EVERSOURCE ENERGY

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

Kathleen M. Shanley
Manager – Transmission Siting
Tel: (860) 728-4527

October 1, 2020

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

RE: **Notice of Exempt Modification**
Eversource Site # 5194
46 Fenwood Lane, Wilton, CT 06897
Latitude: 41-10-21.1 N / Longitude: 73-26-2.1 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 180-foot self-support tower located at 46 Fenwood Lane in Wilton. See Attachment A, Parcel Map and Property Card. The tower and property are owned by the Department of Emergency Services and Public Protection ("DESPP"). Eversource and DESPP have entered into an agreement allowing the modification of Eversource's equipment on the Connecticut State Police tower. See Attachment B, Letter of Authorization. Eversource plans to install one 4.25-foot tall omni-directional antenna to be mounted at 132 feet above ground level ("AGL"), one 5.5-foot tall dipole antenna mounted at 113 feet AGL, and two 7/8-inch diameter coaxial cables. There will be no changes to the area of the fenced compound, the tower or the existing antennas and equipment currently mounted on the tower. The tower and existing and proposed equipment are depicted on Attachment C, Construction Drawings, dated April 29, 2020 and Attachment D, Structural Analysis, dated March 31, 2020. The Connecticut Siting Council approved the self-support tower at this location in Docket No. 128 in April 1990 and subsequently approved Eversource's Tower Share application under TS-CL&P-161-130710.

The proposed installation is part of Eversource's program to update the current obsolete analog voice radio communications system to a modern digital voice communications system. The new system will enable the highest level of voice communications under all operating conditions, including during critical emergency and storm restoration activities. The new radio system will also provide for remote control of distribution safety equipment.

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 Lynne Vanderslice, First Selectwoman for the Town of Wilton and Michael Wrinn, Director of Planning & Land

Use Management for the Town of Wilton via private carrier. Proof of delivery is attached. See Attachment E, Proof of Delivery of Notice.

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

1. There will be no change to the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the new antennas 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 April 10, 2020 (Attachment F – Power Density Report)[1].
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, 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 copy of this notice is enclosed.

Communications regarding this Notice of Exempt Modification should be directed to Kathleen Shanley at (860) 728-4527.

By: _____
Kathleen M. Shanley
Manager – Transmission Siting

cc: Honorable Lynne Vanderslice, First Selectwoman, Town of Wilton
Michael Wrinn, Director of Planning & Land Use Management, Town of Wilton
DESPP

Attachments

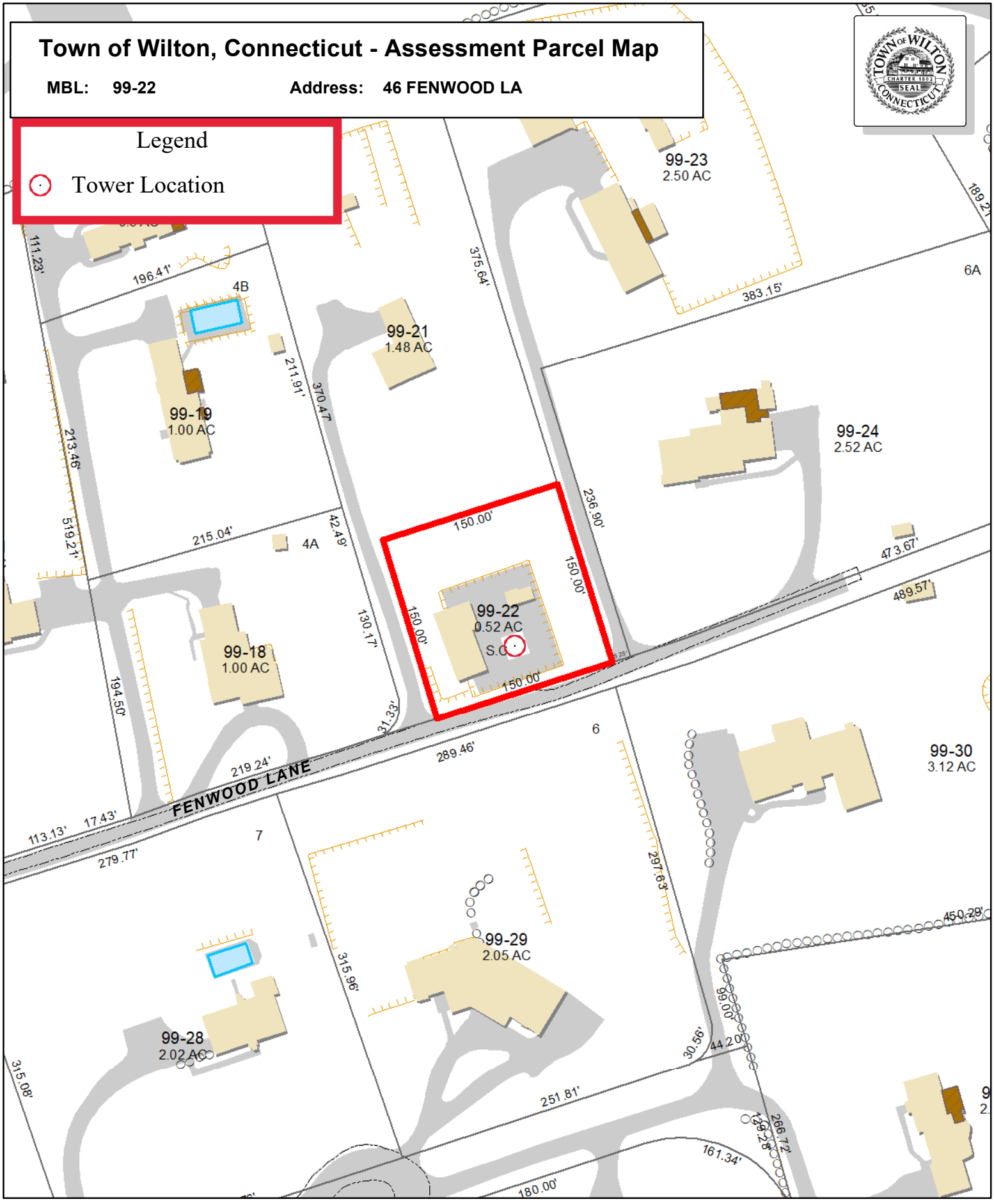
A. Parcel Map and Property Card
B. Letter of Authorization
C. Construction Drawings
D. Structural Analysis
E. Proof of Delivery of Notice
F. Power Density Report

[1] It should be noted that the Power Density Report denotes each channel as a transmitter. The depiction of antennas in the Structural Analysis and Construction Drawings accurately reflects the number of antennas. Also, the "Antenna Height" column on Table 1 in the Power Density Report reflects the Transmit or "TX" antenna centerline.

ATTACHMENT A – PARCEL MAP AND PROPERTY CARD

Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 99-22 **Address:** 46 FENWOOD LA



Approximate Scale:

1 inch = 100 feet

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

Map Grand List Date: Oct 2017

0 50 100 150 Feet

46 FENWOOD LA

Location	46 FENWOOD LA	**Mblu**	99/ / 22/ /
Acct#	006298	**Owner**	CONNECTICUT STATE OF
Assessment	$534,310	**Appraisal**	$763,300
PID	5194	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$84,700	$678,600	$763,300
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$59,290	$475,020	$534,310

Owner of Record

Owner	CONNECTICUT STATE OF	**Sale Price**	$0
Co-Owner		**Certificate**	
		Book & Page	0049/0403

Address	450 CAPITOL AVE HARTFORD, CT 06134	**Sale Date**	01/01/1901
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CONNECTICUT STATE OF	$0		0049/0403	00	01/01/1901

Building Information

Building 1 : Section 1

Year Built: 1990
Living Area: 1,431
Replacement Cost: $104,756
Building Percent Good: 78
Replacement Cost Less Depreciation: $81,700

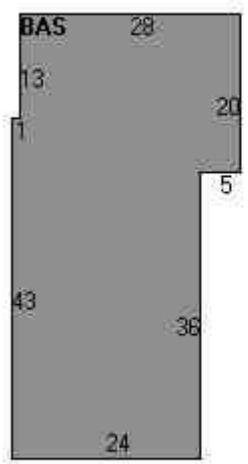
Building Attributes	
Field	**Description**
STYLE	Commercial
MODEL	Commercial
Grade	Average +10
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure	Gable/Hip

Building Photo

(http://images.vgsi.com/photos/WiltonCTPhotos//\00\00\03/49.jpg)

Roof Cover	Asphalt Shngl.
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	Central
Bldg Use	Ex Com MDL-96
Fireplace	
Elevator	
Cath Ceil	
Sauna	
1st Floor Use:	21I
Heat/AC	Heat A/C Split
Frame Type	Wood Frame
Baths/Plumbing	Average
Ceiling/Wall	Ceiling Only
Rooms/Prtns	Average
Wall Height	10
% Comn Wall	0

Building Layout



(http://images.vgsi.com/photos/WiltonCTPhotos//Sketches/5194_5194.jpg)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,431	1,431
		1,431	1,431

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	21I
Description	Ex Com MDL-96
Zone	R-2
Neighborhood	4000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.5
Frontage	
Depth	
Assessed Value	$475,020
Appraised Value	$678,600

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN3	Fence 6'			300 L.F.	$3,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$84,700	$678,600	$763,300
2018	$84,700	$678,600	$763,300
2018	$84,700	$678,600	$763,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$59,290	$475,020	$534,310
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2018	$59,290	$475,020	$534,310

ATTACHMENT B – LETTER OF AUTHORIZATION

STATE OF CONNECTICUT

DEPARTMENT OF EMERGENCY SERVICES AND PUBLIC PROTECTION

January 7, 2020

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Letter of Authorization** – Co-location on Connecticut State Police tower
Property address: 46 Fenwood Lane, Wilton, CT
Latitude: 41-10-21.04" Longitude: 73-26-02.09"

To Whom It May Concern:

Eversource Energy(Eversource) has an Agreement with the Connecticut Department of Emergency Services and Public Protection (DESPP) to co-locate its communications equipment on the DESPP tower located at 46 Fenwood Lane, Wilton, Connecticut.

Eversource shall be required by the terms of the agreement to seek and obtain all necessary permits and approvals. As a duly authorized representative of the DESPP, permission is hereby granted to Eversource and agents thereof, for the purpose of consummating any applications necessary to gain the required approvals from the State of Connecticut.

Any fees or charges associated with all applications or permits and any conditions placed on the applicant shall be the sole responsibility of Eversource.

Yours truly,

Brian Benito
Planning Specialist
State Of Connecticut
Department of Emergency Services and Public Protection
CTS Unit
860-685-8297
brian.benito@ct.gov

ATTACHMENT C – CONSTRUCTION DRAWINGS

EVERSOURCE ENERGY

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

PROJECT SUMMARY

THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:

1. INSTALL (1) NEW OMNI/WHIP ANTENNA AT ELEVATION 137'-0"± AGL
2. INSTALL (1) NEW DIPOLE ANTENNA AT ELEVATION 119'-0"± AGL
3. INSTALL (1) NEW RACK WITH DMR EQUIPMENT IN EXISTING SHELTER

GOVERNING CODES

2018 CONNECTICUT STATE BUILDING CODE (2015 IBC BASIS)
2017 NATIONAL ELECTRIC CODE
TIA-222-H

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

SITE INFORMATION

SITE NAME:	WILTON/STATE POLICE
SITE ID NUMBER:	#5194
SITE ADDRESS:	46 FENWOOD LANE WILTON, CT 06897
MAP:	99
BLOCK:	22
ZONE:	R-2
LATITUDE:	41° 10' 21.1" N
LONGITUDE:	73° 26' 2.1" W
ELEVATION:	376'± AMSL
FEMA/FIRM DESIGNATION:	X
ACREAGE:	0.5± AC (BOOK: 0049, PAGE: 0403)

CONTACT INFORMATION

APPLICANTS:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037

PROPERTY OWNER:
STATE OF CONNECTICUT
450 CAPITOL AVENUE
HARTFORD, CT 06134

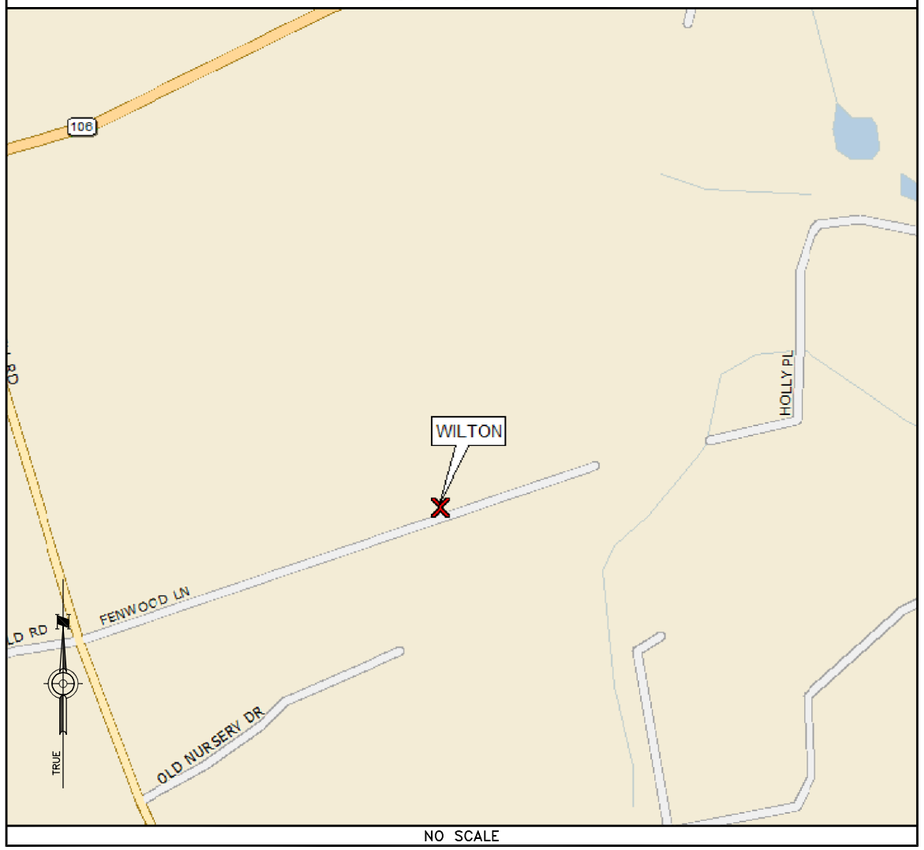
EVERSOURCE ENERGY
PROJECT MANAGER:
NIKOLL PRECI
(860) 655-3079

POWER PROVIDER:
EVERSOURCE ENERGY
(800) 286-2000

TELCO PROVIDER:
FRONTIER
(800) 921-8102

CALL BEFORE YOU DIG:
(800) 922-4455

LOCATION MAP



NO SCALE

DESIGN TYPE

SITE UPGRADE
SELF-SUPPORT TOWER

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
C-1	SITE PLAN
C-2	TOWER ELEVATION
G-1	GROUNDING DETAILS
N-1	NOTES & SPECIFICATIONS
N-2	NOTES & SPECIFICATIONS
N-3	NOTES & SPECIFICATIONS

DO NOT SCALE DRAWINGS

SUBCONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME

UNDERGROUND SERVICE ALERT

UTILITIES PROTECTION CENTER, INC.
811

48 HOURS BEFORE YOU DIG

EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TCG
CHECKED BY:	JR

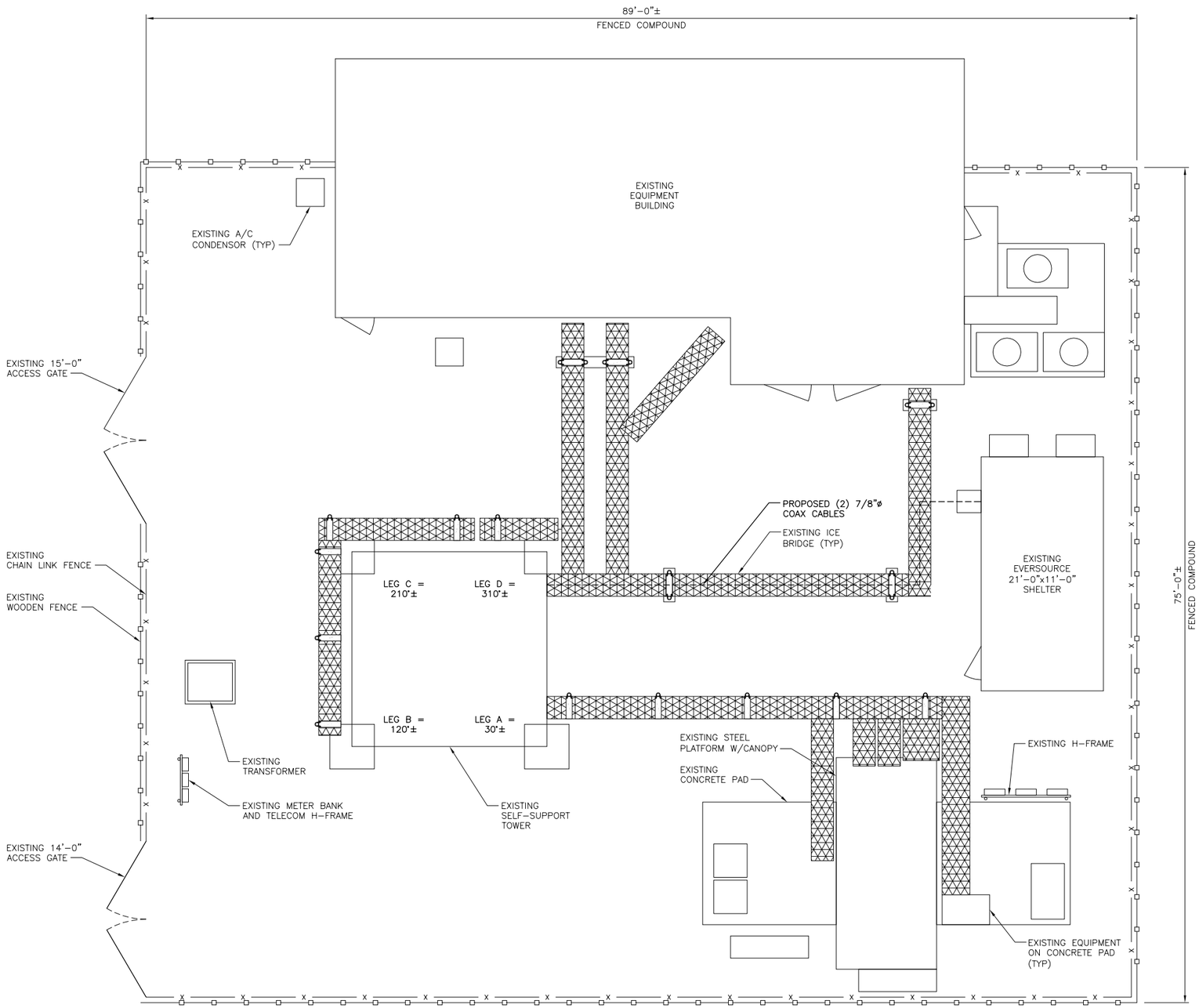
REV	DATE	DESCRIPTION
0	04/29/20	ISSUED FOR FILING

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
04/29/2020

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



SITE PLAN
NO SCALE

EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
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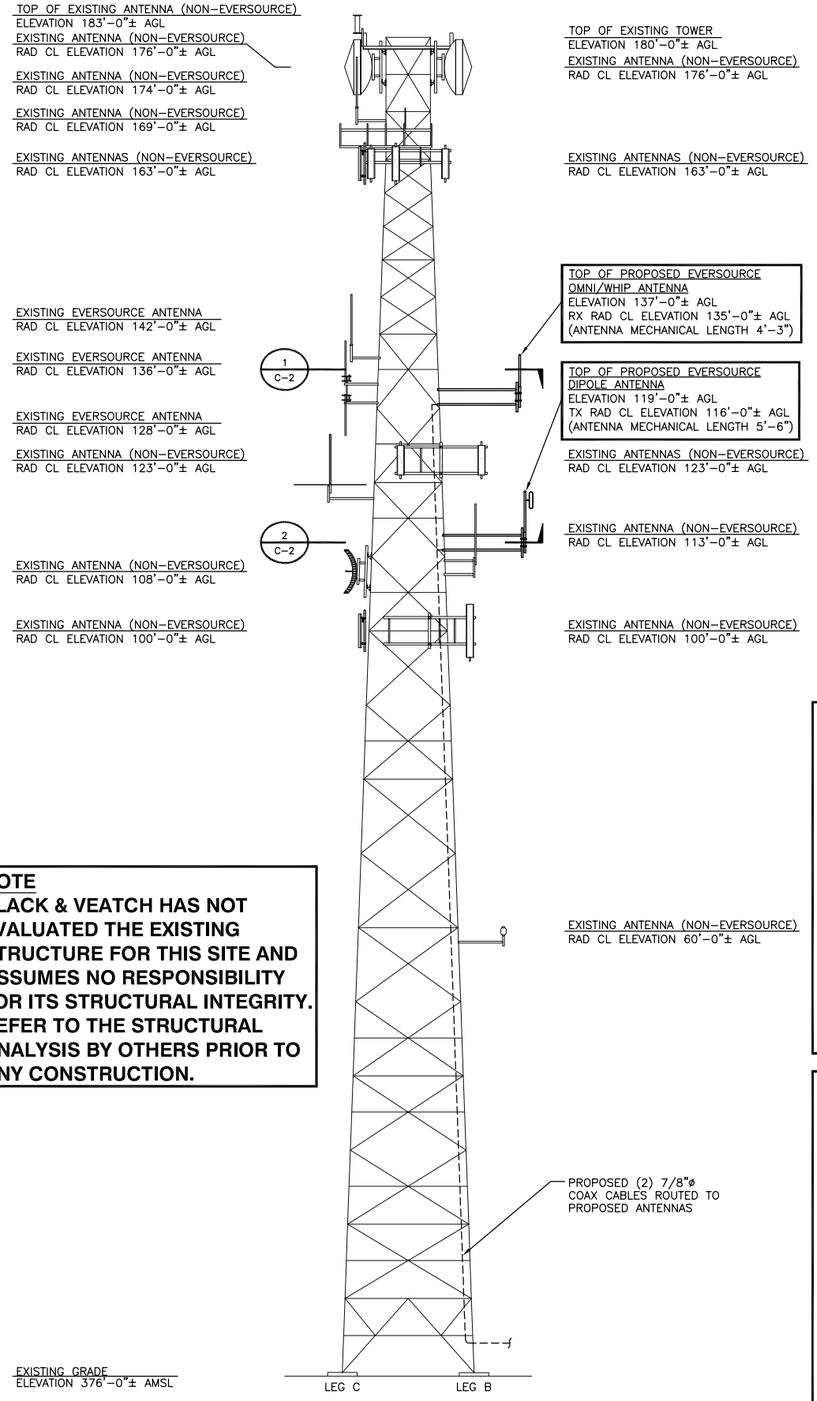
04/29/2020

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE
SITE PLAN

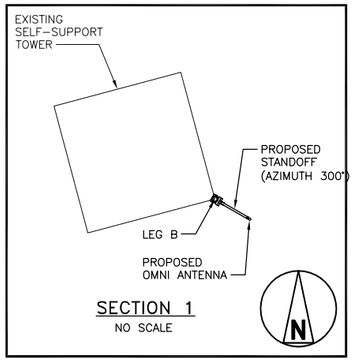
SHEET NUMBER
C-1



TOWER ELEVATION FACE CB

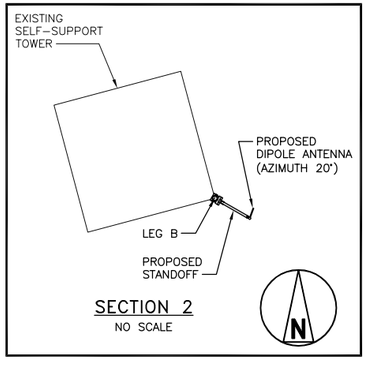
NO SCALE

NOTE
BLACK & VEATCH HAS NOT EVALUATED THE EXISTING STRUCTURE FOR THIS SITE AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO THE STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.



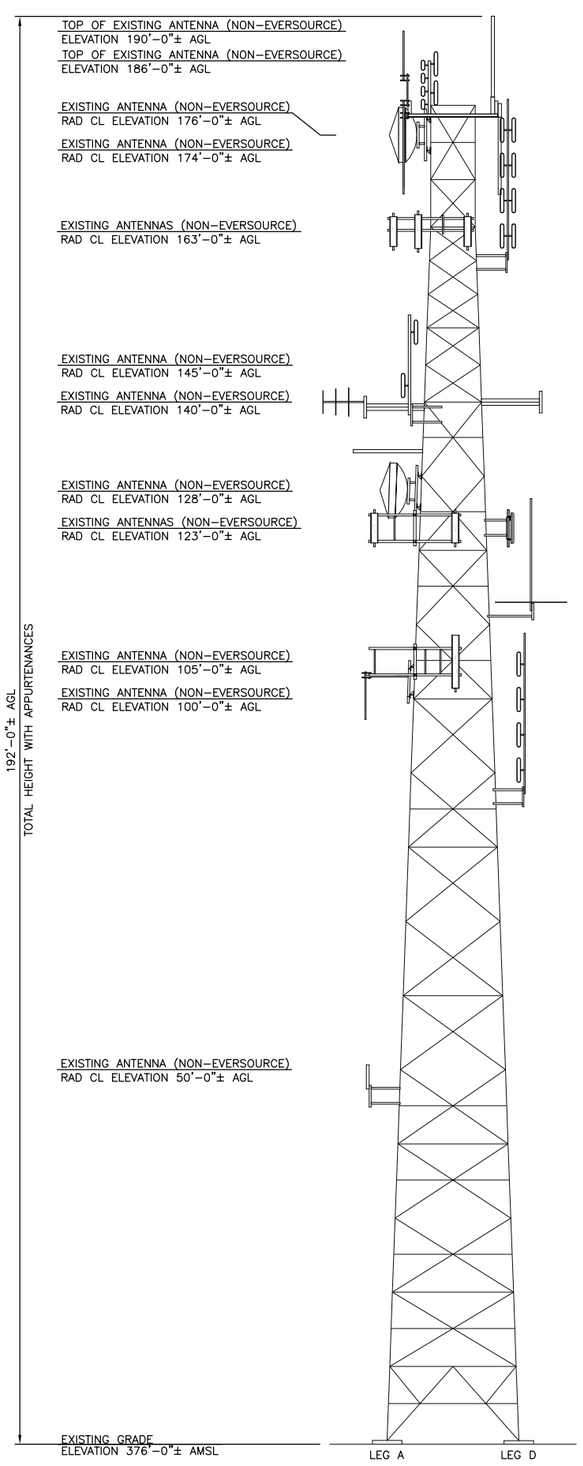
SECTION 1

NO SCALE



SECTION 2

NO SCALE



TOWER ELEVATION FACE AD

NO SCALE

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286–2000

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458–3595

PROJECT NO:	403093
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REV	DATE	DESCRIPTION
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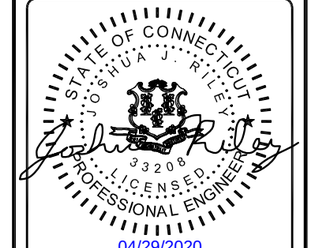


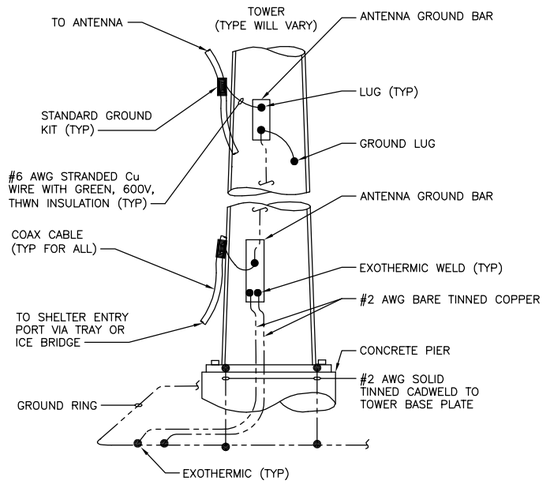
WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE

TOWER ELEVATION

SHEET NUMBER

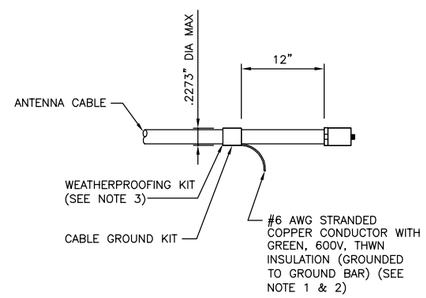
C-2



NOTE

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

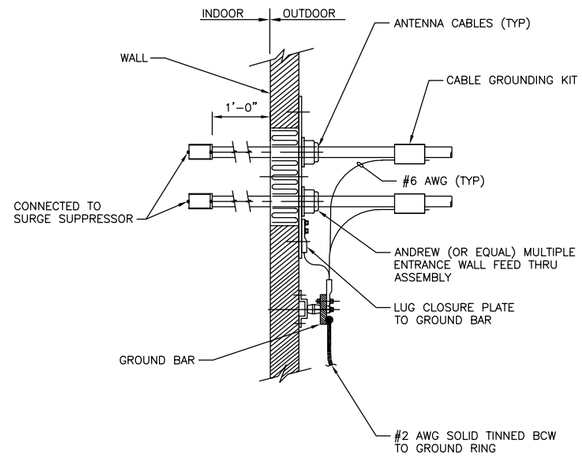
ANTENNA CABLE GROUNDING
NO SCALE



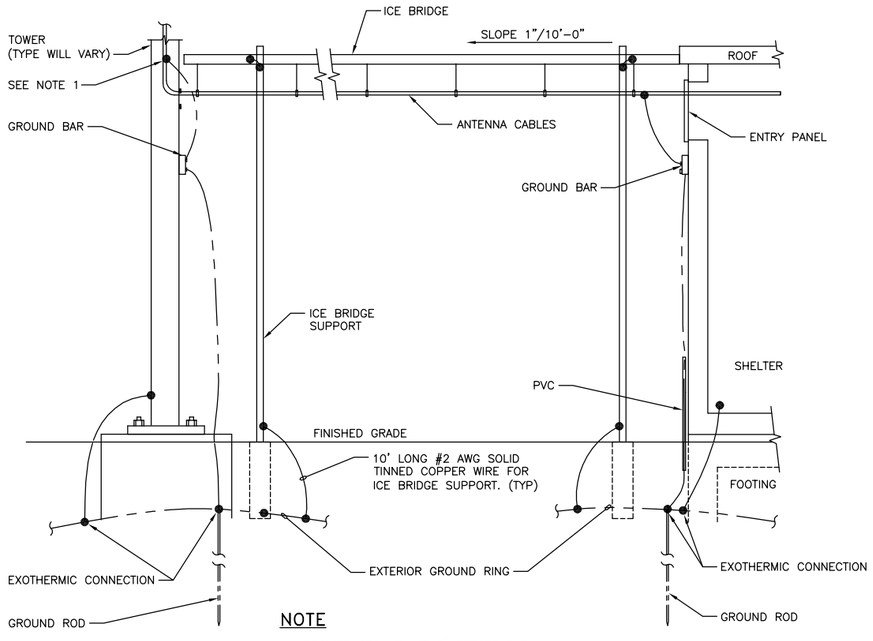
NOTES

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

CONNECTION OF CABLE GROUND
KIT TO ANTENNA CABLE
NO SCALE



CABLE INSTALLATION WITH WALL
FEED THRU ASSEMBLY
NO SCALE



NOTE

1. PROVIDE GROUND KIT 6" BEFORE TURN

ICE BRIDGE AND ANTENNA
CABLE DETAIL
NO SCALE

EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
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PROJECT NO:	403093
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REV	DATE	DESCRIPTION
0	04/29/20	ISSUED FOR FILING

STATE OF CONNECTICUT
MARK P. STILES
24358
LICENSED
PROFESSIONAL ENGINEER
04/29/2020

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE
GROUNDING
DETAILS

SHEET NUMBER
G-1

DESIGN BASIS

1. GOVERNING CODE: 2018 CONNECTICUT STATE BUILDING CODE (2015 IBC BASIS).

GENERAL CONDITIONS

1. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL BUILDING CODES, PERMIT CONDITIONS AND SAFETY CODES DURING CONSTRUCTION.

2. THE ENGINEER IS NOT: A GUARANTOR OF THE INSTALLING CONTRACTOR'S WORK; RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE WORK SITE; IN CONTROL OF THE SAFETY OR ADEQUACY OF ANY BUILDING COMPONENT, SCAFFOLDING OR SUPERINTENDING THE WORK.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL PERMITS, INSPECTIONS, TESTING AND CERTIFICATES NEEDED FOR LEGAL OCCUPANCY OF THE FINISHED PROJECT.

4. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THIS COMPLETE PLAN SET AND VERIFY THE EXISTING CONDITIONS SHOWN IN THESE PLANS AS THEY RELATE TO THE WORK PRIOR TO SUBMITTING PRICE. SIGNIFICANT DEVIATIONS FROM WHAT IS SHOWN AFFECTING THE WORK SHALL BE REPORTED IMMEDIATELY TO THE CONSTRUCTION MANAGER.

5. DETAILS INCLUDED IN THIS PLAN SET ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS.

6. EXISTING ELECTRICAL AND MECHANICAL FIXTURES, PIPING, WIRING, AND EQUIPMENT OBSTRUCTING THE WORK SHALL BE REMOVED AND/OR RELOCATED AS DIRECTED BY THE CONSTRUCTION MANAGER. TEMPORARY SERVICE INTERRUPTIONS MUST BE COORDINATED WITH OWNER.

7. THE CONTRACTOR SHALL DILIGENTLY PROTECT THE EXISTING BUILDING/SITE CONDITIONS AND THOSE OF ANY ADJOINING BUILDING/SITES AND RESTORE ANY DAMAGE CAUSED BY HIS ACTIVITIES TO THE PRE-CONSTRUCTION CONDITION.

8. THE CONTRACTOR SHALL SAFEGUARD AGAINST: CREATING A FIRE HAZARD, AFFECTING TENANT EGRESS OR COMPROMISING BUILDING SITE SECURITY MEASURES.

9. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND CONSTRUCTION WASTE FROM THE SITE EACH DAY. WORK AREAS SHALL BE SWEPT AND MADE CLEAN AT THE END OF EACH WORK DAY.

10. THE CONTRACTOR'S HOURS OF WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES AND BE APPROVED BY OWNER.

11. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER IF ASBESTOS IS ENCOUNTERED DURING THE EXECUTION OF HIS WORK. THE CONTRACTOR SHALL CEASE ALL ACTIVITIES WHERE THE ASBESTOS MATERIAL IS FOUND UNTIL NOTIFIED BY THE CONSTRUCTION MANAGER TO RESUME OPERATIONS.

THERMAL & MOISTURE PROTECTION

1. FIRE-STOP ALL PENETRATIONS FOR ELECTRICAL CONDUITS OR WAVEGUIDE CABLING THROUGH BUILDING WALLS, FLOORS, AND CEILINGS SHALL BE FIRESTOPPED WITH ACCEPTED MATERIALS TO MAINTAIN THE FIRE RATING OF THE EXISTING ASSEMBLY. ALL FILL MATERIAL SHALL BE SHAPED, FITTED, AND PERMANENTLY SECURED IN PLACE. FIRESTOPPING SHALL BE INSTALLED IN ACCORDANCE WITH ASTM E814.

2. HILTI CP620 FIRE FOAM OR 3M FIRE BARRIER FILL, VOID OR CAVITY MATERIAL OR ACCEPTED EQUAL SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ASSOCIATED UNDERWRITERS LABORATORIES (UL) SYSTEM NUMBER.

3. FIRESTOPPING SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER PENETRATIONS ARE MADE AND EQUIPMENT INSTALLED.

4. FIRESTOPPED PENETRATIONS SHALL BE LEFT EXPOSED AND MADE AVAILABLE FOR INSPECTION BEFORE CONCEALING SUCH PENETRATIONS. FIRESTOPPING MATERIAL CERTIFICATES SHALL BE MADE AVAILABLE AT THE TIME OF INSPECTION.

5. ANY BUILDING ROOF PENETRATION AND/OR RESTORATION SHALL BE PERFORMED SO THAT THE ROOF WARRANTY IN PLACE IS NOT COMPROMISED. CONTRACTOR SHALL ARRANGE FOR OWNER'S ROOFING CONTRACTOR TO PERFORM ANY AND ALL ROOFING WORK IF SO REQUIRED BY EXISTING ROOF WARRANTY. OTHERWISE, ROOF SHALL BE MADE WATERTIGHT WITH LIKE CONSTRUCTION AS SOON AS PRACTICABLE AND AT COMPLETION OF CONSTRUCTION.

6. ALL PENETRATIONS INTO AND/OR THROUGH BUILDING EXTERIOR WALLS SHALL BE SEALED WITH SILICONE SEALER.

7. WHERE CONDUIT AND CABLES PENETRATES FIRE RATED WALLS AND FLOORS, FIRE GROUT ALL PENETRATIONS IN ORDER TO MAINTAIN THE FIRE RATING USING A LISTED FIRE SEALING DEVICE OR GROUT.

8. CONTRACTOR TO REMOVE AND RE-INSTALL ALL FIRE PROOFING AS REQUIRED DURING CONSTRUCTION.

SUBMITTALS

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.

2. CONTRACTOR TO NOTIFY ENGINEER FOR INSPECTION PRIOR TO CLOSING PENETRATIONS.

3. CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. THE ENGINEER SHALL BE NOTIFIED OF ANY CONDITIONS WHICH PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

4. ALL STEEL MATERIAL EXPOSED TO WEATHER SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 " ZINC (HOT-DIPPED GALVANIZED) COATINGS" ON IRON AND STEEL PRODUCTS.

5. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS FOR REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

STEEL

1. MATERIAL:

WIDE FLANGE:	ASTM A572, GR 50
TUBING:	ASTM A500, GR C
PIPE:	ASTM A53, GR B
BOLTS:	ASTM A325
GRATING:	TYPE GW-2 (1"x3/16" BARS)
MISC. MATERIAL:	ASTM A36

   ALL STEEL SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123 WITH A COATING WEIGHT OF 2 OZ/SF.

2. DAMAGED GALVANIZED SURFACES SHALL BE CLEANED WITH A WIRE BRUSH AND PAINTED WITH TWO COATS OF COLD ZINC, "GALVANOX", "DRY GALV", "ZINC IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. TOUCH UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT IN SHOP OR FIELD.

3. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC "MANUAL OF STEEL CONSTRUCTION" 13TH EDITION.

4. THE STEEL STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER COMPLETION. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

5. ALL STEEL ELEMENTS SHALL BE INSTALLED PLUMB AND LEVEL.

6. TOWER MANUFACTURER'S DESIGNS SHALL PREVAIL FOR TOWER.

SITE GENERAL

1. CONTRACTOR SHALL FOLLOW CONDITIONS OF ALL APPLICABLE PERMITS AND WORK IN ACCORDANCE WITH OSHA REGULATIONS.

2. THESE PLANS DEPICT KNOWN UNDERGROUND STRUCTURES, CONDUITS, AND/OR PIPELINES. THE LOCATIONS FOR THESE ELEMENTS ARE BASED UPON THE VARIOUS RECORD DRAWINGS AVAILABLE. THE CONTRACTOR IS HEREBY ADVISED THAT THESE DRAWINGS MAY NOT ACCURATELY DEPICT AS-BUILT LOCATIONS AND OTHER UNKNOWN STRUCTURES. THE CONTRACTOR SHALL THEREFORE DETERMINE THE EXACT LOCATION OF EXISTING UNDERGROUND ELEMENTS AND EXCAVATE WITH CARE AFTER CALLING MARKOUT SERVICE AT 1-800-272-4480 48 HOURS BEFORE DIGGING, DRILLING OR BLASTING.

3. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, AND OTHER UTILITIES WHERE ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION, SHALL BE RELOCATED AS DIRECTED BY ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL HAND DIG UTILITIES AS NEEDED. CONTRACTOR SHALL PROVIDE, BUT IS NOT LIMITED TO, APPROPRIATE A) FALL PROTECTION, B) CONFINED SPACE ENTRY, C) ELECTRICAL SAFETY, AND D) TRENCHING AND EXCAVATION.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, FIBER OPTIC, OR OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT THE POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF THE CONSTRUCTION MANAGER.

6. CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION.

7. CONTRACTOR SHALL PROTECT EXISTING PAVED AND GRAVEL SURFACES, CURBS, LANDSCAPE AND STRUCTURES AND RESTORE SITE OR PRE-CONSTRUCTION CONDITION WITH AS GOOD, OR BETTER, MATERIALS. NEW MATERIALS SHALL MATCH EXISTING THICKNESS AND TYPE.

8. THE CONTRACTOR SHALL SHORE ALL TRENCH EXCAVATIONS GREATER THAN 5 FEET IN DEPTH OR LESS WHERE SOIL CONDITIONS ARE DEEMED UNSTABLE. ALL SHEETING AND/OR SHORING METHODS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.

9. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING GROUNDWATER LEVELS IN THE VICINITY OF EXCAVATIONS TO PROTECT ADJACENT PROPERTIES AND NEW WORK. GROUNDWATER SHALL BE DRAINED IN ACCORDANCE WITH LOCAL SEDIMENTATION AND EROSION CONTROL GUIDELINES.

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PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TCG
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	04/29/20	ISSUED FOR FILING

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-1

ELECTRICAL

1. CONTRACTOR SHALL VERIFY EXISTING ELECTRIC SERVICE TYPE AND CAPACITY AND ORDER NEW ELECTRIC SERVICE FROM LOCAL ELECTRIC UTILITY, WHERE APPLICABLE.
2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES, AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION. WHERE A CONFLICT EXISTS BETWEEN CODES, PLAN AND SPECIFICATIONS, OR AUTHORITIES HAVING JURISDICTION, THE MORE STRINGENT AUTHORITIES SHALL APPLY.
3. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC, FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.
4. ALL ELECTRICAL CONDUCTORS SHALL BE 100% COPPER AND SHALL HAVE TYPE THHN INSULATION UNLESS INDICATED OTHERWISE.
5. CONDUIT SHALL BE THREADED RIGID GALVANIZED STEEL OR EMT WITH ONLY COMPRESSION TYPE COUPLINGS AND CONNECTORS, ALL MADE UP WRENCH TIGHT.
6. ALL BURIED CONDUIT SHALL BE MINIMUM SCH 40 PVC UNLESS NOTED OTHERWISE, OR AS PER LOCAL CODE REQUIREMENTS.
7. PROVIDE FLEXIBLE STEEL CONDUIT OR LIQUID TIGHT FLEXIBLE STEEL CONDUIT TO ALL VIBRATING EQUIPMENT, INCLUDING HVAC UNITS, TRANSFORMERS, MOTORS, ETC, OR WHERE EQUIPMENT IS PLACED UPON A SLAB ON GRADE.
8. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR BONDED TO ALL ENCLOSURES, PULLBOXES, ETC.
9. CONDUIT AND CABLE WITHIN CORRIDORS SHALL BE CONCEALED AND EXPOSED ELSEWHERE, UNLESS NOTED OTHERWISE.
10. ELECTRICAL MATERIALS INSTALLED ON ROOFTOP SHALL BE LISTED FOR NEMA 3R USE. –AND ALL WIRING WITHIN A VENTILATION DUCT SHALL BE LISTED FOR SUCH USE. IN GENERAL WIRING METHODS WITHIN A DUCT SHALL BE AN MC CABLE WITH SMOOTH OR CORRUGATED METAL JACKET AND HAVE NO OUTER COVERING OVER THE METAL JACKET. INTERLOCKED ARMOR TYPE OF MC CABLE IS NOT ACCEPTABLE FOR THIS APPLICATION. CONTRACTOR CAN ALSO USE TYPE MI CABLE IN THE VENTILATION DUCT PROVIDED IT DOES NOT HAVE ANY OUTER COVERINGS OVER THE METAL EXTERIOR.
11. WIRING DEVICES SHALL BE SPECIFICATION GRADE, AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED.
12. GROUNDING SYSTEM RESISTANCE SHALL BE MEASURED, RECORDED, AND DATED USING MEGGER DET14 OR SIMILAR INSTRUMENT. GROUND RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION.
13. COORDINATE WITH BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK INVOLVING EXISTING SYSTEMS OR EQUIPMENT IN ORDER TO DETERMINE THE EFFECT, IF ANY, ON OTHER TENANTS WITHIN THE BUILDING, AND TO DETERMINE THE APPROPRIATE TIME FOR PERFORMING THIS WORK.
14. THE CONTRACTOR SHALL BE REQUIRED TO VISIT THE SITE PRIOR TO SUBMITTING BID IN ORDER TO DETERMINE THE EXTENT OF THE EXISTING CONDITIONS.
15. ALL CONDUCTOR ENDS SHALL BE TAGGED AND ELECTRICAL EQUIPMENT LABELED WITH ENGRAVED IDENTIFICATION PLATES.
16. CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING AND ALARM TIE–INS.

GROUNDING

1. #6 THWN SHALL BE STRANDED #6 COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
2. #2 THWN SHALL BE STRANDED #2 COPPER WITH THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
3. ALL LUGS SHALL BE 2–HOLE, LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED, LUGS SHALL BE THOMAS AND BETTS SERIES 548##BE OR EQUIVALENT (IE #2 THWN – 54856BE, #2 SOLID – 54856BE, AND #6 THWN – 54852BE).
4. ALL HARDWARE, BOLTS, NUTS, AND WASHERS SHALL BE 18–8 STAINLESS STEEL. EVERY CONNECTION SHALL BE BOLT–FLAT WASHER–BUSS–LUG–FLAT WASHER–BELLEVILLE WASHER–NUT IN THAT EXACT ORDER. BACK–TO–BACK LUGGING, BOLT–FLAT WASHER–LUG–BUSS–LUG–FLAT WASHER–BELLEVILLE WASHER–NUT, IN THAT EXACT ORDER, IS ACCEPTED WHERE NECESSARY TO CONNECT MANY LUGS TO A BUSS BAR. STACKING OF LUGS, BUSS–LUG–LUG, IS NOT ACCEPTABLE.
5. WHERE CONNECTIONS ARE MADE TO STEEL OR DISSIMILAR METALS, A THOMAS AND BETTS DRAGON TOOTH WASHER MODEL DTWXXX SHALL BE USED BETWEEN THE LUG AND THE STEEL, BOLT–FLAT WASHER–STEEL–DRAGON TOOTH WASHER–LUG–FLAT WASHER–BELEVILE WASHER–NUT.
6. ALL CONNECTIONS, INTERIOR AND EXTERIOR, SHALL BE MADE WITH THOMAS AND BETTS KPOR–SHIELD. COAT ALL WIRES BEFORE LUGGING AND COAT ALL SURFACES BEFORE CONNECTING.
7. THE MINIMUM BEND RADIUS SHALL BE 8 INCHES FOR #6 WIRE AND SMALLER AND 12 INCHES FOR WIRE LARGER THAN #6.
8. BOND THE FENCE TO THE GROUND RING AT EACH CORNER, AND AT EACH GATE POST WITH #2 SOLID TINNED WIRE. EXOTHERMIC WELD BOTH ENDS.
9. GROUND KITS SHALL BE SOLID COPPER STRAP WITH #6 WIRE 2–HOLE COMPRESSION CRIMPED LUGS AND SHALL BE SEALED ACCORDING TO MANUFACTURER INSTRUCTIONS.
10. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL BE USED.
11. GROUND BARS SHALL BE FURNISHED AND INSTALLED WITH PRE–DRILLED HOLE DIAMETERS AND SPACINGS. GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED. GROUND LUGS SHALL MATCH THE SPACING ON THE BAR. HARDWARE DIAMETER SHALL BE MINIMUM 3.8 INCH.

ANTENNA & CABLE NOTES

1. 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 COORDINATE LENGTH OF JUMP CABLES WITH EVERSOURCE. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH EVERSOURCE PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.
2. AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM/SWEEP TESTED FOR PROPER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR TO OBTAIN LATEST TESTING PROCEDURES FROM EVERSOURCE PRIOR TO BIDDING.
3. ANTENNA CABLES SHALL BE COLOR CODED AT THE FOLLOWING LOCATIONS:
   – AT THE ANTENNAS.
   – AT THE WAVEGUIDE ENTRY PLATE ON BOTH SIDES OF THE EQUIPMENT SHELTER WALL.
   – JUMPER CABLES AT THE EQUIPMENT ENTER.
4. SYSTEM INSTALLATION:
   THE CONTRACTOR SHALL INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROCUREMENT AND INSTALLATION OF THE FOLLOWING:
   – ALL CONNECTORS, ASSOCIATED CABLE MOUNTING, AND GROUNDING HARDWARE.
   – WALL MOUNTS, STANDOFFS, AND ASSOCIATED HARDWARE.
   – 1/2 INCH HELIAX ANTENNA JUMPERS OF APPROPRIATE LENGTHS.
5. MINIMUM BENDING RADIUS FOR COAXIAL CABLES:
   – 7/8 INCH, RMIN = 15 INCHES
   – 1 5/8 INCH, RMIN = 25 INCHES
6. 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.
7. ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WATERPROOF SPLICING KIT.
8. CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.
9. CABLE SHALL BE FURNISHED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

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SYMBOLS

●	EXOTHERMIC CONNECTION
■	COMPRESSION CONNECTION
	5/8"ø x 10'-0" COPPER CLAD STEEL GROUND ROD.
	TEST GROUND ROD WITH INSPECTION SLEEVE
	GROUNDING CONDUCTOR
(A)	KEY NOTES
FENCE	X X X X X
LEASE AREA	
ICE BRIDGE	
CABLE TRAY	
GAS LINE	G G G G G
UNDERGROUND ELECTRICAL/TELCO	E/T E/T E/T E/T
UNDERGROUND ELECTRICAL/CONTROL	E/C E/C E/C E/C
UNDERGROUND ELECTRICAL	E E E E E
UNDERGROUND TELCO	T T T T T
PROPERTY LINE (PL)	

ABBREVIATIONS

AC	ALTERNATING CURRENT	MGB	MASTER GROUNDING BAR
AIC	AMPERAGE INTERRUPTION CAPACITY	MIN	MINIMUM
ANI	AUXILIARY NETWORK INTERFACE	MW	MICROWAVE
ATM	ASYNCHRONOUS TRANSFER MODE	MTS	MANUAL TRANSFER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	OC	ON CENTER
AWS	ADVANCED WIRELESS SERVICES	PP	POLARIZING PRESERVING
BATT	BATTERY	PCU	PRIMARY CONTROL UNIT
BBU	BASEBAND UNIT	PDU	PROTOCOL DATA UNIT
BTC	BARE TINNED COPPER CONDUCTOR	PWR	POWER
BTS	BASE TRANSCEIVER STATION	RECT	RECTIFIER
CCU	CLIMATE CONTROL UNIT	RET	REMOTE ELECTRICAL TILT
CDMA	CODE DIVISION MULTIPLE ACCESS	RMC	RIGID METALLIC CONDUIT
CHG	CHARGING	RF	RADIO FREQUENCY
CLU	CLIMATE UNIT	RUC	RACK USER COMMISSIONING
COMM	COMMON	RRH	REMOTE RADIO HEAD
DC	DIRECT CURRENT	RRU	REMOTE RADIO UNIT
DIA	DIAMETER	RWY	RACEWAY
DWG	DRAWING	SFP	SMALL FORM-FACTOR PLUGGABLE
EC	ELECTRICAL CONDUCTOR	SIAD	SMART INTEGRATED ACCESS DEVICE
EMT	ELECTRICAL METALLIC TUBING	SSC	SITE SOLUTIONS CABINET
FIF	FACILITY INTERFACE FRAME	T1	1544KBPS DIGITAL LINE
GEN	GENERATOR	TDMA	TIME-DIVISION MULTIPLE ACCESS
GPS	GLOBAL POSITIONING SYSTEM	TMA	TOWER MOUNT AMPLIFIER
GSM	GLOBAL SYSTEM FOR MOBILE	TVSS	TRANSIENT VOLTAGE SUPPRESSION SYSTEM
HVAC	HEAT/VENTILATION/AIR CONDITIONING	TYP	TYPICAL
ICF	INTERCONNECTION FRAME	UMTS	UNIVERSAL MOBILE TELECOMMUNICATION SYSTEM
IGR	INTERIOR GROUNDING RING (HALO)	UPS	UNINTERRUPTIBLE POWER SUPPLY (DC POWER PLANT)
LTE	LONG TERM EVOLUTION		

EVERSOURCE ENERGY

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STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
04/29/2020

WILTON/STATE POLICE
46 FENWOOD LANE
WILTON, CT 06897

SHEET TITLE

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& SPECIFICATIONS

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N-3

REFERENCE CUTSHEETS

TELEWAVE, INC.®

195 - 260 MHz

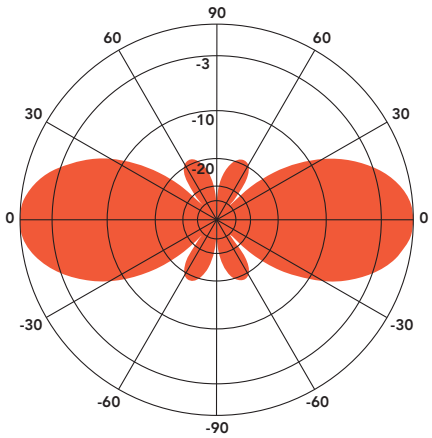
ANT220F2

FIBERGLASS COLLINEAR ANTENNA 2.5 dBd

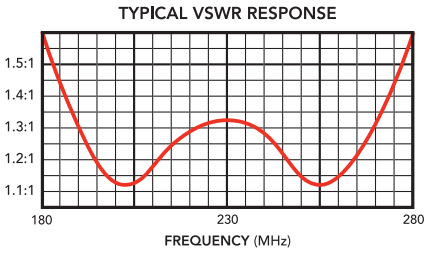
The Telewave ANT220F2 is an extremely rugged collinear antenna, with moderate gain and wide vertical beamwidth. This compact antenna produces 2.5 dBd gain, and is designed for operation in all environmental conditions. The antenna is constructed with brass and copper elements, with a path to ground potential for lightning impulse protection. The ANT220F2 is an excellent choice for wireless PTC systems in urban or rural areas.

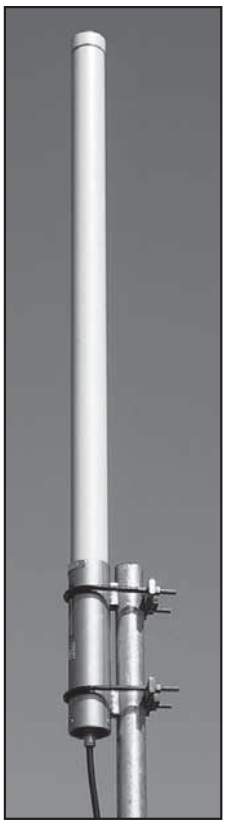
All junctions are fully soldered to prevent RF intermodulation, and each antenna is completely protected within a rugged, high-tech radome to ensure survivability in the worst environments. The "Cool Blue" radome provides maximum protection from corrosive gases, ultraviolet radiation, icing, salt spray, acid rain, and wind blown abrasives.

The ANT220F2 includes the ANTC485 dual clamp set for mounting to a 1.5" to 3" O.D. support pipe, and a 24" removable RG-213 N-Male jumper.



ANT220F2 - 230 MHz
Vertical Plane
Gain = 2.58 dBd





USE PROPOSED SITE PRO 1 P/N
DCP12K CLAMP SET

SPECIFICATIONS			
Frequency (continuous)	195-260 MHz	**Dimensions (L x base diam.) in.**	51 x 2.75
Gain	2.5 dBd	**Tower weight (antenna + clamps)**	11 lb.
Power rating (typ.)	500 watts	**Shipping weight**	14 lb.
Impedance	50 ohms	**Wind rating / with 0.5" ice**	200 / 150 MPH
VSWR	1.5:1 or less	**Maximum exposed area**	1.1 ft.²
Pattern	Omnidirectional	**Lateral thrust at 100 MPH**	44 lb.
Vertical beamwidth	38°	**Bending moment at top clamp**	47 ft. lb.
Termination	Recessed N Female 7-16 DIN-F opt.	**(100 MPH, 40 PSF flat plate equiv.)**	

220MHz EXPOSED DIPOLES — 215-225 MHz

870 Series 220MHz Exposed Dipoles

The 870 Series 220MHz Exposed Dipoles are available in 1, 2, 4, 8 dipole configurations. All our antennas can be completely customized to your particular applications. Our antennas can be black anodized, adjustable, or fixed, side mount or top mount, and heavy-duty versions are available.

- Each antenna is offered in a 1/4, 3/8 or 1/2 wave spacing versions.
- The 87XA-70 has external cabling and a field-adjustable pattern.
- The 87XF-70 has internal cabling and fixed dipole-mast spacing.
- Heavy-duty versions are available. Please contact our Technical Support team for consultation.

