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Structural Analysis Report

185' Existing Lattice Tower

Proposed Verizon Wireless
Antenna Upgrade

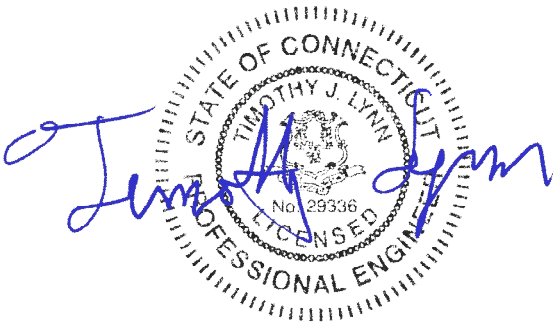
Site Ref: Tariffville Relo

7 Hoskins Road
Bloomfield, CT

CENTEK Project No. 23032.06

Date: August 2, 2023

Max Stress Ratio = 92.5%



Prepared for:

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

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Introduction

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

The host tower is a 185-ft, three legged, lattice tower originally designed and manufactured by Sabre Industries project no. 127272 dated 9/26/15. The tower geometry, structure member sizes and foundation information were taken from the aforementioned design documents.

Antenna and appurtenance inventory was taken from a previous structural analysis report prepared by Centek job no. 21007.01 dated July 13, 2021 and a Verizon RFDS.

The tower consists of ten (10) vertical sections consisting of pipe legs conforming to ASTM A572 Gr. 50 and steel angle lateral bracing conforming to ASTM A36. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 18-ft 6-in at the top and 37-ft 0-in at the bottom.

Antenna and Appurtenance Summary

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

- Unknown (Existing):
  Antenna: One (1) dBSpectra DS2C03F36D-D antenna, one (1) dBSpectra DS9A09F36D-N antenna, one (1) RFS BA8080-67 dipole antenna, one (1) Kreco CO-41A antenna, one (1) Telewave ANT450F-6 antenna and one (1) TTA pipe mounted to the top of the tower.
  Coax Cable: Two (2) 1-5/8"∅, five (5) 7/8"∅ and one (1) 1/2"∅ cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: Three (3) dBSpectra DS7C09P36D-D antennas mounted on (1) 10-ft V-frame with an elevation of 183-ft above tower base.
  Coax Cable: Three (3) 1-5/8"∅ and one (1) 1/2"∅ cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: Two (2) 8-ft microwave dishes pipe mounted with an elevation of 183-ft above tower base.
  Coax Cable: Four (4) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Decibel DB411-B antenna leg mounted with an elevation of 176-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 4-ft microwave dish pipe mounted with an elevation of 177-ft above tower base.
  Coax Cable: One (1) EW90 cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- Unknown (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of 172-ft above tower base.
  Coax Cable: Two (2) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of 171-ft above tower base.
  Coax Cable: Two (2) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Kathrein PR-900 grid dish pipe mounted with an elevation of 168-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Telewave ANT150F6 antenna mounted one a sidearm with an elevation of 165-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
  Antenna: Three (3) Powerwave 7770 panel antennas, four (4) Kathrein 800-10966 panel antennas, two (2) Kathrein 800-10965 panel antennas, two (2) CCI OPA-65R-LCUU-H8 panel antennas, one (1) CCI OPA-65R-LCUU-H6 panel antenna, three (3) Powerwave TT08-19DB111-001 TMAs, three (3) Ericsson 4478 B14 remote radio heads, three (3) Ericsson 4449 B5/B12 remote radio heads, three (3) Ericsson 8843 B2/B66A remote radio heads, three (3) Ericsson RRUS32 remote radio heads, three (3) Ericsson E2 remote radio heads and three (3) Raycap DC6-48-60-18-8F surge arrestors mounted on three (3) 12-ft Sector Frames with a RAD center elevation of ±163.3-ft above grade level.
  Coax Cable: Six (6) 2-1/4" ∅ cables, three (3) 5/16" ∅ cables and twelve (12) 5/8" ∅ cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- T-MOBILE (Existing):
  Antennas: Three (3) RFS APXVAALL24_43 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) RFS APX16DWV-16DWVS panel antennas, three (3) Ericsson 4460 remote radio heads and three (3) Ericsson 4449 remote radio heads mounted on three (3) 10-ft V-Frames with a RAD center elevation of ±140-ft above grade level.
  Coax Cables: Six (6) 6x12 fiber cables and three (3) 6x24 fiber cables running on a face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: Two (2) 6-ft microwave dishes pipe mounted with an elevation of 135-ft above tower base.
  Coax Cable: Four (4) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.

- Unknown (Existing):
  Antenna: One (1) Telewave ANT150F6 antenna mounted one a sidearm with an elevation of 125-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Comprod 531-70HD antenna mounted one a sidearm with an elevation of 125-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of 125-ft above tower base.
  Coax Cable: Two (2) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Comprod 531-70HD antenna mounted one a sidearm with an elevation of 109-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Kreco CO-41A antenna mounted one a sidearm with an elevation of 108-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 8-ft microwave dish pipe mounted with an elevation of 100-ft above tower base.
  Coax Cable: Two (2) EW63 cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 3-ft microwave dish pipe mounted with an elevation of 98-ft above tower base.
  Coax Cable: One (1) 3/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 3-ft microwave dish pipe mounted with an elevation of 91-ft above tower base.
  Coax Cable: One (1) 3/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- Unknown (Existing):
  Antenna: One (1) Telewave ANT150F2 antenna mounted one a sidearm with an elevation of 87-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) Comprod 531-70HD antenna mounted one a sidearm with an elevation of 85-ft above tower base.
  Coax Cable: One (1) 7/8"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Unknown (Existing):
  Antenna: One (1) 2'x2' panel antenna mounted one a sidearm with an elevation of 66-ft above tower base.
  Coax Cable: One (1) 1/4"∅ cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- Verizon (Existing to Remain):
  Antennas: Three (3) Andrew LNX-6514DS panel antennas, six (6) Commscope NHH-65B-R2B panel antennas, three (3) Samsung MT6407-77A panel antennas, three (3) B2/B66A remote radio heads, three (3) B5/B13 remote radio heads and one (1) 12-OVP box mounted on (3) Sector Frames with a RAD center elevation of ±155-ft above grade level.
  Coax Cable: Six (6) 1-5/8" ∅ coax cables and one (1) 12x24 hybrid cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- **VERIZON (PROPOSED):**
  Antennas: Six (6) Kaelus BSF0020F3V1-1 filters mounted on existing (3) Sector Frames with a RAD center elevation of ±155-ft above grade level.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables should be routed as specified in section 3 of this report.

Analysis

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

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

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-H Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-H, gravity loads of the tower structure and its components, and the application of 1.50" radial ice on the tower structure and its components.

Load Cases:	Load Case 1; 130 mph (Ultimate) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix P of the 2022 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 1.50" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-H]*
	Load Case 3; 101 mph (Nominal) wind speed used for deflection calculation.	

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

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower.

