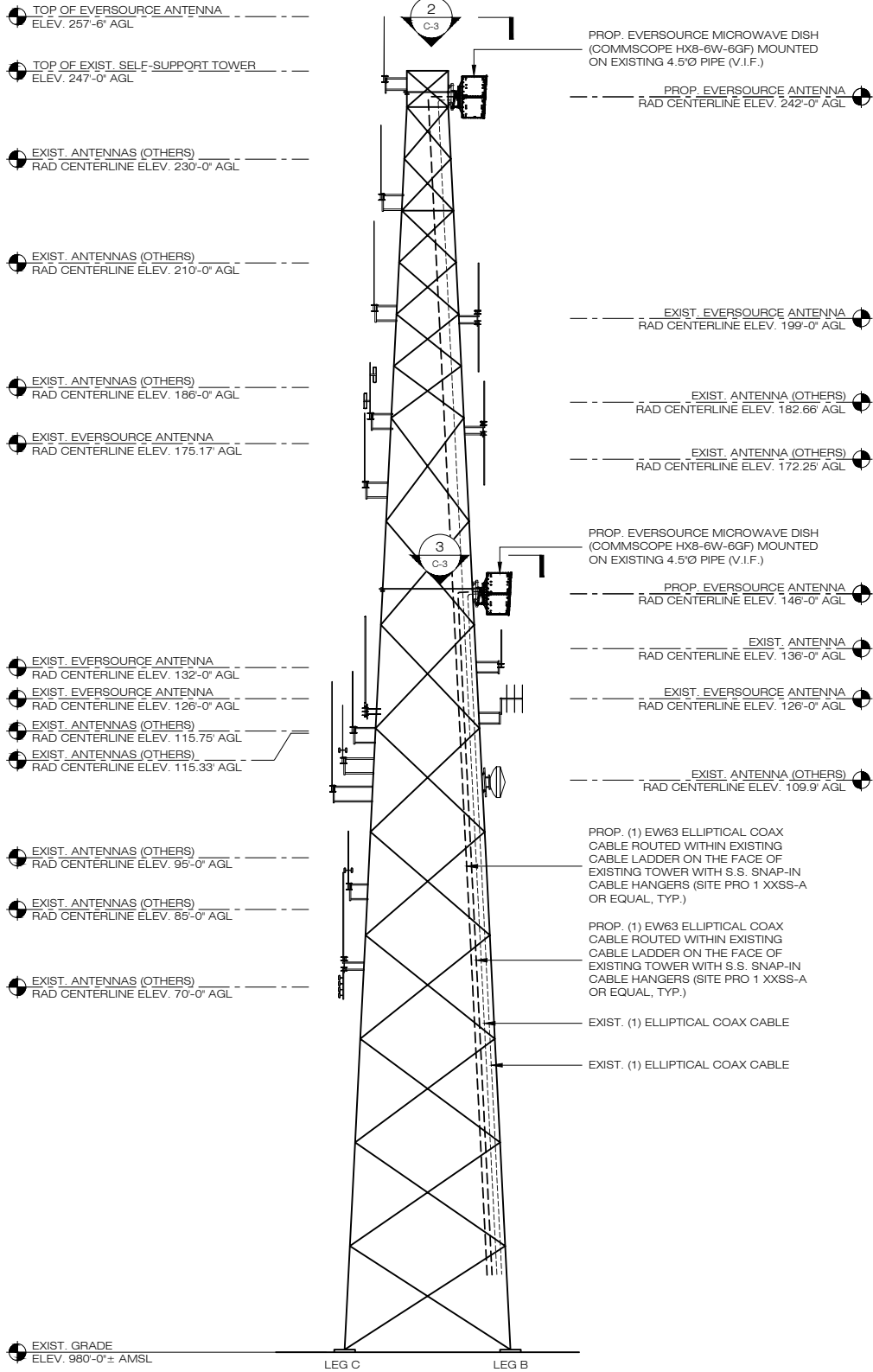
C-1



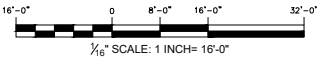


NOTE:
EXISTING ANTENNAS ARE NOT SHOWN FOR CLARITY:

1. 21' LRE AT 247' CL
2. KRECO CO-36AN AT 246' CL
3. SE419-SWBALDF (CSP) AT 244' CL
4. DB810KE-XI (CSP) AT 242' CL
5. DB810KE-XI (CSP) AT 241.5' CL
6. 531-70HD ANTENNA AT 136' CL
7. CSP DISH AT 230.5' CL
8. FUTURE CSP DISH AT 225' CL
9. LCD ANTENNA AT 202' CL
10. LITCHFIELD COUNTY ANTENNA AT 199' CL
11. FUTURE DISH AT 165' CL
12. SE4192 (CSP) AT 160' CL
13. FUTURE EQUIPMENT AT 155' CL
14. BA40-41 (MOTOROLA) AT 120' CL
15. KRECO CO-36AN AT 118.17' CL
16. KRECO CO-36AN AT 111.5' CL



1
C-2
EXISTING TOWER ELEVATION
SCALE : 1/16" = 1'-0"



2
C-2
PROPOSED TOWER ELEVATION
SCALE : 1/16" = 1'-0"

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
OFFICE: (860) 665-6748



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COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
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WATERFORD, CT 06385

NEW MILFORD SITE UPGRADE

SITE 26 CHAPIN ROAD
ADDRESS: NEW MILFORD, CT 06776

APT FILING NUMBER: CT2592932

DATE: 09/29/23
DRAWN BY: CDC
CHECKED BY: KB

SHEET TITLE:

**TOWER
ELEVATIONS**

SHEET NUMBER:

C-2

DESIGN BASIS:
GOVERNING CODES/DESIGN STANDARDS:
2021 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE 2022 CONNECTICUT STATE BUILDING CODE
ASCE 7-16
TIA-222-H (TOWER)

01 GENERAL:
ABBREVIATIONS USED IN THESE SPECIFICATIONS INCLUDE THE FOLLOWING:
ACI AMERICAN CONCRETE INSTITUTE
ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
AWS AMERICAN WELDING SOCIETY
AISC AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM AMERICAN STANDARDS AND TESTING METHODS
CRSI CONCRETE REINFORCING STEEL INSTITUTE
CCES INTERNATIONAL CODE COUNCIL EVALUATION SERVICE
TIA TELECOMMUNICATIONS INDUSTRY ASSOCIATION
UL UNDERWRITERS LABORATORIES
NEC NATIONAL ELECTRICAL CODE
NFPA NATIONAL FIRE PROTECTION ASSOCIATION
OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

EVERY INDIVIDUAL, TRADE, DISCIPLINE, AND CONTRACTOR SHALL INCLUDE THESE GENERAL SPECIFICATIONS. THE ENGINEER IS NOT RESPONSIBLE FOR NOR A GUARANTOR OF THE INSTALLING CONTRACTORS WORK, ADEQUACY OF ANY SITE COMPONENT, SUPERVISION OF ANY WORK, AND SAFETY, OR ON, OR ABOUT THE WORK SITE.

ANY REFERENCE HEREIN TO AN OR EQUAL ITEM, THAT EQUAL ITEM SHALL BE PRE-APPROVED BY THE CONSTRUCTION MANAGER BEFORE INSTALLATION.

ALL TRADES SHALL COORDINATE THEIR WORK WITH ALL OTHER TRADES AND OTHER WORK AND CONDITIONS AS APPLICABLE OR REQUIRED TO AVOID CONFLICTS, RESOLVE AND COORDINATE ALL CONFLICTS WITH ALL AFFECTED WORK AND SITE OPERATIONS. COORDINATION WITH THE SITE SHALL BE WITH THE OWNER, OR OWNERS SPECIFIED REPRESENTATIVE, FOR EVERYTHING RELATED TO THE INSTALLATION OF THIS PROJECT.

ALL WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE EDITIONS OF ALL APPLICABLE CODES AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION (AAJ). WHERE A CONFLICT EXISTS BETWEEN CODES, PLANS, SPECIFICATIONS, AND/OR AAJ, THE MORE STRINGENT AUTHORITY SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLANS AND SPECIFICATIONS, PLANS SHALL APPLY. WHERE CONFLICT EXISTS BETWEEN PLAN SHEETS, CONSTRUCTION MANAGER SHALL BE CONSULTED. THE CONSTRUCTION MANAGER SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND NEVERLY OPERATIVE AND USABLE SYSTEM THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.

CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, INSTALLATIONS, AND EQUIPMENT IN THE FIELD PRIOR TO BID, FABRICATION, AND INSTALLATION OF ANY WORK.

CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED FOR INSPECTIONS PRIOR TO CLOSING PENETRATIONS AND OF ANY CONSTRUCTION. CONNECTIONS SHALL BE PROVIDED TO CONFORM TO THE REQUIREMENTS OF TYPE 2 CONSTRUCTION.

STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE MINIMUM 3/4" DIAMETER AND EACH CONNECTION SHALL HAVE MINIMUM TWO BOLTS. LOCK WASHERS ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES. IF TENSION CONTROL BOLTS ARE USED, CONNECTIONS SHALL BE DESIGNED FOR SLIP CRITICAL BOLT ALLOWABLE LOAD VALUES.

DESIGN CONNECTIONS AT BEAM ENDS FOR 10 KIPS (MN). ALL 1/4-BOLTED CONNECTIONS SHALL BE COMPLETED WITH DOUBLE NUTS OR A LOCK WASHER.

CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS STANDARD QUALIFICATION PROCEDURE. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND SHALL CONFORM TO AWS AND D1.1. WHERE FILLET BEAD WELD JOINTS ARE SHOWN, PROVIDE THE LARGEST OF 1/4" FILLET OR MINIMUM SIZE PER TABLE J2.4 IN THE AWS "MANUAL OF STEEL CONSTRUCTION". AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED. SEE NOTE REGARDING DAMAGED GALVANIZED SURFACES.

ALL ARC AND GAS WELDING SHALL BE DONE BY A LICENSED AND CERTIFIED WELDER IN ACCORDANCE WITH AWS. SEAL ALL PENETRATIONS AND SEAMS BETWEEN MASONRY AND STEEL WITH DOW CORNING 790 SILICONE BUILDING SEALANT OR EQUAL.

26 GROUNDING:
THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

GROUND ALL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH BEST INDUSTRY PRACTICE, THE REQUIREMENTS OF THE NFPA 70 NATIONAL ELECTRICAL CODE (NEC), AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

ALL GROUNDING ELECTRODES PRESENT AT EACH SERVICE LOCATION SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM.

ALL EQUIPMENT ENCLOSURES, DEVICES, AND CONDUITS SHALL BE GROUNDED BY THE INSTALLATION OF A SEPARATE GROUNDING CONDUCTOR FOR ALL FEEDER AND BRANCH CIRCUITS THAT IS SIZED PER CODE OR IS OF THE SIZE INDICATED ON THE DRAWINGS. SHALL BE CONTINUOUS IN LENGTH, AND SHALL BE BONDED TO EACH ENCLOSURE PASSED THROUGH. CONDUIT SHALL NOT BE USED AS A GROUNDING OR BONDING WIRE OR CIRCUIT.

BOND ALL METALLIC CONDUITS TOGETHER THAT ARE CONNECTED TO NON-METALLIC ENCLOSURES, IN-GROUND BOXES, AND TO AN ENCLOSURE WHERE A GROUND BUS IS SPECIFIED OR SUPPLIED. ACCOMPLISH THIS BOND WITH GROUNDING CONDUCTORS MINIMUM SIZED TO THE LARGEST GROUNDING CONDUCTOR PRESENT IN THE ENCLOSURE CONNECTED TO A GROUNDING TYPE BUSHING EQUALLY SIZED OR MAXIMUM GROUND WIRE ACCOMMODATION AVAILABLE IN STANDARD MANUFACTURE FOR THE CONDUIT SIZE, WHICH EVER IS LESS.

EQUIPMENT GROUNDING AND LOAD SIDE BONDING CONDUCTORS SHALL BE SIZED PER THE CIRCUITS OVER-CURRENT PROTECTIVE DEVICE (OCPD) SIZE. ABOVE THE UNGROUNDED CONDUCTORS ARE INCREASED IN SIZE ABOVE THE STANDARD FOR THE CIRCUITS OCPD, INCREASE THE GROUNDING CONDUCTOR NEARBY TO THE CROSS-SECTIONAL AREA OF THE UNGROUNDED CONDUCTORS.

SERVICE MAIN BONDING JUMPERS AND GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED AND INSTALLED PER THE MINIMUM OF ALL APPLICABLE CODES AND REGULATIONS.

26 LIGHTNING PROTECTION:
THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS AND THE GROUNDING SPECIFICATIONS HEREIN.

THE LIGHTNING PROTECTION GROUNDING SYSTEM (LPGS) SHALL CONSIST OF BONDING ALL EQUIPMENT AND CONDUCTIVE STRUCTURES TO LOCALIZED SINGLE-POINT GROUNDING CONNECTIONS (TYPICALLY GROUND BARS) WHICH ARE BONDED TOGETHER AND TO AN IN-GROUND SYSTEM. IF THE LPGS IS ON A BUILDING, IT SHALL BE EFFECTIVELY BONDED TO THE ELECTRICAL SERVICE MAIN BONDING JUMPER AND TO ADDITIONAL IN-GROUND ELECTRODES AS MAY BE REQUIRED OR INDICATED. IF THE LPGS IS ON A DEDICATED COMMUNICATION SITE, ALL EQUIPMENT AREAS AND TOWERS SHALL EACH HAVE THEIR OWN IN-GROUND RING WITH EVERY RING BONDED TOGETHER, AND ALL CONDUCTIVE STRUCTURES IN CLOSE PROXIMITY (FENCES, ICE BRIDGES, ISOLATED EQUIPMENT, ETC.) ALSO BONDED TO PROVIDE A COMMON ELECTRICAL EQUIPOTENTIAL SYSTEM FOR ALL CONDUCTIVE ELEMENTS AND STRUCTURES.

CONDUCTORS:
• MIN #2 AWG SOLID BARE TINNED COPPER (BETC) FOR ALL IN-GROUND CONDUCTORS.
• MIN #2 AWG COPPER GREEN STRANDED FOR BONDING STRUCTURES, AND FOR INTER-SYSTEM BONDING OF INDIVIDUAL ELEMENTS SUCH AS GROUND BAR TO GROUND BAR.
• MIN #6 AWG COPPER GREEN STRANDED OR ALL EQUIPMENT BONDING.
• INSTALL ALL IN-GROUND CONDUCTORS IN THE SAME HORIZONTAL PLANE OR IN A DOWNWARD DIRECTION AWAY FROM THE TOWER AND EQUIPMENT AREAS.
• AVOID LONG RUNS. MAKE DIRECT RUNS AS MUCH AS POSSIBLE.
• PLACE THROUGH NON-METALLIC SLEEVES WHEN PASSING THROUGH FLOORS, WALLS, CEILING, AND SIMILAR STRUCTURES.
• MAKE ALL CONNECTIONS IN CONTACT WITH EARTH WITH EXOTHERMIC WELDING. MAKE ALL OTHER CONNECTIONS WITH EXOTHERMIC WELDING, REVERSIBLE COMPRESSION CONNECTORS, OR LISTED COMPRESSION TWO-HOLE LUGS.
• INSTALL ALL CONDUCTORS WITH A MINIMUM 18 INCH BEND RADIUS AND NO BEND LONGER THAN A 90 DEGREE ARC. ALL BENDS SHALL BE HORIZONTAL, OR DOWNWARD TOWARDS EARTH.
• ALL CONDUCTORS PASSING FROM ABOVE-GROUND TO IN-GROUND CONNECTIONS, WHERE EXPOSED, SHALL BE COVERED AND PROTECTED WITH A NON-METALLIC CONDUIT SEALED AT BOTH ENDS.
• IF 2 OR MORE IN-GROUND CONDUCTORS ARE IN THE SAME PATH (2 RINGS OVERLAPPING, BONDING FOLLOWING ANOTHER RING OR RADIAL, OR SIMILAR), COMBINE WITH A SHARVED SINGLE CONDUCTOR.

EQUIPMENT AND TOWER GROUND RINGS SHALL BE:
• BONDED TO ANY CONDUCTIVE OBJECT OR STRUCTURE WITHIN 5

FEET OF EQUIPMENT GROUND RINGS AND WITHIN 20 FEET OF TOWER GROUND RINGS.

- INSTALLED MINIMUM 18 INCHES FROM FOUNDATIONS, FOOTINGS, AND SIMILAR.

INSTALL ALL IN-GROUND RINGS, RADIALS, BONDS CONNECTING THEM, AND ALL SIMILAR GROUNDING.

- MIN 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE, WHICHEVER IS GREATER DEPTH.
- MIN 2 FEET FROM FOUNDATIONS, FOOTINGS, OTHER GROUNDING SYSTEMS, AND SIMILAR STRUCTURES, EXCEPT WHEN MAKING A BOND TO ANY OF THESE STRUCTURES. DO NOT BOND TO FOUNDATION INTERNAL REINFORCEMENT.

ALL EQUIPMENT GROUNDED IN A COMMON AREA, COMPOUND, STRUCTURE, OR SIMILAR SHALL BE BONDED TO A SINGLE-POINT GROUND, PREFERABLY AN ISOLATED GROUND BAR. BOND THE GROUND BAR TO THE SYSTEM WITH MINIMUM SINGLE BONDING CONDUCTOR. BONDING TO AN IN-GROUND RING, INSTALL 2 BONDING CONDUCTORS MINIMUM WITH EACH CONDUCTOR INSTALLED DIRECTIONALLY AWAY FROM EACH OTHER AND PARALLEL TO THE IN-GROUND CONDUCTOR, WITH NO TEE CONNECTIONS.

TOWER GROUNDING:
• EACH TOWER LEG SHALL BE BONDED TO ITS RING. SINGLE-LEGGED TOWERS, OR MONOPOLES, SHALL HAVE 2 BONDS ON OPPOSITE SIDES.
• BOND TO TOWER BASE, NOT TO VERTICAL TOWER STRUCTURE, AWAY FROM TOWER MOUNTING HARDWARE.
• EACH BOND SHALL HAVE A CORRESPONDING GROUND ROD ON THE RING.
• EACH BOND SHALL CONSIST OF 2 CONDUCTORS FROM THE TOWER TO ITS RING WITH EACH CONDUCTOR DIRECTED IN OPPOSITE DIRECTIONS WITH A PARALLEL CONNECTION ON THE RING ON OPPOSITE SIDES OF THE GROUND ROD.
• EQUIPMENT AREA GROUNDING:
• COMMUNICATION AREAS ON EARTH SHALL HAVE A GROUND RING.
• BOND ALL EQUIPMENT TO A SINGLE-POINT GROUND (GROUND BAR).
• BOND THE EQUIPMENT SINGLE-POINT GROUND TO THE EQUIPMENT GROUND RING WITH MINIMUM 2 CONDUCTORS DIRECTED IN OPPOSITE DIRECTIONS WITH PARALLEL CONNECTIONS ON THE RING.
• IF THE EQUIPMENT IS ENCLOSED IN A SHELTER.
• IF THE SHELTER IS CONSIDERED TO BE EXPOSED TO A DIRECT LIGHTNING STRIKE, INSTALL A BUILDING LIGHTNING PROTECTION SYSTEM PER APPLICABLE CODES.
• BOND ALL FIXED CONDUCTIVE BUILDING COMPONENTS TOGETHER AND TO THE BUILDING RING GROUND AT THE CORNERS. THIS IS TYPICALLY CALLED THE TIE-ROD GROUND. DO NOT BOND EQUIPMENT TO THE HALO GROUND.
• BOND ALL EQUIPMENT TOGETHER TO A SINGLE-POINT OR INTERIOR EQUIPMENT RING GROUND (EGR). BOND THE SINGLE-POINT OR IEGR TO THE EXTERNAL EQUIPMENT RING GROUND.
• PLACE GROUND RODS AT THE EQUIPMENT GROUND RING CORNERS.

GROUND RODS:
• SEPARATION SPACE BETWEEN ANY 2 GROUND RODS SHALL BE NO CLOSER THAN THEIR DEPTH. THIS APPLIES TO ALL RODS IN THE COMPLETE SYSTEM.
• DRIVE VERTICALLY IN UNDISTURBED SOIL WITH THE TOP AT SAME DEPTH AS THE IN-GROUND CONDUCTOR. IF NOT POSSIBLE TO INSTALL VERTICALLY, PLACE AS CLOSE TO VERTICAL AS POSSIBLE AND IN A DIRECTION AWAY FROM THE NEAREST ABOVE-GROUND CONDUCTIVE ELEMENT (TOWER, EQUIPMENT, ETC.).

RADIALS (TY: NEW DEDICATED COMMUNICATION SITES):
• WHERE FEASIBLE WITH ENOUGH SPACE AVAILABLE, INSTALL A MINIMUM OF 4, MAXIMUM 10 RING RADIALS.
• EACH RADIALS LENGTH SHALL BE MIN 20 FT, MAX 80 FT.
• EXTEND RADIALS PERPENDICULAR FROM RINGS IN AS STRAIGHT LINE AS POSSIBLE, AWAY FROM OTHER RING GROUNDS, RADIALS, BONDS, AND SIMILAR.
• A COMMON PRACTICE IS TO PLACE 4 RADIALS FROM THE TOWER RING TO THE 4 CORNERS OF THE AVAILABLE AREA.
• AT A MINIMUM, BOND ALL COMPOUND CONDUCTIVE FENCE CORNER POSTS AND GATE POSTS TO THE LPGS. PREFERABLY, INSTALL A GROUND RING THAT FOLLOWS THE FENCE LINE, BONDING ALL POSTS TO THE RING.

27 ANTENNAS & CABLES:
THESE SPECIFICATIONS SHALL INCLUDE THE GENERAL SPECIFICATIONS HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNTS, AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER.

AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PM / SWEEP TESTED FOR NEWER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR SHALL OBTAIN AND USE LATEST TESTING PROCEDURES FROM OWNER OR MANUFACTURER PRIOR TO BIDDING.

ANTENNA CABLES SHALL BE UNIQUELY COLOR-CODED AT THE ANTENNAS, BOTH SIDES OF EQUIPMENT SHELTER WALL, AND JUMPER CABLES AT THE EQUIPMENT.

THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONNECTORS, ASSOCIATED CABLE MOUNTING AND GROUNDING HARDWARE, WALL MOUNTS, STANDOFFS, AND ALL ASSOCIATED HARDWARE TO INSTALL CABLES AND ANTENNAS TO THE MANUFACTURERS AND OWNERS SPECIFICATIONS.

ANTENNA CABLES SHALL BE AS FOLLOWS:
EWS3, HELIX® STANDARD ELLIPTICAL WAVEGUIDE, 5.925-7.125 GHz, BLACK RE-JACKET.

MATERIAL SPECIFICATIONS
CONDUCTOR MATERIAL: CORRUGATED COPPER
JACKET MATERIAL: PE

MECHANICAL SPECIFICATIONS:
MINIMUM BEND RADIUS, MULTIPLE BENDS (E PLANE): 260mm (1' 0 236")
MINIMUM BEND RADIUS, MULTIPLE BENDS (H PLANE): 740mm (2' 9 134")
MINIMUM BEND RADIUS, SINGLE BENDS (E PLANE): 180mm (1' 7 087")
MINIMUM BEND RADIUS, SINGLE BENDS (H PLANE): 510mm (1' 20 079")
MAXIMUM TWIST: 3.281'm (1' 11")

ENVIRONMENTAL SPECIFICATIONS:
INSTALLATION TEMPERATURE: -40°F TO +60°C (-40°F TO +140°F)
OPERATING TEMPERATURE: -55°F TO +85°C (-67°F TO +185°F)
STORAGE TEMPERATURE: -70°F TO +85°C (-94°F TO +185°F)
ATTENUATION, AMBIENT TEMPERATURE: 70°F (23.88°C)
AVERAGE POWER, AMBIENT TEMPERATURE: 104°F (40°C)
AVERAGE POWER, TEMPERATURE RISE: 42°C (1 07.6°F)

CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.

ALL EXTERIOR CABLE CONNECTIONS SHALL BE COVERED WITH A WATERPROOF SPLICING KIT.

CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.

CABLE SHALL BE FURNISHED AND INSTALLED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

HX8-6W-6GF



Product Classification

Product Type Microwave antenna

Product Brand ValuLine®

General Specifications

Antenna Type HX - ValuLine® High Performance, High XPD Antenna, dual-polarized

Polarization Dual

Antenna Input CPR137G

Antenna Color Gray

Reflector Construction One-piece reflector

Radome Color Gray

Radome Material Fabric

Flash Included Yes

Side Struts, Included 1

Side Struts, Optional 4

Dimensions

Diameter, nominal 2.4 m | 8 ft

Electrical Specifications

Operating Frequency Band 5.925 – 7.125 GHz

Gain, Low Band 40.8 dBi

Gain, Mid Band 41.6 dBi

Gain, Top Band 42.4 dBi

Boresite Cross Polarization Discrimination (XPD) 33 dB

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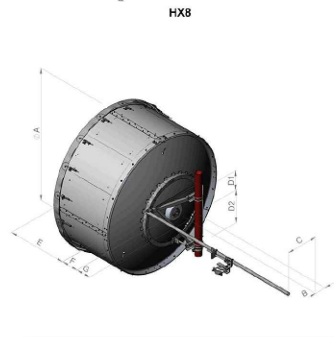
COMMSCOPE®

1 ANTENNA SPECIFICATIONS

C-3 SCALE : NOT TO SCALE

HX8-6W-6GF

Antenna Dimensions and Mounting Information



Antenna size, ft (m)	Dimensions in inches (mm)						
	A	B	C	D1	D2	E	F
8 (2.4)	95.1 (2416)	6.0 (203)	29.5 (752)	14.1 (357)	23.6 (600)	42.4 (1076)	19.3 (492)

Wind Forces at Wind Velocity Survival Rating

Axial Force (FA)	10599 N 2,382.75 lbf
Angle a for MT Max	-140 °
Side Force (FS)	4594 N 1,032.773 lbf
Twisting Moment (MT)	-6518 N-m -57,689.16 in lb
Force on Inboard Strut Side	11263 N 2,532.024 lbf
Zcg without Ice	532 mm 20.945 in
Zcg with 1/2 in (12 mm) Radial Ice	675 mm 26.575 in
Weight with 1/2 in (12 mm) Radial Ice	342 kg 753.98 lb

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567 VALUHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

PERMIT DOCUMENTS

NO	DATE	REVISION
0	09/29/23	FOR CLIENT REVIEW
1	10/10/23	FOR FILING
2		
3		
4		
5		
6		



DESIGN PROFESSIONAL OF RECORD

PROF: SCOTT M. CHASSE PE
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VALUHAUL STREET
EXTENSION - SUITE 311
WATERFORD, CT 06385

NEW MILFORD SITE UPGRADE

SITE 26 CHAPIN ROAD
ADDRESS: NEW MILFORD, CT 06776

APT FILING NUMBER: CT2592932

DRAWN BY: CDC

CHECKED BY: KB

SHEET TITLE:

ANTENNA CUT SHEET & NOTES & SPECIFICATIONS

SHEET NUMBER:

C-3

2 ANTENNA SECTION DETAIL

C-3 SCALE : NOT TO SCALE

3 ANTENNA SECTION DETAIL

C-3 SCALE : NOT TO SCALE

ATTACHMENT C – STRUCTURAL ANALYSIS

Structural Analysis Report

247-ft Existing Valmont Lattice Tower

*Proposed Eversource
Antenna Upgrade*

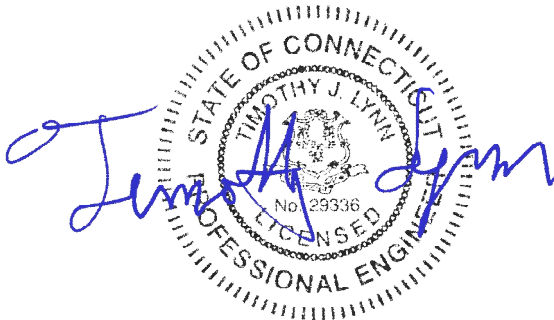
Site Ref: New Milford

*26 Chapin Road
New Milford, CT*

CEN TEK Project No. 23080.02

Date: July 5, 2023

Max Stress Ratio = 85%



Prepared for:
Eversource Energy
107 Selden Street
Berlin, CT 06037

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I n t r o d u c t i o n

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

The host tower is a 247-ft, three legged, steel lattice tower originally designed and manufactured by Valmont Structures, Job No. A-125081, signed and sealed 08/20/2010. The tower geometry and structure member sizes were obtained from the aforementioned design documents prepared by Valmont.

Antenna and appurtenance inventory was obtained from an antenna schedule provided by Eversource, dated 1/08/20 and a previous structural analysis report prepared by Black & Veatch job no. 403093 dated March 26, 2020.

The tower consists of thirteen (13) vertical solid round/truss legs sections conforming to ASTM A572 Gr. 50 and ASTM A36 steel material grade. Horizontal and diagonal lateral support bracing consists of steel angle construction conforming to ASTM A36. The vertical tower sections are connected by bolted flange plates while the legs and bracing are connected by bolted and welded gusset connections. The tower face width is 8.00-ft at the top and 32.00-ft at the bottom.

A n t e n n a a n d A p p u r t e n a n c e S u m m a r y

- **EXISTING:**
Antennas: One (1) Lightning rod leg and one (1) flash beacon mounted to the top of the existing tower with a base elevation of 247-ft. above the existing tower base plate.
Cable: One (1) 3/8" $\varnothing$ power cable.
- **Eversource (Existing):**
Antennas: One (1) Kreco CO-46A Omni-directional antenna pipe mounted off the existing tower leg with a mount elevation of 246-ft above the existing tower base.
Coax Cable: One (1) 7/8" $\varnothing$ coax cable.
- **Eversource (Existing):**
Antennas: One (1) ANT450-6 Omni-directional antenna mounted on a 6-ft side arm with a mount elevation of 244-ft. above the existing tower base.
Coax Cable: One (1) 7/8" $\varnothing$ coax cable.
- **CSP (Existing):**
Antennas: One (1) Sinclair SE419 Omni-directional antenna, two (2) DB810-KE-Xt, Omni-directional antennas (inverted), and one (1) 12"x16"x6" amplifier mounted on a 6-ft side arm with a mount elevation of 241ft-6in above the existing tower base.
Cables: Three (3) 1-5/8" $\varnothing$ coax cables, one (1) 1/2" $\varnothing$ power cable and one (1) 3/8" $\varnothing$ test cable.

- CSP (Existing):
Antennas: One (1) RFS-PAD 8-57WAC 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 230ft-6in above the existing tower base.
Coax Cable: One (1) WE-65 Elliptical coax cable.
- (Future):
Antennas: One (1) RFS-PAL 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 225-ft above the existing tower base.
Coax Cable: One (1) WE-65 Elliptical coax cable.
- ICS (Existing):
Antennas: One (1) Decibel DB616-BC Omni-directional antenna on a 6-ft side arm with a mount elevation of 220-ft above the existing tower base plate
Coax Cable: One (1) 1-1/4" Ø coax cable.
- (Future):
Antennas: One (1) RFS PD1142 Omni-directional antenna on a 6-ft side arm with a mount elevation of 210-ft above the existing tower base plate
Coax Cable: One (1) 7/8" Ø coax cable.
- LCD (Existing):
Antennas: One (1) RFS PD220 DT3 Omni-directional antenna pipe mounted on a 6-ft side arm with a mount elevation of 202ft-2in above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.
- Eversource (Existing):
Antennas: Two (2) DB589-Y Omni-directional antennas, one (1) upright & one (1) inverted with one (1) 12"x16"x6" amplifier mounted on a 6-ft side arm with a mount elevation of 199-ft. above the existing tower base.
Cables: Two (2) 7/8" Ø coax cables and one (1) 3/8" Ø power cable.
- LCD (Existing):
Antennas: One (1) RFS PD 458-2 Omni-directional antenna mounted on a 6-ft side arm with a mount elevation of 199-ft. above the existing tower base.
Coax Cables: One (1) 1-5/8" Ø coax cable.
- LCD (Existing):
Antennas: One (1) Andrew DB 222-A Dipole antenna mounted on a 6-ft side arm with a mount elevation of 186-ft. above the existing tower base.
Coax Cables: One (1) 7/8" Ø coax cable.
- CSP (Existing):
Antennas: Two (2) Amphenol BCR80010 Omni-directional antennas, one (1) upright & one (1) inverted with one (1) 12"x16"x6" amplifier mounted on a 6-ft side arm with a mount elevation of 177ft-5in above the existing tower base.
Coax Cables: Two (2) 1-5/8" Ø coax cables.

- (Future):
Antennas: One (1) RFS-PAL 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 165-ft above the existing tower base.
Coax Cable: One (1) WE-65 elliptical coax cable.
- Eversource (Existing):
Antennas: One (1) RFS PD220 3AN Omni-directional antenna pipe mounted on a 6-ft side arm with a mount elevation of 164ft-5in above the existing tower base.
Coax Cable: One (1) 1/2" Ø coax cable.
- CSP (Existing):
Antennas: One (1) Sinclair SE414 antenna and one (1) 12"x16"x6" amplifier mounted on a 6-ft side arm with a mount elevation of 172ft above the existing tower base.
Coax Cables: One (1) 1-5/8" Ø coax cables, one (1) 1/2"Ø power cable and one (1) 3/8" Ø test cable.
- (Future):
Antennas: Three (3) Antel BXA-70063/6CF, six (6) Antel LPA-80063/6CF and three (3) Antel BXA-185063/12CF panel antennas mounted on three (3) 12-ft sector frames with a RAD center elevation of 155-ft above the existing tower base.
Coax Cables: Eighteen (18) 1-5/8" Ø coax cables.
- CSP (Existing):
Antennas: Two (2) Sinclair SE4192 antennas mounted on one (1) 8-ft sector frame with a RAD center elevation of 160-ft above the existing tower base.
Coax Cable: Two (2) 1-5/8" Ø coax cables.
- Eversource (Existing):
Antennas: One (1) dbSpectra DS2C03F36D-D antenna mounted on a 4-ft side arm with a RAD center elevation of 132ft above the existing tower base.
Coax Cable: Two (2) 7/8" Ø coax cables.
- CTPS (Existing):
Antennas: One (1) Decibel DB636 antenna mounted on a 3-ft side arm with an elevation of 131ft above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.
- Eversource (Existing):
Antennas: One (1) Comprod 531-70 antenna mounted on a 6-ft side arm with an elevation of 131ft above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.
- Eversource (Existing):
Antennas: One (1) Andrew DB230-A Yagi antenna mounted on a 6-ft side arm with a RAD center elevation of 119ft-5in above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable (shared with above antenna).
- Eversource (Existing):
Antennas: One (1) Kreco CO-46AN Omni-directional antenna pipe mounted on a 6-ft side arm with a mount elevation of 118ft-2in above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.

- **EXISTING:**
Antennas: Three (3) obstruction lights leg mounted to the existing tower with an elevation of 123-ft. above the existing tower base plate.
Cable: One (1) 3/8" Ø power cable.
- **NMFD (Existing):**
Antennas: One (1) Andrew DB 222-A Dipole antenna mounted on a 6-ft side arm with a mount elevation of 110-ft above the existing tower base.
Coax Cables: One (1) 7/8" Ø coax cable.
- **CSP (Existing):**
Antennas: One (1) RFS-PAD 6-65C 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 109ft-9in above the existing tower base.
Coax Cable: One (1) WE-65 Elliptical coax cable.
- **LCD (Existing):**
Antennas: One (1) RFS PD220 Omni-directional antenna pipe mounted on a 6-ft side arm with a mount elevation of 107ft-6in above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.
- **Eversource (Existing):**
Antennas: One (1) Kreco CO-46AN Omni-directional antenna pipe mounted on a 6-ft side arm with a mount elevation of 106ft above the existing tower base.
Coax Cable: One (1) 7/8" Ø coax cable.
- **NMPD (Existing):**
Antennas: One (1) Andrew DB 222-A Dipole antenna mounted on a 6-ft side arm with a mount elevation of 90-ft. above the existing tower base.
Coax Cables: One (1) 7/8" Ø coax cable.
- **MOTOROLA (EXISTING):**
Antennas: One (1) RFI BA40-41 Omni-directional whip antenna on one (1) 6-ft side arm with a mount elevation of 115-ft above the existing tower base.
One (1) RFI BA40-41 Omni-directional whip antenna on one (1) 6-ft side arm with a mount elevation of 95-ft above the existing tower base.
One (1) Radiowave HPD2-4.7 Microwave dish and mount assembly with a RAD center elevation of 85-ft above the existing tower base.
Coax Cables: Three (3) 7/8" Ø coax cables running on the face of the existing tower. Refer to coax feed-line plan within Section 3.0 of this report for location.
- **NMPW (Existing):**
Antennas: One (1) RFS PD1142 Omni-directional antenna on a 6-ft side arm with a mount elevation of 75-ft above the existing tower base plate
Coax Cable: One (1) 7/8" Ø coax cable.
- **CSP (Existing):**
Antennas: One (1) ANT450-6 Omni-directional antenna mounted on the NMPW 6-ft side arm above.
Coax Cable: One (1) 7/8" Ø coax cable.