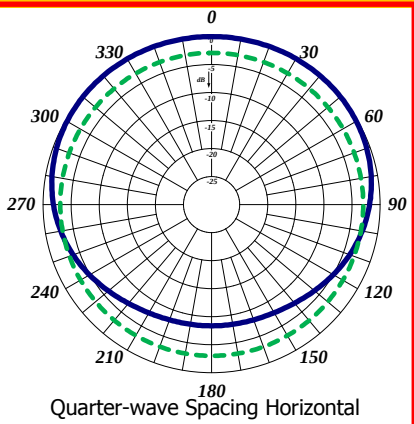
Electrical Specifications	871F-70-2	872F-70-2	874F-70-2
Frequency Range, MHz	215-225	215-225	215-225
Nominal Gain, dBd	2.0-2.5	5.0-5.5	8.0-8.5
Number of Dipoles	1	2	4
Bandwidth 1.5:1 VSWR, MHz	10	10	10
Polarization	Vertical	Vertical	Vertical
Pattern	Offset / bi	Offset / bi	Offset / bi
Power Rating, Watts	200	300	500
Nominal Impedance, Ohms	50	50	50
Lightning Protection	DC Ground	DC Ground	DC Ground
Standard Termination	Type N Male	Type N Male	Type N Male
Mechanical Specifications	**871F-70-2**	**872F-70-2**	**874F-70-2**
Length, in (mm)	66 (1676)	112 (2845)	200 (5080)
Width (1/2 Wave Spacing), in (mm)	31 (787)	31 (787)	32 (813)
Weight, lbs. (kg)	12.5 (5.7)	21 (9.5)	51 (23)
Rated Wind Velocity, No Ice, mph (km/h)	165 (266)	150 (241)	145 (233)
Rated Wind Velocity, 0.5" (13mm) ice, mph (km/h)	140 (225)	130 (209)	105 (177)
Lateral Thrust @ 100 mph, wind, lbs. (kg)	40 (18)	66 (30)	143 (65)
Bending Moment @ top clamp: 100 mph, ft.*lb (kg*m)	58 (8)	150 (21)	610 (84)
Projected Area, ft² (m²)	1.5 (0.14)	2.6 (0.24)	5.5 (0.51)
Mounting Information Mast O.D. (mm)	1.9" (48)	1.9" (48)	2.4" (60)
* See next page for ordering information (page 3) *			

872F-70-2

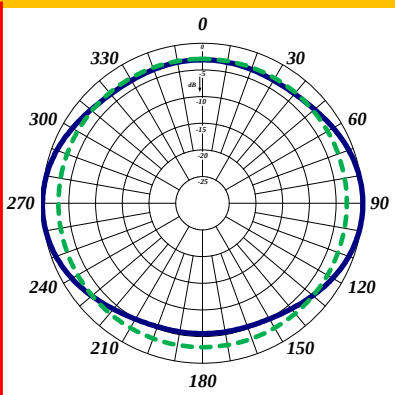
USE PROPOSED SITE PRO 1 P/N DCP12K CLAMP SET

220MHz EXPOSED DIPOLES — 215-225 MHz

871F-70-2



Quarter-wave Spacing Horizontal



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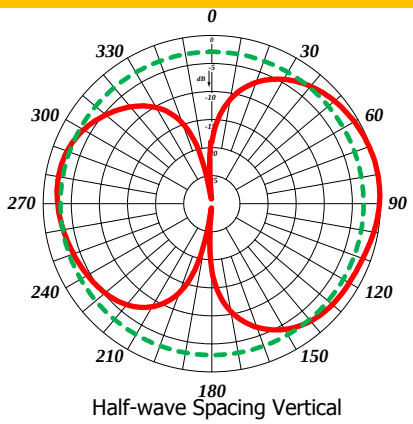
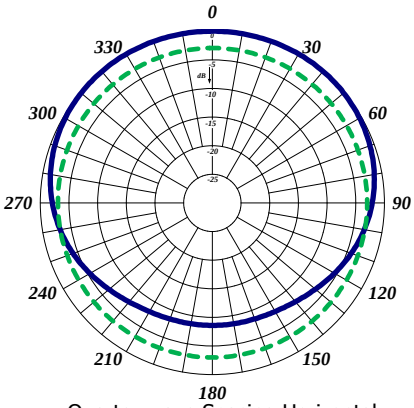
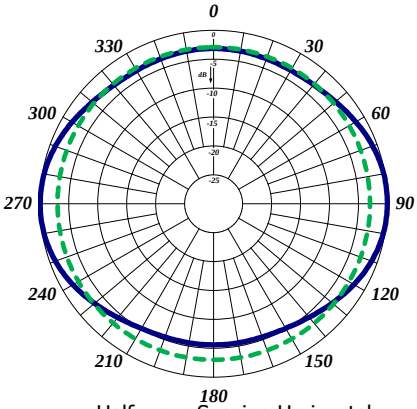


Half-wave Spacing Vertical

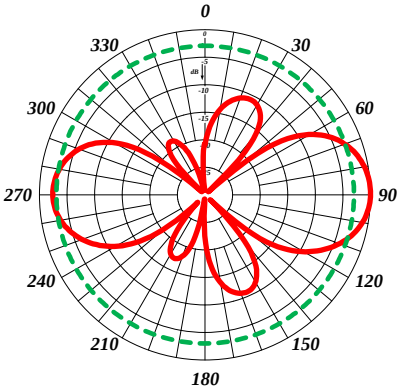
872F-70-2



Quarter-wave Spacing Horizontal

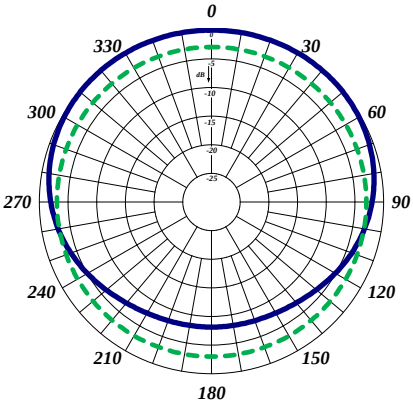


Half-wave Spacing Horizontal

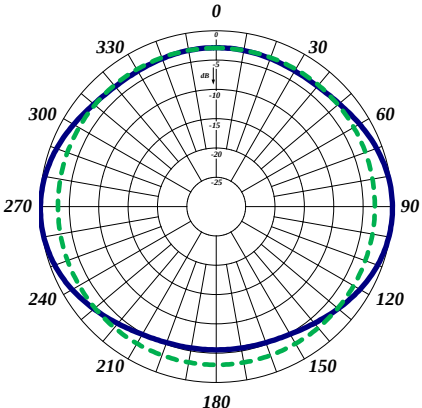


Half-wave Spacing Vertical

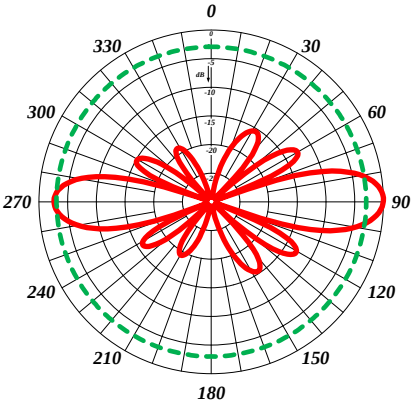
874F-70-2



Quarter-wave Spacing Horizontal



Half-wave Spacing Horizontal

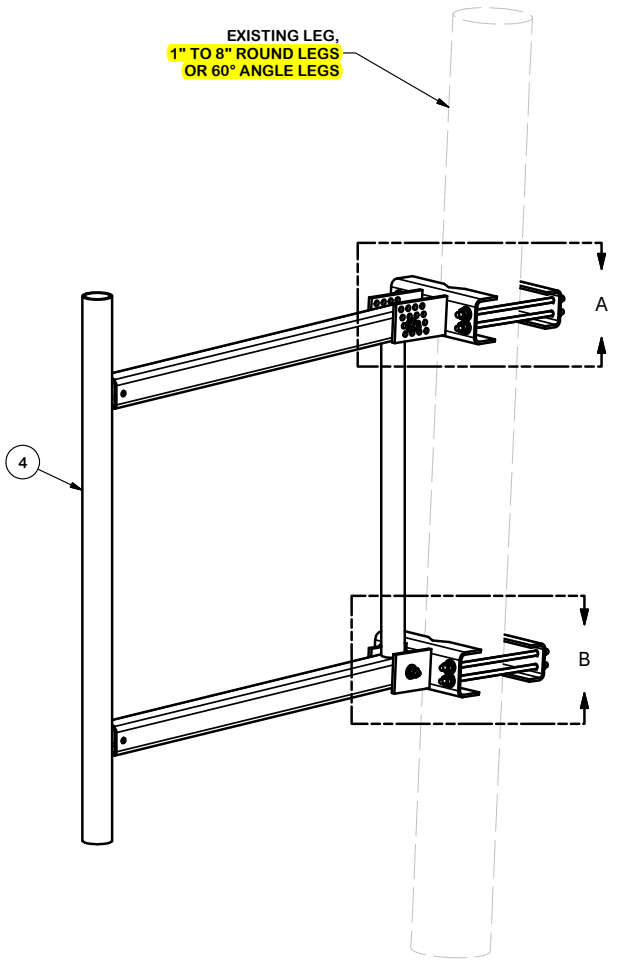


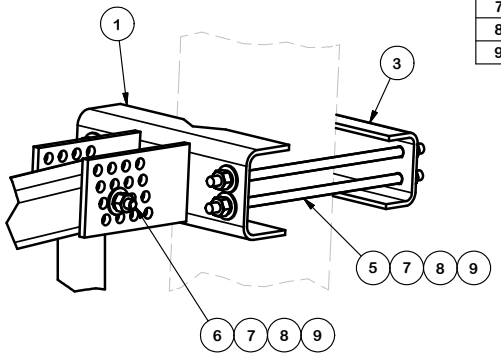
Half-wave Spacing Vertical

COMPROD Simplifying RF Solutions
www.comprodcom.com
Tel: US 1.877.825.2007 / CAN 1.800.603.1454
Email: sales@comprodcom.com
Fax: 1.800.554.1033

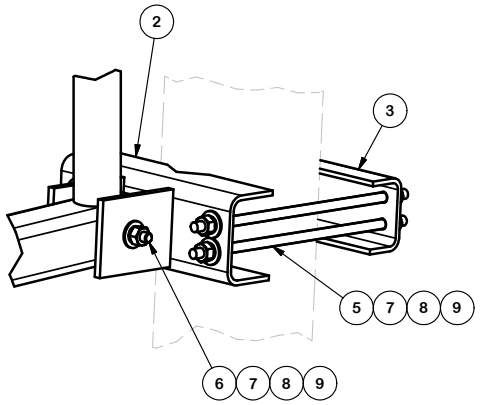
TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 6"± 90° ANGLE.
STANDOFF FRAME WILL FIT 90° ANGLES 1-1/2" TO 6"

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	CFM	UPPER GATE FOOT WELDMENT		13.90	13.90
2	1	CFS	LOWER GATE FOOT WELDMENT		12.72	12.72
3	2	GBB	GATE BACKING BAR		4.53	9.06
4	1	4PBG	48" PIPE MOUNT STANDOFF ARM		113.96	113.96
5	8	G12R-12	1/2" x 12" GALV. THREADED ROD		0.67	5.35
5	8	G12R-15	1/2" x 15" GALV. THREADED ROD		0.84	6.69
6	2	A1205	1/2" x 5" A325 HDG BOLT		0.34	0.69
7	18	G12FW	1/2" HDG USS FLATWASHER		0.03	0.61
8	18	G12LW	1/2" HDG LOCKWASHER		0.01	0.25
9	18	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.29
					TOTAL WT. #	164.53

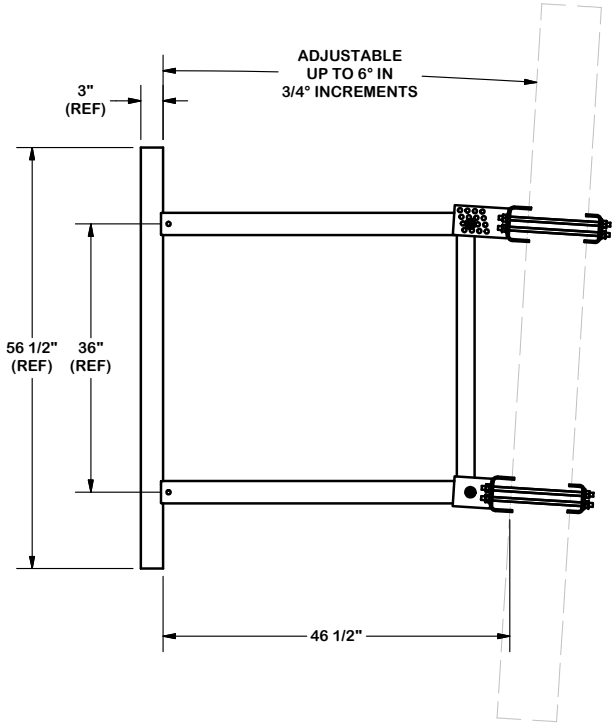




DETAIL A



DETAIL B



TOLERANCE NOTES

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

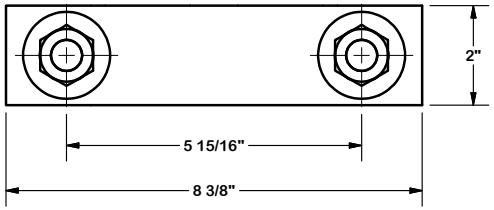
DESCRIPTION: 48" ULTIMATE UNIVERSAL STANDOFF FRAME

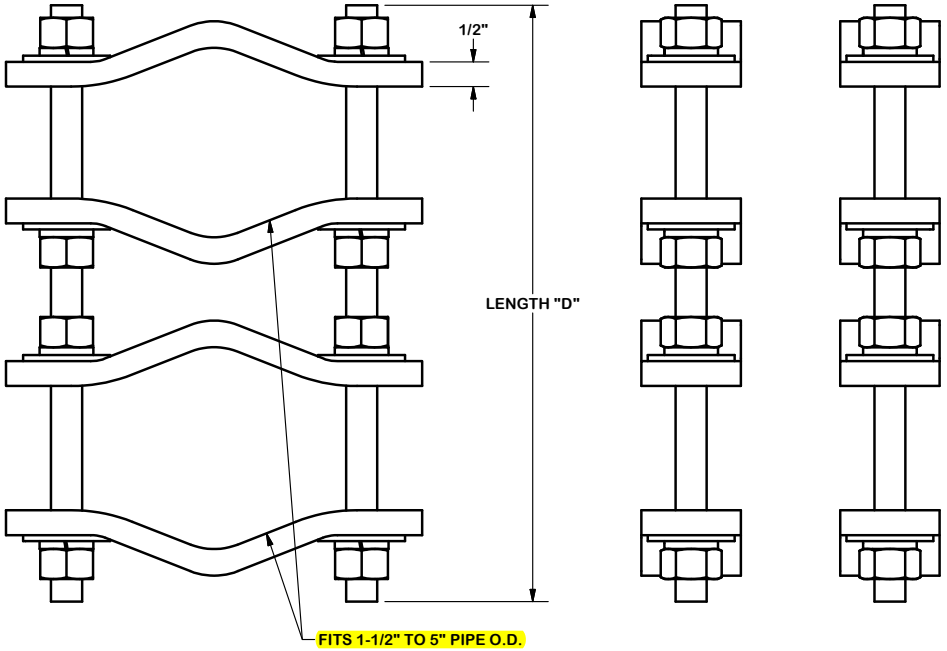
SITE PRO 1 — A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	RCH 2/4/2011		USF-4U	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 2/16/2011	USF-4U

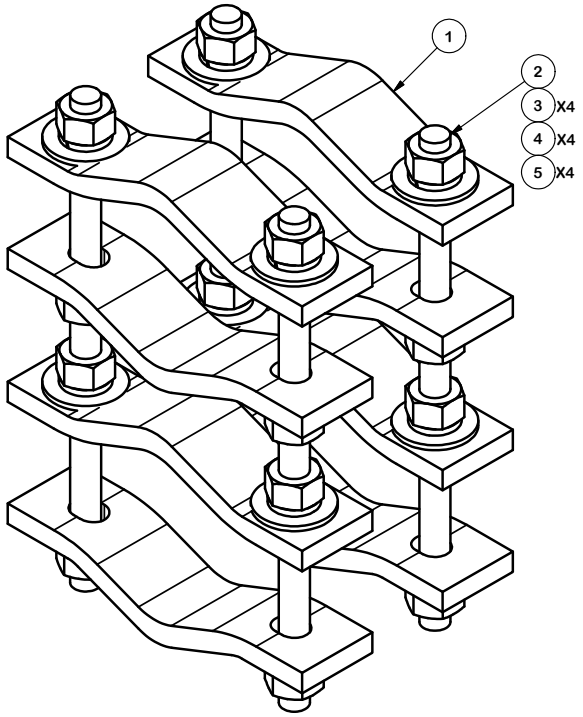
(2) TWO TOTAL CLAMP SETS REQUIRED, ONE PER PROPOSED ANTENNA.





PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	DCP	CLAMP HALF, 1/2" THICK, 8-3/8"		2.40	19.20
2	B	C	5/8" THREADED ROD	D	E	F
3	16	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	2.08
4	16	G58LW	5/8" HDG LOCKWASHER		0.03	0.42
5	16	G58FW	5/8" HDG USS FLATWASHER		0.07	1.13

VARIABLE PARTS TABLE						
ASSEMBLY "A"	QTY "B"	PART "C"	LENGTH "D"	UNIT WT. "E"	NET WT. "F"	TOTAL WEIGHT
DCP12K	4	G58R-12	12"	1.05	4.18	27.01
DCP18K	4	G58R-18	18"	1.57	6.27	29.10



TOLERANCE NOTES

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

DESCRIPTION: PIPE TO PIPE CLAMP SET
1-1/2" TO 5" PIPE
1/2" THICK CLAMP

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	KC8 8/21/2012		SEE ASSEMBLY "A"	1 OF 1

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81	01	CUSTOMER	CEK 1/22/2013	DCPxxK

ATTACHMENT D – STRUCTURAL ANALYSIS

AECOM

Submitted to
Eversource Energy
107 Selden Street
Berlin, CT 06037

Submitted by
AECOM
1255 Broad St,
Suite 201
Clifton, NJ 07013
March 31, 2020

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

EVERSOURCE ENERGY

Site Name : CSP #31 Wilton
Site Address: 46 Fenwood Lane
Wilton, Connecticut

60627193
EVS-019
ES-062 WILTON

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the 180' self-supporting lattice tower located at 46 Fenwood Lane in Wilton, Connecticut.

The structural analysis was conducted in accordance with the 2018 Connecticut State Building Code, the TIA-222-H[1] Standard, 2015 International Building Code, the 2018 Connecticut State Building Code Amendments, the AISC[2] Load Resistance Factor Design (LRFD), the ASCE 7[3] design Code, and the Connecticut State Police Requirements which include the TIA/EIA-222-F[4].

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

The proposed Eversource antenna installation is listed below:

Antenna and Other Appurtenances	Carrier	Antenna Center Elevation
<u>Install:</u> **(1) Telewave ANT220F2 Omni Antenna (Antenna Centerline Install @ 135')** **(1) SitePro USF-4U (Mount Centerline Install @ 132')** **(1) RFS LCF78-50JA-A7 Cellflex Coaxial Cable** **(1) Comprod 871F-70-220-025 Dipole Antenna (Antenna Centerline Install @ 116')** **(1) SitePro USF-4U (Mount Centerline Install @ 113')** **(1) RFS LCF78-50JA-A7 Cellflex Coaxial Cable**	**Eversource (Proposed)**	**@ 116'-135'**

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

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

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

4. TIA/EIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version F)

1. EXECUTIVE SUMM0ARY - *continued*

The results of an initial analysis indicate that:

1. The existing steel tower structure IS considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
3. The existing foundation IS considered structurally adequate for the proposed antenna load classification with the wind classification specified herein.
4. The existing tower's sway (deflection) is 0.5994 degrees, and the existing tower's twist (rotation) is 0.0475 degrees. These figures combined ARE within the Connecticut State Police requirement 0.75 degrees for combined twist (rotation) and sway (deflection) with the load classification specified herein.
5. The controlling structural capacity for all tower and foundation components for the proposed antenna loading is **96.0%**

This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.

2) Tower geometry and structural member sizes utilized in the preparation of this report obtained from the original design documents prepared by Bayar and Associates dated July 1990.

3) Previous structural analysis performed by URS Corporation, on behalf of T-Mobile, project number 36931390.00000 / NSS-017, signed and sealed March 3, 2015

4) Previous structural analysis and modification performed by AECOM, on behalf of T-Mobile, project number 60405835, signed and sealed May 5, 2015.

5) Tower Mapping and Inventory by D&K Nationwide Communications, Inc., dated March 17, 2016.

6) Antenna inventory provided by the Connecticut State Police via email on June 20, 2016.

7) Previous structural analysis and evaluation performed by AECOM, on behalf of Pyramid Network Services, LLC, project number 60509756.03 / PNS-603, signed and sealed on August 9, 2016

8) Previous structural analysis and modification performed by AECOM, on behalf of AT&T & Sprint, project (60570722 / EMP-007; 60570721 / ASM-007), signed and sealed on July 5, 2018.

9) Proposed T-Mobile antenna inventory from Radio Frequency Data Sheet (RFDS) dated April 22, 2019, obtained via e-mail dated May 1, 2019.

10) Antenna Mount frame capacity analysis performed by Centek Engineering, on behalf of T-Mobile, project 19027.02, signed and sealed on April 29, 2019.

11) Proposed Eversource inventory obtained via e-mail dated February 10, 2020.

12) Previous structural analysis and evaluation performed by AECOM, on behalf of Transcend Wireless/T-Mobile, project number 6064309/TWM-013, signed and sealed May 4, 2019.

13) Antenna and mount configuration as specified on the following pages of this report.

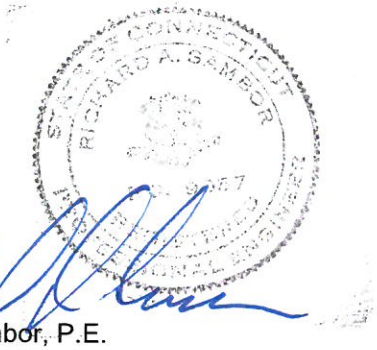
1. EXECUTIVE SUMMARY - *continued*

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

If you should have any questions, please contact Mike Egan at (860) 263-5817.

Sincerely,

AECOM,



Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mcd

2. INTRODUCTION

The subject tower is located at 46 Fenwood Lane in Wilton, Connecticut. The structure is a 180' four sided self-supporting lattice tower designed by Bayar and Associates.

The structural analysis was conducted in accordance with the following:

- TIA-222-H Standard for Standard for a wind velocity of 50 mph (3-second gust) concurrent with 0.75" ice thickness, considered to increase in thickness with height.
- 2015 International Building Code with 2018 Connecticut State Building Code Amendments for an ultimate wind speed of 130 mph (3-second gust)
- 2010 AISC Load Resistance Factor Design (LRFD)
- 2016 ASCE 7 Minimum Design Loads for Buildings and Other Structures for the ice thickness referenced in the TIA-222-H Standard
- Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with 0.5" ice. Twist (rotation) and sway (deflection) were determined in accordance with Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) concurrent with 0.5" ice, analyzed under the TIA/EIA-222-F design Standard.

The inventory together with the proposed Eversource antenna arrangement is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Mount Elevation***	***Cable***
(1) 10' Lightning Rod	Tower (existing)	Tower mounted	185'	---
(1) 8'x6-5/8" Dia Omni Antenna	(A31) CSP-4 (existing)	*Shared Mount (See CSP-2 Mount)*	185'	(1) 7/8"
(1) 20' 4-Bay Dipole Antenna (1) 20' 2-Bay Dipole Antenna	(A29) FBI-12, FCP-12 (existing)	*Shared Mount (See CSP-1 Mount)*	185'	(2) 7/8"
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A30) CSP-3 (existing)	*Shared Mount (See CSP-2 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A28) CSP-6 (existing)	*Shared Mount (See CSP-1 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Bird 432-83H-01T TTA Control Box	(A27) CSP-67 (existing)	*Shared Mount (See CSP-1 Mount)*	181'	(1) 1/2"
(1) 6' Dish with Radome	(A25) CSP-36 (existing)	Pipe Mounted to Tower	173'	(1) WEP65
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A24) CSP-65 (existing)	*Shared Mount (See CSP-2 Mount)*	172'	(1) 1-5/8" (existing Cable)

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A23) CSP-2 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-65, CSP-3 & CSP-4)	172'	(1) 1-5/8" (existing Cable)
(1) 6' Dish with Radome	(A22) CSP-5 (existing)	Pipe Mounted to Tower	170.5'	(1) WEP65
(1) 6' Dish with Radome	(A33) CSP-59 (existing)	Pipe Mounted to Tower	170'	(1) WEP65
(1) BA-1312 Omni Antenna	(A21) CAP-25 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 170'	170'	(1) 7/8"
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A26) CSP-1 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-67, CSP-6 & FBI/FCP-12)	170'	(1) 1-5/8" (existing Cable)
(1) BA1010-2 Omni Antenna	(A20) CSP-10 (existing)	*Shared with Above Mount*	169'	(1) 7/8"
(3) QS66512-2 Panel Antennas (3) 800-10965 Panel Antennas (3) Powerwave 7770 (6) LGP21401 TMAs (3) B14 4478 RRH Units (3) RRUS-32 B66 RRH Units (3) RRUS-32 B2 RRH Units (3) RRUS-32 RRH Units (3) RRUS-11 RRU Units (6) LGP21901 Diplexers (2) DC6-48-Surge Protector	AT&T (existing)	(3) T-Frames	163'	(12) 1-5/8" (1) Fiber Optic Cable (4) DC Cables (1) 2" Flex Conduit with (1) Fiber & (2) DC Cables
(1) Decibel DB408-B Dipole Antenna	(A19) FCP-12 (existing)	(2) 6' Standoff	161'	(1) 7/8"
(1) DB636 12' Omni Antenna	(A15) D&K-30 NEU-57 (existing)	8' Standoff	140'	(1) 7//8"

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
-----	(A18) D&K-33 (existing)	6’ Standoff	139’	N/A
(1) ASP-816 3’ Yagi Antenna	(A17) D&K-32 WTR-28 (existing)	6’ Standoff	138’	(1) 7/8”
(1) Telewave ANT220F2 Omni Antenna	**Eversource (proposed)**	**(1) SitePro USF-4U (Mount Centerline Install @ 132’)**	**135’**	**(1) 7/8” CELLFLEX LCF78-50JA-A7 Feed Line**
(1) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A14) D&K-29 CSP-63 (existing)	*Shared with Below Mount*	134’	(1) 1-5/8”
(1) Bird 432-83H-01T TTA Junction Box	(A13) D&K-28 CSP-66 (existing)	6’ Standoff	133’	(1) 1/2"
(1) (inverted) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A12) D&K-27 CSP-64 (existing)	*Shared with Above Mount*	132’	(1) 1-5/8”
(1) Dish Antenna Ice Shield	(A11) D&K-26 (existing)	*Shared with Below Mount*	131’	N/A
(1) 6’ Dish with Radome	(A10) D&K-25 CSP-35 (existing)	Pipe Mounted to Tower	125’	(1) WEP65
(3) Ericsson AIR32 B66A/B2A Panel Antennas (3) Ericsson APXVAARR24_43-U-NA20 Panel Antennas (3) Generic Twin Units (AWS) (3) Ericsson Radio 4449 B71+B12 RRH Units	T-Mobile (Proposed)	*Shared with below Mount*	122’	(3) Fiber Optic Cables (6x12 HCS 4 AWG)

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
-----	T-Mobile (existing)	(3) SitePro1 EUSF10-U w/ (2) Stiff-Arm Supports (per mount)	122’	(6) 1-1/4” Coaxial Cables (1) Fiber Optic Cable (9x18 HCS 10 AWG)
(1) 7’ Omni Antenna	(A8) D&K-14 (existing)	10’ Standoff Arm	121’	(1) 7/8”
(1) Comprod 871F-70-220-025 Dipole Antenna	**Eversource (proposed)**	**(1) SitePro USF-4U (Mount Centerline Install @ 113’)**	**116’**	**(1) 7/8” CELLFLEX LCF78-50JA-A7 Feed Line**
(1) PD-128 12’ Omni Antenna	(A9) D&K-15 (existing)	6’ Standoff	106’	(1) 7/8”
(1) 4’ Grid Dish	(A6) D&K-12 CSP-11 (existing)	Pipe Mounted to Tower	106’	(1) 7/8”
(3) APXVSPP18-C-A20 Panels (3) AAHC Panels (3) NNVV-65B-R4 Panels (3) ALU 800 MHz RRH Units (3) ALU 1900 MHz RRH Units (3) TD-RRH8x20-25W RRH w/ Solar shield Units	Sprint (existing)	(3) 10’ Frame w/ tie-back arms (existing)	105’	(3) RFS Hybriflex Cables (1-1/4” Dia.) (2) MIMO/Nokia Hybrid Cable (1.689” O.D.)
(1) (inverted) 12’ Omni Antenna	(A4) D&K-4 DEA-32 (existing)	10’ Standoff Arm	91’	(1) 7/8”
(1) 22’ 4-Bay Dipole Antenna	(A5) D&K-11 USS-26 (existing)	3’ Standoff	86’	(1) 7/8”
(1) Ice Shield for Dish Mounted Below	CSP-13 (existing)	Pipe Mounted to Tower	76’	N/A

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
-----	(A3) D&K-3 (existing)	Pipe Mount for Dish Antenna	71’	N/A
(1) GPS	(A2) D&K-2 Sprint (existing)	6’ Standoff	61’	(1) 1/2”
(1) DB-803 3’ Omni Antenna	(A1) D&K-1 CSP-68 (existing)	3’ Standoff	50’	(1) 1/2"

NOTES: Antenna ID numbering of antenna and appurtenances obtained from Tower Mapping and Existing Inventory via tower climb, performed by D&K Nationwide Communications, Inc. on March 17, 2016.

“A#” refers to the antenna number used in the structural analysis program to identify tower appurtenances.

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

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with, the TIA-222-H–Structural Standard for Antenna Towers and Antenna Supporting Structures and Antennas, the 2015 International Building Code with 2018 Connecticut State Building Code Amendments and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Load Resistance Factor Design (LRFD)

The structural analysis was conducted using TNX Tower version 8.0.5.0 and used the following conditions for this tower review (following the TIA/EIA-222-H Standard):

- Structure Class 3 – (Essential Communications)
  - NOTE: ASCE 7 and CT State Building Code Applied Risk Category 4 for design wind loads (see below)
- Topographic Category 3 – (Tower location on top of hill – rolling wind conditions considered)
  - Crest Height used for analysis: (approximate elevations listed below)
    - Tower Base Elevation = 370 feet
    - High point (2 mile Radius) = 460 feet (Ref. Huckleberry Hills)
    - Low Point (2 mile Radius) = 150 feet (Ref. Winnipauk Millpond)
    - "H" = (Avg. of High/Low) – Base Elevation = 65 feet
- Exposure Class C – (Open Terrain with scattered obstructions)
- Load Conditions:
  - Two load conditions were evaluated as shown which were compared to design stresses according to AISC and TIA-222-H Standard.

Basic Wind Speed:

- IBC 2018 w/ 2018 CT State Building Code Amendment:
  - (2018) IBC Section 1609.1.1 – Determination of Wind Loads – Exception 5 "Designs using TIA-222" applies for determination of Design Wind Load obtained as "V.ult" are to be converted to "V.asd" when applying the TIA-222-H design Standard (under Section 1609.3) for Basic Wind Speed.
    - Due to tnxTower program options for TIA-222-H, the program appears to perform tower analysis with speeds according to ASCE 7-16 V.ult loads, therefore, V.ult speeds are to be used.
  - (2018) CT State Building Code Amendment to the IBC Section 1609.3 wind loads are obtained from Appendix N of the State Building Code.
    - **V.ult = 130 mph** (3-Second Gust) Wind Design Parameter for the Town of Wilton, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police). NOTE: Because the State of Connecticut has not officially published the design wind-speeds, use the state of Connecticut wind-speeds per municipality (indicated above).

LOAD CONDITION 1 = 130 MPH (3-SECOND GUST) WIND LOAD (WITHOUT ICE) + TOWER DEAD LOAD
Load Condition 2 = 50 mph (3-second gust) Wind Load (with ice) + Ice Load + Tower Dead Load

Ice thickness used for this analysis is **0.75 inch** (assumed to start at the base of the tower) and is considered to increase in thickness with height. The initial ice thickness for design is referenced in the Annex of TIA-222-H and follows the same design criteria as the ASCE 7 Standard.

The below load condition implements the design requirements of the Connecticut State Police for the tower structures deflection limits with the allowable deflection limit of the combination of the tower's sway (deflection) and twist (rotation) under the TIA-222-H design Standard. This design limit required the design combined value of sway (deflection) and twist (rotation) to be under 0.75 degrees following the TIA-222-F design Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

Load Condition 3 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Seismic event consideration factors/values for design:

- S.s = 0.231 (2018 CT State Building Code – Location Specific Value)
- S.1 = 0.068 (2018 CT State Building Code – Location Specific Value)
- Site Classification = "D" – from Geotechnical Report
- Seismic Design Category = "C" – (2015 International Building Code)
- F.a = 1.6 (Obtained from TIA-222-H Table 2-11 Considering above conditions)
- F.v = 2.4 (Obtained from TIA-222-H Table 2-12 Considering above conditions)

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

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

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

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

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

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

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the strength design in accordance with AISC (LRFD). The calculated stresses for the tower structure, anchor bolts and foundation were within the required design strength under the proposed configuration and loading (stated herein). Detailed analysis calculations for the proposed load condition are provided in Section 6 of this report.

The tower sway (deflection) is 0.5994 degrees and the tower twist (rotation) is 0.0475 degrees. These figures are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Current
Pier Compression (kips)	500
Pier Uplift (kips)	461
Overall Overturning (kip-ft)	11996
Overall Shear (kips)	127
Shear per Leg (kips)	51

Controlling Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Critical Component Size	Controlling Elevation	Stress (% capacity)	Pass/Fail
Leg (T19)	L8x8x1 1/8”	0’ – 10’	89.5	Pass
Diagonal (T19)	2L2 1/2x2 1/2x5/16	0’ – 10’	76.0	Pass
Horizontal (T19)	2L2 1/2x2 1/2x1/4	0’-10’	59.6	Pass
Secondary Horizontal (T18)	L3 1/2x3 1/2x1/4	10’-20’	31.9	Pass
Top Girt (T16)	2L2-1/2x2-1/2x1/4	30’-40’	11.6	Pass
Redund Horz 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0’-10’	33.3	Pass
Redund Diag 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0’-10’	72.3	Pass
Redund Hip 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0’-10’	0.4	Pass
Redund Sub Horz Bracing (T19)	L3x3x5/16	0’-10’	67.4	Pass
Inner Bracing (T19)	2L2x2 1/2x3/16	0’-10’	2.7	Pass
Tower Connection Bolts	(2) A325X 5/8” Dia. Bolts	90’	74.1	Pass

Foundation Summary:

Component	Required	Computed	% Capacity	Pass/Fail
Anchor Rod Capacity (TIA-222-H – 4.9.9)	Ratio < 1.0	0.96	96.0	Pass
Overturning Moment Factor of Safety TIA-222-H Conditions	Resist OT * (0.75) Reduction Factor (TIA-222-H – Section 9.7) 18165 Kip*ft	13206 kip*ft	72.7	Pass
Bearing Pressure (TIA-222-H Conditions)	5.100 ksf max	2.801 ksf	54.9	Pass

Structure Rating (Maximum from all components) =	96.0 %	Pass

4. FINDINGS AND EVALUATION (cont.)

Maximum Deformations – Proposed Condition

ANSI/TIA-222-H Section 2.8.2 - Limit State Deformations

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

Load Case Description	Current		Allowable	
	Sway (degree)	Displacement (Feet)	Sway (degree)	Displacement (Feet)
Service Wind Load	0.1351	3.077	4.0	5.40

Tower Twist & Sway at Top (Connecticut State Police Requirements - TIA-222-F):

Description	Current	Total	Allowable
Tower Twist (degrees)	0.0475	0.6469	0.750
Tower Sway (degrees)	0.5994		

5. CONCLUSIONS

The results of an initial analysis indicate that:

1. The existing steel tower structure IS considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
2. The existing tower anchor bolts ARE considered structurally adequate for the proposed antenna loading with the wind classification specified herein.
3. The existing foundation IS considered structurally adequate for the proposed antenna load classification with the wind classification specified herein.
4. The existing tower's sway (deflection) is 0.5994 degrees, and the existing tower's twist (rotation) is 0.0475 degrees. These figures combined ARE within the Connecticut State Police requirement 0.75 degrees for combined twist (rotation) and sway (deflection) with the load classification specified herein.
5. The controlling structural capacity for all tower and foundation components for the proposed antenna loading is 96.0%

Limitations/Assumptions:

This report is based on the following:

1) Tower inventory as listed in this report.

2) Tower is properly installed and maintained.

3) All members are as specified in the original design documents and are in good condition.

4) All required members are in place.

5) All bolts are in place and are properly tightened.

6) Tower is in plumb condition.

7) All member protective coatings are in good condition.

8) All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

9) Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.

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

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

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

Ongoing and Periodic Inspection and Maintenance:

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

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

6.) DRAWINGS AND DATA

SEISMIC BASE SHEAR ANALYSIS

AECOM

Seismic (Vs) Base Shear Implementing TIA–222-H, IBC 2018 & Connecticut State Building Code of 2018

Calculation of Seismic Base Shear Implementing TIA-222-H, IBC 2018 & & CT State Building Code 2018.

Location: Wilton, CT -Site Class "D"

$S_{DS} = \frac{2}{3} F_A S_S$, where $S_S = 0.231$ and $F_A = 1.6$ $S_{DS} = \frac{2}{3} F_A S_S = \frac{2}{3} * 1.6 * 0.231 = 0.246$

$S_{D1} = \frac{2}{3} F_V S_1$, where $S_1 = 0.068$ and $F_V = 2.4$ $S_{D1} = \frac{2}{3} F_V S_1 = \frac{2}{3} * 2.4 * 0.068 = 0.109$

TIA-222-H SECTION 2.7 EARTHQUAKE LOADS (PROCEDURES):

1. Importance Factor "I" (tables 2-3 TIA-222-H) = 1.25 (Structure Class 3)

ANSI/TIA-222-G 2.7.7.1 (TOTAL BASE SEISMIC SHEAR (Vs)

W=DL TOWER	=	51.850	Kips
W=Antennas/Mounts	=	15.144	Kips
W=Cables	=	8.3682	Kips
		75.3622	Kips = WT Total = "W"

$$V_s = \frac{S_{DS} * W * I}{R} = \frac{0.246 * 75.3622 kips * 1.25}{3.0} = 7.72\ kips,$$ where R = 3.0 for Lattice Tower

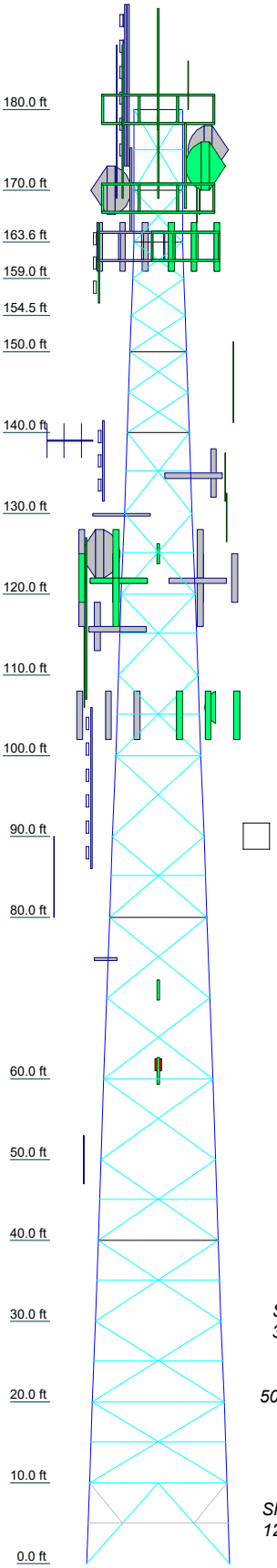
$$V_{S.min} = \frac{0.5 * S_{D1} * W * I}{R} = \frac{0.5 * 0.109 * 75.3622 kips * 1.25}{3.0} = 1.711 \quad kips$$

*By visual inspection, the above "Base Shear" value when considering the following Load Combination is less that the base shear of wind on structure.

$1.2 * DL + 1.0\ E < 1.2\ DL + 1.6\ W$, (125 Kips), therefore seismic effect on structure Does NOT control Design.

TNX TOWER INPUT/OUTPUT SUMMARY

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		L8x8x1 1/8				B	L8x8x1 w/ 1/2x7 Plates		L8x8x3/4	L6x6x3/4		L6x6x1/2		L5x5x3/8			L5x5x5/16		A
Leg Grade									A36										
Diagonals	D		2L2 1/2x2x3/8				2L2 1/2x2x3/16		L3 1/2x3x1/4		L3x3x1/4		L3x2 1/2x1/4	L2 1/2x2x3/16		C		L2 1/2x2 1/2x3/16	
Diagonal Grade									A36										
Top Girts		N.A.		2L2x2x3/16		N.A.		L2 1/2x2 1/2x1/4		N.A.			L2 1/2x2 1/2x3/16		N.A.			L2x2x3/16	
Horizontals	F	2L2x2x3/16		N.A.		2L2x2x3/16		N.A.	E	N.A.	E		L2x2x1/4		N.A.				
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4				N.A.		N.A.	L2x2x1/4	L2x2x3/16	L2x2x1/4						L2x2x3/16	
Red. Horizontals	G								N.A.										
Red. Diagonals	G								N.A.										
Red. Sub-Horizs	L3x3x5/16								N.A.										
Red. Hips	G								N.A.										
Inner Bracing		2L2x2 1/2x3/16		N.A.		2L2x2x3/16		2L2x2x3/16		N.A.	H	N.A.	L2x2x3/16				N.A.		
Face Width (ft)	17.73	17.0125	16.2949	15.5779	14.8608	14.1438	13.4267	11.9926	11.2756	9.84145	9.1244	8.40735	7.6903	6.9736	6.4886	6.0443	5.2433	4.52433	3.8027
# Panels @ (ft)							14 @ 10							2 @ 5			3 @ 4.52433		1 @ 10
Weight (K)	51.8	4.9	5.0	4.3	4.8	5.1	4.6	8.0	2.4	2.5	1.9	2.1	1.4	1.5	1.0	0.4	0.4	0.5	0.4	0.7



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x3/8	E	L2 1/2x2 1/2x1/4
B	L8x8x1-1/8 w/ 1/2x7 Plates	F	2L2 1/2x2 1/2x1/4
C	L2x2x3/16	G	L2 1/2x2 1/2x3/16
D	2L2 1/2x2 1/2x5/16	H	L2 1/2x2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

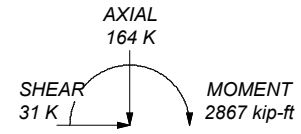
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 3 with Crest Height of 65.00 ft
7. TOWER RATING: 89.5%

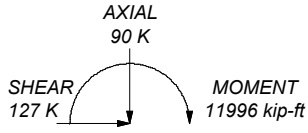
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 500 K
SHEAR: 51 K

UPLIFT: -461 K
SHEAR: 49 K



TORQUE 27 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 57 kip-ft
REACTIONS - 130 mph WIND

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Phone: (973) 883-8663
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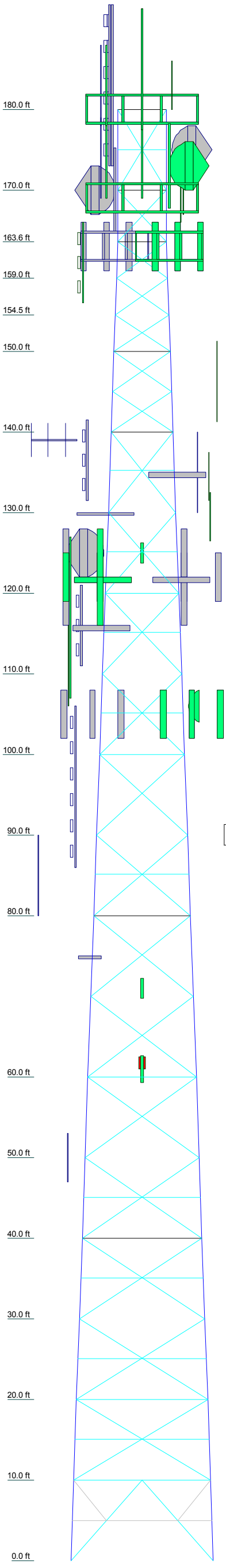
Job: 180' Lattice Tower - CSP#31			
Project: Wilton, Connecticut - S. Analysis			
Client: Eversource	Drawn by: christina.carlos	App'd:	
Code: TIA-222-H	Date: 03/26/20	Scale: NTS	
Path:		Dwg No. E-1	

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1	
Legs		L8x8x1 1/8			L8x8x1-1/8 w/ 1/2x7 Plates		L8x8x1 w/ 1/2x7 Plates		L8x8x3/4		L6x6x3/4		L6x6x1/2	L5x5x3/8			L5x5x5/16		L3 1/2x3 1/2x3/8	
Leg Grade									A36											
Diagonals	2L2 1/2x2 1/2x5/16		2L2 1/2x2x3/8				2L2 1/2x2x3/16				L3 1/2x3x3/4		L3x2 1/2x1/4	L2 1/2x2x3/16			A		L2 1/2x2 1/2x3/16	
Diagonal Grade									A36											
Top Girts		N.A.					L2 1/2x2 1/2x3/16													
Horizontals	2L2 1/2x2 1/2x1/4	2L2x2x3/16	N.A.											N.A.						
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4																	
Red. Horizontals	L2 1/2x2 1/2x3/16																			
Red. Diagonals	L2 1/2x2 1/2x3/16																			
Red. Sub-Horizs	L3x3x5/16																			
Red. Hips	L2 1/2x2 1/2x3/16																			
Inner Bracing	2L2x2 1/2x3/16		N.A.				2L2x2x3/16													
Face Width (ft) 17.73	17.0125	16.2949	15.5779	14.8608	14.1438	13.4267	12.7096	11.9926	11.2756	10.5585	9.8414	9.1244	8.4073	7.6903	6.9733	6.6487	6.3244	6		
# Panels @ (ft)								14 @ 10						2 @ 5		3 @ 4.52433		1 @ 6.427	1 @ 10	
Weight (K) 51.8	4.9	5.0	4.3	4.8	5.1	4.6	8.0	2.4	2.5	1.9	2.1	1.4	1.5	1.0	0.4	0.4	0.4	0.5	0.7	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15' (A32)	185	432E-83I-01T TTA Unit (A13 / DK-28)	132
SC479-HF1LDF (D00-E5764) (A28)	183	6' Side-Arm Mount (A12,13,14 / DK-27,28,29)	132
ANT150D (A29a)	183	BA1010 (A12 / DK-27)	132 - 127
DB222 (A29b)	183	Dish Ice Shield (A11 / DK-26)	130
SC479-HF1LDF (D00-E5764) (A30)	183	PD128-1 (A8 / DK-14)	128 - 121
ALR8-0 (A31)	183	3" Dia 20' Omni (A7 / DK-13)	127 - 107
TMA 432-83H-01T - Future Decom. (A27)	181	2'6"x4" Pipe Mount (A10 / DK-25)	125
SC479-HF1LDF (D00I-E5764) (A23)	180 - 168	6' PAD w/ Radome (A10 / DK-25)	125
15' T-Frame Sector Mount (1) (A23,24,30,31)	180	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
SC479-HF1LDF (D00I-E5764) (A24)	180 - 168	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
SC479-HF1LDF (D00I-E5764) (A26)	180 - 168	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
15' T-Frame Sector Mount (1) (A26,27,28,29)	180	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
10'6"x4" Pipe Mount (A33)	175		
6' PAD w/ Radome (A33)	175	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
10'6"x4" Pipe Mount (A25)	173		
6' PAD w/ Radome (A25 /)	173	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
DB586-Y (A21)	170		
10'6"x4" Pipe Mount (A22)	170	Generic Twin TMA unit (T-Mobile)	122
6' PAD w/ Radome (A22 /)	170	Generic Twin TMA unit (T-Mobile)	122
BA1010-2 (A20)	169	Generic Twin TMA unit (T-Mobile)	122
15' T-Frame Sector Mount (1) (A20)	169	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
T-Frame (ATI)	163	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
T-Frame (ATI)	163	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
T-Frame (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
7770.00 (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
(2) LGP 21901 Diplexer Unit (ATI)	163		
Kathrein 800-10965 Panel Antenna (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
QS66512-3 Quintel Panel (ATI)	163		
RRUS-11 (ATI)	163	10' Standoff (A8 / DK-14)	121
Raycap DC6-48-60-18-8F DC Power Surge Protection (ATI)	163	871F-70-220-025 Antenna (Eversource - Proposed)	116
		Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	116
7770.00 (ATI)	163		
(2) LGP 21901 Diplexer Unit (ATI)	163	12' Omni Antenna (A9 - DK-15)	116 - 106
Kathrein 800-10965 Panel Antenna (ATI)	163	6' Side-Arm Mount (A7 / DK-13)	107
QS66512-3 Quintel Panel (ATI)	163	10'6"x4" Pipe Mount (A6 / DK-12 / CSP-11)	106
RRUS-11 (ATI)	163	DB264-A (A5 / DK-11)	106 - 86
7770.00 (ATI)	163	6' Side-Arm Mount (A9 - DK-15)	106
(2) LGP 21901 Diplexer Unit (ATI)	163	4' Grid Dish (A6 / DK 12 / CSP-11)	106
Kathrein 800-10965 Panel Antenna (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
QS66512-3 Quintel Panel (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
RRUS-11 (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
4478 Radio Unit (4x40W) (ATI)	163	TD-RRH8x20-25 (Sprint)	105
4478 Radio Unit (4x40W) (ATI)	163	TD-RRH8x20-25 (Sprint)	105
4478 Radio Unit (4x40W) (ATI)	163	TD-RRH8x20-25 (Sprint)	105
RRUS-32 B66 (ATI)	163	ALU 4x45W (1900 MHz) (Sprint)	105
RRUS-32 B66 (ATI)	163	ALU 4x45W (1900 MHz) (Sprint)	105
RRUS-32 B66 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B2 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B2 (ATI)	163	12' Wireless Frame (Sprint)	105
RRUS-32 B2 (ATI)	163	12' Wireless Frame (Sprint)	105
RRUS-32 (ATI)	163	12' Wireless Frame (Sprint)	105
RRUS-32 (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	105
RRUS-32 (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	105
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint)	105
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163	ALU 800MHz 2x50W (Sprint)	105
(2) LPG21401 TMA (ATI)	163	ALU 800MHz 2x50W (Sprint)	105
(2) LPG21401 TMA (ATI)	163	ALU 800MHz 2x50W (Sprint)	105
(2) LPG21401 TMA (ATI)	163	AAHC Panel Antenna (Sprint)	105
DB408-B (A19)	161	ALU 4x45W (1900 MHz) (Sprint)	105
(2) 6' Side Mount Standoff (A19)	161	10' Standoff (A4 / DK-4)	91
12' Omni Antenna (A15 / DK-30)	152 - 140.5	SC479-HF1LDF (A4 / DK-4)	91 - 79
8' Side Arm Mount (A15 / DK-30)	140.5	4' Side Mount Standoff (A5 / DK-11)	86
6' Side-Arm Mount (A17 / DK-32)	139	Dish Ice Shield (A3 / DK-3)	75
6' Side-Arm Mount (A18 / DK-33)	139	2'6"x4" Pipe Mount (A3 / DK-3)	71
Yagi ASP-816 (A17 / DK-32)	139	GPS (A2 / Sprint)	61
BA1010 (A14 / DK-29)	137 - 132	3'4"x4" Pipe Mount (A2 / Sprint)	61
DB222-A (A16 / DK-31)	136.5	3' Stand-off (A1 / DK-1)	50
4' Side Mount Standoff (A16 / DK-31)	136.5	DB803M-Y (A1 / DK-1)	50
ANT220F2 w/clamps (Eversource - Proposed)	135		
Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	135		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
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 130 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 3 with Crest Height of 65.00 ft

AECOM
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Phone: (973) 883-8663
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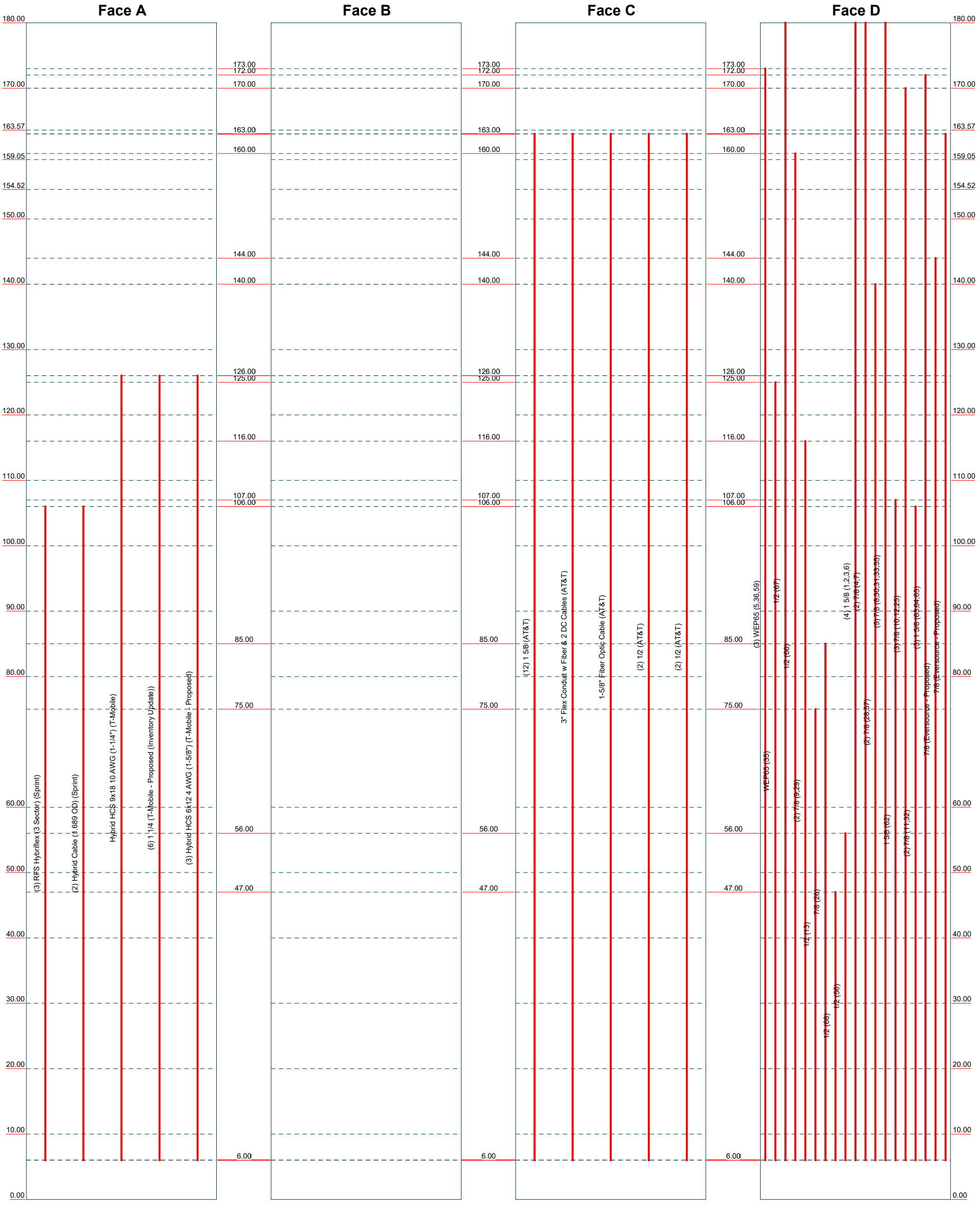
Job: 180' Lattice Tower - CSP#31			
Project: Wilton, Connecticut - S. Analysis			
Client: Eversource	Drawn by: christina.carlos		App'd:
Code: TIA-222-H	Date: 03/31/20		Scale: NTS
Path:			Dwg No. E-1

TNX TOWER FEEDLINE DISTRIBUTION

Feed Line Distribution Chart
0' - 180'

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



AECOM
1255 Broad St. Suite 201
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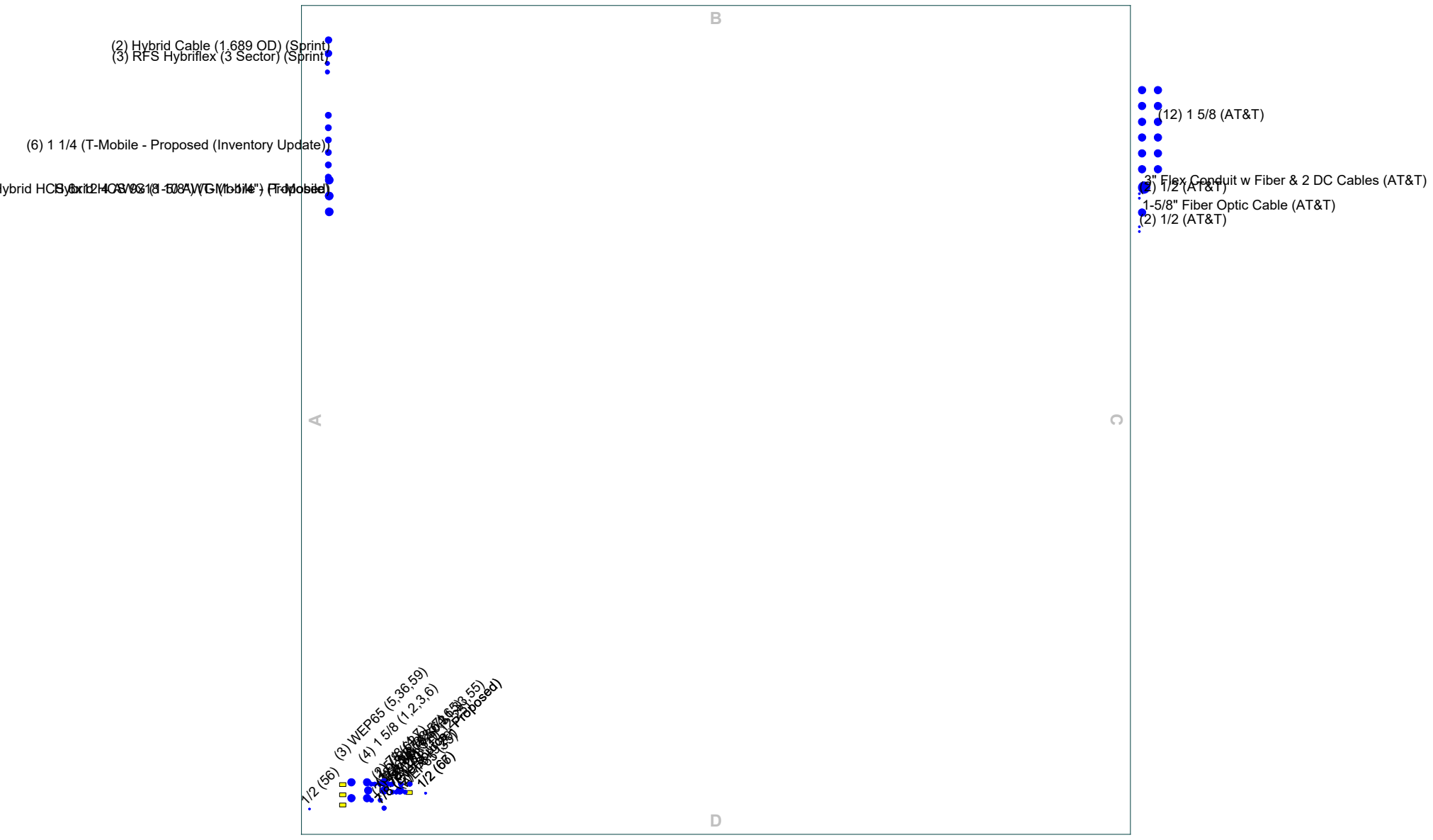
Phone: (973) 883-8663
FAX: (973) 883-8500

Job: ***180' Lattice Tower - CSP#31***			
Project: ***Wilton, Connecticut - S. Analysis***			
Client: Eversource	Drawn by: christina.carlos		App'd:
Code: TIA-222-H	Date: 03/26/20		Scale: NTS
Path:			Dwg No. E-7

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face



(8) 1-5/8" Coax Cables
(18) 7/8" Coax Cables
(4) 1/2" Coax Cables
(4) WEP65 Elliptical Cables
(2) RFS LCF78-50JA-A7 Cellflex Coaxial Cables

AECOM
1255 Broad St. Suite 201
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Phone: (973) 883-8663
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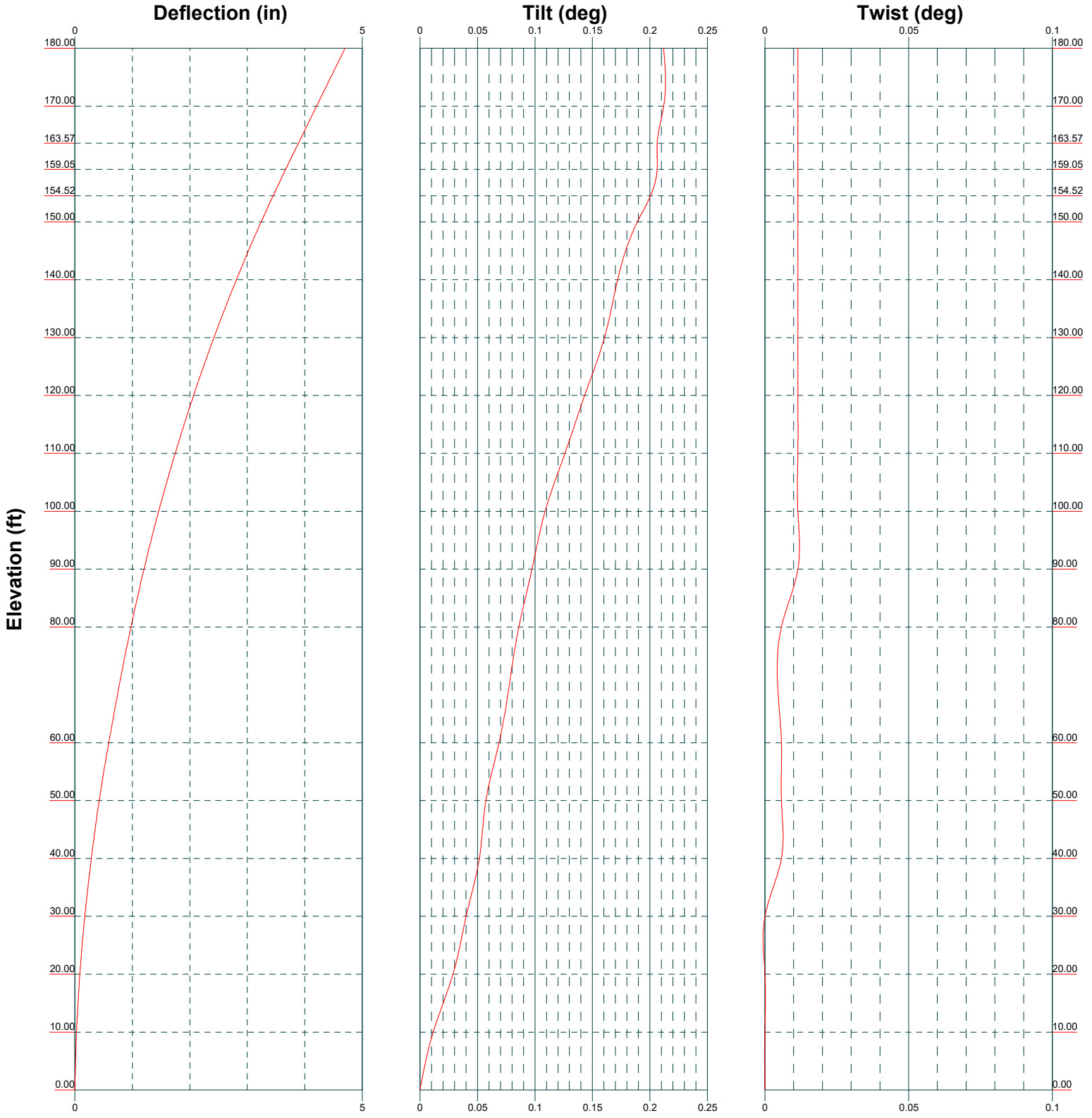
Job: 180' Lattice Tower - CSP#31			
Project: Wilton, Connecticut - S. Analysis			
Client: Eversource	Drawn by: christina.carlos		App'd:
Code: TIA-222-H	Date: 03/26/20		Scale: NTS
Path:			Dwg No. E-7