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

Tower Section	Elevation (AGL)	Stress Ratio (percentage of capacity)	Result
Diagonal (T3)	142'-4"-162'-4"	92.5%	**PASS**
Leg (T10)	55'-8"-62'-4"	64.4%	**PASS**

- The tower combined deflection is **0.2136 degrees**.

Deflection Criteria	Proposed (degrees)	Allowable (degrees)	Result
Sway (Tilt)	0.2124	0.5	**n/a**
Twist	0.0227	0.5	**n/a**
Combined	0.2136	0.5	**PASS**

Note 1: Tower deflection calculated utilizing the service wind load combination and nominal wind speed of 101 mph.

Foundation and Anchors

The existing foundation consists of a three (3) 6-ft ∅ x 5.5-ft long reinforced concrete piers concentrically bearing on a 45.5-ft square x 1-ft 6-in thick reinforced concrete mat. The sub grade conditions used in the foundation analysis were derived from a geotechnical report prepared by Design Earth Technology job no. 2014.15 dated October 14, 2014. The base of the tower is connected to the foundation by means of (6) 1.75"∅, ASTM F1554 Grade 105 anchor bolts per leg embedded 6-ft 6-in into the concrete foundation structure.

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

Load Effect	Proposed Tower Reactions
Leg Shear	82 kips
Leg Compression	511 kips
Leg Tension	434 kips
Base Moment	15370 ft-kips
Base Shear	142 kips

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

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	39.3%	**PASS**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	TIA-222-H Section 9.4 FS[1]	Proposed Loading (FS)[1]	Result
Reinforced Concrete Pad and Piers	Overturning	1.0	1.8	**PASS**

Note 1: FS denotes Factor of Safety

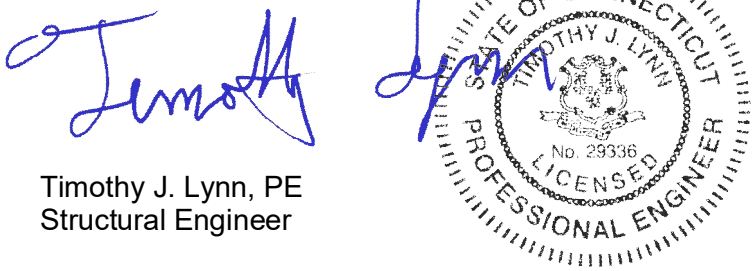
Conclusion

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

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

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

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

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

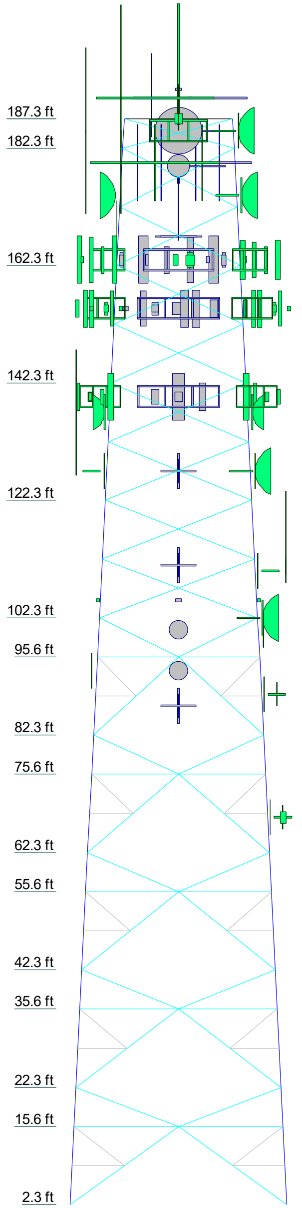
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

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

TnxTower Features:

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

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Horizontals	Red. Horizontals	Red. Diagonals	Inner Bracing	Face Width (ft)	# Panels @ (ft)	Weight (K)
T1	P6x.28	A572-50	A	A36	C	N.A.	N.A.	N.A.	N.A.	18.5	E	1.5
T2			L4x4x1/4		N.A.					19	8 @ 10	2.9
T3			L5x5x5/16							21		4.1
T4										23		4.4
T5	P8x.322		L5x5x3/8							25		5.8
T6			B							27	F	1.9
T7			L6x4x1/2			L4x4x5/16	L3x3x1/4	L3x3x1/4	L3x3x1/4	27.6667	1 @ 13.33	4.4
T8	P8x.5		L6x6x3/8			N.A.	N.A.	N.A.	N.A.	29	F	2.3
T9						L4x4x5/16	L3x3x1/4	L3x3x1/4	L3x3x1/4	29.6667	1 @ 13.33	5.0
T10	P10x.365					N.A.	N.A.	N.A.	N.A.	31	F	2.3
T11						L5x5x5/16	L3x3x5/16	L3x3x5/16	A	31.6667	1 @ 13.33	5.4
T12	P10x.5		L6x6x1/2			N.A.	N.A.	N.A.	N.A.	33	F	2.7
T13						L5x5x5/16	L3x3x5/16	L3x3x5/16	A	33.6667	1 @ 13.33	6.8
T14	P12x.5					N.A.	N.A.	N.A.	N.A.	35	F	3.5
T15						L5x5x5/16	D	D	A	35.6667	1 @ 13.33	7.6
										37		60.7



ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIC
DOWN: 511 K
SHEAR: 82 K

UPLIFT: -434 K
SHEAR: 72 K

AXIAL
311 K
SHEAR
41 K
MOME
4523 ki

TORQUE 64 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL
99 K
SHEAR
142 K
MOME
15370 k