- **Eversource (Existing to Remove):**
Antennas: One (1) RFS-PAL 8-59A 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 242-ft above the existing tower base.
Coax Cable: One (1) WE-65 Elliptical coax cable.
- **EVERSOURCE (Proposed):**
Antenna: One (1) Commscope HX8-6W-6GF 8-ft Ø Microwave dish antenna mounted to the leg of the existing tower with a RAD center elevation of ±242-ft above grade level.
Coax Cable: One (1) EW63 elliptical coax cable running on the face of the existing tower as specified in Section 3 of this report.
- **Eversource (Existing to Remove):**
Antennas: One (1) RFS-PAL 8-59A 8-ft Ø Microwave Dish w/ Radome and mount assembly with a RAD center elevation of 146-ft above the existing tower base.
Coax Cable: One (1) WE-65 Elliptical coax cable.
- **EVERSOURCE (Proposed):**
Antenna: One (1) Commscope HX8-6W-6GF 8-ft Ø Microwave dish antenna mounted to the leg of the existing tower with a RAD center elevation of ±146-ft above grade level.
Coax Cable: One (1) EW63 elliptical coax cable running on the face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are “hot dipped” galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

A n a l y s i s

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

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-H entitled “Structural Standard for Antenna Support Structures and Antennas”, the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

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

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

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-H, gravity loads of the tower structure and its components, and the application of 1.00” radial ice on the tower structure and its components.

Load Cases:	<u>Load Case 1</u> ; 125 mph (Ultimate) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	<i>[Appendix P of the 2022 CT Building Code]</i>
	<u>Load Case 2</u> ; 50 mph wind speed w/ 1.00” radial ice plus gravity load – used in calculation of tower stresses.	<i>[Annex B of TIA-222-H]</i>
	<u>Load Case 3</u> ; 97 mph (Nominal) wind speed used for deflection calculation.	

¹ The 2021 International Building Code as amended by the 2022 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits. This tower was found to be at **85.2%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T6)	140'-0"-160'-0"	85.2%	PASS
Diagonal (T13)	0'-0"-20'-0"	81.6%	PASS

- The tower combined deflection is **0.3592 degrees**.

Deflection Criteria	Proposed (degrees)	Allowable (degrees)	Result
Sway (Tilt)	0.3253	0.5	n/a
Twist	0.1524	0.5	n/a
Combined	0.3592	0.5	PASS

Note 1: Tower deflection calculated utilizing the service wind load combination and nominal wind speed of 97 mph.

Foundation and Anchors

The existing foundation consists of a 41ft. square x 3ft. thick reinforced concrete pad with three (3) 4ft.-6in. diameter x 3ft.-6in. long reinforced concrete pedestals bearing directly on the existing sub grade at 8-ft below grade. The sub grade conditions used by Valmont Structures in the original design of the foundation system were obtained from a geo-technical soils report prepared by Dr. Clarence Welti, P.E., P.C., Inc. dated March 24, 2010. The tower is connected to the piers by means of twelve (12) 1.00" diameter ASTM F1554-GR105 anchor bolts embedded approximately 5-ft. into the concrete foundation structure.

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

Load Effect	Proposed Tower Reactions
Leg Shear	62 kips
Leg Compression	505 kips
Leg Tension	426 kips
Base Moment	13108 ft-kips
Base Shear	101 kips

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

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	59.1%	PASS

- The foundation was found to be within allowable limits.

Foundation	Design Limit	FS Required ⁽¹⁾	Proposed Loading (FS) ⁽¹⁾	Result
Reinforced Concrete Pad and Piers	Overturning	1.00	2.45	PASS

| Note 1: FS denotes Factor of Safety

Conclusion

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

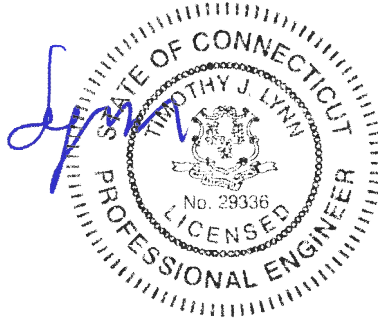
The analysis is based, in part, on the information provided to this office by Eversource. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
 Structural Engineer



*Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures*

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

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

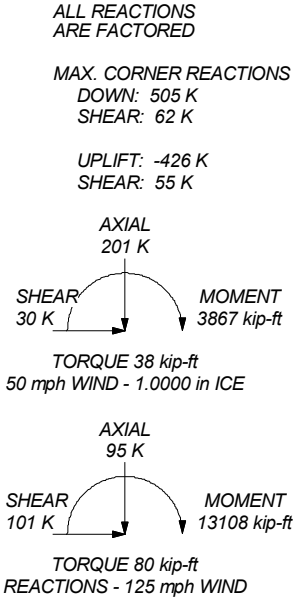
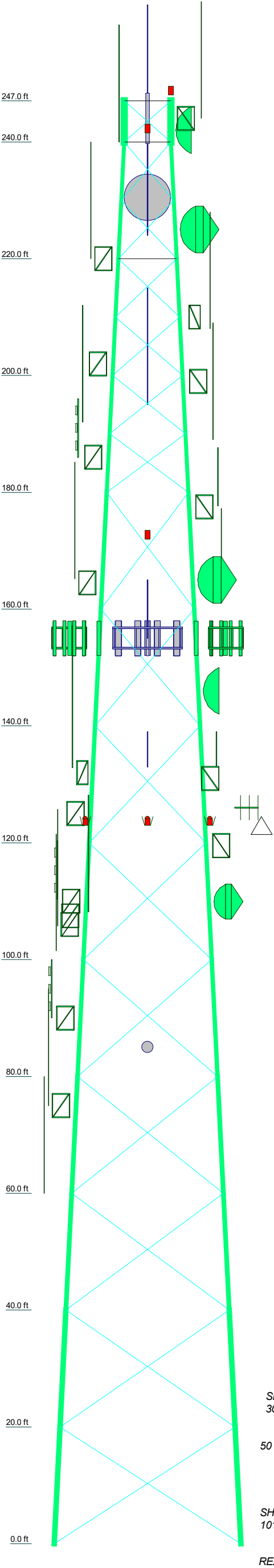
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

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

tnxTower Features:

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

Section	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	
Legs	#12ZG - 2.75" - 0.875" conn. (Prod 208337)		#12ZG - 2.50" - 0.875" conn. (Prod 208335)		#12ZG - 2.25" - 0.875" conn. (Prod 208334)		#12ZG - 2.00" - 0.875" conn. (Prod 208333)		C		#12ZG - 1.75" - 1.00" conn. (Prod 195557)		B	A
Leg Grade	A572-50													
Diagonals	2L4x4x1/4		2L3 1/2x3 1/2x1/4											
Diagonal Grade	A36													
Top Girts	N.A.													
Face Width (ft)	32	30	28	26	24	22	20	18	16	14	12	10	8	
# Panels @ (ft)	9 @ 20													
Weight (K)	63.9	8.0	7.8	6.6	6.4	5.7	5.6	4.9	4.8	2.8	2.8	2.3	1.1	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
21' LRE (arm=8.88') 806012	247	BXA-185063/12CF (Future)	155
Beacon	247	BXA-185063/12CF (Future)	155
KRECO CO-36AN (Eversource)	246	12' V Frame (Future)	155
ANT450F6 (Eversource)	244	12' V Frame (Future)	155
6' Pivot Side Arm (50" pipe) (Eversource)	244	12' V Frame (Future)	155
SE419-SWBPALDF (CSP)	244	BXA-70063/6CF (Future)	155
DB810KE-XT (CSP)	242	BXA-70063/6CF (Future)	155
HX8-6W-6GF (Eversource)	242	BXA-70063/6CF (Future)	155
TMA (12"x16"x6") (CSP)	241.5	(2) LPA-80063/6CF (Future)	155
6' Pivot Side Arm (50" pipe) (CSP)	241.5	HX8-6W-6GF (Eversource)	146
DB810KE-XT (CSP)	241.5	DB636-C (CTPS)	136
8' Solid w/ Radome (CSP)	230.5	531-70HD (Eversource)	136
DB616-BC (ICS)	230	DS2C03F36D-D (Eversource)	132
8' Solid w/ Radome (Future)	225	SitePro USF-4U (Eversource)	132
Rohn 6' Side-Arm(1) (ICS)	220	ROHN 3-ft Side Arm (CTPS)	131
PD1142-2A (Future)	210	ROHN 6-ft Side Arm (Eversource)	131
Rohn 6' Side-Arm(1) (Future)	210	DB230-2A (Eversource)	126
6' Pivot Side Arm (50" pipe) (LCD)	202	6' Pivot Side Arm (50" pipe) (Eversource)	125
PD220-DT (LCD)	202	Obstruction Lights	123
PD458-2 (LCD)	199	Obstruction Lights	123
6' Pivot Side Arm (50" pipe) (LCD)	199	Obstruction Lights	123
DB589-Y (Eversource (inverted))	199	BA40-41 (Motorola)	120
6' Pivot Side Arm (50" pipe) (Eversource)	199	6' Pivot Side Arm (50" pipe) (Eversource)	119.5
DB589-Y (Eversource (upright))	199	KRECO CO-36AN (Eversource)	118.17
DB222-A (LCD)	186	PD220 (LCD)	115.75
6' Pivot Side Arm (50" pipe) (LCD)	186	DB222-A (NMPD)	115.33
BCD-80010NE (CSP)	182.66	6' Pivot Side Arm (50" pipe) (Motorola)	115
6' Pivot Side Arm (50" pipe) (CSP)	177.5	KRECO CO-36AN (Eversource)	111.5
220-3AN (Eversource)	175.17	6' Pivot Side Arm (50" pipe) (NMPD)	110
BCD-80010NE (CSP)	172.25	6' Solid w/ Radome (CSP)	109.9
6' Pivot Side Arm (50" pipe) (CSP)	172	6' Pivot Side Arm (50" pipe) (LCD)	107.5
TMA (12"x16"x6") (CSP)	172	6' Pivot Side Arm (50" pipe) (Eversource)	106
SE-414 (CSP)	172	BA40-41 (Motorola)	100
8' Solid w/ Radome (Future)	165	DB222-A (NMPD)	95
6' Pivot Side Arm (50" pipe) (Eversource)	164.5	6' Pivot Side Arm (50" pipe) (Motorola)	95
SE4192 (CSP)	160	6' Pivot Side Arm (50" pipe) (NMPD)	90
SE4192 (CSP)	160	1142-2C (NMPW)	85
8' x 10' Sector Frame (CSP)	160	HP2-4.7 (Motorola)	85
(2) LPA-80063/6CF (Future)	155	6' Pivot Side Arm (50" pipe) (NMPW)	75
(2) LPA-80063/6CF (Future)	155	ANT450F6 (CSP)	70
BXA-185063/12CF (Future)	155		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	C	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)
B	#12ZG - 1.50" - 1.00" conn. (Pirod 207629)		

MATERIAL STRENGTH

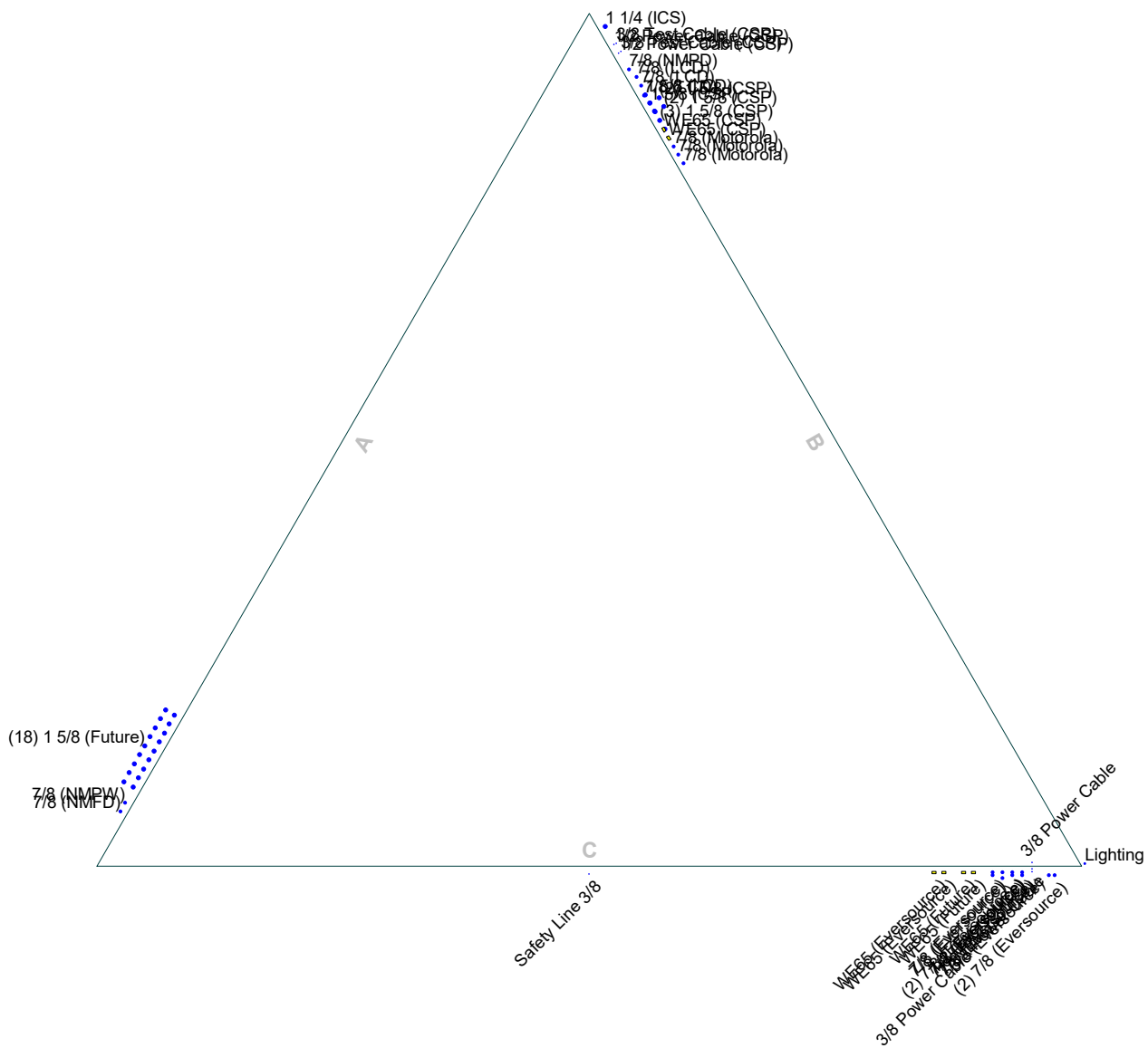
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 97 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 85.2%

Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: 23080.02 - New Milford		
	Project: 26 Chapin Road, New Milford, CT		
	Client: Eversource	Drawn by: TJL	App'd:
	Code: TIA-222-H	Date: 07/05/23	Scale: NTS
	Path: J:\2302300000\W02 - New Milford\Structural Analysis\Backup Documentation\ER Files\247 & 182 09247 & Valmont SSV &	Dwg No. E-1	

Round Flat App In Face App Out Face Truss-Leg



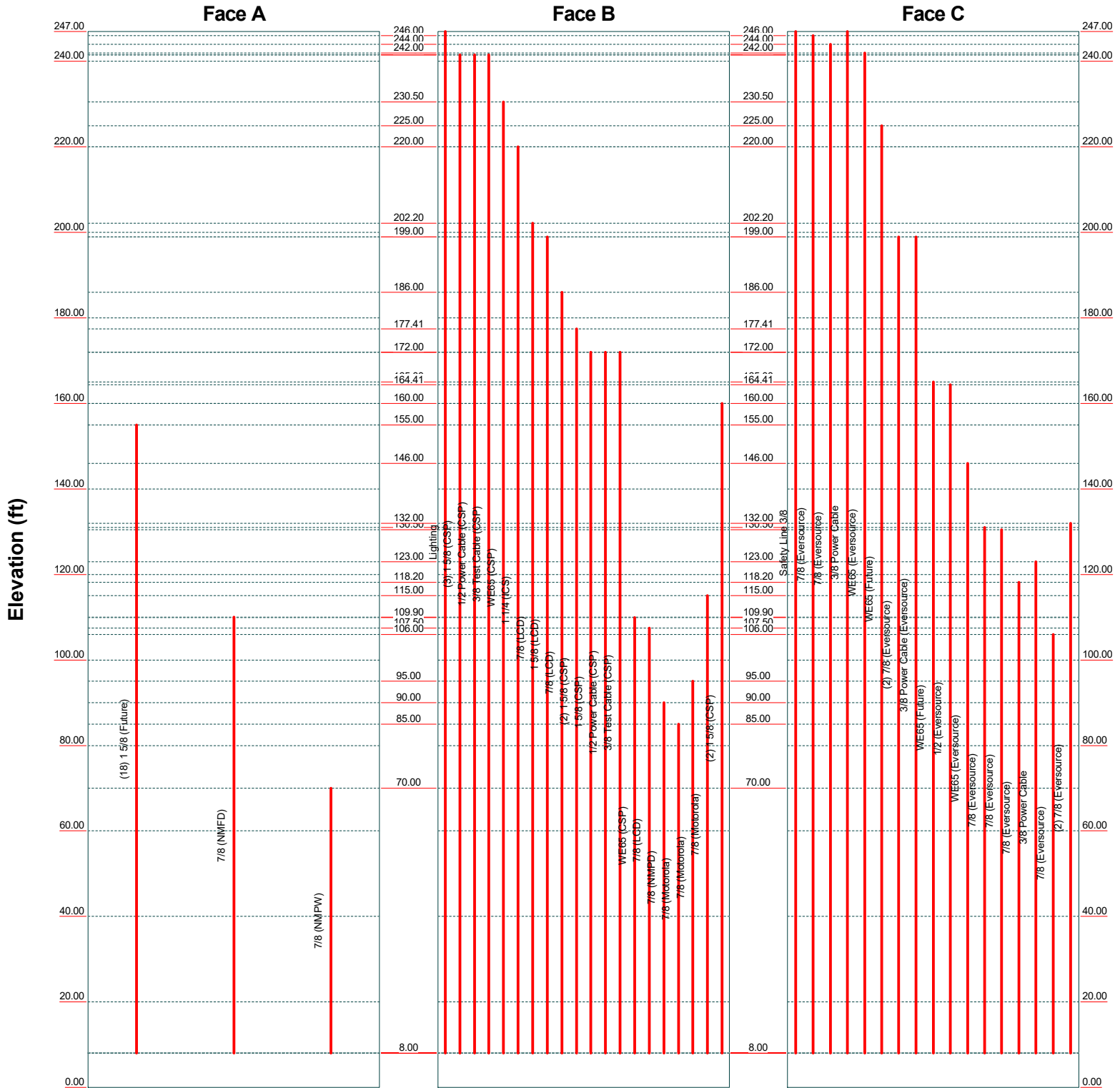
Dwg No. F-7

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Feed Line Distribution Chart

0' - 247'

Round Flat App In Face App Out Face Truss Leg



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 Code: TIA-222-H
 Path: J:\Jobs\23080.02\W02 - New Milford\Structural Analysis\Structure Documentation\EPN Files\247 & 182\0247 & 182.mxd

Drawn by: TJL
 Date: 07/05/23
 App'd:
 Scale: NTS
 Dwg No. E-7

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	Client Eversource	Designed by T.J.L

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 247.00 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 8.00 ft at the top and 32.00 ft at the base.

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

The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 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 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 97 mph.

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

Pressures are calculated at each section.

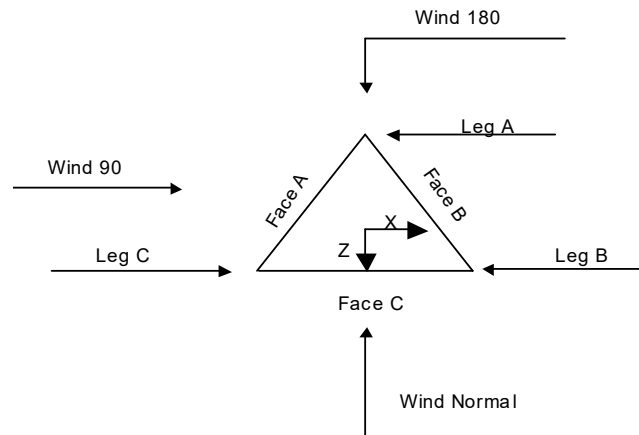
Stress ratio used in tower member design is 1.

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

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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	247.00-240.00			8.00	1	7.00
T2	240.00-220.00			8.00	1	20.00
T3	220.00-200.00			10.00	1	20.00
T4	200.00-180.00			12.00	1	20.00
T5	180.00-160.00			14.00	1	20.00
T6	160.00-140.00			16.00	1	20.00
T7	140.00-120.00			18.00	1	20.00
T8	120.00-100.00			20.00	1	20.00
T9	100.00-80.00			22.00	1	20.00
T10	80.00-60.00			24.00	1	20.00
T11	60.00-40.00			26.00	1	20.00
T12	40.00-20.00			28.00	1	20.00
T13	20.00-0.00			30.00	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	247.00-240.00	7.00	X Brace	No	No	0.0000	0.0000
T2	240.00-220.00	10.00	X Brace	No	No	0.0000	0.0000

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	Eversource	TJL

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T3	220.00-200.00	10.00	X Brace	No	No	0.0000	0.0000
T4	200.00-180.00	10.00	X Brace	No	No	0.0000	0.0000
T5	180.00-160.00	20.00	X Brace	No	No	0.0000	0.0000
T6	160.00-140.00	20.00	X Brace	No	No	0.0000	0.0000
T7	140.00-120.00	20.00	X Brace	No	No	0.0000	0.0000
T8	120.00-100.00	20.00	X Brace	No	No	0.0000	0.0000
T9	100.00-80.00	20.00	X Brace	No	No	0.0000	0.0000
T10	80.00-60.00	20.00	X Brace	No	No	0.0000	0.0000
T11	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T12	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T13	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 247.00-240.00	Truss Leg	#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 240.00-220.00	Truss Leg	#12ZG - 1.50" - 1.00" conn. (Pirod 207629)	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 220.00-200.00	Truss Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 200.00-180.00	Truss Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T5 180.00-160.00	Truss Leg	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T6 160.00-140.00	Truss Leg	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T7 140.00-120.00	Truss Leg	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 120.00-100.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 100.00-80.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 80.00-60.00	Truss Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T11 60.00-40.00	Truss Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 40.00-20.00	Truss Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4	A36 (36 ksi)
T13 20.00-0.00	Truss Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	A572-50 (50 ksi)	Double Equal Angle	2L4x4x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 247.00-240.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 240.00-220.00	Equal Angle	L2 1/2x2 1/2x3/16	A36	Single Angle		A36

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Tower Elevation <i>ft</i>	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T3 220.00-200.00	Equal Angle	L3x3x3/16	(36 ksi) A36 (36 ksi)	Solid Round		(36 ksi) A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Gusset Area (per face) <i>ft²</i>	Gusset Thickness <i>in</i>	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals <i>in</i>	Double Angle Stitch Bolt Spacing Horizontals <i>in</i>	Double Angle Stitch Bolt Spacing Redundants <i>in</i>
T1	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
247.00-240.00			(36 ksi)						
T2	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
240.00-220.00			(36 ksi)						
T3	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
220.00-200.00			(36 ksi)						
T4	0.00	0.5000	A36	1	1	1.05	36.0000	36.0000	36.0000
200.00-180.00			(36 ksi)						
T5	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
180.00-160.00			(36 ksi)						
T6	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
160.00-140.00			(36 ksi)						
T7	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
140.00-120.00			(36 ksi)						
T8	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
120.00-100.00			(36 ksi)						
T9	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
100.00-80.00			(36 ksi)						
T10	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
80.00-60.00			(36 ksi)						
T11	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
60.00-40.00			(36 ksi)						
T12	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
40.00-20.00			(36 ksi)						
T13 20.00-0.00	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
247.00-240.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1

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Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	<i>K Factors¹</i>							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T4	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

¹Note: 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	<i>Truss-Leg K Factors</i>					
	<i>Truss-Legs Used As Leg Members</i>			<i>Truss-Legs Used As Inner Members</i>		
	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1	1	0.5	0.7	1	0.85	0.85
247.00-240.00						
T2	1	0.5	0.7	1	0.85	0.85
240.00-220.00						
T3	1	0.5	0.7	1	0.5	0.7
220.00-200.00						
T4	1	0.5	0.7	1	0.5	0.7
200.00-180.00						
T5	1	0.5	0.7	1	0.5	0.7
180.00-160.00						
T6	1	0.5	0.7	1	0.5	0.7
160.00-140.00						
T7	1	0.5	0.7	1	0.5	0.7
140.00-120.00						
T8	1	0.5	0.7	1	0.5	0.7
120.00-100.00						
T9	1	0.5	0.7	1	0.5	0.7
100.00-80.00						
T10	1	0.5	0.7	1	0.5	0.7
80.00-60.00						
T11	1	0.5	0.7	1	0.5	0.7
60.00-40.00						
T12	1	0.5	0.7	1	0.5	0.7
40.00-20.00						

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Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
200.00-180.00														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
180.00-160.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
160.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
140.00-120.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-100.00														
T9	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-80.00														
T10	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
80.00-60.00														
T11	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
60.00-40.00														
T12	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
40.00-20.00														
T13 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
	in	in	in	in	in	in	in	in
T1	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
247.00-240.00								
T2	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
240.00-220.00								
T3	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0000
220.00-200.00								
T4	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
200.00-180.00								
T5	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
180.00-160.00								
T6	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
160.00-140.00								
T7	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
140.00-120.00								
T8	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
120.00-100.00								
T9	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
100.00-80.00								
T10	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
80.00-60.00								
T11	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
60.00-40.00								

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Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T12 40.00-20.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T13 20.00-0.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000

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 247.00-240.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	1.0000 A325N	0	0.6250 A325X	0	1.0000 A325N	0	0.6250 A325X	0
T2 240.00-220.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	1.0000 A325N	0	0.6250 A325X	0	1.0000 A325N	0	0.6250 A325X	0
T3 220.00-200.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T4 200.00-180.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T5 180.00-160.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T6 160.00-140.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T7 140.00-120.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T8 120.00-100.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T9 100.00-80.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T10 80.00-60.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T11 60.00-40.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T12 40.00-20.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T13 20.00-0.00	Flange	1.0000 F1554-105	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	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
Safety Line 3/8	C	No	No	Ar (CaAa)	247.00 - 8.00	3.0000	0	1	1	0.3750	0.3750		0.22
Lighting	B	No	No	Ar (CaAa)	247.00 - 8.00	1.0000	0.5	1	1	0.8700	0.8700		0.15

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8 (Eversource)	C	No	No	Ar (CaAa)	246.00 - 8.00	2.0000	-0.41	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	C	No	No	Ar (CaAa)	244.00 - 8.00	3.0000	-0.41	1	1	1.1100	1.1100		0.54
1 5/8 (CSP)	B	No	No	Ar (CaAa)	241.50 - 8.00	2.0000	-0.37	3	3	1.9800	1.9800		1.04
1/2 Power Cable (CSP)	B	No	No	Ar (CaAa)	241.50 - 8.00	2.0000	-0.45	1	1	0.5800	0.5800		0.25
3/8 Test Cable (CSP)	B	No	No	Ar (CaAa)	241.50 - 8.00	3.0000	-0.45	1	1	0.4400	0.4400		0.08
3/8 Power Cable	C	No	No	Ar (CaAa)	247.00 - 8.00	1.0000	-0.45	1	1	0.4400	0.4400		0.08
WE65 (Eversource)	C	No	No	Af (CaAa)	242.00 - 8.00	2.0000	-0.35	1	1	1.5836	1.5836		0.53
WE65 (CSP)	B	No	No	Af (CaAa)	230.50 - 8.00	2.0000	-0.36	1	1	1.5836	1.5836		0.53
WE65 (Future)	C	No	No	Af (CaAa)	225.00 - 8.00	2.0000	-0.39	1	1	1.5836	1.5836		0.53
1 1/4 (ICS)	B	No	No	Ar (CaAa)	220.00 - 8.00	2.0000	-0.48	1	1	1.5500	1.5500		0.66
7/8 (LCD)	B	No	No	Ar (CaAa)	202.20 - 8.00	2.0000	-0.4	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	C	No	No	Ar (CaAa)	199.00 - 8.00	2.0000	-0.42	2	1	1.1100	1.1100		0.54
3/8 Power Cable (Eversource)	C	No	No	Ar (CaAa)	199.00 - 8.00	2.0000	-0.45	1	1	0.4400	0.4400		0.08
1 5/8 (LCD)	B	No	No	Ar (CaAa)	199.00 - 8.00	2.0000	-0.4	1	1	1.9800	1.9800		1.04
7/8 (LCD)	B	No	No	Ar (CaAa)	186.00 - 8.00	3.0000	-0.41	1	1	1.1100	1.1100		0.54
1 5/8 (CSP)	B	No	No	Ar (CaAa)	177.41 - 8.00	2.0000	-0.38	2	1	1.9800	1.9800		1.04
WE65 (Future)	C	No	No	Af (CaAa)	165.00 - 8.00	2.0000	-0.38	1	1	1.5836	1.5836		0.53
1/2 (Eversource)	C	No	No	Ar (CaAa)	164.41 - 8.00	2.0000	-0.43	1	1	0.5800	0.5800		0.25
1 5/8 (CSP)	B	No	No	Ar (CaAa)	172.00 - 8.00	2.0000	-0.39	1	1	1.9800	1.9800		1.04
1/2 Power Cable (CSP)	B	No	No	Ar (CaAa)	172.00 - 8.00	2.0000	-0.46	1	1	0.5800	0.5800		0.25
3/8 Test Cable (CSP)	B	No	No	Ar (CaAa)	172.00 - 8.00	3.0000	-0.46	1	1	0.4400	0.4400		0.08
1 5/8 (Future)	A	No	No	Ar (CaAa)	155.00 - 8.00	2.0000	-0.37	18	9	1.9800	1.9800		1.04
WE65 (Eversource)	C	No	No	Af (CaAa)	146.00 - 8.00	2.0000	-0.36	1	1	1.5836	1.5836		0.53
7/8 (Eversource)	C	No	No	Ar (CaAa)	131.00 - 8.00	2.0000	-0.43	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	C	No	No	Ar (CaAa)	130.50 - 8.00	3.0000	-0.43	1	1	1.1100	1.1100		0.54
7/8 (Eversource)	C	No	No	Ar (CaAa)	118.20 - 8.00	2.0000	-0.44	1	1	1.1100	1.1100		0.54
3/8 Power Cable	C	No	No	Ar (CaAa)	123.00 - 8.00	-1.0000	-0.45	1	1	0.4400	0.4400		0.08
7/8 (NMFd)	A	No	No	Ar (CaAa)	110.00 - 8.00	2.0000	-0.44	1	1	1.1100	1.1100		0.54
WE65	B	No	No	Af (CaAa)	109.90 -	2.0000	-0.35	1	1	1.5836	1.5836		0.53

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(CSP)					8.00								
7/8	B	No	No	Ar (CaAa)	107.50 -	3.0000	-0.42	1	1	1.1100	1.1100		0.54
(LCD)					8.00								
7/8	C	No	No	Ar (CaAa)	106.00 -	3.0000	-0.44	1	1	1.1100	1.1100		0.54
(Eversource)					8.00								
7/8	B	No	No	Ar (CaAa)	90.00 - 8.00	2.0000	-0.43	1	1	1.1100	1.1100		0.54
(NMPD)													
7/8	A	No	No	Ar (CaAa)	70.00 - 8.00	2.0000	-0.43	1	1	1.1100	1.1100		0.54
(NMPW)													
7/8	B	No	No	Ar (CaAa)	85.00 - 8.00	2.0000	-0.32	1	1	1.1100	1.1100		0.54
(Motorola)													
7/8	B	No	No	Ar (CaAa)	95.00 - 8.00	2.0000	-0.33	1	1	1.1100	1.1100		0.54
(Motorola)													
7/8	B	No	No	Ar (CaAa)	115.00 -	2.0000	-0.34	1	1	1.1100	1.1100		0.54
(Motorola)					8.00								
1 5/8	B	No	No	Ar (CaAa)	160.00 -	2.0000	-0.39	2	1	1.9800	1.9800		1.04
(CSP)					8.00								
7/8	C	No	No	Ar (CaAa)	132.00 -	3.0000	-0.47	2	2	1.1100	1.1100		0.54
(Eversource)					8.00								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	247.00-240.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.653	0.000	0.01
		C	0.000	0.000	2.208	0.000	0.01
T2	240.00-220.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	18.431	0.000	0.08
		C	0.000	0.000	12.668	0.000	0.04
T3	220.00-200.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	24.283	0.000	0.10
		C	0.000	0.000	16.627	0.000	0.05
T4	200.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	30.687	0.000	0.13
		C	0.000	0.000	21.681	0.000	0.07
T5	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	42.933	0.000	0.19
		C	0.000	0.000	23.523	0.000	0.08
T6	160.00-140.00	A	0.000	0.000	53.460	0.000	0.28
		B	0.000	0.000	54.279	0.000	0.25
		C	0.000	0.000	29.969	0.000	0.09
T7	140.00-120.00	A	0.000	0.000	71.280	0.000	0.37
		B	0.000	0.000	54.279	0.000	0.25
		C	0.000	0.000	38.847	0.000	0.12
T8	120.00-100.00	A	0.000	0.000	72.390	0.000	0.38
		B	0.000	0.000	59.389	0.000	0.27
		C	0.000	0.000	46.110	0.000	0.16
T9	100.00-80.00	A	0.000	0.000	73.500	0.000	0.39
		B	0.000	0.000	67.327	0.000	0.30
		C	0.000	0.000	47.864	0.000	0.16
T10	80.00-60.00	A	0.000	0.000	74.610	0.000	0.39
		B	0.000	0.000	70.657	0.000	0.31
		C	0.000	0.000	47.864	0.000	0.16
T11	60.00-40.00	A	0.000	0.000	75.720	0.000	0.40

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
			<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>
T12	40.00-20.00	B	0.000	0.000	70.657	0.000	0.31
		C	0.000	0.000	47.864	0.000	0.16
		A	0.000	0.000	75.720	0.000	0.40
		B	0.000	0.000	70.657	0.000	0.31
		C	0.000	0.000	47.864	0.000	0.16
T13	20.00-0.00	A	0.000	0.000	45.432	0.000	0.24
		B	0.000	0.000	42.394	0.000	0.19
		C	0.000	0.000	28.719	0.000	0.10

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
				<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>
T1	247.00-240.00	A	1.404	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	6.117	0.000	0.07
		C		0.000	0.000	9.511	0.000	0.11
T2	240.00-220.00	A	1.396	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	60.142	0.000	0.71
		C		0.000	0.000	41.993	0.000	0.48
T3	220.00-200.00	A	1.384	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	74.507	0.000	0.88
		C		0.000	0.000	49.838	0.000	0.56
T4	200.00-180.00	A	1.370	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	92.268	0.000	1.11
		C		0.000	0.000	72.621	0.000	0.79
T5	180.00-160.00	A	1.355	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	132.315	0.000	1.55
		C		0.000	0.000	77.434	0.000	0.84
T6	160.00-140.00	A	1.338	0.000	0.000	70.019	0.000	1.76
		B		0.000	0.000	167.924	0.000	1.92
		C		0.000	0.000	93.052	0.000	1.00
T7	140.00-120.00	A	1.319	0.000	0.000	93.244	0.000	2.33
		B		0.000	0.000	166.708	0.000	1.89
		C		0.000	0.000	119.154	0.000	1.25
T8	120.00-100.00	A	1.297	0.000	0.000	96.817	0.000	2.36
		B		0.000	0.000	178.826	0.000	2.01
		C		0.000	0.000	145.895	0.000	1.52
T9	100.00-80.00	A	1.271	0.000	0.000	100.264	0.000	2.38
		B		0.000	0.000	199.595	0.000	2.21
		C		0.000	0.000	149.846	0.000	1.55
T10	80.00-60.00	A	1.240	0.000	0.000	103.537	0.000	2.40
		B		0.000	0.000	207.779	0.000	2.27
		C		0.000	0.000	147.519	0.000	1.50
T11	60.00-40.00	A	1.199	0.000	0.000	106.553	0.000	2.41
		B		0.000	0.000	204.173	0.000	2.18
		C		0.000	0.000	144.493	0.000	1.43
T12	40.00-20.00	A	1.139	0.000	0.000	105.717	0.000	2.36
		B		0.000	0.000	198.928	0.000	2.06
		C		0.000	0.000	140.091	0.000	1.34
T13	20.00-0.00	A	1.021	0.000	0.000	62.436	0.000	1.36
		B		0.000	0.000	113.113	0.000	1.09
		C		0.000	0.000	78.813	0.000	0.70