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA/EIA-222-F - Service - 60 mph

Maximum Values



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Job: ***180' Lattice Tower - CSP***			
Project: ***Wilton, Connecticut - DESPP/CSP Load Conditions***			
Client: Transcend Wireless / T-Mobile / TWM-013	Drawn by: christina.carlos	App'd:	
Code: TIA/EIA-222-F	Date: 03/26/20	Scale: NTS	
Path:		Dwg No. E-5	

TNX TOWER DETAILED OUTPUT

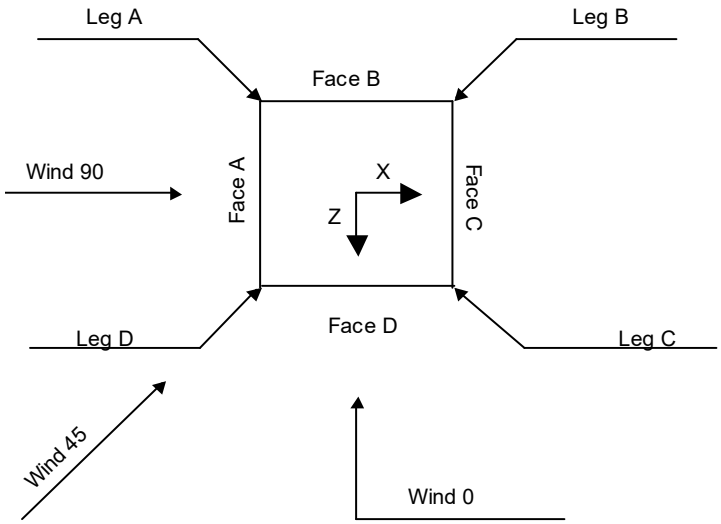
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.00 ft at the top and 17.73 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 130 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 3.
Crest Height: 65.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	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



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00			6.00	1	10.00
T2	170.00-163.57			6.00	1	6.43
T3	163.57-159.05			6.00	1	4.52
T4	159.05-154.52			6.32	1	4.52
T5	154.52-150.00			6.65	1	4.52
T6	150.00-140.00			6.97	1	10.00
T7	140.00-130.00			7.69	1	10.00
T8	130.00-120.00			8.41	1	10.00
T9	120.00-110.00			9.12	1	10.00
T10	110.00-100.00			9.84	1	10.00
T11	100.00-90.00			10.56	1	10.00
T12	90.00-80.00			11.28	1	10.00
T13	80.00-60.00			11.99	1	20.00
T14	60.00-50.00			13.43	1	10.00
T15	50.00-40.00			14.14	1	10.00
T16	40.00-30.00			14.86	1	10.00
T17	30.00-20.00			15.58	1	10.00
T18	20.00-10.00			16.29	1	10.00
T19	10.00-0.00			17.01	1	10.00

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
	ft	ft				in	in

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 170.00-163.57	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 163.57-159.05	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 159.05-154.52	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 154.52-150.00	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 150.00-140.00	Single Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 140.00-130.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 120.00-110.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T11 100.00-90.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	L8x8x1 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T16 40.00-30.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T19 10.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Sub-Horizontal	Single Angle	L3x3x5/16	1
		Hip (1)	Single Angle	L2 1/2x2 1/2x3/16	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-170.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-163.57	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 163.57-159.05	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 159.05-154.52	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 154.52-150.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 150.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	No	1	1		1		1		1		1		1		1	
140.00-130.00				1		1		1		1		1		1		1	
T8	Yes	No	1	1		1		1		1		1		1		1	
130.00-120.00				1		1		1		1		1		1		1	
T9	Yes	No	1	1		1		1		1		1		1		1	
120.00-110.00				1		1		1		1		1		1		1	
T10	Yes	No	1	1		1		1		1		1		1		1	
110.00-100.00				1		1		1		1		1		1		1	
T11	Yes	No	1	1		1		1		1		1		1		1	
100.00-90.00				1		1		1		1		1		1		1	
T12	Yes	No	1	1		1		1		1		1		1		1	
90.00-80.00				1		1		1		1		1		1		1	
T13	Yes	No	1	1		1		1		1		1		1		1	
80.00-60.00				1		1		1		1		1		1		1	
T14	Yes	No	1	1		1		1		1		1		1		1	
60.00-50.00				1		1		1		1		1		1		1	
T15	Yes	No	1	1		1		1		1		1		1		1	
50.00-40.00				1		1		1		1		1		1		1	
T16	Yes	No	1	1		1		1		1		1		1		1	
40.00-30.00				1		1		1		1		1		1		1	
T17	Yes	No	1	1		1		1		1		1		1		1	
30.00-20.00				1		1		1		1		1		1		1	
T18	Yes	No	1	1		1		1		1		1		1		1	
20.00-10.00				1		1		1		1		1		1		1	
T19	Yes	No	1	1		1		1		1		1		1		1	
10.00-0.00				1		1		1		1		1		1		1	

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
180.00-170.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
170.00-163.57														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
163.57-159.05														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
159.05-154.52														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
154.52-150.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
140.00-130.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
130.00-120.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

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
T1 180.00-170.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 170.00-163.57	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 163.57-159.05	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 159.05-154.52	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 154.52-150.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 150.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 140.00-130.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 130.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 120.00-110.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 110.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

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
T11 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T14 60.00-50.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T15 50.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T16 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T17 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T18 20.00-10.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T19 10.00-0.00	0.0000	3.0000	0.0000	3.0000	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 180.00-170.00	Sleeve SS	0.6250 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325X	2
T2 170.00-163.57	Sleeve SS	0.7500 A325X	10	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T3 163.57-159.05	Sleeve SS	0.6250 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T4 159.05-154.52	Sleeve SS	0.6250 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T5 154.52-150.00	Sleeve SS	0.7500 A325X	12	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T6 150.00-140.00	Sleeve SS	0.7500 A325X	12	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T7 140.00-130.00	Sleeve SS	0.6250 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T8 130.00-120.00	Sleeve SS	0.7500 A325X	18	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T9 120.00-110.00	Sleeve SS	0.6250 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T10 110.00-100.00	Sleeve SS	0.7500 A325X	24	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T11 100.00-90.00	Sleeve SS	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T12 90.00-80.00	Sleeve SS	0.7500 A325X	32	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T13 80.00-60.00	Sleeve SS	0.7500 A325X	32	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0

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.
T14 60.00-50.00	Sleeve SS	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T15 50.00-40.00	Sleeve SS	0.8750 A325X	32	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T16 40.00-30.00	Sleeve SS	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.0000 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T17 30.00-20.00	Sleeve SS	0.8750 A325X	40	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T18 20.00-10.00	Sleeve SS	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T19 10.00-0.00	Sleeve SS	0.8750 A325X	40	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
WEP65 (5,36,59)	D	No	No	Af (CaAa)	173.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836		0.53
WEP65 (35)	D	No	No	Af (CaAa)	125.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836		0.53
1/2 (67)	D	No	No	Ar (CaAa)	180.00 - 6.00	-10.0000	0.35	1	1	0.5800	0.5800		0.25
1/2 (66)	D	No	No	Ar (CaAa)	160.00 - 6.00	-10.0000	0.35	1	1	0.5800	0.5800		0.25
7/8 (9,29)	D	No	No	Ar (CaAa)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	No	No	Ar (CaAa)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	No	No	Ar (CaAa)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	No	No	Ar (CaAa)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	D	No	No	Ar (CaAa)	56.00 - 6.00	-6.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	No	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	No	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	No	No	Ar (CaAa)	140.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	No	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	No	No	Ar (CaAa)	107.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	No	No	Ar (CaAa)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	No	No	Ar (CaAa)	106.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8 (63,64,65)	D	No	No	Ar (CaAa)	172.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

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
1 5/8 (AT&T)	C	No	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.35	12	6	1.9800	1.9800		1.04
3" Flex Conduit w Fiber & 2 DC Cables (AT&T)	C	No	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.28	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	No	No	Ar (CaAa)	106.00 - 6.00	-6.0000	0.43	3	3	1.0900	1.0900		0.37
1-5/8" Fiber Optic Cable (AT&T)	C	No	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.25	1	1	1.9800	1.9800		1.30
1/2 (AT&T)	C	No	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.27	2	2	0.5800	0.5800		0.25
1/2 (AT&T)	C	No	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.23	2	2	0.5800	0.5800		0.25
Hybrid Cable (1.689 OD) (Sprint) * T-Mobile Cables	A	No	No	Ar (CaAa)	106.00 - 6.00	-6.0000	0.45	2	2	1.6890	1.6890		2.31
Hybrid HCS 9x18 10 AWG (1-1/4") (T-Mobile)	A	No	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.27	1	1	1.5400	1.5400		0.90
1 1/4 (T-Mobile - Proposed (Inventory Update))	A	No	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.33	6	6	1.5500	1.5500		0.66
Hybrid HCS 6x12 4 AWG (1-5/8") (T-Mobile - Proposed) * Eversource Cables	A	No	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.27	3	3	1.9900	1.9900		1.90
7/8 (Eversource - Proposed)	D	No	No	Ar (CaAa)	144.00 - 6.00	-6.0000	0.4	1	1	1.1100	1.1100		0.54
7/8 (Eversource - Proposed)	D	No	No	Ar (CaAa)	163.00 - 6.00	-6.0000	0.4	1	1	1.1100	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	19.833	0.000	0.09
T2	170.00-163.57	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	21.503	0.000	0.09
T3	163.57-159.05	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.273	0.000	0.07
		D	0.000	0.000	15.631	0.000	0.07
T4	159.05-154.52	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	15.902	0.000	0.07
T5	154.52-150.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	15.902	0.000	0.07
T6	150.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	35.592	0.000	0.16
T7	140.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	38.478	0.000	0.17
T8	130.00-120.00	A	0.000	0.000	10.086	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	39.798	0.000	0.17
T9	120.00-110.00	A	0.000	0.000	16.810	0.000	0.11
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	42.449	0.000	0.18
T10	110.00-100.00	A	0.000	0.000	20.799	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	46.055	0.000	0.20
T11	100.00-90.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	47.537	0.000	0.21
T12	90.00-80.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	48.092	0.000	0.21
T13	80.00-60.00	A	0.000	0.000	46.916	0.000	0.33
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	62.120	0.000	0.36
		D	0.000	0.000	98.164	0.000	0.43
T14	60.00-50.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	49.575	0.000	0.22
T15	50.00-40.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	50.213	0.000	0.22
T16	40.00-30.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	50.387	0.000	0.22
T17	30.00-20.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.033	0.000	0.18

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D	0.000	0.000	50.387	0.000	0.22
T18	20.00-10.00	A	0.000	0.000	23.458	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	30.987	0.000	0.18
		D	0.000	0.000	50.387	0.000	0.22
T19	10.00-0.00	A	0.000	0.000	9.383	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.328	0.000	0.07
		D	0.000	0.000	20.155	0.000	0.09

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	1.021	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	46.559	0.000	0.53
T2	170.00-163.57	A	1.016	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	49.580	0.000	0.54
T3	163.57-159.05	A	1.013	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	20.494	0.000	0.36
		D		0.000	0.000	36.361	0.000	0.39
T4	159.05-154.52	A	1.011	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	23.450	0.000	0.41
		D		0.000	0.000	37.443	0.000	0.40
T5	154.52-150.00	A	1.008	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	23.434	0.000	0.41
		D		0.000	0.000	37.414	0.000	0.40
T6	150.00-140.00	A	1.004	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	51.739	0.000	0.90
		D		0.000	0.000	83.837	0.000	0.90
T7	140.00-130.00	A	0.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	51.660	0.000	0.90
		D		0.000	0.000	93.262	0.000	0.97
T8	130.00-120.00	A	0.993	0.000	0.000	23.795	0.000	0.27
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	51.581	0.000	0.90
		D		0.000	0.000	95.401	0.000	0.98
T9	120.00-110.00	A	0.988	0.000	0.000	39.598	0.000	0.45
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.669	0.000	0.75
		D		0.000	0.000	100.184	0.000	0.97
T10	110.00-100.00	A	0.982	0.000	0.000	51.500	0.000	0.57
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.487	0.000	0.75
		D		0.000	0.000	110.379	0.000	1.06
T11	100.00-90.00	A	0.978	0.000	0.000	59.388	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.321	0.000	0.74

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D		0.000	0.000	114.389	0.000	1.09
T12	90.00-80.00	A	0.974	0.000	0.000	59.317	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.179	0.000	0.74
		D		0.000	0.000	115.718	0.000	1.10
T13	80.00-60.00	A	0.970	0.000	0.000	118.489	0.000	1.28
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	134.068	0.000	1.47
		D		0.000	0.000	237.847	0.000	2.25
T14	60.00-50.00	A	0.969	0.000	0.000	59.232	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.009	0.000	0.74
		D		0.000	0.000	121.027	0.000	1.14
T15	50.00-40.00	A	0.971	0.000	0.000	59.266	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.077	0.000	0.74
		D		0.000	0.000	123.906	0.000	1.17
T16	40.00-30.00	A	0.974	0.000	0.000	59.331	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.207	0.000	0.74
		D		0.000	0.000	124.875	0.000	1.18
T17	30.00-20.00	A	0.978	0.000	0.000	59.398	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.340	0.000	0.74
		D		0.000	0.000	125.092	0.000	1.18
T18	20.00-10.00	A	0.975	0.000	0.000	59.346	0.000	0.64
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.236	0.000	0.74
		D		0.000	0.000	124.922	0.000	1.18
T19	10.00-0.00	A	0.928	0.000	0.000	23.409	0.000	0.25
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	26.237	0.000	0.28
		D		0.000	0.000	48.893	0.000	0.45

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-170.00	-7.3399	6.0535	-11.5432	9.6271
T2	170.00-163.57	-9.6131	7.9789	-14.3404	12.0312
T3	163.57-159.05	0.9354	1.5097	-2.8379	4.9784
T4	159.05-154.52	1.9814	1.1313	-2.1466	5.0609
T5	154.52-150.00	2.0019	1.3105	-2.2751	5.4706
T6	150.00-140.00	1.8813	1.6676	-2.6222	6.1997
T7	140.00-130.00	1.1326	2.5782	-4.2022	8.0561
T8	130.00-120.00	-1.9346	1.3113	-8.5831	5.8565
T9	120.00-110.00	-4.2703	0.9275	-7.9396	2.7210
T10	110.00-100.00	-6.4774	0.9581	-11.4860	2.6297
T11	100.00-90.00	-7.4048	0.7728	-13.3089	2.2491
T12	90.00-80.00	-7.9613	1.1093	-14.2933	2.8206
T13	80.00-60.00	-11.5009	2.1756	-17.6887	4.3239
T14	60.00-50.00	-12.3120	2.7109	-19.1623	5.2909
T15	50.00-40.00	-12.5366	3.0863	-20.1046	6.1414
T16	40.00-30.00	-10.5472	2.7350	-19.2390	6.1292
T17	30.00-20.00	-11.3991	3.0537	-20.5699	6.6972
T18	20.00-10.00	-11.3615	3.1353	-20.7201	6.8630

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T19	10.00-0.00	-6.3073	1.7864	-13.1963	4.3515

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	WEP65	170.00 - 173.00	0.6000	0.6000
T1	4	1/2	170.00 - 180.00	1.0000	1.0000
T1	11	1 5/8	170.00 - 180.00	0.6000	0.6000
T1	12	7/8	170.00 - 180.00	0.6000	0.6000
T1	14	7/8	170.00 - 180.00	0.6000	0.6000
T1	18	1 5/8	170.00 - 172.00	0.6000	0.6000
T2	2	WEP65	163.57 - 170.00	0.6000	0.6000
T2	4	1/2	163.57 - 170.00	1.0000	1.0000
T2	11	1 5/8	163.57 - 170.00	0.6000	0.6000
T2	12	7/8	163.57 - 170.00	0.6000	0.6000
T2	14	7/8	163.57 - 170.00	0.6000	0.6000
T2	16	7/8	163.57 - 170.00	0.6000	0.6000
T2	18	1 5/8	163.57 - 170.00	0.6000	0.6000
T3	2	WEP65	159.05 - 163.57	0.6000	0.5941
T3	4	1/2	159.05 - 163.57	1.0000	1.0000
T3	5	1/2	159.05 - 160.00	1.0000	1.0000
T3	11	1 5/8	159.05 - 163.57	0.6000	0.5941
T3	12	7/8	159.05 - 163.57	0.6000	0.5941
T3	14	7/8	159.05 - 163.57	0.6000	0.5941
T3	16	7/8	159.05 - 163.57	0.6000	0.5941
T3	18	1 5/8	159.05 - 163.57	0.6000	0.5941
T3	19	1 5/8	159.05 - 163.00	0.6000	0.5941
T3	20	3" Flex Conduit w Fiber & 2 DC Cables	159.05 - 163.00	1.0000	0.5941
T3	23	1-5/8" Fiber Optic Cable	159.05 - 163.00	0.6000	0.5941
T3	24	1/2	159.05 -	0.6000	0.5941

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	25	1/2	159.05 - 163.00	0.6000	0.5941
T3	34	7/8	159.05 - 163.00	0.6000	0.5941
T4	2	WEP65	154.52 - 159.05	0.6000	0.6000
T4	4	1/2	154.52 - 159.05	1.0000	1.0000
T4	5	1/2	154.52 - 159.05	1.0000	1.0000
T4	11	1 5/8	154.52 - 159.05	0.6000	0.6000
T4	12	7/8	154.52 - 159.05	0.6000	0.6000
T4	14	7/8	154.52 - 159.05	0.6000	0.6000
T4	16	7/8	154.52 - 159.05	0.6000	0.6000
T4	18	1 5/8	154.52 - 159.05	0.6000	0.6000
T4	19	1 5/8	154.52 - 159.05	0.6000	0.6000
T4	20	3" Flex Conduit w Fiber & 2 DC Cables	154.52 - 159.05	1.0000	0.6000
T4	23	1-5/8" Fiber Optic Cable	154.52 - 159.05	0.6000	0.6000
T4	24	1/2	154.52 - 159.05	0.6000	0.6000
T4	25	1/2	154.52 - 159.05	0.6000	0.6000
T4	34	7/8	154.52 - 159.05	0.6000	0.6000
T5	2	WEP65	150.00 - 154.52	0.6000	0.6000
T5	4	1/2	150.00 - 154.52	1.0000	1.0000
T5	5	1/2	150.00 - 154.52	1.0000	1.0000
T5	11	1 5/8	150.00 - 154.52	0.6000	0.6000
T5	12	7/8	150.00 - 154.52	0.6000	0.6000
T5	14	7/8	150.00 - 154.52	0.6000	0.6000
T5	16	7/8	150.00 - 154.52	0.6000	0.6000
T5	18	1 5/8	150.00 - 154.52	0.6000	0.6000
T5	19	1 5/8	150.00 - 154.52	0.6000	0.6000
T5	20	3" Flex Conduit w Fiber & 2 DC Cables	150.00 - 154.52	1.0000	0.6000
T5	23	1-5/8" Fiber Optic Cable	150.00 - 154.52	0.6000	0.6000
T5	24	1/2	150.00 - 154.52	0.6000	0.6000
T5	25	1/2	150.00 - 154.52	0.6000	0.6000
T5	34	7/8	150.00 - 154.52	0.6000	0.6000
T6	2	WEP65	140.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	4	1/2	140.00 - 150.00	1.0000	1.0000
T6	5	1/2	140.00 - 150.00	1.0000	1.0000
T6	11	1 5/8	140.00 - 150.00	0.6000	0.6000
T6	12	7/8	140.00 - 150.00	0.6000	0.6000
T6	14	7/8	140.00 - 150.00	0.6000	0.6000
T6	16	7/8	140.00 - 150.00	0.6000	0.6000
T6	18	1 5/8	140.00 - 150.00	0.6000	0.6000
T6	19	1 5/8	140.00 - 150.00	0.6000	0.6000
T6	20	3" Flex Conduit w Fiber & 2 DC Cables	140.00 - 150.00	1.0000	0.6000
T6	23	1-5/8" Fiber Optic Cable	140.00 - 150.00	0.6000	0.6000
T6	24	1/2	140.00 - 150.00	0.6000	0.6000
T6	25	1/2	140.00 - 150.00	0.6000	0.6000
T6	33	7/8	140.00 - 144.00	0.6000	0.6000
T6	34	7/8	140.00 - 150.00	0.6000	0.6000
T7	2	WEP65	130.00 - 140.00	0.6000	0.6000
T7	4	1/2	130.00 - 140.00	1.0000	1.0000
T7	5	1/2	130.00 - 140.00	1.0000	1.0000
T7	11	1 5/8	130.00 - 140.00	0.6000	0.6000
T7	12	7/8	130.00 - 140.00	0.6000	0.6000
T7	13	7/8	130.00 - 140.00	0.6000	0.6000
T7	14	7/8	130.00 - 140.00	0.6000	0.6000
T7	16	7/8	130.00 - 140.00	0.6000	0.6000
T7	18	1 5/8	130.00 - 140.00	0.6000	0.6000
T7	19	1 5/8	130.00 - 140.00	0.6000	0.6000
T7	20	3" Flex Conduit w Fiber & 2 DC Cables	130.00 - 140.00	1.0000	0.6000
T7	23	1-5/8" Fiber Optic Cable	130.00 - 140.00	0.6000	0.6000
T7	24	1/2	130.00 - 140.00	0.6000	0.6000
T7	25	1/2	130.00 - 140.00	0.6000	0.6000
T7	33	7/8	130.00 - 140.00	0.6000	0.6000
T7	34	7/8	130.00 - 140.00	0.6000	0.6000
T8	2	WEP65	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	3	WEP65	130.00 - 120.00	0.6000	0.6000
T8	4	1/2	125.00 - 120.00	1.0000	1.0000
T8	5	1/2	130.00 - 120.00	1.0000	1.0000
T8	11	1 5/8	130.00 - 120.00	0.6000	0.6000
T8	12	7/8	130.00 - 120.00	0.6000	0.6000
T8	13	7/8	130.00 - 120.00	0.6000	0.6000
T8	14	7/8	130.00 - 120.00	0.6000	0.6000
T8	16	7/8	130.00 - 120.00	0.6000	0.6000
T8	18	1 5/8	130.00 - 120.00	0.6000	0.6000
T8	19	1 5/8	130.00 - 120.00	0.6000	0.6000
T8	20	3" Flex Conduit w Fiber & 2 DC Cables	130.00 - 120.00	1.0000	0.6000
T8	23	1-5/8" Fiber Optic Cable	130.00 - 120.00	0.6000	0.6000
T8	24	1/2	130.00 - 120.00	0.6000	0.6000
T8	25	1/2	130.00 - 120.00	0.6000	0.6000
T8	28	Hybrid HCS 9x18 10 AWG (1-1/4")	130.00 - 120.00	0.6000	0.6000
T8	30	1 1/4	126.00 - 120.00	0.6000	0.6000
T8	31	Hybrid HCS 6x12 4 AWG (1-5/8")	126.00 - 120.00	0.6000	0.6000
T8	33	7/8	130.00 - 120.00	0.6000	0.6000
T8	34	7/8	130.00 - 120.00	0.6000	0.6000
T9	2	WEP65	120.00 - 110.00	0.6000	0.6000
T9	3	WEP65	120.00 - 110.00	0.6000	0.6000
T9	4	1/2	120.00 - 110.00	1.0000	1.0000
T9	5	1/2	120.00 - 110.00	1.0000	1.0000
T9	6	7/8	116.00 - 110.00	0.6000	0.6000
T9	11	1 5/8	120.00 - 110.00	0.6000	0.6000
T9	12	7/8	120.00 - 110.00	0.6000	0.6000
T9	13	7/8	120.00 - 110.00	0.6000	0.6000
T9	14	7/8	120.00 - 110.00	0.6000	0.6000
T9	16	7/8	120.00 - 110.00	0.6000	0.6000
T9	18	1 5/8	120.00 - 110.00	0.6000	0.6000
T9	19	1 5/8	120.00 - 110.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T9	20	3" Flex Conduit w Fiber & 2 DC Cables	110.00 - 120.00	1.0000	0.6000
T9	23	1-5/8" Fiber Optic Cable	110.00 - 120.00	0.6000	0.6000
T9	24	1/2	110.00 - 120.00	0.6000	0.6000
T9	25	1/2	110.00 - 120.00	0.6000	0.6000
T9	28	Hybrid HCS 9x18 10 AWG (1-1/4")	110.00 - 120.00	0.6000	0.6000
T9	30	1 1/4	110.00 - 120.00	0.6000	0.6000
T9	31	Hybrid HCS 6x12 4 AWG (1-5/8")	110.00 - 120.00	0.6000	0.6000
T9	33	7/8	110.00 - 120.00	0.6000	0.6000
T9	34	7/8	110.00 - 120.00	0.6000	0.6000
T10	2	WEP65	100.00 - 110.00	0.6000	0.6000
T10	3	WEP65	100.00 - 110.00	0.6000	0.6000
T10	4	1/2	100.00 - 110.00	1.0000	1.0000
T10	5	1/2	100.00 - 110.00	1.0000	1.0000
T10	6	7/8	100.00 - 110.00	0.6000	0.6000
T10	11	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	12	7/8	100.00 - 110.00	0.6000	0.6000
T10	13	7/8	100.00 - 110.00	0.6000	0.6000
T10	14	7/8	100.00 - 110.00	0.6000	0.6000
T10	15	1 5/8	100.00 - 107.00	0.6000	0.6000
T10	16	7/8	100.00 - 110.00	0.6000	0.6000
T10	17	7/8	100.00 - 106.00	0.6000	0.6000
T10	18	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	19	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	20	3" Flex Conduit w Fiber & 2 DC Cables	100.00 - 110.00	1.0000	0.6000
T10	21	RFS Hybriflex (3 Sector)	100.00 - 106.00	0.6000	0.6000
T10	23	1-5/8" Fiber Optic Cable	100.00 - 110.00	0.6000	0.6000
T10	24	1/2	100.00 - 110.00	0.6000	0.6000
T10	25	1/2	100.00 - 110.00	0.6000	0.6000
T10	26	Hybrid Cable (1.689 OD)	100.00 - 106.00	0.6000	0.6000
T10	28	Hybrid HCS 9x18 10 AWG (1-1/4")	100.00 - 110.00	0.6000	0.6000
T10	30	1 1/4	100.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			110.00		
T10	31	Hybrid HCS 6x12 4 AWG (1-5/8")	100.00 - 110.00	0.6000	0.6000
T10	33	7/8	100.00 - 110.00	0.6000	0.6000
T10	34	7/8	100.00 - 110.00	0.6000	0.6000
T11	2	WEP65	90.00 - 100.00	0.6000	0.6000
T11	3	WEP65	90.00 - 100.00	0.6000	0.6000
T11	4	1/2	90.00 - 100.00	1.0000	1.0000
T11	5	1/2	90.00 - 100.00	1.0000	1.0000
T11	6	7/8	90.00 - 100.00	0.6000	0.6000
T11	11	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	12	7/8	90.00 - 100.00	0.6000	0.6000
T11	13	7/8	90.00 - 100.00	0.6000	0.6000
T11	14	7/8	90.00 - 100.00	0.6000	0.6000
T11	15	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	16	7/8	90.00 - 100.00	0.6000	0.6000
T11	17	7/8	90.00 - 100.00	0.6000	0.6000
T11	18	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	19	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	20	3" Flex Conduit w Fiber & 2 DC Cables	90.00 - 100.00	1.0000	0.6000
T11	21	RFS Hybriflex (3 Sector)	90.00 - 100.00	0.6000	0.6000
T11	23	1-5/8" Fiber Optic Cable	90.00 - 100.00	0.6000	0.6000
T11	24	1/2	90.00 - 100.00	0.6000	0.6000
T11	25	1/2	90.00 - 100.00	0.6000	0.6000
T11	26	Hybrid Cable (1.689 OD)	90.00 - 100.00	0.6000	0.6000
T11	28	Hybrid HCS 9x18 10 AWG (1-1/4")	90.00 - 100.00	0.6000	0.6000
T11	30	1 1/4	90.00 - 100.00	0.6000	0.6000
T11	31	Hybrid HCS 6x12 4 AWG (1-5/8")	90.00 - 100.00	0.6000	0.6000
T11	33	7/8	90.00 - 100.00	0.6000	0.6000
T11	34	7/8	90.00 - 100.00	0.6000	0.6000
T12	2	WEP65	80.00 - 90.00	0.6000	0.6000
T12	3	WEP65	80.00 - 90.00	0.6000	0.6000
T12	4	1/2	80.00 - 90.00	1.0000	1.0000
T12	5	1/2	80.00 - 90.00	1.0000	1.0000
T12	6	7/8	80.00 - 90.00	0.6000	0.6000
T12	8	7/8	80.00 - 85.00	0.6000	0.6000
T12	11	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	12	7/8	80.00 - 90.00	0.6000	0.6000
T12	13	7/8	80.00 - 90.00	0.6000	0.6000
T12	14	7/8	80.00 - 90.00	0.6000	0.6000
T12	15	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	16	7/8	80.00 - 90.00	0.6000	0.6000
T12	17	7/8	80.00 - 90.00	0.6000	0.6000
T12	18	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	19	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	20	3" Flex Conduit w Fiber & 2 DC Cables	80.00 - 90.00	1.0000	0.6000
T12	21	RFS Hybriflex (3 Sector)	80.00 - 90.00	0.6000	0.6000
T12	23	1-5/8" Fiber Optic Cable	80.00 - 90.00	0.6000	0.6000
T12	24	1/2	80.00 - 90.00	0.6000	0.6000
T12	25	1/2	80.00 - 90.00	0.6000	0.6000
T12	26	Hybrid Cable (1.689 OD)	80.00 - 90.00	0.6000	0.6000
T12	28	Hybrid HCS 9x18 10 AWG (1-1/4")	80.00 - 90.00	0.6000	0.6000
T12	30	1 1/4	80.00 - 90.00	0.6000	0.6000
T12	31	Hybrid HCS 6x12 4 AWG (1-5/8")	80.00 - 90.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	33	7/8	80.00 - 90.00	0.6000	0.6000
T12	34	7/8	80.00 - 90.00	0.6000	0.6000
T13	2	WEP65	60.00 - 80.00	0.6000	0.6000
T13	3	WEP65	60.00 - 80.00	0.6000	0.6000
T13	4	1/2	60.00 - 80.00	1.0000	1.0000
T13	5	1/2	60.00 - 80.00	1.0000	1.0000
T13	6	7/8	60.00 - 80.00	0.6000	0.6000
T13	7	1/2	60.00 - 75.00	0.6000	0.6000
T13	8	7/8	60.00 - 80.00	0.6000	0.6000
T13	11	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	12	7/8	60.00 - 80.00	0.6000	0.6000
T13	13	7/8	60.00 - 80.00	0.6000	0.6000
T13	14	7/8	60.00 - 80.00	0.6000	0.6000
T13	15	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	16	7/8	60.00 - 80.00	0.6000	0.6000
T13	17	7/8	60.00 - 80.00	0.6000	0.6000
T13	18	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	19	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	20	3" Flex Conduit w Fiber & 2 DC Cables	60.00 - 80.00	1.0000	0.6000
T13	21	RFS Hybriflex (3 Sector)	60.00 - 80.00	0.6000	0.6000
T13	23	1-5/8" Fiber Optic Cable	60.00 - 80.00	0.6000	0.6000
T13	24	1/2	60.00 - 80.00	0.6000	0.6000
T13	25	1/2	60.00 - 80.00	0.6000	0.6000
T13	26	Hybrid Cable (1.689 OD)	60.00 - 80.00	0.6000	0.6000
T13	28	Hybrid HCS 9x18 10 AWG (1-1/4")	60.00 - 80.00	0.6000	0.6000
T13	30	1 1/4	60.00 - 80.00	0.6000	0.6000
T13	31	Hybrid HCS 6x12 4 AWG (1-5/8")	60.00 - 80.00	0.6000	0.6000
T13	33	7/8	60.00 - 80.00	0.6000	0.6000
T13	34	7/8	60.00 - 80.00	0.6000	0.6000
T14	2	WEP65	50.00 - 60.00	0.6000	0.6000
T14	3	WEP65	50.00 - 60.00	0.6000	0.6000
T14	4	1/2	50.00 - 60.00	1.0000	1.0000
T14	5	1/2	50.00 - 60.00	1.0000	1.0000
T14	6	7/8	50.00 - 60.00	0.6000	0.6000
T14	7	1/2	50.00 - 60.00	0.6000	0.6000
T14	8	7/8	50.00 - 60.00	0.6000	0.6000
T14	10	1/2	50.00 - 56.00	0.6000	0.6000
T14	11	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	12	7/8	50.00 - 60.00	0.6000	0.6000
T14	13	7/8	50.00 - 60.00	0.6000	0.6000
T14	14	7/8	50.00 - 60.00	0.6000	0.6000
T14	15	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	16	7/8	50.00 - 60.00	0.6000	0.6000
T14	17	7/8	50.00 - 60.00	0.6000	0.6000
T14	18	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	19	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	20	3" Flex Conduit w Fiber & 2 DC Cables	50.00 - 60.00	1.0000	0.6000
T14	21	RFS Hybriflex (3 Sector)	50.00 - 60.00	0.6000	0.6000
T14	23	1-5/8" Fiber Optic Cable	50.00 - 60.00	0.6000	0.6000
T14	24	1/2	50.00 - 60.00	0.6000	0.6000
T14	25	1/2	50.00 - 60.00	0.6000	0.6000
T14	26	Hybrid Cable (1.689 OD)	50.00 - 60.00	0.6000	0.6000
T14	28	Hybrid HCS 9x18 10 AWG (1-1/4")	50.00 - 60.00	0.6000	0.6000
T14	30	1 1/4	50.00 - 60.00	0.6000	0.6000
T14	31	Hybrid HCS 6x12 4 AWG (1-5/8")	50.00 - 60.00	0.6000	0.6000
T14	33	7/8	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	34	7/8	50.00 - 60.00	0.6000	0.6000
T15	2	WEP65	40.00 - 50.00	0.6000	0.6000
T15	3	WEP65	40.00 - 50.00	0.6000	0.6000
T15	4	1/2	40.00 - 50.00	1.0000	1.0000
T15	5	1/2	40.00 - 50.00	1.0000	1.0000
T15	6	7/8	40.00 - 50.00	0.6000	0.6000
T15	7	1/2	40.00 - 50.00	0.6000	0.6000
T15	8	7/8	40.00 - 50.00	0.6000	0.6000
T15	9	1/2	40.00 - 47.00	0.6000	0.6000
T15	10	1/2	40.00 - 50.00	0.6000	0.6000
T15	11	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	12	7/8	40.00 - 50.00	0.6000	0.6000
T15	13	7/8	40.00 - 50.00	0.6000	0.6000
T15	14	7/8	40.00 - 50.00	0.6000	0.6000
T15	15	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	16	7/8	40.00 - 50.00	0.6000	0.6000
T15	17	7/8	40.00 - 50.00	0.6000	0.6000
T15	18	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	19	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	20	3" Flex Conduit w Fiber & 2 DC Cables	40.00 - 50.00	1.0000	0.6000
T15	21	RFS Hybriflex (3 Sector)	40.00 - 50.00	0.6000	0.6000
T15	23	1-5/8" Fiber Optic Cable	40.00 - 50.00	0.6000	0.6000
T15	24	1/2	40.00 - 50.00	0.6000	0.6000
T15	25	1/2	40.00 - 50.00	0.6000	0.6000
T15	26	Hybrid Cable (1.689 OD)	40.00 - 50.00	0.6000	0.6000
T15	28	Hybrid HCS 9x18 10 AWG (1-1/4")	40.00 - 50.00	0.6000	0.6000
T15	30	1 1/4	40.00 - 50.00	0.6000	0.6000
T15	31	Hybrid HCS 6x12 4 AWG (1-5/8")	40.00 - 50.00	0.6000	0.6000
T15	33	7/8	40.00 - 50.00	0.6000	0.6000
T15	34	7/8	40.00 - 50.00	0.6000	0.6000
T16	2	WEP65	30.00 - 40.00	0.6000	0.6000
T16	3	WEP65	30.00 - 40.00	0.6000	0.6000
T16	4	1/2	30.00 - 40.00	1.0000	1.0000
T16	5	1/2	30.00 - 40.00	1.0000	1.0000
T16	6	7/8	30.00 - 40.00	0.6000	0.6000
T16	7	1/2	30.00 - 40.00	0.6000	0.6000
T16	8	7/8	30.00 - 40.00	0.6000	0.6000
T16	9	1/2	30.00 - 40.00	0.6000	0.6000
T16	10	1/2	30.00 - 40.00	0.6000	0.6000
T16	11	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	12	7/8	30.00 - 40.00	0.6000	0.6000
T16	13	7/8	30.00 - 40.00	0.6000	0.6000
T16	14	7/8	30.00 - 40.00	0.6000	0.6000
T16	15	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	16	7/8	30.00 - 40.00	0.6000	0.6000
T16	17	7/8	30.00 - 40.00	0.6000	0.6000
T16	18	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	19	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	20	3" Flex Conduit w Fiber & 2 DC Cables	30.00 - 40.00	1.0000	0.6000
T16	21	RFS Hybriflex (3 Sector)	30.00 - 40.00	0.6000	0.6000
T16	23	1-5/8" Fiber Optic Cable	30.00 - 40.00	0.6000	0.6000
T16	24	1/2	30.00 - 40.00	0.6000	0.6000
T16	25	1/2	30.00 - 40.00	0.6000	0.6000
T16	26	Hybrid Cable (1.689 OD)	30.00 - 40.00	0.6000	0.6000
T16	28	Hybrid HCS 9x18 10 AWG (1-1/4")	30.00 - 40.00	0.6000	0.6000
T16	30	1 1/4	30.00 - 40.00	0.6000	0.6000
T16	31	Hybrid HCS 6x12 4 AWG	30.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		(1-5/8")			
T16	33	7/8	30.00 - 40.00	0.6000	0.6000
T16	34	7/8	30.00 - 40.00	0.6000	0.6000
T17	2	WEP65	20.00 - 30.00	0.6000	0.6000
T17	3	WEP65	20.00 - 30.00	0.6000	0.6000
T17	4	1/2	20.00 - 30.00	1.0000	1.0000
T17	5	1/2	20.00 - 30.00	1.0000	1.0000
T17	6	7/8	20.00 - 30.00	0.6000	0.6000
T17	7	1/2	20.00 - 30.00	0.6000	0.6000
T17	8	7/8	20.00 - 30.00	0.6000	0.6000
T17	9	1/2	20.00 - 30.00	0.6000	0.6000
T17	10	1/2	20.00 - 30.00	0.6000	0.6000
T17	11	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	12	7/8	20.00 - 30.00	0.6000	0.6000
T17	13	7/8	20.00 - 30.00	0.6000	0.6000
T17	14	7/8	20.00 - 30.00	0.6000	0.6000
T17	15	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	16	7/8	20.00 - 30.00	0.6000	0.6000
T17	17	7/8	20.00 - 30.00	0.6000	0.6000
T17	18	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	19	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	20	3" Flex Conduit w Fiber & 2 DC Cables	20.00 - 30.00	1.0000	0.6000
T17	21	RFS Hybriflex (3 Sector)	20.00 - 30.00	0.6000	0.6000
T17	23	1-5/8" Fiber Optic Cable	20.00 - 30.00	0.6000	0.6000
T17	24	1/2	20.00 - 30.00	0.6000	0.6000
T17	25	1/2	20.00 - 30.00	0.6000	0.6000
T17	26	Hybrid Cable (1.689 OD)	20.00 - 30.00	0.6000	0.6000
T17	28	Hybrid HCS 9x18 10 AWG (1-1/4")	20.00 - 30.00	0.6000	0.6000
T17	30	1 1/4	20.00 - 30.00	0.6000	0.6000
T17	31	Hybrid HCS 6x12 4 AWG (1-5/8")	20.00 - 30.00	0.6000	0.6000
T17	33	7/8	20.00 - 30.00	0.6000	0.6000
T17	34	7/8	20.00 - 30.00	0.6000	0.6000
T18	2	WEP65	10.00 - 20.00	0.6000	0.6000
T18	3	WEP65	10.00 - 20.00	0.6000	0.6000
T18	4	1/2	10.00 - 20.00	1.0000	1.0000
T18	5	1/2	10.00 - 20.00	1.0000	1.0000
T18	6	7/8	10.00 - 20.00	0.6000	0.6000
T18	7	1/2	10.00 - 20.00	0.6000	0.6000
T18	8	7/8	10.00 - 20.00	0.6000	0.6000
T18	9	1/2	10.00 - 20.00	0.6000	0.6000
T18	10	1/2	10.00 - 20.00	0.6000	0.6000
T18	11	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	12	7/8	10.00 - 20.00	0.6000	0.6000
T18	13	7/8	10.00 - 20.00	0.6000	0.6000
T18	14	7/8	10.00 - 20.00	0.6000	0.6000
T18	15	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	16	7/8	10.00 - 20.00	0.6000	0.6000
T18	17	7/8	10.00 - 20.00	0.6000	0.6000
T18	18	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	19	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	20	3" Flex Conduit w Fiber & 2 DC Cables	10.00 - 20.00	1.0000	0.6000
T18	21	RFS Hybriflex (3 Sector)	10.00 - 20.00	0.6000	0.6000
T18	23	1-5/8" Fiber Optic Cable	10.00 - 20.00	0.6000	0.6000
T18	24	1/2	10.00 - 20.00	0.6000	0.6000
T18	25	1/2	10.00 - 20.00	0.6000	0.6000
T18	26	Hybrid Cable (1.689 OD)	10.00 - 20.00	0.6000	0.6000
T18	28	Hybrid HCS 9x18 10 AWG (1-1/4")	10.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T18	30	1 1/4	10.00 - 20.00	0.6000	0.6000
T18	31	Hybrid HCS 6x12 4 AWG (1-5/8")	10.00 - 20.00	0.6000	0.6000
T18	33	7/8	10.00 - 20.00	0.6000	0.6000
T18	34	7/8	10.00 - 20.00	0.6000	0.6000
T19	2	WEP65	6.00 - 10.00	0.6000	0.6000
T19	3	WEP65	6.00 - 10.00	0.6000	0.6000
T19	4	1/2	6.00 - 10.00	1.0000	1.0000
T19	5	1/2	6.00 - 10.00	1.0000	1.0000
T19	6	7/8	6.00 - 10.00	0.6000	0.6000
T19	7	1/2	6.00 - 10.00	0.6000	0.6000
T19	8	7/8	6.00 - 10.00	0.6000	0.6000
T19	9	1/2	6.00 - 10.00	0.6000	0.6000
T19	10	1/2	6.00 - 10.00	0.6000	0.6000
T19	11	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	12	7/8	6.00 - 10.00	0.6000	0.6000
T19	13	7/8	6.00 - 10.00	0.6000	0.6000
T19	14	7/8	6.00 - 10.00	0.6000	0.6000
T19	15	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	16	7/8	6.00 - 10.00	0.6000	0.6000
T19	17	7/8	6.00 - 10.00	0.6000	0.6000
T19	18	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	19	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	20	3" Flex Conduit w Fiber & 2 DC Cables	6.00 - 10.00	1.0000	0.6000
T19	21	RFS Hybriflex (3 Sector)	6.00 - 10.00	0.6000	0.6000
T19	23	1-5/8" Fiber Optic Cable	6.00 - 10.00	0.6000	0.6000
T19	24	1/2	6.00 - 10.00	0.6000	0.6000
T19	25	1/2	6.00 - 10.00	0.6000	0.6000
T19	26	Hybrid Cable (1.689 OD)	6.00 - 10.00	0.6000	0.6000
T19	28	Hybrid HCS 9x18 10 AWG (1-1/4")	6.00 - 10.00	0.6000	0.6000
T19	30	1 1/4	6.00 - 10.00	0.6000	0.6000
T19	31	Hybrid HCS 6x12 4 AWG (1-5/8")	6.00 - 10.00	0.6000	0.6000
T19	33	7/8	6.00 - 10.00	0.6000	0.6000
T19	34	7/8	6.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DB803M-Y (A1 / D&K-1)	A	From Leg	3.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	0.50 0.68 0.87	0.50 0.68 0.87	0.00 0.01 0.02
3' Stand-off (A1 / D&K-1)	A	None		0.0000	50.00	No Ice 1/2" Ice 1" Ice	1.00 1.20 1.40	2.00 2.70 3.40	0.05 0.07 0.10
GPS (A2 / Sprint)	B	From Face	4.00 0.00	0.0000	61.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	2.00	2.00	0.02
3'4"x4" Pipe Mount (A2 / Sprint)	B	None		0.0000	61.00	No Ice	0.88	0.88	0.04
						1/2" Ice	1.27	1.27	0.05
						1" Ice	1.49	1.49	0.06
2'6"x4" Pipe Mount (A3 / D&K-3)	A	None		0.0000	71.00	No Ice	0.64	0.64	0.03
						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05
Dish Ice Shield (A3 / D&K-3)	A	From Leg	0.50 0.00	0.0000	75.00	No Ice	4.00	4.00	0.20
						1/2" Ice	5.07	5.07	0.25
			0.00			1" Ice	6.14	6.14	0.30
SC479-HF1LDF (A4 / D&K-4)	A	From Leg	10.00 0.00	0.0000	79.00 - 91.00	No Ice	4.84	4.84	0.03
						1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
10' Standoff (A4 / D&K-4)	A	None		0.0000	91.00	No Ice	17.00	17.00	0.55
						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
DB264-A (A5 / D&K-11)	A	From Leg	4.00 0.00	0.0000	106.00 - 86.00	No Ice	3.16	3.16	0.04
						1/2" Ice	5.69	5.69	0.05
			0.00			1" Ice	8.22	8.22	0.06
4' Side Mount Standoff (A5 / D&K-11)	A	None		0.0000	86.00	No Ice	2.72	2.72	0.05
						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
10'6"x4" Pipe Mount (A6 / D&K-12 / CSP-11)	C	None		0.0000	106.00	No Ice	3.27	3.27	0.11
						1/2" Ice	5.62	5.62	0.15
						1" Ice	6.25	6.25	0.19
3" Dia 20' Omni (A7 / D&K-13)	D	From Leg	6.00 0.00	0.0000	127.00 - 107.00	No Ice	4.00	4.00	0.06
						1/2" Ice	6.00	6.00	0.10
			0.00			1" Ice	8.00	8.00	0.14
6' Side-Arm Mount (A7 / D&K-13)	D	None		0.0000	107.00	No Ice	10.60	10.60	0.14
						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
PD128-1 (A8 / D&K-14)	C	From Leg	10.00 0.00	0.0000	128.00 - 121.00	No Ice	1.00	1.00	0.01
						1/2" Ice	1.80	1.80	0.02
			0.00			1" Ice	2.60	2.60	0.02
10' Standoff (A8 / D&K-14)	C	None		0.0000	121.00	No Ice	17.00	17.00	0.55
						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
12' Omni Antenna (A9 - D&K-15)	D	From Leg	6.00 0.00	0.0000	116.00 - 106.00	No Ice	5.06	5.06	0.03
						1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
6' Side-Arm Mount (A9 - D&K-15)	D	None		0.0000	106.00	No Ice	10.60	10.60	0.14
						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
2'6"x4" Pipe Mount (A10 / D&K-25)	A	None		0.0000	125.00	No Ice	0.63	0.63	0.03
						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05
Dish Ice Shield (A11 / D&K-26)	A	From Leg	0.50 0.00	0.0000	130.00	No Ice	4.00	4.00	0.20
						1/2" Ice	5.07	5.07	0.25
			0.00			1" Ice	6.14	6.14	0.30
BA1010 (A12 / D&K-27)	C	From Leg	6.00 0.00	0.0000	127.00 - 132.00	No Ice	1.55	1.55	0.01
						1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
BA1010 (A14 / D&K-29)	C	From Leg	6.00 0.00	0.0000	137.00 - 132.00	No Ice	1.55	1.55	0.01
						1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
432E-83I-01T TTA Unit (A13 / D&K-28)	C	From Leg	6.00 0.00	0.0000	132.00	No Ice	2.85	0.97	0.03
						1/2" Ice	3.06	1.11	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	3.28	1.26	0.07
6' Side-Arm Mount (A12,13,14 / D&K-27,28,29)	C	None		0.0000	132.00	No Ice	10.60	10.60	0.14
						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
12' Omni Antenna (A15 / D&K-30)	C	From Leg	8.00	0.0000	152.00 - 140.50	No Ice	5.06	5.06	0.03
			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
8' Side Arm Mount (A15 / D&K-30)	C	None		0.0000	140.50	No Ice	17.20	17.20	0.33
						1/2" Ice	24.50	24.50	0.45
						1" Ice	31.80	31.80	0.57
DB222-A (A16 / D&K-31)	A	From Leg	4.00	0.0000	136.50	No Ice	1.60	1.60	0.02
			0.00			1/2" Ice	2.88	2.88	0.02
			0.00			1" Ice	4.16	4.16	0.03
4' Side Mount Standoff (A16 / D&K-31)	A	None		0.0000	136.50	No Ice	2.72	2.72	0.05
						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
Yagi ASP-816 (A17 / D&K-32)	A	From Leg	6.00	0.0000	139.00	No Ice	0.92	0.02	0.01
			0.00			1/2" Ice	1.21	0.05	0.01
			0.00			1" Ice	1.51	0.08	0.02
6' Side-Arm Mount (A17 / D&K-32)	A	None		0.0000	139.00	No Ice	10.60	10.60	0.14
						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
6' Side-Arm Mount (A18 / D&K-33)	D	None		0.0000	139.00	No Ice	10.60	10.60	0.14
						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
*** Following Are D&K NOT Inventoried Appurtenances									
DB408-B (A19)	D	From Leg	6.00	0.0000	161.00	No Ice	1.65	1.65	0.02
			0.00			1/2" Ice	2.61	2.61	0.03
			0.00			1" Ice	3.60	3.60	0.05
(2) 6' Side Mount Standoff (A19)	D	None		0.0000	161.00	No Ice	1.40	0.13	0.01
						1/2" Ice	1.56	0.21	0.02
						1" Ice	1.73	0.30	0.02
BA1010-2 (A20)	C	From Leg	2.50	0.0000	169.00	No Ice	1.40	1.40	0.02
			0.00			1/2" Ice	1.77	1.77	0.03
			0.00			1" Ice	2.16	2.16	0.05
15' T-Frame Sector Mount (1) (A20)	C	None		0.0000	169.00	No Ice	15.00	15.00	0.50
						1/2" Ice	20.60	20.60	0.65
						1" Ice	26.20	26.20	0.80
DB586-Y (A21)	C	From Leg	3.00	0.0000	170.00	No Ice	1.01	1.01	0.01
			0.00			1/2" Ice	1.28	1.28	0.02
			0.00			1" Ice	1.56	1.56	0.03
10'6"x4" Pipe Mount (A22)	A	From Leg	0.50	0.0000	170.00	No Ice	3.17	3.17	0.11
			0.00			1/2" Ice	5.62	5.62	0.15
			0.00			1" Ice	6.25	6.25	0.19
SC479-HF1LDF (D00I-E5764) (A23)	D	From Leg	2.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1) (A23,24,30,31)	D	From Face	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
			0.00			1" Ice	26.20	26.20	0.80
SC479-HF1LDF (D00I-E5764) (A24)	D	From Face	2.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
10'6"x4" Pipe Mount (A25)	C	From Leg	0.50	0.0000	173.00	No Ice	3.16	3.16	0.11
			0.00			1/2" Ice	5.62	5.62	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	6.25	6.25	0.19
SC479-HF1LDF	A	From Leg	3.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A26)			0.00			1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1)	B	From Face	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
(A26,27,28,29)			0.00			1/2" Ice	20.60	20.60	0.65
			0.00			1" Ice	26.20	26.20	0.80
TMA 432-83H-01T - Future	A	From Leg	2.00	0.0000	181.00	No Ice	1.63	0.95	0.03
Decom.			0.00			1/2" Ice	1.81	1.09	0.04
(A27)			0.00			1" Ice	1.99	1.24	0.05
SC479-HF1LDF	A	From Leg	3.00	0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A28)			0.00			1" Ice	8.04	8.04	0.11
ANT150D	A	From Leg	1.00	0.0000	183.00	No Ice	7.00	2.02	0.08
(A29a)			0.00			1/2" Ice	7.47	2.90	0.12
			0.00			1" Ice	7.95	3.79	0.17
DB222	A	From Leg	1.50	0.0000	183.00	No Ice	1.60	1.60	0.02
(A29b)			0.00			1/2" Ice	2.88	2.88	0.02
			0.00			1" Ice	4.16	4.16	0.03
SC479-HF1LDF	D	From Leg	2.00	0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A30)			0.00			1" Ice	8.04	8.04	0.11
ALR8-0	C	From Leg	1.00	0.0000	183.00	No Ice	3.99	3.99	0.05
(A31)			0.00			1/2" Ice	8.21	8.21	0.11
			0.00			1" Ice	8.94	8.94	0.17
Lightning Rod 2"x15'	C	None		0.0000	185.00	No Ice	3.00	3.00	0.08
(A32)						1/2" Ice	4.53	4.53	0.10
						1" Ice	6.07	6.07	0.14
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	175.00	No Ice	3.16	3.16	0.11
(A33)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00			1" Ice	6.25	6.25	0.19
*** Empire EMP-004 Inventory									
T-Frame	A	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
T-Frame	B	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
T-Frame	C	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
7770.00	A	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00			1" Ice	6.78	5.28	0.15
(2) LGP 21901 Diplexer Unit	A	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	A	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00			1" Ice	16.60	6.82	0.27
QS66512-3 Quintel Panel	A	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00			1" Ice	9.51	10.09	0.28
RRUS-11	A	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00			1" Ice	3.47	1.59	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Raycap DC6-48-60-18-8F	A	From Leg	2.00	0.0000	163.00	No Ice	1.27	1.27	0.05
DC Power Surge Protection			0.00			1/2" Ice	1.46	1.46	0.07
(AT&T)			0.00			1" Ice	1.66	1.66	0.08
7770.00	B	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00			1" Ice	6.78	5.28	0.15
(2) LGP 21901 Diplexer Unit	B	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	B	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00			1" Ice	16.60	6.82	0.27
QS66512-3 Quintel Panel	B	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00			1" Ice	9.51	10.09	0.28
RRUS-11	B	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00			1" Ice	3.47	1.59	0.09
7770.00	C	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00			1" Ice	6.78	5.28	0.15
(2) LGP 21901 Diplexer Unit	C	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	C	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00			1" Ice	16.60	6.82	0.27
QS66512-3 Quintel Panel	C	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00			1" Ice	9.51	10.09	0.28
RRUS-11	C	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00			1" Ice	3.47	1.59	0.09
4478 Radio Unit (4x40W)	A	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00			1" Ice	1.58	1.58	0.09
4478 Radio Unit (4x40W)	B	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00			1" Ice	1.58	1.58	0.09
4478 Radio Unit (4x40W)	C	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00			1" Ice	1.58	1.58	0.09
RRUS-32 B66	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B66	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B66	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B2	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B2	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS-32 B2	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
DC6-48-60-18-8C Squid /	B	From Leg	2.00	0.0000	163.00	No Ice	1.79	1.79	0.03
Surge Arrestor			0.00			1/2" Ice	2.02	2.02	0.05
(AT&T)			0.00			1" Ice	2.27	2.27	0.07
DC6-48-60-18-8C Squid /	C	From Leg	2.00	0.0000	163.00	No Ice	1.79	1.79	0.03
Surge Arrestor			0.00			1/2" Ice	2.02	2.02	0.05
(AT&T)			0.00			1" Ice	2.27	2.27	0.07
(2) LPG21401 TMA	A	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
(2) LPG21401 TMA	B	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
(2) LPG21401 TMA	C	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
*** Empire EMP-004 Inventory ** Sprint Equipment ASM-008									
12' Wireless Frame	A	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
12' Wireless Frame	B	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
12' Wireless Frame	C	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
APXVSPP18-C-A20 w/	A	From Leg	1.50	0.0000	105.00	No Ice	8.02	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.48	8.19	0.18
(Sprint)			0.00			1" Ice	8.94	9.02	0.26
APXVSPP18-C-A20 w/	B	From Leg	1.50	0.0000	105.00	No Ice	8.02	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.48	8.19	0.18
(Sprint)			0.00			1" Ice	8.94	9.02	0.26
APXVSPP18-C-A20 w/	C	From Leg	1.50	0.0000	105.00	No Ice	8.02	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.48	8.19	0.18
(Sprint)			0.00			1" Ice	8.94	9.02	0.26
ALU 800MHz 2x50W	A	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint)			0.00			1/2" Ice	2.61	2.46	0.09
			2.50			1" Ice	2.83	2.68	0.11
ALU 800MHz 2x50W	B	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint)			0.00			1/2" Ice	2.61	2.46	0.09
			2.50			1" Ice	2.83	2.68	0.11
ALU 800MHz 2x50W	C	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint)			0.00			1/2" Ice	2.61	2.46	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.50			1" Ice	2.83	2.68	0.11
ALU 4x45W (1900 MHz) (Sprint)	A	From Leg	1.50 0.00 -2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	2.96 3.21 3.46	1.81 2.02 2.25	0.06 0.08 0.10
ALU 4x45W (1900 MHz) (Sprint)	B	From Leg	1.50 0.00 -2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	2.96 3.21 3.46	1.81 2.02 2.25	0.06 0.08 0.10
ALU 4x45W (1900 MHz) (Sprint)	C	From Leg	1.50 0.00 -2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	2.96 3.21 3.46	1.81 2.02 2.25	0.06 0.08 0.10
AAHC Panel Antenna (Sprint)	A	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.90 5.20 5.51	2.40 2.63 2.87	0.10 0.14 0.17
AAHC Panel Antenna (Sprint)	B	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.90 5.20 5.51	2.40 2.63 2.87	0.10 0.14 0.17
AAHC Panel Antenna (Sprint)	C	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.90 5.20 5.51	2.40 2.63 2.87	0.10 0.14 0.17
NNVV-65B-R4 Panel Antenna (Sprint)	A	From Leg	1.50 5.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	13.72 14.32 14.92	5.75 6.21 6.67	0.09 0.16 0.24
NNVV-65B-R4 Panel Antenna (Sprint)	B	From Leg	1.50 5.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	13.72 14.32 14.92	5.75 6.21 6.67	0.09 0.16 0.24
NNVV-65B-R4 Panel Antenna (Sprint)	C	From Leg	1.50 5.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	13.72 14.32 14.92	5.75 6.21 6.67	0.09 0.16 0.24
TD-RRH8x20-25 (Sprint)	A	From Leg	1.50 0.00 2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	0.07 0.10 0.13
TD-RRH8x20-25 (Sprint)	B	From Leg	1.50 0.00 2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	0.07 0.10 0.13
TD-RRH8x20-25 (Sprint)	C	From Leg	1.50 0.00 2.50	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.72 5.01 5.32	1.70 1.92 2.14	0.07 0.10 0.13
** Sprint Equipment ASM-008 ** T-Mobile Equipment TWM-013									
EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	A	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	8.91 12.66 16.41	3.67 5.24 6.81	0.41 0.51 0.61
EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	D	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	8.91 12.66 16.41	3.67 5.24 6.81	0.41 0.51 0.61
EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	B	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	8.91 12.66 16.41	3.67 5.24 6.81	0.41 0.51 0.61
RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	A	From Leg	4.00 -3.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.03 12.55 14.10	0.19 0.32 0.47
RFS APXVAARR24_43-U-NA20	B	From Leg	4.00 -3.00	0.0000	122.00	No Ice 1/2" Ice	20.48 21.23	11.03 12.55	0.19 0.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Panel Antenna w/ 108" Pipe Mount (T-Mobile)			0.00			1" Ice	21.99	14.10	0.47
RFS APXVAARR24_43-U-NA20	D	From Leg	4.00 -3.00	0.0000	122.00	No Ice 1/2" Ice	20.48 21.23	11.03 12.55	0.19 0.32
Panel Antenna w/ 108" Pipe Mount (T-Mobile)			0.00			1" Ice	21.99	14.10	0.47
Generic Twin TMA unit (T-Mobile)	A	From Leg	4.00 -3.00 3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	0.37 0.46 0.55	0.96 1.09 1.22	0.03 0.03 0.04
Generic Twin TMA unit (T-Mobile)	B	From Leg	4.00 -3.00 3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	0.37 0.46 0.55	0.96 1.09 1.22	0.03 0.03 0.04
Generic Twin TMA unit (T-Mobile)	D	From Leg	4.00 -3.00 3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	0.37 0.46 0.55	0.96 1.09 1.22	0.03 0.03 0.04
Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	A	From Leg	4.00 -3.00 -3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	1.16 1.29 1.44	0.08 0.10 0.11
Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	B	From Leg	4.00 -3.00 -3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	1.16 1.29 1.44	0.08 0.10 0.11
Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	D	From Leg	4.00 -3.00 -3.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	1.66 1.82 1.98	1.16 1.29 1.44	0.08 0.10 0.11
Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	A	From Leg	4.00 3.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	7.53 8.35 9.18	6.85 8.13 9.44	0.17 0.23 0.31
Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	B	From Leg	4.00 3.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	7.53 8.35 9.18	6.85 8.13 9.44	0.17 0.23 0.31
Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	D	From Leg	4.00 3.00 0.00	0.0000	122.00	No Ice 1/2" Ice 1" Ice	7.53 8.35 9.18	6.85 8.13 9.44	0.17 0.23 0.31
** T-Mobile Equipment TWM-013									
** Eversource Proposed Equipment									
871F-70-220-025 Antenna (Eversource - Proposed)	A	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	0.82 1.12 1.41	0.82 1.12 1.41	0.01 0.03 0.04
ANT220F2 w/clamps (Eversource - Proposed)	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	0.58 0.81 1.04	0.58 0.81 1.04	0.01 0.03 0.04
Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	A	From Leg	0.50 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.25 1.49 1.73	2.50 2.76 3.02	0.17 0.20 0.23
Site Pro USF-4U w/ (2) Stiff-Arm Supports (Eversource - Proposed)	B	From Leg	0.50 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	1.25 1.49 1.73	2.50 2.76 3.02	0.17 0.20 0.23