TORQUE 156 kip-ft
REACTIONS - 130 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
6'x4" Pipe Mount	187.3	DC6-48-60-18-8F Surge Arrestor (ATT)	163.3
Light Beacon	187.3	80010966 (ATT)	163.3
CO-41A	187.3	80010966 (ATT)	163.3
DS9A09F36D-N	187.3	7770.00 (ATT)	163.3
Tower Top Amplifier	187.3	OPA-65R-LCUU-H8 (ATT)	163.3
ANT450F6	187.3	DC6-48-60-18-8F Surge Arrestor (ATT)	163.3
20' 8 Bay Di-Pole	187.3	4478 B14 (ATT)	163.3
6'x4" Pipe Mount	185.3	4478 B14 (ATT)	163.3
8' x 2" Horz. Pipe	185.3	80010965 (ATT)	163.3
6'x4" Pipe Mount	185.3	80010966 (ATT)	163.3
8' x 2" Horz. Pipe	185.3	80010965 (ATT)	163.3
DS2C03F36D-D	185.3	7770.00 (ATT)	163.3
DS7C09P36U-D	185.3	4449 B5/B12 (ATT)	163.3
DS7C09P36U-D	185.3	4449 B5/B12 (ATT)	163.3
DS7C09P36U-D	185.3	8843 B2/B66A (ATT)	163.3
SitePro VFA10-HD	185.3	4478 B14 (ATT)	163.3
8' Dish	185.3	4449 B5/B12 (ATT)	163.3
8' Dish	185.3	7770.00 (ATT)	163.3
20' Horz. 4x4x1/4"	184.3	OPA-65R-LCUU-H8 (ATT)	163.3
20' Horz. 4x4x1/4"	184.3	OPA-65R-LCUU-H6 (ATT)	163.3
20' Horz. 4x4x1/4"	184.3	Andrew TFL-M2-20 (Verizon)	155
DB411-B	183.3	Andrew TFL-M2-20 (Verizon)	155
6'x4" Pipe Mount	179.3	Andrew TFL-M2-20 (Verizon)	155
8' x 2" Horz. Pipe	179.3	13'x2" Pipe (Verizon)	155
4' Dish	179.3	13'x2" Pipe (Verizon)	155
6'x4" Pipe Mount	174.3	13'x2" Pipe (Verizon)	155
8' x 2" Horz. Pipe	174.3	LNX-6514DS (Verizon)	155
8' Dish	174.3	NHH-65B-R2B (Verizon)	155
8' Dish	174.3	NHH-65B-R2B (Verizon)	155
13'x2" Pipe	173.3	MT6407-77A (Verizon)	155
13'x2" Pipe	173.3	LNX-6514DS (Verizon)	155
13'x2" Pipe	173.3	NHH-65B-R2B (Verizon)	155
13'x2" Pipe	173.3	NHH-65B-R2B (Verizon)	155
13'x2" Pipe	173.3	MT6407-77A (Verizon)	155
13'x2" Pipe	173.3	LNX-6514DS (Verizon)	155
22' Horz. 4x4x1/4	173.3	NHH-65B-R2B (Verizon)	155
22' Horz. 4x4x1/4	173.3	NHH-65B-R2B (Verizon)	155
22' Horz. 4x4x1/4	173.3	MT6407-77A (Verizon)	155
6'x2" Pipe Mount	170.3	B2/B66A RRH (Verizon)	155
PR-900	170.3	B2/B66A RRH (Verizon)	155
8' x 2" Horz. Pipe	167.3	B2/B66A RRH (Verizon)	155
6' Standoff Arm	167.3	B5/B13 RRH (Verizon)	155
ANT150F6	167.3	B5/B13 RRH (Verizon)	155
8843 B2/B66A (ATT)	163.3	B5/B13 RRH (Verizon)	155
8843 B2/B66A (ATT)	163.3	DB-T1-6Z-8AB-0Z (Verizon)	155
RRUS-32 (ATT)	163.3	(2) BSF0020F3V1-1 (Verizon - Proposed)	155
RRUS-32 (ATT)	163.3	(2) BSF0020F3V1-1 (Verizon - Proposed)	155
RRUS-32 (ATT)	163.3	(2) BSF0020F3V1-1 (Verizon - Proposed)	155
RRUS-E2 (ATT)	163.3	Pirod 12' T-Frame Sector Mount (1) (Verizon)	155
RRUS-E2 (ATT)	163.3	Pirod 12' T-Frame Sector Mount (1) (Verizon)	155
RRUS-E2 (ATT)	163.3	Pirod 12' T-Frame Sector Mount (1) (Verizon)	155
Pirod 12' T-Frame Sector Mount (1) (ATT)	163.3	AIR6449 (T-Mobile)	140
Pirod 12' T-Frame Sector Mount (1) (ATT)	163.3	APXVAALL24-43 (T-Mobile)	140
Pirod 12' T-Frame Sector Mount (1) (ATT)	163.3	APX16DWV-16DWVS-E-A20 (T-Mobile)	140
80010966 (ATT)	163.3	AIR6449 (T-Mobile)	140
TT08-19DB111-001 TMA (ATT)	163.3	APX16DWV-16DWVS-E-A20 (T-Mobile)	140
TT08-19DB111-001 TMA (ATT)	163.3	AIR6449 (T-Mobile)	140
TT08-19DB111-001 TMA (ATT)	163.3	APXVAALL24-43 (T-Mobile)	140
DC6-48-60-18-8F Surge Arrestor (ATT)	163.3	4449 B12,B71 (T-Mobile)	140

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Phone: (203) 488-0580
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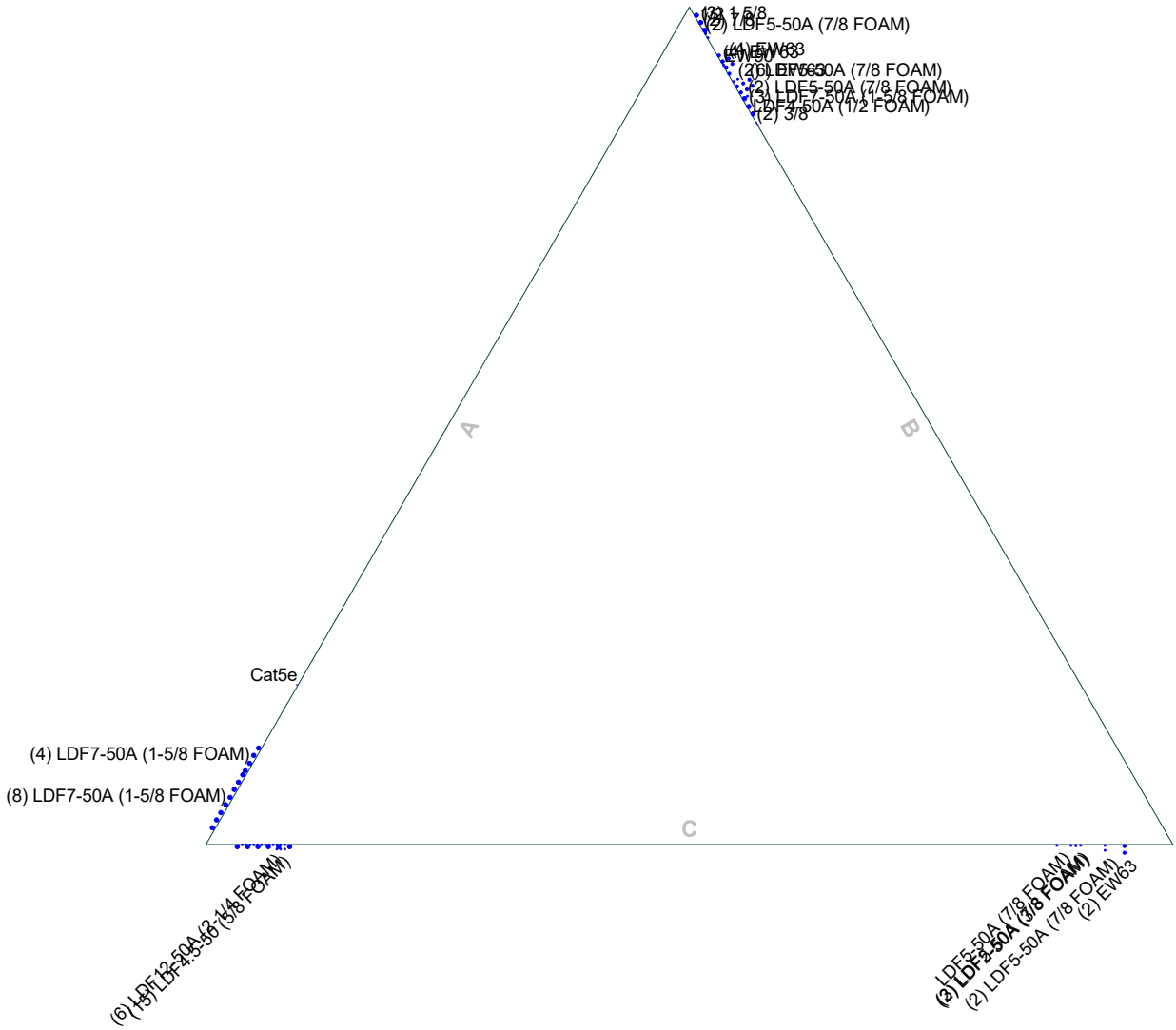
Job: **23032.06 - Tariffville Relo**
Project: **185' Lattice Tower - Bloomfield, CT**
Client: Verizon | Drawn by: TJL | App'd:
Code: TIA-222-H | Date: 08/02/23 | Scale: NTS
Path: J:\Jobs\2303200.WI\06 Tariffville CT\05 Structural\Tower\Backup Documentation\ERI Files\185-ft Sabre Lattice Tower.eri | Dwg No. E-1