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Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T1	247.00-240.00	1.9276	0.6132	2.6483	1.1449
T2	240.00-220.00	5.0677	-2.8311	7.1470	-3.6044
T3	220.00-200.00	6.6539	-4.4568	9.5500	-6.1709
T4	200.00-180.00	9.0587	-6.1252	14.0560	-7.1614
T5	180.00-160.00	10.9610	-11.4757	16.4053	-15.1275
T6	160.00-140.00	-6.2501	-5.5124	5.9360	-13.7091
T7	140.00-120.00	-9.1466	-1.4023	6.4184	-9.4828
T8	120.00-100.00	-7.1311	-1.3860	10.5855	-8.5422
T9	100.00-80.00	-6.7707	-3.7321	11.6327	-11.8640
T10	80.00-60.00	-7.2787	-4.9100	11.5450	-14.0296
T11	60.00-40.00	-8.1321	-4.9612	11.1360	-14.4403
T12	40.00-20.00	-8.1793	-4.9944	10.9902	-14.9294
T13	20.00-0.00	-6.2724	-3.8663	7.8447	-11.8811

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Safety Line 3/8	240.00 - 247.00	0.6000	0.3788
T1	2	Lighting	240.00 - 247.00	0.6000	0.3788
T1	3	7/8	240.00 - 246.00	0.6000	0.3788
T1	4	7/8	240.00 - 244.00	0.6000	0.3788
T1	5	1 5/8	240.00 - 241.50	0.6000	0.3788
T1	6	1/2 Power Cable	240.00 - 241.50	0.6000	0.3788
T1	7	3/8 Test Cable	240.00 - 241.50	0.6000	0.3788
T1	8	3/8 Power Cable	240.00 - 247.00	0.6000	0.3788
T1	9	WE65	240.00 - 242.00	0.6000	0.3788
T2	1	Safety Line 3/8	220.00 - 240.00	0.6000	0.5514
T2	2	Lighting	220.00 - 240.00	0.6000	0.5514
T2	3	7/8	220.00 - 240.00	0.6000	0.5514
T2	4	7/8	220.00 - 240.00	0.6000	0.5514
T2	5	1 5/8	220.00 - 240.00	0.6000	0.5514
T2	6	1/2 Power Cable	220.00 - 240.00	0.6000	0.5514
T2	7	3/8 Test Cable	220.00 - 240.00	0.6000	0.5514
T2	8	3/8 Power Cable	220.00 - 240.00	0.6000	0.5514

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T2	9	WE65	220.00 - 240.00	0.6000	0.5514
T2	10	WE65	220.00 - 230.50	0.6000	0.5514
T2	11	WE65	220.00 - 225.00	0.6000	0.5514
T3	1	Safety Line 3/8	200.00 - 220.00	0.6000	0.6000
T3	2	Lighting	200.00 - 220.00	0.6000	0.6000
T3	3	7/8	200.00 - 220.00	0.6000	0.6000
T3	4	7/8	200.00 - 220.00	0.6000	0.6000
T3	5	1 5/8	200.00 - 220.00	0.6000	0.6000
T3	6	1/2 Power Cable	200.00 - 220.00	0.6000	0.6000
T3	7	3/8 Test Cable	200.00 - 220.00	0.6000	0.6000
T3	8	3/8 Power Cable	200.00 - 220.00	0.6000	0.6000
T3	9	WE65	200.00 - 220.00	0.6000	0.6000
T3	10	WE65	200.00 - 220.00	0.6000	0.6000
T3	11	WE65	200.00 - 220.00	0.6000	0.6000
T3	12	1 1/4	200.00 - 220.00	0.6000	0.6000
T3	13	7/8	200.00 - 202.20	0.6000	0.6000
T4	1	Safety Line 3/8	180.00 - 200.00	0.6000	0.6000
T4	2	Lighting	180.00 - 200.00	0.6000	0.6000
T4	3	7/8	180.00 - 200.00	0.6000	0.6000
T4	4	7/8	180.00 - 200.00	0.6000	0.6000
T4	5	1 5/8	180.00 - 200.00	0.6000	0.6000
T4	6	1/2 Power Cable	180.00 - 200.00	0.6000	0.6000
T4	7	3/8 Test Cable	180.00 - 200.00	0.6000	0.6000
T4	8	3/8 Power Cable	180.00 - 200.00	0.6000	0.6000
T4	9	WE65	180.00 - 200.00	0.6000	0.6000
T4	10	WE65	180.00 - 200.00	0.6000	0.6000
T4	11	WE65	180.00 - 200.00	0.6000	0.6000
T4	12	1 1/4	180.00 - 200.00	0.6000	0.6000
T4	13	7/8	180.00 - 200.00	0.6000	0.6000
T4	14	7/8	180.00 - 199.00	0.6000	0.6000
T4	15	3/8 Power Cable	180.00 - 199.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T4	16	1 5/8	180.00 - 199.00	0.6000	0.6000
T4	17	7/8	180.00 - 186.00	0.6000	0.6000
T5	1	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T5	2	Lighting	160.00 - 180.00	0.6000	0.6000
T5	3	7/8	160.00 - 180.00	0.6000	0.6000
T5	4	7/8	160.00 - 180.00	0.6000	0.6000
T5	5	1 5/8	160.00 - 180.00	0.6000	0.6000
T5	6	1/2 Power Cable	160.00 - 180.00	0.6000	0.6000
T5	7	3/8 Test Cable	160.00 - 180.00	0.6000	0.6000
T5	8	3/8 Power Cable	160.00 - 180.00	0.6000	0.6000
T5	9	WE65	160.00 - 180.00	0.6000	0.6000
T5	10	WE65	160.00 - 180.00	0.6000	0.6000
T5	11	WE65	160.00 - 180.00	0.6000	0.6000
T5	12	1 1/4	160.00 - 180.00	0.6000	0.6000
T5	13	7/8	160.00 - 180.00	0.6000	0.6000
T5	14	7/8	160.00 - 180.00	0.6000	0.6000
T5	15	3/8 Power Cable	160.00 - 180.00	0.6000	0.6000
T5	16	1 5/8	160.00 - 180.00	0.6000	0.6000
T5	17	7/8	160.00 - 180.00	0.6000	0.6000
T5	18	1 5/8	160.00 - 177.41	0.6000	0.6000
T5	19	WE65	160.00 - 165.00	0.6000	0.6000
T5	20	1/2	160.00 - 164.41	0.6000	0.6000
T5	21	1 5/8	160.00 - 172.00	0.6000	0.6000
T5	22	1/2 Power Cable	160.00 - 172.00	0.6000	0.6000
T5	23	3/8 Test Cable	160.00 - 172.00	0.6000	0.6000
T6	1	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T6	2	Lighting	140.00 - 160.00	0.6000	0.6000
T6	3	7/8	140.00 - 160.00	0.6000	0.6000
T6	4	7/8	140.00 - 160.00	0.6000	0.6000
T6	5	1 5/8	140.00 - 160.00	0.6000	0.6000
T6	6	1/2 Power Cable	140.00 - 160.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	7	3/8 Test Cable	140.00 - 160.00	0.6000	0.6000
T6	8	3/8 Power Cable	140.00 - 160.00	0.6000	0.6000
T6	9	WE65	140.00 - 160.00	0.6000	0.6000
T6	10	WE65	140.00 - 160.00	0.6000	0.6000
T6	11	WE65	140.00 - 160.00	0.6000	0.6000
T6	12	1 1/4	140.00 - 160.00	0.6000	0.6000
T6	13	7/8	140.00 - 160.00	0.6000	0.6000
T6	14	7/8	140.00 - 160.00	0.6000	0.6000
T6	15	3/8 Power Cable	140.00 - 160.00	0.6000	0.6000
T6	16	1 5/8	140.00 - 160.00	0.6000	0.6000
T6	17	7/8	140.00 - 160.00	0.6000	0.6000
T6	18	1 5/8	140.00 - 160.00	0.6000	0.6000
T6	19	WE65	140.00 - 160.00	0.6000	0.6000
T6	20	1/2	140.00 - 160.00	0.6000	0.6000
T6	21	1 5/8	140.00 - 160.00	0.6000	0.6000
T6	22	1/2 Power Cable	140.00 - 160.00	0.6000	0.6000
T6	23	3/8 Test Cable	140.00 - 160.00	0.6000	0.6000
T6	24	1 5/8	140.00 - 155.00	0.6000	0.6000
T6	25	WE65	140.00 - 146.00	0.6000	0.6000
T6	39	1 5/8	140.00 - 160.00	0.6000	0.6000
T7	1	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T7	2	Lighting	120.00 - 140.00	0.6000	0.6000
T7	3	7/8	120.00 - 140.00	0.6000	0.6000
T7	4	7/8	120.00 - 140.00	0.6000	0.6000
T7	5	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	6	1/2 Power Cable	120.00 - 140.00	0.6000	0.6000
T7	7	3/8 Test Cable	120.00 - 140.00	0.6000	0.6000
T7	8	3/8 Power Cable	120.00 - 140.00	0.6000	0.6000
T7	9	WE65	120.00 - 140.00	0.6000	0.6000
T7	10	WE65	120.00 - 140.00	0.6000	0.6000
T7	11	WE65	120.00 - 140.00	0.6000	0.6000

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T7	12	1 1/4	120.00 - 140.00	0.6000	0.6000
T7	13	7/8	120.00 - 140.00	0.6000	0.6000
T7	14	7/8	120.00 - 140.00	0.6000	0.6000
T7	15	3/8 Power Cable	120.00 - 140.00	0.6000	0.6000
T7	16	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	17	7/8	120.00 - 140.00	0.6000	0.6000
T7	18	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	19	WE65	120.00 - 140.00	0.6000	0.6000
T7	20	1/2	120.00 - 140.00	0.6000	0.6000
T7	21	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	22	1/2 Power Cable	120.00 - 140.00	0.6000	0.6000
T7	23	3/8 Test Cable	120.00 - 140.00	0.6000	0.6000
T7	24	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	25	WE65	120.00 - 140.00	0.6000	0.6000
T7	26	7/8	120.00 - 131.00	0.6000	0.6000
T7	27	7/8	120.00 - 130.50	0.6000	0.6000
T7	29	3/8 Power Cable	120.00 - 123.00	0.6000	0.6000
T7	39	1 5/8	120.00 - 140.00	0.6000	0.6000
T7	40	7/8	120.00 - 132.00	0.6000	0.6000
T8	1	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T8	2	Lighting	100.00 - 120.00	0.6000	0.6000
T8	3	7/8	100.00 - 120.00	0.6000	0.6000
T8	4	7/8	100.00 - 120.00	0.6000	0.6000
T8	5	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	6	1/2 Power Cable	100.00 - 120.00	0.6000	0.6000
T8	7	3/8 Test Cable	100.00 - 120.00	0.6000	0.6000
T8	8	3/8 Power Cable	100.00 - 120.00	0.6000	0.6000
T8	9	WE65	100.00 - 120.00	0.6000	0.6000
T8	10	WE65	100.00 - 120.00	0.6000	0.6000
T8	11	WE65	100.00 - 120.00	0.6000	0.6000
T8	12	1 1/4	100.00 - 120.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T8	13	7/8	100.00 - 120.00	0.6000	0.6000
T8	14	7/8	100.00 - 120.00	0.6000	0.6000
T8	15	3/8 Power Cable	100.00 - 120.00	0.6000	0.6000
T8	16	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	17	7/8	100.00 - 120.00	0.6000	0.6000
T8	18	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	19	WE65	100.00 - 120.00	0.6000	0.6000
T8	20	1/2	100.00 - 120.00	0.6000	0.6000
T8	21	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	22	1/2 Power Cable	100.00 - 120.00	0.6000	0.6000
T8	23	3/8 Test Cable	100.00 - 120.00	0.6000	0.6000
T8	24	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	25	WE65	100.00 - 120.00	0.6000	0.6000
T8	26	7/8	100.00 - 120.00	0.6000	0.6000
T8	27	7/8	100.00 - 120.00	0.6000	0.6000
T8	28	7/8	100.00 - 118.20	0.6000	0.6000
T8	29	3/8 Power Cable	100.00 - 120.00	0.6000	0.6000
T8	30	7/8	100.00 - 110.00	0.6000	0.6000
T8	31	WE65	100.00 - 109.90	0.6000	0.6000
T8	32	7/8	100.00 - 107.50	0.6000	0.6000
T8	33	7/8	100.00 - 106.00	0.6000	0.6000
T8	38	7/8	100.00 - 115.00	0.6000	0.6000
T8	39	1 5/8	100.00 - 120.00	0.6000	0.6000
T8	40	7/8	100.00 - 120.00	0.6000	0.6000
T9	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T9	2	Lighting	80.00 - 100.00	0.6000	0.6000
T9	3	7/8	80.00 - 100.00	0.6000	0.6000
T9	4	7/8	80.00 - 100.00	0.6000	0.6000
T9	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	6	1/2 Power Cable	80.00 - 100.00	0.6000	0.6000
T9	7	3/8 Test Cable	80.00 - 100.00	0.6000	0.6000
T9	8	3/8 Power Cable	80.00 - 100.00	0.6000	0.6000
T9	9	WE65	80.00 - 100.00	0.6000	0.6000
T9	10	WE65	80.00 - 100.00	0.6000	0.6000
T9	11	WE65	80.00 - 100.00	0.6000	0.6000
T9	12	1 1/4	80.00 - 100.00	0.6000	0.6000
T9	13	7/8	80.00 - 100.00	0.6000	0.6000
T9	14	7/8	80.00 - 100.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T9	15	3/8 Power Cable	80.00 - 100.00	0.6000	0.6000
T9	16	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	17	7/8	80.00 - 100.00	0.6000	0.6000
T9	18	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	19	WE65	80.00 - 100.00	0.6000	0.6000
T9	20	1/2	80.00 - 100.00	0.6000	0.6000
T9	21	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	22	1/2 Power Cable	80.00 - 100.00	0.6000	0.6000
T9	23	3/8 Test Cable	80.00 - 100.00	0.6000	0.6000
T9	24	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	25	WE65	80.00 - 100.00	0.6000	0.6000
T9	26	7/8	80.00 - 100.00	0.6000	0.6000
T9	27	7/8	80.00 - 100.00	0.6000	0.6000
T9	28	7/8	80.00 - 100.00	0.6000	0.6000
T9	29	3/8 Power Cable	80.00 - 100.00	0.6000	0.6000
T9	30	7/8	80.00 - 100.00	0.6000	0.6000
T9	31	WE65	80.00 - 100.00	0.6000	0.6000
T9	32	7/8	80.00 - 100.00	0.6000	0.6000
T9	33	7/8	80.00 - 100.00	0.6000	0.6000
T9	34	7/8	80.00 - 90.00	0.6000	0.6000
T9	36	7/8	80.00 - 85.00	0.6000	0.6000
T9	37	7/8	80.00 - 95.00	0.6000	0.6000
T9	38	7/8	80.00 - 100.00	0.6000	0.6000
T9	39	1 5/8	80.00 - 100.00	0.6000	0.6000
T9	40	7/8	80.00 - 100.00	0.6000	0.6000
T10	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T10	2	Lighting	60.00 - 80.00	0.6000	0.6000
T10	3	7/8	60.00 - 80.00	0.6000	0.6000
T10	4	7/8	60.00 - 80.00	0.6000	0.6000
T10	5	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	6	1/2 Power Cable	60.00 - 80.00	0.6000	0.6000
T10	7	3/8 Test Cable	60.00 - 80.00	0.6000	0.6000
T10	8	3/8 Power Cable	60.00 - 80.00	0.6000	0.6000
T10	9	WE65	60.00 - 80.00	0.6000	0.6000
T10	10	WE65	60.00 - 80.00	0.6000	0.6000
T10	11	WE65	60.00 - 80.00	0.6000	0.6000
T10	12	1 1/4	60.00 - 80.00	0.6000	0.6000
T10	13	7/8	60.00 - 80.00	0.6000	0.6000
T10	14	7/8	60.00 - 80.00	0.6000	0.6000
T10	15	3/8 Power Cable	60.00 - 80.00	0.6000	0.6000
T10	16	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	17	7/8	60.00 - 80.00	0.6000	0.6000
T10	18	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	19	WE65	60.00 - 80.00	0.6000	0.6000
T10	20	1/2	60.00 - 80.00	0.6000	0.6000
T10	21	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	22	1/2 Power Cable	60.00 - 80.00	0.6000	0.6000
T10	23	3/8 Test Cable	60.00 - 80.00	0.6000	0.6000
T10	24	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	25	WE65	60.00 - 80.00	0.6000	0.6000
T10	26	7/8	60.00 - 80.00	0.6000	0.6000
T10	27	7/8	60.00 - 80.00	0.6000	0.6000
T10	28	7/8	60.00 - 80.00	0.6000	0.6000
T10	29	3/8 Power Cable	60.00 - 80.00	0.6000	0.6000
T10	30	7/8	60.00 - 80.00	0.6000	0.6000
T10	31	WE65	60.00 - 80.00	0.6000	0.6000
T10	32	7/8	60.00 - 80.00	0.6000	0.6000
T10	33	7/8	60.00 - 80.00	0.6000	0.6000
T10	34	7/8	60.00 - 80.00	0.6000	0.6000
T10	35	7/8	60.00 - 70.00	0.6000	0.6000
T10	36	7/8	60.00 - 80.00	0.6000	0.6000
T10	37	7/8	60.00 - 80.00	0.6000	0.6000

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	Client	Eversource	Designed by	TJL

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T10	38	7/8	60.00 - 80.00	0.6000	0.6000
T10	39	1 5/8	60.00 - 80.00	0.6000	0.6000
T10	40	7/8	60.00 - 80.00	0.6000	0.6000
T11	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T11	2	Lighting	40.00 - 60.00	0.6000	0.6000
T11	3	7/8	40.00 - 60.00	0.6000	0.6000
T11	4	7/8	40.00 - 60.00	0.6000	0.6000
T11	5	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	6	1/2 Power Cable	40.00 - 60.00	0.6000	0.6000
T11	7	3/8 Test Cable	40.00 - 60.00	0.6000	0.6000
T11	8	3/8 Power Cable	40.00 - 60.00	0.6000	0.6000
T11	9	WE65	40.00 - 60.00	0.6000	0.6000
T11	10	WE65	40.00 - 60.00	0.6000	0.6000
T11	11	WE65	40.00 - 60.00	0.6000	0.6000
T11	12	1 1/4	40.00 - 60.00	0.6000	0.6000
T11	13	7/8	40.00 - 60.00	0.6000	0.6000
T11	14	7/8	40.00 - 60.00	0.6000	0.6000
T11	15	3/8 Power Cable	40.00 - 60.00	0.6000	0.6000
T11	16	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	17	7/8	40.00 - 60.00	0.6000	0.6000
T11	18	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	19	WE65	40.00 - 60.00	0.6000	0.6000
T11	20	1/2	40.00 - 60.00	0.6000	0.6000
T11	21	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	22	1/2 Power Cable	40.00 - 60.00	0.6000	0.6000
T11	23	3/8 Test Cable	40.00 - 60.00	0.6000	0.6000
T11	24	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	25	WE65	40.00 - 60.00	0.6000	0.6000
T11	26	7/8	40.00 - 60.00	0.6000	0.6000
T11	27	7/8	40.00 - 60.00	0.6000	0.6000
T11	28	7/8	40.00 - 60.00	0.6000	0.6000
T11	29	3/8 Power Cable	40.00 - 60.00	0.6000	0.6000
T11	30	7/8	40.00 - 60.00	0.6000	0.6000
T11	31	WE65	40.00 - 60.00	0.6000	0.6000
T11	32	7/8	40.00 - 60.00	0.6000	0.6000
T11	33	7/8	40.00 - 60.00	0.6000	0.6000
T11	34	7/8	40.00 - 60.00	0.6000	0.6000
T11	35	7/8	40.00 - 60.00	0.6000	0.6000
T11	36	7/8	40.00 - 60.00	0.6000	0.6000
T11	37	7/8	40.00 - 60.00	0.6000	0.6000
T11	38	7/8	40.00 - 60.00	0.6000	0.6000
T11	39	1 5/8	40.00 - 60.00	0.6000	0.6000
T11	40	7/8	40.00 - 60.00	0.6000	0.6000
T12	1	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T12	2	Lighting	20.00 - 40.00	0.6000	0.6000
T12	3	7/8	20.00 - 40.00	0.6000	0.6000
T12	4	7/8	20.00 - 40.00	0.6000	0.6000
T12	5	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	6	1/2 Power Cable	20.00 - 40.00	0.6000	0.6000
T12	7	3/8 Test Cable	20.00 - 40.00	0.6000	0.6000
T12	8	3/8 Power Cable	20.00 - 40.00	0.6000	0.6000
T12	9	WE65	20.00 - 40.00	0.6000	0.6000
T12	10	WE65	20.00 - 40.00	0.6000	0.6000
T12	11	WE65	20.00 - 40.00	0.6000	0.6000
T12	12	1 1/4	20.00 - 40.00	0.6000	0.6000
T12	13	7/8	20.00 - 40.00	0.6000	0.6000
T12	14	7/8	20.00 - 40.00	0.6000	0.6000
T12	15	3/8 Power Cable	20.00 - 40.00	0.6000	0.6000
T12	16	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	17	7/8	20.00 - 40.00	0.6000	0.6000
T12	18	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	19	WE65	20.00 - 40.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T12	20	1/2	20.00 - 40.00	0.6000	0.6000
T12	21	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	22	1/2 Power Cable	20.00 - 40.00	0.6000	0.6000
T12	23	3/8 Test Cable	20.00 - 40.00	0.6000	0.6000
T12	24	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	25	WE65	20.00 - 40.00	0.6000	0.6000
T12	26	7/8	20.00 - 40.00	0.6000	0.6000
T12	27	7/8	20.00 - 40.00	0.6000	0.6000
T12	28	7/8	20.00 - 40.00	0.6000	0.6000
T12	29	3/8 Power Cable	20.00 - 40.00	0.6000	0.6000
T12	30	7/8	20.00 - 40.00	0.6000	0.6000
T12	31	WE65	20.00 - 40.00	0.6000	0.6000
T12	32	7/8	20.00 - 40.00	0.6000	0.6000
T12	33	7/8	20.00 - 40.00	0.6000	0.6000
T12	34	7/8	20.00 - 40.00	0.6000	0.6000
T12	35	7/8	20.00 - 40.00	0.6000	0.6000
T12	36	7/8	20.00 - 40.00	0.6000	0.6000
T12	37	7/8	20.00 - 40.00	0.6000	0.6000
T12	38	7/8	20.00 - 40.00	0.6000	0.6000
T12	39	1 5/8	20.00 - 40.00	0.6000	0.6000
T12	40	7/8	20.00 - 40.00	0.6000	0.6000
T13	1	Safety Line 3/8	8.00 - 20.00	0.6000	0.6000
T13	2	Lighting	8.00 - 20.00	0.6000	0.6000
T13	3	7/8	8.00 - 20.00	0.6000	0.6000
T13	4	7/8	8.00 - 20.00	0.6000	0.6000
T13	5	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	6	1/2 Power Cable	8.00 - 20.00	0.6000	0.6000
T13	7	3/8 Test Cable	8.00 - 20.00	0.6000	0.6000
T13	8	3/8 Power Cable	8.00 - 20.00	0.6000	0.6000
T13	9	WE65	8.00 - 20.00	0.6000	0.6000
T13	10	WE65	8.00 - 20.00	0.6000	0.6000
T13	11	WE65	8.00 - 20.00	0.6000	0.6000
T13	12	1 1/4	8.00 - 20.00	0.6000	0.6000
T13	13	7/8	8.00 - 20.00	0.6000	0.6000
T13	14	7/8	8.00 - 20.00	0.6000	0.6000
T13	15	3/8 Power Cable	8.00 - 20.00	0.6000	0.6000
T13	16	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	17	7/8	8.00 - 20.00	0.6000	0.6000
T13	18	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	19	WE65	8.00 - 20.00	0.6000	0.6000
T13	20	1/2	8.00 - 20.00	0.6000	0.6000
T13	21	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	22	1/2 Power Cable	8.00 - 20.00	0.6000	0.6000
T13	23	3/8 Test Cable	8.00 - 20.00	0.6000	0.6000
T13	24	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	25	WE65	8.00 - 20.00	0.6000	0.6000
T13	26	7/8	8.00 - 20.00	0.6000	0.6000
T13	27	7/8	8.00 - 20.00	0.6000	0.6000
T13	28	7/8	8.00 - 20.00	0.6000	0.6000
T13	29	3/8 Power Cable	8.00 - 20.00	0.6000	0.6000
T13	30	7/8	8.00 - 20.00	0.6000	0.6000
T13	31	WE65	8.00 - 20.00	0.6000	0.6000
T13	32	7/8	8.00 - 20.00	0.6000	0.6000
T13	33	7/8	8.00 - 20.00	0.6000	0.6000
T13	34	7/8	8.00 - 20.00	0.6000	0.6000
T13	35	7/8	8.00 - 20.00	0.6000	0.6000
T13	36	7/8	8.00 - 20.00	0.6000	0.6000
T13	37	7/8	8.00 - 20.00	0.6000	0.6000
T13	38	7/8	8.00 - 20.00	0.6000	0.6000
T13	39	1 5/8	8.00 - 20.00	0.6000	0.6000
T13	40	7/8	8.00 - 20.00	0.6000	0.6000

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
21' LRE (arm=8.88') 806012	A	From Leg	0.00 0.00 8.88	0.0000	247.00	No Ice 1/2" Ice 1" Ice	6.51 9.36 12.21	6.51 6.41 8.31	0.13 0.18 0.23
Beacon	B	From Leg	0.00 0.00 1.00	0.0000	247.00	No Ice 1/2" Ice 1" Ice	0.17 0.31 0.39	0.17 0.31 0.39	0.01 0.01 0.02
KRECO CO-36AN (Eversource)	C	From Leg	1.00 0.00 4.00	0.0000	246.00	No Ice 1/2" Ice 1" Ice	5.87 8.00 10.13	5.87 8.00 10.13	0.03 0.07 0.13
ANT450F6 (Eversource)	B	From Leg	6.00 0.00 10.00	0.0000	244.00	No Ice 1/2" Ice 1" Ice	1.86 2.67 3.30	1.86 2.67 3.30	0.02 0.04 0.05
6' Pivot Side Arm (50" pipe) (Eversource)	B	From Leg	3.00 0.00 0.00	0.0000	244.00	No Ice 1/2" Ice 1" Ice	1.91 2.67 3.20	3.93 4.99 5.86	0.13 0.17 0.22
DB810KE-XT (CSP)	A	From Leg	6.00 0.00 -7.50	0.0000	242.00	No Ice 1/2" Ice 1" Ice	3.63 5.10 6.60	3.63 5.10 6.60	0.04 0.06 0.10
DB810KE-XT (CSP)	A	From Leg	6.00 0.00 -7.50	0.0000	241.50	No Ice 1/2" Ice 1" Ice	3.63 5.10 6.60	3.63 5.10 6.60	0.04 0.06 0.10
SE419-SWBPALDF (CSP)	A	From Leg	6.00 0.00 0.00	0.0000	244.00	No Ice 1/2" Ice 1" Ice	9.13 9.77 10.41	9.55 10.19 10.83	0.09 0.15 0.22
TMA (12"x16"x6"") (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	241.50	No Ice 1/2" Ice 1" Ice	2.53 2.71 2.89	1.20 1.33 1.46	0.02 0.04 0.06
6' Pivot Side Arm (50" pipe) (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	241.50	No Ice 1/2" Ice 1" Ice	1.91 2.67 3.20	3.93 4.99 5.86	0.13 0.17 0.22
DB616-BC (ICS)	C	From Leg	6.00 0.00 0.00	0.0000	230.00	No Ice 1/2" Ice 1" Ice	4.67 6.57 8.49	4.67 6.57 8.49	0.05 0.09 0.13
Rohn 6' Side-Arm(1) (ICS)	C	From Leg	3.00 0.00 0.00	0.0000	220.00	No Ice 1/2" Ice 1" Ice	6.00 8.50 11.00	6.00 8.50 11.00	0.14 0.21 0.28
PD1142-2A (Future)	B	From Leg	6.00 0.00 8.00	0.0000	210.00	No Ice 1/2" Ice 1" Ice	0.79 0.91 1.03	0.79 0.91 1.03	0.01 0.01 0.02
Rohn 6' Side-Arm(1) (Future)	B	From Leg	3.00 0.00 0.00	0.0000	210.00	No Ice 1/2" Ice 1" Ice	6.00 8.50 11.00	6.00 8.50 11.00	0.14 0.21 0.28
PD220-DT (LCD)	C	From Leg	6.00 0.00 0.00	10.0000	202.00	No Ice 1/2" Ice 1" Ice	3.56 7.13 10.70	3.56 7.13 10.70	0.02 0.05 0.07
6' Pivot Side Arm (50" pipe) (LCD)	C	From Leg	3.00 0.00	0.0000	202.00	No Ice 1/2" Ice	1.91 2.67	3.93 4.99	0.13 0.17

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
DB589-Y (Eversource (upright))	B	From Leg	0.00 6.00 0.00 5.00	0.0000	199.00	1" Ice 3.20 No Ice 2.13 1/2" Ice 3.00 1" Ice 3.76	5.86 2.13 3.00 3.76	0.22 0.01 0.03 0.05
DB589-Y (Eversource (inverted))	B	From Leg	6.00 0.00 -5.00	0.0000	199.00	No Ice 2.13 1/2" Ice 3.00 1" Ice 3.76	2.13 3.00 3.76	0.01 0.03 0.05
6' Pivot Side Arm (50" pipe) (Eversource)	B	From Leg	3.00 0.00 0.00	0.0000	199.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
PD458-2 (LCD)	A	From Leg	6.00 0.00 6.00	0.0000	199.00	No Ice 3.40 1/2" Ice 4.79 1" Ice 6.20	3.40 4.79 6.20	0.02 0.05 0.08
6' Pivot Side Arm (50" pipe) (LCD)	A	From Leg	3.00 0.00 0.00	0.0000	199.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
DB222-A (LCD)	C	From Leg	6.00 0.00 5.00	0.0000	186.00	No Ice 1.60 1/2" Ice 2.88 1" Ice 4.16	1.60 2.88 4.16	0.02 0.02 0.03
6' Pivot Side Arm (50" pipe) (LCD)	C	From Leg	3.00 0.00 0.00	0.0000	186.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
BCD-80010NE (CSP)	B	From Leg	6.00 0.00 0.00	0.0000	182.66	No Ice 2.95 1/2" Ice 4.11 1" Ice 5.29	2.95 4.11 5.29	0.02 0.04 0.07
BCD-80010NE (CSP)	B	From Leg	6.00 0.00 0.00	0.0000	172.25	No Ice 2.95 1/2" Ice 4.11 1" Ice 5.29	2.95 4.11 5.29	0.02 0.04 0.07
6' Pivot Side Arm (50" pipe) (CSP)	B	From Leg	3.00 0.00 0.00	0.0000	177.50	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
220-3AN (Eversource)	C	From Leg	6.00 0.00 0.00	0.0000	175.17	No Ice 5.69 1/2" Ice 7.79 1" Ice 9.91	5.69 7.79 9.91	0.02 0.07 0.12
6' Pivot Side Arm (50" pipe) (Eversource)	C	From Leg	3.00 0.00 0.00	0.0000	164.50	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
SE-414 (CSP)	A	From Leg	6.00 0.00 0.00	0.0000	172.00	No Ice 4.80 1/2" Ice 5.70 1" Ice 6.60	4.80 5.70 6.60	0.02 0.03 0.03
TMA (12"x16"x6"" (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	172.00	No Ice 2.53 1/2" Ice 2.71 1" Ice 2.89	1.20 1.33 1.46	0.02 0.04 0.06
6' Pivot Side Arm (50" pipe) (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	172.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
SE4192 (CSP)	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 8.70 1/2" Ice 10.73 1" Ice 12.78	25.50 26.96 28.25	0.06 0.14 0.25
SE4192 (CSP)	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 8.70 1/2" Ice 10.73 1" Ice 12.78	25.50 26.96 28.25	0.06 0.14 0.25
8' x 10' Sector Frame (CSP)	A	From Leg	2.00 0.00 0.00	0.0000	160.00	No Ice 17.80 1/2" Ice 19.50 1" Ice 21.20	17.80 19.50 21.20	0.35 0.46 0.56
BXA-70063/6CF (Future)	A	From Leg	3.00 0.00	0.0000	155.00	No Ice 7.57 1/2" Ice 8.02	4.16 4.60	0.01 0.05

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	Client	Designed by
	Eversource	TJL

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
BXA-70063/6CF (Future)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 8.47 No Ice 7.57 1/2" Ice 8.02	5.04 4.16 4.60	0.10 0.01 0.05
BXA-70063/6CF (Future)	C	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 8.47 No Ice 7.57 1/2" Ice 8.02	5.04 4.16 4.60	0.10 0.01 0.05
(2) LPA-80063/6CF (Future)	A	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 8.47 No Ice 9.57 1/2" Ice 10.03	5.04 8.55 9.01	0.10 0.03 0.10
(2) LPA-80063/6CF (Future)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 10.50 No Ice 9.57 1/2" Ice 10.03	9.47 8.55 9.01	0.18 0.03 0.10
(2) LPA-80063/6CF (Future)	C	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 10.50 No Ice 9.57 1/2" Ice 10.03	9.47 8.55 9.01	0.18 0.03 0.10
BXA-185063/12CF (Future)	C	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 10.50 No Ice 4.79 1/2" Ice 5.24	9.47 3.62 4.06	0.18 0.02 0.04
BXA-185063/12CF (Future)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 5.70 No Ice 4.79 1/2" Ice 5.24	4.50 3.62 4.06	0.08 0.02 0.04
BXA-185063/12CF (Future)	A	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 5.70 No Ice 4.79 1/2" Ice 5.24	4.50 3.62 4.06	0.08 0.02 0.04
12' V Frame (Future)	A	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 5.70 No Ice 6.91 1/2" Ice 9.73	4.50 2.31 4.62	0.08 0.30 0.39
12' V Frame (Future)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 12.49 No Ice 6.91 1/2" Ice 9.73	6.66 2.31 4.62	0.52 0.30 0.39
12' V Frame (Future)	C	From Leg	0.00 3.00 0.00 0.00	0.0000	155.00	1" Ice 12.49 No Ice 6.91 1/2" Ice 9.73	6.66 2.31 4.62	0.52 0.30 0.39
DB636-C (CTPS)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	136.00	1" Ice 12.49 No Ice 2.51 1/2" Ice 3.59	6.66 2.51 3.59	0.52 0.03 0.05
ROHN 3-ft Side Arm (CTPS)	B	From Leg	0.00 1.50 0.00 0.00	0.0000	131.00	1" Ice 4.68 No Ice 3.10 1/2" Ice 5.00	4.68 3.10 5.00	0.07 0.07 0.10
531-70HD (Eversource)	A	From Leg	0.00 3.00 0.00 0.00	0.0000	136.00	1" Ice 6.90 No Ice 6.00 1/2" Ice 6.90	6.90 6.00 6.90	0.13 0.04 0.05
ROHN 6-ft Side Arm (Eversource)	A	From Leg	0.00 1.50 0.00 0.00	0.0000	131.00	1" Ice 7.80 No Ice 6.68 1/2" Ice 10.00	7.80 6.68 10.00	0.06 0.08 0.10
DB230-2A (Eversource)	B	From Leg	0.00 6.00 0.00 0.00	0.0000	126.00	1" Ice 13.32 No Ice 3.00 1/2" Ice 5.40	13.32 3.00 5.40	0.13 0.11 0.15
6' Pivot Side Arm (50" pipe) (Eversource)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	119.50	1" Ice 7.80 No Ice 1.91 1/2" Ice 2.67	7.80 3.93 4.99	0.18 0.13 0.17
Obstruction Lights	A	From Leg	0.00 1.00 0.00 0.00	0.0000	123.00	1" Ice 3.20 No Ice 0.18 1/2" Ice 0.25	5.86 0.18 0.25	0.22 0.01 0.01
Obstruction Lights	B	From Leg	0.00 1.00 0.00 0.00	0.0000	123.00	1" Ice 0.32 No Ice 0.18 1/2" Ice 0.25	0.32 0.18 0.25	0.02 0.01 0.01