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 ft²	Weight K
4' Grid Dish	C	Grid	From	1.00	Worst		106.00	4.00	No Ice	12.57	0.06
(A6 / D&K 12 /			Leg	0.00					1/2" Ice	13.10	0.11
CSP-11)				0.00					1" Ice	13.62	0.17
6' PAD w/ Radome	A	Paraboloid	From	0.50	Worst		125.00	6.00	No Ice	28.27	0.24
(A10 / D&K-25)		w/Radome	Leg	0.00					1/2" Ice	29.07	0.29
				0.00					1" Ice	29.87	0.34
6' PAD w/ Radome	B	Paraboloid	From	1.00	Worst		175.00	6.00	No Ice	28.27	0.24
(A33)		w/Radome	Leg	0.00					1/2" Ice	29.07	0.29
				0.00					1" Ice	29.87	0.34
6' PAD w/ Radome	A	Paraboloid	From	0.50	Worst		170.00	6.00	No Ice	28.27	0.24
(A22 /)		w/Radome	Leg	0.00					1/2" Ice	29.07	0.29
				0.00					1" Ice	29.87	0.34
6' PAD w/ Radome	C	Paraboloid	From	0.50	Worst		173.00	6.00	No Ice	28.27	0.24
(A25 /)		w/Radome	Leg	0.00					1/2" Ice	29.07	0.29
				0.00					1" Ice	29.87	0.34

222-H Verification Constants

Constant	Value
K_d	0.85
Ice Thickness Importance Factor	1.15
Z_g	900
α	9.5
K_{zmin}	0.85
K_c	1
K_t	0.53
f	2
K_e	1

222-H Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
T1					A		Sum:	0.000	0.000	0.000	0.000
180.00-170.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T2					A		Sum:	0.000	0.000	0.000	0.000
170.00-163.57					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T3					A		Sum:	0.000	0.000	0.000	0.000
163.57-159.05					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
T4					A		Sum:	0.000	0.000	0.000	0.000
159.05-154.52					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T5					A		Sum:	0.000	0.000	0.000	0.000
154.52-150.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T6					A		Sum:	0.000	0.000	0.000	0.000
150.00-140.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T7					A		Sum:	0.000	0.000	0.000	0.000
140.00-130.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T8					A		Sum:	0.000	0.000	0.000	0.000
130.00-120.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T9					A		Sum:	0.000	0.000	0.000	0.000
120.00-110.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T10					A		Sum:	0.000	0.000	0.000	0.000
110.00-100.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T11					A		Sum:	0.000	0.000	0.000	0.000
100.00-90.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T12 90.00-80.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T13 80.00-60.00	220	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	D	0.167	0.234	14.185	17.421	6.062	10.126
	220	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	A	0.167	0.234	14.185	17.421	6.062	10.126
	221	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	D	0.167	0.234	14.185	17.421	6.062	10.126
	221	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	C	0.167	0.234	14.185	17.421	6.062	10.126
	222	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	C	0.167	0.234	14.185	17.421	6.062	10.126
	222	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	B	0.167	0.234	14.185	17.421	6.062	10.126
	223	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	B	0.167	0.234	14.185	17.421	6.062	10.126
	223	L8x8x1 w/ 1/2x7 Plates	105.912	46.931	A	0.167	0.234	14.185	17.421	6.062	10.126
					A		Sum:	28.370	34.842	12.125	20.253
					B			28.370	34.842	12.125	20.253
					C			28.370	34.842	12.125	20.253
					D			28.370	34.842	12.125	20.253
T14 60.00-50.00	249	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	D	0.163	0.235	7.092	8.709	3.018	5.065
	249	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	A	0.163	0.235	7.092	8.709	3.018	5.065

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
	250	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	D	0.163	0.235	7.092	8.709	3.018	5.065
	250	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	C	0.163	0.235	7.092	8.709	3.018	5.065
	251	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	C	0.163	0.235	7.092	8.709	3.018	5.065
	251	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	B	0.163	0.235	7.092	8.709	3.018	5.065
	252	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	B	0.163	0.235	7.092	8.709	3.018	5.065
	252	L8x8x1-1/8 w/ 1/2x7 Plates	106.766	47.305	A	0.163	0.235	7.092	8.709	3.018	5.065
					A		Sum:	14.185	17.418	6.035	10.130
					B			14.185	17.418	6.035	10.130
					C			14.185	17.418	6.035	10.130
					D			14.185	17.418	6.035	10.130
T15 50.00-40.00	270	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	D	0.17	0.241	7.092	8.712	3.042	5.078
	270	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	A	0.17	0.241	7.092	8.712	3.042	5.078
	271	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	D	0.17	0.241	7.092	8.712	3.042	5.078
	271	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	C	0.17	0.241	7.092	8.712	3.042	5.078
	272	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	C	0.17	0.241	7.092	8.712	3.042	5.078
	272	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	B	0.17	0.241	7.092	8.712	3.042	5.078
	273	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	B	0.17	0.241	7.092	8.712	3.042	5.078
	273	L8x8x1-1/8 w/ 1/2x7 Plates	107.883	47.812	A	0.17	0.241	7.092	8.712	3.042	5.078
					A		Sum:	14.185	17.425	6.084	10.155
					B			14.185	17.425	6.084	10.155
					C			14.185	17.425	6.084	10.155
					D			14.185	17.425	6.084	10.155
T16 40.00-30.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T17 30.00-20.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T18 20.00-10.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T19 10.00-0.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000

222-H Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft^2
T1 180.00-170.00	175.00		1.424	218.026	1.005		53	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		52	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T3 163.57-159.05	161.31		1.4	143.081	1.007		52	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		52	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		51	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		51	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		50	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		50	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		49	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		49	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		49	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		49	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		49	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		49	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		50	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								D	0.17	6.084
T16 40.00-30.00	35.00		1.015	2.936	1.394		52	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		54	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000
								D	0.156	0.000
T18 20.00-10.00	15.00		0.85	1.587	1.78		56	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		66	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

222-H Section Verification Tables - Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00	175.00	1.424	218.026	1.005	1.0208	8	A	0.343	5.661
								B	0.343	5.661
								C	0.343	5.661
								D	0.343	5.661
T2 170.00-163.57	166.79	166.79	1.41	169.337	1.006	1.0164	8	A	0.385	3.787
								B	0.385	3.787
								C	0.385	3.787
								D	0.385	3.787
T3 163.57-159.05	161.31	161.31	1.4	143.081	1.007	1.0134	8	A	0.406	3.145
								B	0.406	3.145
								C	0.406	3.145
								D	0.406	3.145
T4 159.05-154.52	156.79	156.79	1.391	124.487	1.009	1.0110	8	A	0.352	2.502
								B	0.352	2.502
								C	0.352	2.502
								D	0.352	2.502
T5 154.52-150.00	152.26	152.26	1.383	108.309	1.01	1.0084	8	A	0.342	2.534
								B	0.342	2.534
								C	0.342	2.534
								D	0.342	2.534
T6 150.00-140.00	145.00	145.00	1.369	86.621	1.012	1.0044	8	A	0.348	6.226
								B	0.348	6.226
								C	0.348	6.226
								D	0.348	6.226
T7 140.00-130.00	135.00	135.00	1.348	63.678	1.017	0.9988	7	A	0.342	6.112
								B	0.342	6.112
								C	0.342	6.112
								D	0.342	6.112
T8 130.00-120.00	125.00	125.00	1.326	46.813	1.023	0.9932	7	A	0.292	5.353
								B	0.292	5.353
								C	0.292	5.353
								D	0.292	5.353
T9 120.00-110.00	115.00	115.00	1.303	34.414	1.031	0.9877	7	A	0.308	6.388

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								B	0.308	6.388
								C	0.308	6.388
								D	0.308	6.388
T10 110.00-100.00	105.00	105.00	1.279	25.299	1.042	0.9825	7	A	0.274	5.575
								B	0.274	5.575
								C	0.274	5.575
								D	0.274	5.575
T11 100.00-90.00	95.00	95.00	1.252	18.598	1.058	0.9777	7	A	0.292	5.732
								B	0.292	5.732
								C	0.292	5.732
								D	0.292	5.732
T12 90.00-80.00	85.00	85.00	1.223	13.672	1.079	0.9737	7	A	0.281	5.866
								B	0.281	5.866
								C	0.281	5.866
								D	0.281	5.866
T13 80.00-60.00	70.00	70.00	1.174	8.618	1.127	0.9695	7	A	0.234	27.249
								B	0.234	27.249
								C	0.234	27.249
								D	0.234	27.249
T14 60.00-50.00	55.00	55.00	1.116	5.432	1.205	0.9688	7	A	0.235	14.447
								B	0.235	14.447
								C	0.235	14.447
								D	0.235	14.447
T15 50.00-40.00	45.00	45.00	1.07	3.993	1.283	0.9708	7	A	0.241	14.701
								B	0.241	14.701
								C	0.241	14.701
								D	0.241	14.701
T16 40.00-30.00	35.00	35.00	1.015	2.936	1.394	0.9745	8	A	0.26	8.046
								B	0.26	8.046
								C	0.26	8.046
								D	0.26	8.046
T17 30.00-20.00	25.00	25.00	0.945	2.158	1.551	0.9783	8	A	0.226	6.810
								B	0.226	6.810
								C	0.226	6.810
								D	0.226	6.810
T18 20.00-10.00	15.00	15.00	0.85	1.587	1.78	0.9753	8	A	0.25	8.525
								B	0.25	8.525
								C	0.25	8.525
								D	0.25	8.525
T19 10.00-0.00	5.00	5.00	0.85	1.166	2.115	0.9283	10	A	0.237	8.162
								B	0.237	8.162
								C	0.237	8.162
								D	0.237	8.162

222-H Section Verification Tables - Service

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00		1.424	218.026	1.005		11	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000

Section Elevation	z_{wind}	z_{ice}	K_z	K_h	K_{zt}	t_z	q_z	Face	e	A_rR_r
ft	ft	ft				in	psf			ft^2
								D	0.246	0.000
T3 163.57-159.05	161.31		1.4	143.081	1.007		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		11	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		11	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		11	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		11	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		11	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		11	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		10	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		10	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		10	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		10	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		11	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		11	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084
								D	0.17	6.084
T16 40.00-30.00	35.00		1.015	2.936	1.394		11	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		11	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								D	0.156	0.000
T18 20.00-10.00	15.00		0.85	1.587	1.78		12	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		14	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	53	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.833	0.000
T2	166.79	1.41	52	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	21.503	0.000
T3	161.31	1.4	52	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	15.631	0.000
T4	156.79	1.391	52	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	15.902	0.000
T5	152.26	1.383	51	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	15.902	0.000
T6	145.00	1.369	51	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	35.592	0.000
T7	135.00	1.348	50	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	38.478	0.000
T8	125.00	1.326	50	90.466	A	17.878	0.000	10.013	56.01	10.086	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	39.798	0.000
T9	115.00	1.303	49	97.774	A	20.028	0.000	10.013	49.99	16.810	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	42.449	0.000
T10	105.00	1.279	49	104.945	A	19.757	0.000	10.013	50.68	20.799	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	19.757	0.000		50.68	31.060	0.000
					D	19.757	0.000		50.68	46.055	0.000
T11	95.00	1.252	49	112.984	A	23.872	0.000	13.350	55.93	23.458	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	47.537	0.000
T12	85.00	1.223	49	120.155	A	24.365	0.000	13.350	54.79	23.458	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	48.092	0.000
T13	70.00	1.174	49	263.233	A	15.516	28.370	28.370	64.64	46.916	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	98.164	0.000
T14	55.00	1.116	49	142.444	A	9.050	14.185	14.185	61.05	23.458	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	49.575	0.000
T15	45.00	1.07	50	149.614	A	11.192	14.185	14.185	55.90	23.458	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	50.213	0.000
T16	35.00	1.015	52	156.196	A	27.367	0.000	13.350	48.78	23.458	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	50.387	0.000
T17	25.00	0.945	54	163.366	A	25.467	0.000	13.350	52.42	23.458	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.033	0.000
					D	25.467	0.000		52.42	50.387	0.000
T18	15.00	0.85	56	170.539	A	28.533	0.000	13.350	46.79	23.458	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	30.987	0.000
					D	28.533	0.000		46.79	50.387	0.000
T19 10.00-0.00	5.00	0.85	66	177.715	A	28.435	0.000	13.350	46.95	9.383	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.328	0.000
					D	28.435	0.000		46.95	20.155	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	8	1.0208	63.375	A	12.491	9.229	9.236	42.52	0.000	0.000
180.00-170.00						B	12.491	9.229		42.52	0.000	0.000
						C	12.491	9.229		42.52	0.000	0.000
						D	12.491	9.229		42.52	46.559	0.000
T2	166.79	1.41	8	1.0164	41.110	A	9.832	6.011	7.533	47.55	0.000	0.000
170.00-163.57						B	9.832	6.011		47.55	0.000	0.000
						C	9.832	6.011		47.55	0.000	0.000
						D	9.832	6.011		47.55	49.580	0.000
T3	161.31	1.4	8	1.0134	29.673	A	7.122	4.922	5.305	44.05	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
163.57-159.05						B	7.122	4.922		44.05	0.000	0.000
						C	7.122	4.922		44.05	20.494	0.000
						D	7.122	4.922		44.05	36.361	0.000
T4	156.79	1.391	8	1.0110	31.139	A	6.903	4.056	5.302	48.38	0.000	0.000
159.05-154.52						B	6.903	4.056		48.38	0.000	0.000
						C	6.903	4.056		48.38	23.450	0.000
						D	6.903	4.056		48.38	37.443	0.000
T5	152.26	1.383	8	1.0084	32.605	A	7.011	4.134	5.298	47.54	0.000	0.000
154.52-150.00						B	7.011	4.134		47.54	0.000	0.000
						C	7.011	4.134		47.54	23.434	0.000
						D	7.011	4.134		47.54	37.414	0.000
T6	145.00	1.369	8	1.0044	77.309	A	16.767	10.120	11.696	43.50	0.000	0.000
150.00-140.00						B	16.767	10.120		43.50	0.000	0.000
						C	16.767	10.120		43.50	51.739	0.000
						D	16.767	10.120		43.50	83.837	0.000
T7	135.00	1.348	7	0.9988	84.961	A	19.051	9.971	13.346	45.99	0.000	0.000
140.00-130.00						B	19.051	9.971		45.99	0.000	0.000
						C	19.051	9.971		45.99	51.660	0.000
						D	19.051	9.971		45.99	93.262	0.000
T8	125.00	1.326	7	0.9932	92.122	A	17.878	8.977	13.328	49.63	23.795	0.000
130.00-120.00						B	17.878	8.977		49.63	0.000	0.000
						C	17.878	8.977		49.63	51.581	0.000
						D	17.878	8.977		49.63	95.401	0.000
T9	115.00	1.303	7	0.9877	99.421	A	20.028	10.620	13.309	43.43	39.598	0.000
120.00-110.00						B	20.028	10.620		43.43	0.000	0.000
						C	20.028	10.620		43.43	67.669	0.000
						D	20.028	10.620		43.43	100.184	0.000
T10	105.00	1.279	7	0.9825	106.583	A	19.757	9.430	13.292	45.54	51.500	0.000
110.00-100.00						B	19.757	9.430		45.54	0.000	0.000
						C	19.757	9.430		45.54	67.487	0.000
						D	19.757	9.430		45.54	110.379	0.000
T11	95.00	1.252	7	0.9777	114.615	A	23.872	9.610	16.614	49.62	59.388	0.000
100.00-90.00						B	23.872	9.610		49.62	0.000	0.000
						C	23.872	9.610		49.62	67.321	0.000
						D	23.872	9.610		49.62	114.389	0.000
T12 90.00-80.00	85.00	1.223	7	0.9737	121.778	A	24.365	9.886	16.600	48.47	59.317	0.000
						B	24.365	9.886		48.47	0.000	0.000
						C	24.365	9.886		48.47	67.179	0.000
						D	24.365	9.886		48.47	115.718	0.000
T13 80.00-60.00	70.00	1.174	7	0.9695	266.467	A	15.516	46.876	34.842	55.84	118.489	0.000
						B	15.516	46.876		55.84	0.000	0.000
						C	15.516	46.876		55.84	134.068	0.000
						D	15.516	46.876		55.84	237.847	0.000
T14 60.00-50.00	55.00	1.116	7	0.9688	144.059	A	9.050	24.843	17.418	51.39	59.232	0.000
						B	9.050	24.843		51.39	0.000	0.000
						C	9.050	24.843		51.39	67.009	0.000
						D	9.050	24.843		51.39	121.027	0.000
T15 50.00-40.00	45.00	1.07	7	0.9708	151.233	A	11.192	25.224	17.425	47.85	59.266	0.000
						B	11.192	25.224		47.85	0.000	0.000
						C	11.192	25.224		47.85	67.077	0.000
						D	11.192	25.224		47.85	123.906	0.000
T16 40.00-30.00	35.00	1.015	8	0.9745	157.821	A	27.367	13.695	16.603	40.43	59.331	0.000
						B	27.367	13.695		40.43	0.000	0.000
						C	27.367	13.695		40.43	67.207	0.000
						D	27.367	13.695		40.43	124.875	0.000
T17 30.00-20.00	25.00	0.945	8	0.9783	164.998	A	25.467	11.752	16.616	44.64	59.398	0.000
						B	25.467	11.752		44.64	0.000	0.000
						C	25.467	11.752		44.64	67.340	0.000
						D	25.467	11.752		44.64	125.092	0.000
T18 20.00-10.00	15.00	0.85	8	0.9753	172.166	A	28.533	14.571	16.606	38.52	59.346	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	28.533	14.571		38.52	0.000	0.000
						C	28.533	14.571		38.52	67.236	0.000
						D	28.533	14.571		38.52	124.922	0.000
T19 10.00-0.00	5.00	0.85	10	0.9283	179.263	A	28.435	14.026	16.449	38.74	23.409	0.000
						B	28.435	14.026		38.74	0.000	0.000
						C	28.435	14.026		38.74	26.237	0.000
						D	28.435	14.026		38.74	48.893	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	11	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.833	0.000
T2	166.79	1.41	11	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	21.503	0.000
T3	161.31	1.4	11	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	15.631	0.000
T4	156.79	1.391	11	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	15.902	0.000
T5	152.26	1.383	11	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	15.902	0.000
T6	145.00	1.369	11	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	35.592	0.000
T7	135.00	1.348	11	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	38.478	0.000
T8	125.00	1.326	11	90.466	A	17.878	0.000	10.013	56.01	10.086	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	39.798	0.000
T9	115.00	1.303	11	97.774	A	20.028	0.000	10.013	49.99	16.810	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	42.449	0.000
T10	105.00	1.279	10	104.945	A	19.757	0.000	10.013	50.68	20.799	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	19.757	0.000		50.68	31.060	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					D	19.757	0.000		50.68	46.055	0.000
T11	95.00	1.252	10	112.984	A	23.872	0.000	13.350	55.93	23.458	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	47.537	0.000
T12	85.00	1.223	10	120.155	A	24.365	0.000	13.350	54.79	23.458	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	48.092	0.000
T13	70.00	1.174	10	263.233	A	15.516	28.370	28.370	64.64	46.916	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	98.164	0.000
T14	55.00	1.116	11	142.444	A	9.050	14.185	14.185	61.05	23.458	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	49.575	0.000
T15	45.00	1.07	11	149.614	A	11.192	14.185	14.185	55.90	23.458	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	50.213	0.000
T16	35.00	1.015	11	156.196	A	27.367	0.000	13.350	48.78	23.458	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	50.387	0.000
T17	25.00	0.945	11	163.366	A	25.467	0.000	13.350	52.42	23.458	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.033	0.000
					D	25.467	0.000		52.42	50.387	0.000
T18	15.00	0.85	12	170.539	A	28.533	0.000	13.350	46.79	23.458	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	30.987	0.000
					D	28.533	0.000		46.79	50.387	0.000
T19 10.00-0.00	5.00	0.85	14	177.715	A	28.435	0.000	13.350	46.95	9.383	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.328	0.000
					D	28.435	0.000		46.95	20.155	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	53	1	1	12.491	2.20	220.13	D
180.00-170.00			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2	0.09	0.54	A	0.246	2.792	52	1	1	9.832	1.80	279.39	D
170.00-163.57			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3	0.14	0.39	A	0.246	2.789	52	1	1	7.122	1.64	362.48	D
163.57-159.05			B	0.246	2.789		1	1	7.122			
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4	0.15	0.36	A	0.227	2.866	52	1	1	6.903	1.69	373.30	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
159.05-154.52			B	0.227	2.866		1	1	6.903			
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.15	0.37	A	0.22	2.895	51	1	1	7.011	1.70	376.45	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.33	0.97	A	0.222	2.889	51	1	1	16.767	3.90	390.13	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.35	1.53	A	0.229	2.86	50	1	1	19.051	4.19	419.32	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.41	1.43	A	0.198	2.99	50	1	1	17.878	4.40	439.72	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
			C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.46	2.05	A	0.205	2.959	49	1	1	20.028	4.84	483.60	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.52	1.91	A	0.188	3.031	49	1	1	19.757	5.01	501.17	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.55	2.50	A	0.211	2.932	49	1	1	23.872	5.50	550.14	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.55	2.43	A	0.203	2.968	49	1	1	24.365	5.59	559.16	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	1.11	7.96	A	0.167	3.128	49	1	1	27.641	8.85	442.67	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.56	4.57	A	0.163	3.144	49	1	1	15.085	4.69	468.74	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.56	5.12	A	0.17	3.114	50	1	1	17.276	5.08	507.59	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.56	4.78	A	0.175	3.089	52	1	1	27.367	6.59	659.26	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.56	4.27	A	0.156	3.177	54	1	1	25.467	6.67	667.00	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.56	5.02	A	0.167	3.125	56	1	1	28.533	7.27	726.77	D
20.00-10.00			B	0.167	3.125		1	1	28.533			
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.22	4.90	A	0.16	3.158	66	1	1	28.435	6.49	649.46	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
10.00-0.00			B	0.16	3.158		1	1	28.435			
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	7.93	51.85						OTM	6880.07 kip-ft	88.10		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	53	1.152	1.152	14.389	2.45	245.33	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.09	0.54	A	0.246	2.792	52	1.184	1.184	11.643	2.02	314.28	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.14	0.39	A	0.246	2.789	52	1.185	1.185	8.438	1.80	398.24	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.15	0.36	A	0.227	2.866	52	1.17	1.17	8.079	1.84	405.99	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.15	0.37	A	0.22	2.895	51	1.165	1.165	8.169	1.85	408.79	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.33	0.97	A	0.222	2.889	51	1.166	1.166	19.555	4.25	425.00	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.35	1.53	A	0.229	2.86	50	1.172	1.172	22.319	4.59	459.37	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.41	1.43	A	0.198	2.99	50	1.148	1.148	20.527	4.73	473.32	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.46	2.05	A	0.205	2.959	49	1.154	1.154	23.105	5.22	521.85	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.52	1.91	A	0.188	3.031	49	1.141	1.141	22.546	5.36	536.40	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			
			C	0.188	3.031		1.141	1.141	22.546			
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.55	2.50	A	0.211	2.932	49	1.158	1.158	27.655	5.96	596.06	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.211	2.932		1.158	1.158	27.655			
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.55	2.43	A	0.203	2.968	49	1.152	1.152	28.071	6.05	604.53	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	1.11	7.96	A	0.167	3.128	49	1.125	1.125	31.097	9.30	465.02	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.56	4.57	A	0.163	3.144	49	1.122	1.122	16.931	4.93	493.12	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.56	5.12	A	0.17	3.114	50	1.127	1.127	19.474	5.37	536.96	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.56	4.78	A	0.175	3.089	52	1.131	1.131	30.964	7.08	708.36	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.56	4.27	A	0.156	3.177	54	1.117	1.117	28.444	7.10	710.37	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.56	5.02	A	0.167	3.125	56	1.125	1.125	32.114	7.80	779.68	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.22	4.90	A	0.16	3.158	66	1.12	1.12	31.847	7.10	710.04	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	7.93	51.85						OTM	7439.81 kip-ft	94.81		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.53	1.80	A	0.343	2.448	8	1	1	18.152	0.49	48.57	D
180.00-170.00			B	0.343	2.448		1	1	18.152			
			C	0.343	2.448		1	1	18.152			
			D	0.343	2.448		1	1	18.152			
T2	0.54	1.30	A	0.385	2.32	8	1	1	13.619	0.41	63.29	D
170.00-163.57			B	0.385	2.32		1	1	13.619			
			C	0.385	2.32		1	1	13.619			
			D	0.385	2.32		1	1	13.619			
T3	0.75	0.97	A	0.406	2.264	8	1	1	10.267	0.38	83.01	D
163.57-159.05			B	0.406	2.264		1	1	10.267			
			C	0.406	2.264		1	1	10.267			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.406	2.264		1	1	10.267			
T4	0.81	0.85	A	0.352	2.419	8	1	1	9.404	0.39	86.37	D
159.05-154.52			B	0.352	2.419		1	1	9.404			
			C	0.352	2.419		1	1	9.404			
			D	0.352	2.419		1	1	9.404			
T5	0.81	0.87	A	0.342	2.451	8	1	1	9.545	0.39	86.82	D
154.52-150.00			B	0.342	2.451		1	1	9.545			
			C	0.342	2.451		1	1	9.545			
			D	0.342	2.451		1	1	9.545			
T6	1.80	2.22	A	0.348	2.432	8	1	1	22.994	0.89	89.26	D
150.00-140.00			B	0.348	2.432		1	1	22.994			
			C	0.348	2.432		1	1	22.994			
			D	0.348	2.432		1	1	22.994			
T7	1.87	3.05	A	0.342	2.451	7	1	1	25.163	0.96	95.51	D
140.00-130.00			B	0.342	2.451		1	1	25.163			
			C	0.342	2.451		1	1	25.163			
			D	0.342	2.451		1	1	25.163			
T8	2.15	2.71	A	0.292	2.62	7	1	1	23.231	1.04	103.75	D
130.00-120.00			B	0.292	2.62		1	1	23.231			
			C	0.292	2.62		1	1	23.231			
			D	0.292	2.62		1	1	23.231			
T9	2.17	3.74	A	0.308	2.561	7	1	1	26.416	1.21	120.66	D
120.00-110.00			B	0.308	2.561		1	1	26.416			
			C	0.308	2.561		1	1	26.416			
			D	0.308	2.561		1	1	26.416			
T10	2.37	3.30	A	0.274	2.684	7	1	1	25.332	1.28	127.98	D
110.00-100.00			B	0.274	2.684		1	1	25.332			
			C	0.274	2.684		1	1	25.332			
			D	0.274	2.684		1	1	25.332			
T11	2.47	4.29	A	0.292	2.618	7	1	1	29.604	1.37	137.29	D
100.00-90.00			B	0.292	2.618		1	1	29.604			
			C	0.292	2.618		1	1	29.604			
			D	0.292	2.618		1	1	29.604			
T12	2.48	4.06	A	0.281	2.657	7	1	1	30.231	1.39	138.93	D
90.00-80.00			B	0.281	2.657		1	1	30.231			
			C	0.281	2.657		1	1	30.231			
			D	0.281	2.657		1	1	30.231			
T13	5.00	11.30	A	0.234	2.838	7	1	1	42.765	2.57	128.35	D
80.00-60.00			B	0.234	2.838		1	1	42.765			
			C	0.234	2.838		1	1	42.765			
			D	0.234	2.838		1	1	42.765			
T14	2.52	6.64	A	0.235	2.833	7	1	1	23.497	1.35	134.86	D
60.00-50.00			B	0.235	2.833		1	1	23.497			
			C	0.235	2.833		1	1	23.497			
			D	0.235	2.833		1	1	23.497			
T15	2.54	7.01	A	0.241	2.811	7	1	1	25.892	1.43	142.78	D
50.00-40.00			B	0.241	2.811		1	1	25.892			
			C	0.241	2.811		1	1	25.892			
			D	0.241	2.811		1	1	25.892			
T16	2.56	7.50	A	0.26	2.736	8	1	1	35.414	1.63	163.31	D
40.00-30.00			B	0.26	2.736		1	1	35.414			
			C	0.26	2.736		1	1	35.414			
			D	0.26	2.736		1	1	35.414			
T17	2.57	6.36	A	0.226	2.873	8	1	1	32.276	1.67	166.72	D
30.00-20.00			B	0.226	2.873		1	1	32.276			
			C	0.226	2.873		1	1	32.276			
			D	0.226	2.873		1	1	32.276			
T18	2.56	7.91	A	0.25	2.774	8	1	1	37.058	1.79	178.87	D
20.00-10.00			B	0.25	2.774		1	1	37.058			
			C	0.25	2.774		1	1	37.058			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.25	2.774		1	1	37.058			
T19	0.98	7.76	A	0.237	2.827	10	1	1	36.597	1.36	135.82	D
10.00-0.00			B	0.237	2.827		1	1	36.597			
			C	0.237	2.827		1	1	36.597			
			D	0.237	2.827		1	1	36.597			
Sum Weight:	37.48	83.64						OTM	1694.79 kip-ft	21.98		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.53	1.80	A	0.343	2.448	8	1.2	1.2	21.782	0.54	54.45	D
180.00-170.00			B	0.343	2.448		1.2	1.2	21.782			
			C	0.343	2.448		1.2	1.2	21.782			
			D	0.343	2.448		1.2	1.2	21.782			
T2	0.54	1.30	A	0.385	2.32	8	1.2	1.2	16.342	0.45	69.74	D
170.00-163.57			B	0.385	2.32		1.2	1.2	16.342			
			C	0.385	2.32		1.2	1.2	16.342			
			D	0.385	2.32		1.2	1.2	16.342			
T3	0.75	0.97	A	0.406	2.264	8	1.2	1.2	12.320	0.41	89.71	D
163.57-159.05			B	0.406	2.264		1.2	1.2	12.320			
			C	0.406	2.264		1.2	1.2	12.320			
			D	0.406	2.264		1.2	1.2	12.320			
T4	0.81	0.85	A	0.352	2.419	8	1.2	1.2	11.285	0.42	92.89	D
159.05-154.52			B	0.352	2.419		1.2	1.2	11.285			
			C	0.352	2.419		1.2	1.2	11.285			
			D	0.352	2.419		1.2	1.2	11.285			
T5	0.81	0.87	A	0.342	2.451	8	1.2	1.2	11.455	0.42	93.50	D
154.52-150.00			B	0.342	2.451		1.2	1.2	11.455			
			C	0.342	2.451		1.2	1.2	11.455			
			D	0.342	2.451		1.2	1.2	11.455			
T6	1.80	2.22	A	0.348	2.432	8	1.2	1.2	27.592	0.96	96.42	D
150.00-140.00			B	0.348	2.432		1.2	1.2	27.592			
			C	0.348	2.432		1.2	1.2	27.592			
			D	0.348	2.432		1.2	1.2	27.592			
T7	1.87	3.05	A	0.342	2.451	7	1.2	1.2	30.195	1.03	103.33	D
140.00-130.00			B	0.342	2.451		1.2	1.2	30.195			
			C	0.342	2.451		1.2	1.2	30.195			
			D	0.342	2.451		1.2	1.2	30.195			
T8	2.15	2.71	A	0.292	2.62	7	1.2	1.2	27.877	1.11	111.39	D
130.00-120.00			B	0.292	2.62		1.2	1.2	27.877			
			C	0.292	2.62		1.2	1.2	27.877			
			D	0.292	2.62		1.2	1.2	27.877			
T9	2.17	3.74	A	0.308	2.561	7	1.2	1.2	31.700	1.29	129.07	D
120.00-110.00			B	0.308	2.561		1.2	1.2	31.700			
			C	0.308	2.561		1.2	1.2	31.700			
			D	0.308	2.561		1.2	1.2	31.700			
T10	2.37	3.30	A	0.274	2.684	7	1.2	1.2	30.398	1.36	136.36	D
110.00-100.00			B	0.274	2.684		1.2	1.2	30.398			
			C	0.274	2.684		1.2	1.2	30.398			
			D	0.274	2.684		1.2	1.2	30.398			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T11	2.47	4.29	A	0.292	2.618	7	1.2	1.2	35.525	1.47	146.78	D
100.00-90.00			B	0.292	2.618		1.2	1.2	35.525			
			C	0.292	2.618		1.2	1.2	35.525			
			D	0.292	2.618		1.2	1.2	35.525			
T12	2.48	4.06	A	0.281	2.657	7	1.2	1.2	36.277	1.49	148.74	D
90.00-80.00			B	0.281	2.657		1.2	1.2	36.277			
			C	0.281	2.657		1.2	1.2	36.277			
			D	0.281	2.657		1.2	1.2	36.277			
T13	5.00	11.30	A	0.234	2.838	7	1.176	1.176	50.275	2.70	134.87	D
80.00-60.00			B	0.234	2.838		1.176	1.176	50.275			
			C	0.234	2.838		1.176	1.176	50.275			
			D	0.234	2.838		1.176	1.176	50.275			
T14	2.52	6.64	A	0.235	2.833	7	1.176	1.176	27.643	1.42	142.16	D
60.00-50.00			B	0.235	2.833		1.176	1.176	27.643			
			C	0.235	2.833		1.176	1.176	27.643			
			D	0.235	2.833		1.176	1.176	27.643			
T15	2.54	7.01	A	0.241	2.811	7	1.181	1.181	30.568	1.51	151.12	D
50.00-40.00			B	0.241	2.811		1.181	1.181	30.568			
			C	0.241	2.811		1.181	1.181	30.568			
			D	0.241	2.811		1.181	1.181	30.568			
T16	2.56	7.50	A	0.26	2.736	8	1.195	1.195	42.324	1.76	175.67	D
40.00-30.00			B	0.26	2.736		1.195	1.195	42.324			
			C	0.26	2.736		1.195	1.195	42.324			
			D	0.26	2.736		1.195	1.195	42.324			
T17	2.57	6.36	A	0.226	2.873	8	1.169	1.169	37.737	1.77	177.35	D
30.00-20.00			B	0.226	2.873		1.169	1.169	37.737			
			C	0.226	2.873		1.169	1.169	37.737			
			D	0.226	2.873		1.169	1.169	37.737			
T18	2.56	7.91	A	0.25	2.774	8	1.188	1.188	44.017	1.92	192.37	D
20.00-10.00			B	0.25	2.774		1.188	1.188	44.017			
			C	0.25	2.774		1.188	1.188	44.017			
			D	0.25	2.774		1.188	1.188	44.017			
T19	0.98	7.76	A	0.237	2.827	10	1.178	1.178	43.098	1.51	151.10	D
10.00-0.00			B	0.237	2.827		1.178	1.178	43.098			
			C	0.237	2.827		1.178	1.178	43.098			
			D	0.237	2.827		1.178	1.178	43.098			
Sum Weight:	37.48	83.64						OTM	1819.09 kip-ft	23.56		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	11	1	1	12.491	0.47	46.89	D
180.00-170.00			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2	0.09	0.54	A	0.246	2.792	11	1	1	9.832	0.38	59.52	D
170.00-163.57			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3	0.14	0.39	A	0.246	2.789	11	1	1	7.122	0.35	77.22	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
163.57-159.05			B	0.246	2.789		1	1	7.122			
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4	0.15	0.36	A	0.227	2.866	11	1	1	6.903	0.36	79.52	D
159.05-154.52			B	0.227	2.866		1	1	6.903			
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.15	0.37	A	0.22	2.895	11	1	1	7.011	0.36	80.19	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.33	0.97	A	0.222	2.889	11	1	1	16.767	0.83	83.10	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.35	1.53	A	0.229	2.86	11	1	1	19.051	0.89	89.32	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.41	1.43	A	0.198	2.99	11	1	1	17.878	0.94	93.67	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
			C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.46	2.05	A	0.205	2.959	11	1	1	20.028	1.03	103.02	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.52	1.91	A	0.188	3.031	10	1	1	19.757	1.07	106.76	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.55	2.50	A	0.211	2.932	10	1	1	23.872	1.17	117.19	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.55	2.43	A	0.203	2.968	10	1	1	24.365	1.19	119.11	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	1.11	7.96	A	0.167	3.128	10	1	1	27.641	1.89	94.30	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.56	4.57	A	0.163	3.144	11	1	1	15.085	1.00	99.85	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.56	5.12	A	0.17	3.114	11	1	1	17.276	1.08	108.13	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.56	4.78	A	0.175	3.089	11	1	1	27.367	1.40	140.43	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.56	4.27	A	0.156	3.177	11	1	1	25.467	1.42	142.08	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.56	5.02	A	0.167	3.125	12	1	1	28.533	1.55	154.82	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
20.00-10.00			B	0.167	3.125		1	1	28.533			
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.22	4.90	A	0.16	3.158	14	1	1	28.435	1.38	138.35	D
10.00-0.00			B	0.16	3.158		1	1	28.435			
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	7.93	51.85						OTM	1465.58 kip-ft	18.77		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	11	1.152	1.152	14.389	0.52	52.26	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.09	0.54	A	0.246	2.792	11	1.184	1.184	11.643	0.43	66.95	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.14	0.39	A	0.246	2.789	11	1.185	1.185	8.438	0.38	84.83	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.15	0.36	A	0.227	2.866	11	1.17	1.17	8.079	0.39	86.48	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.15	0.37	A	0.22	2.895	11	1.165	1.165	8.169	0.39	87.08	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.33	0.97	A	0.222	2.889	11	1.166	1.166	19.555	0.91	90.53	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.35	1.53	A	0.229	2.86	11	1.172	1.172	22.319	0.98	97.85	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.41	1.43	A	0.198	2.99	11	1.148	1.148	20.527	1.01	100.83	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.46	2.05	A	0.205	2.959	11	1.154	1.154	23.105	1.11	111.16	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.52	1.91	A	0.188	3.031	10	1.141	1.141	22.546	1.14	114.26	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.188	3.031		1.141	1.141	22.546			
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.55	2.50	A	0.211	2.932	10	1.158	1.158	27.655	1.27	126.97	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			
			C	0.211	2.932		1.158	1.158	27.655			
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.55	2.43	A	0.203	2.968	10	1.152	1.152	28.071	1.29	128.78	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	1.11	7.96	A	0.167	3.128	10	1.125	1.125	31.097	1.98	99.06	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.56	4.57	A	0.163	3.144	11	1.122	1.122	16.931	1.05	105.04	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.56	5.12	A	0.17	3.114	11	1.127	1.127	19.474	1.14	114.38	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.56	4.78	A	0.175	3.089	11	1.131	1.131	30.964	1.51	150.89	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.56	4.27	A	0.156	3.177	11	1.117	1.117	28.444	1.51	151.32	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.56	5.02	A	0.167	3.125	12	1.125	1.125	32.114	1.66	166.09	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.22	4.90	A	0.16	3.158	14	1.12	1.12	31.847	1.51	151.25	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	7.93	51.85						OTM	1584.81 kip-ft	20.20		

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	30.80					
Bracing Weight	21.04					
Total Member Self-Weight	51.85			-22.53	10.78	
Total Weight	74.85			-22.53	10.78	
Wind 0 deg - No Ice		-0.56	-119.74	-11331.00	98.28	-56.60
Wind 30 deg - No Ice		62.76	-109.23	-10256.95	-5851.76	-54.86
Wind 45 deg - No Ice		89.05	-89.02	-8352.75	-8325.40	-48.28

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - No Ice		109.27	-62.74	-5880.86	-10230.94	-38.42
Wind 90 deg - No Ice		119.79	0.56	64.98	-11306.12	-11.69
Wind 120 deg - No Ice		109.84	63.71	5987.36	-10318.45	18.18
Wind 135 deg - No Ice		89.85	89.81	8431.44	-8449.15	31.76
Wind 150 deg - No Ice		63.74	109.79	10299.40	-6003.32	43.17
Wind 180 deg - No Ice		0.56	119.74	11285.95	-76.73	56.60
Wind 210 deg - No Ice		-62.76	109.23	10211.90	5873.32	54.86
Wind 225 deg - No Ice		-89.05	89.02	8307.69	8346.96	48.28
Wind 240 deg - No Ice		-109.27	62.74	5835.80	10252.50	38.42
Wind 270 deg - No Ice		-119.79	-0.56	-110.03	11327.68	11.69
Wind 300 deg - No Ice		-109.84	-63.71	-6032.42	10340.01	-18.18
Wind 315 deg - No Ice		-89.85	-89.81	-8476.50	8470.71	-31.76
Wind 330 deg - No Ice		-63.74	-109.79	-10344.46	6024.88	-43.17
Member Ice	31.79					
Total Weight Ice	149.22			-25.47	54.68	
Wind 0 deg - Ice		-0.08	-28.90	-2685.26	66.46	-26.47
Wind 30 deg - Ice		15.18	-26.36	-2430.67	-1327.84	-20.62
Wind 45 deg - Ice		21.51	-21.50	-1985.79	-1906.60	-15.45
Wind 60 deg - Ice		26.37	-15.18	-1407.31	-2351.70	-9.24
Wind 90 deg - Ice		28.91	0.08	-13.69	-2606.48	4.62
Wind 120 deg - Ice		26.45	15.31	1376.78	-2363.49	17.23
Wind 135 deg - Ice		21.62	21.61	1951.51	-1923.27	21.98
Wind 150 deg - Ice		15.31	26.44	2391.51	-1348.26	25.23
Wind 180 deg - Ice		0.08	28.90	2634.31	42.89	26.47
Wind 210 deg - Ice		-15.18	26.36	2379.72	1437.19	20.62
Wind 225 deg - Ice		-21.51	21.50	1934.84	2015.95	15.45
Wind 240 deg - Ice		-26.37	15.18	1356.36	2461.06	9.24
Wind 270 deg - Ice		-28.91	-0.08	-37.26	2715.83	-4.62
Wind 300 deg - Ice		-26.45	-15.31	-1427.73	2472.84	-17.23
Wind 315 deg - Ice		-21.62	-21.61	-2002.46	2032.62	-21.98
Wind 330 deg - Ice		-15.31	-26.44	-2442.46	1457.61	-25.23
Total Weight	74.85			-22.53	10.78	
Wind 0 deg - Service		-0.12	-25.51	-2428.72	20.01	-12.06
Wind 30 deg - Service		13.37	-23.27	-2199.93	-1247.46	-11.69
Wind 45 deg - Service		18.97	-18.96	-1794.30	-1774.38	-10.29
Wind 60 deg - Service		23.28	-13.36	-1267.74	-2180.30	-8.18
Wind 90 deg - Service		25.52	0.12	-1.17	-2409.33	-2.49
Wind 120 deg - Service		23.40	13.57	1260.40	-2198.94	3.87
Wind 135 deg - Service		19.14	19.13	1781.03	-1800.75	6.76
Wind 150 deg - Service		13.58	23.39	2178.94	-1279.74	9.20
Wind 180 deg - Service		0.12	25.51	2389.09	-17.27	12.06
Wind 210 deg - Service		-13.37	23.27	2160.30	1250.19	11.69
Wind 225 deg - Service		-18.97	18.96	1754.67	1777.12	10.29
Wind 240 deg - Service		-23.28	13.36	1228.12	2183.04	8.18
Wind 270 deg - Service		-25.52	-0.12	-38.45	2412.07	2.49
Wind 300 deg - Service		-23.40	-13.57	-1300.02	2201.68	-3.87
Wind 315 deg - Service		-19.14	-19.13	-1820.66	1803.49	-6.76
Wind 330 deg - Service		-13.58	-23.39	-2218.57	1282.48	-9.20

Load Combinations

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

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 170	Leg	Max Tension	31	1.97	0.20	0.08
			Max. Compression	14	-2.92	-0.40	-0.37
			Max. Mx	8	-1.27	-0.71	0.50
			Max. My	26	-1.96	0.18	-0.71
			Max. Vy	18	-0.72	0.40	-0.14
			Max. Vx	2	-0.73	-0.12	0.39
		Diagonal	Max Tension	3	3.06	-0.02	-0.00
			Max. Compression	26	-3.22	0.00	0.00
			Max. Mx	2	-3.17	0.03	-0.00
			Max. My	8	-0.76	-0.00	0.00
			Max. Vy	35	-0.02	0.02	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	3	0.84	0.00	0.00
			Max. Compression	18	-0.85	0.04	0.00
			Max. Mx	2	-0.52	0.04	-0.00
			Max. My	23	-0.57	0.03	0.00
			Max. Vy	2	-0.02	0.04	-0.00
			Max. Vx	23	-0.00	0.03	0.00
		Top Girt	Max Tension	2	0.19	0.00	0.00
			Max. Compression	3	-0.12	0.00	0.00
			Max. Mx	34	0.12	-0.04	0.00
			Max. My	10	0.04	0.00	0.00
			Max. Vy	34	0.02	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T2	170 - 163.573	Leg	Max Tension	15	9.19	-0.60	-0.51
			Max. Compression	30	-11.00	-0.82	-0.89
			Max. Mx	12	8.14	0.98	0.67
			Max. My	32	-10.67	-0.66	-0.99
			Max. Vy	2	0.51	-0.80	0.09
			Max. Vx	4	-0.52	-0.48	0.79
		Diagonal	Max Tension	19	3.79	0.00	0.00
			Max. Compression	2	-3.95	0.00	0.00
			Max. Mx	48	0.18	0.02	0.00
			Max. My	6	-3.20	-0.00	0.00
			Max. Vy	48	-0.02	0.02	0.00
			Max. Vx	6	0.00	0.00	0.00
		Top Girt	Max Tension	2	0.74	0.00	0.00
			Max. Compression	3	-0.50	0.00	0.00
			Max. Mx	34	0.41	-0.03	0.00
			Max. My	10	0.09	0.00	0.00
			Max. Vy	34	0.02	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T3	163.573 - 159.049	Leg	Max Tension	31	18.00	-0.27	-0.31
			Max. Compression	30	-21.57	-0.98	-0.76
			Max. Mx	10	10.50	-1.45	-0.06
			Max. My	26	9.28	-0.12	-1.48
			Max. Vy	10	1.49	-0.59	0.22
			Max. Vx	26	1.52	0.23	-0.60
		Diagonal	Max Tension	27	5.19	0.00	0.00
			Max. Compression	26	-5.34	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	32	2.60	0.01	-0.00
			Max. My	10	-5.27	0.00	0.00
			Max. Vy	36	0.01	0.01	0.00
			Max. Vx	10	-0.00	0.00	0.00
		Top Girt	Max Tension	26	0.58	0.00	0.00
			Max. Compression	27	-0.50	0.00	0.00
			Max. Mx	35	0.15	-0.03	0.00
			Max. My	35	0.24	0.00	0.00
			Max. Vy	35	-0.02	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
T4	159.049 - 154.524	Leg	Max Tension	31	27.18	-0.37	-0.39
			Max. Compression	30	-31.83	-0.56	-0.47
			Max. Mx	16	3.69	1.11	-0.84
			Max. My	28	3.74	-0.86	1.12
			Max. Vy	26	0.39	-1.03	0.33
			Max. Vx	12	0.39	0.86	-1.12
		Diagonal	Max Tension	26	5.86	0.00	0.00
			Max. Compression	26	-5.76	0.00	0.00
			Max. Mx	32	2.24	0.03	-0.00
			Max. My	10	-5.72	-0.00	0.01
			Max. Vy	38	-0.02	0.02	-0.00
			Max. Vx	10	-0.00	0.00	0.00
T5	154.524 - 150	Leg	Max Tension	31	35.98	-0.52	-0.64
			Max. Compression	30	-40.69	-0.89	-0.77
			Max. Mx	28	-39.41	-0.97	-0.63
			Max. My	16	-39.07	-0.63	-0.97
			Max. Vy	28	0.44	-0.97	-0.63
			Max. Vx	16	0.44	-0.63	-0.97
		Diagonal	Max Tension	11	5.83	0.00	0.00
			Max. Compression	26	-5.96	0.00	0.00
			Max. Mx	32	2.76	0.04	0.00
			Max. My	11	-5.13	-0.01	0.00
			Max. Vy	36	-0.02	0.03	-0.00
			Max. Vx	11	-0.00	-0.01	0.00
T6	150 - 140	Leg	Max Tension	31	56.45	-0.61	-0.71
			Max. Compression	30	-61.85	-1.06	-0.92
			Max. Mx	33	-14.72	-1.40	1.09
			Max. My	28	8.30	-1.08	1.39
			Max. Vy	18	-0.65	1.38	-0.10
			Max. Vx	2	-0.65	-0.05	1.38
		Diagonal	Max Tension	26	6.32	0.00	0.00
			Max. Compression	26	-6.38	0.00	0.00
			Max. Mx	32	3.36	0.05	0.00
			Max. My	10	-6.08	-0.01	0.01
			Max. Vy	36	-0.02	0.03	-0.00
			Max. Vx	10	-0.00	0.00	0.00
		Top Girt	Max Tension	2	0.65	0.00	0.00
			Max. Compression	3	-0.59	0.00	0.00
			Max. Mx	34	0.16	-0.06	0.00
			Max. My	35	0.19	0.00	0.00
			Max. Vy	34	0.03	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
T7	140 - 130	Leg	Max Tension	31	72.08	-0.93	-1.06
			Max. Compression	30	-78.58	-0.52	-0.35
			Max. Mx	14	-4.82	4.20	-4.04
			Max. My	30	-4.68	-4.05	4.22
			Max. Vy	14	-1.07	4.20	-4.04
			Max. Vx	30	-1.07	-4.05	4.22
		Diagonal	Max Tension	19	9.84	0.03	0.02
			Max. Compression	18	-10.04	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	32	5.28	0.10	0.02
			Max. My	16	-9.60	-0.05	0.04
			Max. Vy	36	0.03	0.04	0.00
			Max. Vx	16	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	1.18	0.00	0.00
			Max. Compression	30	-1.18	-0.03	-0.01
			Max. Mx	32	-0.59	0.05	0.03
			Max. My	32	-0.59	0.05	0.03
			Max. Vy	48	-0.02	0.02	0.01
			Max. Vx	32	0.01	0.00	0.00
		Top Girt	Max Tension	10	0.48	0.00	0.00
			Max. Compression	10	-0.56	-0.06	0.00
			Max. Mx	35	-0.06	-0.21	0.01
			Max. My	35	-0.06	-0.21	0.01
			Max. Vy	35	-0.07	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Inner Bracing	Max Tension	14	0.08	0.00	0.00
			Max. Compression	14	-0.08	0.00	0.00
			Max. Mx	34	0.00	-0.06	0.00
			Max. My	10	0.00	0.00	-0.00
			Max. Vy	34	0.03	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
T8	130 - 120	Leg	Max Tension	31	93.97	-2.14	-2.26
			Max. Compression	30	-103.60	-1.30	-1.28
			Max. Mx	8	18.72	2.67	-1.86
			Max. My	20	18.54	-1.86	2.67
			Max. Vy	8	-1.49	2.67	-1.86
			Max. Vx	20	-1.52	-1.86	2.67
		Diagonal	Max Tension	11	11.89	0.04	-0.01
			Max. Compression	26	-12.13	0.00	0.00
			Max. Mx	32	4.65	0.15	0.03
			Max. My	27	-9.98	-0.05	-0.06
			Max. Vy	36	-0.04	0.08	-0.02
			Max. Vx	10	-0.01	-0.04	0.05
		Secondary Horizontal	Max Tension	30	1.55	0.00	0.00
			Max. Compression	7	-1.60	0.02	0.02
			Max. Mx	28	-0.21	0.05	-0.00
			Max. My	13	-1.46	-0.01	-0.03
			Max. Vy	48	0.03	0.03	0.00
			Max. Vx	32	-0.01	-0.01	-0.03
T9	120 - 110	Leg	Max Tension	31	120.83	-1.93	-2.12
			Max. Compression	30	-132.09	-0.56	-0.54
			Max. Mx	6	-7.32	5.05	-4.82
			Max. My	28	24.45	-4.49	5.08
			Max. Vy	30	-1.22	4.99	-4.80
			Max. Vx	14	-1.21	-4.78	4.96
		Diagonal	Max Tension	10	13.02	0.00	0.00
			Max. Compression	26	-13.13	0.00	0.00
			Max. Mx	28	7.67	0.10	-0.01
			Max. My	26	-13.10	-0.01	-0.06
			Max. Vy	48	0.04	0.06	0.01
			Max. Vx	26	-0.01	0.00	0.00
		Horizontal	Max Tension	11	0.83	0.00	0.00
			Max. Compression	11	-1.01	-0.08	0.00
			Max. Mx	35	-0.19	-0.32	0.01
			Max. My	35	-0.19	-0.32	0.01
			Max. Vy	35	-0.09	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Secondary	Max Tension	30	1.98	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Horizontal					
			Max. Compression	30	-1.98	-0.02	-0.01
			Max. Mx	12	-0.65	0.03	0.02
			Max. My	32	-0.67	0.03	0.02
			Max. Vy	48	-0.02	0.02	0.01
			Max. Vx	32	0.00	0.00	0.00
		Inner Bracing	Max Tension	14	0.09	0.00	0.00
			Max. Compression	14	-0.09	0.00	0.00
			Max. Mx	34	0.00	-0.09	0.00
			Max. My	26	-0.00	0.00	0.00
			Max. Vy	34	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T10	110 - 100	Leg	Max Tension	31	147.93	-2.65	-2.65
			Max. Compression	30	-161.23	-1.97	-1.81
			Max. Mx	24	-149.43	3.27	2.28
			Max. My	4	-150.52	2.29	3.27
			Max. Vy	18	1.19	0.21	1.11
			Max. Vx	32	1.19	1.20	0.77
		Diagonal	Max Tension	11	16.07	0.06	-0.01
			Max. Compression	26	-16.34	0.00	0.00
			Max. Mx	32	5.72	0.19	0.02
			Max. My	11	-12.91	-0.05	0.05
			Max. Vy	50	-0.05	0.11	0.02
			Max. Vx	10	-0.01	-0.04	0.04
		Secondary Horizontal	Max Tension	30	2.42	0.00	0.00
			Max. Compression	30	-2.42	0.01	-0.02
			Max. Mx	28	-1.13	0.04	0.00
			Max. My	5	-2.25	-0.00	-0.02
			Max. Vy	48	0.03	0.04	0.00
			Max. Vx	4	0.00	0.00	-0.02
T11	100 - 90	Leg	Max Tension	31	179.57	-2.20	-2.26
			Max. Compression	30	-195.20	-1.40	-1.46
			Max. Mx	8	38.03	6.99	-5.92
			Max. My	28	37.01	-5.93	7.00
			Max. Vy	8	-1.43	6.99	-5.92
			Max. Vx	20	-1.44	-5.85	6.92
		Diagonal	Max Tension	10	15.55	0.00	0.00
			Max. Compression	26	-15.65	0.00	0.00
			Max. Mx	28	8.90	0.14	0.00
			Max. My	26	-15.62	-0.03	-0.05
			Max. Vy	48	0.05	0.07	0.01
			Max. Vx	26	0.01	0.00	0.00
		Horizontal	Max Tension	2	1.63	0.00	0.00
			Max. Compression	3	-1.76	-0.16	0.01
			Max. Mx	35	-0.23	-0.43	0.02
			Max. My	35	-0.23	-0.43	0.02
			Max. Vy	35	-0.11	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Inner Bracing	Max Tension	30	0.11	0.00	0.00
			Max. Compression	30	-0.11	0.00	0.00
			Max. Mx	34	0.00	-0.12	0.00
			Max. My	26	-0.00	0.00	0.00
			Max. Vy	34	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T12	90 - 80	Leg	Max Tension	31	210.27	-2.14	-2.29
			Max. Compression	30	-227.48	-1.24	-1.14
			Max. Mx	26	-151.69	3.60	-0.18
			Max. My	10	-155.03	-0.10	3.57
			Max. Vy	24	1.18	-2.14	-1.92
			Max. Vx	4	1.19	-1.97	-2.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	11	17.23	0.07	-0.00
			Max. Compression	26	-17.57	0.00	0.00
			Max. Mx	32	7.67	0.18	0.03
			Max. My	27	-15.92	-0.04	-0.04
			Max. Vy	50	-0.05	0.12	0.02
			Max. Vx	26	0.01	-0.03	-0.04
		Secondary Horizontal	Max Tension	30	3.41	0.00	0.00
			Max. Compression	30	-3.41	0.02	-0.02
			Max. Mx	28	0.48	0.06	-0.00
			Max. My	5	-3.19	0.00	-0.03
			Max. Vy	38	-0.04	0.06	0.01
			Max. Vx	25	-0.01	0.00	-0.03
T13	80 - 60	Leg	Max Tension	31	273.16	2.02	0.17
			Max. Compression	30	-294.58	7.09	-0.08
			Max. Mx	30	-294.58	7.09	-0.08
			Max. My	6	-12.48	-0.73	6.86
			Max. Vy	14	-1.18	7.07	-0.21
			Max. Vx	6	-1.26	-0.73	6.86
		Diagonal	Max Tension	19	17.11	0.00	0.00
			Max. Compression	10	-17.62	0.00	0.00
			Max. Mx	48	2.83	-0.10	0.02
			Max. My	26	-16.64	-0.02	0.03
			Max. Vy	48	-0.06	-0.10	0.02
			Max. Vx	26	-0.01	0.00	0.00
		Top Girt	Max Tension	32	1.07	0.00	0.00
			Max. Compression	27	-1.05	-0.20	0.01
			Max. Mx	35	0.28	-0.68	0.02
			Max. My	35	0.28	-0.68	0.02
			Max. Vy	35	-0.14	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.15	0.00	0.00
			Max. Compression	30	-0.15	0.00	0.00
			Max. Mx	34	0.00	0.21	0.00
			Max. My	26	-0.00	0.00	-0.00
			Max. Vy	34	0.07	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00
T14	60 - 50	Leg	Max Tension	31	301.30	-0.28	-0.12
			Max. Compression	30	-326.02	0.72	0.28
			Max. Mx	41	41.53	-4.31	0.46
			Max. My	7	-11.37	-0.93	9.47
			Max. Vy	41	0.76	-4.31	0.46
			Max. Vx	7	-1.59	-0.93	9.47
		Diagonal	Max Tension	18	17.15	0.00	0.00
			Max. Compression	18	-17.26	0.00	0.00
			Max. Mx	48	1.92	-0.10	-0.02
			Max. My	26	-17.07	-0.03	0.02
			Max. Vy	49	-0.06	-0.10	-0.02
			Max. Vx	35	-0.00	0.00	0.00
		Horizontal	Max Tension	2	2.35	0.00	0.00
			Max. Compression	27	-1.81	0.33	-0.02
			Max. Mx	35	1.32	0.76	-0.04
			Max. My	35	1.32	0.76	-0.04
			Max. Vy	35	-0.15	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.18	0.00	0.00
			Max. Compression	31	-0.17	0.00	0.00
			Max. Mx	34	0.00	0.27	0.00
			Max. My	26	0.00	0.00	-0.00
			Max. Vy	34	-0.08	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T15	50 - 40	Leg	Max Tension	31	330.08	2.20	0.26
			Max. Compression	30	-356.42	2.23	-0.16
			Max. Mx	30	-355.88	6.84	0.02
			Max. My	32	71.94	0.57	5.12
			Max. Vy	30	-2.39	6.84	0.02
			Max. Vx	32	-1.30	0.57	5.12
		Diagonal	Max Tension	19	18.00	-0.09	-0.01
			Max. Compression	18	-19.22	0.00	0.00
			Max. Mx	50	1.25	-0.19	0.02
			Max. My	22	10.38	-0.16	0.02
			Max. Vy	50	-0.09	-0.19	0.02
			Max. Vx	49	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.35	0.00	0.00
			Max. Compression	30	-5.35	0.05	-0.00
			Max. Mx	38	-0.16	0.13	0.03
			Max. My	28	-2.47	0.06	0.04
			Max. Vy	38	-0.07	0.13	0.03
			Max. Vx	42	-0.01	0.00	0.00
T16	40 - 30	Leg	Max Tension	31	356.57	-2.89	-2.39
			Max. Compression	30	-387.15	1.67	1.23
			Max. Mx	4	-113.59	7.92	-6.34
			Max. My	16	-110.23	-6.40	7.94
			Max. Vy	4	-1.83	7.92	-6.34
			Max. Vx	16	-1.83	-6.40	7.94
		Diagonal	Max Tension	5	18.55	-0.13	-0.01
			Max. Compression	20	-18.93	0.00	0.00
			Max. Mx	28	12.08	-0.16	0.00
			Max. My	8	-18.77	-0.04	-0.05
			Max. Vy	48	-0.09	-0.16	-0.02
			Max. Vx	8	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.81	0.00	0.00
			Max. Compression	30	-5.81	0.00	0.00
			Max. Mx	41	-0.32	0.08	0.04
			Max. My	24	-1.73	0.06	0.05
			Max. Vy	41	0.06	0.08	0.04
			Max. Vx	4	-0.01	0.00	0.00
		Top Girt	Max Tension	35	2.87	0.00	0.00
			Max. Compression	27	-1.89	0.45	-0.03
			Max. Mx	35	2.14	0.80	-0.04
			Max. My	35	2.15	0.80	-0.04
			Max. Vy	35	-0.15	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	31	0.23	0.00	0.00
			Max. Compression	31	-0.23	0.00	0.00
			Max. Mx	34	0.00	0.33	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	-0.09	0.00	0.00
			Max. Vx	49	0.00	0.00	0.00
T17	30 - 20	Leg	Max Tension	31	387.81	-3.99	-4.41
			Max. Compression	30	-420.56	0.09	0.24
			Max. Mx	18	-287.11	6.63	1.12
			Max. My	2	-284.14	1.00	6.68
			Max. Vy	16	2.17	-3.77	-3.39
			Max. Vx	4	2.17	-3.33	-3.73
		Diagonal	Max Tension	19	19.58	-0.12	-0.00
			Max. Compression	18	-20.21	0.00	0.00
			Max. Mx	49	3.15	-0.22	-0.03
			Max. My	20	8.16	-0.20	0.03
			Max. Vy	49	-0.10	-0.22	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	49	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	6.31	0.00	0.00
			Max. Compression	30	-6.31	0.07	-0.01
			Max. Mx	38	-0.20	0.15	0.03
			Max. My	12	-3.13	0.06	0.04
			Max. Vy	38	-0.07	0.15	0.03
			Max. Vx	32	-0.01	0.00	0.00
T18	20 - 10	Leg	Max Tension	31	414.45	-4.25	-3.64
			Max. Compression	30	-447.00	1.09	0.90
			Max. Mx	32	396.14	-4.77	-3.27
			Max. My	20	388.10	-3.19	-4.76
			Max. Vy	30	-1.69	3.14	2.91
			Max. Vx	22	-1.67	2.85	3.09
		Diagonal	Max Tension	5	21.28	-0.14	0.00
			Max. Compression	8	-23.99	0.00	0.00
			Max. Mx	49	0.33	-0.20	-0.02
			Max. My	4	-18.51	-0.07	-0.04
			Max. Vy	49	-0.10	-0.20	-0.02
			Max. Vx	50	0.01	0.00	0.00
		Horizontal	Max Tension	2	5.68	0.00	0.00
			Max. Compression	27	-1.85	0.64	-0.04
			Max. Mx	2	-0.33	0.79	-0.05
			Max. My	2	-0.32	0.79	-0.05
			Max. Vy	35	-0.14	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	6.71	0.00	0.00
			Max. Compression	30	-6.71	0.04	0.01
			Max. Mx	50	-0.21	0.12	0.05
			Max. My	49	-1.10	0.11	0.05
			Max. Vy	50	-0.07	0.12	0.05
			Max. Vx	49	-0.01	0.00	0.00
		Inner Bracing	Max Tension	33	0.07	0.00	0.00
			Max. Compression	33	-0.05	0.00	0.00
			Max. Mx	34	0.00	0.42	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	0.10	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T19	10 - 0	Leg	Max Tension	31	421.73	-2.86	-3.00
			Max. Compression	30	-458.74	0.00	-0.00
			Max. Mx	18	-313.69	4.68	0.60
			Max. My	2	-310.53	0.52	4.71
			Max. Vy	32	1.59	-3.18	-2.99
			Max. Vx	20	1.57	-2.87	-3.16
		Diagonal	Max Tension	17	30.95	-0.06	0.04
			Max. Compression	20	-31.97	0.00	0.00
			Max. Mx	16	13.31	-0.08	-0.04
			Max. My	16	-23.99	-0.01	-0.06
			Max. Vy	48	-0.05	-0.05	-0.04
			Max. Vx	50	-0.01	0.00	0.00
		Horizontal	Max Tension	8	22.85	-0.12	-0.02
			Max. Compression	17	-20.59	-0.04	0.02
			Max. Mx	26	9.94	-0.15	-0.05
			Max. My	10	-4.67	-0.15	-0.05
			Max. Vy	47	0.09	-0.15	-0.01
			Max. Vx	10	-0.01	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	30	6.89	0.00	0.00
			Max. Compression	30	-6.89	0.00	0.00
			Max. Mx	40	2.10	-0.02	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	50	1.04	0.00	0.00
			Max. Vy	40	-0.02	0.00	0.00
			Max. Vx	50	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	3	8.57	0.00	0.00
			Max. Compression	26	-9.05	0.00	0.00
			Max. Mx	50	1.65	-0.03	0.00
			Max. My	42	4.82	0.00	0.00
			Max. Vy	50	-0.02	0.00	0.00
			Max. Vx	42	-0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	49	0.01	0.00	0.00
			Max. Compression	30	-0.04	0.00	0.00
			Max. Mx	34	0.01	-0.04	0.00
			Max. Vy	34	-0.03	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	3	9.67	0.00	0.00
			Max. Compression	26	-10.52	0.00	0.00
			Max. Mx	34	4.14	-0.13	0.00
			Max. My	34	4.14	0.00	0.00
			Max. Vy	34	0.06	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
		Inner Bracing	Max Tension	30	0.21	0.00	0.00
			Max. Compression	30	-0.21	0.00	0.00
			Max. Mx	34	-0.00	0.45	0.00
			Max. My	26	0.00	0.00	-0.00
			Max. Vy	34	-0.10	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	22	491.96	34.86	-36.27
	Max. H_x	24	476.04	36.35	-32.48
	Max. H_z	5	-437.72	-29.50	36.21
	Min. Vert	7	-453.84	-33.42	34.73
	Min. H_x	9	-437.82	-34.95	30.77
	Min. H_z	20	475.95	31.11	-37.71
Leg C	Max. Vert	14	498.22	-36.35	-35.50
	Max. H_x	29	-445.14	36.14	30.38
	Max. H_z	33	-445.04	31.28	35.22
	Min. Vert	31	-461.40	34.96	34.01
	Min. H_x	12	482.06	-37.50	-32.02
	Min. H_z	16	481.96	-32.85	-36.67
Leg B	Max. Vert	6	492.76	-36.29	34.88
	Max. H_x	25	-437.21	35.99	-29.70
	Max. H_z	4	476.74	-32.73	36.14
	Min. Vert	23	-453.24	34.73	-33.38
	Min. H_x	8	476.84	-37.50	31.36
	Min. H_z	21	-437.12	31.00	-34.67
Leg A	Max. Vert	30	500.47	35.55	36.42
	Max. H_x	28	484.32	37.08	32.56
	Max. H_z	32	484.22	31.73	37.91
	Min. Vert	15	-459.70	-33.99	-34.89
	Min. H_x	13	-443.44	-35.56	-30.86