Feed Line Plan

Round Flat App In Face App Out Face



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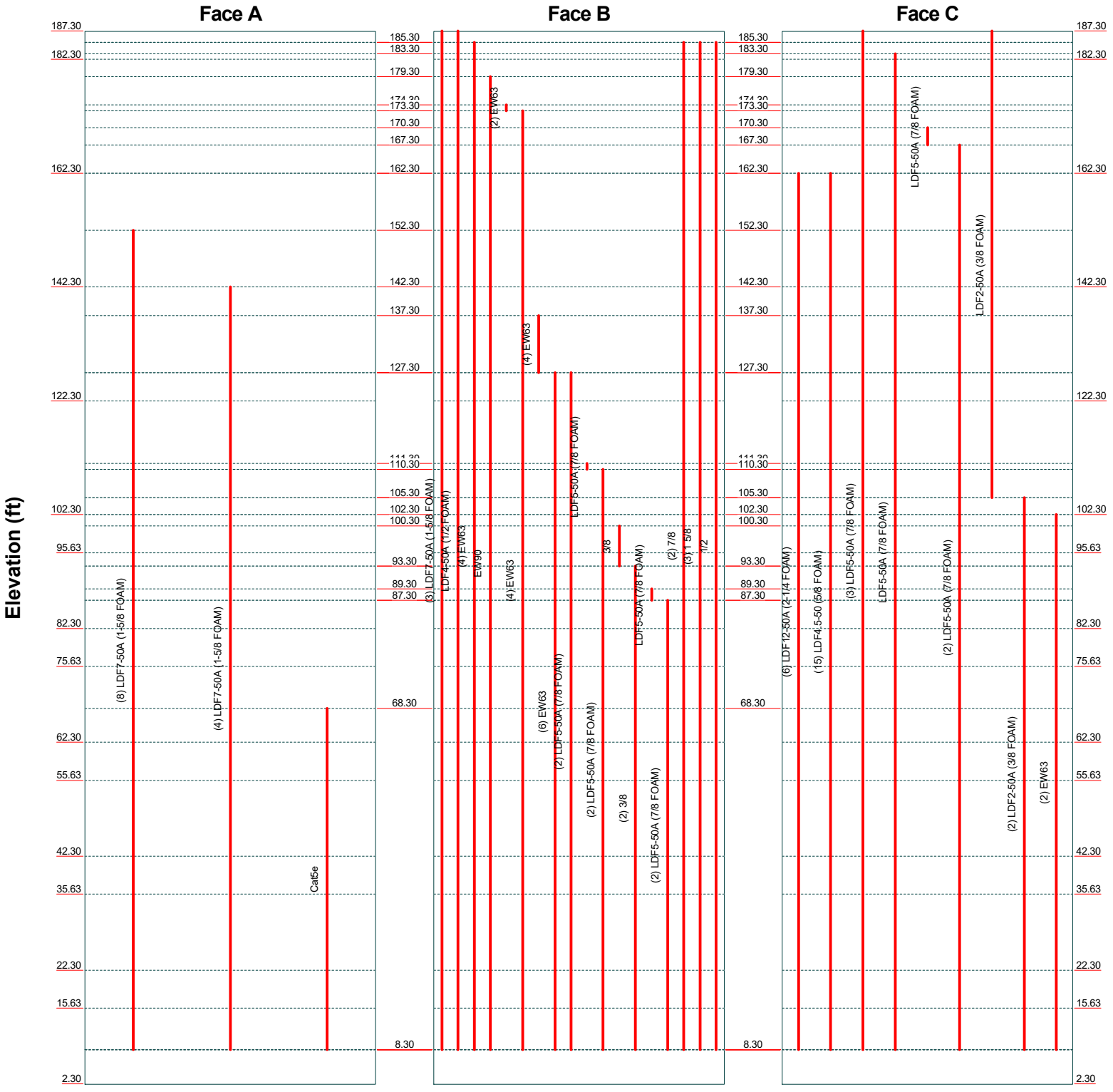
Job: ***23032.06 - Tariffville Relo***		
Project: ***185' Lattice Tower - Bloomfield, CT***		
Client: Verizon	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 08/02/23	Scale: NTS
Path: J:\Jobs\23032\00.WI06_Tariffville CT\05_Structural\Tower\Backup Documentation\ER Files\185-ft Sabre Lattice Tower.eri		Dwg No. E-7

Feed Line Distribution Chart
2'3-19/32" - 187'3-19/32"

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



Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **23032.06 - Tariffville Relo**		
Project: ***185' Lattice Tower - Bloomfield, CT***		
Client: Verizon	Drawn by: TJL	App'd:
Code: TIA-222-H	Date: 08/02/23	Scale: NTS
Path: J:\Jobs\23032\00.WI06_Tariffville CT\05_Structural\Tower\Backup Documentation\ER Files\185-ft Sabre Lattice Tower.ecf		Dwg No. E-7

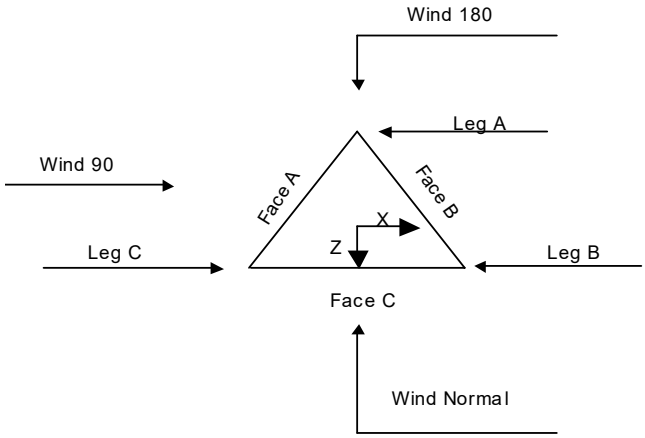
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 187.30 ft above the ground line.
The base of the tower is set at an elevation of 2.30 ft above the ground line.
The face width of the tower is 18.50 ft at the top and 37.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 407.30 ft.
Basic wind speed of 130 mph.
Risk Category III.
Exposure Category B.
Crest Height: 200.00 ft.
Rigorous Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Feature: Continuous Ridge.
Slope Distance L: 1698.00 ft.
Distance from Crest x: 397.00 ft.
Horizontal Distance Downwind: No.
Nominal ice thickness of 1.5000 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 101 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	187.30-182.30			18.50	1	5.00
T2	182.30-162.30			19.00	1	20.00
T3	162.30-142.30			21.00	1	20.00
T4	142.30-122.30			23.00	1	20.00
T5	122.30-102.30			25.00	1	20.00
T6	102.30-95.63			27.00	1	6.67
T7	95.63-82.30			27.67	1	13.33
T8	82.30-75.63			29.00	1	6.67
T9	75.63-62.30			29.67	1	13.33
T10	62.30-55.63			31.00	1	6.67
T11	55.63-42.30			31.67	1	13.33
T12	42.30-35.63			33.00	1	6.67
T13	35.63-22.30			33.67	1	13.33
T14	22.30-15.63			35.00	1	6.67
T15	15.63-2.30			35.67	1	13.33