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	Client	Eversource	Designed by	TJL

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
Obstruction Lights	C	From Leg	0.00 1.00 0.00 0.00	0.0000	123.00	1" Ice 0.32 No Ice 0.18 1/2" Ice 0.25 1" Ice 0.32	0.32 0.18 0.25 0.32	0.02 0.01 0.01 0.02
6' Pivot Side Arm (50" pipe) (Eversource)	C	From Leg	0.00 3.00 0.00 0.00	0.0000	125.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
KRECO CO-36AN (Eversource)	C	From Leg	0.00 0.00 0.00	0.0000	118.17	No Ice 5.87 1/2" Ice 8.00 1" Ice 10.13	5.87 8.00 10.13	0.03 0.07 0.13
DB222-A (NMFD)	C	From Leg	6.00 0.00 0.00	0.0000	115.33	No Ice 1.60 1/2" Ice 2.88 1" Ice 4.16	1.60 2.88 4.16	0.02 0.02 0.03
6' Pivot Side Arm (50" pipe) (NMFD)	C	From Leg	3.00 0.00 0.00	0.0000	110.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
PD220 (LCD)	C	From Leg	6.00 0.00 0.00	0.0000	115.75	No Ice 3.08 1/2" Ice 5.30 1" Ice 7.54	3.08 5.30 7.54	0.02 0.05 0.09
6' Pivot Side Arm (50" pipe) (LCD)	C	From Leg	3.00 0.00 0.00	0.0000	107.50	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
KRECO CO-36AN (Eversource)	C	From Leg	6.00 0.00 0.00	0.0000	111.50	No Ice 5.87 1/2" Ice 8.00 1" Ice 10.13	5.87 8.00 10.13	0.03 0.07 0.13
6' Pivot Side Arm (50" pipe) (Eversource)	C	From Leg	3.00 0.00 0.00	0.0000	106.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
DB222-A (NMPD)	C	From Leg	6.00 0.00 0.00	0.0000	95.00	No Ice 1.60 1/2" Ice 2.88 1" Ice 4.16	1.60 2.88 4.16	0.02 0.02 0.03
6' Pivot Side Arm (50" pipe) (NMPD)	C	From Leg	3.00 0.00 0.00	0.0000	90.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
1142-2C (NMPW)	C	From Leg	6.00 0.00 0.00	0.0000	85.00	No Ice 2.09 1/2" Ice 3.37 1" Ice 4.67	2.09 3.37 4.67	0.02 0.04 0.07
6' Pivot Side Arm (50" pipe) (NMPW)	C	From Leg	3.00 0.00 0.00	0.0000	75.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
ANT450F6 (CSP)	C	From Leg	6.00 0.00 0.00	0.0000	70.00	No Ice 1.86 1/2" Ice 2.67 1" Ice 3.30	1.86 2.67 3.30	0.02 0.04 0.05
BA40-41 (Motorola)	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 4.48 1/2" Ice 7.66 1" Ice 10.84	4.48 7.66 10.84	0.03 0.04 0.05
6' Pivot Side Arm (50" pipe) (Motorola)	A	From Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
BA40-41 (Motorola)	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 4.48 1/2" Ice 7.66 1" Ice 10.84	4.48 7.66 10.84	0.03 0.04 0.05
6' Pivot Side Arm (50" pipe) (Motorola)	A	From Leg	3.00 0.00 0.00	0.0000	95.00	No Ice 1.91 1/2" Ice 2.67 1" Ice 3.20	3.93 4.99 5.86	0.13 0.17 0.22
DS2C03F36D-D (Eversource)	C	From Leg	4.00 0.00	0.0000	132.00	No Ice 7.30 1/2" Ice 9.77	7.30 9.77	0.08 0.13

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
SitePro USF-4U (Eversource)	C	From Leg	13.00	0.0000	132.00	1" Ice	12.25	0.20
			2.00			No Ice	5.75	0.16
			0.00			1/2" Ice	8.00	0.21
			0.00			1" Ice	10.25	0.26

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
HX8-6W-6GF (Eversource)	B	Paraboloid w/o Radome	From Leg	1.00	54.0000		242.00	8.00	No Ice	50.27
				0.00					1/2" Ice	51.32
				0.00					1" Ice	52.37
8' Solid w/ Radome (CSP)	A	Paraboloid w/Radome	From Leg	1.00	20.0000		230.50	8.00	No Ice	50.27
				0.00					1/2" Ice	51.32
				0.00					1" Ice	52.37
8' Solid w/ Radome (Future)	B	Paraboloid w/Radome	From Leg	1.00	-30.0000		225.00	8.00	No Ice	50.27
				0.00					1/2" Ice	51.32
				0.00					1" Ice	52.37
8' Solid w/ Radome (Future)	B	Paraboloid w/Radome	From Leg	1.00	20.0000		165.00	8.00	No Ice	50.27
				0.00					1/2" Ice	51.32
				0.00					1" Ice	52.37
HX8-6W-6GF (Eversource)	B	Paraboloid w/o Radome	From Leg	1.00	70.0000		146.00	8.00	No Ice	50.27
				0.00					1/2" Ice	51.32
				0.00					1" Ice	52.37
6' Solid w/ Radome (CSP)	B	Paraboloid w/Radome	From Leg	1.00	28.0000		109.90	6.00	No Ice	28.27
				0.00					1/2" Ice	29.07
				0.00					1" Ice	32.82
HP2-4.7 (Motorola)	A	Paraboloid w/Shroud (HP)	From Leg	1.00	23.7600		85.00	2.00	No Ice	3.14
				0.00					1/2" Ice	3.41
				0.00					1" Ice	3.68

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in ²
#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	1383.8169	2579.7210	0.79	0.26	13.7283	25.5925	5.3014
#12ZG - 1.50" - 1.00" conn. (Pirod 207629)	2303.0530	5974.5724	0.58	0.76	7.9967	20.7450	5.3014
#12ZG - 1.75" - 1.00" conn. (Pirod)	2421.2670	6037.5769	0.71	0.71	8.4072	20.9638	7.2158

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Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in ²	in ²	K	K	in	in	in ²
195557)							
#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	2421.2670	6027.7745	0.71	0.70	8.4072	20.9298	7.2158
#12ZG - 2.00" - 0.875" conn.-Trans (Pirod 211843)	2550.9192	6088.9953	1.05	0.73	8.8574	21.1423	9.4248
#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	2556.3970	6077.0079	1.05	0.72	8.8764	21.1007	9.4248
#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	2556.3970	6063.4851	1.05	0.70	8.8764	21.0538	9.4248
#12ZG - 2.25" - 0.875" conn. (Pirod 208334)	2686.5516	6119.9416	1.22	0.70	9.3283	21.2498	11.9282
#12ZG - 2.25" - 0.875" conn. (Pirod 208334)	2686.5516	6101.6103	1.22	0.68	9.3283	21.1861	11.9282
#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	2826.7749	6151.1655	1.42	0.67	9.8152	21.3582	14.7262
#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	2826.7749	6121.9850	1.42	0.64	9.8152	21.2569	14.7262
#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	3051.6959	6151.5187	1.69	0.63	10.5962	21.3594	17.8187
#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	3051.6959	6067.2166	1.69	0.54	10.5962	21.0667	17.8187

Tower Pressures - No Ice

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²			ft ²
T1 247.00-240.00	243.50	1.526	52	63.875	A	5.104	16.016	16.016	75.83	0.000	0.000
					B	5.104	16.016		75.83	1.653	0.000
					C	5.104	16.016		75.83	2.208	0.000
T2 240.00-220.00	230.00	1.508	51	202.528	A	11.184	26.700	26.700	70.48	0.000	0.000
					B	11.184	26.700		70.48	18.431	0.000
					C	11.184	26.700		70.48	12.668	0.000
T3 220.00-200.00	210.00	1.48	50	242.945	A	13.084	28.071	28.071	68.21	0.000	0.000
					B	13.084	28.071		68.21	24.283	0.000
					C	13.084	28.071		68.21	16.627	0.000
T4 200.00-180.00	190.00	1.449	49	282.945	A	14.389	28.071	28.071	66.11	0.000	0.000
					B	14.389	28.071		66.11	30.687	0.000
					C	14.389	28.071		66.11	21.681	0.000
T5 180.00-160.00	170.00	1.415	48	323.362	A	13.541	29.574	29.574	68.59	0.000	0.000
					B	13.541	29.574		68.59	42.933	0.000
					C	13.541	29.574		68.59	23.523	0.000
T6	150.00	1.378	47	363.362	A	14.231	29.637	29.637	67.56	53.460	0.000

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
160.00-140.00					B	14.231	29.637		67.56	54.279	0.000
					C	14.231	29.637		67.56	29.969	0.000
T7	130.00	1.337	45	403.362	A	14.981	29.637	29.637	66.42	71.280	0.000
140.00-120.00					B	14.981	29.637		66.42	54.279	0.000
					C	14.981	29.637		66.42	38.847	0.000
T8	110.00	1.291	44	443.780	A	15.781	31.146	31.146	66.37	72.390	0.000
120.00-100.00					B	15.781	31.146		66.37	59.389	0.000
					C	15.781	31.146		66.37	46.110	0.000
T9	90.00	1.238	42	483.780	A	16.624	31.146	31.146	65.20	73.500	0.000
100.00-80.00					B	16.624	31.146		65.20	67.327	0.000
					C	16.624	31.146		65.20	47.864	0.000
T10	70.00	1.174	40	524.197	A	17.505	32.772	32.772	65.18	74.610	0.000
80.00-60.00					B	17.505	32.772		65.18	70.657	0.000
					C	17.505	32.772		65.18	47.864	0.000
T11	50.00	1.094	37	564.197	A	18.418	32.772	32.772	64.02	75.720	0.000
60.00-40.00					B	18.418	32.772		64.02	70.657	0.000
					C	18.418	32.772		64.02	47.864	0.000
T12	30.00	0.982	33	604.614	A	22.123	35.379	35.379	61.53	75.720	0.000
40.00-20.00					B	22.123	35.379		61.53	70.657	0.000
					C	22.123	35.379		61.53	47.864	0.000
T13 20.00-0.00	10.00	0.85	29	644.614	A	23.224	35.379	35.379	60.37	45.432	0.000
					B	23.224	35.379		60.37	42.394	0.000
					C	23.224	35.379		60.37	28.719	0.000

Tower Pressure - With Ice

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T1	243.50	1.526	8	1.4044	65.513	A	5.104	35.593	29.858	73.37	0.000	0.000
247.00-240.00						B	5.104	35.593		73.37	6.117	0.000
						C	5.104	35.593		73.37	9.511	0.000
T2	230.00	1.508	8	1.3964	207.189	A	11.184	81.760	69.265	74.52	0.000	0.000
240.00-220.00						B	11.184	81.760		74.52	60.142	0.000
						C	11.184	81.760		74.52	41.993	0.000
T3	210.00	1.48	8	1.3838	247.564	A	13.084	84.065	69.996	72.05	0.000	0.000
220.00-200.00						B	13.084	84.065		72.05	74.507	0.000
						C	13.084	84.065		72.05	49.838	0.000
T4	190.00	1.449	8	1.3700	287.518	A	14.389	83.024	69.882	71.74	0.000	0.000
200.00-180.00						B	14.389	83.024		71.74	92.268	0.000
						C	14.389	83.024		71.74	72.621	0.000
T5	170.00	1.415	8	1.3549	327.884	A	13.541	81.075	70.592	74.61	0.000	0.000
180.00-160.00						B	13.541	81.075		74.61	132.315	0.000
						C	13.541	81.075		74.61	77.434	0.000
T6	150.00	1.378	7	1.3380	367.828	A	14.231	81.334	70.453	73.72	70.019	0.000
160.00-140.00						B	14.231	81.334		73.72	167.924	0.000
						C	14.231	81.334		73.72	93.052	0.000
T7	130.00	1.337	7	1.3190	407.765	A	14.981	81.587	70.296	72.79	93.244	0.000
140.00-120.00						B	14.981	81.587		72.79	166.708	0.000
						C	14.981	81.587		72.79	119.154	0.000
T8	110.00	1.291	7	1.2971	448.109	A	15.781	82.648	70.951	72.08	96.817	0.000
120.00-100.00						B	15.781	82.648		72.08	178.826	0.000
						C	15.781	82.648		72.08	145.895	0.000

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Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T9 100.00-80.00	90.00	1.238	7	1.2714	488.023	A	16.624	82.816	70.738	71.14	100.264	0.000
						B	16.624	82.816		71.14	199.595	0.000
						C	16.624	82.816		71.14	149.846	0.000
T10 80.00-60.00	70.00	1.174	6	1.2398	528.335	A	17.505	83.714	71.313	70.45	103.537	0.000
						B	17.505	83.714		70.45	207.779	0.000
						C	17.505	83.714		70.45	147.519	0.000
T11 60.00-40.00	50.00	1.094	6	1.1988	568.198	A	18.418	83.591	70.974	69.58	106.553	0.000
						B	18.418	83.591		69.58	204.173	0.000
						C	18.418	83.591		69.58	144.493	0.000
T12 40.00-20.00	30.00	0.982	5	1.1391	608.416	A	22.123	83.917	71.317	67.25	105.717	0.000
						B	22.123	83.917		67.25	198.928	0.000
						C	22.123	83.917		67.25	140.091	0.000
T13 20.00-0.00	10.00	0.85	5	1.0206	648.020	A	23.224	82.190	70.339	66.73	62.436	0.000
						B	23.224	82.190		66.73	113.113	0.000
						C	23.224	82.190		66.73	78.813	0.000

Tower Pressure - Service

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
T1 247.00-240.00	243.50	1.526	31	63.875	A	5.104	16.016	16.016	75.83	0.000	0.000
					B	5.104	16.016		75.83	1.653	0.000
					C	5.104	16.016		75.83	2.208	0.000
T2 240.00-220.00	230.00	1.508	31	202.528	A	11.184	26.700	26.700	70.48	0.000	0.000
					B	11.184	26.700		70.48	18.431	0.000
					C	11.184	26.700		70.48	12.668	0.000
T3 220.00-200.00	210.00	1.48	30	242.945	A	13.084	28.071	28.071	68.21	0.000	0.000
					B	13.084	28.071		68.21	24.283	0.000
					C	13.084	28.071		68.21	16.627	0.000
T4 200.00-180.00	190.00	1.449	30	282.945	A	14.389	28.071	28.071	66.11	0.000	0.000
					B	14.389	28.071		66.11	30.687	0.000
					C	14.389	28.071		66.11	21.681	0.000
T5 180.00-160.00	170.00	1.415	29	323.362	A	13.541	29.574	29.574	68.59	0.000	0.000
					B	13.541	29.574		68.59	42.933	0.000
					C	13.541	29.574		68.59	23.523	0.000
T6 160.00-140.00	150.00	1.378	28	363.362	A	14.231	29.637	29.637	67.56	53.460	0.000
					B	14.231	29.637		67.56	54.279	0.000
					C	14.231	29.637		67.56	29.969	0.000
T7 140.00-120.00	130.00	1.337	27	403.362	A	14.981	29.637	29.637	66.42	71.280	0.000
					B	14.981	29.637		66.42	54.279	0.000
					C	14.981	29.637		66.42	38.847	0.000
T8 120.00-100.00	110.00	1.291	26	443.780	A	15.781	31.146	31.146	66.37	72.390	0.000
					B	15.781	31.146		66.37	59.389	0.000
					C	15.781	31.146		66.37	46.110	0.000
T9 100.00-80.00	90.00	1.238	25	483.780	A	16.624	31.146	31.146	65.20	73.500	0.000
					B	16.624	31.146		65.20	67.327	0.000
					C	16.624	31.146		65.20	47.864	0.000
T10 80.00-60.00	70.00	1.174	24	524.197	A	17.505	32.772	32.772	65.18	74.610	0.000
					B	17.505	32.772		65.18	70.657	0.000
					C	17.505	32.772		65.18	47.864	0.000
T11 50.00	50.00	1.094	22	564.197	A	18.418	32.772	32.772	64.02	75.720	0.000

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Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{A A} In Face ft ²	C _{A A} Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
60.00-40.00					B	18.418	32.772		64.02	70.657	0.000
					C	18.418	32.772		64.02	47.864	0.000
T12	30.00	0.982	20	604.614	A	22.123	35.379	35.379	61.53	75.720	0.000
40.00-20.00					B	22.123	35.379		61.53	70.657	0.000
					C	22.123	35.379		61.53	47.864	0.000
T13 20.00-0.00	10.00	0.85	17	644.614	A	23.224	35.379	35.379	60.37	45.432	0.000
					B	23.224	35.379		60.37	42.394	0.000
					C	23.224	35.379		60.37	28.719	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1	0.01	1.08	A	0.331	2.218	52	1	1	14.859	1.56	222.26	C
247.00-240.00			B	0.331	2.218		1	1	14.859			
			C	0.331	2.218		1	1	14.859			
T2	0.12	2.27	A	0.187	2.64	51	1	1	26.466	3.86	192.92	C
240.00-220.00			B	0.187	2.64		1	1	26.466			
			C	0.187	2.64		1	1	26.466			
T3	0.15	2.76	A	0.169	2.701	50	1	1	29.079	4.41	220.42	C
220.00-200.00			B	0.169	2.701		1	1	29.079			
			C	0.169	2.701		1	1	29.079			
T4	0.20	2.81	A	0.15	2.771	49	1	1	30.320	4.83	241.68	C
200.00-180.00			B	0.15	2.771		1	1	30.320			
			C	0.15	2.771		1	1	30.320			
T5	0.27	4.83	A	0.133	2.834	48	1	1	30.281	5.14	257.02	C
180.00-160.00			B	0.133	2.834		1	1	30.281			
			C	0.133	2.834		1	1	30.281			
T6	0.62	4.92	A	0.121	2.882	47	1	1	30.983	6.85	342.43	C
160.00-140.00			B	0.121	2.882		1	1	30.983			
			C	0.121	2.882		1	1	30.983			
T7	0.75	5.01	A	0.111	2.922	45	1	1	31.717	7.39	369.74	C
140.00-120.00			B	0.111	2.922		1	1	31.717			
			C	0.111	2.922		1	1	31.717			
T8	0.80	5.64	A	0.106	2.941	44	1	1	33.364	7.64	382.24	C
120.00-100.00			B	0.106	2.941		1	1	33.364			
			C	0.106	2.941		1	1	33.364			
T9	0.85	5.74	A	0.099	2.969	42	1	1	34.201	7.68	384.14	C
100.00-80.00			B	0.099	2.969		1	1	34.201			
			C	0.099	2.969		1	1	34.201			
T10	0.87	6.45	A	0.096	2.98	40	1	1	35.997	7.57	378.61	C
80.00-60.00			B	0.096	2.98		1	1	35.997			
			C	0.096	2.98		1	1	35.997			
T11	0.87	6.56	A	0.091	3.002	37	1	1	36.907	7.19	359.29	C
60.00-40.00			B	0.091	3.002		1	1	36.907			
			C	0.091	3.002		1	1	36.907			
T12	0.87	7.84	A	0.095	2.984	33	1	1	42.086	6.87	343.65	C
40.00-20.00			B	0.095	2.984		1	1	42.086			
			C	0.095	2.984		1	1	42.086			
T13	0.52	7.97	A	0.091	3.001	29	1	1	43.185	4.90	245.06	C
20.00-0.00			B	0.091	3.001		1	1	43.185			
			C	0.091	3.001		1	1	43.185			
Sum Weight:	6.90	63.88						OTM	8649.86 kip-ft	75.90		

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	Eversource	TJL

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
T1 247.00-240.00	0.01	1.08	A	0.331	2.218	52	0.8	1	13.838	1.46	208.00	C
			B	0.331	2.218		0.8	1	13.838			
			C	0.331	2.218		0.8	1	13.838			
T2 240.00-220.00	0.12	2.27	A	0.187	2.64	51	0.8	1	24.229	3.60	180.05	C
			B	0.187	2.64		0.8	1	24.229			
			C	0.187	2.64		0.8	1	24.229			
T3 220.00-200.00	0.15	2.76	A	0.169	2.701	50	0.8	1	26.462	4.11	205.31	C
			B	0.169	2.701		0.8	1	26.462			
			C	0.169	2.701		0.8	1	26.462			
T4 200.00-180.00	0.20	2.81	A	0.15	2.771	49	0.8	1	27.443	4.50	224.98	C
			B	0.15	2.771		0.8	1	27.443			
			C	0.15	2.771		0.8	1	27.443			
T5 180.00-160.00	0.27	4.83	A	0.133	2.834	48	0.8	1	27.573	4.83	241.33	C
			B	0.133	2.834		0.8	1	27.573			
			C	0.133	2.834		0.8	1	27.573			
T6 160.00-140.00	0.62	4.92	A	0.121	2.882	47	0.8	1	28.136	6.52	326.09	C
			B	0.121	2.882		0.8	1	28.136			
			C	0.121	2.882		0.8	1	28.136			
T7 140.00-120.00	0.75	5.01	A	0.111	2.922	45	0.8	1	28.721	7.06	352.82	C
			B	0.111	2.922		0.8	1	28.721			
			C	0.111	2.922		0.8	1	28.721			
T8 120.00-100.00	0.80	5.64	A	0.106	2.941	44	0.8	1	30.208	7.30	364.92	C
			B	0.106	2.941		0.8	1	30.208			
			C	0.106	2.941		0.8	1	30.208			
T9 100.00-80.00	0.85	5.74	A	0.099	2.969	42	0.8	1	30.876	7.33	366.48	C
			B	0.099	2.969		0.8	1	30.876			
			C	0.099	2.969		0.8	1	30.876			
T10 80.00-60.00	0.87	6.45	A	0.096	2.98	40	0.8	1	32.496	7.22	360.91	C
			B	0.096	2.98		0.8	1	32.496			
			C	0.096	2.98		0.8	1	32.496			
T11 60.00-40.00	0.87	6.56	A	0.091	3.002	37	0.8	1	33.224	6.84	341.81	C
			B	0.091	3.002		0.8	1	33.224			
			C	0.091	3.002		0.8	1	33.224			
T12 40.00-20.00	0.87	7.84	A	0.095	2.984	33	0.8	1	37.661	6.50	324.91	C
			B	0.095	2.984		0.8	1	37.661			
			C	0.095	2.984		0.8	1	37.661			
T13 20.00-0.00	0.52	7.97	A	0.091	3.001	29	0.8	1	38.540	4.56	227.94	C
			B	0.091	3.001		0.8	1	38.540			
			C	0.091	3.001		0.8	1	38.540			
Sum Weight:	6.90	63.88						OTM	8166.25 kip-ft	71.81		

Tower Forces - No Ice - Wind 90 To Face

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 247.00-240.00	0.01	1.08	A	0.331	2.218	52	0.85	1	14.094	1.48	211.56	C
			B	0.331	2.218		0.85	1	14.094			
			C	0.331	2.218		0.85	1	14.094			
T2 240.00-220.00	0.12	2.27	A	0.187	2.64	51	0.85	1	24.788	3.67	183.27	C
			B	0.187	2.64		0.85	1	24.788			
			C	0.187	2.64		0.85	1	24.788			
T3 220.00-200.00	0.15	2.76	A	0.169	2.701	50	0.85	1	27.116	4.18	209.09	C
			B	0.169	2.701		0.85	1	27.116			
			C	0.169	2.701		0.85	1	27.116			
T4 200.00-180.00	0.20	2.81	A	0.15	2.771	49	0.85	1	28.162	4.58	229.16	C
			B	0.15	2.771		0.85	1	28.162			
			C	0.15	2.771		0.85	1	28.162			
T5 180.00-160.00	0.27	4.83	A	0.133	2.834	48	0.85	1	28.250	4.90	245.25	C
			B	0.133	2.834		0.85	1	28.250			
			C	0.133	2.834		0.85	1	28.250			
T6 160.00-140.00	0.62	4.92	A	0.121	2.882	47	0.85	1	28.848	6.60	330.17	C
			B	0.121	2.882		0.85	1	28.848			
			C	0.121	2.882		0.85	1	28.848			
T7 140.00-120.00	0.75	5.01	A	0.111	2.922	45	0.85	1	29.470	7.14	357.05	C
			B	0.111	2.922		0.85	1	29.470			
			C	0.111	2.922		0.85	1	29.470			
T8 120.00-100.00	0.80	5.64	A	0.106	2.941	44	0.85	1	30.997	7.38	369.25	C
			B	0.106	2.941		0.85	1	30.997			
			C	0.106	2.941		0.85	1	30.997			
T9 100.00-80.00	0.85	5.74	A	0.099	2.969	42	0.85	1	31.707	7.42	370.90	C
			B	0.099	2.969		0.85	1	31.707			
			C	0.099	2.969		0.85	1	31.707			
T10 80.00-60.00	0.87	6.45	A	0.096	2.98	40	0.85	1	33.371	7.31	365.33	C
			B	0.096	2.98		0.85	1	33.371			
			C	0.096	2.98		0.85	1	33.371			
T11 60.00-40.00	0.87	6.56	A	0.091	3.002	37	0.85	1	34.145	6.92	346.18	C
			B	0.091	3.002		0.85	1	34.145			
			C	0.091	3.002		0.85	1	34.145			
T12 40.00-20.00	0.87	7.84	A	0.095	2.984	33	0.85	1	38.767	6.59	329.60	C
			B	0.095	2.984		0.85	1	38.767			
			C	0.095	2.984		0.85	1	38.767			
T13 20.00-0.00	0.52	7.97	A	0.091	3.001	29	0.85	1	39.701	4.64	232.22	C
			B	0.091	3.001		0.85	1	39.701			
			C	0.091	3.001		0.85	1	39.701			
Sum Weight:	6.90	63.88						OTM	8287.15 kip-ft	72.83		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 247.00-240.00	0.18	2.00	A	0.621	1.792	8	1	1	32.061	0.45	63.91	C
			B	0.621	1.792		1	1	32.061			
			C	0.621	1.792		1	1	32.061			
T2 240.00-220.00	1.18	5.94	A	0.449	1.976	8	1	1	65.031	1.29	64.44	C
			B	0.449	1.976		1	1	65.031			
			C	0.449	1.976		1	1	65.031			

<i>tnxTower</i> Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	23080.02 - New Milford	Page	32 of 61
	Project	26 Chapin Road, New Milford, CT	Date	10:50:09 07/05/23
	Client	Eversource	Designed by	TJL

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T3 220.00-200.00	1.44	6.48	A	0.392	2.079	8	1	1	66.297	1.45	72.68	C
			B	0.392	2.079		1	1	66.297			
			C	0.392	2.079		1	1	66.297			
T4 200.00-180.00	1.90	6.54	A	0.339	2.198	8	1	1	65.196	1.62	81.13	C
			B	0.339	2.198		1	1	65.196			
			C	0.339	2.198		1	1	65.196			
T5 180.00-160.00	2.39	8.94	A	0.289	2.327	8	1	1	61.817	1.76	88.24	C
			B	0.289	2.327		1	1	61.817			
			C	0.289	2.327		1	1	61.817			
T6 160.00-140.00	4.67	9.08	A	0.26	2.408	7	1	1	62.012	2.22	110.89	C
			B	0.26	2.408		1	1	62.012			
			C	0.26	2.408		1	1	62.012			
T7 140.00-120.00	5.47	9.19	A	0.237	2.478	7	1	1	62.455	2.36	118.19	C
			B	0.237	2.478		1	1	62.455			
			C	0.237	2.478		1	1	62.455			
T8 120.00-100.00	5.89	9.87	A	0.22	2.532	7	1	1	63.568	2.47	123.55	C
			B	0.22	2.532		1	1	63.568			
			C	0.22	2.532		1	1	63.568			
T9 100.00-80.00	6.14	9.97	A	0.204	2.583	7	1	1	64.256	2.49	124.73	C
			B	0.204	2.583		1	1	64.256			
			C	0.204	2.583		1	1	64.256			
T10 80.00-60.00	6.17	10.71	A	0.192	2.624	6	1	1	65.478	2.43	121.37	C
			B	0.192	2.624		1	1	65.478			
			C	0.192	2.624		1	1	65.478			
T11 60.00-40.00	6.02	10.75	A	0.18	2.666	6	1	1	66.164	2.27	113.67	C
			B	0.18	2.666		1	1	66.164			
			C	0.18	2.666		1	1	66.164			
T12 40.00-20.00	5.75	12.27	A	0.174	2.684	5	1	1	69.993	2.07	103.26	C
			B	0.174	2.684		1	1	69.993			
			C	0.174	2.684		1	1	69.993			
T13 20.00-0.00	3.14	11.95	A	0.163	2.725	5	1	1	69.986	1.35	67.48	C
			B	0.163	2.725		1	1	69.986			
			C	0.163	2.725		1	1	69.986			
Sum Weight:	50.33	113.71						OTM	2814.25 kip-ft	24.24		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K							ft ²	K	plf	
T1 247.00-240.00	0.18	2.00	A	0.621	1.792	8	0.8	1	31.040	0.43	62.07	C
			B	0.621	1.792		0.8	1	31.040			
			C	0.621	1.792		0.8	1	31.040			
T2 240.00-220.00	1.18	5.94	A	0.449	1.976	8	0.8	1	62.794	1.26	62.90	C
			B	0.449	1.976		0.8	1	62.794			
			C	0.449	1.976		0.8	1	62.794			
T3 220.00-200.00	1.44	6.48	A	0.392	2.079	8	0.8	1	63.680	1.42	70.81	C
			B	0.392	2.079		0.8	1	63.680			
			C	0.392	2.079		0.8	1	63.680			
T4 200.00-180.00	1.90	6.54	A	0.339	2.198	8	0.8	1	62.318	1.58	79.01	C
			B	0.339	2.198		0.8	1	62.318			
			C	0.339	2.198		0.8	1	62.318			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T5 180.00-160.00	2.39	8.94	A	0.289	2.327	8	0.8	1	59.109	1.72	86.18	C
			B	0.289	2.327		0.8	1	59.109			
			C	0.289	2.327		0.8	1	59.109			
T6 160.00-140.00	4.67	9.08	A	0.26	2.408	7	0.8	1	59.166	2.17	108.70	C
			B	0.26	2.408		0.8	1	59.166			
			C	0.26	2.408		0.8	1	59.166			
T7 140.00-120.00	5.47	9.19	A	0.237	2.478	7	0.8	1	59.459	2.32	115.89	C
			B	0.237	2.478		0.8	1	59.459			
			C	0.237	2.478		0.8	1	59.459			
T8 120.00-100.00	5.89	9.87	A	0.22	2.532	7	0.8	1	60.411	2.42	121.17	C
			B	0.22	2.532		0.8	1	60.411			
			C	0.22	2.532		0.8	1	60.411			
T9 100.00-80.00	6.14	9.97	A	0.204	2.583	7	0.8	1	60.931	2.45	122.27	C
			B	0.204	2.583		0.8	1	60.931			
			C	0.204	2.583		0.8	1	60.931			
T10 80.00-60.00	6.17	10.71	A	0.192	2.624	6	0.8	1	61.977	2.38	118.88	C
			B	0.192	2.624		0.8	1	61.977			
			C	0.192	2.624		0.8	1	61.977			
T11 60.00-40.00	6.02	10.75	A	0.18	2.666	6	0.8	1	62.481	2.22	111.19	C
			B	0.18	2.666		0.8	1	62.481			
			C	0.18	2.666		0.8	1	62.481			
T12 40.00-20.00	5.75	12.27	A	0.174	2.684	5	0.8	1	65.569	2.01	100.57	C
			B	0.174	2.684		0.8	1	65.569			
			C	0.174	2.684		0.8	1	65.569			
T13 20.00-0.00	3.14	11.95	A	0.163	2.725	5	0.8	1	65.341	1.30	64.99	C
			B	0.163	2.725		0.8	1	65.341			
			C	0.163	2.725		0.8	1	65.341			
Sum Weight:	50.33	113.71						OTM	2750.86 kip-ft	23.69		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 247.00-240.00	0.18	2.00	A	0.621	1.792	8	0.85	1	31.296	0.44	62.53	C
			B	0.621	1.792		0.85	1	31.296			
			C	0.621	1.792		0.85	1	31.296			
T2 240.00-220.00	1.18	5.94	A	0.449	1.976	8	0.85	1	63.354	1.27	63.29	C
			B	0.449	1.976		0.85	1	63.354			
			C	0.449	1.976		0.85	1	63.354			
T3 220.00-200.00	1.44	6.48	A	0.392	2.079	8	0.85	1	64.334	1.43	71.28	C
			B	0.392	2.079		0.85	1	64.334			
			C	0.392	2.079		0.85	1	64.334			
T4 200.00-180.00	1.90	6.54	A	0.339	2.198	8	0.85	1	63.038	1.59	79.54	C
			B	0.339	2.198		0.85	1	63.038			
			C	0.339	2.198		0.85	1	63.038			
T5 180.00-160.00	2.39	8.94	A	0.289	2.327	8	0.85	1	59.786	1.73	86.69	C
			B	0.289	2.327		0.85	1	59.786			
			C	0.289	2.327		0.85	1	59.786			
T6 160.00-140.00	4.67	9.08	A	0.26	2.408	7	0.85	1	59.878	2.18	109.25	C
			B	0.26	2.408		0.85	1	59.878			
			C	0.26	2.408		0.85	1	59.878			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T7 140.00-120.00	5.47	9.19	A	0.237	2.478	7	0.85	1	60.208	2.33	116.47	C
			B	0.237	2.478		0.85	1	60.208			
			C	0.237	2.478		0.85	1	60.208			
T8 120.00-100.00	5.89	9.87	A	0.22	2.532	7	0.85	1	61.200	2.44	121.76	C
			B	0.22	2.532		0.85	1	61.200			
			C	0.22	2.532		0.85	1	61.200			
T9 100.00-80.00	6.14	9.97	A	0.204	2.583	7	0.85	1	61.762	2.46	122.89	C
			B	0.204	2.583		0.85	1	61.762			
			C	0.204	2.583		0.85	1	61.762			
T10 80.00-60.00	6.17	10.71	A	0.192	2.624	6	0.85	1	62.852	2.39	119.50	C
			B	0.192	2.624		0.85	1	62.852			
			C	0.192	2.624		0.85	1	62.852			
T11 60.00-40.00	6.02	10.75	A	0.18	2.666	6	0.85	1	63.402	2.24	111.81	C
			B	0.18	2.666		0.85	1	63.402			
			C	0.18	2.666		0.85	1	63.402			
T12 40.00-20.00	5.75	12.27	A	0.174	2.684	5	0.85	1	66.675	2.02	101.24	C
			B	0.174	2.684		0.85	1	66.675			
			C	0.174	2.684		0.85	1	66.675			
T13 20.00-0.00	3.14	11.95	A	0.163	2.725	5	0.85	1	66.502	1.31	65.61	C
			B	0.163	2.725		0.85	1	66.502			
			C	0.163	2.725		0.85	1	66.502			
Sum Weight:	50.33	113.71						OTM	2766.71 kip-ft	23.82		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 247.00-240.00	0.01	1.08	A	0.331	2.218	31	1	1	14.859	0.94	133.84	C
			B	0.331	2.218		1	1	14.859			
			C	0.331	2.218		1	1	14.859			
T2 240.00-220.00	0.12	2.27	A	0.187	2.64	31	1	1	26.466	2.32	116.17	C
			B	0.187	2.64		1	1	26.466			
			C	0.187	2.64		1	1	26.466			
T3 220.00-200.00	0.15	2.76	A	0.169	2.701	30	1	1	29.079	2.65	132.73	C
			B	0.169	2.701		1	1	29.079			
			C	0.169	2.701		1	1	29.079			
T4 200.00-180.00	0.20	2.81	A	0.15	2.771	30	1	1	30.320	2.91	145.53	C
			B	0.15	2.771		1	1	30.320			
			C	0.15	2.771		1	1	30.320			
T5 180.00-160.00	0.27	4.83	A	0.133	2.834	29	1	1	30.281	3.10	154.77	C
			B	0.133	2.834		1	1	30.281			
			C	0.133	2.834		1	1	30.281			
T6 160.00-140.00	0.62	4.92	A	0.121	2.882	28	1	1	30.983	4.12	206.20	C
			B	0.121	2.882		1	1	30.983			
			C	0.121	2.882		1	1	30.983			
T7 140.00-120.00	0.75	5.01	A	0.111	2.922	27	1	1	31.717	4.45	222.65	C
			B	0.111	2.922		1	1	31.717			
			C	0.111	2.922		1	1	31.717			
T8 120.00-100.00	0.80	5.64	A	0.106	2.941	26	1	1	33.364	4.60	230.18	C
			B	0.106	2.941		1	1	33.364			
			C	0.106	2.941		1	1	33.364			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T9 100.00-80.00	0.85	5.74	A	0.099	2.969	25	1	1	34.201	4.63	231.32	C
			B	0.099	2.969		1	1	34.201			
			C	0.099	2.969		1	1	34.201			
T10 80.00-60.00	0.87	6.45	A	0.096	2.98	24	1	1	35.997	4.56	227.99	C
			B	0.096	2.98		1	1	35.997			
			C	0.096	2.98		1	1	35.997			
T11 60.00-40.00	0.87	6.56	A	0.091	3.002	22	1	1	36.907	4.33	216.35	C
			B	0.091	3.002		1	1	36.907			
			C	0.091	3.002		1	1	36.907			
T12 40.00-20.00	0.87	7.84	A	0.095	2.984	20	1	1	42.086	4.14	206.94	C
			B	0.095	2.984		1	1	42.086			
			C	0.095	2.984		1	1	42.086			
T13 20.00-0.00	0.52	7.97	A	0.091	3.001	17	1	1	43.185	2.95	147.57	C
			B	0.091	3.001		1	1	43.185			
			C	0.091	3.001		1	1	43.185			
Sum Weight:	6.90	63.88						OTM	5208.74 kip-ft	45.71		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 247.00-240.00	0.01	1.08	A	0.331	2.218	31	0.8	1	13.838	0.88	125.25	C
			B	0.331	2.218		0.8	1	13.838			
			C	0.331	2.218		0.8	1	13.838			
T2 240.00-220.00	0.12	2.27	A	0.187	2.64	31	0.8	1	24.229	2.17	108.42	C
			B	0.187	2.64		0.8	1	24.229			
			C	0.187	2.64		0.8	1	24.229			
T3 220.00-200.00	0.15	2.76	A	0.169	2.701	30	0.8	1	26.462	2.47	123.63	C
			B	0.169	2.701		0.8	1	26.462			
			C	0.169	2.701		0.8	1	26.462			
T4 200.00-180.00	0.20	2.81	A	0.15	2.771	30	0.8	1	27.443	2.71	135.48	C
			B	0.15	2.771		0.8	1	27.443			
			C	0.15	2.771		0.8	1	27.443			
T5 180.00-160.00	0.27	4.83	A	0.133	2.834	29	0.8	1	27.573	2.91	145.32	C
			B	0.133	2.834		0.8	1	27.573			
			C	0.133	2.834		0.8	1	27.573			
T6 160.00-140.00	0.62	4.92	A	0.121	2.882	28	0.8	1	28.136	3.93	196.36	C
			B	0.121	2.882		0.8	1	28.136			
			C	0.121	2.882		0.8	1	28.136			
T7 140.00-120.00	0.75	5.01	A	0.111	2.922	27	0.8	1	28.721	4.25	212.46	C
			B	0.111	2.922		0.8	1	28.721			
			C	0.111	2.922		0.8	1	28.721			
T8 120.00-100.00	0.80	5.64	A	0.106	2.941	26	0.8	1	30.208	4.39	219.75	C
			B	0.106	2.941		0.8	1	30.208			
			C	0.106	2.941		0.8	1	30.208			
T9 100.00-80.00	0.85	5.74	A	0.099	2.969	25	0.8	1	30.876	4.41	220.69	C
			B	0.099	2.969		0.8	1	30.876			
			C	0.099	2.969		0.8	1	30.876			
T10 80.00-60.00	0.87	6.45	A	0.096	2.98	24	0.8	1	32.496	4.35	217.33	C
			B	0.096	2.98		0.8	1	32.496			
			C	0.096	2.98		0.8	1	32.496			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T11 60.00-40.00	0.87	6.56	A	0.091	3.002	22	0.8	1	33.224	4.12	205.83	C
			B	0.091	3.002		0.8	1	33.224			
			C	0.091	3.002		0.8	1	33.224			
T12 40.00-20.00	0.87	7.84	A	0.095	2.984	20	0.8	1	37.661	3.91	195.66	C
			B	0.095	2.984		0.8	1	37.661			
			C	0.095	2.984		0.8	1	37.661			
T13 20.00-0.00	0.52	7.97	A	0.091	3.001	17	0.8	1	38.540	2.75	137.26	C
			B	0.091	3.001		0.8	1	38.540			
			C	0.091	3.001		0.8	1	38.540			
Sum Weight:	6.90	63.88						OTM	4917.52 kip-ft	43.24		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T1 247.00-240.00	0.01	1.08	A	0.331	2.218	31	0.85	1	14.094	0.89	127.40	C
			B	0.331	2.218		0.85	1	14.094			
			C	0.331	2.218		0.85	1	14.094			
T2 240.00-220.00	0.12	2.27	A	0.187	2.64	31	0.85	1	24.788	2.21	110.36	C
			B	0.187	2.64		0.85	1	24.788			
			C	0.187	2.64		0.85	1	24.788			
T3 220.00-200.00	0.15	2.76	A	0.169	2.701	30	0.85	1	27.116	2.52	125.91	C
			B	0.169	2.701		0.85	1	27.116			
			C	0.169	2.701		0.85	1	27.116			
T4 200.00-180.00	0.20	2.81	A	0.15	2.771	30	0.85	1	28.162	2.76	137.99	C
			B	0.15	2.771		0.85	1	28.162			
			C	0.15	2.771		0.85	1	28.162			
T5 180.00-160.00	0.27	4.83	A	0.133	2.834	29	0.85	1	28.250	2.95	147.68	C
			B	0.133	2.834		0.85	1	28.250			
			C	0.133	2.834		0.85	1	28.250			
T6 160.00-140.00	0.62	4.92	A	0.121	2.882	28	0.85	1	28.848	3.98	198.82	C
			B	0.121	2.882		0.85	1	28.848			
			C	0.121	2.882		0.85	1	28.848			
T7 140.00-120.00	0.75	5.01	A	0.111	2.922	27	0.85	1	29.470	4.30	215.01	C
			B	0.111	2.922		0.85	1	29.470			
			C	0.111	2.922		0.85	1	29.470			
T8 120.00-100.00	0.80	5.64	A	0.106	2.941	26	0.85	1	30.997	4.45	222.35	C
			B	0.106	2.941		0.85	1	30.997			
			C	0.106	2.941		0.85	1	30.997			
T9 100.00-80.00	0.85	5.74	A	0.099	2.969	25	0.85	1	31.707	4.47	223.35	C
			B	0.099	2.969		0.85	1	31.707			
			C	0.099	2.969		0.85	1	31.707			
T10 80.00-60.00	0.87	6.45	A	0.096	2.98	24	0.85	1	33.371	4.40	219.99	C
			B	0.096	2.98		0.85	1	33.371			
			C	0.096	2.98		0.85	1	33.371			
T11 60.00-40.00	0.87	6.56	A	0.091	3.002	22	0.85	1	34.145	4.17	208.46	C
			B	0.091	3.002		0.85	1	34.145			
			C	0.091	3.002		0.85	1	34.145			
T12 40.00-20.00	0.87	7.84	A	0.095	2.984	20	0.85	1	38.767	3.97	198.48	C
			B	0.095	2.984		0.85	1	38.767			
			C	0.095	2.984		0.85	1	38.767			