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	17	-443.34	-29.99	-36.42

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	74.85	0.00	0.00	-22.54	10.78	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	89.82	-0.56	-119.74	-11343.46	100.84	-56.63
0.9 Dead+1.0 Wind 0 deg - No Ice	67.37	-0.56	-119.74	-11329.48	97.53	-56.62
1.2 Dead+1.0 Wind 30 deg - No Ice	89.82	62.76	-109.23	-10268.06	-5853.02	-54.99
0.9 Dead+1.0 Wind 30 deg - No Ice	67.37	62.76	-109.23	-10254.78	-5852.56	-54.94
1.2 Dead+1.0 Wind 45 deg - No Ice	89.82	89.05	-89.02	-8362.64	-8328.31	-48.45
0.9 Dead+1.0 Wind 45 deg - No Ice	67.37	89.05	-89.02	-8350.57	-8326.28	-48.41
1.2 Dead+1.0 Wind 60 deg - No Ice	89.82	109.27	-62.74	-5889.16	-10235.15	-38.62
0.9 Dead+1.0 Wind 60 deg - No Ice	67.37	109.27	-62.74	-5878.65	-10231.91	-38.57
1.2 Dead+1.0 Wind 90 deg - No Ice	89.82	119.79	0.56	60.55	-11311.83	-11.88
0.9 Dead+1.0 Wind 90 deg - No Ice	67.37	119.79	0.56	67.28	-11307.89	-11.83
1.2 Dead+1.0 Wind 120 deg - No Ice	89.82	109.83	63.71	5986.76	-10323.00	18.03
0.9 Dead+1.0 Wind 120 deg - No Ice	67.37	109.84	63.71	5989.75	-10319.69	18.07
1.2 Dead+1.0 Wind 135 deg - No Ice	89.82	89.85	89.81	8432.39	-8452.53	31.63
0.9 Dead+1.0 Wind 135 deg - No Ice	67.37	89.85	89.81	8433.83	-8450.41	31.67
1.2 Dead+1.0 Wind 150 deg - No Ice	89.82	63.74	109.79	10301.50	-6005.13	43.09
0.9 Dead+1.0 Wind 150 deg - No Ice	67.37	63.74	109.79	10301.77	-6004.55	43.11
1.2 Dead+1.0 Wind 180 deg - No Ice	89.82	0.56	119.74	11289.19	-74.71	56.62
0.9 Dead+1.0 Wind 180 deg - No Ice	67.37	0.56	119.74	11288.82	-77.89	56.61
1.2 Dead+1.0 Wind 210 deg - No Ice	89.82	-62.76	109.23	10213.64	5879.21	54.99
0.9 Dead+1.0 Wind 210 deg - No Ice	67.37	-62.76	109.23	10213.97	5872.26	54.96
1.2 Dead+1.0 Wind 225 deg - No Ice	89.82	-89.05	89.02	8308.14	8354.43	48.45
0.9 Dead+1.0 Wind 225 deg - No Ice	67.37	-89.05	89.02	8309.69	8345.92	48.40
1.2 Dead+1.0 Wind 240 deg - No Ice	89.82	-109.27	62.74	5834.61	10261.20	38.60
0.9 Dead+1.0 Wind 240 deg - No Ice	67.37	-109.27	62.74	5837.72	10251.47	38.56
1.2 Dead+1.0 Wind 270 deg -	89.82	-119.79	-0.56	-115.01	11337.73	11.89

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
No Ice 0.9 Dead+1.0 Wind 270 deg - No Ice	67.37	-119.79	-0.56	-108.14	11327.31	11.84
1.2 Dead+1.0 Wind 300 deg - No Ice	89.82	-109.83	-63.71	-6041.08	10348.88	-18.00
0.9 Dead+1.0 Wind 300 deg - No Ice	67.37	-109.84	-63.71	-6030.46	10339.09	-18.05
1.2 Dead+1.0 Wind 315 deg - No Ice	89.82	-89.85	-89.81	-8486.65	8478.46	-31.62
0.9 Dead+1.0 Wind 315 deg - No Ice	67.37	-89.85	-89.81	-8474.48	8469.85	-31.66
1.2 Dead+1.0 Wind 330 deg - No Ice	89.82	-63.74	-109.79	-10355.73	6031.15	-43.10
0.9 Dead+1.0 Wind 330 deg - No Ice	67.37	-63.74	-109.79	-10342.38	6024.09	-43.12
1.2 Dead+1.0 Ice+1.0 Temp	164.19	-0.00	0.00	-30.21	57.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	164.19	-0.08	-28.90	-2697.22	68.87	-26.50
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	164.19	15.18	-26.36	-2441.70	-1329.08	-20.67
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	164.19	21.51	-21.50	-1995.65	-1909.36	-15.52
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	164.19	26.37	-15.18	-1415.66	-2355.64	-9.30
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	164.19	28.91	0.08	-18.39	-2611.34	4.56
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	164.19	26.45	15.31	1375.71	-2367.48	17.20
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	164.19	21.62	21.61	1951.93	-1926.12	21.97
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	164.19	15.31	26.44	2393.07	-1349.61	25.23
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	164.19	0.08	28.90	2636.73	45.17	26.51
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	164.19	-15.18	26.36	2381.21	1443.12	20.68
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	164.19	-21.51	21.50	1935.15	2023.39	15.52
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	164.19	-26.37	15.18	1355.16	2469.66	9.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	164.19	-28.91	-0.08	-42.10	2725.36	-4.55
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	164.19	-26.45	-15.31	-1436.19	2481.51	-17.19
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	164.19	-21.62	-21.61	-2012.41	2040.15	-21.96
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	164.19	-15.31	-26.44	-2453.56	1463.65	-25.22
Dead+Wind 0 deg - Service	74.85	-0.12	-25.51	-2432.20	29.48	-12.06
Dead+Wind 30 deg - Service	74.85	13.37	-23.27	-2203.16	-1238.26	-11.71
Dead+Wind 45 deg - Service	74.85	18.97	-18.96	-1797.44	-1765.30	-10.31
Dead+Wind 60 deg - Service	74.85	23.28	-13.36	-1270.78	-2171.30	-8.22
Dead+Wind 90 deg - Service	74.85	25.52	0.12	-3.92	-2400.60	-2.52
Dead+Wind 120 deg - Service	74.85	23.40	13.57	1257.93	-2190.00	3.84
Dead+Wind 135 deg - Service	74.85	19.14	19.13	1778.66	-1791.74	6.75
Dead+Wind 150 deg - Service	74.85	13.58	23.39	2176.64	-1270.63	9.18
Dead+Wind 180 deg - Service	74.85	0.12	25.51	2387.00	-7.89	12.06
Dead+Wind 210 deg - Service	74.85	-13.37	23.27	2157.99	1259.88	11.71
Dead+Wind 225 deg - Service	74.85	-18.97	18.96	1752.22	1786.90	10.32
Dead+Wind 240 deg - Service	74.85	-23.28	13.36	1225.55	2192.91	8.22
Dead+Wind 270 deg - Service	74.85	-25.52	-0.12	-41.29	2422.18	2.53

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 300 deg - Service	74.85	-23.40	-13.57	-1303.14	2211.59	-3.84
Dead+Wind 315 deg - Service	74.85	-19.14	-19.14	-1823.88	1813.35	-6.75
Dead+Wind 330 deg - Service	74.85	-13.58	-23.39	-2221.84	1292.23	-9.18

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-74.85	0.00	-0.00	74.85	-0.00	0.000%
2	-0.56	-89.82	-119.74	0.56	89.82	119.74	0.000%
3	-0.56	-67.37	-119.74	0.56	67.37	119.74	0.000%
4	62.76	-89.82	-109.23	-62.76	89.82	109.23	0.000%
5	62.76	-67.37	-109.23	-62.76	67.37	109.23	0.000%
6	89.05	-89.82	-89.02	-89.05	89.82	89.02	0.001%
7	89.05	-67.37	-89.02	-89.05	67.37	89.02	0.001%
8	109.27	-89.82	-62.74	-109.27	89.82	62.74	0.000%
9	109.27	-67.37	-62.74	-109.27	67.37	62.74	0.000%
10	119.79	-89.82	0.56	-119.79	89.82	-0.56	0.000%
11	119.79	-67.37	0.56	-119.79	67.37	-0.56	0.000%
12	109.84	-89.82	63.71	-109.83	89.82	-63.71	0.000%
13	109.84	-67.37	63.71	-109.84	67.37	-63.71	0.000%
14	89.85	-89.82	89.81	-89.85	89.82	-89.81	0.001%
15	89.85	-67.37	89.81	-89.85	67.37	-89.81	0.001%
16	63.74	-89.82	109.79	-63.74	89.82	-109.79	0.000%
17	63.74	-67.37	109.79	-63.74	67.37	-109.79	0.000%
18	0.56	-89.82	119.74	-0.56	89.82	-119.74	0.000%
19	0.56	-67.37	119.74	-0.56	67.37	-119.74	0.000%
20	-62.76	-89.82	109.23	62.76	89.82	-109.23	0.000%
21	-62.76	-67.37	109.23	62.76	67.37	-109.23	0.000%
22	-89.05	-89.82	89.02	89.05	89.82	-89.02	0.001%
23	-89.05	-67.37	89.02	89.05	67.37	-89.02	0.001%
24	-109.27	-89.82	62.74	109.27	89.82	-62.74	0.000%
25	-109.27	-67.37	62.74	109.27	67.37	-62.74	0.000%
26	-119.79	-89.82	-0.56	119.79	89.82	0.56	0.000%
27	-119.79	-67.37	-0.56	119.79	67.37	0.56	0.000%
28	-109.84	-89.82	-63.71	109.83	89.82	63.71	0.000%
29	-109.84	-67.37	-63.71	109.84	67.37	63.71	0.000%
30	-89.85	-89.82	-89.81	89.85	89.82	89.81	0.001%
31	-89.85	-67.37	-89.81	89.85	67.37	89.81	0.001%
32	-63.74	-89.82	-109.79	63.74	89.82	109.79	0.000%
33	-63.74	-67.37	-109.79	63.74	67.37	109.79	0.000%
34	0.00	-164.19	0.00	0.00	164.19	-0.00	0.000%
35	-0.08	-164.19	-28.90	0.08	164.19	28.90	0.000%
36	15.18	-164.19	-26.36	-15.18	164.19	26.36	0.000%
37	21.51	-164.19	-21.50	-21.51	164.19	21.50	0.000%
38	26.37	-164.19	-15.18	-26.37	164.19	15.18	0.000%
39	28.91	-164.19	0.08	-28.91	164.19	-0.08	0.000%
40	26.45	-164.19	15.31	-26.45	164.19	-15.31	0.000%
41	21.62	-164.19	21.61	-21.62	164.19	-21.61	0.000%
42	15.31	-164.19	26.44	-15.31	164.19	-26.44	0.000%
43	0.08	-164.19	28.90	-0.08	164.19	-28.90	0.000%
44	-15.18	-164.19	26.36	15.18	164.19	-26.36	0.000%
45	-21.51	-164.19	21.50	21.51	164.19	-21.50	0.000%
46	-26.37	-164.19	15.18	26.37	164.19	-15.18	0.000%
47	-28.91	-164.19	-0.08	28.91	164.19	0.08	0.000%
48	-26.45	-164.19	-15.31	26.45	164.19	15.31	0.000%
49	-21.62	-164.19	-21.61	21.62	164.19	21.61	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
50	-15.31	-164.19	-26.44	15.31	164.19	26.44	0.000%
51	-0.12	-74.85	-25.51	0.12	74.85	25.51	0.000%
52	13.37	-74.85	-23.27	-13.37	74.85	23.27	0.000%
53	18.97	-74.85	-18.96	-18.97	74.85	18.96	0.000%
54	23.28	-74.85	-13.36	-23.28	74.85	13.36	0.000%
55	25.52	-74.85	0.12	-25.52	74.85	-0.12	0.000%
56	23.40	-74.85	13.57	-23.40	74.85	-13.57	0.000%
57	19.14	-74.85	19.13	-19.14	74.85	-19.13	0.000%
58	13.58	-74.85	23.39	-13.58	74.85	-23.39	0.000%
59	0.12	-74.85	25.51	-0.12	74.85	-25.51	0.000%
60	-13.37	-74.85	23.27	13.37	74.85	-23.27	0.000%
61	-18.97	-74.85	18.96	18.97	74.85	-18.96	0.000%
62	-23.28	-74.85	13.36	23.28	74.85	-13.36	0.000%
63	-25.52	-74.85	-0.12	25.52	74.85	0.12	0.000%
64	-23.40	-74.85	-13.57	23.40	74.85	13.57	0.000%
65	-19.14	-74.85	-19.13	19.14	74.85	19.14	0.010%
66	-13.58	-74.85	-23.39	13.58	74.85	23.39	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00073905
2	Yes	11	0.00090814	0.00025534
3	Yes	15	0.00090824	0.00018873
4	Yes	8	0.00076351	0.00025237
5	Yes	9	0.00090629	0.00021974
6	Yes	6	0.00079341	0.00029673
7	Yes	6	0.00090505	0.00026971
8	Yes	9	0.00085533	0.00020297
9	Yes	10	0.00085488	0.00015251
10	Yes	14	0.00096147	0.00019609
11	Yes	18	0.00096525	0.00014436
12	Yes	9	0.00090245	0.00021209
13	Yes	10	0.00090866	0.00016066
14	Yes	6	0.00082996	0.00030550
15	Yes	6	0.00094838	0.00027841
16	Yes	8	0.00076903	0.00025385
17	Yes	9	0.00092355	0.00022317
18	Yes	11	0.00087223	0.00024664
19	Yes	14	0.00099630	0.00021003
20	Yes	8	0.00073914	0.00024576
21	Yes	9	0.00088042	0.00021451
22	Yes	6	0.00079578	0.00029568
23	Yes	6	0.00090319	0.00026804
24	Yes	9	0.00087652	0.00020689
25	Yes	10	0.00087276	0.00015508
26	Yes	14	0.00098689	0.00020049
27	Yes	18	0.00099020	0.00014765
28	Yes	9	0.00091416	0.00021421
29	Yes	10	0.00091901	0.00016216
30	Yes	6	0.00084166	0.00030912
31	Yes	6	0.00096078	0.00028149
32	Yes	8	0.00079294	0.00026011
33	Yes	9	0.00094926	0.00022820
34	Yes	5	0.00000001	0.00070439

35	Yes	5	0.00000001	0.00040276
36	Yes	5	0.00000001	0.00039151
37	Yes	5	0.00000001	0.00038752
38	Yes	5	0.00000001	0.00038504
39	Yes	5	0.00000001	0.00039320
40	Yes	5	0.00000001	0.00038759
41	Yes	5	0.00000001	0.00039160
42	Yes	5	0.00000001	0.00039724
43	Yes	5	0.00000001	0.00041243
44	Yes	5	0.00000001	0.00039489
45	Yes	5	0.00000001	0.00038812
46	Yes	5	0.00000001	0.00038319
47	Yes	5	0.00000001	0.00038615
48	Yes	5	0.00000001	0.00037734
49	Yes	5	0.00000001	0.00038010
50	Yes	5	0.00000001	0.00038544
51	Yes	4	0.00000001	0.00040338
52	Yes	4	0.00000001	0.00036990
53	Yes	4	0.00000001	0.00033856
54	Yes	4	0.00000001	0.00031329
55	Yes	4	0.00000001	0.00029776
56	Yes	4	0.00000001	0.00031272
57	Yes	4	0.00000001	0.00033744
58	Yes	4	0.00000001	0.00036889
59	Yes	4	0.00000001	0.00040535
60	Yes	4	0.00000001	0.00036935
61	Yes	4	0.00000001	0.00033722
62	Yes	4	0.00000001	0.00031197
63	Yes	4	0.00000001	0.00029686
64	Yes	4	0.00000001	0.00031206
65	Yes	4	0.00000001	0.00033757
66	Yes	4	0.00000001	0.00036737

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	3.077	66	0.1351	0.0079
T2	170 - 163.573	2.763	66	0.1341	0.0076
T3	163.573 - 159.049	2.563	66	0.1320	0.0075
T4	159.049 - 154.524	2.422	66	0.1299	0.0069
T5	154.524 - 150	2.285	66	0.1265	0.0065
T6	150 - 140	2.152	66	0.1222	0.0062
T7	140 - 130	1.874	66	0.1115	0.0058
T8	130 - 120	1.621	66	0.1025	0.0057
T9	120 - 110	1.391	65	0.0923	0.0056
T10	110 - 100	1.181	65	0.0833	0.0048
T11	100 - 90	0.991	65	0.0736	0.0043
T12	90 - 80	0.822	65	0.0650	0.0039
T13	80 - 60	0.670	65	0.0561	0.0034
T14	60 - 50	0.409	65	0.0458	0.0023
T15	50 - 40	0.296	65	0.0406	0.0018
T16	40 - 30	0.203	65	0.0350	0.0015
T17	30 - 20	0.125	65	0.0264	0.0012
T18	20 - 10	0.065	65	0.0177	0.0009
T19	10 - 0	0.024	57	0.0087	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	66	3.077	0.1351	0.0079	627434
183.00	SC479-HF1LDF (D00-E5764)	66	3.077	0.1351	0.0079	627434
181.00	TMA 432-83H-01T - Future Decom.	66	3.077	0.1351	0.0079	627434
180.00	SC479-HF1LDF (D00I-E5764)	66	3.077	0.1351	0.0079	627434
175.00	6' PAD w/ Radome	66	2.920	0.1349	0.0077	627434
174.00	SC479-HF1LDF (D00I-E5764)	66	2.888	0.1348	0.0077	525587
173.00	6' PAD w/ Radome	66	2.857	0.1347	0.0077	464662
170.00	6' PAD w/ Radome	66	2.763	0.1341	0.0076	502246
169.00	BA1010-2	66	2.732	0.1339	0.0076	676036
168.00	SC479-HF1LDF (D00I-E5764)	66	2.701	0.1336	0.0076	Inf
163.00	T-Frame	66	2.545	0.1318	0.0074	299317
161.00	DB408-B	66	2.483	0.1309	0.0071	112928
152.00	12' Omni Antenna	66	2.210	0.1242	0.0063	54319
146.25	12' Omni Antenna	66	2.045	0.1182	0.0060	49803
140.50	12' Omni Antenna	66	1.888	0.1120	0.0058	48576
139.00	Yagi ASP-816	66	1.848	0.1105	0.0058	48838
137.00	BA1010	66	1.796	0.1087	0.0057	49674
136.50	DB222-A	66	1.783	0.1083	0.0057	49944
135.00	ANT220F2 w/clamps	66	1.745	0.1070	0.0057	50841
134.50	BA1010	66	1.732	0.1065	0.0057	51155
132.00	BA1010	66	1.670	0.1044	0.0057	52728
130.00	Dish Ice Shield	66	1.621	0.1025	0.0057	53897
129.50	BA1010	66	1.609	0.1021	0.0058	54162
128.00	PD128-1	66	1.574	0.1006	0.0058	54892
127.00	3" Dia 20' Omni	66	1.550	0.0995	0.0058	55337
125.00	6' PAD w/ Radome	65	1.503	0.0974	0.0057	56181
124.50	PD128-1	65	1.492	0.0969	0.0057	56391
122.00	3" Dia 20' Omni	65	1.435	0.0943	0.0057	57419
121.00	PD128-1	65	1.413	0.0933	0.0056	57794
117.00	3" Dia 20' Omni	65	1.326	0.0895	0.0054	58878
116.00	12' Omni Antenna	65	1.305	0.0886	0.0053	59072
112.00	3" Dia 20' Omni	65	1.221	0.0851	0.0050	59730
111.00	12' Omni Antenna	65	1.201	0.0842	0.0049	59809
107.00	3" Dia 20' Omni	65	1.122	0.0804	0.0047	59419
106.00	4' Grid Dish	65	1.103	0.0794	0.0046	59197
105.00	12' Wireless Frame	65	1.084	0.0784	0.0045	58959
101.00	DB264-A	65	1.010	0.0745	0.0044	58592
96.00	DB264-A	65	0.921	0.0701	0.0041	62536
91.00	SC479-HF1LDF	65	0.838	0.0659	0.0039	68961
86.00	DB264-A	65	0.759	0.0613	0.0037	70909
85.00	SC479-HF1LDF	65	0.744	0.0604	0.0036	70826
79.00	SC479-HF1LDF	65	0.655	0.0553	0.0033	73586
75.00	Dish Ice Shield	65	0.600	0.0527	0.0031	82946
71.00	2'6"x4" Pipe Mount	65	0.546	0.0507	0.0029	96803
61.00	GPS	65	0.421	0.0463	0.0024	145038
50.00	DB803M-Y	65	0.296	0.0406	0.0018	51315

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	14.279	30	0.6230	0.0372
T2	170 - 163.573	12.834	30	0.6188	0.0358
T3	163.573 - 159.049	11.909	30	0.6090	0.0351
T4	159.049 - 154.524	11.259	30	0.6002	0.0323
T5	154.524 - 150	10.623	30	0.5850	0.0305
T6	150 - 140	10.006	30	0.5656	0.0290
T7	140 - 130	8.721	30	0.5160	0.0272
T8	130 - 120	7.549	30	0.4745	0.0270
T9	120 - 110	6.480	30	0.4270	0.0263
T10	110 - 100	5.506	30	0.3860	0.0228
T11	100 - 90	4.624	30	0.3414	0.0203
T12	90 - 80	3.834	30	0.3020	0.0182
T13	80 - 60	3.125	30	0.2606	0.0159
T14	60 - 50	1.911	30	0.2131	0.0108
T15	50 - 40	1.382	30	0.1888	0.0083
T16	40 - 30	0.948	30	0.1628	0.0068
T17	30 - 20	0.585	30	0.1231	0.0054
T18	20 - 10	0.305	30	0.0824	0.0041
T19	10 - 0	0.111	14	0.0407	0.0026

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	30	14.279	0.6230	0.0372	141884
183.00	SC479-HF1LDF (D00-E5764)	30	14.279	0.6230	0.0372	141884
181.00	TMA 432-83H-01T - Future Decom.	30	14.279	0.6230	0.0372	141884
180.00	SC479-HF1LDF (D00I-E5764)	30	14.279	0.6230	0.0372	141884
175.00	6' PAD w/ Radome	30	13.555	0.6222	0.0364	141884
174.00	SC479-HF1LDF (D00I-E5764)	30	13.411	0.6218	0.0363	118879
173.00	6' PAD w/ Radome	30	13.266	0.6213	0.0361	105245
170.00	6' PAD w/ Radome	30	12.834	0.6188	0.0358	119271
169.00	BA1010-2	30	12.690	0.6176	0.0358	174609
168.00	SC479-HF1LDF (D00I-E5764)	30	12.546	0.6162	0.0358	471448
163.00	T-Frame	30	11.827	0.6080	0.0348	98215
161.00	DB408-B	30	11.538	0.6045	0.0335	28307
152.00	12' Omni Antenna	30	10.276	0.5746	0.0296	12079
146.25	12' Omni Antenna	30	9.511	0.5471	0.0281	10824
140.50	12' Omni Antenna	30	8.783	0.5183	0.0272	10473
139.00	Yagi ASP-816	30	8.599	0.5116	0.0271	10519
137.00	BA1010	30	8.358	0.5032	0.0270	10695
136.50	DB222-A	30	8.298	0.5011	0.0270	10753
135.00	ANT220F2 w/clamps	30	8.121	0.4951	0.0269	10948
134.50	BA1010	30	8.063	0.4931	0.0269	11017
132.00	BA1010	30	7.774	0.4831	0.0269	11363
130.00	Dish Ice Shield	30	7.549	0.4745	0.0270	11630
129.50	BA1010	30	7.493	0.4723	0.0271	11693
128.00	PD128-1	30	7.327	0.4654	0.0271	11873
127.00	3" Dia 20' Omni	30	7.218	0.4606	0.0271	11988
125.00	6' PAD w/ Radome	30	7.002	0.4509	0.0270	12214
124.50	PD128-1	30	6.949	0.4484	0.0270	12271
122.00	3" Dia 20' Omni	30	6.686	0.4363	0.0267	12548
121.00	PD128-1	30	6.582	0.4316	0.0265	12646
117.00	3" Dia 20' Omni	30	6.178	0.4143	0.0254	12900
116.00	12' Omni Antenna	30	6.079	0.4102	0.0251	12937
112.00	3" Dia 20' Omni	30	5.693	0.3943	0.0235	13054

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	12' Omni Antenna	30	5.599	0.3902	0.0232	13065
107.00	3" Dia 20' Omni	30	5.231	0.3728	0.0219	12963
106.00	4' Grid Dish	30	5.142	0.3682	0.0216	12912
105.00	12' Wireless Frame	30	5.053	0.3636	0.0214	12858
101.00	DB264-A	30	4.708	0.3457	0.0205	12768
96.00	DB264-A	30	4.298	0.3254	0.0194	13609
91.00	SC479-HF1LDF	30	3.909	0.3060	0.0184	14979
86.00	DB264-A	30	3.541	0.2850	0.0173	15364
85.00	SC479-HF1LDF	30	3.470	0.2807	0.0171	15338
79.00	SC479-HF1LDF	30	3.058	0.2572	0.0157	15900
75.00	Dish Ice Shield	30	2.799	0.2452	0.0147	17928
71.00	2'6"x4" Pipe Mount	30	2.551	0.2356	0.0137	20940
61.00	GPS	30	1.967	0.2153	0.0111	31414
50.00	DB803M-Y	30	1.382	0.1888	0.0083	10957

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.6250	2	1.53	7.19	0.213 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.42	6.17	0.068 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.10	6.17	0.016 ✔	1	Member Block Shear
T2	170	Leg	A325X	0.7500	10	2.20	24.03	0.092 ✔	1	Bearing
		Diagonal	A325X	0.6250	2	1.89	7.19	0.263 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.37	6.17	0.060 ✔	1	Member Block Shear
T3	163.573	Diagonal	A325X	0.6250	2	2.60	6.17	0.421 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.29	6.17	0.047 ✔	1	Member Block Shear
T4	159.049	Diagonal	A325X	0.6250	2	2.93	7.19	0.407 ✔	1	Member Block Shear
T5	154.524	Leg	A325X	0.7500	12	6.78	24.38	0.278 ✔	1	Bearing
		Diagonal	A325X	0.6250	2	2.91	7.19	0.405 ✔	1	Member Block Shear
T6	150	Leg	A325X	0.7500	12	10.31	24.85	0.415 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	3.16	7.19	0.440 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.33	7.19	0.045 ✔	1	Member Block Shear
T7	140	Diagonal	A325X	0.6250	2	4.92	10.26	0.480 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.24	7.19	0.034 ✔	1	Member Block Shear
T8	130	Leg	A325X	0.7500	18	11.51	24.85	0.463 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	5.94	10.26	0.579 ✔	1	Member Block Shear
		Secondary	A325X	0.6250	2	0.78	8.22	0.095 ✔	1	Member Block

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
		Horizontal								Shear
T9	120	Diagonal	A325X	0.6250	2	6.51	10.26	0.634 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	0.42	9.58	0.044 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.99	6.17	0.161 ✔	1	Member Block Shear
T10	110	Leg	A325X	0.7500	24	13.44	24.85	0.541 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	8.03	11.62	0.691 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	1.21	8.22	0.147 ✔	1	Member Block Shear
T11	100	Diagonal	A325X	0.6250	2	7.77	11.62	0.669 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	0.82	9.58	0.085 ✔	1	Member Block Shear
T12	90	Leg	A325X	0.7500	32	14.22	24.85	0.572 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	8.62	11.62	0.741 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	1.71	9.58	0.178 ✔	1	Member Block Shear
T13	80	Leg	A325X	0.7500	32	18.41	24.85	0.741 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	8.56	14.38	0.595 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.54	9.58	0.056 ✔	1	Member Block Shear
T14	60	Diagonal	A325X	0.6250	2	8.57	14.38	0.596 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	1.18	12.34	0.095 ✔	1	Member Block Shear
T15	50	Leg	A325X	0.8750	32	22.28	33.82	0.659 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	9.00	28.75	0.313 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.67	11.62	0.230 ✔	1	Member Block Shear
T16	40	Diagonal	A325X	0.6250	2	9.27	28.75	0.323 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.91	11.62	0.250 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	1.44	12.34	0.116 ✔	1	Member Block Shear
T17	30	Leg	A325X	0.8750	40	21.03	33.82	0.622 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	9.79	28.75	0.341 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	3.16	11.62	0.272 ✔	1	Member Block Shear
T18	20	Diagonal	A325X	0.6250	2	10.64	28.75	0.370 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	2.84	12.34	0.230 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	3.35	11.62	0.289 ✔	1	Member Block Shear
T19	10	Leg	A325X	0.8750	40	22.94	33.82	0.678 ✔	1	Bolt SS
		Diagonal	A325X	0.6250	2	15.48	23.96	0.646 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	11.42	19.17	0.596 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	87.3 K=1.00	2.4800	-2.92	67.87	0.043 [1] ✔
T2	170 - 163.573	L5x5x5/16	6.43	6.43	77.6 K=1.00	3.0300	-11.00	86.11	0.128 [1] ✔
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-21.57	95.81	0.225 [1] ✔
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-31.83	95.81	0.332 [1] ✔
T5	154.524 - 150	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-40.69	95.81	0.425 [1] ✔
T6	150 - 140	L5x5x3/8	10.01	5.01	60.7 K=1.00	3.6100	-61.85	114.91	0.538 [1] ✔
T7	140 - 130	L6x6x1/2	10.01	5.23	53.2 K=1.00	5.7500	-78.58	188.59	0.417 [1] ✔
T8	130 - 120	L6x6x1/2	10.01	5.21	53.0 K=1.00	5.7500	-103.60	188.72	0.549 [1] ✔
T9	120 - 110	L6x6x3/4	10.01	5.20	53.3 K=1.00	8.4400	-132.09	276.71	0.477 [1] ✔
T10	110 - 100	L6x6x3/4	10.01	5.18	53.2 K=1.00	8.4400	-161.24	276.85	0.582 [1] ✔
T11	100 - 90	L8x8x3/4	10.01	10.01	76.0 K=1.00	11.4000	-195.20	335.77	0.581 [1] ✔
T12	90 - 80	L8x8x3/4	10.01	5.16	39.2 K=1.00	11.4000	-227.48	390.57	0.582 [1] ✔
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3 K=1.00	22.0000	-294.58	630.40	0.467 [1] ✔
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6 K=1.00	23.7340	-326.02	679.24	0.480 [1] ✔
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9 K=1.00	23.7340	-356.42	744.33	0.479 [1] ✔
T16	40 - 30	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-387.15	571.83	0.677 [1] ✔
T17	30 - 20	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-420.56	571.89	0.735 [1] ✔
T18	20 - 10	L8x8x1 1/8	10.01	5.11	39.3 K=1.00	16.7000	-447.00	571.94	0.782 [1] ✔
T19	10 - 0	L8x8x1 1/8	10.01	5.01	38.5 K=1.00	16.7000	-458.74	573.16	0.800 [1] ✔

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

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	130.4 K=0.98	0.9020	-3.22	15.19	0.212 [1] ✔
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	103.3 K=1.06	0.9020	-3.95	21.58	0.183 [1] ✔
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	110.5 K=1.03	0.7150	-5.34	15.86	0.337 [1] ✔
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	106.9 K=1.04	0.8090	-5.76	18.66	0.309 [1] ✔
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	109.6 K=1.03	0.8090	-5.96	18.12	0.329 [1] ✔
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	118.8 K=1.00	0.8090	-6.38	16.21	0.394 [1] ✔
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	138.5 K=0.96	1.3100	-10.04	19.53	0.514 [1] ✔
T8	130 - 120	L3x3x1/4	12.98	6.56	129.9 K=0.98	1.4400	-12.13	24.43	0.496 [1] ✔
T9	120 - 110	L3x3x1/4	13.45	6.78	133.3 K=0.97	1.4400	-13.13	23.19	0.566 [1] ✔
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	130.3 K=0.98	1.5600	-16.34	26.32	0.621 [1] ✔
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	133.8 K=0.97	1.5600	-15.65	24.93	0.628 [1] ✔
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	137.5 K=0.96	1.5600	-17.57	23.60	0.744 [1] ✔
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	122.4 K=1.00	1.6200	-17.62	30.87	0.571 [1] ✔
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	126.6 K=1.00	1.6200	-17.26	28.93	0.597 [1] ✔
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	131.2 K=0.97	3.0900	-19.22	51.35	0.374 [1] ✔
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	134.7 K=0.97	3.0900	-18.93	48.75	0.388 [1] ✔
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	138.2 K=0.96	3.0900	-20.21	46.29	0.437 [1] ✔
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	141.8 K=0.95	3.0900	-23.99	43.98	0.545 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x5/16	13.37	12.47	141.2 K=1.00	2.9300	-31.97	42.08	0.760 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	110.3 K=1.10	1.1900	-1.01	26.46	0.038 [1] ✔
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	119.0 K=1.01	1.1900	-1.76	23.75	0.074 [1] ✔
T14	60 - 50	2L2x2x3/16	13.43	6.16	119.8 K=1.00	1.4300	-1.81	28.24	0.064 [1] ✔
T18	20 - 10	2L2x2x3/16	16.29	7.62	141.5 K=0.96	1.4300	-1.85	20.45	0.090 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	123.4 K=0.99	2.3800	-20.59	44.64	0.461 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	180 - 170	L2x2x3/16	6.00	5.31	111.7 K=1.08	0.7150	-0.85	15.65	0.054 [1] ✔
T7	140 - 130	L2x2x1/4	8.03	7.53	137.5 K=0.93	0.9380	-1.18	14.20	0.083 [1] ✔
T8	130 - 120	L2x2x1/4	8.75	7.86	141.4 K=0.91	0.9380	-1.60	13.43	0.119 [1] ✔
T9	120 - 110	L2x2x3/16	9.47	8.57	148.7 K=0.89	0.7150	-1.98	9.25	0.214 [1] ✔
T10	110 - 100	L2x2x1/4	10.19	9.29	158.8 K=0.87	0.9380	-2.42	10.65	0.227 [1] ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	147.5 K=0.90	1.1900	-3.41	15.65	0.218 [1] ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	136.9 K=0.93	1.6900	-5.35	25.83	0.207 [1] ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	142.0 K=0.91	1.6900	-5.81	23.99	0.242 [1] ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	146.9 K=0.90	1.6900	-6.31	22.43	0.281 [1] ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	151.7 K=0.88	1.6900	-6.71	21.02	0.319 [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	180 - 170	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.12	9.64	0.012 [1] ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.50	9.64	0.052 [1] ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	143.4 K=0.91	0.7150	-0.50	9.96	0.050 [1] ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	138.1 K=0.92	0.9020	-0.59	13.55	0.043 [1] ✔
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	101.7 K=1.22	0.9020	-0.56	21.91	0.026 [1] ✔
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	130.4 K=0.98	1.1900	-1.05	20.04	0.052 [1] ✔
T16	40 - 30	2L2x2x3/16	14.86	6.88	130.5 K=0.98	1.4300	-1.89	24.02	0.079 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	107.5 K=1.13	0.9020	-6.89	20.67	0.333 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	143.6 K=1.00	0.9020	-9.05	12.52	0.723 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	145.8	0.9020	-0.04	12.14	0.004 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				✔

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L3x3x5/16	8.86	8.86	180.6 K=1.00	1.7800	-10.52	15.62	0.674 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	140 - 130	L2x2x3/16	5.44	5.44	165.6 K=1.00	0.7150	-0.08	7.46	0.010 [1] ✔
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	181.3 K=1.00	0.8090	-0.09	7.04	0.013 [1] ✔
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	209.8 K=1.00	0.8090	-0.11	5.26	0.021 [1] ✔
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9 K=1.00	1.4300	-0.15	15.05	0.010 [1] ✔
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6 K=1.00	1.4300	-0.17	12.00	0.014 [1] ✔
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4 K=1.00	1.4300	-0.23	9.80	0.024 [1] ✔
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4 K=1.00	1.6200	-0.05	8.73	0.005 [1] ✔
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6 K=1.00	1.6200	-0.21	8.01	0.027 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	56.1	2.4800	1.96	80.35	0.024 [1]
T2	170 - 163.573	L5x5x5/16	6.43	6.43	49.1	1.8623	9.19	81.01	0.113 [1]
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	34.6	3.0300	18.00	98.17	0.183 [1]
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	34.6	3.0300	27.18	98.17	0.277 [1]
T5	154.524 - 150	L5x5x5/16	4.53	4.53	34.6	1.8623	35.98	81.01	0.444 [1]
T6	150 - 140	L5x5x3/8	10.01	5.01	38.5	2.2153	56.45	96.37	0.586 [1]
T7	140 - 130	L6x6x1/2	10.01	5.23	33.7	5.7500	72.08	186.30	0.387 [1]
T8	130 - 120	L6x6x1/2	10.01	5.21	33.6	3.6563	93.97	159.05	0.591 [1]
T9	120 - 110	L6x6x3/4	10.01	5.20	34.1	8.4400	120.83	273.46	0.442 [1]
T10	110 - 100	L6x6x3/4	10.01	5.18	34.0	5.3456	147.93	232.54	0.636 [1]
T11	100 - 90	L8x8x3/4	10.01	10.01	48.6	11.4000	179.57	369.36	0.486 [1]
T12	90 - 80	L8x8x3/4	10.01	5.16	25.1	7.5656	210.27	329.11	0.639 [1]
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3	22.0000	273.17	712.80	0.383 [1]
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6	23.7340	301.30	768.98	0.392 [1]
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9	23.7340	330.07	768.98	0.429 [1]
T16	40 - 30	L8x8x1 1/8	10.01	5.12	25.4	16.7000	356.57	541.08	0.659 [1]
T17	30 - 20	L8x8x1 1/8	10.01	5.12	25.4	10.8375	387.81	471.43	0.823 [1]
T18	20 - 10	L8x8x1 1/8	10.01	5.11	25.4	16.7000	414.44	541.08	0.766 [1]
T19	10 - 0	L8x8x1 1/8	10.01	5.01	24.8	10.8375	421.73	471.43	0.895 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	88.0	0.5710	3.06	24.84	0.123 [1]
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	65.2	0.5710	3.79	24.84	0.152 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	72.4	0.4308	5.19	18.74	0.277 [1]
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	77.0	0.5013	5.86	21.81	0.269 [1]
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	79.6	0.5013	5.83	21.81	0.267 [1]
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	88.2	0.5013	6.32	21.81	0.290 [1]
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	104.5	0.8419	9.84	36.62	0.269 [1]
T8	130 - 120	L3x3x1/4	12.98	6.56	87.2	0.9394	11.89	40.86	0.291 [1]
T9	120 - 110	L3x3x1/4	13.45	6.78	90.0	0.9394	13.02	40.86	0.319 [1]
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	94.8	1.0294	16.07	44.78	0.359 [1]
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	98.1	1.0294	15.55	44.78	0.347 [1]
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	101.4	1.0294	17.23	44.78	0.385 [1]
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	125.4	1.0041	17.11	43.68	0.392 [1]
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	129.6	1.0041	17.15	43.68	0.393 [1]
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	137.8	1.8956	18.00	82.46	0.218 [1]
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	142.3	1.8956	18.55	82.46	0.225 [1]
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	147.0	1.8956	19.58	82.46	0.237 [1]
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	151.6	1.8956	21.27	82.46	0.258 [1]
T19	10 - 0	2L2 1/2x2 1/2x5/16	13.37	12.47	145.7	1.8459	30.95	80.30	0.385 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	67.3	0.7519	0.83	32.71	0.026 [1]
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	78.5	0.7519	1.63	32.71	0.050 [1]
T14	60 - 50	2L2x2x3/16	13.43	6.16	123.7	0.8616	2.35	37.48	0.063 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T18	20 - 10	2L2x2x3/16	16.29	7.62	152.0	0.8616	5.68	37.48	0.152 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	127.5	1.5037	22.85	65.41	0.349 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.84	18.74	0.045 [1] ✔
T7	140 - 130	L2x2x1/4	8.03	7.53	148.4	0.9380	1.18	30.39	0.039 [1] ✔
T8	130 - 120	L2x2x1/4	8.75	7.86	162.6	0.5629	1.55	24.49	0.064 [1] ✔
T9	120 - 110	L2x2x3/16	9.47	8.57	174.4	0.4308	1.98	18.74	0.106 [1] ✔
T10	110 - 100	L2x2x1/4	10.19	9.29	190.9	0.5629	2.42	24.49	0.099 [1] ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	171.0	0.7519	3.41	32.71	0.104 [1] ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	151.8	1.1269	5.35	49.02	0.109 [1] ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	160.1	1.1269	5.81	49.02	0.119 [1] ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	168.0	1.1269	6.31	49.02	0.129 [1] ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	175.9	1.1269	6.71	49.02	0.137 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.19	18.74	0.010 [1] ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.31	111.0	0.4308	0.74	18.74	0.039 [1] ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	108.6	0.4308	0.58	18.74	0.031 [1] ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	101.1	0.5710	0.65	24.84	0.026 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	56.1	0.5710	0.48	24.84	0.019 [1]
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	88.4	0.7519	1.07	32.71	0.033 [1]
T16	40 - 30	2L2x2x3/16	14.86	6.88	137.6	0.8616	2.87	37.48	0.077 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	60.5	0.9020	6.89	29.22	0.236 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	91.4	0.9020	8.57	29.22	0.293 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	92.8	0.9020	0.01	29.22	0.000 [1]