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	187.30-182.30	5.00	X Brace	No	No	0.0000	0.0000
T2	182.30-162.30	10.00	X Brace	No	No	0.0000	0.0000
T3	162.30-142.30	10.00	X Brace	No	No	0.0000	0.0000
T4	142.30-122.30	10.00	X Brace	No	No	0.0000	0.0000
T5	122.30-102.30	10.00	X Brace	No	No	0.0000	0.0000
T6	102.30-95.63	6.67	K Brace Up	No	Yes	0.0000	0.0000
T7	95.63-82.30	13.33	K1 Down	No	Yes	0.0000	0.0000
T8	82.30-75.63	6.67	K Brace Up	No	Yes	0.0000	0.0000
T9	75.63-62.30	13.33	K1 Down	No	Yes	0.0000	0.0000
T10	62.30-55.63	6.67	K Brace Up	No	Yes	0.0000	0.0000
T11	55.63-42.30	13.33	K1 Down	No	Yes	0.0000	0.0000
T12	42.30-35.63	6.67	K Brace Up	No	Yes	0.0000	0.0000
T13	35.63-22.30	13.33	K1 Down	No	Yes	0.0000	0.0000
T14	22.30-15.63	6.67	K Brace Up	No	Yes	0.0000	0.0000
T15	15.63-2.30	13.33	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 187.30-182.30	Pipe	P6x.28	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T2 182.30-162.30	Pipe	P6x.28	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T3 162.30-142.30	Pipe	P6x.28	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T4 142.30-122.30	Pipe	P6x.28	A572-50 (50 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T5 122.30-102.30	Pipe	P8x.322	A572-50 (50 ksi)	Single Angle	L5x5x3/8	A36 (36 ksi)
T6 102.30-95.63	Pipe	P8x.322	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T7 95.63-82.30	Pipe	P8x.322	A572-50 (50 ksi)	Single Angle	L6x4x1/2	A36 (36 ksi)
T8 82.30-75.63	Pipe	P8x.5	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T9 75.63-62.30	Pipe	P8x.5	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T10 62.30-55.63	Pipe	P10x.365	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T11 55.63-42.30	Pipe	P10x.365	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T12 42.30-35.63	Pipe	P10x.5	A572-50 (50 ksi)	Single Angle	L6x6x3/8	A36 (36 ksi)
T13 35.63-22.30	Pipe	P10x.5	A572-50 (50 ksi)	Single Angle	L6x6x1/2	A36 (36 ksi)
T14 22.30-15.63	Pipe	P12x.5	A572-50 (50 ksi)	Single Angle	L6x6x1/2	A36 (36 ksi)
T15 15.63-2.30	Pipe	P12x.5	A572-50 (50 ksi)	Single Angle	L6x6x1/2	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 187.30-182.30	Single Angle	L5x5x5/16	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
T6 102.30-95.63	None	Single Angle		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T7 95.63-82.30	None	Single Angle		A36 (36 ksi)	Single Angle	L4x4x5/16	A36 (36 ksi)
T8 82.30-75.63	None	Single Angle		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T9 75.63-62.30	None	Single Angle		A36 (36 ksi)	Single Angle	L4x4x5/16	A36 (36 ksi)
T10 62.30-55.63	None	Single Angle		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T11 55.63-42.30	None	Single Angle		A36 (36 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T12 42.30-35.63	None	Single Angle		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T13 35.63-22.30	None	Single Angle		A36 (36 ksi)	Single Angle	L5x5x5/16	A36 (36 ksi)
T14 22.30-15.63	None	Single Angle		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T15 15.63-2.30	None	Single Angle		A36 (36 ksi)	Single Angle	L5x5x5/16	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
T7 95.63-82.30	Single Angle		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 75.63-62.30	Single Angle		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T11 55.63-42.30	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T13 35.63-22.30	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T15 15.63-2.30	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T7	A36	Horizontal (1)	Single Angle	L3x3x1/4	1
95.63-82.30	(36 ksi)	Diagonal (1)	Single Angle	L3x3x1/4	1
T9	A36	Horizontal (1)	Single Angle	L3x3x1/4	1
75.63-62.30	(36 ksi)	Diagonal (1)	Single Angle	L3x3x1/4	1
T11	A36	Horizontal (1)	Single Angle	L3x3x5/16	1
55.63-42.30	(36 ksi)	Diagonal (1)	Single Angle	L3x3x5/16	1
T13	A36	Horizontal (1)	Single Angle	L3x3x5/16	1
35.63-22.30	(36 ksi)	Diagonal (1)	Single Angle	L3x3x5/16	1
T15	A36	Horizontal (1)	Single Angle	L4x3 1/2x5/16	1
15.63-2.30	(36 ksi)	Diagonal (1)	Single Angle	L4x3 1/2x5/16	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	0.00	0.0000	A36	1	1	1	30.0000	30.0000	36.0000
187.30-182.30			(36 ksi)						
T2	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
182.30-162.30			(36 ksi)						
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
162.30-142.30			(36 ksi)						
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
142.30-122.30			(36 ksi)						
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
122.30-102.30			(36 ksi)						
T6	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
102.30-95.63			(36 ksi)						
T7 95.63-82.30	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T8 82.30-75.63	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T9 75.63-62.30	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
62.30-55.63			(36 ksi)						
T11	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
55.63-42.30			(36 ksi)						
T12	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
42.30-35.63			(36 ksi)						
T13	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
35.63-22.30			(36 ksi)						
T14	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
22.30-15.63			(36 ksi)						
T15 15.63-2.30	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	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
T1	Yes	Yes	1	1		1		1		1		1		1		1	
187.30-182.30				1		1		1		1		1		1		1	
T2	Yes	Yes	1	1		1		1		1		1		1		1	
182.30-162.30				1		1		1		1		1		1		1	
T3	Yes	Yes	1	1		1		1		1		1		1		1	
162.30-142.30				1		1		1		1		1		1		1	
T4	Yes	Yes	1	1		1		1		1		1		1		1	
142.30-122.30				1		1		1		1		1		1		1	
T5	Yes	Yes	1	1		1		1		1		1		1		1	
122.30-102.30				1		1		1		1		1		1		1	
T6	Yes	Yes	1	1		1		1		1		1		1		1	
102.30-95.63				1		1		1		1		1		1		1	
T7	Yes	Yes	1	1		1		1		1		1		1		1	
95.63-82.30				1		1		1		1		1		1		1	
T8	Yes	Yes	1	1		1		1		1		1		1		1	
82.30-75.63				1		1		1		1		1		1		1	
T9	Yes	Yes	1	1		1		1		1		1		1		1	
75.63-62.30				1		1		1		1		1		1		1	
T10	Yes	Yes	1	1		1		1		1		1		1		1	
62.30-55.63				1		1		1		1		1		1		1	
T11	Yes	Yes	1	1		1		1		1		1		1		1	
55.63-42.30				1		1		1		1		1		1		1	
T12	Yes	Yes	1	1		1		1		1		1		1		1	
42.30-35.63				1		1		1		1		1		1		1	
T13	Yes	Yes	1	1		1		1		1		1		1		1	
35.63-22.30				1		1		1		1		1		1		1	
T14	Yes	Yes	1	1		1		1		1		1		1		1	
22.30-15.63				1		1		1		1		1		1		1	
T15	Yes	Yes	1	1		1		1		1		1		1		1	
15.63-2.30				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	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
187.30-182.30														
T2	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
182.30-162.30														
T3	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
162.30-142.30														
T4	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
142.30-122.30														