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	Client	Designed by
	Eversource	TJL

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
ft	K	K										
T13	0.52	7.97	A	0.091	3.001	17	0.85	1	39.701	2.80	139.84	C
20.00-0.00			B	0.091	3.001		0.85	1	39.701			
			C	0.091	3.001		0.85	1	39.701			
Sum Weight:	6.90	63.88						OTM	4990.33 kip-ft	43.86		

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
21' LRE (arm=8.88') 806012	0.0000	0.13	0.00	-4.62	255.88	1.542	52	6.51	6.51
Beacon	120.0000	0.01	4.00	2.31	248.00	1.532	52	0.17	0.17
KRECO CO-36AN	240.0000	0.03	-4.87	2.81	250.00	1.535	52	5.87	5.87
ANT450F6	120.0000	0.02	9.20	5.31	254.00	1.540	52	1.86	1.86
6' Pivot Side Arm (50" pipe)	120.0000	0.13	6.60	3.81	244.00	1.527	52	1.91	3.93
DB810KE-XT	0.0000	0.04	0.00	-10.62	234.50	1.514	51	3.63	3.63
DB810KE-XT	0.0000	0.04	0.00	-10.62	234.00	1.514	51	3.63	3.63
SE419-SWBPALDF	0.0000	0.09	0.00	-10.62	244.00	1.527	52	9.13	9.55
TMA (12"x16"x6"")	0.0000	0.02	0.00	-7.62	241.50	1.524	52	2.53	1.20
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-7.62	241.50	1.524	52	1.91	3.93
DB616-BC	240.0000	0.05	-9.70	5.60	230.00	1.508	51	4.67	4.67
Rohn 6' Side-Arm(1)	240.0000	0.14	-7.60	4.39	220.00	1.494	51	6.00	6.00
PD1142-2A	120.0000	0.01	10.70	6.18	218.00	1.491	51	0.79	0.79
Rohn 6' Side-Arm(1)	120.0000	0.14	8.10	4.68	210.00	1.480	50	6.00	6.00
PD220-DT	250.0000	0.02	-11.10	6.41	202.00	1.468	50	3.56	3.56
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-8.50	4.91	202.00	1.468	50	1.91	3.93
DB589-Y	120.0000	0.01	11.25	6.49	204.00	1.471	50	2.13	2.13
DB589-Y	120.0000	0.01	11.25	6.49	194.00	1.455	49	2.13	2.13
6' Pivot Side Arm (50" pipe)	120.0000	0.13	8.65	4.99	199.00	1.463	50	1.91	3.93
PD458-2	0.0000	0.02	0.00	-12.99	205.00	1.472	50	3.40	3.40
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-9.99	199.00	1.463	50	1.91	3.93
DB222-A	240.0000	0.02	-11.90	6.87	191.00	1.450	49	1.60	1.60
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-9.30	5.37	186.00	1.442	49	1.91	3.93
BCD-80010NE	120.0000	0.02	12.06	6.96	182.66	1.437	49	2.95	2.95
BCD-80010NE	120.0000	0.02	12.58	7.27	172.25	1.419	48	2.95	2.95
6' Pivot Side Arm (50" pipe)	120.0000	0.13	9.72	5.61	177.50	1.428	49	1.91	3.93
220-3AN	240.0000	0.02	-12.44	7.18	175.17	1.424	48	5.69	5.69
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-10.37	5.99	164.50	1.405	48	1.91	3.93
SE-414	0.0000	0.02	0.00	-14.54	172.00	1.419	48	4.80	4.80
TMA (12"x16"x6"")	0.0000	0.02	0.00	-11.54	172.00	1.419	48	2.53	1.20
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-11.54	172.00	1.419	48	1.91	3.93
SE4192	0.0000	0.06	0.00	-13.24	160.00	1.397	48	8.70	25.50
SE4192	0.0000	0.06	0.00	-13.24	160.00	1.397	48	8.70	25.50

<i>tnxTower</i> Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	23080.02 - New Milford	Page 38 of 61
	Project	26 Chapin Road, New Milford, CT	Date 10:50:09 07/05/23
	Client	Eversource	Designed by TJL

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AC} Front ft ²	C _{AC} Side ft ²
8' x 10' Sector Frame	0.0000	0.35	0.00	-11.24	160.00	1.397	48	17.80	17.80
BXA-70063/6CF	0.0000	0.01	0.00	-12.53	155.00	1.388	47	7.57	4.16
BXA-70063/6CF	120.0000	0.01	10.85	6.26	155.00	1.388	47	7.57	4.16
BXA-70063/6CF	240.0000	0.01	-10.85	6.26	155.00	1.388	47	7.57	4.16
LPA-80063/6CF	0.0000	0.06	0.00	-12.53	155.00	1.388	47	19.13	17.11
LPA-80063/6CF	120.0000	0.06	10.85	6.26	155.00	1.388	47	19.13	17.11
LPA-80063/6CF	240.0000	0.06	-10.85	6.26	155.00	1.388	47	19.13	17.11
BXA-185063/12CF	240.0000	0.02	-10.85	6.26	155.00	1.388	47	4.79	3.62
BXA-185063/12CF	120.0000	0.02	10.85	6.26	155.00	1.388	47	4.79	3.62
BXA-185063/12CF	0.0000	0.02	0.00	-12.53	155.00	1.388	47	4.79	3.62
12' V Frame	0.0000	0.30	0.00	-12.53	155.00	1.388	47	6.91	2.31
12' V Frame	120.0000	0.30	10.85	6.26	155.00	1.388	47	6.91	2.31
12' V Frame	240.0000	0.30	-10.85	6.26	155.00	1.388	47	6.91	2.31
DB636-C	120.0000	0.03	11.80	6.81	136.00	1.350	46	2.51	2.51
ROHN 3-ft Side Arm	120.0000	0.07	10.75	6.21	131.00	1.340	46	3.10	3.10
531-70HD	0.0000	0.04	0.00	-13.62	136.00	1.350	46	6.00	6.00
ROHN 6-ft Side Arm	0.0000	0.08	0.00	-12.41	131.00	1.340	46	6.68	6.68
DB230-2A	120.0000	0.11	14.90	8.60	126.00	1.329	45	3.00	3.00
6' Pivot Side Arm (50" pipe)	120.0000	0.13	12.62	7.29	119.50	1.314	45	1.91	3.93
Obstruction Lights	0.0000	0.01	0.00	-12.37	123.00	1.322	45	0.18	0.18
Obstruction Lights	120.0000	0.01	10.72	6.19	123.00	1.322	45	0.18	0.18
Obstruction Lights	240.0000	0.01	-10.72	6.19	123.00	1.322	45	0.18	0.18
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-12.35	7.13	125.00	1.326	45	1.91	3.93
KRECO CO-36AN	240.0000	0.03	-10.09	5.83	118.17	1.311	45	5.87	5.87
DB222-A	240.0000	0.02	-15.43	8.91	115.33	1.304	44	1.60	1.60
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.10	7.56	110.00	1.291	44	1.91	3.93
PD220	240.0000	0.02	-15.41	8.90	115.75	1.305	44	3.08	3.08
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.22	7.63	107.50	1.285	44	1.91	3.93
KRECO CO-36AN	240.0000	0.03	-15.62	9.02	111.50	1.295	44	5.87	5.87
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.30	7.68	106.00	1.281	44	1.91	3.93
DB222-A	240.0000	0.02	-16.45	9.50	95.00	1.252	43	1.60	1.60
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-14.10	8.14	90.00	1.238	42	1.91	3.93
1142-2C	240.0000	0.02	-16.95	9.78	85.00	1.223	42	2.09	2.09
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-14.85	8.57	75.00	1.191	41	1.91	3.93
ANT450F6	240.0000	0.02	-17.70	10.22	70.00	1.174	40	1.86	1.86
BA40-41	0.0000	0.03	0.00	-15.55	120.00	1.315	45	4.48	4.48
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-14.84	115.00	1.303	44	1.91	3.93
BA40-41	0.0000	0.03	0.00	-16.70	100.00	1.266	43	4.48	4.48
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-15.99	95.00	1.252	43	1.91	3.93
DS2C03F36D-D	240.0000	0.08	-12.86	7.43	145.00	1.369	47	7.30	7.30
SitePro USF-4U	240.0000	0.16	-11.13	6.43	132.00	1.342	46	5.75	5.75
Sum		5.67							
Weight:									

Discrete Appurtenance Pressures - With Ice

$G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AC} Front ft ²	C _{AC} Side ft ²	t _z in
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<i>tnxTower</i> Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	Page
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	Project	Date
	26 Chapin Road, New Milford, CT	10:50:09 07/05/23
	Client	Designed by
	Eversource	TJL

<i>Description</i>	<i>Aiming Azimuth °</i>	<i>Weight K</i>	<i>Offset_x ft</i>	<i>Offset_z ft</i>	<i>z ft</i>	<i>K_z</i>	<i>q_z psf</i>	<i>C_{AAc} Front ft²</i>	<i>C_{AAc} Side ft²</i>	<i>t_z in</i>
21' LRE (arm=8.88')	0.0000	0.27	0.00	-4.62	255.88	1.542	8	14.55	9.87	1.4114
806012										
Beacon	120.0000	0.02	4.00	2.31	248.00	1.532	8	0.47	0.47	1.4070
KRECO CO-36AN	240.0000	0.19	-4.87	2.81	250.00	1.535	8	11.87	11.87	1.4081
ANT450F6	120.0000	0.08	9.20	5.31	254.00	1.540	8	3.70	3.70	1.4104
6' Pivot Side Arm (50" pipe)	120.0000	0.27	6.60	3.81	244.00	1.527	8	3.61	6.52	1.4047
DB810KE-XT	0.0000	0.14	0.00	-10.62	234.50	1.514	8	7.81	7.81	1.3991
DB810KE-XT	0.0000	0.14	0.00	-10.62	234.00	1.514	8	7.81	7.81	1.3988
SE419-SWBPALDF	0.0000	0.28	0.00	-10.62	244.00	1.527	8	10.94	11.36	1.4047
TMA (12"x16"x6"")	0.0000	0.09	0.00	-7.62	241.50	1.524	8	3.05	1.58	1.4033
6' Pivot Side Arm (50" pipe)	0.0000	0.27	0.00	-7.62	241.50	1.524	8	3.61	6.52	1.4033
DB616-BC	240.0000	0.18	-9.70	5.60	230.00	1.508	8	10.03	10.03	1.3964
Rohn 6' Side-Arm(1)	240.0000	0.34	-7.60	4.39	220.00	1.494	8	12.95	12.95	1.3902
PD1142-2A	120.0000	0.02	10.70	6.18	218.00	1.491	8	1.12	1.12	1.3890
Rohn 6' Side-Arm(1)	120.0000	0.34	8.10	4.68	210.00	1.480	8	12.92	12.92	1.3838
PD220-DT	250.0000	0.09	-11.10	6.41	202.00	1.468	8	13.40	13.40	1.3784
6' Pivot Side Arm (50" pipe)	240.0000	0.27	-8.50	4.91	202.00	1.468	8	3.59	6.48	1.3784
DB589-Y	120.0000	0.07	11.25	6.49	204.00	1.471	8	4.16	4.16	1.3798
DB589-Y	120.0000	0.07	11.25	6.49	194.00	1.455	8	4.16	4.16	1.3729
6' Pivot Side Arm (50" pipe)	120.0000	0.27	8.65	4.99	199.00	1.463	8	3.59	6.48	1.3764
PD458-2	0.0000	0.12	0.00	-12.99	205.00	1.472	8	7.28	7.28	1.3805
6' Pivot Side Arm (50" pipe)	0.0000	0.27	0.00	-9.99	199.00	1.463	8	3.59	6.48	1.3764
DB222-A	240.0000	0.03	-11.90	6.87	191.00	1.450	8	5.11	5.11	1.3707
6' Pivot Side Arm (50" pipe)	240.0000	0.27	-9.30	5.37	186.00	1.442	8	3.58	6.46	1.3671
BCD-80010NE	120.0000	0.10	12.06	6.96	182.66	1.437	8	5.97	5.97	1.3646
BCD-80010NE	120.0000	0.10	12.58	7.27	172.25	1.419	8	5.96	5.96	1.3566
6' Pivot Side Arm (50" pipe)	120.0000	0.27	9.72	5.61	177.50	1.428	8	3.57	6.45	1.3607
220-3AN	240.0000	0.17	-12.44	7.18	175.17	1.424	8	11.45	11.45	1.3589
6' Pivot Side Arm (50" pipe)	240.0000	0.27	-10.37	5.99	164.50	1.405	8	3.56	6.44	1.3504
SE-414	0.0000	0.03	0.00	-14.54	172.00	1.419	8	7.24	7.24	1.3564
TMA (12"x16"x6"")	0.0000	0.08	0.00	-11.54	172.00	1.419	8	3.04	1.57	1.3564
6' Pivot Side Arm (50" pipe)	0.0000	0.27	0.00	-11.54	172.00	1.419	8	3.56	6.45	1.3564
SE4192	0.0000	0.33	0.00	-13.24	160.00	1.397	8	14.21	29.15	1.3467
SE4192	0.0000	0.33	0.00	-13.24	160.00	1.397	8	14.21	29.15	1.3467
8' x 10' Sector Frame	0.0000	0.63	0.00	-11.24	160.00	1.397	8	22.38	22.38	1.3467
BXA-70063/6CF	0.0000	0.14	0.00	-12.53	155.00	1.388	8	8.79	5.35	1.3424
BXA-70063/6CF	120.0000	0.14	10.85	6.26	155.00	1.388	8	8.79	5.35	1.3424
BXA-70063/6CF	240.0000	0.14	-10.85	6.26	155.00	1.388	8	8.79	5.35	1.3424
LPA-80063/6CF	0.0000	0.49	0.00	-12.53	155.00	1.388	8	21.67	19.59	1.3424
LPA-80063/6CF	120.0000	0.49	10.85	6.26	155.00	1.388	8	21.67	19.59	1.3424
LPA-80063/6CF	240.0000	0.49	-10.85	6.26	155.00	1.388	8	21.67	19.59	1.3424
BXA-185063/12CF	240.0000	0.10	-10.85	6.26	155.00	1.388	8	6.02	4.82	1.3424
BXA-185063/12CF	120.0000	0.10	10.85	6.26	155.00	1.388	8	6.02	4.82	1.3424
BXA-185063/12CF	0.0000	0.10	0.00	-12.53	155.00	1.388	8	6.02	4.82	1.3424
12' V Frame	0.0000	0.64	0.00	-12.53	155.00	1.388	8	14.29	7.92	1.3424
12' V Frame	120.0000	0.64	10.85	6.26	155.00	1.388	8	14.29	7.92	1.3424
12' V Frame	240.0000	0.64	-10.85	6.26	155.00	1.388	8	14.29	7.92	1.3424
DB636-C	120.0000	0.10	11.80	6.81	136.00	1.350	7	5.21	5.21	1.3250
ROHN 3-ft Side Arm	120.0000	0.15	10.75	6.21	131.00	1.340	7	8.12	8.12	1.3200
531-70HD	0.0000	0.07	0.00	-13.62	136.00	1.350	7	8.38	8.38	1.3250
ROHN 6-ft Side Arm	0.0000	0.14	0.00	-12.41	131.00	1.340	7	15.44	15.44	1.3200
DB230-2A	120.0000	0.20	14.90	8.60	126.00	1.329	7	9.31	9.31	1.3149

tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	23080.02 - New Milford	Page	40 of 61
	Project	26 Chapin Road, New Milford, CT	Date	10:50:09 07/05/23
	Client	Eversource	Designed by	TJL

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
6' Pivot Side Arm (50" pipe)	120.0000	0.26	12.62	7.29	119.50	1.314	7	3.52	6.37	1.3079
Obstruction Lights	0.0000	0.02	0.00	-12.37	123.00	1.322	7	0.36	0.36	1.3117
Obstruction Lights	120.0000	0.02	10.72	6.19	123.00	1.322	7	0.36	0.36	1.3117
Obstruction Lights	240.0000	0.02	-10.72	6.19	123.00	1.322	7	0.36	0.36	1.3117
6' Pivot Side Arm (50" pipe)	240.0000	0.26	-12.35	7.13	125.00	1.326	7	3.52	6.38	1.3138
KRECO CO-36AN	240.0000	0.18	-10.09	5.83	118.17	1.311	7	11.44	11.44	1.3065
DB222-A	240.0000	0.03	-15.43	8.91	115.33	1.304	7	4.94	4.94	1.3033
6' Pivot Side Arm (50" pipe)	240.0000	0.26	-13.10	7.56	110.00	1.291	7	3.51	6.35	1.2971
PD220	240.0000	0.12	-15.41	8.90	115.75	1.305	7	8.91	8.91	1.3038
6' Pivot Side Arm (50" pipe)	240.0000	0.26	-13.22	7.63	107.50	1.285	7	3.50	6.34	1.2942
KRECO CO-36AN	240.0000	0.18	-15.62	9.02	111.50	1.295	7	11.41	11.41	1.2989
6' Pivot Side Arm (50" pipe)	240.0000	0.26	-13.30	7.68	106.00	1.281	7	3.50	6.34	1.2923
DB222-A	240.0000	0.03	-16.45	9.50	95.00	1.252	7	4.87	4.87	1.2783
6' Pivot Side Arm (50" pipe)	240.0000	0.26	-14.10	8.14	90.00	1.238	7	3.48	6.31	1.2714
1142-2C	240.0000	0.09	-16.95	9.78	85.00	1.223	7	5.37	5.37	1.2641
6' Pivot Side Arm (50" pipe)	240.0000	0.25	-14.85	8.57	75.00	1.191	6	3.46	6.27	1.2484
ANT450F6	240.0000	0.07	-17.70	10.22	70.00	1.174	6	3.54	3.54	1.2398
BA40-41	0.0000	0.05	0.00	-15.55	120.00	1.315	7	12.80	12.80	1.3085
6' Pivot Side Arm (50" pipe)	0.0000	0.26	0.00	-14.84	115.00	1.303	7	3.51	6.36	1.3029
BA40-41	0.0000	0.05	0.00	-16.70	100.00	1.266	7	12.65	12.65	1.2848
6' Pivot Side Arm (50" pipe)	0.0000	0.26	0.00	-15.99	95.00	1.252	7	3.49	6.32	1.2783
DS2C03F36D-D	240.0000	0.26	-12.86	7.43	145.00	1.369	7	13.92	13.92	1.3335
SitePro USF-4U	240.0000	0.29	-11.13	6.43	132.00	1.342	7	11.69	11.69	1.3210
Sum Weight:		15.21								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
21' LRE (arm=8.88') 806012	0.0000	0.13	0.00	-4.62	255.88	1.542	32	6.51	6.51
Beacon	120.0000	0.01	4.00	2.31	248.00	1.532	31	0.19	0.19
KRECO CO-36AN	240.0000	0.03	-4.87	2.81	250.00	1.535	31	5.87	5.87
ANT450F6	120.0000	0.02	9.20	5.31	254.00	1.540	32	1.86	1.86
6' Pivot Side Arm (50" pipe)	120.0000	0.13	6.60	3.81	244.00	1.527	31	1.91	3.93
DB810KE-XT	0.0000	0.04	0.00	-10.62	234.50	1.514	31	3.63	3.63
DB810KE-XT	0.0000	0.04	0.00	-10.62	234.00	1.514	31	3.63	3.63
SE419-SWBPALDF	0.0000	0.09	0.00	-10.62	244.00	1.527	31	9.13	9.55
TMA (12"x16"x6")	0.0000	0.02	0.00	-7.62	241.50	1.524	31	2.53	1.20
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-7.62	241.50	1.524	31	1.91	3.93
DB616-BC	240.0000	0.05	-9.70	5.60	230.00	1.508	31	4.67	4.67
Rohn 6' Side-Arm(1)	240.0000	0.14	-7.60	4.39	220.00	1.494	31	6.00	6.00
PD1142-2A	120.0000	0.01	10.70	6.18	218.00	1.491	31	0.79	0.79
Rohn 6' Side-Arm(1)	120.0000	0.14	8.10	4.68	210.00	1.480	30	6.00	6.00
PD220-DT	250.0000	0.02	-11.10	6.41	202.00	1.468	30	3.56	3.56

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AC} Front ft ²	C _{AC} Side ft ²
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-8.50	4.91	202.00	1.468	30	1.91	3.93
DB589-Y	120.0000	0.01	11.25	6.49	204.00	1.471	30	2.13	2.13
DB589-Y	120.0000	0.01	11.25	6.49	194.00	1.455	30	2.13	2.13
6' Pivot Side Arm (50" pipe)	120.0000	0.13	8.65	4.99	199.00	1.463	30	1.91	3.93
PD458-2	0.0000	0.02	0.00	-12.99	205.00	1.472	30	3.40	3.40
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-9.99	199.00	1.463	30	1.91	3.93
DB222-A	240.0000	0.02	-11.90	6.87	191.00	1.450	30	1.60	1.60
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-9.30	5.37	186.00	1.442	30	1.91	3.93
BCD-80010NE	120.0000	0.02	12.06	6.96	182.66	1.437	29	2.95	2.95
BCD-80010NE	120.0000	0.02	12.58	7.27	172.25	1.419	29	2.95	2.95
6' Pivot Side Arm (50" pipe)	120.0000	0.13	9.72	5.61	177.50	1.428	29	1.91	3.93
220-3AN	240.0000	0.02	-12.44	7.18	175.17	1.424	29	5.69	5.69
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-10.37	5.99	164.50	1.405	29	1.91	3.93
SE-414	0.0000	0.02	0.00	-14.54	172.00	1.419	29	4.80	4.80
TMA (12"x16"x6"mm)	0.0000	0.02	0.00	-11.54	172.00	1.419	29	2.53	1.20
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-11.54	172.00	1.419	29	1.91	3.93
SE4192	0.0000	0.06	0.00	-13.24	160.00	1.397	29	8.70	25.50
SE4192	0.0000	0.06	0.00	-13.24	160.00	1.397	29	8.70	25.50
8' x 10' Sector Frame	0.0000	0.35	0.00	-11.24	160.00	1.397	29	17.80	17.80
BXA-70063/6CF	0.0000	0.01	0.00	-12.53	155.00	1.388	28	7.57	4.16
BXA-70063/6CF	120.0000	0.01	10.85	6.26	155.00	1.388	28	7.57	4.16
BXA-70063/6CF	240.0000	0.01	-10.85	6.26	155.00	1.388	28	7.57	4.16
LPA-80063/6CF	0.0000	0.06	0.00	-12.53	155.00	1.388	28	19.13	17.11
LPA-80063/6CF	120.0000	0.06	10.85	6.26	155.00	1.388	28	19.13	17.11
LPA-80063/6CF	240.0000	0.06	-10.85	6.26	155.00	1.388	28	19.13	17.11
BXA-185063/12CF	240.0000	0.02	-10.85	6.26	155.00	1.388	28	4.79	3.62
BXA-185063/12CF	120.0000	0.02	10.85	6.26	155.00	1.388	28	4.79	3.62
BXA-185063/12CF	0.0000	0.02	0.00	-12.53	155.00	1.388	28	4.79	3.62
12' V Frame	0.0000	0.30	0.00	-12.53	155.00	1.388	28	6.91	2.31
12' V Frame	120.0000	0.30	10.85	6.26	155.00	1.388	28	6.91	2.31
12' V Frame	240.0000	0.30	-10.85	6.26	155.00	1.388	28	6.91	2.31
DB636-C	120.0000	0.03	11.80	6.81	136.00	1.350	28	2.51	2.51
ROHN 3-ft Side Arm	120.0000	0.07	10.75	6.21	131.00	1.340	27	3.10	3.10
531-70HD	0.0000	0.04	0.00	-13.62	136.00	1.350	28	6.00	6.00
ROHN 6-ft Side Arm	0.0000	0.08	0.00	-12.41	131.00	1.340	27	6.68	6.68
DB230-2A	120.0000	0.11	14.90	8.60	126.00	1.329	27	3.00	3.00
6' Pivot Side Arm (50" pipe)	120.0000	0.13	12.62	7.29	119.50	1.314	27	1.91	3.93
Obstruction Lights	0.0000	0.01	0.00	-12.37	123.00	1.322	27	0.18	0.18
Obstruction Lights	120.0000	0.01	10.72	6.19	123.00	1.322	27	0.18	0.18
Obstruction Lights	240.0000	0.01	-10.72	6.19	123.00	1.322	27	0.18	0.18
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-12.35	7.13	125.00	1.326	27	1.91	3.93
KRECO CO-36AN	240.0000	0.03	-10.09	5.83	118.17	1.311	27	5.87	5.87
DB222-A	240.0000	0.02	-15.43	8.91	115.33	1.304	27	1.60	1.60
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.10	7.56	110.00	1.291	26	1.91	3.93
PD220	240.0000	0.02	-15.41	8.90	115.75	1.305	27	3.08	3.08
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.22	7.63	107.50	1.285	26	1.91	3.93
KRECO CO-36AN	240.0000	0.03	-15.62	9.02	111.50	1.295	27	5.87	5.87
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-13.30	7.68	106.00	1.281	26	1.91	3.93
DB222-A	240.0000	0.02	-16.45	9.50	95.00	1.252	26	1.60	1.60

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Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-14.10	8.14	90.00	1.238	25	1.91	3.93
1142-2C	240.0000	0.02	-16.95	9.78	85.00	1.223	25	2.09	2.09
6' Pivot Side Arm (50" pipe)	240.0000	0.13	-14.85	8.57	75.00	1.191	24	1.91	3.93
ANT450F6	240.0000	0.02	-17.70	10.22	70.00	1.174	24	1.86	1.86
BA40-41	0.0000	0.03	0.00	-15.55	120.00	1.315	27	4.48	4.48
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-14.84	115.00	1.303	27	1.91	3.93
BA40-41	0.0000	0.03	0.00	-16.70	100.00	1.266	26	4.48	4.48
6' Pivot Side Arm (50" pipe)	0.0000	0.13	0.00	-15.99	95.00	1.252	26	1.91	3.93
DS2C03F36D-D	240.0000	0.08	-12.86	7.43	145.00	1.369	28	7.30	7.30
SitePro USF-4U	240.0000	0.16	-11.13	6.43	132.00	1.342	27	5.75	5.75
Sum Weight:		5.67							

Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z psf
242.00	HX8-6W-6GF	174.0000	0.70	4.87	2.81	1.524	50.27	52
230.50	8' Solid w/ Radome	20.0000	0.30	0.00	-6.17	1.509	50.27	51
225.00	8' Solid w/ Radome	90.0000	0.30	5.62	3.24	1.501	50.27	51
165.00	8' Solid w/ Radome	140.0000	0.30	8.62	4.97	1.406	50.27	48
146.00	HX8-6W-6GF	190.0000	0.70	9.57	5.52	1.371	50.27	47
109.90	6' Solid w/ Radome	148.0000	0.16	11.37	6.57	1.291	28.27	44
85.00	HP2-4.7	23.7600	0.03	0.00	-14.57	1.223	3.14	42
	Sum Weight:		2.49					

Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z psf	t _z in
242.00	HX8-6W-6GF	174.0000	1.34	4.87	2.81	1.524	52.84	8	1.2205
230.50	8' Solid w/ Radome	20.0000	1.08	0.00	-6.17	1.509	52.82	8	1.2146
225.00	8' Solid w/ Radome	90.0000	1.08	5.62	3.24	1.501	52.82	8	1.2116
165.00	8' Solid w/ Radome	140.0000	1.05	8.62	4.97	1.406	52.74	8	1.1746
146.00	HX8-6W-6GF	190.0000	1.31	9.57	5.52	1.371	52.71	7	1.1603
109.90	6' Solid w/ Radome	148.0000	0.53	11.37	6.57	1.291	33.78	7	1.1278
85.00	HP2-4.7	23.7600	0.06	0.00	-14.57	1.223	3.73	7	1.0992
	Sum Weight:		6.46						