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L3x3x5/16	8.86	8.86	115.4	1.7800	9.67	57.67	0.168 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	140 - 130	L2x2x3/16	5.44	5.44	105.8	0.7150	0.08	23.17	0.003 [1] ✔
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	129.1	0.8090	0.09	26.21	0.004 [1] ✔
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	149.4	0.8090	0.11	26.21	0.004 [1] ✔
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9	1.4300	0.15	46.33	0.003 [1] ✔
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6	1.4300	0.18	46.33	0.004 [1] ✔
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4	1.4300	0.23	46.33	0.005 [1] ✔
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4	1.6200	0.07	52.49	0.001 [1] ✔
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6	1.6200	0.21	52.49	0.004 [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	180 - 170	Leg	L3 1/2x3 1/2x3/8	1	-2.59	67.87	3.8	Pass
		Leg	L3 1/2x3 1/2x3/8	2	-2.92	67.87	4.3	Pass
		Leg	L3 1/2x3 1/2x3/8	3	-2.73	67.87	4.0	Pass
		Leg	L3 1/2x3 1/2x3/8	4	-2.86	67.87	4.2	Pass
T2	170 - 163.573	Leg	L5x5x5/16	21	-10.38	86.11	12.1	Pass
		Leg	L5x5x5/16	22	-10.70	86.11	12.4	Pass
		Leg	L5x5x5/16	23	-10.43	86.11	12.1	Pass
		Leg	L5x5x5/16	24	-11.00	86.11	12.8	Pass
T3	163.573 - 159.049	Leg	L5x5x5/16	37	-19.72	95.81	20.6	Pass
		Leg	L5x5x5/16	38	-21.17	95.81	22.1	Pass
		Leg	L5x5x5/16	39	-21.48	95.81	22.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Leg	L5x5x5/16	40	-21.57	95.81	22.5	Pass
T4	159.049 - 154.524	Leg	L5x5x5/16	53	-29.53	95.81	30.8	Pass
		Leg	L5x5x5/16	54	-31.45	95.81	32.8	Pass
		Leg	L5x5x5/16	55	-31.29	95.81	32.7	Pass
		Leg	L5x5x5/16	56	-31.83	95.81	33.2	Pass
T5	154.524 - 150	Leg	L5x5x5/16	65	34.82	81.01	43.0	Pass
		Leg	L5x5x5/16	66	35.98	81.01	44.4	Pass
		Leg	L5x5x5/16	67	33.65	81.01	41.5	Pass
		Leg	L5x5x5/16	68	35.74	81.01	44.1	Pass
T6	150 - 140	Leg	L5x5x3/8	77	54.51	96.37	56.6	Pass
		Leg	L5x5x3/8	78	56.45	96.37	58.6	Pass
		Leg	L5x5x3/8	79	53.42	96.37	55.4	Pass
		Leg	L5x5x3/8	80	56.29	96.37	58.4	Pass
T7	140 - 130	Leg	L6x6x1/2	101	-74.78	188.59	39.7	Pass
		Leg	L6x6x1/2	102	-78.48	188.59	41.6	Pass
		Leg	L6x6x1/2	103	-76.52	188.59	40.6	Pass
		Leg	L6x6x1/2	104	-78.58	188.59	41.7	Pass
T8	130 - 120	Leg	L6x6x1/2	126	90.97	159.05	57.2	Pass
		Leg	L6x6x1/2	127	93.97	159.05	59.1	Pass
		Leg	L6x6x1/2	128	89.83	159.05	56.5	Pass
		Leg	L6x6x1/2	129	93.96	159.05	59.1	Pass
T9	120 - 110	Leg	L6x6x3/4	142	-126.55	276.71	45.7	Pass
		Leg	L6x6x3/4	143	-129.92	276.71	47.0	Pass
		Leg	L6x6x3/4	144	-127.79	276.71	46.2	Pass
		Leg	L6x6x3/4	145	-132.09	276.71	47.7	Pass
T10	110 - 100	Leg	L6x6x3/4	167	143.66	232.54	61.8	Pass
		Leg	L6x6x3/4	168	147.93	232.54	63.6	Pass
		Leg	L6x6x3/4	169	142.82	232.54	61.4	Pass
		Leg	L6x6x3/4	170	146.41	232.54	63.0	Pass
T11	100 - 90	Leg	L8x8x3/4	183	-188.80	335.77	56.2	Pass
		Leg	L8x8x3/4	184	-193.12	335.77	57.5	Pass
		Leg	L8x8x3/4	185	-190.72	335.77	56.8	Pass
		Leg	L8x8x3/4	186	-195.20	335.77	58.1	Pass
T12	90 - 80	Leg	L8x8x3/4	204	205.40	329.11	62.4	Pass
		Leg	L8x8x3/4	205	210.27	329.11	63.9	Pass
		Leg	L8x8x3/4	206	204.04	329.11	62.0	Pass
		Leg	L8x8x3/4	207	208.80	329.11	63.4	Pass
T13	80 - 60	Leg	L8x8x1 w/ 1/2x7 Plates	220	-287.12	630.40	45.5 72.2 (b)	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	221	-292.20	630.40	46.4 73.5 (b)	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	222	-288.61	630.40	45.8 72.6 (b)	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	223	-294.58	630.40	46.7 74.1 (b)	Pass
T14	60 - 50	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	249	-318.37	679.24	46.9	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	250	-323.67	679.24	47.7	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	251	-319.72	679.24	47.1	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	252	-326.02	679.24	48.0	Pass
T15	50 - 40	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	270	-348.58	744.33	46.8 64.4 (b)	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	271	-354.07	744.33	47.6 65.4 (b)	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	272	-349.80	744.33	47.0 64.6 (b)	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	273	-356.42	744.33	47.9 65.9 (b)	Pass
T16	40 - 30	Leg	L8x8x1 1/8	286	-379.14	571.83	66.3	Pass
		Leg	L8x8x1 1/8	287	-384.80	571.83	67.3	Pass
		Leg	L8x8x1 1/8	288	-380.24	571.83	66.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Leg	L8x8x1 1/8	289	-387.15	571.83	67.7	Pass
T17	30 - 20	Leg	L8x8x1 1/8	311	380.83	471.43	80.8	Pass
		Leg	L8x8x1 1/8	312	387.81	471.43	82.3	Pass
		Leg	L8x8x1 1/8	313	380.04	471.43	80.6	Pass
		Leg	L8x8x1 1/8	314	386.12	471.43	81.9	Pass
T18	20 - 10	Leg	L8x8x1 1/8	327	-438.74	571.94	76.7	Pass
		Leg	L8x8x1 1/8	328	-444.67	571.94	77.7	Pass
		Leg	L8x8x1 1/8	329	-439.61	571.94	76.9	Pass
		Leg	L8x8x1 1/8	330	-447.00	571.94	78.2	Pass
T19	10 - 0	Leg	L8x8x1 1/8	352	414.54	471.43	87.9	Pass
		Leg	L8x8x1 1/8	353	421.73	471.43	89.5	Pass
		Leg	L8x8x1 1/8	354	413.92	471.43	87.8	Pass
		Leg	L8x8x1 1/8	355	420.05	471.43	89.1	Pass
T1	180 - 170	Diagonal	L2 1/2x2 1/2x3/16	9	-3.01	15.19	19.8 19.9 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	10	-3.04	15.19	20.0 20.1 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	11	-3.22	15.19	21.2 21.3 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	12	-3.19	15.19	21.0 21.1 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	13	-3.19	15.19	21.0	Pass
		Diagonal	L2 1/2x2 1/2x3/16	14	-3.22	15.19	21.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	15	-3.04	15.19	20.0	Pass
		Diagonal	L2 1/2x2 1/2x3/16	16	-3.01	15.19	19.8	Pass
T2	170 - 163.573	Diagonal	L2 1/2x2 1/2x3/16	29	-3.69	21.58	17.1 24.8 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	30	-3.86	21.58	17.9 25.8 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	31	-3.79	21.58	17.6 25.2 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	32	-3.64	21.58	16.9 24.3 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	33	-3.94	21.58	18.3 26.0 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	34	-3.90	21.58	18.1 25.9 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	35	-3.95	21.58	18.3 26.3 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	36	-3.95	21.58	18.3 26.3 (b)	Pass
T3	163.573 - 159.049	Diagonal	L2x2x3/16	45	-4.51	15.86	28.4 35.8 (b)	Pass
		Diagonal	L2x2x3/16	46	-4.50	15.86	28.4 36.0 (b)	Pass
		Diagonal	L2x2x3/16	47	-5.06	15.86	31.9 39.8 (b)	Pass
		Diagonal	L2x2x3/16	48	-5.00	15.86	31.5 39.9 (b)	Pass
		Diagonal	L2x2x3/16	49	-5.30	15.86	33.4 42.1 (b)	Pass
		Diagonal	L2x2x3/16	50	-5.34	15.86	33.7 42.1 (b)	Pass
		Diagonal	L2x2x3/16	51	-4.76	15.86	30.0 38.1 (b)	Pass
		Diagonal	L2x2x3/16	52	-4.79	15.86	30.2 37.7 (b)	Pass
T4	159.049 - 154.524	Diagonal	L2 1/2x2x3/16	57	-4.96	18.66	26.6 34.5 (b)	Pass
		Diagonal	L2 1/2x2x3/16	58	-4.92	18.66	26.4 34.6 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L2 1/2x2x3/16	59	-5.51	18.66	29.5 38.5 (b)	Pass
		Diagonal	L2 1/2x2x3/16	60	-5.49	18.66	29.4 38.9 (b)	Pass
		Diagonal	L2 1/2x2x3/16	61	-5.75	18.66	30.8 40.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	62	-5.76	18.66	30.9 40.5 (b)	Pass
		Diagonal	L2 1/2x2x3/16	63	-5.15	18.66	27.6 36.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	64	-5.20	18.66	27.9 36.1 (b)	Pass
T5	154.524 - 150	Diagonal	L2 1/2x2x3/16	69	-5.18	18.12	28.6 35.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	70	-5.18	18.12	28.6 35.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	71	-5.74	18.12	31.7 39.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	72	-5.68	18.12	31.4 39.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	73	-5.92	18.12	32.6 40.5 (b)	Pass
		Diagonal	L2 1/2x2x3/16	74	-5.96	18.12	32.9 40.5 (b)	Pass
		Diagonal	L2 1/2x2x3/16	75	-5.37	18.12	29.6 37.1 (b)	Pass
		Diagonal	L2 1/2x2x3/16	76	-5.38	18.12	29.7 36.7 (b)	Pass
T6	150 - 140	Diagonal	L2 1/2x2x3/16	85	-5.87	16.21	36.2 40.3 (b)	Pass
		Diagonal	L2 1/2x2x3/16	86	-5.85	16.21	36.1 40.6 (b)	Pass
		Diagonal	L2 1/2x2x3/16	87	-6.35	16.21	39.2 43.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	88	-6.31	16.21	38.9 43.8 (b)	Pass
		Diagonal	L2 1/2x2x3/16	89	-6.35	16.21	39.2 44.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	90	-6.38	16.21	39.4 43.9 (b)	Pass
		Diagonal	L2 1/2x2x3/16	91	-5.86	16.21	36.1 40.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	92	-5.88	16.21	36.3 40.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	93	-5.49	16.85	32.6 37.9 (b)	Pass
		Diagonal	L2 1/2x2x3/16	94	-5.47	16.85	32.4 38.1 (b)	Pass
		Diagonal	L2 1/2x2x3/16	95	-6.02	16.85	35.7 41.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	96	-5.98	16.85	35.5 41.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	97	-6.12	16.85	36.3 42.6 (b)	Pass
		Diagonal	L2 1/2x2x3/16	98	-6.15	16.85	36.5 42.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	99	-5.57	16.85	33.1 38.9 (b)	Pass
		Diagonal	L2 1/2x2x3/16	100	-5.61	16.85	33.3 38.6 (b)	Pass
T7	140 - 130	Diagonal	L3x2 1/2x1/4	114	-9.34	19.53	47.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L3x2 1/2x1/4	115	-9.33	19.53	47.8	Pass
		Diagonal	L3x2 1/2x1/4	116	-10.04	19.53	51.4	Pass
		Diagonal	L3x2 1/2x1/4	117	-9.95	19.53	50.9	Pass
		Diagonal	L3x2 1/2x1/4	118	-9.88	19.53	50.6	Pass
		Diagonal	L3x2 1/2x1/4	119	-9.95	19.53	51.0	Pass
		Diagonal	L3x2 1/2x1/4	120	-9.22	19.53	47.2	Pass
		Diagonal	L3x2 1/2x1/4	121	-9.25	19.53	47.3	Pass
T8	130 - 120	Diagonal	L3x3x1/4	130	-11.14	24.43	45.6 53.3 (b)	Pass
		Diagonal	L3x3x1/4	131	-11.17	24.43	45.7 53.6 (b)	Pass
		Diagonal	L3x3x1/4	132	-11.68	24.43	47.8 55.9 (b)	Pass
		Diagonal	L3x3x1/4	133	-11.57	24.43	47.4 55.7 (b)	Pass
		Diagonal	L3x3x1/4	134	-12.07	24.43	49.4 57.7 (b)	Pass
		Diagonal	L3x3x1/4	135	-12.13	24.43	49.6 57.9 (b)	Pass
		Diagonal	L3x3x1/4	136	-11.59	24.43	47.4 55.7 (b)	Pass
		Diagonal	L3x3x1/4	137	-11.61	24.43	47.5 55.2 (b)	Pass
T9	120 - 110	Diagonal	L3x3x1/4	155	-12.01	23.19	51.8 57.9 (b)	Pass
		Diagonal	L3x3x1/4	156	-12.08	23.19	52.1 58.1 (b)	Pass
		Diagonal	L3x3x1/4	157	-12.29	23.19	53.0 58.9 (b)	Pass
		Diagonal	L3x3x1/4	158	-12.15	23.19	52.4 59.1 (b)	Pass
		Diagonal	L3x3x1/4	159	-13.11	23.19	56.5 63.1 (b)	Pass
		Diagonal	L3x3x1/4	160	-13.13	23.19	56.6 63.4 (b)	Pass
		Diagonal	L3x3x1/4	161	-12.91	23.19	55.7 62.4 (b)	Pass
		Diagonal	L3x3x1/4	162	-12.95	23.19	55.8 61.8 (b)	Pass
T10	110 - 100	Diagonal	L3 1/2x3x1/4	171	-15.16	26.32	57.6 64.2 (b)	Pass
		Diagonal	L3 1/2x3x1/4	172	-15.18	26.32	57.7 64.3 (b)	Pass
		Diagonal	L3 1/2x3x1/4	173	-15.66	26.32	59.5 65.9 (b)	Pass
		Diagonal	L3 1/2x3x1/4	174	-15.54	26.32	59.0 66.1 (b)	Pass
		Diagonal	L3 1/2x3x1/4	175	-16.31	26.32	62.0 69.0 (b)	Pass
		Diagonal	L3 1/2x3x1/4	176	-16.34	26.32	62.1 69.1 (b)	Pass
		Diagonal	L3 1/2x3x1/4	177	-15.83	26.32	60.1 67.4 (b)	Pass
		Diagonal	L3 1/2x3x1/4	178	-15.90	26.32	60.4 67.0 (b)	Pass
T11	100 - 90	Diagonal	L3 1/2x3x1/4	196	-14.53	24.93	58.3 62.2 (b)	Pass
		Diagonal	L3 1/2x3x1/4	197	-14.55	24.93	58.4 62.3 (b)	Pass
		Diagonal	L3 1/2x3x1/4	198	-15.00	24.93	60.2 63.6 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L3 1/2x3x1/4	199	-14.88	24.93	59.7	Pass
							63.9 (b)	
		Diagonal	L3 1/2x3x1/4	200	-15.63	24.93	62.7	Pass
							66.8 (b)	
		Diagonal	L3 1/2x3x1/4	201	-15.65	24.93	62.8	Pass
							66.9 (b)	
		Diagonal	L3 1/2x3x1/4	202	-15.23	24.93	61.1	Pass
							65.4 (b)	
		Diagonal	L3 1/2x3x1/4	203	-15.30	24.93	61.4	Pass
							64.9 (b)	
T12	90 - 80	Diagonal	L3 1/2x3x1/4	208	-16.47	23.60	69.8	Pass
		Diagonal	L3 1/2x3x1/4	209	-16.50	23.60	69.9	Pass
		Diagonal	L3 1/2x3x1/4	210	-16.71	23.60	70.8	Pass
		Diagonal	L3 1/2x3x1/4	211	-16.61	23.60	70.4	Pass
							70.5 (b)	
		Diagonal	L3 1/2x3x1/4	212	-17.55	23.60	74.4	Pass
		Diagonal	L3 1/2x3x1/4	213	-17.57	23.60	74.4	Pass
		Diagonal	L3 1/2x3x1/4	214	-17.28	23.60	73.2	Pass
							73.4 (b)	
		Diagonal	L3 1/2x3x1/4	215	-17.34	23.60	73.5	Pass
T13	80 - 60	Diagonal	2L2 1/2x2x3/16	233	-16.64	30.87	53.9	Pass
							55.8 (b)	
		Diagonal	2L2 1/2x2x3/16	234	-16.66	30.87	54.0	Pass
							55.7 (b)	
		Diagonal	2L2 1/2x2x3/16	235	-16.53	30.87	53.5	Pass
							55.7 (b)	
		Diagonal	2L2 1/2x2x3/16	236	-16.44	30.87	53.3	Pass
							55.9 (b)	
		Diagonal	2L2 1/2x2x3/16	237	-17.62	30.87	57.1	Pass
							59.0 (b)	
		Diagonal	2L2 1/2x2x3/16	238	-17.60	30.87	57.0	Pass
							59.1 (b)	
		Diagonal	2L2 1/2x2x3/16	239	-17.48	30.87	56.6	Pass
							59.5 (b)	
		Diagonal	2L2 1/2x2x3/16	240	-17.56	30.87	56.9	Pass
							59.3 (b)	
		Diagonal	2L2 1/2x2x3/16	241	-15.61	32.69	47.7	Pass
							54.2 (b)	
		Diagonal	2L2 1/2x2x3/16	242	-15.63	32.69	47.8	Pass
							54.2 (b)	
		Diagonal	2L2 1/2x2x3/16	243	-15.79	32.69	48.3	Pass
							54.2 (b)	
		Diagonal	2L2 1/2x2x3/16	244	-15.69	32.69	48.0	Pass
							54.5 (b)	
		Diagonal	2L2 1/2x2x3/16	245	-16.67	32.69	51.0	Pass
							57.7 (b)	
		Diagonal	2L2 1/2x2x3/16	246	-16.67	32.69	51.0	Pass
							57.8 (b)	
		Diagonal	2L2 1/2x2x3/16	247	-16.56	32.69	50.7	Pass
							57.5 (b)	
		Diagonal	2L2 1/2x2x3/16	248	-16.63	32.69	50.9	Pass
							57.1 (b)	
T14	60 - 50	Diagonal	2L2 1/2x2x3/16	262	-16.22	28.93	56.1	Pass
		Diagonal	2L2 1/2x2x3/16	263	-16.27	28.93	56.2	Pass
		Diagonal	2L2 1/2x2x3/16	264	-16.15	28.93	55.8	Pass
		Diagonal	2L2 1/2x2x3/16	265	-16.05	28.93	55.5	Pass
							55.7 (b)	
		Diagonal	2L2 1/2x2x3/16	266	-17.10	28.93	59.1	Pass
		Diagonal	2L2 1/2x2x3/16	267	-17.11	28.93	59.1	Pass
		Diagonal	2L2 1/2x2x3/16	268	-17.21	28.93	59.5	Pass
							59.6 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x3/16	269	-17.26	28.93	59.7	Pass
T15	50 - 40	Diagonal	2L2 1/2x2x3/8	274	-18.28	51.35	35.6	Pass
		Diagonal	2L2 1/2x2x3/8	275	-18.33	51.35	35.7	Pass
		Diagonal	2L2 1/2x2x3/8	276	-17.91	51.35	34.9	Pass
		Diagonal	2L2 1/2x2x3/8	277	-17.82	51.35	34.7	Pass
		Diagonal	2L2 1/2x2x3/8	278	-19.07	51.35	37.1	Pass
		Diagonal	2L2 1/2x2x3/8	279	-19.07	51.35	37.1	Pass
		Diagonal	2L2 1/2x2x3/8	280	-19.17	51.35	37.3	Pass
		Diagonal	2L2 1/2x2x3/8	281	-19.22	51.35	37.4	Pass
T16	40 - 30	Diagonal	2L2 1/2x2x3/8	299	-17.88	48.75	36.7	Pass
		Diagonal	2L2 1/2x2x3/8	300	-18.37	48.75	37.7	Pass
		Diagonal	2L2 1/2x2x3/8	301	-17.78	48.75	36.5	Pass
		Diagonal	2L2 1/2x2x3/8	302	-17.37	48.75	35.6	Pass
		Diagonal	2L2 1/2x2x3/8	303	-18.84	48.75	38.6	Pass
		Diagonal	2L2 1/2x2x3/8	304	-18.61	48.75	38.2	Pass
		Diagonal	2L2 1/2x2x3/8	305	-18.89	48.75	38.7	Pass
		Diagonal	2L2 1/2x2x3/8	306	-18.93	48.75	38.8	Pass
T17	30 - 20	Diagonal	2L2 1/2x2x3/8	315	-19.20	46.29	41.5	Pass
		Diagonal	2L2 1/2x2x3/8	316	-19.23	46.29	41.5	Pass
		Diagonal	2L2 1/2x2x3/8	317	-18.62	46.29	40.2	Pass
		Diagonal	2L2 1/2x2x3/8	318	-18.55	46.29	40.1	Pass
		Diagonal	2L2 1/2x2x3/8	319	-19.79	46.29	42.7	Pass
		Diagonal	2L2 1/2x2x3/8	320	-19.77	46.29	42.7	Pass
		Diagonal	2L2 1/2x2x3/8	321	-20.15	46.29	43.5	Pass
		Diagonal	2L2 1/2x2x3/8	322	-20.21	46.29	43.7	Pass
T18	20 - 10	Diagonal	2L2 1/2x2x3/8	340	-22.64	43.98	51.5	Pass
		Diagonal	2L2 1/2x2x3/8	341	-23.70	43.98	53.9	Pass
		Diagonal	2L2 1/2x2x3/8	342	-22.50	43.98	51.2	Pass
		Diagonal	2L2 1/2x2x3/8	343	-22.05	43.98	50.1	Pass
		Diagonal	2L2 1/2x2x3/8	344	-23.99	43.98	54.5	Pass
		Diagonal	2L2 1/2x2x3/8	345	-23.22	43.98	52.8	Pass
		Diagonal	2L2 1/2x2x3/8	346	-23.75	43.98	54.0	Pass
		Diagonal	2L2 1/2x2x3/8	347	-23.90	43.98	54.3	Pass
T19	10 - 0	Diagonal	2L2 1/2x2 1/2x5/16	357	-29.90	42.08	71.1	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	360	-31.34	42.08	74.5	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	365	-30.09	42.08	71.5	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	368	-29.55	42.08	70.2	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	374	-31.62	42.08	75.2	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	377	-30.61	42.08	72.7	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	383	-31.83	42.08	75.7	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	386	-31.97	42.08	76.0	Pass
T9	120 - 110	Horizontal	L2 1/2x2 1/2x1/4	146	-1.01	26.46	3.8 4.3 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	147	-1.01	26.46	3.8 4.4 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	148	-1.01	26.46	3.8 4.3 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	149	-1.01	26.46	3.8 4.4 (b)	Pass
T11	100 - 90	Horizontal	L2 1/2x2 1/2x1/4	187	-1.76	23.75	7.4 8.4 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	188	-1.75	23.75	7.4 8.5 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	189	-1.74	23.75	7.3 8.5 (b)	Pass
		Horizontal	L2 1/2x2 1/2x1/4	190	-1.75	23.75	7.4 8.5 (b)	Pass
T14	60 - 50	Horizontal	2L2x2x3/16	253	2.34	37.48	6.2 9.5 (b)	Pass
		Horizontal	2L2x2x3/16	254	-1.81	28.24	6.4 8.9 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Horizontal	2L2x2x3/16	255	2.35	37.48	6.3	Pass
							9.5 (b)	
		Horizontal	2L2x2x3/16	256	-1.81	28.24	6.4	Pass
							9.0 (b)	
T18	20 - 10	Horizontal	2L2x2x3/16	331	5.65	37.48	15.1	Pass
							22.9 (b)	
		Horizontal	2L2x2x3/16	332	5.08	37.48	13.6	Pass
							20.6 (b)	
		Horizontal	2L2x2x3/16	333	5.68	37.48	15.2	Pass
							23.0 (b)	
		Horizontal	2L2x2x3/16	334	5.09	37.48	13.6	Pass
							20.6 (b)	
T19	10 - 0	Horizontal	2L2 1/2x2 1/2x1/4	356	-19.94	44.64	44.7	Pass
							59.1 (b)	
		Horizontal	2L2 1/2x2 1/2x1/4	364	-19.37	44.64	43.4	Pass
							56.3 (b)	
		Horizontal	2L2 1/2x2 1/2x1/4	373	-20.03	44.64	44.9	Pass
							59.6 (b)	
		Horizontal	2L2 1/2x2 1/2x1/4	382	-20.59	44.64	46.1	Pass
							59.6 (b)	
T1	180 - 170	Secondary Horizontal	L2x2x3/16	17	-0.66	15.65	4.2	Pass
							5.3 (b)	
		Secondary Horizontal	L2x2x3/16	18	-0.85	15.65	5.4	Pass
							6.8 (b)	
		Secondary Horizontal	L2x2x3/16	19	-0.72	15.65	4.6	Pass
							5.8 (b)	
		Secondary Horizontal	L2x2x3/16	20	-0.52	15.65	3.3	Pass
							4.1 (b)	
T7	140 - 130	Secondary Horizontal	L2x2x1/4	122	-1.18	14.20	8.3	Pass
		Secondary Horizontal	L2x2x1/4	123	-1.18	14.20	8.3	Pass
		Secondary Horizontal	L2x2x1/4	124	-1.18	14.20	8.3	Pass
		Secondary Horizontal	L2x2x1/4	125	-1.18	14.20	8.3	Pass
T8	130 - 120	Secondary Horizontal	L2x2x1/4	138	-1.52	13.43	11.4	Pass
		Secondary Horizontal	L2x2x1/4	139	-1.52	13.43	11.4	Pass
		Secondary Horizontal	L2x2x1/4	140	-1.59	13.43	11.9	Pass
		Secondary Horizontal	L2x2x1/4	141	-1.60	13.43	11.9	Pass
T9	120 - 110	Secondary Horizontal	L2x2x3/16	163	-1.95	9.25	21.1	Pass
		Secondary Horizontal	L2x2x3/16	164	-1.95	9.25	21.1	Pass
		Secondary Horizontal	L2x2x3/16	165	-1.98	9.25	21.4	Pass
		Secondary Horizontal	L2x2x3/16	166	-1.98	9.25	21.4	Pass
T10	110 - 100	Secondary Horizontal	L2x2x1/4	179	-2.39	10.65	22.4	Pass
		Secondary Horizontal	L2x2x1/4	180	-2.39	10.65	22.4	Pass
		Secondary Horizontal	L2x2x1/4	181	-2.42	10.65	22.7	Pass
		Secondary Horizontal	L2x2x1/4	182	-2.42	10.65	22.7	Pass
T12	90 - 80	Secondary Horizontal	L2 1/2x2 1/2x1/4	216	-3.38	15.65	21.6	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	217	-3.38	15.65	21.6	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	218	-3.41	15.65	21.8	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	219	-3.41	15.65	21.8	Pass
T15	50 - 40	Secondary Horizontal	L3 1/2x3 1/2x1/4	282	-5.31	25.83	20.6	Pass
							22.9 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	283	-5.31	25.83	20.6	Pass
							22.9 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	284	-5.35	25.83	20.7	Pass
							23.0 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	285	-5.35	25.83	20.7	Pass
							23.0 (b)	
T16	40 - 30	Secondary Horizontal	L3 1/2x3 1/2x1/4	307	-5.78	23.99	24.1	Pass
							24.8 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	308	-5.78	23.99	24.1	Pass
							24.8 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	309	-5.81	23.99	24.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							25.0 (b)	
		Secondary Horizontal	L3 1/2x3 1/2x1/4	310	-5.81	23.99	24.2	Pass
							25.0 (b)	
T17	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	323	-6.28	22.43	28.0	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	324	-6.28	22.43	28.0	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	325	-6.31	22.43	28.1	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	326	-6.31	22.43	28.1	Pass
T18	20 - 10	Secondary Horizontal	L3 1/2x3 1/2x1/4	348	-6.67	21.02	31.8	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	349	-6.67	21.02	31.8	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	350	-6.71	21.02	31.9	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	351	-6.71	21.02	31.9	Pass
T1	180 - 170	Top Girt	L2x2x3/16	5	-0.12	9.64	1.2	Pass
							1.5 (b)	
		Top Girt	L2x2x3/16	6	-0.12	9.64	1.2	Pass
							1.5 (b)	
		Top Girt	L2x2x3/16	7	-0.11	9.64	1.1	Pass
							1.6 (b)	
		Top Girt	L2x2x3/16	8	-0.11	9.64	1.2	Pass
							1.6 (b)	
T2	170 - 163.573	Top Girt	L2x2x3/16	25	-0.50	9.64	5.2	Pass
							5.8 (b)	
		Top Girt	L2x2x3/16	26	-0.50	9.64	5.1	Pass
							5.9 (b)	
		Top Girt	L2x2x3/16	27	-0.48	9.64	5.0	Pass
							6.0 (b)	
		Top Girt	L2x2x3/16	28	-0.49	9.64	5.1	Pass
							5.9 (b)	
T3	163.573 - 159.049	Top Girt	L2x2x3/16	41	-0.50	9.96	5.0	Pass
		Top Girt	L2x2x3/16	42	-0.50	9.96	5.0	Pass
		Top Girt	L2x2x3/16	43	-0.50	9.96	5.0	Pass
		Top Girt	L2x2x3/16	44	-0.49	9.96	4.9	Pass
T6	150 - 140	Top Girt	L2 1/2x2 1/2x3/16	81	-0.59	13.55	4.3	Pass
							4.4 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	82	-0.57	13.55	4.2	Pass
							4.5 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	83	-0.57	13.55	4.2	Pass
							4.5 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	84	-0.58	13.55	4.3	Pass
							4.4 (b)	
T7	140 - 130	Top Girt	L2 1/2x2 1/2x3/16	105	-0.55	21.91	2.5	Pass
							3.2 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	106	-0.54	21.91	2.4	Pass
							3.4 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	107	-0.54	21.91	2.5	Pass
							3.3 (b)	
		Top Girt	L2 1/2x2 1/2x3/16	108	-0.56	21.91	2.6	Pass
							3.2 (b)	
T13	80 - 60	Top Girt	L2 1/2x2 1/2x1/4	224	-1.01	20.04	5.1	Pass
							5.5 (b)	
		Top Girt	L2 1/2x2 1/2x1/4	225	-1.05	20.04	5.2	Pass
							5.3 (b)	
		Top Girt	L2 1/2x2 1/2x1/4	226	-1.00	20.04	5.0	Pass
							5.6 (b)	
		Top Girt	L2 1/2x2 1/2x1/4	227	-1.04	20.04	5.2	Pass
							5.3 (b)	
T16	40 - 30	Top Girt	2L2x2x3/16	290	2.86	37.48	7.6	Pass
							11.6 (b)	
		Top Girt	2L2x2x3/16	291	-1.89	24.02	7.9	Pass
							10.4 (b)	
		Top Girt	2L2x2x3/16	292	2.87	37.48	7.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							11.6 (b)	
		Top Girt	2L2x2x3/16	293	-1.88	24.02	7.8	Pass
							10.4 (b)	
T19	10 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	358	-6.76	20.67	32.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	361	-6.85	20.67	33.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	366	-6.85	20.67	33.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	369	-6.77	20.67	32.8	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	375	-6.77	20.67	32.8	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	378	-6.89	20.67	33.3	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	384	-6.89	20.67	33.3	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	387	-6.76	20.67	32.7	Pass
T19	10 - 0	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	359	-8.97	12.52	71.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	362	-8.92	12.52	71.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	367	-8.99	12.52	71.8	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	370	-9.01	12.52	72.0	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	376	-8.95	12.52	71.5	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	379	-9.03	12.52	72.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	385	-9.05	12.52	72.3	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	388	-9.00	12.52	71.9	Pass
T19	10 - 0	Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	372	-0.04	12.14	0.4	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	381	-0.04	12.14	0.3	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	390	-0.04	12.14	0.3	Pass
		Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	391	-0.04	12.14	0.3	Pass
T19	10 - 0	Redund Sub Horz Bracing	L3x3x5/16	363	-10.38	15.62	66.5	Pass
		Redund Sub Horz Bracing	L3x3x5/16	371	-10.49	15.62	67.2	Pass
		Redund Sub Horz Bracing	L3x3x5/16	380	-10.44	15.62	66.8	Pass
		Redund Sub Horz Bracing	L3x3x5/16	389	-10.52	15.62	67.4	Pass
T7	140 - 130	Inner Bracing	L2x2x3/16	109	-0.08	7.46	1.0	Pass
		Inner Bracing	L2x2x3/16	110	-0.08	7.46	1.0	Pass
		Inner Bracing	L2x2x3/16	111	-0.08	7.46	1.0	Pass
		Inner Bracing	L2x2x3/16	112	-0.08	7.46	1.0	Pass
		Inner Bracing	L2x2x3/16	113	-0.01	3.73	0.4	Pass
T9	120 - 110	Inner Bracing	L2 1/2x2x3/16	150	-0.09	7.04	1.3	Pass
		Inner Bracing	L2 1/2x2x3/16	151	-0.09	7.04	1.3	Pass
		Inner Bracing	L2 1/2x2x3/16	152	-0.09	7.04	1.3	Pass
		Inner Bracing	L2 1/2x2x3/16	153	-0.09	7.04	1.3	Pass
		Inner Bracing	L2 1/2x2x3/16	154	-0.00	3.52	0.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T11	100 - 90	Inner Bracing	L2 1/2x2x3/16	191	-0.11	5.26	2.0	Pass
		Inner Bracing	L2 1/2x2x3/16	192	-0.11	5.26	2.1	Pass
		Inner Bracing	L2 1/2x2x3/16	193	-0.11	5.26	2.0	Pass
		Inner Bracing	L2 1/2x2x3/16	194	-0.11	5.26	2.1	Pass
		Inner Bracing	L2 1/2x2x3/16	195	-0.00	2.63	0.6	Pass
T13	80 - 60	Inner Bracing	2L2x2x3/16	228	-0.14	15.05	0.9	Pass
		Inner Bracing	2L2x2x3/16	229	-0.15	15.05	1.0	Pass
		Inner Bracing	2L2x2x3/16	230	-0.14	15.05	0.9	Pass
		Inner Bracing	2L2x2x3/16	231	-0.15	15.05	1.0	Pass
		Inner Bracing	2L2x2x3/16	232	-0.02	7.52	0.5	Pass
T14	60 - 50	Inner Bracing	2L2x2x3/16	257	-0.17	12.00	1.4	Pass
		Inner Bracing	2L2x2x3/16	258	-0.17	12.00	1.4	Pass
		Inner Bracing	2L2x2x3/16	259	-0.17	12.00	1.4	Pass
		Inner Bracing	2L2x2x3/16	260	-0.17	12.00	1.4	Pass
		Inner Bracing	2L2x2x3/16	261	0.00	46.33	0.5	Pass
T16	40 - 30	Inner Bracing	2L2x2x3/16	294	-0.22	9.80	2.3	Pass
		Inner Bracing	2L2x2x3/16	295	-0.23	9.80	2.4	Pass
		Inner Bracing	2L2x2x3/16	296	-0.22	9.80	2.3	Pass
		Inner Bracing	2L2x2x3/16	297	-0.23	9.80	2.3	Pass
		Inner Bracing	2L2x2x3/16	298	-0.02	4.90	0.6	Pass
T18	20 - 10	Inner Bracing	2L2x2 1/2x3/16	335	-0.04	8.73	0.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	336	-0.05	8.73	0.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	337	-0.04	8.73	0.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	338	-0.05	8.73	0.5	Pass
		Inner Bracing	2L2x2 1/2x3/16	339	0.01	52.49	0.6	Pass
T19	10 - 0	Inner Bracing	2L2x2 1/2x3/16	392	-0.20	8.01	2.6	Pass
		Inner Bracing	2L2x2 1/2x3/16	393	-0.21	8.01	2.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	394	-0.21	8.01	2.6	Pass
		Inner Bracing	2L2x2 1/2x3/16	395	-0.21	8.01	2.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	396	-0.01	4.01	0.6	Pass
							Summary	
						Leg (T19)	89.5	Pass
						Diagonal (T19)	76.0	Pass
						Horizontal (T19)	59.6	Pass
						Secondary Horizontal (T18)	31.9	Pass
						Top Girt (T16)	11.6	Pass
						Redund Horz 1 Bracing (T19)	33.3	Pass
						Redund Diag 1 Bracing (T19)	72.3	Pass
						Redund Hip 1 Bracing (T19)	0.4	Pass
						Redund Sub Horz Bracing (T19)	67.4	Pass
						Inner Bracing (T19)	2.7	Pass
						Bolt Checks	74.1	Pass
						RATING =	**89.5**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift:	Uplift := 461·kips	*user input*
Shear:	Shear := 51·kips	*user input*
Compression:	Compression := 500·kips	*user input*

Anchor Bolt Data:

Use ASTM A36 Use ASTM A36 per page 4.1 of structural analysis dated November 23, 1993

Number of Anchor Bolts = N	N := 4	*user input*	
Bolt Ultimate Strength:	F_u := 58·ksi	*user input*	
Bolt Yield Strength:	Fy := 36·ksi	*user input*	
Bolt Modulus:	E := 29000 ksi	*user input*	
Thickness of Anchor Bolts	D := 2.5in	*user input*	
Threads per Inch:	n := 4	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-15)
Length from top of pier to bottom of leveling nut:	L_{ar} := 2.5in	*user input*	
Bolt Modulus:	E := 29000 ksi	*user input*	

Anchor Bolt Section Properties:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4}\cdot D^2 \qquad A_g = 4.91\cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2 \qquad A_n = 4\cdot in^2$$

Net Diameter:

$$D_n := D - \frac{0.9743 in}{n} \qquad D_n = 2.26\cdot in$$

Radius of Gyration of Bolt:

$$r := \frac{D_n}{4} \qquad r = 0.56\cdot in$$

Plastic Section Modulus of Bolt:

$$Z_x := \frac{D_n^3}{6} \qquad Z_x = 1.91\cdot in^3$$

Forces:

Tension Force:

$$T_u := \frac{Uplift}{N}$$

$T_u = 115.25\cdot kip$ $\quad T_{ub} := T_u$

Compression Force:

$$P_{uc} := \frac{Compression}{N}$$

$P_{uc} = 125\cdot kip$ $\quad P_{ucb} := P_{uc}$

Shear Force:

$$V_u := \frac{Shear}{N}$$

$V_u = 12.75\cdot kip$ $\quad V_{ub} := V_u$

Resistance Factor for Flexure (TIA-222-H 4.9.9):

$\phi_f := 0.9$

Resistance Factor for Anchor Bolt (Compression) (TIA-222-H 4.9.9):

$\phi_c := 1.00$

Resistance Factor for Tension (TIA-222-H 4.9.9):

$\phi_t := 0.75$

Resistance Factor for Shear (TIA-222-H 4.9.9):

$\phi_v := 0.75$

TIA-222-H 4.9.9 Calculate Equation Variables Strength Design:

Design Tensile Strength, Rnt:

$$R_{nt} := F_u \cdot A_n$$

$$R_{nt} = 231.93 \cdot ft \cdot kip$$

$$\phi_t \cdot R_{nt} = 173.95 \cdot ft \cdot kip$$

Design Compression Strength, Rnc:

$$R_{nc} := Fy \cdot A_n$$

$$R_{nc} = 143.96 \cdot ft \cdot kip$$

$$\phi_c \cdot R_{nc} = 143.96 \cdot ft \cdot kip$$

Design Shear Strength (Tension), Rnv:

$$R_{nv} := 0.5 \cdot F_u \cdot A_g$$

$$R_{nv} = 142.35 \cdot ft \cdot kip$$

$$\phi_v \cdot R_{nv} = 106.77 \cdot ft \cdot kip$$

Design Shear Strength (Compression), Rnvc:

$$R_{nvc} := 0.6 \cdot Fy \cdot \frac{A_n}{2}$$

$$R_{nvc} = 43.19 \cdot ft \cdot kip$$

$$\phi_c \cdot R_{nvc} = 43.19 \cdot ft \cdot kip$$

NOTE: Per TIA-222-H The determination of capacity formulas are based on the exising constructed condition of exposed anchor rod from the top of the foundation to the bottom of the (base) leveling nut., Therefore the following equations next page), reflects for this tower site, the first formula shall be applied:

lar = 3" - 1.75" (nut height) = 1.25" < 1.75" Bolt Diameter

TIA-222-H 4.9.9 Combined Shear and Tension:

$$\left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 + \left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 \le 1$$

$$\left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 + \left(\frac{V_{ub}}{\phi_v \cdot R_{nv}}\right)^2 = 0.45$$

TIA-222-H 4.9.9 Combined Shear and Compression:

$$\left[\frac{P_{ucb}}{(\phi_c \cdot R_{nc})}\right] + \left(\frac{V_{ub}}{\phi_c \cdot R_{nvc}}\right)^2 \le 1$$

$$\left[\frac{P_{ucb}}{(\phi_c \cdot R_{nc})}\right] + \left(\frac{V_{ub}}{\phi_c \cdot R_{nvc}}\right)^2 = 0.96$$

NOTE: Larger ratio number shown above Governs design Capacity.

Combined Shear and Tension/Compression Check:

$$\text{ShearAndTensionCheck} := \text{if}\left[\max\left[\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2, \left[\frac{P_{ucb}}{(\phi_c \cdot R_{nc})}\right] + \left(\frac{V_{ub}}{\phi_c \cdot R_{nvc}}\right)^2\right] \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

ShearAndTensionCheck = "OK"

FOUNDATION ANALYSIS

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Job	180' Self Supporting Lattice Tower - Wilton, CT	Project No.	EVS-019	Sheet 1	of 10
Description	Foundation Analysis (TIA-222-H)	Computed by	CMC	Date	03/26/20
	Analysis Report	Checked by		Date	

FOOTING WITH FOUR CONCRETE PIERS

INPUT DATA

TOWER FORCES:

Moment Caused by Tower	$M_t := 11996 \cdot kip \cdot ft$
Shear at Base of Tower	$S_t := 127 kip$
Max Compressive Force	$C_t := 500 kip$
Max Uplift	$U_t := 461 kip$
Max Pier Shear	$S_p := 51 kip$
Height of Tower	$H_t := 180 \cdot ft$
Width of Tower at Base	$W_t := 17.729 \cdot ft$
Weight of Tower	$WT_t := 1 \cdot kip$

NOTE: Weight of Tower is incorporated into the other loads listed above and is therefore set equal to one for programming.

FOOTING DIMENSIONS:

Width of Footing	$W_f := 37 \cdot ft + 0 ft$
Overall Depth of Footing	$D_f := 9.5 ft$
Length of Pier	$L_p := 6.5 \cdot ft - 0 ft$
Extension of Pier Above Grade	$L_{pag} := 1.0 \cdot ft$
Square Dimension of Pier	$d_p := 4.0 \cdot ft$
Thickness of Footing	$T_f := 3.0 \cdot ft + 0 ft$
Reinforement Cover:	$Cvr := 3 in$
Ftg. Edge To Pier CL:	$X_t := 8.635 ft$

NOTE: 2ft extension from original 35'-0" foundation based on MODification from AECOM project NSS-017R1 (dated 05/05/2015).

MATERIAL PROPERTIES:

Compressive Strength of Concrete	$f'c := 3000 \cdot psi$	Unit Weight of Soil	$\gamma_s := 100 \cdot pcf$
Yield Strength of Steel Reinforcement	$fy := 60000 \cdot psi$	Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Internal Friction Angle of Soil	$\phi_s := 30 \cdot deg$	Depth to Neglect	$n := 1.5 \cdot ft$
Allowable Bearing Capacity	$q_s := 3400 \cdot psf$	Cohesion of Clay Type Soil	$c := 0 \cdot ksf$
Ultimate Bearing Capacity	$R_s := 2 \cdot q_s$	Note: Use 0 for Sandy Soil	

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

What is Position of Center of Tower with respect to Center of Pad? 1=Offset 2=Not Offset $Pos_{tower} := 2$

PIER REINFORCEMENT:

Bar Size	$BSpier := 9$	Bar Diameter	$d_{bpier} := 1.128 \cdot in$
Number of Bars	$NBpier := 24$	Bar Area	$A_{bpier} := 1.00 \cdot in^2$

PAD REINFORCEMENT:

Bar Size	$BS_{pad} := 9$	Bar Diameter	$d_{bpad} := 1.128 \cdot in$
Number of Bars	$NB_{pad} := 42$	Bar Area	$A_{bpad} := 1.00 \cdot in^2$

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Job	180' Self Supporting Lattice Tower - Wilton, CT	Project No.	EVS-019	Sheet 2	of 10
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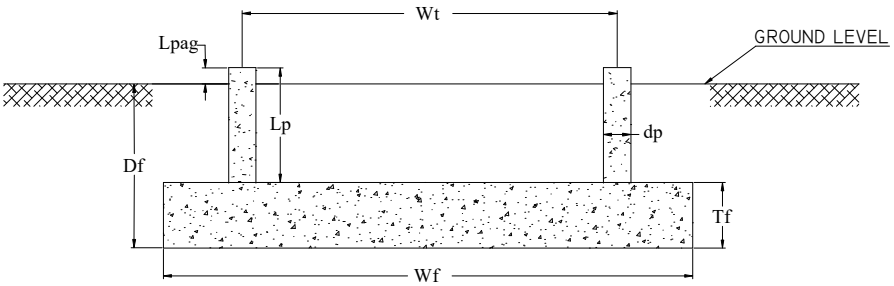
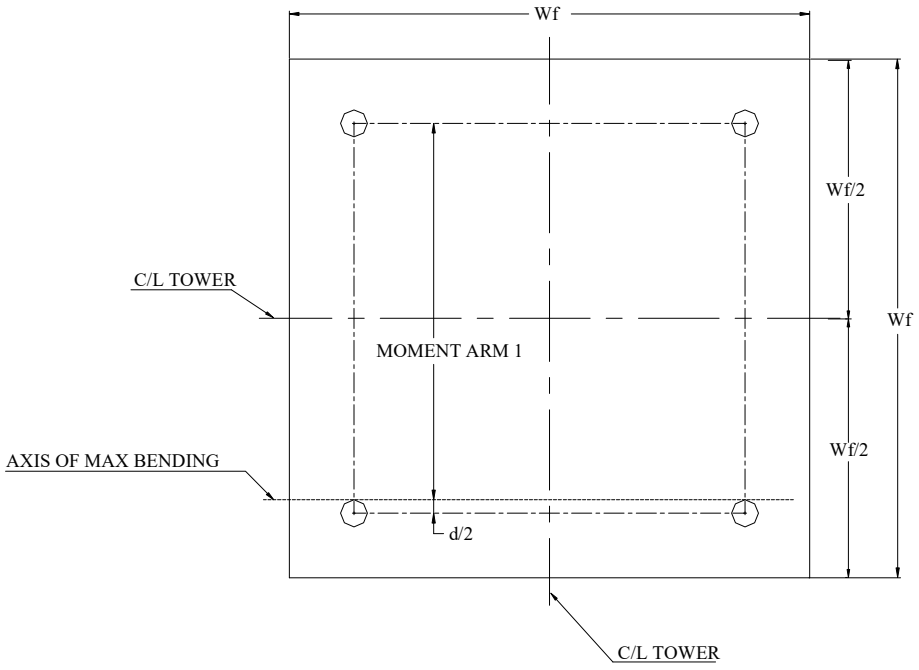
	Analysis Report	Checked by		Date	

Typical Footing Plan and Elevation:



ELEVATION



PLAN

STABILITY OF FOOTING

NOTE: Reduction factor is implemented as 0.75 for pull-out/uplift of foundation. Reduction factor shall be applied to Overturning Moment in this case

Passive Pressure:

Pressure at Neglect: $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pn} = 0.45 \cdot ksf$

Pressure at Footing Top: $P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pt} = 1.95 \cdot ksf$

Pressure at Top: $P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}]$ $P_{top} = 1.95 \cdot ksf$

Pressure at Bottom: $P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p}$ $P_{bot} = 2.85 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_{top} + P_{bot}}{2}$ $P_{ave} = 2.4 \cdot ksf$

Soil Shear:

Effective Soil Depth: $T_{pp} := if[n < (D_f - T_f), T_f, (D_f - n)]$ $T_{pp} = 3 \cdot ft$

Area of Resistance: $A_{pp} := W_f \cdot T_{pp}$ $A_{pp} = 111 \cdot ft^2$

Shear Resistance: $S_u := P_{ave} \cdot A_{pp}$ $S_u = 266.4 \cdot kip$

Stabilizing Dead Load:

Weight of Concrete Pad: $WT_c := (W_f^2 \cdot T_f) \cdot \gamma_c$ $WT_c = 616.05 \cdot kip$

Weight of Soil: above Footing:

$$Depth := \begin{cases} D_f - n - T_f & \text{if } n < (D_f - T_f) \\ 0 & \text{otherwise} \end{cases}$$

$Depth = 5 \cdot ft$

$WT_{s1} := W_f^2 \cdot Depth \cdot \gamma_s$ $WT_{s1} = 684.5 \cdot kip$

Weight of Soil Wedge at Back Face: $WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\phi_s)}{2} \cdot W_f \right] \cdot \gamma_s$ $WT_{s2} = 68.3583 \cdot kip$

Distance to center of Tower Leg from Edge of Footing: $X_{t1} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_{t2} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_t := if(Pos_{tower} = 1, X_{t1}, X_{t2})$

Additional Offset of Footing: $X_{off1} := \frac{W_f}{2} - \left(\frac{W_t \cdot \cos(30 \cdot deg)}{3} + X_t \right)$ $X_{off1} = 3.7466 \cdot ft$ $X_{off2} := X_{off1}$

$X_{off} := if(Pos_{tower} = 1, X_{off1}, X_{off2})$ $X_{off} = 3.7466 \cdot ft$

Stability Analysis:

Resisting Moment:

$$M_r := \left(WT_c \cdot 0.9 + WT_{s1} \cdot 0.9\right) \cdot \frac{W_f}{2} + WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) \ldots + 0.9\left(S_u \cdot \frac{T_{pp}}{3}\right) + 0.9 \cdot WT_{s2} \cdot \left(W_f + \frac{T_{pp} \cdot \tan(\phi_s)}{3}\right)$$

$M_r = 24220.5214 \cdot kip \cdot ft$

$\phi_{OT} := 0.75$ ***ANSI/TIA-222-H REDUCTION FACTOR***

(Factored) Overturning Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t \cdot X_{off}$ $M_{ot} = 13206.2466 \cdot kip \cdot ft$

$StabilityCheck := if(M_r \cdot \phi_{OT} > M_{ot}, "Okay", "No Good")$

Overturn Ratio (%): $Ratio_{Stability} := \frac{M_{ot}}{M_r \cdot \phi_{OT}}$ $Ratio_{Stability} = 72.70 \cdot \%$

$StabilityCheck = "Okay"$

BEARING PRESSURES

Loading Eccentricity:

Total Axial Load: $LOAD_{tot} := \left(WT_c + WT_{s1} + WT_t\right) \cdot 1.2$ → $LOAD_{tot} = 1561.86 \cdot kip$

Total Moment: $M_{ot} := M_t + S_t \cdot \left(L_p + T_f\right) + WT_t$ → $M_{ot} = 13203.5 \cdot kip \cdot ft$

Eccentricity: $e := \frac{M_{ot}}{LOAD_{tot}}$ → $e = 8.4537 \cdot ft$

Dist. From Ftg. CL to Kern Edge: $X_k := \frac{W_f}{6}$ → $X_k = 6.1667 \cdot ft$

Calculate Soil Pressures:

Maximum Contact Pressure:

$$P_{max} := \begin{cases} \frac{LOAD_{tot}}{W_f^2} \cdot \left(1 + \frac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ \frac{2 \cdot LOAD_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} & \text{otherwise} \end{cases}$$

$P_{max} = 2.8012 \cdot ksf$

Minimum Contact Pressure:

$$P_{min} := \begin{cases} \frac{LOAD_{tot}}{W_f^2} \cdot \left(1 - \frac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ 0ksf & \text{otherwise} \end{cases}$$

$P_{min} = 0 \cdot ksf$

Length of Applied Pressure:

$$X_p := \begin{cases} W_f & \text{if } e \le X_k \\ 3 \cdot \left(\frac{W_f}{2} - e\right) & \text{otherwise} \end{cases}$$

$X_p = 30.1389 \cdot ft$

Pressure Slope:

$$m_p := \frac{P_{max} - P_{min}}{X_p}$$

$m_p = 0.0929 \cdot ksf$

Revised Maximum: $q_{max} := P_{max}$ → $q_{max} = 2.8012 \cdot ksf$

$PressureCheck := \text{if}\left(q_{max} < 0.75 \cdot R_s, \text{"Okay"}, \text{"No Good"}\right)$ → PressureCheck = "Okay"

$\frac{q_{max}}{0.75 \cdot R_s} = 0.5493$

Concrete Bearing Capacity (ACI 10.14):

(ACI 9.3.2.2) $\phi_c := 0.65$

$$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^{\,2} \cdot \pi}{4} \qquad P_b = 2999.3413 \cdot kip$$

$$BearingCheck := if\left(P_b > C_t, "Okay", "No\ Good"\right) \qquad BearingCheck = "Okay"$$

SHEAR STRENGTH OF CONCRETE

Beam (One-Way) Shear Action (ACI 11.2.1.1):

"d" Distance: $d := T_f - Cvr - .5 \cdot in$ $\qquad d = 32.5 \cdot in$

Factored Pressure at "d" Distance: $P_d := \left[P_{max} - \left(X_t - \frac{d_p}{2} - d\right) \cdot m_p\right]$ $\qquad P_d = 2.3432 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := P_{max}$ $\qquad P_{edge} = 2.8012 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_d + P_{edge}}{2}$ $\qquad P_{ave} = 2.5722 \cdot ksf$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := 0.75$

Applied Shear Force: $V_{req} := \frac{P_{ave} \cdot \left(X_t - 0.5 \cdot d_p - d\right) \cdot W_f}{\phi_c}$ $\qquad V_{req} = 625.2389 \cdot kip$

Available Shear: (ACI 11.3.1.1) $V_{Avail} := 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d$ $\qquad V_{Avail} = 1580.7273 \cdot kip$

Check Capacity: $BeamShearCheck := if\left(V_{req} < V_{Avail}, "Okay", "No\ Good"\right)$

$BeamShearCheck = "Okay"$

Punching (Two-Way) Shear Action (ACI 11.11.1.2):

Critical Perimeter: $b_o := 4\left(d_p + d\right)$ → $b_o = 26.8333 \cdot ft$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := .85$ $C_t = 500 \cdot kip$

Factored Maximum Punching Shear Force $FL := \frac{C_t}{\phi_c}$ → $FL = 588.2353 \cdot kip$

Available Shear: $V_{Avail} := 4 \cdot \sqrt{f'c \cdot psi} \cdot b_o \cdot d$ → $V_{Avail} = 2292.7666 \cdot kip$

Check Capacity: $PunchingShearCheck := if\left(V_{req} < V_{Avail}, "Okay", "No Good"\right)$

$PunchingShearCheck = "Okay"$

BENDING

Maximim Bending Moment:

Distance From Edge of FTG To Face of Pier: $X_b := \frac{W_f}{2} - e - \frac{d_p}{2}$ → $X_b = 8.0463 \cdot ft$

Moment Due To Overturning:

Factored Pressure at "d" Distance: $P_{face} := 1 \cdot \left(P_{max} - X_b \cdot m_p\right)$ → $P_{face} = 2.0533 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := 1 \cdot P_{max}$ → $P_{edge} = 2.8012 \cdot ksf$

Moment Due To Rectangular Loading: $M_1 := \left(P_{face} \cdot X_b \cdot W_f\right) \cdot \left(\frac{1}{2} \cdot X_b\right)$ → $M_1 = 2459.3844 \cdot kip \cdot ft$

Moment Due to Triangular Loading: $M_2 := \left[\frac{1}{2} \cdot X_b \cdot \left(P_{edge} - P_{face}\right)\right] \cdot \left(\frac{2}{3} \cdot X_b\right)$ → $M_2 = 16.1392 \cdot kip \cdot ft$

Sum Moments: $M_{ot} := M_1 + M_2$ → $M_{ot} = 2475.5237 \cdot kip \cdot ft$

Moment Due To Uplift:

Pier Forces:

$$M_{nT} := 1\cdot\left[U_t\cdot\left(W_f - 2\cdot X_b - \frac{d}{2} - d\right) + S_t\cdot\left(D_f + L_{pag}\right)\right] \qquad M_{nT} = 9099.0013\cdot kip\cdot ft$$

Concrete Resistance:

$$M_{nS} := \left[\frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_s\right]\cdot 0.9 \qquad M_{nS} = 3110.3229\cdot kip\cdot ft$$

Soil Resistance:

$$M_{nC} := \left[\frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_c\right]\cdot 0.9 \qquad M_{nC} = 4665.4844\cdot kip\cdot ft$$

Sum Moments

$$M_{uplift} := M_{nT} - M_{nS} - M_{nC} \qquad M_{uplift} = 1323.194\cdot kips\cdot ft$$

Select Controlling Moment:

$$M_u := \begin{cases} M_{ot} & \text{if } M_{ot} \geq M_{uplift} \\ M_{uplift} & \text{otherwise} \end{cases} \qquad M_u = 2475.5237\cdot kips\cdot ft$$

Strength Reduction Factor: (ACI 9.3.2.2)

$$\phi_m := .90$$

Design Moment:

$$M_n := \frac{M_u}{\phi_m} \qquad M_n = 2750.5818\cdot kips\cdot ft$$

Size Reinforcing Steel:

Effective Width:

$$b_{eff} := W_f \qquad b_{eff} = 444\cdot in$$

Stress Block:

$$a := d\cdot\left(1 - \sqrt{1 - 2.3529\cdot\frac{M_n}{f'c\cdot b_{eff}\cdot d^2}}\right) \qquad a = 0.9097\cdot in$$

Steel Req'd For Bending:

$$A_s := \frac{M_n}{fy\cdot\left(d - \frac{a}{2}\right)} \qquad A_s = 17.1669\cdot in^2$$

Reinforcement Ratio:

$$\rho := \frac{A_s}{b_{eff}\cdot d} \qquad \rho = 0.0012$$

Steel Req'd For Temperature and Shrinkage: (ACI 7.12.2.1b)

$$\rho_{sh} := \text{if}\left(fy \geq 60000\cdot psi, 0.0018, 0.0020\right) \qquad \rho_{sh} = 0.0018$$

$$As := \text{if}\left(\rho \geq \rho_{sh}, A_s, \rho_{sh}\cdot b_{eff}\cdot d\right) \qquad As = 25.974\cdot in^2$$

$$As_{prov} := A_{bpad}\cdot NB_{pad} \qquad As_{prov} = 42\cdot in^2$$

Check Provided Steel:

$$PadReinforcement := \text{if}\left(As_{prov} > As, \text{"Okay"}, \text{"No Good"}\right)$$

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

DEVELOPMENT LENGTH OF PAD REINFORCEMENT

TENSION (ACI 12.2.3)

Bar Spacing:

$$B_{sPad} := \frac{W_f - 2\cdot Cvr - NB_{pad}\cdot d_{bpad}}{NB_{pad} - 1}$$

$B_{sPad} = 9.5274\cdot in$

Development Length Factors:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension:

$$c := if\left(Cvr < \frac{B_{sPad}}{2}, Cvr, \frac{B_{sPad}}{2}\right)$$

$c = 3\cdot in$

Transverse Reinforcement Index: As allowed by ACI 12.2.4

$k_{tr} := 0$

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{f'c\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpad}}}\cdot d_{bpad}$$

$L_{dbt} = 34.8457\cdot in$

$L_{dbmin} := 12\cdot in$

Minimum Development Length: (ACI 12.2.1)

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

Available Length in Pad:

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - Cvr$$

$L_{Pad} = 112.626\cdot in$

$LpadTension := if\left(L_{Pad} > L_{dbt}, "Okay", "No\ Good"\right)$ $LpadTension = "Okay"$

REINFORCEMENT IN PIER

Pier Area:

(ACI 10.8.4 and 10.9.1)

$$A_p := \frac{\pi\cdot d_p^{\,2}}{4}$$

$A_p = 1809.5574\cdot in^2$

$A_{smin} := 0.01\cdot 0.5\cdot A_p$

$A_{smin} = 9.0478\cdot in^2$

$A_{sprov} := NBpier\cdot A_{bpier}$

$A_{sprov} = 24\cdot in^2$

$SteelAreaCheck := if\left(A_{sprov} > A_{smin}, "Okay", "No\ Good"\right)$ $SteelAreaCheck = "Okay"$

NOTE: Anchor Bolts are not accounted for in reinforcement calculation and will provide additional reinforcement to satisfy minimum requirement of steel.

Bar Spacing In Pier:

$$B_{sPier} := \frac{d_p \cdot \pi}{NBpier} - d_{bpier} \qquad B_{sPier} = 5.1552 \cdot in$$

Diameter of Reinforcement Cage:

$$Diam_{cage} := d_p - 2 \cdot Cvr \qquad Diam_{cage} = 42 \cdot in$$

Maximum Moment in Pier:

$$M_p := (S_p \cdot L_p) \cdot 1 \qquad M_p = 3978 \cdot kips \cdot in$$

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

(defined variables)

$$(f'_c \;\; f_y \;\; cl \;\; Spiral) = (3 \;\; 60 \;\; 4 \;\; 0)$$

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches:

$$(D \;\; N \;\; n \;\; P_u \;\; M_{xu}) := (48 \;\; 24 \;\; 9 \;\; 560.4 \;\; 11045)$$

Clears any previous output:

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

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

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio:

$$(\phi P_n \;\; \phi M_{xn} \;\; f_{sp} \;\; \rho) = (1368.1926 \;\; 26965.895 \;\; -60 \;\; 0.0133)$$

Column size and reinforcement may be changed to match capacity to the applied load.

$$AxialLoadCheck := if(\phi P_n \geq P_u, "Okay", "No Good") \qquad AxialLoadCheck = "Okay"$$

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

DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

Spacing and Cover: $Cvr = 3\cdot in$ $B_{sPier} = 5.1552\cdot in$

Factors for development:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension: $c := if\left(Cvr < \frac{B_{sPier}}{2}, Cvr, \frac{B_{sPier}}{2}\right)$ $c = 2.5776\cdot in$

Transverse Reinforcement: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{f'c\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpier}}}\cdot d_{bpier} \qquad L_{dbt} = 40.5561\cdot in$$

Minimum Development Length: (ACI 12.2.1) $L_{dbmin} := 12\cdot in$

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

COMPRESSION: (ACI 12.3.2)

$$L_{dbc1} := \frac{.02\cdot d_{bpier}\cdot fy}{\sqrt{f'c\cdot psi}} \qquad L_{dbc1} = 24.7132\cdot in$$

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

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right)$ $L_{dbc} = 24.7132\cdot in$

Available Length in Pier: $L_{pier} := L_p - 3\cdot in$ $L_{pier} = 75\cdot in$

Available Length in Pad: $L_{pad} := T_f - 3\cdot in$ $L_{pad} = 33\cdot in$

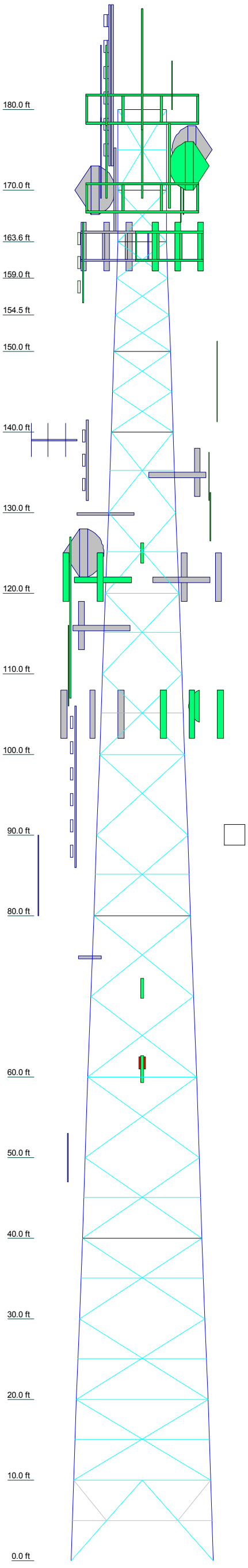
Available Length: $L_{total} := L_{pad} + L_{pier}$ $L_{total} = 108\cdot in$

$L_{tension} := if\left(L_{total} > L_{dbt}, "Okay", "No\ Good"\right)$ $L_{tension} = "Okay"$

$L_{compression} := if\left(L_{total} > L_{dbc}, "Okay", "No\ Good"\right)$ $L_{compression} = "Okay"$

ANALYSIS UNDER TIA-222-F DESIGN CRITERIA (DESPP / CSP)

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		L8x8x1 1/8			L8x8x1-1/8 w/ 1/2x7 Plates		L8x8x1 w/ 1/2x7 Plates	L8x8x3/4		L6x6x3/4		L6x6x1/2		L5x5x3/8			L5x5x5/16		L3 1/2x3 1/2x3/8
Leg Grade								A36											
Diagonals	2L2 1/2x2 1/2x5/16		2L2 1/2x2x3/8				2L2 1/2x2x3/16		L3 1/2x3x1/4		L3x3x1/4		L3x2 1/2x1/4	L2 1/2x2x3/16			A		L2 1/2x2 1/2x3/16
Diagonal Grade								A36				N.A.							
Top Girts		N.A.						N.A.						L2 1/2x2 1/2x3/16					L2x2x3/16
Horizontals	2L2 1/2x2 1/2x1/4	2L2x2x3/16						N.A.						N.A.					
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4											L2 1/2x2 1/2x3/16					
Red. Horizontals	L2 1/2x2 1/2x3/16														N.A.				
Red. Diagonals	L2 1/2x2 1/2x3/16																		
Red. Sub-Horizs	L3x3x5/16																		
Red. Hips	L2 1/2x2 1/2x3/16																		
Inner Bracing	2L2x2 1/2x3/16		N.A.																
Face Width (ft) 17.73	17.0125	16.2949	15.5779	14.8608	14.1438	13.4267	11.9926	11.2756	10.5585	9.84145	9.1244	8.40735	7.6903	6.9733	6.64887	6.32443	6		
# Panels @ (ft)							14 @ 10						2 @ 5		3 @ 4.52433			1 @ 6.427	1 @ 10
Weight (K) 51.8	4.9	5.0	4.3	4.8	5.1	4.6	8.0	2.4	2.5	1.9	2.1	1.4	1.5	1.0	0.4	0.4	0.4	0.5	0.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15' (A32)	185	6' Side-Arm Mount (A12,13,14 / DK-27,28,29)	132
SC479-HF1LDF (D00-E5764) (A28)	183	BA1010 (A12 / DK-27)	132 - 127
ANT150D (A29a)	183	Dish Ice Shield (A11 / DK-26)	130
DB222 (A29b)	183	PD128-1 (A8 / DK-14)	128 - 121
SC479-HF1LDF (D00-E5764) (A30)	183	3" Dia 20' Omni (A7 / DK-13)	127 - 107
ALR8-0 (A31)	183	2'6"x4" Pipe Mount (A10 / DK-25)	125
TMA 432-83H-01T - Future Decom. (A27)	181	6' PAD w/ Radome (A10 / DK-25)	125
SC479-HF1LDF (D00I-E5764) (A23)	180 - 168	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
15' T-Frame Sector Mount (1) (A23,24,30,31)	180	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
SC479-HF1LDF (D00I-E5764) (A24)	180 - 168	EUSF10-U w/ (2) Stiff-Arm Supports (T-Mobile)	122
SC479-HF1LDF (D00I-E5764) (A26)	180 - 168	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
15' T-Frame Sector Mount (1) (A26,27,28,29)	180		
10'6"x4" Pipe Mount (A33)	175	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
6' PAD w/ Radome (A33)	175		
10'6"x4" Pipe Mount (A25)	173	RFS APXVAARR24_43-U-NA20 Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
6' PAD w/ Radome (A25 /)	173		
DB586-Y (A21)	170	Generic Twin TMA unit (T-Mobile)	122
10'6"x4" Pipe Mount (A22)	170	Generic Twin TMA unit (T-Mobile)	122
6' PAD w/ Radome (A22 /)	170	Generic Twin TMA unit (T-Mobile)	122
BA1010-2 (A20)	169	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
15' T-Frame Sector Mount (1) (A20)	169	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
T-Frame (ATI)	163	Ericsson 4449 B71 + B12 Radio Unit (T-Mobile)	122
T-Frame (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
T-Frame (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
7770.00 (ATI)	163		
(2) LGP 21901 Diplexer Unit (ATI)	163	Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile)	122
Kathrein 800-10965 Panel Antenna (ATI)	163		
QS66512-3 Quintel Panel (ATI)	163	10' Standoff (A8 / DK-14)	121
RRUS-11 (ATI)	163	871F-70-220-025 Antenna (Eversource - Proposed)	116
Raycap DC6-48-60-18-8F DC Power Surge Protection (ATI)	163	Site Pro USF-4U (Eversource - Proposed)	116
		12' Omni Antenna (A9 - DK-15)	116 - 106
7770.00 (ATI)	163	6' Side-Arm Mount (A7 / DK-13)	107
(2) LGP 21901 Diplexer Unit (ATI)	163	10'6"x4" Pipe Mount (A6 / DK-12 / CSP-11)	106
Kathrein 800-10965 Panel Antenna (ATI)	163	DB264-A (A5 / DK-11)	106 - 86
QS66512-3 Quintel Panel (ATI)	163	6' Side-Arm Mount (A9 - DK-15)	106
RRUS-11 (ATI)	163	4' Grid Dish (A6 / DK 12 / CSP-11)	106
7770.00 (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
(2) LGP 21901 Diplexer Unit (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
Kathrein 800-10965 Panel Antenna (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
QS66512-3 Quintel Panel (ATI)	163	TD-RRH8x20-25 (Sprint)	105
RRUS-11 (ATI)	163	TD-RRH8x20-25 (Sprint)	105
4478 Radio Unit (4x40W) (ATI)	163	TD-RRH8x20-25 (Sprint)	105
4478 Radio Unit (4x40W) (ATI)	163	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATI)	163	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
RRUS-32 B66 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B66 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B66 (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-32 B2 (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-32 B2 (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-32 B2 (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
RRUS-32 (ATI)	163		
RRUS-32 (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
RRUS-32 (ATI)	163		
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163		
(2) LPG21401 TMA (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
(2) LPG21401 TMA (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
(2) LPG21401 TMA (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
DB408-B (A19)	161	AAHC Panel Antenna (Sprint)	105
(2) 6' Side Mount Standoff (A19)	161	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
12' Omni Antenna (A15 / DK-30)	152 - 140.5	10' Standoff (A4 / DK-4)	91
8' Side Arm Mount (A15 / DK-30)	140.5	SC479-HF1LDF (A4 / DK-4)	91 - 79
6' Side-Arm Mount (A17 / DK-32)	139	4' Side Mount Standoff (A5 / DK-11)	86
6' Side-Arm Mount (A18 / DK-33)	139	Dish Ice Shield (A3 / DK-3)	75
Yagi ASP-816 (A17 / DK-32)	139	2'6"x4" Pipe Mount (A3 / DK-3)	71
BA1010 (A14 / DK-29)	137 - 132	GPS (A2 / Sprint)	61
DB222-A (A16 / DK-31)	136.5	3'4"x4" Pipe Mount (A2 / Sprint)	61
4' Side Mount Standoff (A16 / DK-31)	136.5	3' Stand-off (A1 / DK-1)	50
ANT220F2 w/clamps (Eversource - Proposed)	135	DB803M-Y (A1 / DK-1)	50
Site Pro USF-4U (Eversource - Proposed)	135		
432E-83I-01T TTA Unit (A13 / DK-28)	132		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

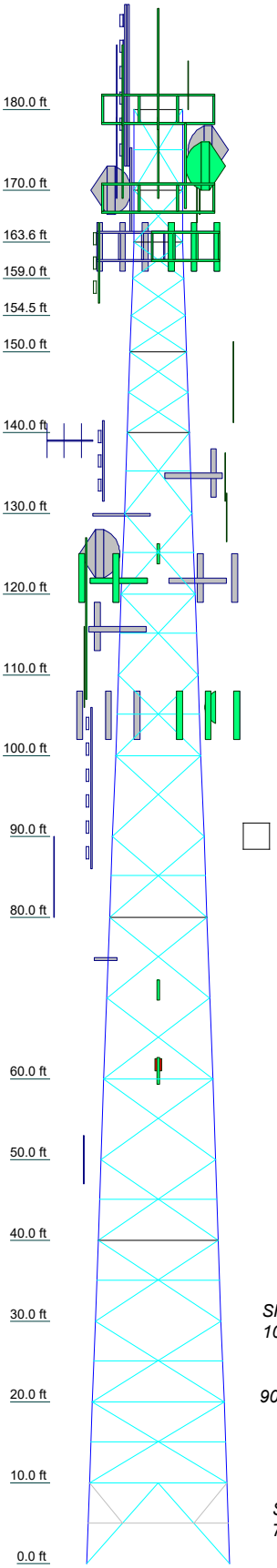
TOWER DESIGN NOTES

1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 60 mph wind.