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
T5 122.30-102.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T6 102.30-95.63	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T7 95.63-82.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T8 82.30-75.63	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 75.63-62.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10 62.30-55.63	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T11 55.63-42.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T12 42.30-35.63	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T13 35.63-22.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T14 22.30-15.63	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T15 15.63-2.30	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 187.30-182.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 182.30-162.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 162.30-142.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 142.30-122.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 122.30-102.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 102.30-95.63	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 95.63-82.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 82.30-75.63	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 75.63-62.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 62.30-55.63	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 55.63-42.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 42.30-35.63	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 35.63-22.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 22.30-15.63	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 15.63-2.30	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1	Flange	1.2500	6	0.7500	1	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
187.30-182.30		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	1.2500	6	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
182.30-162.30		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	1.2500	6	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
162.30-142.30		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	1.2500	8	0.6250	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
142.30-122.30		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	1.5000	8	0.7500	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
122.30-102.30		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.0000	0	1.0000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
102.30-95.63		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7 95.63-82.30	Flange	1.5000	8	1.0000	2	0.6250	0	0.0000	0	0.6250	0	1.0000	2	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8 82.30-75.63	Flange	0.0000	0	0.8750	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9 75.63-62.30	Flange	1.5000	8	0.8750	2	0.6250	0	0.0000	0	0.6250	0	0.8750	2	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.0000	0	0.8750	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
62.30-55.63		A325N		A325N		A325N		A325N		A325X		A325N		A325X	
T11	Flange	1.5000	8	0.8750	2	0.6250	0	0.0000	0	0.6250	0	0.8750	2	0.6250	0
55.63-42.30		A325N		A325N		A325N		A325N		A325X		A325N		A325X	
T12	Flange	0.0000	0	1.0000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
42.30-35.63		A325N		A325N		A325N		A325N		A325X		A325N		A325X	
T13	Flange	1.5000	8	1.0000	2	0.6250	0	0.0000	0	0.6250	0	1.0000	2	0.6250	0
35.63-22.30		A325N		A325N		A325N		A325N		A325X		A325N		A325X	
T14	Flange	0.0000	0	1.0000	2	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
22.30-15.63		A325N		A325N		A325N		A325N		A325X		A325N		A325X	
T15 15.63-2.30	Flange	1.7500	6	1.0000	2	0.6250	0	0.0000	0	0.6250	0	1.0000	2	0.6250	0
		F1554-105		A325N		A325N		A325N		A325X		A325N		A325X	

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
187.30-182.30	A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
182.30-162.30	A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
162.30-142.30	A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
142.30-122.30	A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
122.30-102.30	A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
102.30-95.63	A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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.
T7 95.63-82.30	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 82.30-75.63	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 75.63-62.30	0.8750 A325N	1	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 62.30-55.63	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 55.63-42.30	0.8750 A325N	1	0.8750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 42.30-35.63	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 35.63-22.30	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 22.30-15.63	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 15.63-2.30	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF12-50A (2-1/4 FOAM)	C	No	No	Ar (CaAa)	162.30 - 8.30	0.0000	0.44	6	6	2.3500	2.3500		1.22
LDF4.5-50 (5/8 FOAM)	C	No	No	Ar (CaAa)	162.30 - 8.30	0.0000	0.44	15	12	0.8700	0.8700		0.15
LDF7-50A (1-5/8 FOAM)	A	No	No	Ar (CaAa)	152.30 - 8.30	0.0000	-0.45	8	8	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	No	No	Ar (CaAa)	142.30 - 8.30	0.0000	-0.4	4	4	1.9800	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	187.30 - 8.30	0.0000	-0.38	3	3	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	No	No	Ar (CaAa)	187.30 - 8.30	0.0000	-0.4	3	3	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	No	Ar (CaAa)	183.30 - 8.30	0.0000	-0.38	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM)	B	No	No	Ar (CaAa)	187.30 - 8.30	0.0000	-0.37	1	1	0.6300	0.6300		0.15
EW63	B	No	No	Ar (CaAa)	185.30 - 8.30	0.0000	-0.43	4	4	1.5742	1.5742		0.51
EW90	B	No	No	Ar (CaAa)	179.30 - 8.30	0.0000	-0.43	1	1	0.9869	0.9869		0.32
EW63	B	No	No	Ar (CaAa)	174.30 - 173.30	0.0000	-0.43	2	2	1.5742	1.5742		0.51
EW63	B	No	No	Ar (CaAa)	173.30 - 8.30	0.0000	-0.43	4	2	1.5742	1.5742		0.51
LDF5-50A (7/8 FOAM)	C	No	No	Ar (CaAa)	170.30 - 167.30	0.0000	-0.43	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	C	No	No	Ar (CaAa)	167.30 - 8.30	0.0000	-0.43	2	1	1.0900	1.0900		0.33
EW63	B	No	No	Ar (CaAa)	137.30 -	0.0000	-0.4	4	2	1.5742	1.5742		0.51