Dish Pressures - Service

Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z psf
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Elevation ft	Dish Description	Aiming Azimuth °	Weight K	Offset _x ft	Offset _z ft	K _z	A _A ft ²	q _z psf
242.00	HX8-6W-6GF	174.0000	0.70	4.87	2.81	1.524	50.27	31
230.50	8' Solid w/ Radome	20.0000	0.30	0.00	-6.17	1.509	50.27	31
225.00	8' Solid w/ Radome	90.0000	0.30	5.62	3.24	1.501	50.27	31
165.00	8' Solid w/ Radome	140.0000	0.30	8.62	4.97	1.406	50.27	29
146.00	HX8-6W-6GF	190.0000	0.70	9.57	5.52	1.371	50.27	28
109.90	6' Solid w/ Radome	148.0000	0.16	11.37	6.57	1.291	28.27	26
85.00	HP2-4.7	23.7600	0.03	0.00	-14.57	1.223	3.14	25
	Sum		2.49					
	Weight:							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	42.36					
Bracing Weight	21.52					
Total Member Self-Weight	63.88					
Total Weight	78.95					
Wind 0 deg - No Ice		-0.37	-100.83	-13065.60	120.95	28.09
Wind 30 deg - No Ice		45.42	-85.08	-11117.40	-5654.86	-3.81
Wind 60 deg - No Ice		79.07	-51.31	-6889.74	-9991.41	-9.72
Wind 90 deg - No Ice		93.11	-0.63	-43.97	-11793.00	-32.50
Wind 120 deg - No Ice		83.93	49.23	6294.75	-10640.16	-39.06
Wind 150 deg - No Ice		47.52	82.17	10539.65	-6063.94	-20.90
Wind 180 deg - No Ice		-0.09	94.04	12109.57	50.01	-3.64
Wind 210 deg - No Ice		-47.94	81.66	10491.03	6212.89	19.07
Wind 240 deg - No Ice		-84.99	48.78	6302.68	10903.69	38.60
Wind 270 deg - No Ice		-94.73	-0.33	-103.88	12116.88	42.30
Wind 300 deg - No Ice		-81.00	-51.82	-6966.13	10340.56	80.22
Wind 330 deg - No Ice		-46.34	-85.80	-11203.24	5871.83	60.83
Member Ice	49.83					
Total Weight Ice	185.70			-29.34	32.09	
Wind 0 deg - Ice		-0.07	-29.97	-3840.19	51.53	24.94
Wind 30 deg - Ice		14.15	-25.66	-3307.27	-1725.67	8.35
Wind 60 deg - Ice		24.61	-15.19	-2002.69	-3048.66	-6.25
Wind 90 deg - Ice		28.69	-0.10	-35.84	-3564.12	-22.44
Wind 120 deg - Ice		25.32	14.79	1836.74	-3143.49	-31.35
Wind 150 deg - Ice		14.52	25.18	3152.76	-1795.87	-29.48
Wind 180 deg - Ice		-0.01	28.96	3638.56	38.14	-20.78
Wind 210 deg - Ice		-14.57	25.08	3143.14	1880.39	-5.73
Wind 240 deg - Ice		-25.49	14.70	1836.43	3247.78	11.15
Wind 270 deg - Ice		-28.97	-0.07	-47.46	3680.14	24.10
Wind 300 deg - Ice		-24.95	-15.30	-2017.06	3170.09	38.28
Wind 330 deg - Ice		-14.32	-25.79	-3322.77	1824.75	36.21
Total Weight	78.95			-1.49	9.86	
Wind 0 deg - Service		-0.22	-60.72	-7860.99	62.48	16.92
Wind 30 deg - Service		27.35	-51.23	-6687.81	-3415.64	-2.29
Wind 60 deg - Service		47.61	-30.90	-4141.96	-6027.06	-5.85
Wind 90 deg - Service		56.07	-0.38	-19.53	-7111.96	-19.57
Wind 120 deg - Service		50.54	29.65	3797.57	-6417.72	-23.52
Wind 150 deg - Service		28.61	49.48	6353.80	-3661.98	-12.58
Wind 180 deg - Service		-0.05	56.63	7299.19	19.76	-2.19
Wind 210 deg - Service		-28.87	49.17	6324.52	3730.98	11.48
Wind 240 deg - Service		-51.18	29.37	3802.35	6555.71	23.24
Wind 270 deg - Service		-57.04	-0.20	-55.61	7286.29	25.47
Wind 300 deg - Service		-48.78	-31.20	-4187.96	6216.61	48.31

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<i>Load Case</i>	<i>Vertical Forces</i>	<i>Sum of Forces X</i>	<i>Sum of Forces Z</i>	<i>Sum of Overturning Moments, M_x</i>	<i>Sum of Overturning Moments, M_z</i>	<i>Sum of Torques</i>
	<i>K</i>	<i>K</i>	<i>K</i>	<i>kip-ft</i>	<i>kip-ft</i>	<i>kip-ft</i>
Wind 330 deg - Service		-27.90	-51.67	-6739.50	3525.60	36.63

Load Combinations

<i>Comb. No.</i>	<i>Description</i>
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

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<i>Comb.</i>	<i>Description</i>
<i>No.</i>	
50	Dead+Wind 330 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
T1	247 - 240	Leg	Max Tension	33	1.72	0.75	-0.01
			Max. Compression	10	-3.03	-0.31	0.65
			Max. Mx	3	-1.56	-2.60	0.10
			Max. My	6	-0.50	-0.19	3.69
			Max. Vy	2	-1.39	-0.01	-0.83
			Max. Vx	24	2.19	0.19	-0.93
		Diagonal	Max Tension	23	1.91	0.00	0.00
			Max. Compression	38	-1.62	0.00	0.00
			Max. Mx	29	-0.90	0.02	-0.00
			Max. My	22	-1.53	0.01	-0.00
			Max. Vy	29	0.02	0.02	-0.00
			Max. Vx	22	-0.00	0.01	-0.00
		Top Girt	Max Tension	35	0.85	0.00	0.00
			Max. Compression	23	-0.40	0.00	0.00
			Max. Mx	26	0.78	-0.10	0.00
			Max. My	24	-0.18	0.00	-0.00
			Max. Vy	26	0.05	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
T2	240 - 220	Leg	Max Tension	7	13.89	0.68	0.02
			Max. Compression	2	-19.86	4.40	-1.08
			Max. Mx	2	-19.86	4.40	-1.08
			Max. My	4	-0.09	-0.77	-3.17
			Max. Vy	14	1.53	-3.50	0.92
			Max. Vx	20	1.52	0.19	-2.02
		Diagonal	Max Tension	23	7.00	0.00	0.00
			Max. Compression	24	-6.75	0.00	0.00
			Max. Mx	27	0.19	0.04	0.01
			Max. My	22	-5.32	0.01	-0.03
			Max. Vy	29	0.03	0.04	-0.01
			Max. Vx	22	0.01	0.00	0.00
		Top Girt	Max Tension	35	1.02	0.00	0.00
			Max. Compression	5	-0.37	0.00	0.00
			Max. Mx	26	0.99	-0.10	0.00
			Max. My	37	1.00	0.00	0.00
			Max. Vy	26	0.05	0.00	0.00
			Max. Vx	37	-0.00	0.00	0.00
T3	220 - 200	Leg	Max Tension	15	37.10	0.81	-0.55
			Max. Compression	2	-47.12	4.30	-0.78
			Max. Mx	3	-32.69	4.64	-0.49
			Max. My	4	3.57	-0.53	-3.50
			Max. Vy	3	-0.98	4.64	-0.49
			Max. Vx	4	0.65	-0.53	-3.50
		Diagonal	Max Tension	24	7.26	0.00	0.00
			Max. Compression	24	-7.28	0.00	0.00
			Max. Mx	29	1.42	0.05	0.01
			Max. My	22	-6.56	0.01	-0.02
			Max. Vy	29	0.04	0.05	0.01
			Max. Vx	22	0.00	0.00	0.00
		Top Girt	Max Tension	29	0.79	0.00	0.00
			Max. Compression	3	-0.38	0.00	0.00
			Max. Mx	26	0.73	-0.18	0.00
			Max. My	37	0.58	0.00	0.01

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T4	200 - 180	Leg	Max. Vy	26	0.07	0.00	0.00
			Max. Vx	37	0.00	0.00	0.00
			Max Tension	15	62.36	0.21	-0.43
			Max. Compression	2	-76.81	5.94	-1.54
			Max. Mx	22	60.72	-6.00	-1.46
			Max. My	20	-8.02	-0.03	-7.25
		Diagonal	Max. Vy	2	-1.10	5.84	-0.34
			Max. Vx	4	1.24	-0.69	-7.07
			Max Tension	24	7.81	0.00	0.00
			Max. Compression	24	-8.02	0.00	0.00
			Max. Mx	28	0.85	0.08	0.01
			Max. My	24	-7.44	0.01	-0.03
			Max. Vy	28	0.05	0.08	0.01
			Max. Vx	24	0.00	0.00	0.00
T5	180 - 160	Leg	Max Tension	15	79.20	2.91	-0.08
			Max. Compression	2	-96.65	19.00	-2.70
			Max. Mx	2	-96.65	19.00	-2.70
			Max. My	4	4.14	-1.08	-13.17
			Max. Vy	3	-2.49	18.94	-2.70
			Max. Vx	2	2.21	-9.48	-13.01
		Diagonal	Max Tension	23	12.38	0.00	0.00
			Max. Compression	2	-13.01	0.00	0.00
			Max. Mx	29	2.49	-0.31	-0.05
			Max. My	24	-12.47	-0.05	0.07
			Max. Vy	29	-0.12	-0.31	-0.05
			Max. Vx	27	-0.01	0.00	0.00
		Leg	Max Tension	23	111.65	1.46	-0.24
			Max. Compression	2	-136.53	20.41	-2.28
			Max. Mx	3	-133.79	20.41	-2.28
			Max. My	4	2.07	-1.45	-15.16
			Max. Vy	3	-3.25	20.41	-2.28
			Max. Vx	20	-3.79	-0.72	-2.92
T6	160 - 140	Leg	Max Tension	24	18.26	0.00	0.00
			Max. Compression	24	-18.69	0.00	0.00
			Max. Mx	29	3.49	-0.38	0.06
			Max. My	24	-18.40	-0.07	0.12
			Max. Vy	29	-0.14	-0.38	0.06
			Max. Vx	22	-0.01	0.00	0.00
		Diagonal	Max Tension	23	150.87	2.33	-0.19
			Max. Compression	2	-181.41	19.21	-0.43
			Max. Mx	2	-181.41	19.21	-0.43
			Max. My	20	-16.23	0.52	-10.07
			Max. Vy	10	-2.48	18.59	0.41
			Max. Vx	24	-1.70	-0.14	9.55
T7	140 - 120	Leg	Max Tension	24	20.91	0.00	0.00
			Max. Compression	24	-22.10	0.00	0.00
			Max. Mx	29	4.06	-0.43	-0.07
			Max. My	22	-19.31	-0.14	0.09
			Max. Vy	29	-0.16	-0.43	-0.07
			Max. Vx	38	-0.01	0.00	0.00
		Diagonal	Max Tension	23	193.93	3.38	2.18
			Max. Compression	2	-231.76	19.24	-0.82
			Max. Mx	3	-227.66	19.27	-0.82
			Max. My	4	0.91	-1.03	-13.02
			Max. Vy	3	-2.71	19.27	-0.82
			Max. Vx	12	2.04	-0.28	-12.46
T8	120 - 100	Leg	Max Tension	24	21.79	0.00	0.00
			Max. Compression	24	-21.58	0.00	0.00
			Max. Mx	29	4.32	-0.51	0.08
			Max. My	22	-19.10	-0.19	0.10
			Max. Vy	29	-0.17	-0.51	0.08
		Diagonal					

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T9	100 - 80	Leg	Max. Vx	37	-0.01	0.00	0.00			
			Max Tension	23	236.59	1.23	1.21			
			Max. Compression	2	-280.65	18.33	-0.08			
			Max. Mx	2	-280.65	18.33	-0.08			
			Max. My	21	-17.11	0.39	-9.32			
			Max. Vy	2	-2.33	18.33	-0.08			
		Diagonal	Max. Vx	8	-1.56	0.53	9.16			
			Max Tension	24	22.28	0.00	0.00			
			Max. Compression	24	-23.30	0.00	0.00			
			Max. Mx	29	5.43	-0.56	0.08			
			Max. My	38	3.03	-0.48	0.09			
			Max. Vy	29	-0.19	-0.56	0.08			
			Max. Vx	38	0.01	0.00	0.00			
			T10	80 - 60	Leg	Max Tension	23	281.48	2.12	0.54
Max. Compression	2	-333.10				16.05	-0.27			
Max. Mx	3	-327.45				16.14	-0.27			
Max. My	20	-24.90				-0.37	-13.08			
Max. Vy	3	-2.18				16.14	-0.27			
Max. Vx	20	1.76				-0.37	-13.08			
Diagonal	Max Tension	24			22.93	0.00	0.00			
	Max. Compression	24			-22.99	0.00	0.00			
	Max. Mx	37			3.46	-0.66	0.10			
	Max. My	37			-7.36	-0.62	0.10			
	Max. Vy	37			-0.20	-0.66	-0.09			
	Max. Vx	37			0.01	0.00	0.00			
	T11	60 - 40			Leg	Max Tension	23	323.19	0.26	0.39
						Max. Compression	2	-381.23	17.79	-0.11
Max. Mx			2	-381.23		17.79	-0.11			
Max. My			24	-5.68		-0.79	7.37			
Max. Vy			2	-2.11		17.79	-0.11			
Max. Vx			24	1.26		-0.79	7.37			
Diagonal			Max Tension	24	23.20	0.00	0.00			
			Max. Compression	24	-24.23	0.00	0.00			
			Max. Mx	37	7.61	-0.69	-0.09			
			Max. My	37	-0.76	-0.65	0.10			
			Max. Vy	37	-0.21	-0.69	-0.09			
			Max. Vx	37	0.01	0.00	0.00			
			T12	40 - 20	Leg	Max Tension	23	367.14	-0.68	0.30
						Max. Compression	2	-433.67	13.70	-0.14
Max. Mx	22	359.40				-14.07	-1.14			
Max. My	20	-31.40				-0.54	-15.67			
Max. Vy	22	1.81				-14.07	-1.14			
Max. Vx	20	1.81				-0.54	-15.67			
Diagonal	Max Tension	24			23.82	0.00	0.00			
	Max. Compression	24			-23.86	0.00	0.00			
	Max. Mx	37			2.45	-0.96	0.13			
	Max. My	37			-9.14	-0.90	0.15			
	Max. Vy	37			-0.26	-0.96	0.13			
	Max. Vx	37			-0.02	0.00	0.00			
	T13	20 - 0			Leg	Max Tension	23	405.64	-2.00	-0.21
						Max. Compression	2	-479.33	7.46	-0.12
Max. Mx			2	-479.33		7.46	-0.12			
Max. My			24	-10.46		-1.10	10.96			
Max. Vy			2	-1.11		7.46	-0.12			
Max. Vx			24	1.27		-1.10	10.96			
Diagonal			Max Tension	24	24.14	0.00	0.00			
			Max. Compression	24	-25.51	0.00	0.00			
			Max. Mx	38	9.35	-0.87	-0.11			
			Max. My	38	4.24	-0.81	0.13			
			Max. Vy	38	-0.26	-0.87	-0.11			
			Max. Vx	38	0.01	0.00	0.00			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
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Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	487.52	52.20	-30.88
	Max. H _x	18	487.52	52.20	-30.88
	Max. H _z	7	-413.91	-46.53	27.20
	Min. Vert	7	-413.91	-46.53	27.20
	Min. H _x	7	-413.91	-46.53	27.20
	Min. H _z	18	487.52	52.20	-30.88
Leg B	Max. Vert	10	478.98	-51.72	-30.68
	Max. H _x	23	-426.16	46.94	28.91
	Max. H _z	23	-426.16	46.94	28.91
	Min. Vert	23	-426.16	46.94	28.91
	Min. H _x	10	478.98	-51.72	-30.68
	Min. H _z	10	478.98	-51.72	-30.68
Leg A	Max. Vert	2	504.54	0.47	62.39
	Max. H _x	21	27.45	7.82	2.12
	Max. H _z	2	504.54	0.47	62.39
	Min. Vert	15	-414.32	-0.09	-53.85
	Min. H _x	9	25.27	-7.61	2.24
	Min. H _z	15	-414.32	-0.09	-53.85

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	78.95	-0.00	0.00	-1.49	9.88	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	94.74	-0.37	-100.83	-13107.11	123.21	28.13
0.9 Dead+1.0 Wind 0 deg - No Ice	71.05	-0.37	-100.83	-13096.33	120.12	28.11
1.2 Dead+1.0 Wind 30 deg - No Ice	94.74	45.42	-85.08	-11152.93	-5670.41	-3.80
0.9 Dead+1.0 Wind 30 deg - No Ice	71.05	45.42	-85.08	-11143.59	-5668.98	-3.79
1.2 Dead+1.0 Wind 60 deg - No Ice	94.74	79.07	-51.31	-6912.20	-10020.50	-9.75
0.9 Dead+1.0 Wind 60 deg - No Ice	71.05	79.07	-51.31	-6906.14	-10015.63	-9.75
1.2 Dead+1.0 Wind 90 deg - No Ice	94.74	93.10	-0.63	-44.32	-11827.73	-32.52
0.9 Dead+1.0 Wind 90 deg - No Ice	71.05	93.10	-0.63	-43.88	-11821.44	-32.53
1.2 Dead+1.0 Wind 120 deg - No Ice	94.74	83.93	49.23	6314.00	-10671.42	-39.07
0.9 Dead+1.0 Wind 120 deg - No Ice	71.05	83.93	49.23	6309.52	-10666.07	-39.06
1.2 Dead+1.0 Wind 150 deg - No Ice	94.74	47.52	82.17	10572.37	-6081.06	-20.90

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 150 deg - No Ice	71.05	47.52	82.17	10564.48	-6079.23	-20.88
1.2 Dead+1.0 Wind 180 deg - No Ice	94.74	-0.09	94.04	12147.36	52.05	-3.67
0.9 Dead+1.0 Wind 180 deg - No Ice	71.05	-0.09	94.04	12138.19	49.04	-3.66
1.2 Dead+1.0 Wind 210 deg - No Ice	94.74	-47.94	81.66	10523.77	6234.34	19.02
0.9 Dead+1.0 Wind 210 deg - No Ice	71.05	-47.94	81.66	10515.89	6226.47	19.02
1.2 Dead+1.0 Wind 240 deg - No Ice	94.74	-84.99	48.78	6322.28	10939.80	38.58
0.9 Dead+1.0 Wind 240 deg - No Ice	71.05	-84.99	48.78	6317.73	10928.29	38.58
1.2 Dead+1.0 Wind 270 deg - No Ice	94.74	-94.73	-0.33	-104.85	12156.64	42.33
0.9 Dead+1.0 Wind 270 deg - No Ice	71.05	-94.73	-0.33	-104.27	12144.16	42.34
1.2 Dead+1.0 Wind 300 deg - No Ice	94.74	-81.00	-51.82	-6989.15	10374.48	80.28
0.9 Dead+1.0 Wind 300 deg - No Ice	71.05	-81.00	-51.82	-6983.03	10363.40	80.27
1.2 Dead+1.0 Wind 330 deg - No Ice	94.74	-46.34	-85.80	-11239.14	5891.74	60.87
0.9 Dead+1.0 Wind 330 deg - No Ice	71.05	-46.34	-85.80	-11229.76	5884.19	60.85
1.2 Dead+1.0 Ice+1.0 Temp	201.49	-0.00	0.00	-29.70	34.04	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	201.49	-0.07	-29.97	-3867.09	53.50	24.97
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	201.49	14.15	-25.66	-3330.56	-1735.80	8.36
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	201.49	24.61	-15.19	-2017.09	-3067.88	-6.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	201.49	28.69	-0.10	-36.40	-3586.88	-22.49
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	201.49	25.32	14.79	1848.95	-3163.41	-31.40
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	201.49	14.52	25.18	3174.04	-1806.62	-29.52
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	201.49	-0.01	28.96	3663.23	39.98	-20.81
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	201.49	-14.57	25.08	3164.40	1894.90	-5.74
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	201.49	-25.49	14.70	1848.75	3271.64	11.17
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	201.49	-28.97	-0.07	-48.26	3706.90	24.15
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	201.49	-24.95	-15.30	-2031.59	3193.31	38.34
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	201.49	-14.32	-25.79	-3346.15	1838.75	36.26
Dead+ Wind 0 deg - Service	78.95	-0.22	-60.72	-7889.26	76.94	16.94
Dead+ Wind 30 deg - Service	78.95	27.35	-51.23	-6713.08	-3410.14	-2.28
Dead+ Wind 60 deg - Service	78.95	47.61	-30.90	-4160.65	-6028.39	-5.86
Dead+ Wind 90 deg - Service	78.95	56.07	-0.38	-27.06	-7116.13	-19.58
Dead+ Wind 120 deg - Service	78.95	50.54	29.65	3799.88	-6420.15	-23.53
Dead+ Wind 150 deg - Service	78.95	28.61	49.48	6362.85	-3657.30	-12.59
Dead+ Wind 180 deg - Service	78.95	-0.05	56.63	7310.78	34.09	-2.21
Dead+ Wind 210 deg - Service	78.95	-28.87	49.17	6333.56	3755.07	11.46
Dead+ Wind 240 deg - Service	78.95	-51.18	29.37	3804.81	6587.15	23.23
Dead+ Wind 270 deg - Service	78.95	-57.04	-0.20	-63.44	7319.55	25.49

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 300 deg - Service	78.95	-48.78	-31.20	-4206.88	6246.97	48.34
Dead+Wind 330 deg - Service	78.95	-27.90	-51.67	-6764.93	3548.91	36.65

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-78.95	0.00	0.00	78.95	-0.00	0.000%
2	-0.37	-94.74	-100.83	0.37	94.74	100.83	0.000%
3	-0.37	-71.05	-100.83	0.37	71.05	100.83	0.000%
4	45.42	-94.74	-85.08	-45.42	94.74	85.08	0.000%
5	45.42	-71.05	-85.08	-45.42	71.05	85.08	0.000%
6	79.07	-94.74	-51.31	-79.07	94.74	51.31	0.000%
7	79.07	-71.05	-51.31	-79.07	71.05	51.31	0.000%
8	93.11	-94.74	-0.63	-93.10	94.74	0.63	0.000%
9	93.11	-71.05	-0.63	-93.10	71.05	0.63	0.000%
10	83.93	-94.74	49.23	-83.93	94.74	-49.23	0.000%
11	83.93	-71.05	49.23	-83.93	71.05	-49.23	0.000%
12	47.52	-94.74	82.17	-47.52	94.74	-82.17	0.000%
13	47.52	-71.05	82.17	-47.52	71.05	-82.17	0.000%
14	-0.09	-94.74	94.04	0.09	94.74	-94.04	0.000%
15	-0.09	-71.05	94.04	0.09	71.05	-94.04	0.000%
16	-47.94	-94.74	81.66	47.94	94.74	-81.66	0.000%
17	-47.94	-71.05	81.66	47.94	71.05	-81.66	0.000%
18	-84.99	-94.74	48.78	84.99	94.74	-48.78	0.000%
19	-84.99	-71.05	48.78	84.99	71.05	-48.78	0.000%
20	-94.73	-94.74	-0.33	94.73	94.74	0.33	0.000%
21	-94.73	-71.05	-0.33	94.73	71.05	0.33	0.000%
22	-81.00	-94.74	-51.82	81.00	94.74	51.82	0.000%
23	-81.00	-71.05	-51.82	81.00	71.05	51.82	0.000%
24	-46.34	-94.74	-85.80	46.34	94.74	85.80	0.000%
25	-46.34	-71.05	-85.80	46.34	71.05	85.80	0.000%
26	0.00	-201.49	0.00	0.00	201.49	-0.00	0.000%
27	-0.07	-201.49	-29.97	0.07	201.49	29.97	0.000%
28	14.15	-201.49	-25.66	-14.15	201.49	25.66	0.000%
29	24.61	-201.49	-15.19	-24.61	201.49	15.19	0.000%
30	28.69	-201.49	-0.10	-28.69	201.49	0.10	0.000%
31	25.32	-201.49	14.79	-25.32	201.49	-14.79	0.000%
32	14.52	-201.49	25.18	-14.52	201.49	-25.18	0.000%
33	-0.01	-201.49	28.96	0.01	201.49	-28.96	0.000%
34	-14.57	-201.49	25.08	14.57	201.49	-25.08	0.000%
35	-25.49	-201.49	14.70	25.49	201.49	-14.70	0.000%
36	-28.97	-201.49	-0.07	28.97	201.49	0.07	0.000%
37	-24.95	-201.49	-15.30	24.95	201.49	15.30	0.000%
38	-14.32	-201.49	-25.79	14.32	201.49	25.79	0.000%
39	-0.22	-78.95	-60.72	0.22	78.95	60.72	0.000%
40	27.35	-78.95	-51.23	-27.35	78.95	51.23	0.000%
41	47.61	-78.95	-30.90	-47.61	78.95	30.90	0.000%
42	56.07	-78.95	-0.38	-56.07	78.95	0.38	0.000%
43	50.54	-78.95	29.65	-50.54	78.95	-29.65	0.000%
44	28.61	-78.95	49.48	-28.61	78.95	-49.48	0.000%
45	-0.05	-78.95	56.63	0.05	78.95	-56.63	0.000%
46	-28.87	-78.95	49.17	28.87	78.95	-49.17	0.000%
47	-51.18	-78.95	29.37	51.18	78.95	-29.37	0.000%
48	-57.04	-78.95	-0.20	57.04	78.95	0.20	0.000%
49	-48.78	-78.95	-31.20	48.78	78.95	31.20	0.000%
50	-27.90	-78.95	-51.67	27.90	78.95	51.67	0.000%

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Non-Linear Convergence Results

<i>Load Combination</i>	<i>Converged?</i>	<i>Number of Cycles</i>	<i>Displacement Tolerance</i>	<i>Force Tolerance</i>
1	Yes	7	0.00000001	0.00007127
2	Yes	10	0.00000001	0.00005510
3	Yes	10	0.00000001	0.00005327
4	Yes	10	0.00000001	0.00005636
5	Yes	10	0.00000001	0.00005451
6	Yes	10	0.00000001	0.00005796
7	Yes	10	0.00000001	0.00005607
8	Yes	10	0.00000001	0.00005571
9	Yes	10	0.00000001	0.00005387
10	Yes	10	0.00000001	0.00005442
11	Yes	10	0.00000001	0.00005261
12	Yes	10	0.00000001	0.00005636
13	Yes	10	0.00000001	0.00005453
14	Yes	10	0.00000001	0.00005811
15	Yes	10	0.00000001	0.00005625
16	Yes	10	0.00000001	0.00005645
17	Yes	10	0.00000001	0.00005463
18	Yes	10	0.00000001	0.00005470
19	Yes	10	0.00000001	0.00005292
20	Yes	10	0.00000001	0.00005589
21	Yes	10	0.00000001	0.00005410
22	Yes	10	0.00000001	0.00005795
23	Yes	10	0.00000001	0.00005610
24	Yes	10	0.00000001	0.00005635
25	Yes	10	0.00000001	0.00005452
26	Yes	7	0.00000001	0.00013513
27	Yes	10	0.00000001	0.00005472
28	Yes	10	0.00000001	0.00005502
29	Yes	10	0.00000001	0.00005519
30	Yes	10	0.00000001	0.00005381
31	Yes	10	0.00000001	0.00005353
32	Yes	10	0.00000001	0.00005354
33	Yes	10	0.00000001	0.00005352
34	Yes	10	0.00000001	0.00005262
35	Yes	10	0.00000001	0.00005214
36	Yes	10	0.00000001	0.00005199
37	Yes	10	0.00000001	0.00005367
38	Yes	10	0.00000001	0.00005412
39	Yes	10	0.00000001	0.00005425
40	Yes	10	0.00000001	0.00005496
41	Yes	10	0.00000001	0.00005581
42	Yes	10	0.00000001	0.00005417
43	Yes	10	0.00000001	0.00005353
44	Yes	10	0.00000001	0.00005478
45	Yes	10	0.00000001	0.00005588
46	Yes	10	0.00000001	0.00005485
47	Yes	10	0.00000001	0.00005377
48	Yes	10	0.00000001	0.00005422
49	Yes	10	0.00000001	0.00005572
50	Yes	10	0.00000001	0.00005487

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Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	247 - 240	11.653	39	0.3253	0.1524
T2	240 - 220	11.108	39	0.3246	0.1485
T3	220 - 200	9.498	39	0.3266	0.1010
T4	200 - 180	7.966	39	0.3152	0.0720
T5	180 - 160	6.538	39	0.2922	0.0544
T6	160 - 140	5.212	39	0.2703	0.0475
T7	140 - 120	4.010	39	0.2410	0.0365
T8	120 - 100	2.970	39	0.2047	0.0260
T9	100 - 80	2.087	39	0.1710	0.0190
T10	80 - 60	1.367	39	0.1332	0.0135
T11	60 - 40	0.799	39	0.0997	0.0091
T12	40 - 20	0.388	39	0.0639	0.0054
T13	20 - 0	0.114	39	0.0323	0.0025

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
247.00	21' LRE (arm=8.88') 806012	39	11.653	0.3253	0.1524	42489
246.00	KRECO CO-36AN	39	11.576	0.3252	0.1521	42489
244.00	ANT450F6	39	11.421	0.3249	0.1514	42489
242.00	HX8-6W-6GF	39	11.265	0.3247	0.1503	42489
241.50	DB810KE-XT	39	11.226	0.3247	0.1499	39728
230.50	8' Solid w/ Radome	39	10.346	0.3258	0.1290	144632
230.00	DB616-BC	39	10.305	0.3259	0.1277	178925
225.00	8' Solid w/ Radome	39	9.900	0.3266	0.1139	79847
220.00	Rohn 6' Side-Arm(1)	39	9.498	0.3266	0.1010	39422
210.00	PD1142-2A	39	8.718	0.3231	0.0833	41599
202.00	PD220-DT	39	8.115	0.3171	0.0741	48383
199.00	DB589-Y	39	7.893	0.3142	0.0710	49964
186.00	DB222-A	39	6.956	0.2993	0.0586	47875
182.66	BCD-80010NE	39	6.722	0.2952	0.0560	47231
177.50	6' Pivot Side Arm (50" pipe)	39	6.366	0.2894	0.0531	46041
175.17	220-3AN	39	6.208	0.2868	0.0521	45421
172.25	BCD-80010NE	39	6.011	0.2838	0.0511	44656
172.00	SE-414	39	5.994	0.2835	0.0510	44592
165.00	8' Solid w/ Radome	39	5.533	0.2760	0.0491	42864
164.50	6' Pivot Side Arm (50" pipe)	39	5.501	0.2755	0.0489	42745
160.00	SE4192	39	5.212	0.2703	0.0475	40975
155.00	BXA-70063/6CF	39	4.898	0.2639	0.0453	36767
146.00	HX8-6W-6GF	39	4.355	0.2509	0.0401	30303
136.00	DB636-C	39	3.789	0.2339	0.0341	28022
132.00	DS2C03F36D-D	39	3.574	0.2266	0.0319	28971
131.00	ROHN 3-ft Side Arm	39	3.522	0.2247	0.0313	29219
126.00	DB230-2A	39	3.265	0.2154	0.0288	30530
125.00	6' Pivot Side Arm (50" pipe)	39	3.215	0.2136	0.0283	30806
123.00	Obstruction Lights	39	3.116	0.2100	0.0274	31346
120.00	BA40-41	39	2.970	0.2047	0.0260	31815
119.50	6' Pivot Side Arm (50" pipe)	39	2.946	0.2038	0.0258	31818
118.17	KRECO CO-36AN	39	2.883	0.2015	0.0253	31715
115.75	PD220	39	2.769	0.1974	0.0243	31265
115.33	DB222-A	39	2.750	0.1967	0.0241	31171
115.00	6' Pivot Side Arm (50" pipe)	39	2.735	0.1962	0.0240	31097

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
<i>ft</i>			<i>in</i>			<i>ft</i>
111.50	KRECO CO-36AN	39	2.575	0.1904	0.0227	30328
110.00	6' Pivot Side Arm (50" pipe)	39	2.509	0.1880	0.0222	30009
109.90	6' Solid w/ Radome	39	2.504	0.1878	0.0222	29988
107.50	6' Pivot Side Arm (50" pipe)	39	2.399	0.1839	0.0214	29494
106.00	6' Pivot Side Arm (50" pipe)	39	2.335	0.1814	0.0209	29193
100.00	BA40-41	39	2.087	0.1710	0.0190	28401
95.00	DB222-A	39	1.892	0.1618	0.0176	29273
90.00	6' Pivot Side Arm (50" pipe)	39	1.707	0.1522	0.0161	30611
85.00	HP2-4.7	39	1.533	0.1425	0.0148	32077
75.00	6' Pivot Side Arm (50" pipe)	39	1.210	0.1246	0.0123	32010
70.00	ANT450F6	39	1.063	0.1163	0.0112	30490

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	247 - 240	19.357	2	0.5402	0.2532
T2	240 - 220	18.452	2	0.5391	0.2467
T3	220 - 200	15.778	2	0.5425	0.1678
T4	200 - 180	13.234	2	0.5236	0.1197
T5	180 - 160	10.860	2	0.4853	0.0903
T6	160 - 140	8.659	2	0.4490	0.0789
T7	140 - 120	6.662	2	0.4003	0.0606
T8	120 - 100	4.934	2	0.3400	0.0433
T9	100 - 80	3.467	2	0.2841	0.0316
T10	80 - 60	2.271	2	0.2214	0.0225
T11	60 - 40	1.327	2	0.1656	0.0151
T12	40 - 20	0.644	2	0.1062	0.0089
T13	20 - 0	0.190	2	0.0537	0.0042

Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
<i>ft</i>			<i>in</i>			<i>ft</i>
247.00	21' LRE (arm=8.88') 806012	2	19.357	0.5402	0.2532	25425
246.00	KRECO CO-36AN	2	19.229	0.5400	0.2527	25425
244.00	ANT450F6	2	18.971	0.5396	0.2516	25425
242.00	HX8-6W-6GF	2	18.713	0.5392	0.2497	25425
241.50	DB810KE-XT	2	18.648	0.5392	0.2491	23772
230.50	8' Solid w/ Radome	2	17.186	0.5411	0.2143	89563
230.00	DB616-BC	2	17.118	0.5413	0.2121	111613
225.00	8' Solid w/ Radome	2	16.445	0.5425	0.1892	48225
220.00	Rohn 6' Side-Arm(1)	2	15.778	0.5425	0.1678	23729
210.00	PD1142-2A	2	14.482	0.5367	0.1383	25045
202.00	PD220-DT	2	13.480	0.5268	0.1231	29148
199.00	DB589-Y	2	13.111	0.5220	0.1180	30103
186.00	DB222-A	2	11.555	0.4971	0.0973	28818
182.66	BCD-80010NE	2	11.166	0.4904	0.0931	28424
177.50	6' Pivot Side Arm (50" pipe)	2	10.575	0.4807	0.0882	27705
175.17	220-3AN	2	10.312	0.4765	0.0866	27334

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
172.25	BCD-80010NE	2	9.986	0.4713	0.0849	26876
172.00	SE-414	2	9.958	0.4709	0.0848	26837
165.00	8' Solid w/ Radome	2	9.192	0.4585	0.0816	25802
164.50	6' Pivot Side Arm (50" pipe)	2	9.138	0.4576	0.0813	25731
160.00	SE4192	2	8.659	0.4490	0.0789	24671
155.00	BXA-70063/6CF	2	8.138	0.4384	0.0752	22150
146.00	HX8-6W-6GF	2	7.235	0.4167	0.0667	18271
136.00	DB636-C	2	6.294	0.3886	0.0567	16891
132.00	DS2C03F36D-D	2	5.938	0.3764	0.0530	17449
131.00	ROHN 3-ft Side Arm	2	5.851	0.3733	0.0521	17595
126.00	DB230-2A	2	5.424	0.3579	0.0479	18364
125.00	6' Pivot Side Arm (50" pipe)	2	5.341	0.3549	0.0471	18526
123.00	Obstruction Lights	2	5.176	0.3489	0.0455	18843
120.00	BA40-41	2	4.934	0.3400	0.0433	19118
119.50	6' Pivot Side Arm (50" pipe)	2	4.894	0.3386	0.0429	19119
118.17	KRECO CO-36AN	2	4.789	0.3348	0.0420	19060
115.75	PD220	2	4.600	0.3280	0.0404	18798
115.33	DB222-A	2	4.568	0.3268	0.0402	18743
115.00	6' Pivot Side Arm (50" pipe)	2	4.543	0.3259	0.0399	18699
111.50	KRECO CO-36AN	2	4.278	0.3164	0.0378	18250
110.00	6' Pivot Side Arm (50" pipe)	2	4.167	0.3123	0.0369	18064
109.90	6' Solid w/ Radome	2	4.160	0.3120	0.0369	18051
107.50	6' Pivot Side Arm (50" pipe)	2	3.986	0.3055	0.0355	17762
106.00	6' Pivot Side Arm (50" pipe)	2	3.879	0.3013	0.0347	17586
100.00	BA40-41	2	3.467	0.2841	0.0316	17121
95.00	DB222-A	2	3.143	0.2688	0.0292	17634
90.00	6' Pivot Side Arm (50" pipe)	2	2.836	0.2528	0.0268	18418
85.00	HP2-4.7	2	2.546	0.2368	0.0246	19274
75.00	6' Pivot Side Arm (50" pipe)	2	2.011	0.2069	0.0205	19243
70.00	ANT450F6	2	1.766	0.1932	0.0186	18361