AECOM
1255 Broad St. Suite 201
Clifton, NJ 07013
Phone: (973) 883-8663
FAX: (973) 883-8500

Job: ***180' Lattice Tower - CSP***			
Project: ***Wilton, Connecticut - DESPP/CSP Load Conditions***			
Client: Eversource	Drawn by: christina.carlos	App'd:	
Code: TIA/EIA-222-F	Date: 03/31/20	Scale: NTS	
Path:		Dwg No. E-1	

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs			L8x8x1 1/8			B	L8x8x1 w/ 1/2x7 Plates	L8x8x3/4		L6x6x3/4		L6x6x1/2		L5x5x3/8		L5x5x5/16		A	
Leg Grade								A36											
Diagonals	D		2L2 1/2x2x3/8				2L2 1/2x2x3/16		L3 1/2x3x1/4		L3x3x1/4		L3x2 1/2x1/4		L2 1/2x2x3/16		C	L2 1/2x2 1/2x3/16	
Diagonal Grade								A36											
Top Girts		N.A.		2L2x2x3/16		N.A.	L2 1/2x2 1/2x1/4			N.A.			L2 1/2x2 1/2x3/16		N.A.			L2x2x3/16	
Horizontals	F	2L2x2x3/16		N.A.		2L2x2x3/16	N.A.		E	N.A.	E		N.A.						
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4				N.A.		N.A.	L2x2x1/4	L2x2x3/16	L2x2x1/4			N.A.			L2x2x3/16	
Red. Horizontals	G								N.A.										
Red. Diagonals	G								N.A.										
Red. Sub-Horizs	L3x3x5/16								N.A.										
Red. Hips	G								N.A.										
Inner Bracing		2L2x2 1/2x3/16		N.A.		2L2x2x3/16	N.A.			N.A.	H	N.A.	L2x2x3/16			N.A.			
Face Width (ft)	17.73	16.2949	15.5779	14.8608	14.1438	13.4267	11.9926	11.2756	10.5585	9.84145	9.1244	8.40735	7.6903	6.9736	6.4886	6.0443	5.2433	4.5243	3.8053
# Panels @ (ft)		17.0125					14 @ 10							2 @ 5		3 @ 4.52433		2 @ 6.427	1 @ 10
Weight (K)	51.8																		6



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x3/8	E	L2 1/2x2 1/2x1/4
B	L8x8x1-1/8 w/ 1/2x7 Plates	F	2L2 1/2x2 1/2x1/4
C	L2x2x3/16	G	L2 1/2x2 1/2x3/16
D	2L2 1/2x2 1/2x5/16	H	L2 1/2x2x3/16

MATERIAL STRENGTH

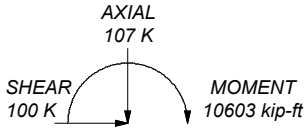
GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

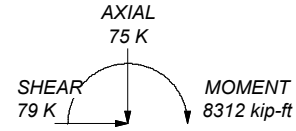
1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 60 mph wind.
4. TOWER RATING: 98.1%

MAX. CORNER REACTIONS AT BASE:
DOWN: 449 K
SHEAR: 39 K

UPLIFT: -396 K
SHEAR: 43 K



TORQUE 111 kip-ft
90 mph WIND - 0.5000 in ICE



TORQUE 59 kip-ft
REACTIONS - 90 mph WIND

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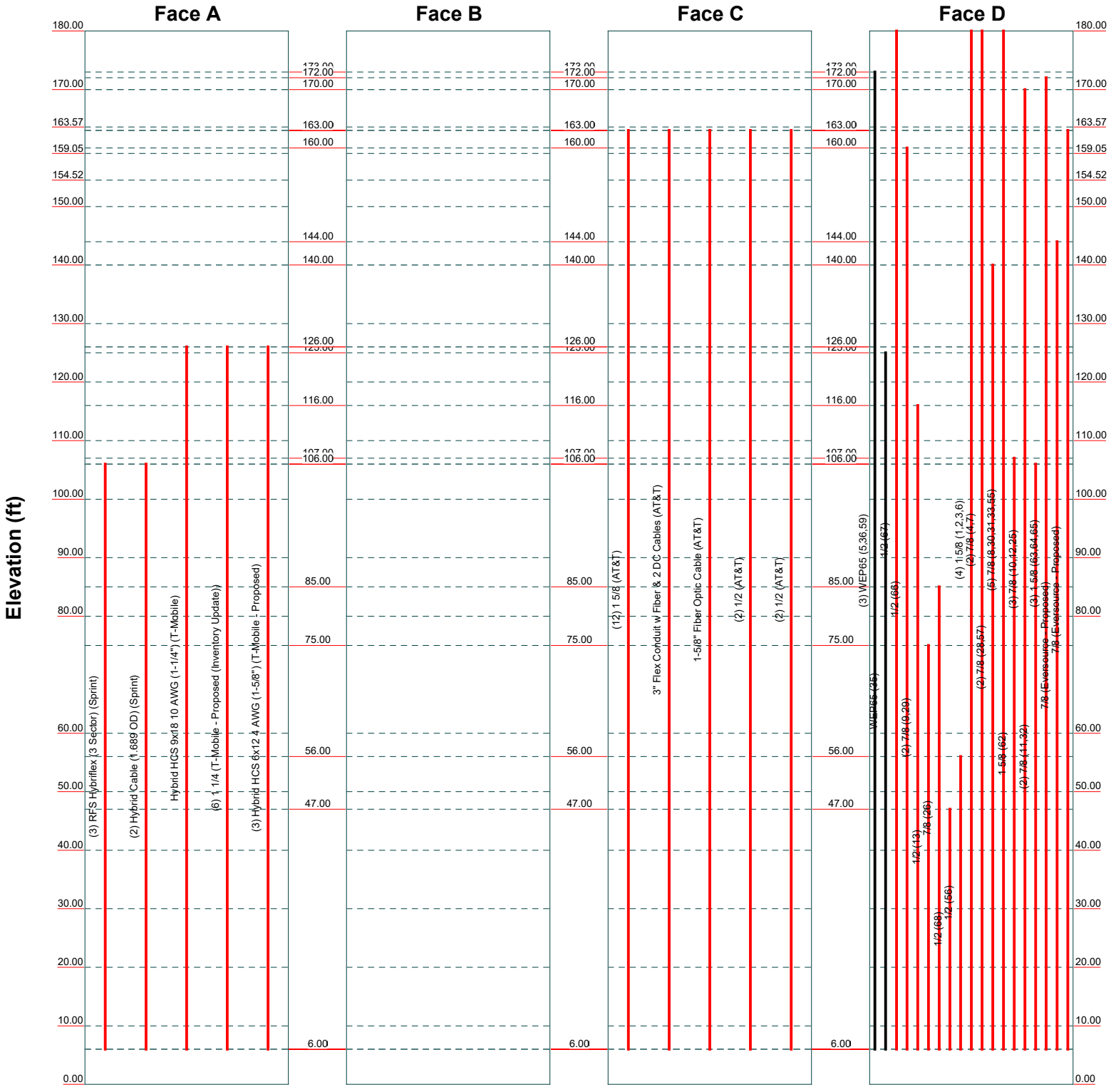
Job: ***180' Lattice Tower - CSP***			
Project: ***Wilton, Connecticut - DESPP/CSP Load Condition***			
Client: Eversource	Drawn by: christina.carlos	App'd:	
Code: TIA/EIA-222-F	Date: 03/26/20	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
0' - 180'

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



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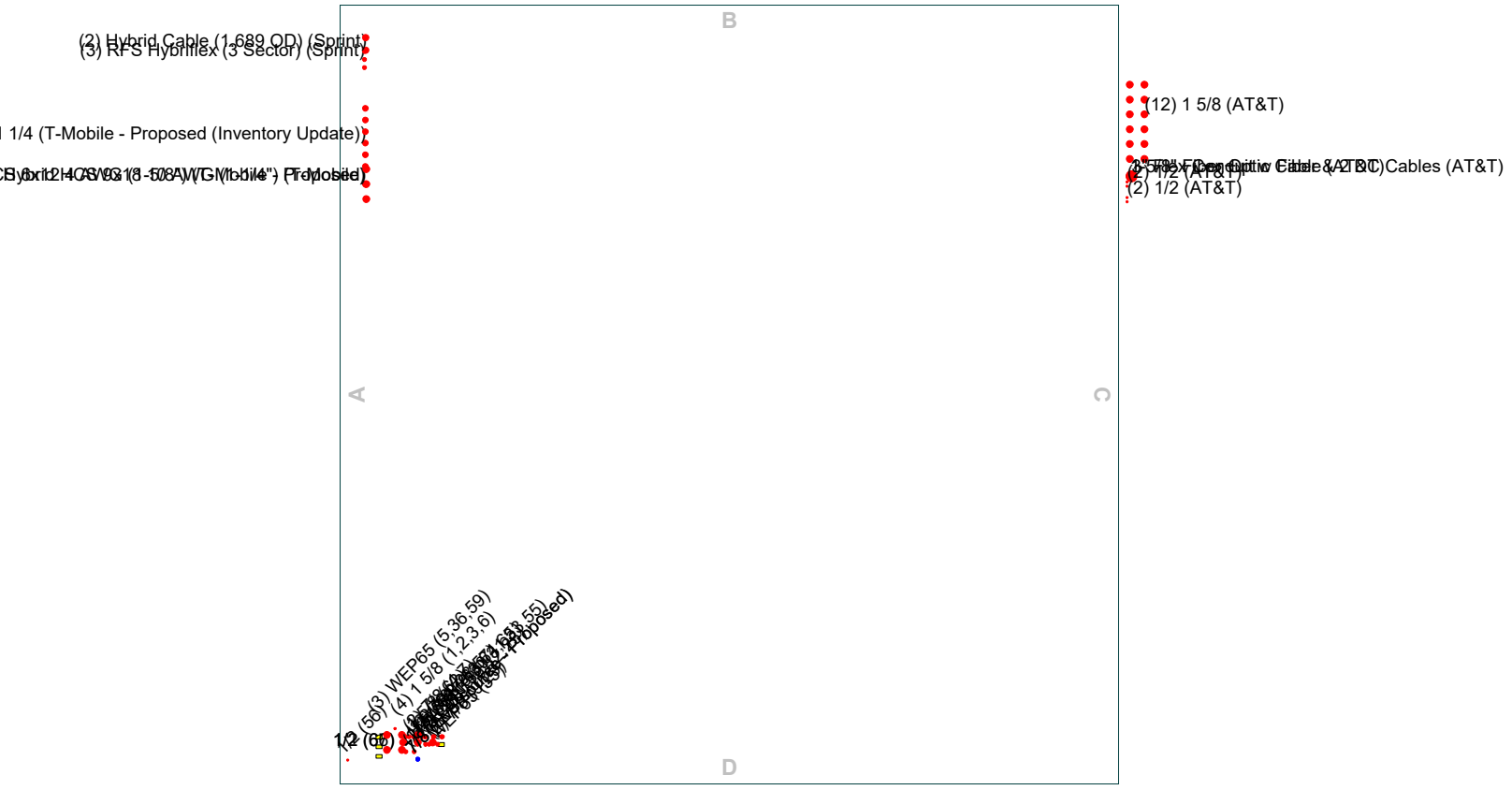
Job:	***180' Lattice Tower - CSP***		
Project:	***Wilton, Connecticut - DESPP/CSP Load Condition***		
Client: Eversource	Drawn by: christina.carlos	App'd:	
Code: TIA/EIA-222-F	Date: 03/26/20	Scale: NTS	
Path:		Dwg No. E-7	

Feed Line Plan

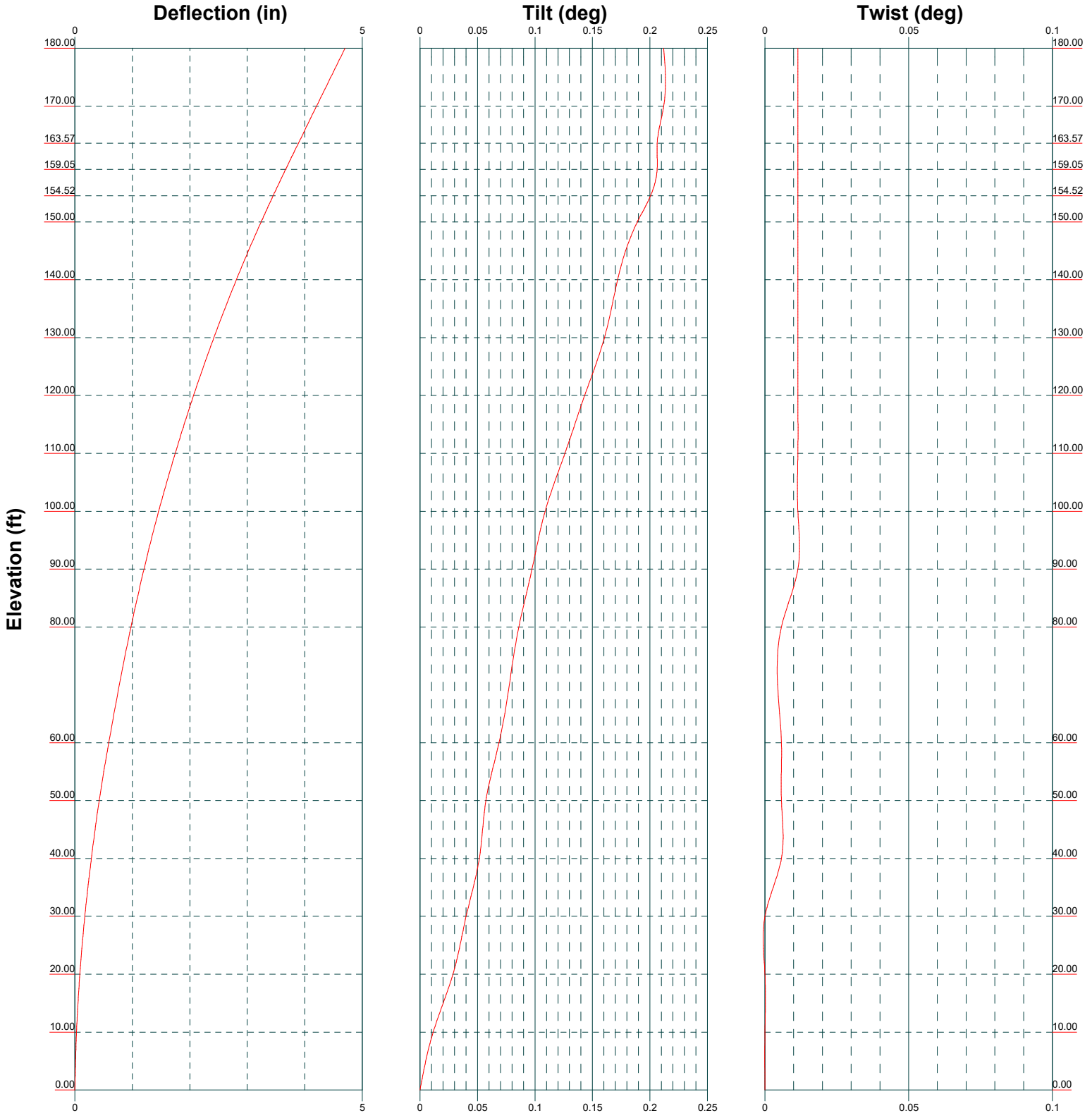
Round Flat App In Face App Out Face



AECOM 1255 Broad St. Suite 201 Clifton, NJ 07013 Phone: (973) 883-8663 FAX: (973) 883-8500	Job: ***180' Lattice Tower - CSP***		
	Project: ***Wilton, Connecticut - DESPP/CSP Load Condition***		
	Client: Eversource	Drawn by: christina.carlos	App'd:
	Code: TIA/EIA-222-F	Date: 03/26/20	Scale: NTS
	Path:		Dwg No. E-7

TIA/EIA-222-F - Service - 60 mph

Maximum Values



AECOM
1255 Broad St. Suite 201
Clifton, NJ 07013
Phone: (973) 883-8663
FAX: (973) 883-8500

Job: ***180' Lattice Tower - CSP***			
Project: ***Wilton, Connecticut - DESPP/CSP Load Conditions***			
Client: Transcend Wireless / T-Mobile / TWM-013	Drawn by: christina.carlos	App'd:	
Code: TIA/EIA-222-F	Date: 03/26/20	Scale: NTS	
Path:		Dwg No. E-5	

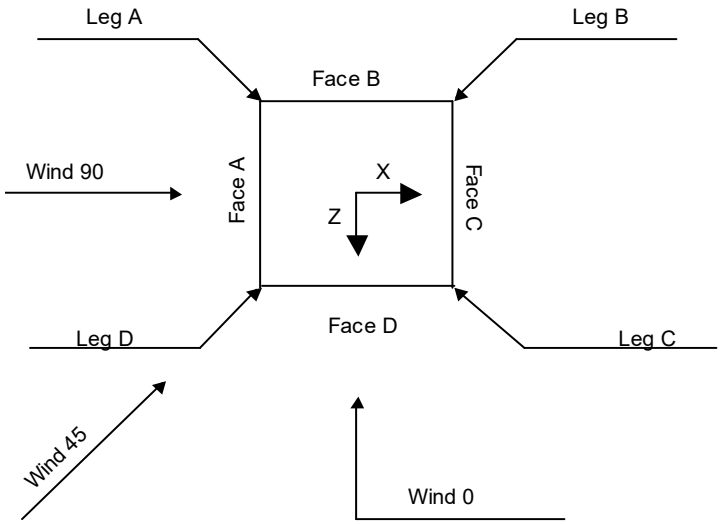
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.00 ft at the top and 17.73 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
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-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G 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



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.00-170.00			6.00	1	10.00
T2	170.00-163.57			6.00	1	6.43
T3	163.57-159.05			6.00	1	4.52
T4	159.05-154.52			6.32	1	4.52
T5	154.52-150.00			6.65	1	4.52
T6	150.00-140.00			6.97	1	10.00
T7	140.00-130.00			7.69	1	10.00
T8	130.00-120.00			8.41	1	10.00
T9	120.00-110.00			9.12	1	10.00
T10	110.00-100.00			9.84	1	10.00
T11	100.00-90.00			10.56	1	10.00
T12	90.00-80.00			11.28	1	10.00
T13	80.00-60.00			11.99	1	20.00
T14	60.00-50.00			13.43	1	10.00
T15	50.00-40.00			14.14	1	10.00
T16	40.00-30.00			14.86	1	10.00
T17	30.00-20.00			15.58	1	10.00
T18	20.00-10.00			16.29	1	10.00
T19	10.00-0.00			17.01	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 170.00-163.57	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 163.57-159.05	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 159.05-154.52	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 154.52-150.00	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 150.00-140.00	Single Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 140.00-130.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 120.00-110.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T11 100.00-90.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	L8x8x1 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T16 40.00-30.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T19 10.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Sub-Horizontal	Single Angle	L3x3x5/16	1
		Hip (1)	Single Angle	L2 1/2x2 1/2x3/16	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-170.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-163.57	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 163.57-159.05	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 159.05-154.52	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 154.52-150.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 150.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	No	1	1		1		1		1		1		1		1	
140.00-130.00				1		1		1		1		1		1		1	
T8	Yes	No	1	1		1		1		1		1		1		1	
130.00-120.00				1		1		1		1		1		1		1	
T9	Yes	No	1	1		1		1		1		1		1		1	
120.00-110.00				1		1		1		1		1		1		1	
T10	Yes	No	1	1		1		1		1		1		1		1	
110.00-100.00				1		1		1		1		1		1		1	
T11	Yes	No	1	1		1		1		1		1		1		1	
100.00-90.00				1		1		1		1		1		1		1	
T12	Yes	No	1	1		1		1		1		1		1		1	
90.00-80.00				1		1		1		1		1		1		1	
T13	Yes	No	1	1		1		1		1		1		1		1	
80.00-60.00				1		1		1		1		1		1		1	
T14	Yes	No	1	1		1		1		1		1		1		1	
60.00-50.00				1		1		1		1		1		1		1	
T15	Yes	No	1	1		1		1		1		1		1		1	
50.00-40.00				1		1		1		1		1		1		1	
T16	Yes	No	1	1		1		1		1		1		1		1	
40.00-30.00				1		1		1		1		1		1		1	
T17	Yes	No	1	1		1		1		1		1		1		1	
30.00-20.00				1		1		1		1		1		1		1	
T18	Yes	No	1	1		1		1		1		1		1		1	
20.00-10.00				1		1		1		1		1		1		1	
T19	Yes	No	1	1		1		1		1		1		1		1	
10.00-0.00				1		1		1		1		1		1		1	

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
180.00-170.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
170.00-163.57														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
163.57-159.05														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
159.05-154.52														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
154.52-150.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
140.00-130.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
130.00-120.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

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
T1 180.00-170.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 170.00-163.57	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 163.57-159.05	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 159.05-154.52	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 154.52-150.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 150.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 140.00-130.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 130.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 120.00-110.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 110.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

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
T11 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T14 60.00-50.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T15 50.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T16 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T17 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T18 20.00-10.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T19 10.00-0.00	0.0000	3.0000	0.0000	3.0000	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 180.00-170.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325X	2
T2 170.00-163.57	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T3 163.57-159.05	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T4 159.05-154.52	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T5 154.52-150.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T6 150.00-140.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T7 140.00-130.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T8 130.00-120.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T9 120.00-110.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T10 110.00-100.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T11 100.00-90.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T12 90.00-80.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T13 80.00-60.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0

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.
T14 60.00-50.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T15 50.00-40.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T16 40.00-30.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.0000 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T17 30.00-20.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T18 20.00-10.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T19 10.00-0.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
WEP65 (5,36,59)	D	Yes	No	Af (CfAe)	173.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836	5.1284	0.53
WEP65 (35)	D	Yes	No	Af (CfAe)	125.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836	5.1284	0.53
1/2 (67)	D	No	No	Ar (Leg)	180.00 - 6.00	0.0000	0.1	1	1	0.5800	0.5800		0.25
1/2 (66)	D	No	No	Ar (Leg)	160.00 - 6.00	0.0000	0.1	1	1	0.5800	0.5800		0.25
7/8 (9,29)	D	Yes	No	Ar (CfAe)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	Yes	No	Ar (CfAe)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	Yes	No	Ar (CfAe)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	Yes	No	Ar (CfAe)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	D	Yes	No	Ar (CfAe)	56.00 - 6.00	-6.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	Yes	No	Ar (CfAe)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	Yes	No	Ar (CfAe)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	Yes	No	Ar (CfAe)	140.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	Yes	No	Ar (CfAe)	180.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	Yes	No	Ar (CfAe)	107.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	Yes	No	Ar (CfAe)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	Yes	No	Ar (CfAe)	106.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8 (63,64,65)	D	Yes	No	Ar (CfAe)	172.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

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
1 5/8 (AT&T)	C	Yes	No	Ar (CfAe)	163.00 - 6.00	2.0000	-0.35	12	6	1.9800	1.9800		1.04
3" Flex Conduit w Fiber & 2 DC Cables (AT&T)	C	Yes	No	Ar (CfAe)	163.00 - 6.00	2.0000	-0.28	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	Yes	No	Ar (CfAe)	106.00 - 6.00	-6.0000	0.43	3	3	1.0900	1.0900		0.37
1-5/8" Fiber Optic Cable (AT&T)	C	Yes	No	Ar (CfAe)	163.00 - 6.00	2.0000	-0.28	1	1	1.9800	1.9800		1.30
1/2 (AT&T)	C	Yes	No	Ar (CfAe)	163.00 - 6.00	2.0000	-0.27	2	2	0.5800	0.5800		0.25
1/2 (AT&T)	C	Yes	No	Ar (CfAe)	163.00 - 6.00	2.0000	-0.25	2	2	0.5800	0.5800		0.25
Hybrid Cable (1.689 OD) (Sprint) * T-Mobile Cables	A	Yes	No	Ar (CfAe)	106.00 - 6.00	-6.0000	0.45	2	2	1.6890	1.6890		2.31
Hybrid HCS 9x18 10 AWG (1-1/4") (T-Mobile)	A	Yes	No	Ar (CfAe)	126.00 - 6.00	-6.0000	0.27	1	1	1.5400	1.5400		0.90
1 1/4 (T-Mobile - Proposed (Inventory Update))	A	Yes	No	Ar (CfAe)	126.00 - 6.00	-6.0000	0.33	6	6	1.5500	1.5500		0.66
Hybrid HCS 6x12 4 AWG (1-5/8") (T-Mobile - Proposed) **Eversource Equipment	A	Yes	No	Ar (CfAe)	126.00 - 6.00	-6.0000	0.27	3	3	1.9900	1.9900		1.90
7/8 (Eversource - Proposed)	D	Yes	No	Ar (CaAa)	144.00 - 6.00	-6.0000	0.4	1	1	1.1100	1.1100		0.54
7/8 (Eversource - Proposed)	D	Yes	No	Ar (CaAa)	163.00 - 6.00	-6.0000	0.4	1	1	1.1100	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.483	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	11.248	0.396	0.000	0.000	0.09
T2	170.00-163.57	A	0.311	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.00
		D	11.558	0.848	0.000	0.000	0.09
T3	163.57-159.05	A	0.265	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	6.316	0.000	0.000	0.000	0.07
		D	8.182	0.597	0.439	0.000	0.07
T4	159.05-154.52	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	7.231	0.000	0.000	0.000	0.08
		D	8.355	0.597	0.502	0.000	0.07
T5	154.52-150.00	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	7.231	0.000	0.000	0.000	0.08
		D	8.355	0.597	0.502	0.000	0.07
T6	150.00-140.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	18.467	1.320	1.554	0.000	0.16
T7	140.00-130.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	20.317	1.320	2.220	0.000	0.17
T8	130.00-120.00	A	9.372	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	20.317	1.979	2.220	0.000	0.17
T9	120.00-110.00	A	14.975	0.000	0.000	0.000	0.11
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	21.427	2.639	2.220	0.000	0.18
T10	110.00-100.00	A	18.299	0.000	0.000	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	24.432	2.639	2.220	0.000	0.20
T11	100.00-90.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	25.667	2.639	2.220	0.000	0.21
T12	90.00-80.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	26.129	2.639	2.220	0.000	0.21
T13	80.00-60.00	A	41.030	0.000	0.000	0.000	0.33
		B	0.000	0.000	0.000	0.000	0.00
		C	31.967	0.000	0.000	0.000	0.36
		D	53.908	5.279	4.440	0.000	0.43
T14	60.00-50.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	27.365	2.639	2.220	0.000	0.22
T15	50.00-40.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	27.897	2.639	2.220	0.000	0.22
T16	40.00-30.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	28.042	2.639	2.220	0.000	0.22
T17	30.00-20.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D	28.042	2.639	2.220	0.000	0.22
T18	20.00-10.00	A	20.515	0.000	0.000	0.000	0.16
		B	0.000	0.000	0.000	0.000	0.00
		C	15.983	0.000	0.000	0.000	0.18
		D	28.042	2.639	2.220	0.000	0.22
T19	10.00-0.00	A	8.206	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	6.393	0.000	0.000	0.000	0.07
		D	11.217	1.056	0.888	0.000	0.09

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.500	1.317	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		20.082	0.563	0.000	0.000	0.25
T2	170.00-163.57	A	0.500	0.846	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		20.127	1.205	0.000	0.000	0.26
T3	163.57-159.05	A	0.500	0.721	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		9.226	0.764	0.000	0.000	0.17
		D		14.294	0.848	0.834	0.000	0.19
T4	159.05-154.52	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		10.564	0.875	0.000	0.000	0.19
		D		14.764	0.848	0.955	0.000	0.19
T5	154.52-150.00	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		10.564	0.875	0.000	0.000	0.19
		D		14.764	0.848	0.955	0.000	0.19
T6	150.00-140.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		32.633	1.875	2.954	0.000	0.43
T7	140.00-130.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		36.150	1.875	4.220	0.000	0.47
T8	130.00-120.00	A	0.500	16.038	0.000	0.000	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		36.150	2.813	4.220	0.000	0.48
T9	120.00-110.00	A	0.500	24.975	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		38.260	3.750	4.220	0.000	0.50
T10	110.00-100.00	A	0.500	30.799	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		43.515	3.750	4.220	0.000	0.55
T11	100.00-90.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D		45.667	3.750	4.220	0.000	0.57
T12	90.00-80.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		46.546	3.750	4.220	0.000	0.58
T13	80.00-60.00	A	0.500	69.363	0.000	0.000	0.000	0.70
		B		0.000	0.000	0.000	0.000	0.00
		C		46.700	3.867	0.000	0.000	0.84
		D		96.825	7.501	8.440	0.000	1.19
T14	60.00-50.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		49.532	3.750	4.220	0.000	0.60
T15	50.00-40.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		50.980	3.750	4.220	0.000	0.61
T16	40.00-30.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		51.375	3.750	4.220	0.000	0.62
T17	30.00-20.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		51.375	3.750	4.220	0.000	0.62
T18	20.00-10.00	A	0.500	34.682	0.000	0.000	0.000	0.35
		B		0.000	0.000	0.000	0.000	0.00
		C		23.350	1.933	0.000	0.000	0.42
		D		51.375	3.750	4.220	0.000	0.62
T19	10.00-0.00	A	0.500	13.873	0.000	0.000	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		9.340	0.773	0.000	0.000	0.17
		D		20.550	1.500	1.688	0.000	0.25

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180.00-170.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
		D	0.000	0.952	1.276	2.219
T2	170.00-163.57	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
		D	0.000	1.053	1.463	2.499
T3	163.57-159.05	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.641	0.810	1.281
		D	0.000	0.977	1.139	1.954
T4	159.05-154.52	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.514	0.812	1.284
		D	0.000	0.689	1.003	1.723
T5	154.52-150.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
		C	0.000	0.506	0.799	1.265
		D	0.000	0.678	0.988	1.696
T6	150.00-140.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.231	1.945	3.077
		D	0.000	1.685	2.448	4.213
T7	140.00-130.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.093	1.873	2.963
		D	0.000	1.694	2.639	4.592
T8	130.00-120.00	A	0.000	0.450	0.777	1.240
		B	0.000	0.000	0.000	0.000
		C	0.000	0.850	1.478	2.338
		D	0.000	1.353	2.144	3.724
T9	120.00-110.00	A	0.000	0.913	1.543	2.461
		B	0.000	0.000	0.000	0.000
		C	0.000	1.034	1.760	2.785
		D	0.000	1.776	2.748	4.785
T10	110.00-100.00	A	0.000	0.892	1.704	2.770
		B	0.000	0.000	0.000	0.000
		C	0.000	0.801	1.572	2.486
		D	0.000	1.542	2.749	4.789
T11	100.00-90.00	A	0.000	0.991	1.953	3.202
		B	0.000	0.000	0.000	0.000
		C	0.000	0.782	1.597	2.526
		D	0.000	1.573	2.917	5.082
T12	90.00-80.00	A	0.000	0.971	1.911	3.132
		B	0.000	0.000	0.000	0.000
		C	0.000	0.766	1.562	2.471
		D	0.000	1.568	2.898	5.057
T13	80.00-60.00	A	0.000	1.627	2.481	4.067
		B	0.000	0.000	0.000	0.000
		C	0.000	1.283	2.028	3.208
		D	0.000	2.721	3.867	6.802
T14	60.00-50.00	A	0.000	0.927	1.332	2.184
		B	0.000	0.000	0.000	0.000
		C	0.000	0.731	1.089	1.723
		D	0.000	1.583	2.105	3.728
T15	50.00-40.00	A	0.000	0.916	1.559	2.557
		B	0.000	0.000	0.000	0.000
		C	0.000	0.723	1.275	2.017
		D	0.000	1.605	2.506	4.481
T16	40.00-30.00	A	0.000	1.173	1.870	3.067
		B	0.000	0.000	0.000	0.000
		C	0.000	0.926	1.529	2.419
		D	0.000	2.071	3.020	5.412
T17	30.00-20.00	A	0.000	0.898	1.532	2.511
		B	0.000	0.000	0.000	0.000
		C	0.000	0.708	1.252	1.981
		D	0.000	1.584	2.473	4.432
T18	20.00-10.00	A	0.000	1.157	1.846	3.026
		B	0.000	0.000	0.000	0.000
		C	0.000	0.913	1.509	2.388
		D	0.000	2.042	2.981	5.341
T19	10.00-0.00	A	0.000	0.544	0.829	1.359
		B	0.000	0.000	0.000	0.000
		C	0.000	0.429	0.678	1.072
		D	0.000	0.960	1.339	2.399

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-170.00	-6.8722	5.7038	-9.3485	7.8120
T2	170.00-163.57	-9.1052	7.6489	-10.3067	8.6923
T3	163.57-159.05	-0.5718	3.0218	-2.7110	4.6009
T4	159.05-154.52	0.3930	2.8846	-2.2030	4.9822
T5	154.52-150.00	0.3547	3.1404	-2.3701	5.4617
T6	150.00-140.00	0.0416	3.6585	-2.8861	6.3074
T7	140.00-130.00	-1.2732	5.0722	-4.6016	8.2101
T8	130.00-120.00	-6.7418	2.6954	-11.3795	5.8055
T9	120.00-110.00	-10.6795	1.6743	-16.0704	4.6631
T10	110.00-100.00	-14.8432	1.6374	-21.4331	4.6612
T11	100.00-90.00	-16.2441	1.2104	-23.5132	4.0650
T12	90.00-80.00	-17.1354	1.7198	-25.1118	4.9063
T13	80.00-60.00	-22.5625	3.0998	-31.0576	7.1730
T14	60.00-50.00	-23.6249	3.8091	-32.9892	8.4609
T15	50.00-40.00	-23.7043	4.3379	-33.7818	9.4961
T16	40.00-30.00	-20.9219	4.0481	-31.7232	9.2757
T17	30.00-20.00	-22.5050	4.4620	-34.3866	10.1701
T18	20.00-10.00	-21.9544	4.4766	-33.6502	10.1421
T19	10.00-0.00	-10.2384	2.1256	-16.7017	5.0972

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
DB803M-Y	A	From Leg	3.00	0.0000	50.00	No Ice	0.50	0.50	0.00
(A1 / D&K-1)			0.00 0.00			1/2" Ice	0.68	0.68	0.01
3' Stand-off	A	None		0.0000	50.00	No Ice	1.00	2.00	0.05
(A1 / D&K-1)						1/2" Ice	1.20	2.70	0.07
GPS	B	From Face	4.00	0.0000	61.00	No Ice	1.00	1.00	0.01
(A2 / Sprint)			0.00 0.00			1/2" Ice	1.50	1.50	0.01
3'4"x4" Pipe Mount	B	None		0.0000	61.00	No Ice	1.05	1.05	0.04
(A2 / Sprint)						1/2" Ice	1.27	1.27	0.05
2'6"x4" Pipe Mount	A	None		0.0000	71.00	No Ice	0.75	0.75	0.03
(A3 / D&K-3)						1/2" Ice	0.95	0.95	0.04
Dish Ice Shield	A	From Leg	0.50	0.0000	75.00	No Ice	4.00	4.00	0.20
(A3 / D&K-3)			0.00 0.00			1/2" Ice	5.07	5.07	0.25
SC479-HF1LDF	A	From Leg	10.00	0.0000	79.00 - 91.00	No Ice	5.06	5.06	0.03
(A4 / D&K-4)			0.00 0.00			1/2" Ice	6.54	6.54	0.07
10' Standoff	A	None		0.0000	91.00	No Ice	17.00	17.00	0.55
(A4 / D&K-4)						1/2" Ice	22.00	22.00	0.75
DB264-A	A	From Leg	4.00	0.0000	106.00 - 86.00	No Ice	3.16	3.16	0.04
(A5 / D&K-11)			0.00 0.00			1/2" Ice	5.69	5.69	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4' Side Mount Standoff	A	None			0.0000	86.00	No Ice	2.72	2.72	0.05
(A5 / D&K-11)							1/2" Ice	4.91	4.91	0.09
10'6"x4" Pipe Mount	C	None			0.0000	106.00	No Ice	4.72	4.72	0.11
(A6 / D&K-12 / CSP-11)							1/2" Ice	5.62	5.62	0.15
3" Dia 20' Omni	D	From Leg	6.00		0.0000	127.00 - 107.00	No Ice	4.00	4.00	0.06
(A7 / D&K-13)			0.00				1/2" Ice	6.00	6.00	0.10
			0.00							
6' Side-Arm Mount	D	None			0.0000	107.00	No Ice	10.60	10.60	0.14
(A7 / D&K-13)							1/2" Ice	15.40	15.40	0.21
PD128-1	C	From Leg	10.00		0.0000	128.00 - 121.00	No Ice	1.00	1.00	0.01
(A8 / D&K-14)			0.00				1/2" Ice	1.80	1.80	0.02
			0.00							
10' Standoff	C	None			0.0000	121.00	No Ice	17.00	17.00	0.55
(A8 / D&K-14)							1/2" Ice	22.00	22.00	0.75
12' Omni Antenna	D	From Leg	6.00		0.0000	116.00 - 106.00	No Ice	5.06	5.06	0.03
(A9 - D&K-15)			0.00				1/2" Ice	6.54	6.54	0.07
			0.00							
6' Side-Arm Mount	D	None			0.0000	106.00	No Ice	10.60	10.60	0.14
(A9 - D&K-15)							1/2" Ice	15.40	15.40	0.21
2'6"x4" Pipe Mount	A	None			0.0000	125.00	No Ice	0.75	0.75	0.03
(A10 / D&K-25)							1/2" Ice	0.95	0.95	0.04
Dish Ice Shield	A	From Leg	0.50		0.0000	130.00	No Ice	4.00	4.00	0.20
(A11 / D&K-26)			0.00				1/2" Ice	5.07	5.07	0.25
			0.00							
BA1010	C	From Leg	6.00		0.0000	127.00 - 132.00	No Ice	1.55	1.55	0.01
(A12 / D&K-27)			0.00				1/2" Ice	2.29	2.29	0.01
			0.00							
BA1010	C	From Leg	6.00		0.0000	137.00 - 132.00	No Ice	1.55	1.55	0.01
(A14 / D&K-29)			0.00				1/2" Ice	2.29	2.29	0.01
			0.00							
432E-83I-01T TTA Unit	C	From Leg	6.00		0.0000	132.00	No Ice	3.33	1.11	0.03
(A13 / D&K-28)			0.00				1/2" Ice	3.57	1.27	0.04
			0.00							
6' Side-Arm Mount	C	None			0.0000	132.00	No Ice	10.60	10.60	0.14
(A12,13,14 / D&K-27,28,29)							1/2" Ice	15.40	15.40	0.21
12' Omni Antenna	C	From Leg	8.00		0.0000	152.00 - 140.50	No Ice	5.06	5.06	0.03
(A15 / D&K-30)			0.00				1/2" Ice	6.54	6.54	0.07
			0.00							
8' Side Arm Mount	C	None			0.0000	140.50	No Ice	17.20	17.20	0.33
(A15 / D&K-30)							1/2" Ice	24.50	24.50	0.45
DB222-A	A	From Leg	4.00		0.0000	136.50	No Ice	1.60	1.60	0.02
(A16 / D&K-31)			0.00				1/2" Ice	2.88	2.88	0.02
			0.00							
4' Side Mount Standoff	A	None			0.0000	136.50	No Ice	2.72	2.72	0.05
(A16 / D&K-31)							1/2" Ice	4.91	4.91	0.09
Yagi ASP-816	A	From Leg	6.00		0.0000	139.00	No Ice	0.92	0.02	0.01
(A17 / D&K-32)			0.00				1/2" Ice	1.21	0.05	0.01
			0.00							
6' Side-Arm Mount	A	None			0.0000	139.00	No Ice	10.60	10.60	0.14
(A17 / D&K-32)							1/2" Ice	15.40	15.40	0.21
6' Side-Arm Mount	D	None			0.0000	139.00	No Ice	10.60	10.60	0.14
(A18 / D&K-33)							1/2" Ice	15.40	15.40	0.21
*** Following Are D&K NOT Inventoried Appurtenances										
DB408-B	D	From Leg	6.00		0.0000	161.00	No Ice	1.65	1.65	0.02
(A19)			0.00				1/2" Ice	2.61	2.61	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
				0.00						
(2) 6' Side Mount Standoff	D	None			0.0000	161.00	No Ice	1.40	0.13	0.01
(A19)							1/2" Ice	1.56	0.21	0.02
BA1010-2	C	From Leg	2.50		0.0000	169.00	No Ice	1.40	1.40	0.02
(A20)			0.00				1/2" Ice	1.77	1.77	0.03
			0.00							
15' T-Frame Sector Mount (1)	C	None			0.0000	169.00	No Ice	15.00	15.00	0.50
(A20)							1/2" Ice	20.60	20.60	0.65
DB586-Y	C	From Leg	3.00		0.0000	170.00	No Ice	1.01	1.01	0.01
(A21)			0.00				1/2" Ice	1.28	1.28	0.02
			0.00							
10'6"x4" Pipe Mount	A	From Leg	0.50		0.0000	170.00	No Ice	4.72	4.72	0.11
(A22)			0.00				1/2" Ice	5.62	5.62	0.15
			0.00							
SC479-HF1LDF	D	From Leg	2.00		0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00				1/2" Ice	6.54	6.54	0.07
(A23)			0.00							
15' T-Frame Sector Mount (1)	D	From Face	2.00		0.0000	180.00	No Ice	15.00	15.00	0.50
(A23,24,30,31)			0.00				1/2" Ice	20.60	20.60	0.65
			0.00							
SC479-HF1LDF	D	From Face	2.00		0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00				1/2" Ice	6.54	6.54	0.07
(A24)			0.00							
10'6"x4" Pipe Mount	C	From Leg	0.50		0.0000	173.00	No Ice	4.72	4.72	0.11
(A25)			0.00				1/2" Ice	5.62	5.62	0.15
			0.00							
SC479-HF1LDF	A	From Leg	3.00		0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00				1/2" Ice	6.54	6.54	0.07
(A26)			0.00							
15' T-Frame Sector Mount (1)	B	From Face	2.00		0.0000	180.00	No Ice	15.00	15.00	0.50
(A26,27,28,29)			0.00				1/2" Ice	20.60	20.60	0.65
			0.00							
TMA 432-83H-01T - Future	A	From Leg	2.00		0.0000	181.00	No Ice	1.63	0.95	0.03
Decom.			0.00				1/2" Ice	1.81	1.09	0.04
(A27)			0.00							
SC479-HF1LDF	A	From Leg	3.00		0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00				1/2" Ice	6.54	6.54	0.07
(A28)			0.00							
ANT150D	A	From Leg	1.00		0.0000	183.00	No Ice	7.00	2.02	0.08
(A29a)			0.00				1/2" Ice	7.47	2.90	0.12
			0.00							
DB222	A	From Leg	1.50		0.0000	183.00	No Ice	1.60	1.60	0.02
(A29b)			0.00				1/2" Ice	2.88	2.88	0.02
			0.00							
SC479-HF1LDF	D	From Leg	2.00		0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00				1/2" Ice	6.54	6.54	0.07
(A30)			0.00							
ALR8-0	C	From Leg	1.00		0.0000	183.00	No Ice	7.49	7.49	0.05
(A31)			0.00				1/2" Ice	8.21	8.21	0.11
			0.00							
Lightning Rod 2"x15'	C	None			0.0000	185.00	No Ice	3.00	3.00	0.08
(A32)							1/2" Ice	4.53	4.53	0.10
10'6"x4" Pipe Mount	A	From Leg	0.50		0.0000	175.00	No Ice	4.72	4.72	0.11
(A33)			0.00				1/2" Ice	5.62	5.62	0.15
			0.00							
*** AT&T EMP-004 Inventory										

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
T-Frame	A	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	B	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	C	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
7770.00	A	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00						
(2) LGP 21901 Diplexer Unit	A	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
Kathrein 800-10965 Panel	A	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00						
QS66512-3 Quintel Panel	A	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00						
RRUS-11	A	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00						
Raycap DC6-48-60-18-8F	A	From Leg	2.00	0.0000	163.00	No Ice	1.27	1.27	0.05
DC Power Surge Protection			0.00			1/2" Ice	1.46	1.46	0.07
(AT&T)			0.00						
7770.00	B	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00						
(2) LGP 21901 Diplexer Unit	B	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
Kathrein 800-10965 Panel	B	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00						
QS66512-3 Quintel Panel	B	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00						
RRUS-11	B	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00						
7770.00	C	From Leg	2.00	0.0000	163.00	No Ice	5.90	4.01	0.05
(AT&T)			4.00			1/2" Ice	6.34	4.64	0.10
			0.00						
(2) LGP 21901 Diplexer Unit	C	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
Kathrein 800-10965 Panel	C	From Leg	2.00	0.0000	163.00	No Ice	15.30	5.83	0.11
Antenna			-4.00			1/2" Ice	15.95	6.32	0.19
(AT&T)			0.00						
QS66512-3 Quintel Panel	C	From Leg	2.00	0.0000	163.00	No Ice	8.40	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.95	9.19	0.20
			0.00						
RRUS-11	C	From Leg	2.00	0.0000	163.00	No Ice	2.99	1.25	0.05
(AT&T)			0.00			1/2" Ice	3.23	1.41	0.07
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4478 Radio Unit (4x40W)	A	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00						
4478 Radio Unit (4x40W)	B	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00						
4478 Radio Unit (4x40W)	C	From Leg	2.00	0.0000	163.00	No Ice	1.26	1.26	0.06
(AT&T)			0.00			1/2" Ice	1.42	1.42	0.07
			0.00						
RRUS-32 B66	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32 B66	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32 B66	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32 B2	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32 B2	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32 B2	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
RRUS-32	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00						
DC6-48-60-18-8C Squid /	B	From Leg	2.00	0.0000	163.00	No Ice	1.79	1.79	0.03
Surge Arrestor			0.00			1/2" Ice	2.02	2.02	0.05
(AT&T)			0.00						
DC6-48-60-18-8C Squid /	C	From Leg	2.00	0.0000	163.00	No Ice	1.79	1.79	0.03
Surge Arrestor			0.00			1/2" Ice	2.02	2.02	0.05
(AT&T)			0.00						
(2) LPG21401 TMA	A	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
(2) LPG21401 TMA	B	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
(2) LPG21401 TMA	C	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
*** AT&T EMP-004 Inventory									
** Sprint Equipment ASM-008									
12' Wireless Frame	A	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
12' Wireless Frame	B	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00						
12' Wireless Frame	C	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00						
APXVSPP18-C-A20 w/	A	From Leg	1.50	0.0000	105.00	No Ice	8.26	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.81	8.19	0.18
(Sprint / D&K 5-10)			0.00						
APXVSPP18-C-A20 w/	B	From Leg	1.50	0.0000	105.00	No Ice	8.26	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.81	8.19	0.18
(Sprint / D&K 5-10)			0.00						
APXVSPP18-C-A20 w/	C	From Leg	1.50	0.0000	105.00	No Ice	8.26	7.23	0.11
Mount Pipe			-5.00			1/2" Ice	8.81	8.19	0.18
(Sprint / D&K 5-10)			0.00						
ALU 800MHz 2x50W	A	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.61	2.46	0.09
			2.50						
ALU 800MHz 2x50W	B	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.61	2.46	0.09
			2.50						
ALU 800MHz 2x50W	C	From Leg	1.50	0.0000	105.00	No Ice	2.40	2.25	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.61	2.46	0.09
			2.50						
ALU 4x45W (1900 MHz)	A	From Leg	1.50	0.0000	105.00	No Ice	2.96	1.81	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	3.21	2.02	0.08
			-2.50						
ALU 4x45W (1900 MHz)	B	From Leg	1.50	0.0000	105.00	No Ice	2.96	1.81	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	3.21	2.02	0.08
			-2.50						
ALU 4x45W (1900 MHz)	C	From Leg	1.50	0.0000	105.00	No Ice	2.96	1.81	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	3.21	2.02	0.08
			-2.50						
AAHC Panel Antenna	A	From Leg	1.50	0.0000	105.00	No Ice	4.90	2.40	0.10
(Sprint)			0.00			1/2" Ice	5.20	2.63	0.14
			0.00						
AAHC Panel Antenna	B	From Leg	1.50	0.0000	105.00	No Ice	4.90	2.40	0.10
(Sprint)			0.00			1/2" Ice	5.20	2.63	0.14
			0.00						
AAHC Panel Antenna	C	From Leg	1.50	0.0000	105.00	No Ice	4.90	2.40	0.10
(Sprint)			0.00			1/2" Ice	5.20	2.63	0.14
			0.00						
NNVV-65B-R4 Panel	A	From Leg	1.50	0.0000	105.00	No Ice	13.72	5.75	0.09
Antenna			5.00			1/2" Ice	14.32	6.21	0.16
(Sprint)			0.00						
NNVV-65B-R4 Panel	B	From Leg	1.50	0.0000	105.00	No Ice	13.72	5.75	0.09
Antenna			5.00			1/2" Ice	14.32	6.21	0.16
(Sprint)			0.00						
NNVV-65B-R4 Panel	C	From Leg	1.50	0.0000	105.00	No Ice	13.72	5.75	0.09
Antenna			5.00			1/2" Ice	14.32	6.21	0.16
(Sprint)			0.00						
TD-RRH8x20-25	A	From Leg	1.50	0.0000	105.00	No Ice	4.72	1.70	0.07
(Sprint)			0.00			1/2" Ice	5.01	1.92	0.10
			2.50						
TD-RRH8x20-25	B	From Leg	1.50	0.0000	105.00	No Ice	4.72	1.70	0.07
(Sprint)			0.00			1/2" Ice	5.01	1.92	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.50						
TD-RRH8x20-25	C	From Leg	1.50	0.0000	105.00	No Ice	4.72	1.70	0.07
(Sprint)			0.00			1/2" Ice	5.01	1.92	0.10
			2.50						
** Sprint Equipment									
ASM-008									
** T-Mobile Equipment									
TWM-013									
EUSF10-U w/ (2) Stiff-Arm	A	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
Supports			0.00			1/2" Ice	12.66	5.24	0.51
(T-Mobile)			0.00						
EUSF10-U w/ (2) Stiff-Arm	D	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
Supports			0.00			1/2" Ice	12.66	5.24	0.51
(T-Mobile)			0.00						
EUSF10-U w/ (2) Stiff-Arm	B	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
Supports			0.00			1/2" Ice	12.66	5.24	0.51
(T-Mobile)			0.00						
RFS	A	From Leg	4.00	0.0000	122.00	No Ice	22.62	11.03	0.19
APXVAARR24_43-U-NA20			-3.00			1/2" Ice	23.50	12.55	0.32
Panel Antenna w/ 108" Pipe			0.00						
Mount									
(T-Mobile)									
RFS	B	From Leg	4.00	0.0000	122.00	No Ice	22.62	11.03	0.19
APXVAARR24_43-U-NA20			-3.00			1/2" Ice	23.50	12.55	0.32
Panel Antenna w/ 108" Pipe			0.00						
Mount									
(T-Mobile)									
RFS	D	From Leg	4.00	0.0000	122.00	No Ice	22.62	11.03	0.19
APXVAARR24_43-U-NA20			-3.00			1/2" Ice	23.50	12.55	0.32
Panel Antenna w/ 108" Pipe			0.00						
Mount									
(T-Mobile)									
Generic Twin TMA unit	A	From Leg	4.00	0.0000	122.00	No Ice	0.42	1.12	0.03
(T-Mobile)			-3.00			1/2" Ice	0.53	1.27	0.03
			3.00						
Generic Twin TMA unit	B	From Leg	4.00	0.0000	122.00	No Ice	0.42	1.12	0.03
(T-Mobile)			-3.00			1/2" Ice	0.53	1.27	0.03
			3.00						
Generic Twin TMA unit	D	From Leg	4.00	0.0000	122.00	No Ice	0.42	1.12	0.03
(T-Mobile)			-3.00			1/2" Ice	0.53	1.27	0.03
			3.00						
Ericsson 4449 B71 + B12	A	From Leg	4.00	0.0000	122.00	No Ice	1.93	1.35	0.08
Radio Unit			-3.00			1/2" Ice	2.12	1.51	0.10
(T-Mobile)			-3.00						
Ericsson 4449 B71 + B12	B	From Leg	4.00	0.0000	122.00	No Ice	1.93	1.35	0.08
Radio Unit			-3.00			1/2" Ice	2.12	1.51	0.10
(T-Mobile)			-3.00						
Ericsson 4449 B71 + B12	D	From Leg	4.00	0.0000	122.00	No Ice	1.93	1.35	0.08
Radio Unit			-3.00			1/2" Ice	2.12	1.51	0.10
(T-Mobile)			-3.00						
Ericsson AIR32 B66A/B2A	A	From Leg	4.00	0.0000	122.00	No Ice	8.12	6.92	0.17
Panel Antenna w/ 108" Pipe			3.00			1/2" Ice	9.01	8.28	0.23
Mount			0.00						
(T-Mobile)									
Ericsson AIR32 B66A/B2A	B	From Leg	4.00	0.0000	122.00	No Ice	8.12	6.92	0.17
Panel Antenna w/ 108" Pipe			3.00			1/2" Ice	9.01	8.28	0.23
Mount			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(T-Mobile) Ericsson AIR32 B66A/B2A Panel Antenna w/ 108" Pipe Mount (T-Mobile) ** T-Mobile Equipment TWM-013 **Eversource Proposed Equipment	D	From Leg	4.00 3.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.12 9.01	6.92 8.28	0.17 0.23
871F-70-220-025 Antenna (Eversource - Proposed)	A	From Leg	4.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	0.82 1.12	0.82 1.12	0.01 0.03
ANT220F2 w/clamps (Eversource - Proposed)	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	0.58 0.81	0.58 0.81	0.01 0.03
Site Pro USF-4U (Eversource - Proposed)	A	From Leg	0.50 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	1.25 1.49	2.50 2.76	0.17 0.20
Site Pro USF-4U (Eversource - Proposed)	B	From Leg	0.50 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	1.25 1.49	2.50 2.76	0.17 0.20

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
4' Grid Dish (A6 / D&K 12 / CSP-11)	C	Grid	From Leg	1.00 0.00 0.00	Worst		106.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.06 0.11
6' PAD w/ Radome (A10 / D&K-25)	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		125.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.24 0.29
6' PAD w/ Radome (A33)	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	Worst		175.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.24 0.29
6' PAD w/ Radome (A22 /)	A	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		170.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.24 0.29
6' PAD w/ Radome (A25 /)	C	Paraboloid w/Radome	From Leg	0.50 0.00 0.00	Worst		173.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.24 0.29