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
					127.30								
EW63	B	No	No	Ar (CaAa)	127.30 - 8.30	0.0000	-0.4	6	2	1.5742	1.5742		0.51
LDF5-50A (7/8 FOAM)	B	No	No	Ar (CaAa)	127.30 - 8.30	0.0000	-0.465	2	2	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	No	No	Ar (CaAa)	111.30 - 110.30	0.0000	-0.41	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	No	No	Ar (CaAa)	110.30 - 8.30	0.0000	-0.41	2	1	1.0900	1.0900		0.33
LDF2-50A (3/8 FOAM)	C	No	No	Ar (CaAa)	187.30 - 105.30	0.0000	-0.4	1	1	0.4400	0.4400		0.08
LDF2-50A (3/8 FOAM)	C	No	No	Ar (CaAa)	105.30 - 8.30	0.0000	-0.4	2	1	0.4400	0.4400		0.08
EW63	C	No	No	Ar (CaAa)	102.30 - 8.30	0.0000	-0.45	2	1	1.5742	1.5742		0.51
3/8	B	No	No	Ar (CaAa)	100.30 - 93.30	0.0000	-0.36	1	1	0.5000	0.5000		0.40
3/8	B	No	No	Ar (CaAa)	93.30 - 8.30	0.0000	-0.36	2	2	0.5000	0.5000		0.40
LDF5-50A (7/8 FOAM)	B	No	No	Ar (CaAa)	89.30 - 87.30	0.0000	-0.39	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	No	No	Ar (CaAa)	87.30 - 8.30	0.0000	-0.39	2	1	1.0900	1.0900		0.33
Cat5e	A	No	No	Ar (CaAa)	68.30 - 8.30	0.0000	-0.31	1	1	0.3600	0.3600		0.06
7/8	B	No	No	Ar (CaAa)	185.30 - 8.30	0.0000	-0.47	2	2	1.1100	1.1100		0.54
1 5/8	B	No	No	Ar (CaAa)	185.30 - 8.30	0.0000	-0.48	3	3	1.9800	1.9800		1.04
1/2	B	No	No	Ar (CaAa)	185.30 - 8.30	0.0000	-0.48	1	1	0.5800	0.5800		0.25

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	187.30-182.30	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	7.796	0.000	0.03
		C	0.000	0.000	1.964	0.000	0.01
T2	182.30-162.30	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	52.133	0.000	0.21
		C	0.000	0.000	11.017	0.000	0.03
T3	162.30-142.30	A	0.000	0.000	15.840	0.000	0.07
		B	0.000	0.000	57.781	0.000	0.23
		C	0.000	0.000	68.260	0.000	0.23
T4	142.30-122.30	A	0.000	0.000	47.520	0.000	0.20
		B	0.000	0.000	69.891	0.000	0.27
		C	0.000	0.000	68.260	0.000	0.23
T5	122.30-102.30	A	0.000	0.000	47.520	0.000	0.20
		B	0.000	0.000	82.857	0.000	0.31
		C	0.000	0.000	68.392	0.000	0.23
T6	102.30-95.63	A	0.000	0.000	15.848	0.000	0.07
		B	0.000	0.000	28.712	0.000	0.11
		C	0.000	0.000	25.158	0.000	0.08
T7	95.63-82.30	A	0.000	0.000	31.672	0.000	0.13
		B	0.000	0.000	59.426	0.000	0.22
		C	0.000	0.000	50.279	0.000	0.17

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
T8	82.30-75.63	A	0.000	0.000	15.848	0.000	0.07
		B	0.000	0.000	30.599	0.000	0.12
		C	0.000	0.000	25.158	0.000	0.08
T9	75.63-62.30	A	0.000	0.000	31.888	0.000	0.13
		B	0.000	0.000	61.153	0.000	0.23
		C	0.000	0.000	50.279	0.000	0.17
T10	62.30-55.63	A	0.000	0.000	16.088	0.000	0.07
		B	0.000	0.000	30.599	0.000	0.12
		C	0.000	0.000	25.158	0.000	0.08
T11	55.63-42.30	A	0.000	0.000	32.152	0.000	0.13
		B	0.000	0.000	61.153	0.000	0.23
		C	0.000	0.000	50.279	0.000	0.17
T12	42.30-35.63	A	0.000	0.000	16.088	0.000	0.07
		B	0.000	0.000	30.599	0.000	0.12
		C	0.000	0.000	25.158	0.000	0.08
T13	35.63-22.30	A	0.000	0.000	32.152	0.000	0.13
		B	0.000	0.000	61.153	0.000	0.23
		C	0.000	0.000	50.279	0.000	0.17
T14	22.30-15.63	A	0.000	0.000	16.088	0.000	0.07
		B	0.000	0.000	30.599	0.000	0.12
		C	0.000	0.000	25.158	0.000	0.08
T15	15.63-2.30	A	0.000	0.000	17.680	0.000	0.07
		B	0.000	0.000	33.627	0.000	0.13
		C	0.000	0.000	27.648	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	187.30-182.30	A	2.204	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	29.455	0.000	0.45
		C		0.000	0.000	10.029	0.000	0.14
T2	182.30-162.30	A	2.196	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	191.463	0.000	2.96
		C		0.000	0.000	55.783	0.000	0.81
T3	162.30-142.30	A	2.180	0.000	0.000	43.307	0.000	0.78
		B		0.000	0.000	205.507	0.000	3.20
		C		0.000	0.000	212.736	0.000	3.52
T4	142.30-122.30	A	2.162	0.000	0.000	134.619	0.000	2.34
		B		0.000	0.000	235.974	0.000	3.71
		C		0.000	0.000	212.111	0.000	3.49
T5	122.30-102.30	A	2.139	0.000	0.000	134.345	0.000	2.32
		B		0.000	0.000	274.180	0.000	4.31
		C		0.000	0.000	212.680	0.000	3.47
T6	102.30-95.63	A	2.121	0.000	0.000	44.731	0.000	0.77
		B		0.000	0.000	97.519	0.000	1.52
		C		0.000	0.000	82.131	0.000	1.32
T7	95.63-82.30	A	2.106	0.000	0.000	89.268	0.000	1.52
		B		0.000	0.000	207.850	0.000	3.18
		C		0.000	0.000	163.681	0.000	2.62
T8	82.30-75.63	A	2.088	0.000	0.000	44.595	0.000	0.76
		B		0.000	0.000	108.553	0.000	1.64
		C		0.000	0.000	81.639	0.000	1.30
T9	75.63-62.30	A	2.067	0.000	0.000	91.649	0.000	1.54
		B		0.000	0.000	215.818	0.000	3.24
		C		0.000	0.000	162.544	0.000	2.56
T10	62.30-55.63	A	2.042	0.000	0.000	47.373	0.000	0.78

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
		B		0.000	0.000	107.322	0.000	1.60
		C		0.000	0.000	80.970	0.000	1.27
T11	55.63-42.30	A	2.012	0.000	0.000	94.350	0.000	1.54
		B		0.000	0.000	212.861	0.000	3.14
		C		0.000	0.000	160.936	0.000	2.49
T12	42.30-35.63	A	1.974	0.000	0.000	47.006	0.000	0.76
		B		0.000	0.000	105.490	0.000	1.54
		C		0.000	0.000	79.974	0.000	1.22
T13	35.63-22.30	A	1.923	0.000	0.000	93.403	0.000	1.48
		B		0.000	0.000	208.130	0.000	2.99
		C		0.000	0.000	158.365	0.000	2.37
T14	22.30-15.63	A	1.851	0.000	0.000	46.348	0.000	0.72
		B		0.000	0.000	102.203	0.000	1.43
		C		0.000	0.000	78.188	0.000	1.14
T15	15.63-2.30	A	1.725	0.000	0.000	50.191	0.000	0.74
		B		0.000	0.000	108.593	0.000	1.46
		C		0.000	0.000	83.903	0.000	1.16