Bolt Design Data

<i>Section No.</i>	<i>Elevation</i>	<i>Component Type</i>	<i>Bolt Grade</i>	<i>Bolt Size</i>	<i>Number Of Bolts</i>	<i>Maximum Load per Bolt K</i>	<i>Allowable Load per Bolt K</i>	<i>Ratio Load Allowable</i>	<i>Allowable Ratio</i>	<i>Criteria</i>
	<i>ft</i>			<i>in</i>						
T1	247	Leg	A325N	1.0000	6	0.29	54.52	0.005	1	Bolt Tension
		Diagonal	A325N	1.0000	1	1.91	12.72	0.150	1	Member Bearing
		Top Girt	A325N	1.0000	1	0.85	12.72	0.067	1	Member Bearing
T2	240	Leg	A325N	1.0000	6	2.30	54.52	0.042	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7.00	12.72	0.550	1	Member Bearing
		Top Girt	A325N	1.0000	1	1.02	12.72	0.080	1	Member Bearing
T3	220	Leg	A325N	1.0000	6	6.19	54.52	0.114	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7.26	12.72	0.570	1	Member Bearing
		Top Girt	A325N	1.0000	1	0.82	12.72	0.064	1	Member Bearing
T4	200	Leg	A325N	1.0000	6	10.39	54.52	0.191	1	Bolt Tension
		Diagonal	A325N	1.0000	1	7.81	12.72	0.614	1	Member Bearing
T5	180	Leg	A325N	1.0000	12	6.60	54.52	0.121	1	Bolt Tension
		Diagonal	A325N	0.8750	1	12.38	29.58	0.418	1	Member Bearing

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T6	160	Leg	A325N	1.0000	12	9.30	54.52	0.171 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	18.26	29.58	0.617 ✓	1	Member Bearing
T7	140	Leg	A325N	1.0000	12	12.57	54.52	0.231 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	20.91	29.58	0.707 ✓	1	Member Bearing
T8	120	Leg	A325N	1.0000	12	16.16	54.52	0.296 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	21.79	29.58	0.737 ✓	1	Member Bearing
T9	100	Leg	A325N	1.0000	12	19.72	54.52	0.362 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	22.28	29.58	0.753 ✓	1	Member Bearing
T10	80	Leg	A325N	1.0000	12	23.46	54.52	0.430 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	22.93	29.58	0.775 ✓	1	Member Bearing
T11	60	Leg	A325N	1.0000	12	26.93	54.52	0.494 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	23.20	29.58	0.784 ✓	1	Member Bearing
T12	40	Leg	A325N	1.0000	12	30.60	54.52	0.561 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	23.82	29.58	0.805 ✓	1	Member Bearing
T13	20	Leg	F1554-10 5	1.0000	12	33.80	56.79	0.595 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	24.14	29.58	0.816 ✓	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u φP _n
T1	247 - 240	#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	7.00	7.00	37.5 K=1.00	5.3014	-3.03	215.25	0.014 ¹ ✓
T2	240 - 220	#12ZG - 1.50" - 1.00" conn. (Pirod 207629)	20.03	10.02	37.5 K=1.00	5.3014	-19.86	215.25	0.092 ¹ ✓
T3	220 - 200	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	20.03	10.02	31.9 K=1.00	7.2158	-47.12	301.49	0.156 ¹ ✓
T4	200 - 180	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	20.03	10.02	31.9 K=1.00	7.2158	-76.81	301.49	0.255 ¹ ✓
T5	180 - 160	#12ZG - 2.00" - 0.875" conn.-Trans (Pirod 211843)	20.03	20.03	48.8 K=1.00	9.4248	-96.65	356.29	0.271 ¹ ✓
T6	160 - 140	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	20.03	20.03	48.8 K=1.00	9.4248	-136.53	356.29	0.383 ¹ ✓
T7	140 - 120	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	20.03	20.03	48.8 K=1.00	9.4248	-181.41	356.29	0.509 ¹ ✓
T8	120 - 100	#12ZG - 2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8 K=1.00	11.9282	-231.76	451.15	0.514 ¹ ✓
T9	100 - 80	#12ZG - 2.25" - 0.875" conn.	20.03	20.03	48.8	11.9282	-280.65	451.15	0.622 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
		(Pirod 208334)			K=1.00				
T10	80 - 60	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7 K=1.00	14.7262	-333.10	557.27	0.598 ¹ ✓
T11	60 - 40	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7 K=1.00	14.7262	-381.24	557.27	0.684 ¹ ✓
T12	40 - 20	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	20.03	20.03	48.6 K=1.00	17.8187	-433.67	674.68	0.643 ¹ ✓
T13	20 - 0	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	20.03	20.03	48.6 K=1.00	17.8187	-479.33	674.68	0.710 ¹ ✓

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T1	247 - 240	0.5	1.46	98.3	238.57	0.1963	2.37	4.30	0.551 ✓
T2	240 - 220	0.5	1.46	98.3	238.57	0.1963	1.63	4.30	0.380 ✓
T3	220 - 200	0.5	1.44	96.9	324.71	0.1963	0.99	4.39	0.226 ✓
T4	200 - 180	0.5	1.44	96.9	324.71	0.1963	1.35	4.39	0.309 ✓
T5	180 - 160	0.5	1.39	93.2	424.12	0.1963	2.60	4.67	0.557 ✓
T6	160 - 140	0.5	1.39	93.2	424.12	0.1963	3.97	4.67	0.852 ✓
T7	140 - 120	0.5	1.39	93.2	424.12	0.1963	2.49	4.67	0.533 ✓
T8	120 - 100	0.5	1.38	92.4	536.77	0.1963	2.73	4.71	0.580 ✓
T9	100 - 80	0.5	1.38	92.4	536.77	0.1963	2.33	4.71	0.496 ✓
T10	80 - 60	0.5	1.36	91.6	662.68	0.1963	2.19	4.75	0.462 ✓
T11	60 - 40	0.5	1.36	91.6	662.68	0.1963	2.11	4.75	0.446 ✓
T12	40 - 20	0.625	1.35	72.6	801.84	0.3068	1.91	8.74	0.224 ✓
T13	20 - 0	0.625	1.35	72.6	801.84	0.3068	1.27	8.74	0.151 ✓

Diagonal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	247 - 240	L2 1/2x2 1/2x3/16	8.75	4.21	106.5 K=1.04	0.9020	-1.62	20.89	0.078 ¹
T2	240 - 220	L2 1/2x2 1/2x3/16	11.98	6.14	148.8 K=1.00	0.9020	-6.75	11.66	0.579 ¹
T3	220 - 200	L2 1/2x2 1/2x3/16	13.35	6.80	164.9 K=1.00	0.9020	-7.28	9.50	0.767 ¹
T4	200 - 180	L3x3x3/16	14.77	7.49	150.9 K=1.00	1.0900	-7.51	13.70	0.548 ¹
T5	180 - 160	2L3 1/2x3 1/2x1/4	23.21	12.23	134.6 K=1.00	3.3800	-13.01	53.37	0.244 ¹
T6	160 - 140	2L3 1/2x3 1/2x1/4	24.40	12.76	140.5 K=1.00	3.3800	-18.69	48.99	0.382 ¹
T7	140 - 120	2L3 1/2x3 1/2x1/4	25.68	13.37	147.1 K=1.00	3.3800	-22.10	44.68	0.495 ¹
T8	120 - 100	2L3 1/2x3 1/2x1/4	27.05	14.02	154.3 K=1.00	3.3800	-21.58	40.61	0.531 ¹
T9	100 - 80	2L3 1/2x3 1/2x1/4	28.50	14.72	162.0 K=1.00	3.3800	-23.30	36.85	0.632 ¹
T10	80 - 60	2L3 1/2x3 1/2x1/4	30.01	15.45	170.1 K=1.00	3.3800	-22.99	33.42	0.688 ¹
T11	60 - 40	2L3 1/2x3 1/2x1/4	31.57	16.22	178.6 K=1.00	3.3800	-24.23	30.34	0.799 ¹
T12	40 - 20	2L4x4x1/4	33.18	17.01	163.3 K=1.00	3.8800	-23.86	41.63	0.573 ¹
T13	20 - 0	2L4x4x1/4	34.84	17.83	171.2 K=1.00	3.8800	-25.51	37.91	0.673 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	247 - 240	L2 1/2x2 1/2x3/16	8.00	6.67	161.6 K=1.00	0.9020	-0.40	9.88	0.041 ¹
T2	240 - 220	L2 1/2x2 1/2x3/16	8.00	6.67	161.6 K=1.00	0.9020	-0.37	9.88	0.038 ¹
T3	220 - 200	L3x3x3/16	10.00	8.67	174.5 K=1.00	1.0900	-0.82	10.25	0.080 ¹

¹ P_u / φP_n controls

Tension Checks

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Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	247 - 240	#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	7.00	7.00	37.5	5.3014	1.72	238.57	0.007 ¹
T2	240 - 220	#12ZG - 1.50" - 1.00" conn. (Pirod 207629)	20.03	10.02	37.5	5.3014	13.82	238.57	0.058 ¹
T3	220 - 200	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	20.03	10.02	31.9	7.2158	37.16	324.71	0.114 ¹
T4	200 - 180	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	20.03	10.02	31.9	7.2158	62.36	324.71	0.192 ¹
T5	180 - 160	#12ZG -2.00" - 0.875" conn.-Trans (Pirod 211843)	20.03	20.03	48.8	9.4248	79.20	424.12	0.187 ¹
T6	160 - 140	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	20.03	20.03	48.8	9.4248	111.65	424.12	0.263 ¹
T7	140 - 120	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	20.03	20.03	48.8	9.4248	150.87	424.12	0.356 ¹
T8	120 - 100	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8	11.9282	193.93	536.77	0.361 ¹
T9	100 - 80	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.03	20.03	48.8	11.9282	236.59	536.77	0.441 ¹
T10	80 - 60	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7	14.7262	281.48	662.68	0.425 ¹
T11	60 - 40	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7	14.7262	323.19	662.68	0.488 ¹
T12	40 - 20	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	20.03	20.03	48.6	17.8187	367.14	801.84	0.458 ¹
T13	20 - 0	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	20.03	20.03	48.6	17.8187	405.64	801.84	0.506 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T1	247 - 240	0.5	1.46	98.3	238.57	0.1963	2.37	4.30	0.551
T2	240 - 220	0.5	1.46	98.3	238.57	0.1963	1.63	4.30	0.380
T3	220 - 200	0.5	1.44	96.9	324.71	0.1963	0.99	4.39	0.226
T4	200 - 180	0.5	1.44	96.9	324.71	0.1963	1.35	4.39	0.309
T5	180 - 160	0.5	1.39	93.2	424.12	0.1963	2.60	4.67	0.557
T6	160 - 140	0.5	1.39	93.2	424.12	0.1963	3.97	4.67	0.852
T7	140 - 120	0.5	1.39	93.2	424.12	0.1963	2.49	4.67	0.533

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Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T8	120 - 100	0.5	1.38	92.4	536.77	0.1963	2.73	4.71	0.580
T9	100 - 80	0.5	1.38	92.4	536.77	0.1963	2.33	4.71	0.496
T10	80 - 60	0.5	1.36	91.6	662.68	0.1963	2.19	4.75	0.462
T11	60 - 40	0.5	1.36	91.6	662.68	0.1963	2.11	4.75	0.446
T12	40 - 20	0.625	1.35	72.6	801.84	0.3068	1.91	8.74	0.224
T13	20 - 0	0.625	1.35	72.6	801.84	0.3068	1.27	8.74	0.151

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	247 - 240	L2 1/2x2 1/2x3/16	8.75	4.21	67.5	0.5183	1.91	22.55	0.085 ¹
T2	240 - 220	L2 1/2x2 1/2x3/16	11.98	6.14	97.3	0.5183	7.00	22.55	0.310 ¹
T3	220 - 200	L2 1/2x2 1/2x3/16	13.35	6.80	107.5	0.5183	7.26	22.55	0.322 ¹
T4	200 - 180	L3x3x3/16	14.00	7.12	93.1	0.6593	7.81	28.68	0.272 ¹
T5	180 - 160	2L3 1/2x3 1/2x1/4	23.21	12.23	136.3	2.1600	12.38	93.96	0.132 ¹
T6	160 - 140	2L3 1/2x3 1/2x1/4	24.40	12.76	142.2	2.1600	18.26	93.96	0.194 ¹
T7	140 - 120	2L3 1/2x3 1/2x1/4	25.68	13.37	148.8	2.1600	20.91	93.96	0.222 ¹
T8	120 - 100	2L3 1/2x3 1/2x1/4	27.05	14.02	156.0	2.1600	21.79	93.96	0.232 ¹
T9	100 - 80	2L3 1/2x3 1/2x1/4	28.50	14.72	163.7	2.1600	22.28	93.96	0.237 ¹
T10	80 - 60	2L3 1/2x3 1/2x1/4	30.01	15.45	171.8	2.1600	22.93	93.96	0.244 ¹
T11	60 - 40	2L3 1/2x3 1/2x1/4	31.57	16.22	180.2	2.1600	23.20	93.96	0.247 ¹
T12	40 - 20	2L4x4x1/4	33.18	17.01	164.8	2.5350	23.82	110.27	0.216 ¹
T13	20 - 0	2L4x4x1/4	34.84	17.83	172.6	2.5350	24.14	110.27	0.219 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	247 - 240	L2 1/2x2 1/2x3/16	8.00	6.67	108.0	0.5183	0.85	22.55	0.038 ¹
T2	240 - 220	L2 1/2x2 1/2x3/16	8.00	6.67	108.0	0.5183	1.02	22.55	0.045 ¹
T3	220 - 200	L3x3x3/16	10.00	8.67	115.0	0.6593	0.82	28.68	0.028 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	247 - 240	Leg	#12ZG - 1.50" - 1.00" conn. TS (Pirod 218574)	2	-3.03	215.25	55.1	Pass
T2	240 - 220	Leg	#12ZG - 1.50" - 1.00" conn. (Pirod 207629)	15	-9.25	215.25	38.0	Pass
T3	220 - 200	Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	33	-33.45	301.49	22.6	Pass
T4	200 - 180	Leg	#12ZG - 1.75" - 1.00" conn. (Pirod 195557)	50	-67.44	301.49	30.9	Pass
T5	180 - 160	Leg	#12ZG - 2.00" - 0.875" conn.-Trans (Pirod 211843)	65	-86.28	356.29	55.7	Pass
T6	160 - 140	Leg	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	75	-136.53	356.29	85.2	Pass
T7	140 - 120	Leg	#12ZG - 2.00" - 0.875" conn. (Pirod 208333)	84	-181.41	356.29	53.3	Pass
T8	120 - 100	Leg	#12ZG - 2.25" - 0.875" conn. (Pirod 208334)	93	-231.76	451.15	58.0	Pass
T9	100 - 80	Leg	#12ZG - 2.25" - 0.875" conn. (Pirod 208334)	102	-280.65	451.15	62.2	Pass
T10	80 - 60	Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	111	-333.10	557.27	59.8	Pass
T11	60 - 40	Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	120	-381.24	557.27	68.4	Pass
T12	40 - 20	Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	129	-433.67	674.68	64.3	Pass
T13	20 - 0	Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	138	-479.33	674.68	71.0	Pass
T1	247 - 240	Diagonal	L2 1/2x2 1/2x3/16	9	1.91	22.55	8.5	Pass
T2	240 - 220	Diagonal	L2 1/2x2 1/2x3/16	22	-6.75	11.66	15.0 (b)	Pass
T3	220 - 200	Diagonal	L2 1/2x2 1/2x3/16	40	-7.28	9.50	57.9	Pass
T4	200 - 180	Diagonal	L3x3x3/16	55	-7.51	13.70	76.7	Pass
T5	180 - 160	Diagonal	2L3 1/2x3 1/2x1/4	70	-13.01	53.37	54.8	Pass
T6	160 - 140	Diagonal	2L3 1/2x3 1/2x1/4	79	-18.69	48.99	61.4 (b)	Pass
T7	140 - 120	Diagonal	2L3 1/2x3 1/2x1/4	88	-22.10	44.68	24.4	Pass
T8	120 - 100	Diagonal	2L3 1/2x3 1/2x1/4	97	-21.58	40.61	41.8 (b)	Pass
T9	100 - 80	Diagonal	2L3 1/2x3 1/2x1/4	106	-23.30	36.85	38.2	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T10	80 - 60	Diagonal	2L3 1/2x3 1/2x1/4	115	-22.99	33.42	75.3 (b) 68.8	Pass
T11	60 - 40	Diagonal	2L3 1/2x3 1/2x1/4	124	-24.23	30.34	77.5 (b) 79.9	Pass
T12	40 - 20	Diagonal	2L4x4x1/4	133	-23.86	41.63	57.3 80.5 (b)	Pass
T13	20 - 0	Diagonal	2L4x4x1/4	142	-25.51	37.91	67.3 81.6 (b)	Pass
T1	247 - 240	Top Girt	L2 1/2x2 1/2x3/16	6	-0.40	9.88	4.1 6.7 (b)	Pass
T2	240 - 220	Top Girt	L2 1/2x2 1/2x3/16	17	1.02	22.55	4.5 8.0 (b)	Pass
T3	220 - 200	Top Girt	L3x3x3/16	35	-0.82	10.25	8.0 Summary	Pass
						Leg (T6)	85.2	Pass
						Diagonal (T13)	81.6	Pass
						Top Girt (T2)	8.0	Pass
						Bolt Checks	81.6	Pass
						RATING =	85.2	Pass

Subject:

Anchor Bolt Analysis

Location:

247-ft Lattice Tower
 New Milford, CT

Rev. 0: 7/5/23

Prepared by: T.J.L. Checked by: C.F.C.
 Job No. 23080.02

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 426-kips	(Input From tnxTower)
Compression Force =	Compression := 505-kips	(Input From tnxTower)
Shear Force =	Shear := 62-kips	(Input From tnxTower)

Anchor Bolt Data:

ASTMF1554-105

Number of Anchor Bolts =	N := 12	(User Input)
Bolt Ultimate Strength =	$F_u := 125\text{-ksi}$	(User Input)
Bolt Yield Strength =	$F_y := 105\text{-ksi}$	(User Input)
Bolt Modulus =	E := 29000-ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.00-in	(User Input)
Threads per Inch =	n := 8	(User Input)
Length from Top of Pier to Bottom of Leveling Nut =	$L_{ar} := 0\text{-in}$	(User Input)

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

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

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

$$\text{Net Diameter} = D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot \text{in}$$

$$\text{Radius of Gyration of Bolt} = r := \frac{D_n}{4} = 0.22 \cdot \text{in}$$

$$\text{Elastic Section Modulus of Bolt} = S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot \text{in}^3$$

$$\text{Plastic Section Modulus of Bolt} = Z_x := \frac{D_n^3}{6} = 0.113 \cdot \text{in}^3$$

Anchor Bolt Design Strength:

$$\text{Resistance Factor for Flexure} = \phi_f := 0.9$$

$$\text{Resistance Factor for Compression} = \phi_c := 0.9$$

$$\text{Resistance Factor for Tension} = \phi_t := 0.75$$

$$\text{Resistance Factor for Shear} = \phi_v := 0.75$$

$$\text{Design Tensile Strength} = \Phi R_{nt} := \phi_t \cdot F_u \cdot A_n = 56.8 \cdot \text{k}$$

$$\text{Design Compression Strength} = \Phi R_{nc} := \phi_c \cdot F_y \cdot A_g = 74.2 \cdot \text{k}$$

$$\text{Design Shear Strength (Tension)} = \Phi R_{nv} := \phi_v \cdot 0.5 F_u \cdot A_g = 36.8 \cdot \text{k}$$

$$\text{Design Shear Strength (Compression)} = \Phi R_{nvc} := \phi_c \cdot 0.6 F_y \cdot A_g \cdot 0.75 = 33.4 \cdot \text{k}$$

Check Anchor Bolt Tension Force:

Maximum Tensile Force =

$$P_{ut} := \frac{\text{Tension}}{N} = 35.5 \text{ kips}$$

Maximum Compressive Force =

$$P_{uc} := \frac{\text{Compression}}{N} = 42.1 \text{ kips}$$

Maximum Shear Force =

$$V_u := \frac{\text{Shear}}{N} = 5.2 \text{ kips}$$

Condition1 =

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

Condition1 = "OK"

Condition2 =

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

Condition2 = "OK"

Bolt % of Capacity =

$$\max \left[\left(\frac{P_{ut}}{\Phi R_{nt}} \right)^2 + \left(\frac{V_u}{\Phi R_{nv}} \right)^2, \left(\frac{P_{uc}}{\Phi R_{nc}} \right)^2 + \left(\frac{V_u}{\Phi R_{nvc}} \right)^2 \right] = 59.1\%$$

Pier and Mat Foundation Analysis:

Input Data:

Tower Data

Overturing Moment =	OM := 13108-ft-kips	(User Input from tnxTower)
Shear Force =	S _t := 101-kip	(User Input from tnxTower)
Axial Force =	WT _t := 95-kip	(User Input from tnxTower)
Max Compression Force =	C _t := 505-kip	(User Input from tnxTower)
Max Uplift Force =	U _t := 426-kip	(User Input from tnxTower)
Tower Height =	H _t := 247-ft	(User Input)
Tower Width =	W _t := 32-ft	(User Input)
Tower Position on Foundation (1=offset, 2=centered) =	Pos _t := 1	(User Input)

Footing Data:

Overall Depth of Footing =	D _f := 8.0-ft	(User Input)
Length of Pier =	L _p := 5.5-ft	(User Input)
Extension of Pier Above Grade =	L _{pag} := 0.5-ft	(User Input)
Diameter of Pier =	d _p := 4.5-ft	(User Input)
Thickness of Footing =	T _f := 3.0-ft	(User Input)
Width of Footing =	W _f := 41-ft	(User Input)

Material Properties:

Concrete Compressive Strength =	f _c := 4000-psi	(User Input)
Steel Reinforcement Yield Strength =	f _y := 60000-psi	(User Input)
Internal Friction Angle of Soil =	Φ _s := 30-deg	(User Input)
Allowable Soil Bearing Capacity =	q _s := 8000-psf	(User Input)
Unit Weight of Soil =	γ _{soil} := 120-pcf	(User Input)
Unit Weight of Concrete =	γ _{conc} := 150-pcf	(User Input)
Foundation Bouyancy =	Bouyancy := 0	(User Input) (Yes=1 / No=0)
Depth to Neglect =	n := 0-ft	(User Input)
Cohesion of Clay Type Soil =	c := 0-ksf	(User Input) (Use 0 for Sandy Soil)
Seismic Zone Factor =	Z := 2	(User Input) (UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	μ := 0.45	(User Input)

Pier Reinforcement:

Bar Size =	$BS_{\text{pier}} := 9$	(User Input)	
Bar Diameter =	$d_{\text{bpier}} := 1.128 \cdot \text{in}$	(User Input)	
Number of Bars =	$NB_{\text{pier}} := 21$	(User Input)	
Clear Cover of Reinforcement =	$Cvr_{\text{pier}} := 3 \cdot \text{in}$	(User Input)	
Reinforcement Location Factor =	$\alpha_{\text{pier}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{\text{pier}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{\text{pier}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{\text{pier}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Diameter of Tie =	$d_{\text{Tie}} := 0.5 \cdot \text{in}$	(User Input)	

Pad Reinforcement:

Bar Size =	$BS_{\text{top}} := 9$	(User Input)	(Top of Pad)
Bar Diameter =	$d_{\text{btop}} := 1.128 \cdot \text{in}$	(User Input)	(Top of Pad)
Number of Bars =	$NB_{\text{top}} := 57$	(User Input)	(Top of Pad)
Bar Size =	$BS_{\text{bot}} := 9$	(User Input)	(Bottom of Pad)
Bar Diameter =	$d_{\text{bbot}} := 1.128 \cdot \text{in}$	(User Input)	(Bottom of Pad)
Number of Bars =	$NB_{\text{bot}} := 57$	(User Input)	(Bottom of Pad)
Clear Cover of Reinforcement =	$Cvr_{\text{pad}} := 3.0 \cdot \text{in}$	(User Input)	
Reinforcement Location Factor =	$\alpha_{\text{pad}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{\text{pad}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{\text{pad}} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{\text{pad}} := 1.0$	(User Input)	(ACI-2008 12.2.4)

Calculated Factors:

Pier Reinforcement Bar Area =	$A_{\text{bpier}} := \frac{\pi \cdot d_{\text{bpier}}^2}{4} = 0.999 \cdot \text{in}^2$
Pad Top Reinforcement Bar Area =	$A_{\text{btop}} := \frac{\pi \cdot d_{\text{btop}}^2}{4} = 0.999 \cdot \text{in}^2$
Pad Bottom Reinforcement Bar Area =	$A_{\text{bbot}} := \frac{\pi \cdot d_{\text{bbot}}^2}{4} = 0.999 \cdot \text{in}^2$
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$
Load Factor =	$LF := 1$

Stability of Footing:

Adjusted Concrete Unit Weight =

$$\gamma_c := \text{if}(\text{Bouyancy} = 1, \gamma_{\text{conc}} - 62.4 \text{pcf}, \gamma_{\text{conc}}) = 150 \text{pcf}$$

Adjusted Soil Unit Weight =

$$\gamma_s := \text{if}(\text{Bouyancy} = 1, \gamma_{\text{soil}} - 62.4 \text{pcf}, \gamma_{\text{soil}}) = 120 \text{pcf}$$

Passive Pressure =

$$P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p} = 0 \text{ksf}$$

$$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} = 1.8 \text{ksf}$$

$$P_{top} := \text{if}(n < (D_f - T_f), P_{pt}, P_{pn}) = 1.8 \text{ksf}$$

$$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 2.88 \text{ksf}$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 2.34 \text{ksf}$$

$$T_p := \text{if}(n < (D_f - T_f), T_f, (D_f - n)) = 3 \text{-ft}$$

$$A_p := W_f \cdot T_p = 123 \text{-ft}^2$$

Ultimate Shear =

$$S_u := P_{ave} \cdot A_p = 287.82 \text{-kip}$$

Weight of Concrete =

$$WT_c := \left[(W_f^2 \cdot T_f) + (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4} \cdot L_p \right) \right] \cdot \gamma_c = 795.813 \text{-kip}$$

Weight of Soil Above Footing =

$$WT_{s1} := \left[W_f^2 - (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4} \right) \right] \cdot (L_p - L_{pag} - n) \cdot \gamma_s = 979.97 \text{-kip}$$

Weight of Soil Wedge at Back Face =

$$WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\phi_s)}{2} \cdot W_f \right] \cdot \gamma_s = 90.898 \text{-kip}$$

Foundation has undercut toe per Fred A. Nudd dwg 96-4992-1

Tower Offset =

$$X_{t1} := \left[\frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \text{-deg}))}{2} \right] \quad X_{t2} := \frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \text{-deg}))}{3}$$

$$X_t := \text{if}(\text{Pos}_t = 1, X_{t1}, X_{t2}) = 6.644$$

$$X_{off1} := \frac{W_f}{2} - \left[\frac{(W_t \cdot \cos(30 \text{-deg}))}{3} + X_t \right] = 4.619 \quad X_{off2} := 0$$

$$X_{off} := \text{if}(\text{Pos}_t = 1, X_{off1}, X_{off2}) \quad X_{off} = 4.619 \text{-ft}$$

Total Weight =

$$WT_{tot} := 0.9WT_c + 0.75WT_{s1} = 1451.2 \text{-kip}$$

Resisting Moment =

$$M_r := (WT_{tot}) \cdot \frac{W_f}{2} + 0.9WT_t \cdot \left(\frac{W_f}{2} - X_{off} \right) + 0.75 \left(S_u \cdot \frac{T_p}{3} \right) + 0.75WT_{s2} \cdot \left[W_f + \frac{(D_f - n) \cdot \tan(\phi_s)}{3} \right] = 34224 \text{-kip-ft}$$

Overtaking Moment =

$$M_{ot} := OM + S_t \cdot (L_p + T_f) = 13966.5 \text{-kip-ft}$$

Foundation has undercut toe per Fred A. Nudd dwg 96-4992-1

Factor of Safety Actual =

$$FS := \frac{M_r}{M_{ot}} = 2.45$$

Factor of Safety Required =

$$FS_{req} := 1 \quad \text{OverTurning_Moment_Check} := \text{if}(FS \geq FS_{req}, \text{"Okay"}, \text{"No Good"})$$

OverTurning_Moment_Check = "Okay"

Shear Capacity in Pier:

Shear Resistance of Pier =

$$S_p := \frac{P_{ave} \cdot A_p + \mu \cdot W_{T_{tot}}}{F_{S_{req}}} = 940.865 \text{ kips}$$

$$\text{Shear_Check} := \text{if}(S_p > S_t, \text{"Okay"}, \text{"No Good"})$$

Shear_Check = "Okay"

Bearing Pressure Caused by Footing:

Total Load =

$$\text{Load}_{tot} := W_{T_c} + W_{T_{s1}} + W_{T_t} = 1871 \text{ kip}$$

Area of the Mat =

$$A_{mat} := W_f^2 = 1.681 \times 10^3$$

Section Modulus of Mat =

$$S := \frac{W_f^3}{6} = 1.15 \times 10^4 \text{ ft}^3$$

Maximum Pressure in Mat =

$$P_{max} := \frac{\text{Load}_{tot}}{A_{mat}} + \frac{M_{ot}}{S} = 2.329 \text{ ksf}$$

$$\text{Max_Pressure_Check} := \text{if}(P_{max} < 0.75q_s, \text{"Okay"}, \text{"No Good"})$$

Max_Pressure_Check = "Okay"

Minimum Pressure in Mat =

$$P_{min} := \frac{\text{Load}_{tot}}{A_{mat}} - \frac{M_{ot}}{S} = -0.103 \text{ ksf}$$

$$\text{Min_Pressure_Check} := \text{if}((P_{min} \geq 0) \cdot (P_{min} < 0.75q_s), \text{"Okay"}, \text{"No Good"})$$

Min_Pressure_Check = "No Good"

Distance to Resultant of Pressure Distribution =

$$X_p := \frac{P_{max}}{P_{max} - P_{min}} \cdot \frac{1}{3} = 13.088$$

Distance to Kern =

$$X_k := \frac{W_f}{6} = 6.833$$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity =

$$e := \frac{M_{ot}}{\text{Load}_{tot}} = 7.466$$

Adjusted Soil Pressure =

$$P_a := \frac{2 \cdot \text{Load}_{tot}}{3 \cdot W_f \left(\frac{W_f}{2} - e \right)} = 2.334 \text{ ksf}$$

$$q_{adj} := \text{if}(P_{min} < 0, P_a, P_{max}) = 2.334 \text{ ksf}$$

$$\text{Pressure_Check} := \text{if}(q_{adj} < 0.75q_s, \text{"Okay"}, \text{"No Good"})$$

Pressure_Check = "Okay"

Concrete Bearing Capacity:

Strength Reduction Factor =

$$\Phi_c := 0.65 \quad (\text{ACI-2008 9.3.2.2})$$

Bearing Strength Between Pier and Pad =

$$P_b := \Phi_c \cdot 0.85 \cdot f_c \cdot \frac{\pi \cdot d_p^2}{4} = 5.061 \times 10^3 \text{ kips} \quad (\text{ACI-2008 10.14})$$

$$\text{Bearing_Check} := \text{if}(P_b > LF \cdot C_t, \text{"Okay"}, \text{"No Good"})$$

Bearing_Check = "Okay"

Shear Strength of Concrete:

Beam Shear:

(Critical section located at a distance d from the face of Pier) (ACI 11.3.1.1)

$$\phi_c := 0.85 \quad (\text{ACI 9.3.2.5})$$

$$d := T_f - C_{v_r \text{ pad}} - d_{\text{bbot}} = 31.872 \text{ in}$$

$$FL := LF \cdot \frac{C_t}{W_f^2} = 0.3 \text{ ksf}$$

$$V_{\text{req}} := FL \cdot (X_t - .5 \cdot d_p - d) \cdot W_f = 21.402 \text{ kips}$$

$$V_{\text{Avail}} := \phi_c \cdot 2 \cdot \sqrt{f_c \cdot \text{psi}} \cdot W_f \cdot d = 1686 \text{ kip} \quad (\text{ACI-2008 11.2.1.1})$$

$$\text{Beam_Shear_Check} := \text{if}(V_{\text{req}} < V_{\text{Avail}}, \text{"Okay"}, \text{"No Good"})$$

Beam_Shear_Check = "Okay"

Punching Shear:

(Critical Section Located at a distance of d/2 from the face of pier) (ACI 11.11.1.2)

Critical Perimeter of Punching Shear =

$$b_o := (d_p + d) \cdot \pi = 22.5$$

Area Included Inside Perimeter =

$$A_{bo} := \frac{\pi \cdot (d_p + d)^2}{4} = 40.2$$

Required Shear Strength =

$$V_{\text{req}} := FL \cdot (W_f^2 - A_{bo}) = 493 \text{ kips}$$

Available Shear Strength =

$$V_{\text{Avail}} := \phi_c \cdot 4 \cdot \sqrt{f_c \cdot \text{psi}} \cdot b_o \cdot d = 1848.9 \text{ kip} \quad (\text{ACI-2008 11.11.2.1})$$

$$\text{Punching_Shear_Check} := \text{if}(V_{\text{req}} < V_{\text{Avail}}, \text{"Okay"}, \text{"No Good"})$$

Punching_Shear_Check = "Okay"

Steel Reinforcement in Pad:

Required Reinforcement for Bending:

Strength Reduction Factor =

$$\phi_m := .90$$

(ACI-2008 9.3.2.1)

Maximum Moment in Pad =

$$M_{max} := 1200 \cdot \text{kip} \cdot \text{ft}$$

(User Input)

Design Moment =

$$M_n := \frac{LF \cdot M_{max}}{\phi_m} = 1.333 \times 10^3 \cdot \text{kips} \cdot \text{ft}$$

$$\beta := \begin{cases} 0.85 & \text{if } 2500 \cdot \text{psi} \leq f_c \leq 4000 \cdot \text{psi} \\ 0.65 & \text{if } f_c > 8000 \cdot \text{psi} \\ \left[0.85 - \left[\frac{\left(\frac{f_c}{\text{psi}} - 4000 \right)}{1000} \right] \cdot 0.5 \right] & \text{otherwise} \end{cases} = 0.85$$

(ACI-2008 10.2.7.3)

$$b_{eff} := W_t \cdot \cos(30 \cdot \text{deg}) + d_p = 386.554 \cdot \text{in}$$

$$A_s := \frac{M_n}{(f_y \cdot d)} = 8.367 \cdot \text{in}^2$$

$$a := \frac{A_s \cdot f_y}{\beta \cdot f_c \cdot b_{eff}} = 0.382 \cdot \text{in}$$

$$A_s := \frac{M_n}{f_y \cdot \left(d - \frac{a}{2} \right)} = 8.417 \cdot \text{in}^2$$

$$\rho := \frac{A_s}{b_{eff} \cdot d} = 0.0082 \cdot \text{in}$$

Required Reinforcement for Temperature and Shrinkage:

$$\rho_{sh} := \begin{cases} .0018 & \text{if } f_y \geq 60000 \text{ psi} \\ .0020 & \text{otherwise} \end{cases} = 0.0018 \quad (\text{ACI-2008 7.12.2.1})$$

Check Bottom Bars:

$$A_s := \text{if} \left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d \right) = 11.1 \cdot \text{in}^2$$

$$A_{s_{prov}} := A_{bbot} \cdot NB_{bot} = 57 \cdot \text{in}^2$$

$$Pad_Reinforcement_Bot := \text{if}(A_{s_{prov}} > A_s, \text{"Okay"}, \text{"No Good"})$$

$$Pad_Reinforcement_Bot = \text{"Okay"}$$

Check top Bars:

$$A_s := \text{if} \left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d \right) = 11.1 \cdot \text{in}^2$$

$$A_{s_{prov}} := A_{btop} \cdot NB_{top} = 57 \cdot \text{in}^2$$

$$Pad_Reinforcement_Top := \text{if}(A_{s_{prov}} > A_s, \text{"Okay"}, \text{"No Good"})$$

$$Pad_Reinforcement_Top = \text{"Okay"}$$

Development Length Pad Reinforcement:

Bar Spacing =

$$B_{sPad} := \frac{W_f - 2 \cdot C_{vr_{pad}} - NB_{bot} \cdot d_{bbot}}{NB_{bot} - 1} = 7.53 \cdot \text{in}$$

Spacing or Cover Dimension =

$$c := \text{if} \left(C_{vr_{pad}} < \frac{B_{sPad}}{2}, C_{vr_{pad}}, \frac{B_{sPad}}{2} \right) = 3 \cdot \text{in}$$

Transverse Reinforcement Index =

$$k_{tr} := 0 \quad (\text{ACI-2008 12.2.3})$$

$$L_{dbt} := \frac{3 \cdot f_y \cdot \alpha_{pad} \cdot \beta_{pad} \cdot \gamma_{pad} \cdot \lambda_{pad}}{40 \cdot \sqrt{f_c \cdot \text{psi}} \cdot \frac{c + k_{tr}}{d_{bbot}}} \cdot d_{bbot} = 30.2 \cdot \text{in}$$