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.611	33	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	11.611	11.248		25.52	0.000	0.000
T2	166.79	1.589	33	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.217	11.558		25.78	0.000	0.000
T3	161.31	1.574	33	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.312	6.316		29.90	0.000	0.000
					D	6.581	8.182		25.57	0.439	0.000
T4	156.79	1.561	32	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.091	7.231		28.34	0.000	0.000
					D	6.497	8.355		25.42	0.502	0.000
T5	152.26	1.548	32	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.212	7.231		28.08	0.000	0.000
					D	6.621	8.355		25.21	0.502	0.000
T6	145.00	1.526	32	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	14.822	15.983		27.09	0.000	0.000
					D	15.639	18.467		24.47	1.554	0.000
T7	135.00	1.496	31	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.178	15.983		30.19	0.000	0.000
					D	17.731	20.317		26.32	2.220	0.000
T8	125.00	1.463	30	90.466	A	17.100	9.372	10.013	37.82	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.399	15.983		30.92	0.000	0.000
					D	17.713	20.317		26.33	2.220	0.000
T9	115.00	1.429	30	97.774	A	18.485	14.975	10.013	29.92	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.268	15.983		29.23	0.000	0.000
					D	19.919	21.427		24.22	2.220	0.000
T10	105.00	1.392	29	104.945	A	18.053	18.299	10.013	27.54	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.185	15.983		29.30	0.000	0.000
					D	19.647	24.432		22.72	2.220	0.000
T11	95.00	1.353	28	112.984	A	21.919	20.515	13.350	31.46	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.275	15.983		34.90	0.000	0.000
					D	23.595	25.667		27.10	2.220	0.000
T12	85.00	1.31	27	120.155	A	22.455	20.515	13.350	31.07	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	22.803	15.983		34.42	0.000	0.000
					D	24.107	26.129		26.58	2.220	0.000
T13	70.00	1.24	26	263.233	A	13.036	69.400	28.370	34.41	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.488	60.336		38.43	0.000	0.000
					D	16.927	82.278		28.60	4.440	0.000
T14	55.00	1.157	24	142.444	A	7.718	34.700	14.185	33.44	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	7.961	30.168		37.20	0.000	0.000
					D	9.584	41.550		27.74	2.220	0.000
T15	45.00	1.093	23	149.614	A	9.632	34.700	14.185	32.00	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	9.917	30.168		35.39	0.000	0.000
					D	11.324	42.082		26.56	2.220	0.000
T16	35.00	1.017	21	156.196	A	25.497	20.515	13.350	29.02	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	25.838	15.983		31.92	0.000	0.000
					D	26.986	28.042		24.26	2.220	0.000
T17	25.00	1	21	163.366	A	23.935	20.515	13.350	30.03	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.214	15.983		33.21	0.000	0.000
					D	25.633	28.042		24.87	2.220	0.000
T18	15.00	1	21	170.539	A	26.687	20.515	13.350	28.28	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.024	15.983		31.04	0.000	0.000
					D	28.192	28.042		23.74	2.220	0.000
T19 10.00-0.00	5.00	1	21	177.715	A	27.606	8.206	13.350	37.28	0.000	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	27.757	6.393		39.09	0.000	0.000
					D	28.152	11.217		33.91	0.888	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.611	33	0.5000	62.507	A	12.491	5.837	7.500	40.92	0.000	0.000
180.00-170.00						B	12.491	4.520		44.09	0.000	0.000
						C	12.491	4.520		44.09	0.000	0.000
						D	10.835	23.650		21.75	0.000	0.000
T2	166.79	1.589	33	0.5000	40.557	A	9.832	3.803	6.427	47.14	0.000	0.000
170.00-163.57						B	9.832	2.957		50.26	0.000	0.000
						C	9.832	2.957		50.26	0.000	0.000
						D	8.538	22.031		21.02	0.000	0.000
T3	161.31	1.574	33	0.5000	29.285	A	7.122	3.150	4.530	44.10	0.000	0.000
163.57-159.05						B	7.122	2.429		47.43	0.000	0.000
						C	6.605	11.014		25.71	0.000	0.000
						D	6.016	15.745		20.82	0.834	0.000
T4	156.79	1.561	32	0.5000	30.753	A	6.903	3.197	4.530	44.85	0.000	0.000
159.05-154.52						B	6.903	2.006		50.85	0.000	0.000
						C	6.493	12.057		24.42	0.000	0.000
						D	6.028	16.081		20.49	0.955	0.000
T5	152.26	1.548	32	0.5000	32.221	A	7.011	3.241	4.530	44.19	0.000	0.000
154.52-150.00						B	7.011	2.050		50.00	0.000	0.000
						C	6.621	12.108		24.19	0.000	0.000
						D	6.164	16.135		20.32	0.955	0.000
T6	145.00	1.526	32	0.5000	76.467	A	16.767	7.671	10.013	40.97	0.000	0.000
150.00-140.00						B	16.767	5.038		45.92	0.000	0.000
						C	15.623	27.157		23.41	0.000	0.000
						D	14.429	35.986		19.86	2.954	0.000
T7	135.00	1.496	31	0.5000	84.129	A	19.051	7.625	11.682	43.79	0.000	0.000
140.00-130.00						B	19.051	4.992		48.59	0.000	0.000
						C	18.021	27.249		25.80	0.000	0.000
						D	16.334	39.448		20.94	4.220	0.000
T8	125.00	1.463	30	0.5000	91.300	A	16.638	20.107	11.682	31.79	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
130.00-120.00						B	17.878	4.520		52.16	0.000	0.000
						C	17.473	27.020		26.26	0.000	0.000
						D	16.967	39.317		20.76	4.220	0.000
T9	115.00	1.429	30	0.5000	98.608	A	17.567	29.438	11.682	24.85	0.000	0.000
120.00-110.00						B	20.028	5.376		45.98	0.000	0.000
						C	19.177	27.693		24.92	0.000	0.000
						D	18.993	41.860		19.20	4.220	0.000
T10	105.00	1.392	29	0.5000	105.778	A	16.987	34.706	11.682	22.60	0.000	0.000
110.00-100.00						B	19.757	4.799		47.57	0.000	0.000
						C	19.204	27.348		25.09	0.000	0.000
						D	18.718	46.771		17.84	4.220	0.000
T11	95.00	1.353	28	0.5000	113.818	A	20.670	38.605	15.019	25.34	0.000	0.000
100.00-90.00						B	23.872	4.914		52.17	0.000	0.000
						C	23.279	27.482		29.59	0.000	0.000
						D	22.541	49.008		20.99	4.220	0.000
T12 90.00-80.00	85.00	1.31	27	0.5000	120.989	A	21.233	38.787	15.019	25.02	0.000	0.000
						B	24.365	5.077		51.01	0.000	0.000
						C	23.828	27.661		29.17	0.000	0.000
						D	23.059	50.055		20.54	4.220	0.000
T13 80.00-60.00	70.00	1.24	26	0.5000	264.901	A	11.449	105.650	31.707	27.08	0.000	0.000
						B	15.516	37.914		59.34	0.000	0.000
						C	16.174	83.330		31.87	0.000	0.000
						D	16.215	132.018		21.39	8.440	0.000
T14 60.00-50.00	55.00	1.157	24	0.5000	143.277	A	6.866	53.440	15.854	26.29	0.000	0.000
						B	9.050	19.686		55.17	0.000	0.000
						C	9.260	42.304		30.75	0.000	0.000
						D	9.072	67.635		20.67	4.220	0.000
T15 50.00-40.00	45.00	1.093	23	0.5000	150.448	A	8.635	53.637	15.854	25.46	0.000	0.000
						B	11.192	19.871		51.04	0.000	0.000
						C	11.108	42.498		29.57	0.000	0.000
						D	10.461	69.246		19.89	4.220	0.000
T16 40.00-30.00	35.00	1.017	21	0.5000	157.030	A	24.301	40.535	15.019	23.17	0.000	0.000
						B	27.367	7.027		43.67	0.000	0.000
						C	26.881	29.451		26.66	0.000	0.000
						D	25.705	56.331		18.31	4.220	0.000
T17 30.00-20.00	25.00	1	21	0.5000	164.200	A	22.956	39.791	15.019	23.94	0.000	0.000
						B	25.467	6.007		47.72	0.000	0.000
						C	25.419	28.648		27.78	0.000	0.000
						D	24.785	55.797		18.64	4.220	0.000
T18 20.00-10.00	15.00	1	21	0.5000	171.373	A	25.507	40.994	15.019	22.59	0.000	0.000
						B	28.533	7.470		41.72	0.000	0.000
						C	28.079	29.907		25.90	0.000	0.000
						D	26.942	56.802		17.93	4.220	0.000
T19 10.00-0.00	5.00	1	21	0.5000	178.549	A	27.076	20.884	15.019	31.32	0.000	0.000
						B	28.435	7.555		41.73	0.000	0.000
						C	28.136	16.466		33.67	0.000	0.000
						D	27.536	27.145		27.47	1.688	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.611	15	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	11.611	11.248		25.52	0.000	0.000
T2	166.79	1.589	15	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.217	11.558		25.78	0.000	0.000
T3	161.31	1.574	15	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.312	6.316		29.90	0.000	0.000
					D	6.581	8.182		25.57	0.439	0.000
T4	156.79	1.561	14	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.091	7.231		28.34	0.000	0.000
					D	6.497	8.355		25.42	0.502	0.000
T5	152.26	1.548	14	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.212	7.231		28.08	0.000	0.000
					D	6.621	8.355		25.21	0.502	0.000
T6	145.00	1.526	14	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	14.822	15.983		27.09	0.000	0.000
					D	15.639	18.467		24.47	1.554	0.000
T7	135.00	1.496	14	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.178	15.983		30.19	0.000	0.000
					D	17.731	20.317		26.32	2.220	0.000
T8	125.00	1.463	13	90.466	A	17.100	9.372	10.013	37.82	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.399	15.983		30.92	0.000	0.000
					D	17.713	20.317		26.33	2.220	0.000
T9	115.00	1.429	13	97.774	A	18.485	14.975	10.013	29.92	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.268	15.983		29.23	0.000	0.000
					D	19.919	21.427		24.22	2.220	0.000
T10	105.00	1.392	13	104.945	A	18.053	18.299	10.013	27.54	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.185	15.983		29.30	0.000	0.000
					D	19.647	24.432		22.72	2.220	0.000
T11	95.00	1.353	12	112.984	A	21.919	20.515	13.350	31.46	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.275	15.983		34.90	0.000	0.000
					D	23.595	25.667		27.10	2.220	0.000
T12	85.00	1.31	12	120.155	A	22.455	20.515	13.350	31.07	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	22.803	15.983		34.42	0.000	0.000
					D	24.107	26.129		26.58	2.220	0.000
T13	70.00	1.24	11	263.233	A	13.036	69.400	28.370	34.41	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.488	60.336		38.43	0.000	0.000
					D	16.927	82.278		28.60	4.440	0.000
T14	55.00	1.157	11	142.444	A	7.718	34.700	14.185	33.44	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	7.961	30.168		37.20	0.000	0.000
					D	9.584	41.550		27.74	2.220	0.000
T15	45.00	1.093	10	149.614	A	9.632	34.700	14.185	32.00	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	9.917	30.168		35.39	0.000	0.000
					D	11.324	42.082		26.56	2.220	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T16	35.00	1.017	9	156.196	A	25.497	20.515	13.350	29.02	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	25.838	15.983		31.92	0.000	0.000
					D	26.986	28.042		24.26	2.220	0.000
T17	25.00	1	9	163.366	A	23.935	20.515	13.350	30.03	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.214	15.983		33.21	0.000	0.000
					D	25.633	28.042		24.87	2.220	0.000
T18	15.00	1	9	170.539	A	26.687	20.515	13.350	28.28	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.024	15.983		31.04	0.000	0.000
					D	28.192	28.042		23.74	2.220	0.000
T19 10.00-0.00	5.00	1	9	177.715	A	27.606	8.206	13.350	37.28	0.000	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	27.757	6.393		39.09	0.000	0.000
					D	28.152	11.217		33.91	0.888	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.21	2.936	0.593	1	1	12.778	1.66	166.38	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.371	2.363	0.64	1	1	18.811			
T2	0.09	0.54	A	0.253	2.762	0.603	1	1	10.019	1.29	201.38	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.519	2.015	0.707	1	1	17.394			
T3	0.14	0.39	A	0.256	2.754	0.603	1	1	7.282	0.93	205.95	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			
			C	0.437	2.186	0.667	1	1	10.527			
			D	0.511	2.03	0.703	1	1	12.333			
T4	0.15	0.36	A	0.242	2.808	0.6	1	1	7.165	0.94	207.96	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			
			C	0.439	2.182	0.668	1	1	10.922			
			D	0.489	2.072	0.692	1	1	12.278			
T5	0.15	0.37	A	0.234	2.839	0.598	1	1	7.273	0.95	210.79	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.422	2.222	0.661	1	1	10.991			
			D	0.47	2.11	0.683	1	1	12.326			
T6	0.33	0.97	A	0.234	2.837	0.598	1	1	17.345	2.20	219.98	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.407	2.261	0.655	1	1	25.284			
			D	0.451	2.153	0.674	1	1	28.080			
T7	0.35	1.53	A	0.24	2.813	0.599	1	1	19.630	2.42	241.80	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.398	2.285	0.651	1	1	27.580			
			D	0.457	2.14	0.676	1	1	31.474			
T8	0.41	1.43	A	0.293	2.616	0.614	1	1	22.851	2.43	243.21	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.358	2.401	0.635	1	1	26.554			
			D	0.42	2.227	0.66	1	1	31.125			
T9	0.46	2.05	A	0.342	2.449	0.63	1	1	27.915	2.59	258.67	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.35	2.424	0.633	1	1	28.378			
			D	0.423	2.22	0.661	1	1	34.087			
T10	0.52	1.91	A	0.346	2.436	0.631	1	1	29.603	2.65	264.97	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			
			C	0.326	2.503	0.624	1	1	28.160			
			D	0.42	2.228	0.66	1	1	35.772			
T11	0.55	2.50	A	0.376	2.348	0.642	1	1	35.088	2.87	287.04	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.339	2.461	0.628	1	1	32.320			
			D	0.436	2.188	0.667	1	1	40.713			
T12	0.55	2.43	A	0.358	2.402	0.635	1	1	35.486	2.88	287.77	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.323	2.512	0.623	1	1	32.763			
			D	0.418	2.232	0.659	1	1	41.330			
T13	1.11	7.96	A	0.313	2.545	0.62	1	1	56.065	4.84	242.11	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.28	2.66	0.61	1	1	50.300			
			D	0.377	2.345	0.642	1	1	69.786			
T14	0.56	4.57	A	0.298	2.598	0.615	1	1	29.066	2.38	238.09	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.268	2.707	0.607	1	1	26.259			
			D	0.359	2.397	0.636	1	1	35.999			
T15	0.56	5.12	A	0.296	2.603	0.615	1	1	30.965	2.38	237.88	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.268	2.706	0.607	1	1	28.217			
			D	0.357	2.404	0.635	1	1	38.046			
T16	0.56	4.78	A	0.295	2.609	0.614	1	1	38.098	2.61	260.97	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.268	2.707	0.607	1	1	35.533			
			D	0.352	2.418	0.633	1	1	44.745			
T17	0.56	4.27	A	0.272	2.691	0.608	1	1	36.403	2.55	255.28	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.246	2.79	0.601	1	1	33.818			
			D	0.329	2.493	0.625	1	1	43.160			
T18	0.56	5.02	A	0.277	2.673	0.609	1	1	39.182	2.70	269.76	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			
			C	0.252	2.767	0.602	1	1	36.653			
			D	0.33	2.489	0.625	1	1	45.731			
T19	0.22	4.90	A	0.202	2.974	0.591	1	1	32.453	2.36	235.93	D
10.00-0.00			B	0.16	3.158	0.583	1	1	28.435			
			C	0.192	3.014	0.589	1	1	31.522			
			D	0.222	2.889	0.595	1	1	34.826			
Sum Weight:	7.93	51.85						OTM	3776.85 kip-ft	43.64		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	2.00	199.66	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.371	2.363	0.64	1.2	1.2	22.573			
T2	0.09	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	1.55	241.66	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.519	2.015	0.707	1.2	1.2	20.872			
T3	0.14	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	1.11	246.43	D
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.437	2.186	0.667	1.2	1.2	12.632			
			D	0.511	2.03	0.703	1.2	1.2	14.799			
T4	0.15	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	1.13	248.75	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.439	2.182	0.668	1.2	1.2	13.106			
			D	0.489	2.072	0.692	1.2	1.2	14.733			
T5	0.15	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	1.14	252.15	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.422	2.222	0.661	1.2	1.2	13.189			
			D	0.47	2.11	0.683	1.2	1.2	14.791			
T6	0.33	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	2.63	262.87	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.407	2.261	0.655	1.2	1.2	30.341			
			D	0.451	2.153	0.674	1.2	1.2	33.695			
T7	0.35	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	2.89	288.61	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.398	2.285	0.651	1.2	1.2	33.096			
			D	0.457	2.14	0.676	1.2	1.2	37.769			
T8	0.41	1.43	A	0.293	2.616	0.614	1.2	1.2	27.422	2.90	290.35	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.358	2.401	0.635	1.2	1.2	31.865			
			D	0.42	2.227	0.66	1.2	1.2	37.350			
T9	0.46	2.05	A	0.342	2.449	0.63	1.2	1.2	33.498	3.09	308.93	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.35	2.424	0.633	1.2	1.2	34.054			
			D	0.423	2.22	0.661	1.2	1.2	40.904			
T10	0.52	1.91	A	0.346	2.436	0.631	1.2	1.2	35.523	3.17	316.53	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.326	2.503	0.624	1.2	1.2	33.792			
			D	0.42	2.228	0.66	1.2	1.2	42.926			
T11	0.55	2.50	A	0.376	2.348	0.642	1.2	1.2	42.106	3.43	343.06	D
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.339	2.461	0.628	1.2	1.2	38.784			
			D	0.436	2.188	0.667	1.2	1.2	48.856			
T12	0.55	2.43	A	0.358	2.402	0.635	1.2	1.2	42.584	3.44	343.98	D
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.323	2.512	0.623	1.2	1.2	39.316			
			D	0.418	2.232	0.659	1.2	1.2	49.596			
T13	1.11	7.96	A	0.313	2.545	0.62	1.2	1.2	67.277	5.79	289.26	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.28	2.66	0.61	1.2	1.2	60.360			
			D	0.377	2.345	0.642	1.2	1.2	83.743			
T14	0.56	4.57	A	0.298	2.598	0.615	1.2	1.2	34.879	2.85	284.51	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.268	2.707	0.607	1.2	1.2	31.511			
			D	0.359	2.397	0.636	1.2	1.2	43.198			
T15	0.56	5.12	A	0.296	2.603	0.615	1.2	1.2	37.158	2.84	284.32	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.268	2.706	0.607	1.2	1.2	33.860			
			D	0.357	2.404	0.635	1.2	1.2	45.655			
T16	0.56	4.78	A	0.295	2.609	0.614	1.2	1.2	45.718	3.12	312.11	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.268	2.707	0.607	1.2	1.2	42.639			
			D	0.352	2.418	0.633	1.2	1.2	53.694			
T17	0.56	4.27	A	0.272	2.691	0.608	1.2	1.2	43.684	3.05	305.30	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.246	2.79	0.601	1.185	1.185	40.059			
			D	0.329	2.493	0.625	1.2	1.2	51.792			
T18	0.56	5.02	A	0.277	2.673	0.609	1.2	1.2	47.019	3.23	322.68	D
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.252	2.767	0.602	1.189	1.189	43.585			
			D	0.33	2.489	0.625	1.2	1.2	54.877			
T19	0.22	4.90	A	0.202	2.974	0.591	1.151	1.151	37.358	2.75	274.79	D
10.00-0.00			B	0.16	3.158	0.583	1.12	1.12	31.847			
			C	0.192	3.014	0.589	1.144	1.144	36.065			
			D	0.222	2.889	0.595	1.166	1.166	40.612			
Sum Weight:	7.93	51.85						OTM	4515.18 kip-ft	52.10		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.25	1.18	A	0.293	2.614	0.614	1	1	16.074	2.06	205.61	D
180.00-170.00			B	0.272	2.691	0.608	1	1	15.239			
			C	0.272	2.691	0.608	1	1	15.239			
			D	0.552	1.962	0.725	1	1	27.986			
T2	0.26	0.86	A	0.336	2.469	0.628	1	1	12.219	1.85	288.18	D
170.00-163.57			B	0.315	2.537	0.621	1	1	11.667			
			C	0.315	2.537	0.621	1	1	11.667			
			D	0.754	1.825	0.86	1	1	27.478			
T3	0.35	0.63	A	0.351	2.423	0.633	1	1	9.115	1.33	293.24	D
163.57-159.05			B	0.326	2.501	0.624	1	1	8.638			
			C	0.602	1.898	0.755	1	1	14.917			
			D	0.743	1.824	0.852	1	1	19.425			
T4	0.38	0.56	A	0.328	2.494	0.625	1	1	8.901	1.32	292.16	D
159.05-154.52			B	0.29	2.627	0.613	1	1	8.132			
			C	0.603	1.897	0.756	1	1	15.602			
			D	0.719	1.826	0.834	1	1	19.434			
T5	0.38	0.57	A	0.318	2.528	0.622	1	1	9.026	1.31	288.87	D
154.52-150.00			B	0.281	2.657	0.61	1	1	8.262			
			C	0.581	1.922	0.742	1	1	15.609			
			D	0.692	1.833	0.814	1	1	19.302			
T6	0.85	1.49	A	0.32	2.523	0.622	1	1	21.539	2.92	291.99	D
150.00-140.00			B	0.285	2.643	0.611	1	1	19.848			
			C	0.559	1.951	0.73	1	1	35.438			
			D	0.659	1.849	0.792	1	1	42.919			
T7	0.89	2.18	A	0.317	2.531	0.621	1	1	23.788	3.21	320.61	D
140.00-130.00			B	0.286	2.641	0.612	1	1	22.104			
			C	0.538	1.983	0.718	1	1	37.577			
			D	0.663	1.847	0.794	1	1	47.663			
T8	1.04	1.98	A	0.402	2.273	0.653	1	1	29.760	3.15	315.27	D
130.00-120.00			B	0.245	2.793	0.601	1	1	20.592			
			C	0.487	2.075	0.691	1	1	36.146			
			D	0.616	1.883	0.764	1	1	46.997			
T9	1.16	2.78	A	0.477	2.096	0.686	1	1	37.758	3.33	332.66	D
120.00-110.00			B	0.258	2.745	0.604	1	1	23.274			
			C	0.475	2.099	0.685	1	1	38.152			
			D	0.617	1.882	0.764	1	1	50.984			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T10	1.28	2.52	A	0.489	2.072	0.692	1	1	40.997	3.45	345.34	D
110.00-100.00			B	0.232	2.846	0.597	1	1	22.624			
			C	0.44	2.178	0.669	1	1	37.494			
			D	0.619	1.88	0.765	1	1	54.521			
T11	1.35	3.28	A	0.521	2.012	0.708	1	1	48.014	3.68	368.44	D
100.00-90.00			B	0.253	2.764	0.603	1	1	26.833			
			C	0.446	2.164	0.671	1	1	41.732			
			D	0.629	1.872	0.772	1	1	60.352			
T12	1.35	3.15	A	0.496	2.058	0.696	1	1	48.210	3.64	364.48	D
90.00-80.00			B	0.243	2.801	0.6	1	1	27.413			
			C	0.426	2.214	0.662	1	1	42.149			
			D	0.604	1.895	0.756	1	1	60.913			
T13	2.74	9.49	A	0.442	2.174	0.67	1	1	82.199	6.57	328.50	D
80.00-60.00			B	0.202	2.973	0.591	1	1	37.914			
			C	0.376	2.348	0.642	1	1	69.669			
			D	0.56	1.951	0.73	1	1	112.548			
T14	1.38	5.52	A	0.421	2.225	0.66	1	1	42.156	3.19	318.80	D
60.00-50.00			B	0.201	2.978	0.591	1	1	20.674			
			C	0.36	2.395	0.636	1	1	36.168			
			D	0.535	1.988	0.716	1	1	57.510			
T15	1.39	5.97	A	0.414	2.243	0.657	1	1	43.894	3.14	314.21	D
50.00-40.00			B	0.206	2.952	0.592	1	1	22.950			
			C	0.356	2.406	0.635	1	1	38.084			
			D	0.53	1.997	0.713	1	1	59.844			
T16	1.39	5.99	A	0.413	2.246	0.657	1	1	50.930	3.22	321.80	D
40.00-30.00			B	0.219	2.9	0.594	1	1	31.544			
			C	0.359	2.398	0.636	1	1	45.601			
			D	0.522	2.009	0.709	1	1	65.655			
T17	1.39	5.18	A	0.382	2.33	0.644	1	1	48.600	3.15	314.73	D
30.00-20.00			B	0.192	3.016	0.589	1	1	29.003			
			C	0.329	2.491	0.625	1	1	43.333			
			D	0.491	2.068	0.693	1	1	63.443			
T18	1.39	6.32	A	0.388	2.313	0.647	1	1	52.022	3.29	328.80	D
20.00-10.00			B	0.21	2.937	0.593	1	1	32.959			
			C	0.338	2.462	0.628	1	1	46.872			
			D	0.489	2.072	0.692	1	1	66.237			
T19	0.56	6.31	A	0.269	2.704	0.607	1	1	39.748	2.68	268.41	D
10.00-0.00			B	0.202	2.973	0.591	1	1	32.898			
			C	0.25	2.776	0.602	1	1	38.046			
			D	0.306	2.568	0.618	1	1	44.307			
Sum Weight:	19.77	65.96						OTM	4974.96 kip-ft	56.49		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.25	1.18	A	0.293	2.614	0.614	1.2	1.2	19.289	2.47	246.73	D
180.00-170.00			B	0.272	2.691	0.608	1.2	1.2	18.286			
			C	0.272	2.691	0.608	1.2	1.2	18.286			
			D	0.552	1.962	0.725	1.2	1.2	33.583			
T2	0.26	0.86	A	0.336	2.469	0.628	1.2	1.2	14.662	2.22	345.82	D
170.00-163.57			B	0.315	2.537	0.621	1.2	1.2	14.001			
			C	0.315	2.537	0.621	1.2	1.2	14.001			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			D	0.754	1.825	0.86	1.2	1.2	32.974			
T3	0.35	0.63	A	0.351	2.423	0.633	1.2	1.2	10.938	1.59	350.54	D
163.57-159.05			B	0.326	2.501	0.624	1.2	1.2	10.366			
			C	0.602	1.898	0.755	1.2	1.2	17.900			
			D	0.743	1.824	0.852	1.2	1.2	23.310			
T4	0.38	0.56	A	0.328	2.494	0.625	1.2	1.2	10.681	1.58	349.07	D
159.05-154.52			B	0.29	2.627	0.613	1.2	1.2	9.758			
			C	0.603	1.897	0.756	1.2	1.2	18.723			
			D	0.719	1.826	0.834	1.2	1.2	23.321			
T5	0.38	0.57	A	0.318	2.528	0.622	1.2	1.2	10.831	1.56	345.13	D
154.52-150.00			B	0.281	2.657	0.61	1.2	1.2	9.915			
			C	0.581	1.922	0.742	1.2	1.2	18.731			
			D	0.692	1.833	0.814	1.2	1.2	23.163			
T6	0.85	1.49	A	0.32	2.523	0.622	1.2	1.2	25.847	3.48	348.30	D
150.00-140.00			B	0.285	2.643	0.611	1.2	1.2	23.817			
			C	0.559	1.951	0.73	1.2	1.2	42.525			
			D	0.659	1.849	0.792	1.2	1.2	51.503			
T7	0.89	2.18	A	0.317	2.531	0.621	1.2	1.2	28.546	3.82	381.79	D
140.00-130.00			B	0.286	2.641	0.612	1.2	1.2	26.525			
			C	0.538	1.983	0.718	1.2	1.2	45.092			
			D	0.663	1.847	0.794	1.2	1.2	57.196			
T8	1.04	1.98	A	0.402	2.273	0.653	1.2	1.2	35.712	3.75	375.46	D
130.00-120.00			B	0.245	2.793	0.601	1.184	1.184	24.381			
			C	0.487	2.075	0.691	1.2	1.2	43.376			
			D	0.616	1.883	0.764	1.2	1.2	56.397			
T9	1.16	2.78	A	0.477	2.096	0.686	1.2	1.2	45.310	3.96	396.40	D
120.00-110.00			B	0.258	2.745	0.604	1.193	1.193	27.771			
			C	0.475	2.099	0.685	1.2	1.2	45.783			
			D	0.617	1.882	0.764	1.2	1.2	61.180			
T10	1.28	2.52	A	0.489	2.072	0.692	1.2	1.2	49.196	4.12	411.67	D
110.00-100.00			B	0.232	2.846	0.597	1.174	1.174	26.563			
			C	0.44	2.178	0.669	1.2	1.2	44.993			
			D	0.619	1.88	0.765	1.2	1.2	65.425			
T11	1.35	3.28	A	0.521	2.012	0.708	1.2	1.2	57.617	4.39	439.47	D
100.00-90.00			B	0.253	2.764	0.603	1.19	1.19	31.923			
			C	0.446	2.164	0.671	1.2	1.2	50.078			
			D	0.629	1.872	0.772	1.2	1.2	72.423			
T12	1.35	3.15	A	0.496	2.058	0.696	1.2	1.2	57.852	4.35	434.80	D
90.00-80.00			B	0.243	2.801	0.6	1.183	1.183	32.416			
			C	0.426	2.214	0.662	1.2	1.2	50.579			
			D	0.604	1.895	0.756	1.2	1.2	73.096			
T13	2.74	9.49	A	0.442	2.174	0.67	1.2	1.2	98.639	7.84	391.77	D
80.00-60.00			B	0.202	2.973	0.591	1.151	1.151	43.649			
			C	0.376	2.348	0.642	1.2	1.2	83.603			
			D	0.56	1.951	0.73	1.2	1.2	135.058			
T14	1.38	5.52	A	0.421	2.225	0.66	1.2	1.2	50.587	3.80	380.30	D
60.00-50.00			B	0.201	2.978	0.591	1.15	1.15	23.784			
			C	0.36	2.395	0.636	1.2	1.2	43.402			
			D	0.535	1.988	0.716	1.2	1.2	69.012			
T15	1.39	5.97	A	0.414	2.243	0.657	1.2	1.2	52.673	3.75	374.91	D
50.00-40.00			B	0.206	2.952	0.592	1.155	1.155	26.504			
			C	0.356	2.406	0.635	1.2	1.2	45.700			
			D	0.53	1.997	0.713	1.2	1.2	71.812			
T16	1.39	5.99	A	0.413	2.246	0.657	1.2	1.2	61.116	3.84	384.17	D
40.00-30.00			B	0.219	2.9	0.594	1.164	1.164	36.726			
			C	0.359	2.398	0.636	1.2	1.2	54.722			
			D	0.522	2.009	0.709	1.2	1.2	78.786			
T17	1.39	5.18	A	0.382	2.33	0.644	1.2	1.2	58.320	3.76	375.72	D
30.00-20.00			B	0.192	3.016	0.589	1.144	1.144	33.172			
			C	0.329	2.491	0.625	1.2	1.2	51.999			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.491	2.068	0.693	1.2	1.2	76.132			
T18	1.39	6.32	A	0.388	2.313	0.647	1.2	1.2	62.426	3.93	392.60	D
20.00-10.00			B	0.21	2.937	0.593	1.158	1.158	38.152			
			C	0.338	2.462	0.628	1.2	1.2	56.247			
			D	0.489	2.072	0.692	1.2	1.2	79.485			
T19	0.56	6.31	A	0.269	2.704	0.607	1.2	1.2	47.698	3.21	321.30	D
10.00-0.00			B	0.202	2.973	0.591	1.151	1.151	37.871			
			C	0.25	2.776	0.602	1.187	1.187	45.173			
			D	0.306	2.568	0.618	1.2	1.2	53.169			
Sum Weight:	19.77	65.96						OTM	5938.31 kip-ft	67.42		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.21	2.936	0.593	1	1	12.778	0.74	73.95	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.371	2.363	0.64	1	1	18.811			
T2	0.09	0.54	A	0.253	2.762	0.603	1	1	10.019	0.58	89.50	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.519	2.015	0.707	1	1	17.394			
T3	0.14	0.39	A	0.256	2.754	0.603	1	1	7.282	0.41	91.53	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			
			C	0.437	2.186	0.667	1	1	10.527			
			D	0.511	2.03	0.703	1	1	12.333			
T4	0.15	0.36	A	0.242	2.808	0.6	1	1	7.165	0.42	92.43	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			
			C	0.439	2.182	0.668	1	1	10.922			
			D	0.489	2.072	0.692	1	1	12.278			
T5	0.15	0.37	A	0.234	2.839	0.598	1	1	7.273	0.42	93.69	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.422	2.222	0.661	1	1	10.991			
			D	0.47	2.11	0.683	1	1	12.326			
T6	0.33	0.97	A	0.234	2.837	0.598	1	1	17.345	0.98	97.77	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.407	2.261	0.655	1	1	25.284			
			D	0.451	2.153	0.674	1	1	28.080			
T7	0.35	1.53	A	0.24	2.813	0.599	1	1	19.630	1.07	107.47	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.398	2.285	0.651	1	1	27.580			
			D	0.457	2.14	0.676	1	1	31.474			
T8	0.41	1.43	A	0.293	2.616	0.614	1	1	22.851	1.08	108.09	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.358	2.401	0.635	1	1	26.554			
			D	0.42	2.227	0.66	1	1	31.125			
T9	0.46	2.05	A	0.342	2.449	0.63	1	1	27.915	1.15	114.97	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			
			C	0.35	2.424	0.633	1	1	28.378			
			D	0.423	2.22	0.661	1	1	34.087			
T10	0.52	1.91	A	0.346	2.436	0.631	1	1	29.603	1.18	117.77	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.326	2.503	0.624	1	1	28.160			
			D	0.42	2.228	0.66	1	1	35.772			
T11	0.55	2.50	A	0.376	2.348	0.642	1	1	35.088	1.28	127.58	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.339	2.461	0.628	1	1	32.320			
			D	0.436	2.188	0.667	1	1	40.713			
T12	0.55	2.43	A	0.358	2.402	0.635	1	1	35.486	1.28	127.90	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.323	2.512	0.623	1	1	32.763			
			D	0.418	2.232	0.659	1	1	41.330			
T13	1.11	7.96	A	0.313	2.545	0.62	1	1	56.065	2.15	107.61	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.28	2.66	0.61	1	1	50.300			
			D	0.377	2.345	0.642	1	1	69.786			
T14	0.56	4.57	A	0.298	2.598	0.615	1	1	29.066	1.06	105.82	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.268	2.707	0.607	1	1	26.259			
			D	0.359	2.397	0.636	1	1	35.999			
T15	0.56	5.12	A	0.296	2.603	0.615	1	1	30.965	1.06	105.72	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.268	2.706	0.607	1	1	28.217			
			D	0.357	2.404	0.635	1	1	38.046			
T16	0.56	4.78	A	0.295	2.609	0.614	1	1	38.098	1.16	115.98	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.268	2.707	0.607	1	1	35.533			
			D	0.352	2.418	0.633	1	1	44.745			
T17	0.56	4.27	A	0.272	2.691	0.608	1	1	36.403	1.13	113.46	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.246	2.79	0.601	1	1	33.818			
			D	0.329	2.493	0.625	1	1	43.160			
T18	0.56	5.02	A	0.277	2.673	0.609	1	1	39.182	1.20	119.89	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			
			C	0.252	2.767	0.602	1	1	36.653			
			D	0.33	2.489	0.625	1	1	45.731			
T19	0.22	4.90	A	0.202	2.974	0.591	1	1	32.453	1.05	104.86	D
10.00-0.00			B	0.16	3.158	0.583	1	1	28.435			
			C	0.192	3.014	0.589	1	1	31.522			
			D	0.222	2.889	0.595	1	1	34.826			
Sum Weight:	7.93	51.85						OTM	1678.60 kip-ft	19.40		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	0.89	88.74	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.371	2.363	0.64	1.2	1.2	22.573			
T2	0.09	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	0.69	107.40	D
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.519	2.015	0.707	1.2	1.2	20.872			
T3	0.14	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	0.50	109.52	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.437	2.186	0.667	1.2	1.2	12.632			
			D	0.511	2.03	0.703	1.2	1.2	14.799			
T4	0.15	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	0.50	110.56	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.439	2.182	0.668	1.2	1.2	13.106			
			D	0.489	2.072	0.692	1.2	1.2	14.733			
T5	0.15	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	0.51	112.07	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.422	2.222	0.661	1.2	1.2	13.189			
			D	0.47	2.11	0.683	1.2	1.2	14.791			
T6	0.33	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	1.17	116.83	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.407	2.261	0.655	1.2	1.2	30.341			
			D	0.451	2.153	0.674	1.2	1.2	33.695			
T7	0.35	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	1.28	128.27	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.398	2.285	0.651	1.2	1.2	33.096			
			D	0.457	2.14	0.676	1.2	1.2	37.769			
T8	0.41	1.43	A	0.293	2.616	0.614	1.2	1.2	27.422	1.29	129.04	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.358	2.401	0.635	1.2	1.2	31.865			
			D	0.42	2.227	0.66	1.2	1.2	37.350			
T9	0.46	2.05	A	0.342	2.449	0.63	1.2	1.2	33.498	1.37	137.30	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.35	2.424	0.633	1.2	1.2	34.054			
			D	0.423	2.22	0.661	1.2	1.2	40.904			
T10	0.52	1.91	A	0.346	2.436	0.631	1.2	1.2	35.523	1.41	140.68	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.326	2.503	0.624	1.2	1.2	33.792			
			D	0.42	2.228	0.66	1.2	1.2	42.926			
T11	0.55	2.50	A	0.376	2.348	0.642	1.2	1.2	42.106	1.52	152.47	D
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.339	2.461	0.628	1.2	1.2	38.784			
			D	0.436	2.188	0.667	1.2	1.2	48.856			
T12	0.55	2.43	A	0.358	2.402	0.635	1.2	1.2	42.584	1.53	152.88	D
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.323	2.512	0.623	1.2	1.2	39.316			
			D	0.418	2.232	0.659	1.2	1.2	49.596			
T13	1.11	7.96	A	0.313	2.545	0.62	1.2	1.2	67.277	2.57	128.56	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.28	2.66	0.61	1.2	1.2	60.360			
			D	0.377	2.345	0.642	1.2	1.2	83.743			
T14	0.56	4.57	A	0.298	2.598	0.615	1.2	1.2	34.879	1.26	126.45	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.268	2.707	0.607	1.2	1.2	31.511			
			D	0.359	2.397	0.636	1.2	1.2	43.198			
T15	0.56	5.12	A	0.296	2.603	0.615	1.2	1.2	37.158	1.26	126.37	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.268	2.706	0.607	1.2	1.2	33.860			
			D	0.357	2.404	0.635	1.2	1.2	45.655			
T16	0.56	4.78	A	0.295	2.609	0.614	1.2	1.2	45.718	1.39	138.72	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.268	2.707	0.607	1.2	1.2	42.639			
			D	0.352	2.418	0.633	1.2	1.2	53.694			
T17	0.56	4.27	A	0.272	2.691	0.608	1.2	1.2	43.684	1.36	135.69	D
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.246	2.79	0.601	1.185	1.185	40.059			
			D	0.329	2.493	0.625	1.2	1.2	51.792			
T18	0.56	5.02	A	0.277	2.673	0.609	1.2	1.2	47.019	1.43	143.41	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.252	2.767	0.602	1.189	1.189	43.585			
			D	0.33	2.489	0.625	1.2	1.2	54.877			
T19	0.22	4.90	A	0.202	2.974	0.591	1.151	1.151	37.358	1.22	122.13	D
10.00-0.00			B	0.16	3.158	0.583	1.12	1.12	31.847			
			C	0.192	3.014	0.589	1.144	1.144	36.065			
			D	0.222	2.889	0.595	1.166	1.166	40.612			
Sum Weight:	7.93	51.85						OTM	2006.75 kip-ft	23.15		

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	30.80					
Bracing Weight	21.04					
Total Member Self-Weight	51.85			-22.61	10.85	
Total Weight	74.85			-22.61	10.85	
Wind 0 deg - No Ice		-0.43	-69.79	-7492.14	78.89	-53.34
Wind 30 deg - No Ice		38.78	-67.55	-7096.81	-4037.65	-58.74
Wind 45 deg - No Ice		55.06	-55.03	-5778.33	-5749.82	-50.25
Wind 60 deg - No Ice		67.59	-38.76	-4067.62	-7069.40	-38.33
Wind 90 deg - No Ice		69.84	0.43	45.42	-7465.67	-10.01
Wind 120 deg - No Ice		68.02	39.49	4140.24	-7137.44	25.08
Wind 135 deg - No Ice		55.66	55.63	5829.33	-5846.04	39.43
Wind 150 deg - No Ice		39.52	67.98	7119.62	-4155.50	51.09
Wind 180 deg - No Ice		0.43	69.79	7446.91	-57.18	53.34
Wind 210 deg - No Ice		-38.78	67.55	7051.58	4059.36	58.74
Wind 225 deg - No Ice		-55.06	55.03	5733.11	5771.52	50.25
Wind 240 deg - No Ice		-67.59	38.76	4022.39	7091.11	38.33
Wind 270 deg - No Ice		-69.84	-0.43	-90.65	7487.38	10.01
Wind 300 deg - No Ice		-68.02	-39.49	-4185.46	7159.14	-25.08
Wind 315 deg - No Ice		-55.66	-55.63	-5874.55	5867.74	-39.43
Wind 330 deg - No Ice		-39.52	-67.98	-7164.84	4177.20	-51.09
Member Ice	14.12					
Total Weight Ice	107.10			-24.78	28.23	
Wind 0 deg - Ice		-0.40	-88.84	-9539.62	92.73	-100.00
Wind 30 deg - Ice		49.56	-86.21	-9066.92	-5158.67	-95.29
Wind 45 deg - Ice		70.30	-70.27	-7388.38	-7340.55	-73.04
Wind 60 deg - Ice		86.25	-49.54	-5208.02	-9020.25	-45.81
Wind 90 deg - Ice		88.89	0.40	39.72	-9493.94	9.61
Wind 120 deg - Ice		86.65	50.23	5270.17	-9084.75	73.42
Wind 135 deg - Ice		70.87	70.83	7430.03	-7431.76	95.58
Wind 150 deg - Ice		50.26	86.61	9081.85	-5270.39	111.23
Wind 180 deg - Ice		0.40	88.84	9490.06	-36.26	100.00
Wind 210 deg - Ice		-49.56	86.21	9017.35	5215.14	95.29
Wind 225 deg - Ice		-70.30	70.27	7338.81	7397.02	73.04
Wind 240 deg - Ice		-86.25	49.54	5158.46	9076.72	45.81
Wind 270 deg - Ice		-88.89	-0.40	-89.28	9550.41	-9.61
Wind 300 deg - Ice		-86.65	-50.23	-5319.74	9141.22	-73.42
Wind 315 deg - Ice		-70.87	-70.83	-7479.59	7488.23	-95.58
Wind 330 deg - Ice		-50.26	-86.61	-9131.42	5326.86	-111.23
Total Weight	74.85			-22.61	10.85	
Wind 0 deg - Service		-0.19	-31.02	-3339.60	31.61	-23.71

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 30 deg - Service		17.23	-30.02	-3163.90	-1797.97	-26.11
Wind 45 deg - Service		24.47	-24.46	-2577.91	-2558.93	-22.33
Wind 60 deg - Service		30.04	-17.23	-1817.59	-3145.41	-17.04
Wind 90 deg - Service		31.04	0.19	10.43	-3321.53	-4.45
Wind 120 deg - Service		30.23	17.55	1830.34	-3175.65	11.15
Wind 135 deg - Service		24.74	24.73	2581.05	-2601.69	17.53
Wind 150 deg - Service		17.56	30.21	3154.51	-1850.34	22.71
Wind 180 deg - Service		0.19	31.02	3299.98	-28.87	23.71
Wind 210 deg - Service		-17.23	30.02	3124.27	1800.71	26.11
Wind 225 deg - Service		-24.47	24.46	2538.29	2561.67	22.33
Wind 240 deg - Service		-30.04	17.23	1777.97	3148.15	17.04
Wind 270 deg - Service		-31.04	-0.19	-50.05	3324.27	4.45
Wind 300 deg - Service		-30.23	-17.55	-1869.97	3178.39	-11.15
Wind 315 deg - Service		-24.74	-24.73	-2620.67	2604.43	-17.53
Wind 330 deg - Service		-17.56	-30.21	-3194.14	1853.08	-22.71

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service

Comb. No.	Description
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	4.700	50	0.2134	0.0137
T2	170 - 163.573	4.205	50	0.2117	0.0135
T3	163.573 - 159.049	3.888	49	0.2078	0.0132
T4	159.049 - 154.524	3.666	49	0.2042	0.0125
T5	154.524 - 150	3.450	49	0.1983	0.0122
T6	150 - 140	3.241	49	0.1909	0.0119
T7	140 - 130	2.810	49	0.1726	0.0119
T8	130 - 120	2.419	49	0.1577	0.0124
T9	120 - 110	2.065	49	0.1409	0.0123
T10	110 - 100	1.746	49	0.1265	0.0110
T11	100 - 90	1.458	49	0.1111	0.0100
T12	90 - 80	1.203	49	0.0977	0.0091
T13	80 - 60	0.976	49	0.0838	0.0079
T14	60 - 50	0.590	49	0.0681	0.0054
T15	50 - 40	0.423	49	0.0601	0.0041
T16	40 - 30	0.287	49	0.0517	0.0033
T17	30 - 20	0.173	49	0.0389	0.0026
T18	20 - 10	0.087	49	0.0260	0.0019
T19	10 - 0	0.029	41	0.0128	0.0012

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	50	4.700	0.2134	0.0137	352727
183.00	SC479-HF1LDF (D00-E5764)	50	4.700	0.2134	0.0137	352727
181.00	TMA 432-83H-01T - Future Decom.	50	4.700	0.2134	0.0137	352727
180.00	SC479-HF1LDF (D00I-E5764)	50	4.700	0.2134	0.0137	352727
175.00	6' PAD w/ Radome	50	4.452	0.2130	0.0136	352727
174.00	SC479-HF1LDF (D00I-E5764)	50	4.402	0.2128	0.0136	295311
173.00	6' PAD w/ Radome	50	4.353	0.2126	0.0136	260237
170.00	6' PAD w/ Radome	50	4.205	0.2117	0.0135	270649
169.00	BA1010-2	49	4.155	0.2112	0.0135	349714
168.00	SC479-HF1LDF (D00I-E5764)	49	4.106	0.2107	0.0135	572286

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
163.00	T-Frame	49	3.860	0.2074	0.0131	167924
161.00	DB408-B	49	3.762	0.2060	0.0128	64773
152.00	12' Omni Antenna	49	3.333	0.1943	0.0120	31200
146.25	12' Omni Antenna	49	3.075	0.1840	0.0118	28734
140.50	12' Omni Antenna	49	2.830	0.1734	0.0119	28547
139.00	Yagi ASP-816	49	2.769	0.1709	0.0120	28815
137.00	BA1010	49	2.688	0.1679	0.0121	29444
136.50	DB222-A	49	2.668	0.1672	0.0121	29637
135.00	ANT220F2 w/clamps	49	2.609	0.1650	0.0122	30269
134.50	BA1010	49	2.590	0.1643	0.0122	30490
132.00	BA1010	49	2.494	0.1607	0.0123	31608
130.00	Dish Ice Shield	49	2.419	0.1577	0.0124	32457
129.50	BA1010	49	2.400	0.1569	0.0124	32653
128.00	PD128-1	49	2.345	0.1544	0.0125	33200
127.00	3" Dia 20' Omni	49	2.309	0.1527	0.0125	33540
125.00	6' PAD w/ Radome	49	2.238	0.1493	0.0125	34195
124.50	PD128-1	49	2.220	0.1484	0.0125	34359
122.00	3" Dia 20' Omni	49	2.133	0.1441	0.0124	35138
121.00	PD128-1	49	2.099	0.1425	0.0124	35425
117.00	3" Dia 20' Omni	49	1.966	0.1364	0.0120	36287
116.00	12' Omni Antenna	49	1.934	0.1350	0.0119	36448
112.00	3" Dia 20' Omni	49	1.807	0.1294	0.0113	36996
111.00	12' Omni Antenna	49	1.776	0.1280	0.0112	37079
107.00	3" Dia 20' Omni	49	1.656	0.1219	0.0107	36991
106.00	4' Grid Dish	49	1.627	0.1204	0.0106	36894
105.00	12' Wireless Frame	49	1.598	0.1188	0.0105	36787
101.00	DB264-A	49	1.486	0.1126	0.0101	36688
96.00	DB264-A	49	1.353	0.1057	0.0096	39069
91.00	SC479-HF1LDF	49	1.227	0.0991	0.0092	42905
86.00	DB264-A	49	1.109	0.0920	0.0086	44648
85.00	SC479-HF1LDF	49	1.086	0.0905	0.0085	44769
79.00	SC479-HF1LDF	49	0.954	0.0827	0.0078	47296
75.00	Dish Ice Shield	49	0.872	0.0787	0.0073	53227
71.00	2'6"x4" Pipe Mount	49	0.793	0.0755	0.0068	61818
61.00	GPS	49	0.608	0.0688	0.0055	91685
50.00	DB803M-Y	49	0.423	0.0601	0.0041	34959

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	13.327	33	0.5994	0.0475
T2	170 - 163.573	11.935	33	0.5945	0.0454
T3	163.573 - 159.049	11.046	33	0.5841	0.0436
T4	159.049 - 154.524	10.421	33	0.5745	0.0427
T5	154.524 - 150	9.813	33	0.5586	0.0421
T6	150 - 140	9.224	33	0.5385	0.0416
T7	140 - 130	8.003	33	0.4880	0.0416
T8	130 - 120	6.897	33	0.4465	0.0422
T9	120 - 110	5.894	33	0.3995	0.0414
T10	110 - 100	4.986	33	0.3593	0.0376
T11	100 - 90	4.168	33	0.3161	0.0349
T12	90 - 80	3.441	33	0.2783	0.0324
T13	80 - 60	2.792	33	0.2390	0.0291
T14	60 - 50	1.690	33	0.1943	0.0209

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T15	50 - 40	1.212	33	0.1717	0.0163
T16	40 - 30	0.822	33	0.1477	0.0137
T17	30 - 20	0.497	33	0.1113	0.0110
T18	20 - 10	0.250	33	0.0743	0.0081
T19	10 - 0	0.083	25	0.0367	0.0051

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	33	13.327	0.5994	0.0475	117746
183.00	SC479-HF1LDF (D00-E5764)	33	13.327	0.5994	0.0475	117746
181.00	TMA 432-83H-01T - Future Decom.	33	13.327	0.5994	0.0475	117746
180.00	SC479-HF1LDF (D00I-E5764)	33	13.327	0.5994	0.0475	117746
175.00	6' PAD w/ Radome	33	12.630	0.5983	0.0466	117746
174.00	SC479-HF1LDF (D00I-E5764)	33	12.491	0.5978	0.0464	98582
173.00	6' PAD w/ Radome	33	12.352	0.5972	0.0462	86888
170.00	6' PAD w/ Radome	33	11.935	0.5945	0.0454	90637
169.00	BA1010-2	33	11.797	0.5932	0.0451	117741
168.00	SC479-HF1LDF (D00I-E5764)	33	11.658	0.5918	0.0448	205861
163.00	T-Frame	33	10.967	0.5830	0.0434	76137
161.00	DB408-B	33	10.690	0.5792	0.0430	25473
152.00	12' Omni Antenna	33	9.481	0.5478	0.0418	11504
146.25	12' Omni Antenna	33	8.753	0.5195	0.0414	10499
140.50	12' Omni Antenna	33	8.062	0.4904	0.0416	10423
139.00	Yagi ASP-816	33	7.888	0.4836	0.0416	10502
137.00	BA1010	33	7.660	0.4751	0.0418	10692
136.50	DB222-A	33	7.603	0.4731	0.0418	10750
135.00	ANT220F2 w/clamps	33	7.436	0.4670	0.0419	10940
134.50	BA1010	33	7.381	0.4651	0.0419	11006
132.00	BA1010	33	7.109	0.4550	0.0421	11341
130.00	Dish Ice Shield	33	6.897	0.4465	0.0422	11598
129.50	BA1010	33	6.844	0.4443	0.0422	11658
128.00	PD128-1	33	6.688	0.4374	0.0422	11829
127.00	3" Dia 20' Omni	33	6.585	0.4327	0.0422	11938
125.00	6' PAD w/ Radome	33	6.383	0.4231	0.0422	12150
124.50	PD128-1	33	6.333	0.4206	0.0421	12203
122.00	3" Dia 20' Omni	33	6.086	0.4086	0.0419	12470
121.00	PD128-1	33	5.990	0.4040	0.0417	12572
117.00	3" Dia 20' Omni	33	5.612	0.3869	0.0404	12925
116.00	12' Omni Antenna	33	5.519	0.3830	0.0400	13002
112.00	3" Dia 20' Omni	33	5.160	0.3674	0.0383	13288
111.00	12' Omni Antenna	33	5.072	0.3634	0.0379	13333
107.00	3" Dia 20' Omni	33	4.731	0.3464	0.0367	13278
106.00	4' Grid Dish	33	4.648	0.3420	0.0364	13223
105.00	12' Wireless Frame	33	4.566	0.3376	0.0361	13163
101.00	DB264-A	33	4.246	0.3203	0.0351	13050
96.00	DB264-A	33	3.867	0.3007	0.0340	13875
91.00	SC479-HF1LDF	33	3.510	0.2822	0.0327	15250
86.00	DB264-A	33	3.172	0.2621	0.0312	15847
85.00	SC479-HF1LDF	33	3.107	0.2580	0.0308	15881
79.00	SC479-HF1LDF	33	2.731	0.2357	0.0287	16746
75.00	Dish Ice Shield	33	2.496	0.2244	0.0272	18866
71.00	2'6"x4" Pipe Mount	33	2.270	0.2154	0.0257	21951
61.00	GPS	33	1.741	0.1963	0.0214	32707
50.00	DB803M-Y	33	1.212	0.1717	0.0163	12174

ATTACHMENT E – PROOF OF DELIVERY OF NOTICE

Ref: CT587100-ES-062 Date: 01Oct20
Dep: BL GRAPHICS Wgt: 2.20 LBS

DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT
TRCK: 9151 3346 4747

ORIGIN ID:RSPA (800) 301-3077

BL COMPANIES
355 RESEARCH PARKWAY

MERIDEN, CT 06450
UNITED STATES US

SHIP DATE: 01OCT20
ACTWGT: 2.20 LB MAN
CAD: 0765627/CAFE3311

BILL THIRD PARTY

565C2/A27E/05A2

TO **BRIAN BENITO**
DEPT OF EMERGENCY SERVICES
1111 COUNTRY CLUB ROAD

MIDDLETOWN CT 06457

REF: CT587100-ES-062 WILTON

DEPT: BL GRAPHICS

FedEx Express

J191219082001UV

FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **9151 3346 4747**

00 BDLA

06457
CT-US **BDL**

Ref: CT587100-ES-062 Date: 01Oct20
Dep: BL GRAPHICS Wgt: 2.20 LBS

DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT
TRCK: 9151 3346 4736

ORIGIN ID:RSPA (800) 301-3077

BL COMPANIES
355 RESEARCH PARKWAY

MERIDEN, CT 06450
UNITED STATES US

SHIP DATE: 01OCT20
ACTWGT: 2.20 LB MAN
CAD: 0785627/CAFE3311

BILL THIRD PARTY

TO **MICHAEL WRINN DIRECTOR OF PLANNING**
TOWN OF WILTON
238 DANBURY ROAD

WILTON CT 06897

REF: CT587100-ES-062 WILTON

DEPT: BL GRAPHICS

555C2/A27E/05A2

FedEx Express

J191219082001uv

FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **9151 3346 4736**

EG DXRA

06897
CT-US **SWF**

Ref: CT587100-ES-062 Date: 01Oct20
Dep: BL GRAPHICS Wgt: 2.20 LBS

DV: 0.00

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT
TRCK: 9151 3346 4725

ORIGIN ID:RSPA (800) 301-3077

BL COMPANIES
355 RESEARCH PARKWAY

MERIDEN, CT 06450
UNITED STATES US

SHIP DATE: 01OCT20
ACTWGT: 2.20 LB MAN
CAD: 0765627/CAFE3311

BILL THIRD PARTY

565C2/A27E/0582

TO **HONORABLE LYNNE VANDERSLICE**
TOWN OF WILTON
238 DANBURY ROAD

WILTON CT 06897

REF: CT587100-ES-062 WILTON

DEPT: BL GRAPHICS

FedEx Express

J191219082001av

FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **9151 3346 4725**

EG DXRA

06897
CT-US **SWF**

Ref: CT587100-ES-062 Date: 01Oct20
Dep: BL GRAPHICS Wgt: 2.20 LBS

DV:

SHIPPING:	0.00
SPECIAL:	0.00
HANDLING:	0.00
0.00 TOTAL:	0.00

Svcs: PRIORITY OVERNIGHT
TRCK: 9151 3346 4714

ORIGIN ID:RSPA (800) 301-3077

BL COMPANIES
355 RESEARCH PARKWAY

MERIDEN, CT 06450
UNITED STATES US

SHIP DATE: 01OCT20
ACTWGT: 2.20 LB
CAD: 0765627/CAFE3311

BILL THIRD PARTY

TO

CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051

REF: CT587100-ES-062 WILTON

DEPT: BL GRAPHICS

565C2/A27E/0582

FedEx Express

JF191282808012U

FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **9151 3346 4714**

00 BDLA

06051
CT-US **BDL**

ATTACHMENT F - 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-062

46 Fenwood Lane

Wilton, CT 06897

May 12, 2020

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Eversource installation on the lattice tower located at 46 Fenwood Lane in Wilton, CT.

Eversource is proposing to install two omnidirectional antennas – one transmit antenna and one receive antenna – as part of its 220 MHz communications system.

This report considers the planned antenna configuration as detailed by Eversource along with power density information of the existing antennas to calculate the cumulative % MPE (Maximum Permissible Exposure) of the facility at ground level.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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 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. Calculated % MPE Results

Table 1 below outlines the power density information for the site. The proposed Eversource omnidirectional antenna has a narrow vertical beamwidth of 30°; therefore, the majority of the RF power is focused out towards the horizon. Please refer to Attachment C for the vertical pattern of the proposed Eversource antenna. Likewise, the other transmit antennas exhibit similar directionality of varying vertical beamwidths. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the facility. The calculated results in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas. Any inactive or receive-only antennas are not listed in the table unless specified otherwise, as they are irrelevant in terms of the % MPE calculations.

The green shaded entry for Eversource reflects the parameters of their existing transmit antenna on site. Any entries in the current CT Siting Council power density database for Eversource (f.k.a NEU or CL&P) may be removed or replaced based upon information provided by Eversource through its agents regarding their existing equipment on site. The blue shaded entry reflects the proposed Eversource transmit antenna.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
AT&T	163	850	2	414	0.0012	0.5667	0.21%
AT&T	163	700	4	736	0.0043	0.4667	0.92%
AT&T	163	2100	4	1181	0.0069	1.0000	0.69%
AT&T	163	850	2	546	0.0016	0.5667	0.28%
AT&T	163	700	2	487	0.0014	0.4667	0.30%
AT&T	163	2300	4	917	0.0054	1.0000	0.54%
AT&T	163	1900	4	971	0.0057	1.0000	0.57%
Sprint	106	850	1	377	0.0014	0.5667	0.24%
Sprint	106	850	2	942	0.0068	0.5667	1.20%
Sprint	106	1900	5	512	0.0092	1.0000	0.92%
Sprint	106	1900	2	1280	0.0092	1.0000	0.92%
Sprint	106	2500	8	640	0.0184	1.0000	1.84%
T-Mobile	122	1900	4	1028	0.0110	1.0000	1.10%
T-Mobile	122	1900	2	2057	0.0110	1.0000	1.10%
T-Mobile	122	2100	2	2308	0.0123	1.0000	1.23%
T-Mobile	122	2100	2	1295	0.0069	1.0000	0.69%
T-Mobile	122	600	2	592	0.0032	0.4000	0.79%
T-Mobile	122	700	2	649	0.0035	0.4667	0.74%
State Police	176	6700	1	5591	0.0070	1.0000	0.70%
State Police	130	6700	1	5591	0.0131	1.0000	1.31%
WPD	95	45	1	100	0.0005	0.2000	0.23%
DEA	100	48	1	631	0.0026	0.2000	1.28%
WTR	135	170	1	100	0.0002	0.2000	0.11%
USS	85	165	1	398	0.0023	0.2000	1.15%
State Police	169	954.4	1	227	0.0003	0.6363	0.05%
FCP	170	154.1	2	199.5	0.0005	0.2000	0.27%
State Police	170	154.665	1	330	0.0004	0.2000	0.22%
DHS	112	153.815	1	200	0.0006	0.2000	0.32%
State Police	120	42.04	1	300	0.0008	0.2000	0.42%
State Police	180	42.04	1	300	0.0004	0.2000	0.18%
State Police	175	822.5	1	199	0.0003	0.5483	0.05%
State Police	176	6700	1	5591	0.0070	1.0000	0.70%
DOE	180	2668	1	76	0.0001	1.0000	0.01%
Eversource	146	470	1	100	0.0002	0.3133	0.06%
Eversource	116	217	4	124	0.0015	0.2000	0.74%
						Total	**22.05%**

Table 1: Proposed Facility % MPE [1] [2]

[1] The power density information for carriers other than Eversource was taken directly from the CSC database dated 12/15/2019. Please note that % MPE values listed are rounded to two decimal points and the total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not identically match the total value reflected in the table.

[2] Antenna height listed for Eversource is based upon the AECOM Structural Analysis Report dated 3/31/2020.

5. Conclusion

The above analysis concludes that RF exposure at ground level with the proposed antenna installation will be below the maximum power density limits as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods discussed herein, the highest expected percent of Maximum Permissible Exposure at ground level with the proposed installation is **22.05% of the FCC General Population/Uncontrolled limit**.

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

6. Statement of Certification

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

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May 12, 2020
Date

Reviewed/Approved By: Keith Vellante
Director of RF Services
C Squared Systems, LLC

May 12, 2020
Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[3]

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

(B) Limits for General Population/Uncontrolled Exposure[4]

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

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

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

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

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

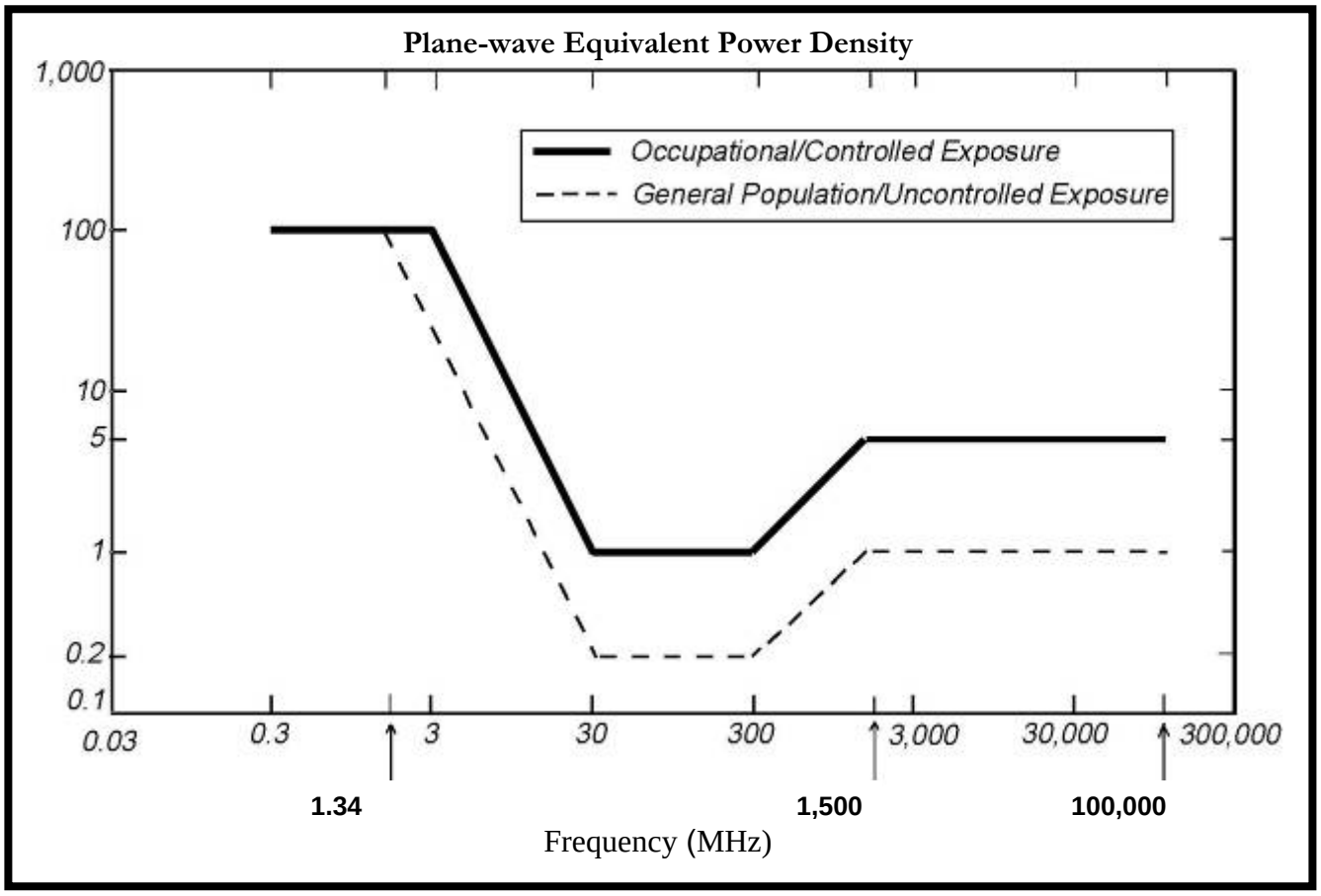
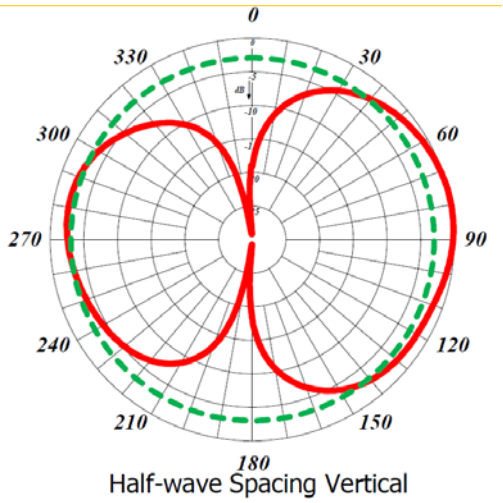


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Eversource Antenna Data Sheets and Electrical Patterns

217 MHz	
Manufacturer:	Comprod
Model #:	871F-70-220
Frequency Band:	215-225 MHz
Gain:	2.5 dBd
Vertical Beamwidth:	30°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Length:	66”



Half-wave Spacing Vertical