Minimum Development Length =

$$L_{dbmin} := 12 \cdot \text{in} \quad (\text{ACI-2008 12.2.1})$$

$$L_{dbtCheck} := \text{if}(L_{dbt} \geq L_{dbmin}, \text{"Use L.dbt"}, \text{"Use L.dbmin"}) = \text{"Use L.dbt"}$$

Available Length in Pad =

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - C_{vr_{pad}} = 51 \cdot \text{in}$$

$$L_{pad_Check} := \text{if}(L_{Pad} > L_{dbt}, \text{"Okay"}, \text{"No Good"})$$

$$L_{pad_Check} = \text{"Okay"}$$

Steel Reinforcement in Pier:

Area of Pier =

$$A_p := \frac{\pi \cdot d_p^2}{4} = 2290.22 \cdot \text{in}^2$$

$$A_{smin} := 0.01 \cdot 0.5 \cdot A_p = 11.45 \cdot \text{in}^2 \quad (\text{ACI-2008 10.8.4 \& 10.9.1})$$

$$A_{sprov} := N_{B_{pier}} \cdot A_{bpier} = 20.99 \cdot \text{in}^2$$

$$\text{Steel_Area_Check} := \text{if}(A_{sprov} > A_{smin}, \text{"Okay"}, \text{"No Good"})$$

$$\text{Steel_Area_Check} = \text{"Okay"}$$

Bar Spacing In Pier =

$$B_{sPier} := \frac{d_p \cdot \pi}{N_{B_{pier}}} - d_{bpier} = 6.95 \cdot \text{in}$$

Diameter of Reinforcement Cage =

$$\text{Diam}_{cage} := d_p - 2 \cdot C_{vr_{pier}} = 48 \cdot \text{in}$$

Maximum Moment in Pier =

$$M_p := S_t(L_p) \cdot LF = 6666 \cdot \text{in} \cdot \text{kips}$$

Pier Check evaluated from outside program and results are listed below;

$$(D \ N \ n \ P_u \ M_{xu}) := \left(d_p^{12} \ N_{B_{pier}} \ B_{s_{pier}} \ \frac{C_t \cdot 1.333}{\text{kips}} \ \frac{M_p}{\text{in} \cdot \text{kips}} \right)$$

$$(D \ N \ n \ P_u \ M_{xu}) = (54 \ 21 \ 9 \ 673.165 \ 6.666 \times 10^3)$$

$$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := (0 \ 0 \ 0 \ 0)$$

$$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := \phi P'_n (D, N, n, P_u, M_{xu})^T$$

$$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (2.985 \times 10^3 \ 2.956 \times 10^4 \ -39.709 \ 9.169 \times 10^{-3})$$

$$\text{Axial_Load_Check} := \text{if}(\phi P_n \geq P_u, \text{"Okay"}, \text{"No Good"})$$

$$\text{Axial_Load_Check} = \text{"Okay"}$$

$$\text{Bending_Check} := \text{if}(\phi M_{xn} \geq M_{xu}, \text{"Okay"}, \text{"No Good"})$$

$$\text{Bending_Check} = \text{"Okay"}$$

Development Length Pier Reinforcement:

Available Length in Foundation:

$$L_{\text{pier}} := L_p - C_{\text{vr}}_{\text{pier}} = 63 \cdot \text{in}$$

$$L_{\text{pad}} := T_f - C_{\text{vr}}_{\text{pad}} = 33 \cdot \text{in}$$

Tension:

(ACI-2008 12.2.3)

Spacing or Cover Dimension =

$$c := \text{if} \left(C_{\text{vr}}_{\text{pier}} < \frac{B_{\text{spier}}}{2}, C_{\text{vr}}_{\text{pier}}, \frac{B_{\text{spier}}}{2} \right) = 3 \cdot \text{in}$$

Transverse Reinforcement =

$$k_{\text{tr}} := 0 \quad (\text{ACI-2008 12.2.3})$$

$$L_{\text{dbt}} := \frac{3 \cdot f_y \cdot \alpha_{\text{pier}} \cdot \beta_{\text{pier}} \cdot \gamma_{\text{pier}} \cdot \lambda_{\text{pier}}}{40 \cdot \sqrt{f_c \cdot \text{psi}} \cdot \left(\frac{c + k_{\text{tr}}}{d_{\text{bpier}}} \right)} \cdot d_{\text{bpier}} = 30.18 \cdot \text{in}$$

Minimum Development Length =

Pier reinforcement bars are standard 90 degree hooks
 and therefore development in the pad is computed
 as follows:

$$L_{\text{dh}} := \frac{1200 \cdot d_{\text{bpier}}}{\sqrt{\frac{f_c}{\text{psi}}}} \cdot .7 = 14.982 \cdot \text{in} \quad (\text{ACI 12.2.1})$$

$$L_{\text{db}} := \max(L_{\text{dbt}}, L_{\text{dbmin}}) = 30.177 \cdot \text{in}$$

$$L_{\text{tension_Check}} := \text{if}(L_{\text{pier}} + L_{\text{pad}} > L_{\text{db}}, \text{"Okay"}, \text{"No Good"})$$

$$L_{\text{tension_Check}} = \text{"Okay"}$$

Compression:

(ACI-2008 12.3.2)

$$L_{\text{dbc1}} := \frac{.02 \cdot d_{\text{bpier}} \cdot f_y}{\sqrt{f_c \cdot \text{psi}}} = 21.402 \cdot \text{in}$$

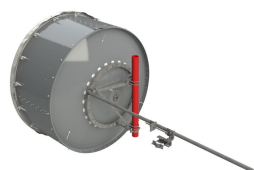
$$L_{\text{dbmin}} := 0.0003 \cdot \frac{\text{in}^2}{\text{lb}} \cdot (d_{\text{bpier}} \cdot f_y) = 20.304 \cdot \text{in}$$

$$L_{\text{dbc}} := \text{if}(L_{\text{dbc1}} \geq L_{\text{dbmin}}, L_{\text{dbc1}}, L_{\text{dbmin}}) = 21.402 \cdot \text{in}$$

$$L_{\text{compression_Check}} := \text{if}(L_{\text{pier}} + L_{\text{pad}} > L_{\text{dbc}}, \text{"Okay"}, \text{"No Good"})$$

$$L_{\text{compression_Check}} = \text{"Okay"}$$

HX8-6W-6GF



2.4m | 8ft ValuLine® High Performance, High XPD Antenna, dual-polarized, 5.925 – 7.125 GHz, grey, CPR137G flange

Product Classification

Product Type	Microwave antenna
Product Brand	ValuLine®

General Specifications

Antenna Type	HX - ValuLine® High Performance, High XPD Antenna, dual-polarized
Polarization	Dual
Antenna Input	CPR137G
Antenna Color	Gray
Reflector Construction	One-piece reflector
Radome Color	Gray
Radome Material	Fabric
Flash Included	Yes
Side Struts, Included	1
Side Struts, Optional	4

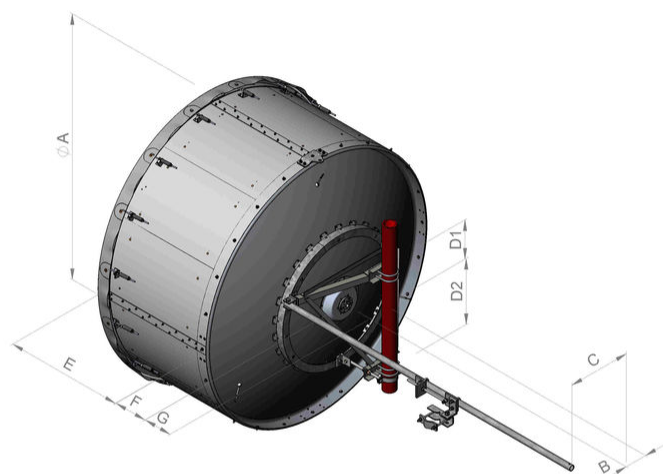
Dimensions

Diameter, nominal	2.4 m 8 ft
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HX8-6W-6GF

Antenna Dimensions and Mounting Information

HX8



Dimensions in inches (mm)								
Antenna size, ft (m)	A	B	C	D1	D2	E	F	G
8 (2.4)	95.1 (2416)	8.0 (203)	22.5 (572)	14.1 (357)	23.6 (600)	42.4 (1078)	12.1 (306)	10.3 (262)

Electrical Specifications

Operating Frequency Band	5.925 – 7.125 GHz
Gain, Low Band	40.8 dBi
Gain, Mid Band	41.6 dBi
Gain, Top Band	42.4 dBi
Boresite Cross Polarization Discrimination (XPD)	33 dB
Front-to-Back Ratio	70 dB
Beamwidth, Horizontal	1.3 °
Beamwidth, Vertical	1.3 °
Return Loss	26 dB

HX8-6W-6GF

VSWR	1.1
Radiation Pattern Envelope Reference (RPE)	7389
Electrical Compliance	ACMA FX03_6b, 6p7b ETSI 302 217 Class 3 IC 3059A IC 3064A US FCC Part 101A US FCC Part 74A
Cross Polarization Discrimination (XPD) Electrical Compliance	ETSI EN 302217 XPD Category 2

Electrical Specifications, Band 2

Beamwidth, Horizontal	1.3 °
Beamwidth, Vertical	1.3 °
Gain, Mid Band	40.7 dBi
Operating Frequency Band	5.725 – 5.850 GHz

Mechanical Specifications

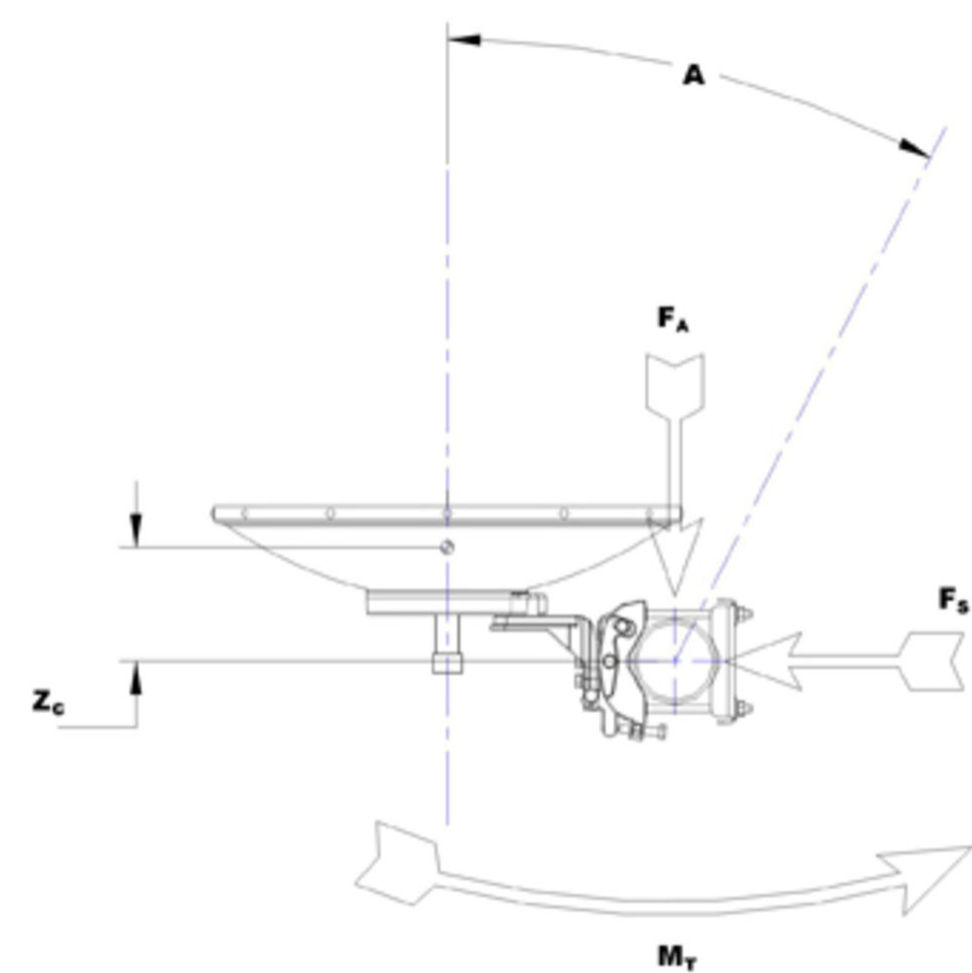
Compatible Mounting Pipe Diameter	115 mm 4.5 in
Fine Azimuth Adjustment Range	±5°
Fine Elevation Adjustment Range	±5°
Wind Speed, operational	180 km/h 111.847 mph
Wind Speed, survival	200 km/h 124.274 mph

Wind Forces at Wind Velocity Survival Rating

Axial Force (FA)	10599 N 2,382.751 lbf
Angle # for MT Max	-140 °
Side Force (FS)	4594 N 1,032.773 lbf
Twisting Moment (MT)	-6518 N-m -57,689.16 in lb
Force on Inboard Strut Side	11263 N 2,532.024 lbf
Zcg without Ice	532 mm 20.945 in
Zcg with 1/2 in (12 mm) Radial Ice	675 mm 26.575 in
Weight with 1/2 in (12 mm) Radial Ice	342 kg 753.98 lb

HX8-6W-6GF

Wind Forces at Wind Velocity Survival Rating Image



Packaging and Weights

Height, packed	2250 mm 88.583 in
Width, packed	1130 mm 44.488 in
Length, packed	2380 mm 93.701 in
Packaging Type	Standard pack
Volume	6.1 m ³ 215.42 ft ³
Weight, gross	318 kg 701.069 lb
Weight, net	187 kg 412.264 lb

Regulatory Compliance/Certifications

Agency	Classification
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HX8-6W-6GF

ISO 9001:2015

Designed, manufactured and/or distributed under this quality management system



* Footnotes

Axial Force (FA)

Maximum forces exerted on a supporting structure as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.

Boresite Cross Polarization Discrimination (XPD)

The difference between the peak of the co-polarized main beam and the maximum cross-polarized signal over an angle twice the 3 dB beamwidth of the co-polarized main beam.

Cross Polarization Discrimination (XPD) Electrical Compliance

The difference between the peak of the co-polarized main beam and the maximum cross-polarized signal over an angle twice the 3 dB beamwidth of the co-polarized main beam.

Front-to-Back Ratio

Denotes highest radiation relative to the main beam, at $180^\circ \pm 40^\circ$, across the band. Production antennas do not exceed rated values by more than 2 dB unless stated otherwise.

Gain, Mid Band

For a given frequency band, gain is primarily a function of antenna size. The gain of Andrew antennas is determined by either gain by comparison or by computer integration of the measured antenna patterns.

Operating Frequency Band

Bands correspond with CCIR recommendations or common allocations used throughout the world. Other ranges can be accommodated on special order.

Packaging Type

Andrew standard packing is suitable for export. Antennas are shipped as standard in totally recyclable cardboard or wire-bound crates (dependent on product). For your convenience, Andrew offers heavy duty export packing options.

Radiation Pattern Envelope Reference (RPE)

Radiation patterns define an antenna's ability to discriminate against unwanted signals. Under still dry conditions, production antennas will not have any peak exceeding the current RPE by more than 3dB, maintaining an angular accuracy of $\pm 1^\circ$ throughout

Return Loss

The figure that indicates the proportion of radio waves incident upon the antenna that are rejected as a ratio of those that are accepted.

Side Force (FS)

Maximum side force exerted on the mounting pipe as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.

HX8-6W-6GF

Twisting Moment (MT)

Maximum forces exerted on a supporting structure as a result of wind from the most critical direction for this parameter. The individual maximums specified may not occur simultaneously. All forces are referenced to the mounting pipe.

VSWR

Maximum; is the guaranteed Peak Voltage-Standing-Wave-Ratio within the operating band.

Wind Speed, operational

For VHLP(X), SHP(X), HX and USX antennas, the wind speed where the maximum antenna deflection is 0.3 x the 3 dB beam width of the antenna. For other antennas, it is defined as a deflection is equal to or less than 0.1 degrees.

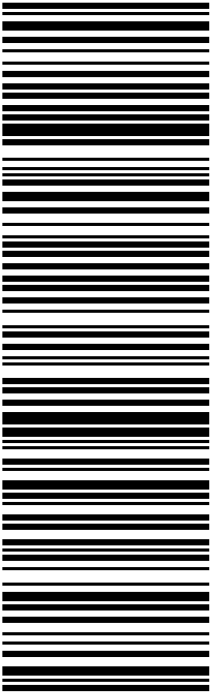
Wind Speed, survival

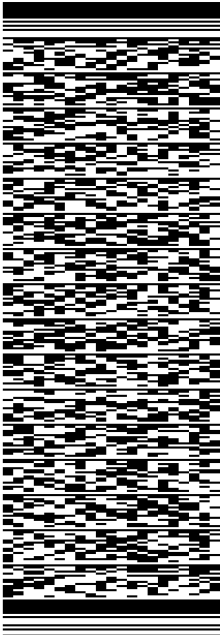
The maximum wind speed the antenna, including mounts and radomes, where applicable, will withstand without permanent deformation. Realignment may be required. This wind speed is applicable to antenna with the specified amount of radial ice.

ATTACHMENT D – PROOF OF DELIVERY OF NOTICE

ORIGIN ID:EFBA (203) 562-9885 MARGARET SZALAU 60 HAMILTON STREET NEW HAVEN, CT 06511 UNITED STATES US		SHIP DATE: 16OCT23 ACTWGT: 1.00 LB CAD: 2847419/INET14660
TO HON. PETE BASS, MAYOR TOWN OF NEW MILFORD 10 MAIN STREET NEW MILFORD CT 06776 (860) 798-6597 REF: CT2592932 - NEW MILFORD DEPT:		
BILL THIRD PARTY		
583J1/BC8B/9AE3		

TRK# 7737 5731 6916 0201	TUE - 17 OCT 10:30A PRIORITY OVERNIGHT
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EG DXRA CT-US 06776 SWF	
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After printing this label:

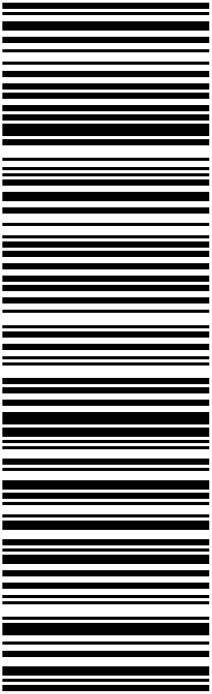
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

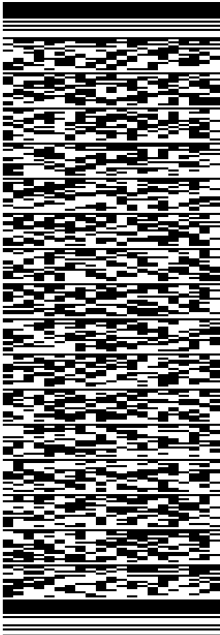
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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on [fedex.com](https://www.fedex.com). FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ORIGIN ID:EFBA (203) 562-9885 MARGARET SZALAU 60 HAMILTON STREET NEW HAVEN, CT 06511 UNITED STATES US		SHIP DATE: 16OCT23 ACTWGT: 1.00 LB CAD: 2847419/INET4660
TO LAURA REGAN, TOWN PLANNER TOWN OF NEW MILFORD 10 MAIN STREET NEW MILFORD CT 06776 (860) 798-6597 REF: CT2592932 - NEW MILFORD DEPT:		
BILL THIRD PARTY		
583J1/BC8B/9AE3		

TRK# 7737 5746 1576 0201	TUE - 17 OCT 10:30A PRIORITY OVERNIGHT
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EG DXRA CT-US 06776 SWF	
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After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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ATTACHMENT E - POWER DENSITY REPORT



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

Calculated Radio Frequency Emissions Report



ES-074

20 Chapin Road

New Milford, CT 06776

September 29, 2023

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Eversource swap out installation on the self-support tower at 20 Chapin Road in New Milford, CT. Eversource is proposing to swap out one of the microwave antennas. This report provides an updated analysis with % MPE (Maximum Permissible Exposure) measurements around the site to determine FCC compliance of the facility.



Figure 1: View of ES-074 New Milford

Site Address	20 Chapin Road
Latitude	41°36'18.75"N
Longitude	73°22'1.33"W
Site Elevation AMSL	980'
Survey Engineer	Ram Acharya
Survey Date/Time	9/25/2023; 2:00 PM – 3:15 PM

Table 1: Survey Information

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

3. Power Density Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

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

Where:

EIRP = Effective Isotropic Radiated Power = 1.64 x ERP

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

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor (GRF) of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Proposed Antenna Configuration

Table 2 below lists the technical details of the proposed swap out of Eversource installation. These parameters are applied to the above calculation methods in order to calculate the % MPE values of the proposed swap out equipment. Any receive-only antennas have not been included in the table as they are irrelevant in terms of the % MPE calculations.

Operator	Antenna Model	TX Freq. (MHz)	Ant Gain (dBd)	Power per Channel (ERP - Watts)	Number of Channels	Vertical Beamwidth	Length (ft)	Antenna Centerline Height (ft)
Eversource	HX8-6W-6GF	5945.2	39.45	9772	1	1.3°	8	242

Table 2: Eversource Antenna Configuration (Proposed Swap Out)^{1 2}

¹ Transmit power assumes 0 dB of cable loss.

² Transmit antenna centerline height is based on the CENTEK ENGINEERING Structural Analysis Report dated July 05, 2023.

5. Measurement Procedure

Frequencies from 300 KHz to 50 GHz were measured using the Narda Probe EA 5091, E-Field, shaped, FCC probe in conjunction with the NBM550 survey meter. The EA 5091 probe is “shaped” such that in a mixed signal environment (i.e.: more than one frequency band is used in a particular location), it accurately measures the percent of MPE.

From FCC OET Bulletin No. 65 - Edition 97-01 – “A useful characteristic of broadband probes used in multiple-frequency RF environments is a frequency-dependent response that corresponds to the variation in MPE limits with frequency. Broadband probes having such a “shaped” response permit direct assessment of compliance at sites where RF fields result from antennas transmitting over a wide range of frequencies. Such probes can express the composite RF field as a percentage of the applicable MPEs”.

Probe Description - As suggested in FCC OET Bulletin No. 65 - Edition 97-01, the response of the measurement instrument should be essentially isotropic, (i.e., independent of orientation or rotation angle of the probe). For this reason, the Narda EA 5091 probe was used for these measurements.

Sampling Description - At each measurement location, a spatially averaged measurement is collected over the height of an average human body. The NBM550 survey meter performs a time average measurement while the user slowly moves the probe over a distance range of 20 cm to 200 cm (about 6 feet) above ground level. The results recorded at each measurement location include average values over the spatial distance.

Instrumentation Information - A summary of specifications for the equipment used is provided in the table below.

Manufacturer	Narda Microwave			
Probe	EA 5091, Serial# 0116			
Calibration Date	January 2023			
Calibration Interval	24 Months			
Meter	NBM550, Serial# E-1069			
Calibration Date	January 2023			
Calibration Interval	24 Months			
Probe Specifications	Frequency Range	Field Measured	Standard	Measurement Range
	300 KHz-50 GHz	Electric Field	U.S. FCC 1997 Occupational/Controlled	0.2 – 600 % of Standard

Table 3: Instrumentation Information

Instrument Measurement Uncertainty - The total measurement uncertainty of the NARDA measurement probe and meter is no greater than ± 3 dB (0.5% to 6%), ± 1 dB (6% to 100%), ± 2 dB (100% to 600%). The factors which contribute to this include the probe’s frequency response deviation, calibration uncertainty, ellipse ratio, and isotropic response³. Every effort is taken to reduce the overall uncertainty during measurement collection including pointing the probe directly at the likely highest source of emissions.

³ For further details, please refer to Narda Safety Test Solutions NBM550 Probe Specifications.
<https://www.narda-sts.com/en/servicesupport/product-literature/nbmnim/pd/pdfs/22772/eID/>

6. Surveyed and Calculated % MPE Results

Measured and calculated results and a description of each survey location are detailed in the table below. Measurements were recorded on September 21, 2023 between 2 PM and 3:15 PM. The calculated % MPE contribution from the proposed swap out equipment was then added to the measured % MPE values in the “Composite % MPE” column. These calculated values incorporate the antenna pattern of the antenna model specified by Eversource to determine the “Off Beam Loss” factor shown in the power density formula from Section 3. All % MPE values are in reference to the FCC Uncontrolled/General Population exposure limit.

Table 4 below lists 22 measurements recorded in the vicinity of the tower. The highest spatially averaged measurement was 11.66% (Average Uncontrolled/General Population MPE) and was recorded at Location 2. The highest composite (measured + calculated) % MPE value is calculated to be 11.66% (Average Uncontrolled/General Population) and is also calculated to occur at Location 2.

Meas. Location	Latitude	Longitude	Dist. From Site (feet)	Measured % MPE (Uncontrolled / General)	Calculated % MPE (Eversource Proposed)	Composite % MPE (Uncontrolled / General)
1	41.60532	-73.36724	56	2.68%	0.00%	2.68%
2	41.60512	-73.36718	60	11.66%	0.00%	11.66%
3	41.60519	-73.36687	37	< 1.00%	0.00%	< 1.00%
4	41.60545	-73.36693	79	< 1.00%	0.00%	< 1.00%
5	41.60482	-73.36717	156	< 1.00%	0.00%	< 1.00%
6	41.60519	-73.36737	99	< 1.00%	0.00%	< 1.00%
7	41.60550	-73.36746	166	< 1.00%	0.00%	< 1.00%
8	41.60579	-73.36765	266	< 1.00%	0.00%	< 1.00%
9	41.60633	-73.36789	464	< 1.00%	0.00%	< 1.00%
10	41.60692	-73.36818	695	< 1.00%	0.00%	< 1.00%
11	41.60717	-73.37004	1089	4.54%	0.00%	4.54%
12	41.60695	-73.36894	801	8.17%	0.00%	8.17%
13	41.60704	-73.36694	656	3.28%	0.00%	3.28%
14	41.60747	-73.36434	1122	< 1.00%	0.00%	< 1.00%
15	41.60675	-73.36355	1085	< 1.00%	0.00%	< 1.00%
16	41.60514	-73.36340	994	< 1.00%	0.00%	< 1.00%
17	41.60438	-73.36456	728	1.20%	0.00%	1.20%
18	41.60285	-73.36596	924	4.77%	0.00%	4.77%
19	41.60181	-73.36647	1254	1.07%	0.00%	1.07%
20	41.604521	-73.371733	1300	4.27%	0.00%	4.27%
21	41.602945	-73.370571	1288	< 1.00%	0.00%	< 1.00%
22	41.601418	-73.369191	1512	< 1.00%	0.00%	< 1.00%

Table 4: Measured and Calculated % MPE Results ⁴⁵⁶

⁴ Due to measurement uncertainty at low levels (See Table 3), any readings outside the measurement range of the probe (< 1.00 % FCC General Population/Uncontrolled MPE) are noted as such.

⁵ Measured and calculated % MPE values listed are rounded to two decimal points and the composite % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total composite value reflected in the table.

⁶ The calculated %MPE is very low for Eversource’s swap out antenna due to the parameters of the antenna. The swap out antenna has a very narrow beamwidth which is good for long range communication but covers a very narrow area.

Figures 2 and 3 below are aerial views⁷ of the tower location and the surrounding area, along with the measurement locations listed in Table 4.

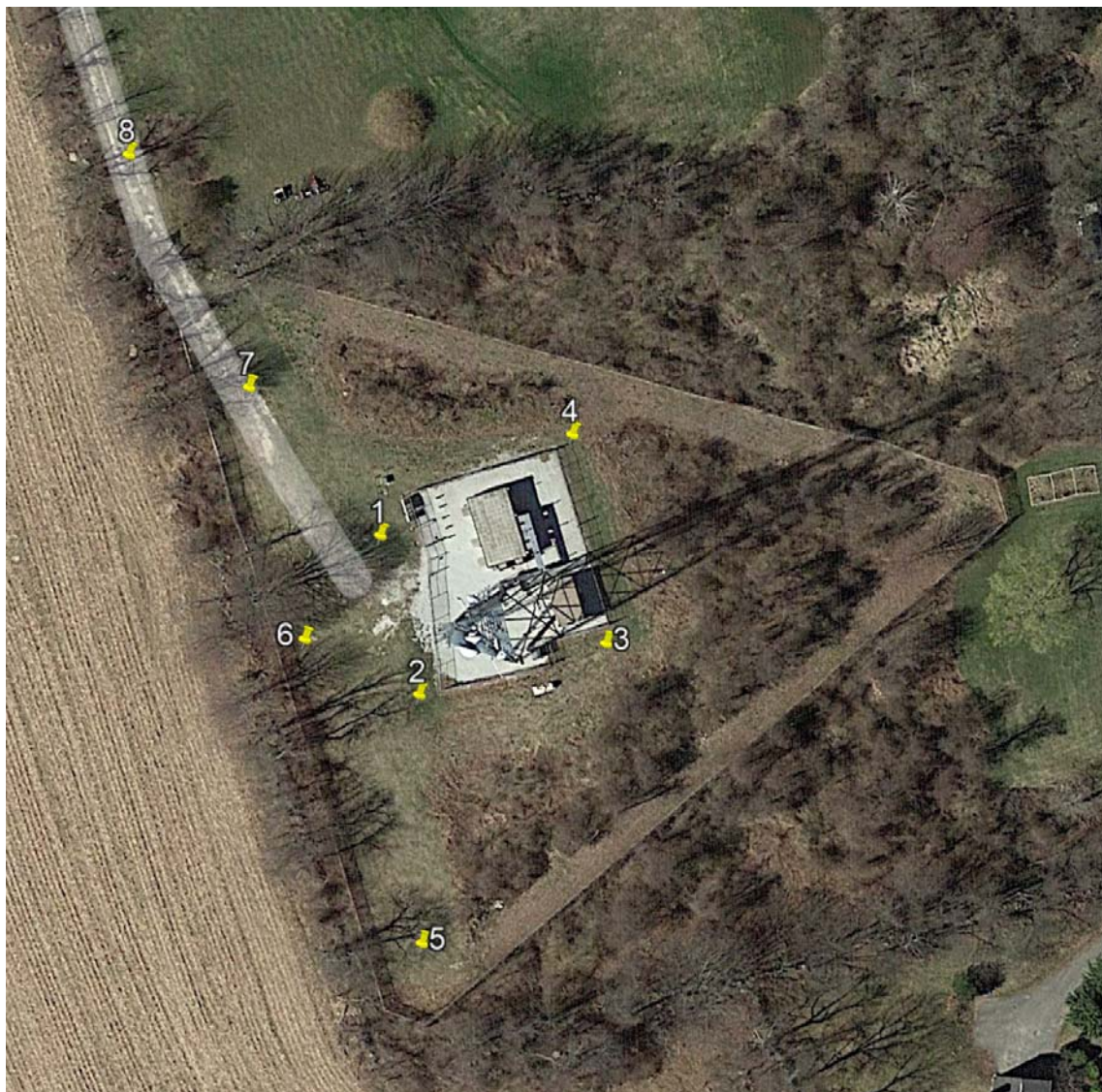


Figure 2: Measurement Points – Zoom In

⁷ Map showing location of telecommunications facility and the surrounding area. *Google Earth*, <https://earth.google.com/web>



Figure 3: All Measurement Points

7. Conclusion

A number of accessible areas around the tower at 20 Chapin Road in New Milford, CT were surveyed and found to be well within the mandated General Population/Uncontrolled limits for Maximum Permissible Exposure, as delineated in the Federal Communications Commission's Radio Frequency exposure rules published in 47 CFR 1.1307(b)(1)-(b)(3).

The highest spatially averaged % MPE measurement of all surveyed points based on the 1997 FCC standard for exposure to the general population is 11.66% MPE. This measurement was recorded at Location 2.

The highest composite (measured + calculated) power density is **11.66% of the FCC General Population MPE limit** with the proposed swap out Eversource equipment and is also calculated to occur at Location 2.

The above analysis concludes that RF exposure at ground level around the tower, both currently and with the proposed swap out antenna installation, will be below the maximum power density limits as outlined by the FCC in the OET Bulletin 65 Ed. 97-01.

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

8. Statement of Certification

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



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

September 27, 2023

Date



Report Prepared By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

September 29, 2023

Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure⁸

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

(B) Limits for General Population/Uncontrolled Exposure⁹

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

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

Table 5: FCC Limits for Maximum Permissible Exposure (MPE)

⁸ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

⁹ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

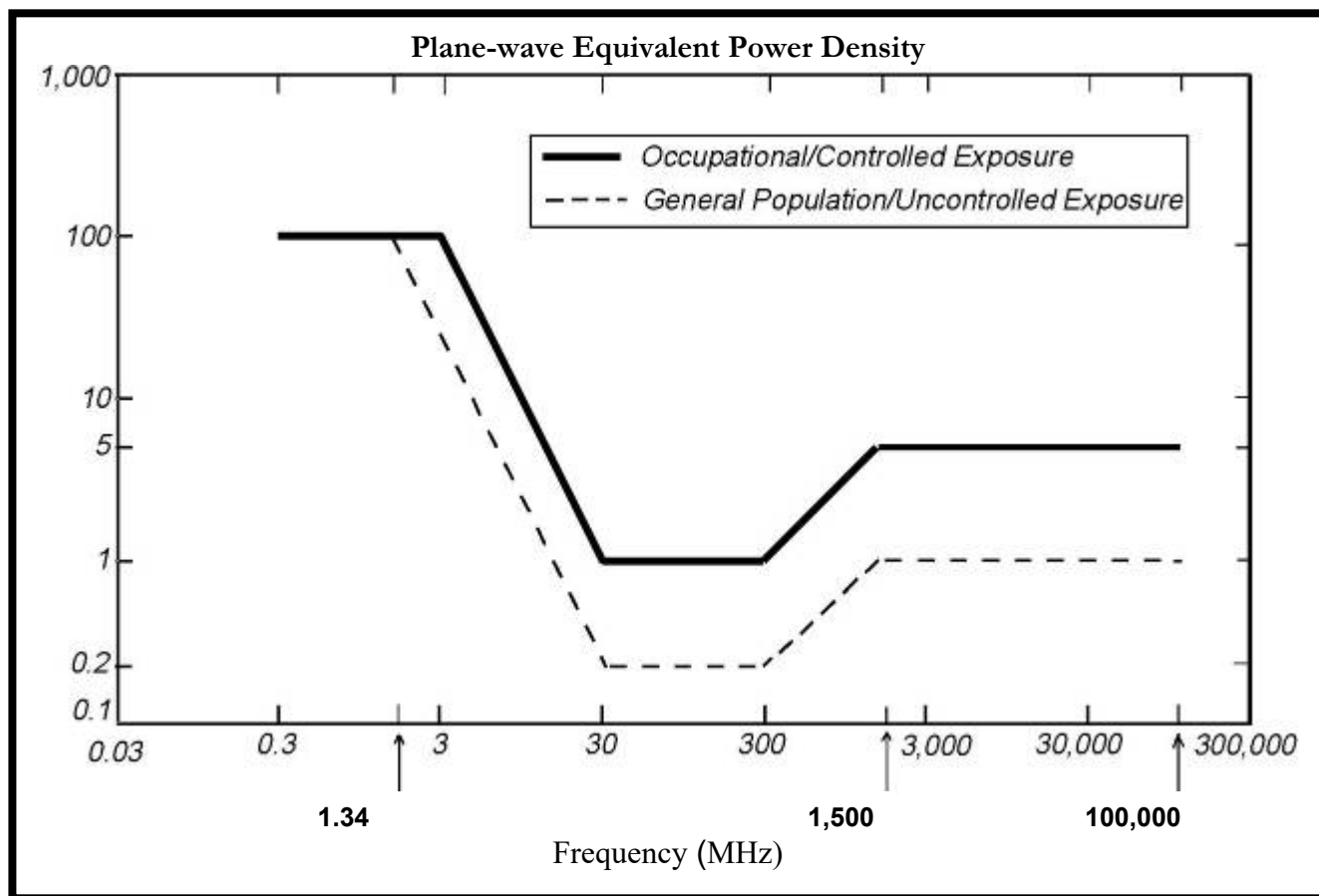


Figure 4: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Eversource Antenna Data Sheet and Electrical Patterns**217 MHz**

Manufacturer: COMMSCOPE
Model #: HX8-6W-6GF
Frequency Band: 5.725-5.850 GHz
Gain: 39.45 dBd
Vertical Beamwidth: 1.3°
Horizontal Beamwidth: 1.3°
Polarization: Dual-Polarization
Length: 8'