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	187.30-182.30	2.5999	-9.1993	6.3436	-15.9182
T2	182.30-162.30	6.2491	-25.7820	13.2144	-39.1374
T3	162.30-142.30	-17.0062	-4.7676	-15.4345	-11.7549
T4	142.30-122.30	-25.3127	-3.8934	-26.7425	-9.5553
T5	122.30-102.30	-24.7660	-8.5584	-26.2939	-15.9154
T6	102.30-95.63	-23.3627	-8.4635	-21.5772	-15.7438
T7	95.63-82.30	-21.9623	-9.0923	-20.2469	-17.9794
T8	82.30-75.63	-23.8282	-10.8017	-21.4675	-21.4893
T9	75.63-62.30	-22.7372	-10.3066	-21.3800	-20.5500
T10	62.30-55.63	-24.4882	-10.9245	-23.5965	-21.5415
T11	55.63-42.30	-22.7079	-10.2198	-22.7852	-20.5858
T12	42.30-35.63	-25.3575	-11.3331	-25.0653	-22.1954
T13	35.63-22.30	-23.4664	-10.5788	-24.2281	-21.0284
T14	22.30-15.63	-25.7659	-11.5085	-26.5881	-22.2165
T15	15.63-2.30	-14.9185	-6.8427	-18.6127	-14.8720

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	5	LDF7-50A (1-5/8 FOAM)	182.30 - 187.30	0.6000	0.5109
T1	6	LDF5-50A (7/8 FOAM)	182.30 - 187.30	0.6000	0.5109
T1	7	LDF5-50A (7/8 FOAM)	182.30 - 183.30	0.6000	0.5109
T1	8	LDF4-50A (1/2 FOAM)	182.30 - 187.30	0.6000	0.5109

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	9	EW63	182.30 - 185.30	0.6000	0.5109
T1	20	LDF2-50A (3/8 FOAM)	182.30 - 187.30	0.6000	0.5109
T1	28	7/8	182.30 - 185.30	0.6000	0.5109
T1	29	1 5/8	182.30 - 185.30	0.6000	0.5109
T1	30	1/2	182.30 - 185.30	0.6000	0.5109
T2	5	LDF7-50A (1-5/8 FOAM)	162.30 - 182.30	0.6000	0.6000
T2	6	LDF5-50A (7/8 FOAM)	162.30 - 182.30	0.6000	0.6000
T2	7	LDF5-50A (7/8 FOAM)	162.30 - 182.30	0.6000	0.6000
T2	8	LDF4-50A (1/2 FOAM)	162.30 - 182.30	0.6000	0.6000
T2	9	EW63	162.30 - 182.30	0.6000	0.6000
T2	10	EW90	162.30 - 179.30	0.6000	0.6000
T2	11	EW63	173.30 - 174.30	0.6000	0.6000
T2	12	EW63	162.30 - 173.30	0.6000	0.6000
T2	13	LDF5-50A (7/8 FOAM)	167.30 - 170.30	0.6000	0.6000
T2	14	LDF5-50A (7/8 FOAM)	162.30 - 167.30	0.6000	0.6000
T2	20	LDF2-50A (3/8 FOAM)	162.30 - 182.30	0.6000	0.6000
T2	28	7/8	162.30 - 182.30	0.6000	0.6000
T2	29	1 5/8	162.30 - 182.30	0.6000	0.6000
T2	30	1/2	162.30 - 182.30	0.6000	0.6000
T3	1	LDF12-50A (2-1/4 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	2	LDF4.5-50 (5/8 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	3	LDF7-50A (1-5/8 FOAM)	142.30 - 152.30	0.6000	0.6000
T3	5	LDF7-50A (1-5/8 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	6	LDF5-50A (7/8 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	7	LDF5-50A (7/8 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	8	LDF4-50A (1/2 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	9	EW63	142.30 - 162.30	0.6000	0.6000
T3	10	EW90	142.30 - 162.30	0.6000	0.6000
T3	12	EW63	142.30 - 162.30	0.6000	0.6000
T3	14	LDF5-50A (7/8 FOAM)	142.30 - 162.30	0.6000	0.6000
T3	20	LDF2-50A (3/8 FOAM)	142.30 - 162.30	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	28	7/8	142.30 - 162.30	0.6000	0.6000
T3	29	1 5/8	142.30 - 162.30	0.6000	0.6000
T3	30	1/2	142.30 - 162.30	0.6000	0.6000
T4	1	LDF12-50A (2-1/4 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	2	LDF4.5-50 (5/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	3	LDF7-50A (1-5/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	4	LDF7-50A (1-5/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	5	LDF7-50A (1-5/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	6	LDF5-50A (7/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	7	LDF5-50A (7/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	8	LDF4-50A (1/2 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	9	EW63	122.30 - 142.30	0.6000	0.6000
T4	10	EW90	122.30 - 142.30	0.6000	0.6000
T4	12	EW63	122.30 - 142.30	0.6000	0.6000
T4	14	LDF5-50A (7/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	15	EW63	127.30 - 137.30	0.6000	0.6000
T4	16	EW63	122.30 - 127.30	0.6000	0.6000
T4	17	LDF5-50A (7/8 FOAM)	122.30 - 127.30	0.6000	0.6000
T4	20	LDF2-50A (3/8 FOAM)	122.30 - 142.30	0.6000	0.6000
T4	28	7/8	122.30 - 142.30	0.6000	0.6000
T4	29	1 5/8	122.30 - 142.30	0.6000	0.6000
T4	30	1/2	122.30 - 142.30	0.6000	0.6000
T5	1	LDF12-50A (2-1/4 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	2	LDF4.5-50 (5/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	3	LDF7-50A (1-5/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	4	LDF7-50A (1-5/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	5	LDF7-50A (1-5/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	6	LDF5-50A (7/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	7	LDF5-50A (7/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	8	LDF4-50A (1/2 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	9	EW63	102.30 - 122.30	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	10	EW90	102.30 - 122.30	0.6000	0.6000
T5	12	EW63	102.30 - 122.30	0.6000	0.6000
T5	14	LDF5-50A (7/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	16	EW63	102.30 - 122.30	0.6000	0.6000
T5	17	LDF5-50A (7/8 FOAM)	102.30 - 122.30	0.6000	0.6000
T5	18	LDF5-50A (7/8 FOAM)	110.30 - 111.30	0.6000	0.6000
T5	19	LDF5-50A (7/8 FOAM)	102.30 - 110.30	0.6000	0.6000
T5	20	LDF2-50A (3/8 FOAM)	105.30 - 122.30	0.6000	0.6000
T5	21	LDF2-50A (3/8 FOAM)	102.30 - 105.30	0.6000	0.6000
T5	28	7/8	102.30 - 122.30	0.6000	0.6000
T5	29	1 5/8	102.30 - 122.30	0.6000	0.6000
T5	30	1/2	102.30 - 122.30	0.6000	0.6000
T6	1	LDF12-50A (2-1/4 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	2	LDF4.5-50 (5/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	3	LDF7-50A (1-5/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	4	LDF7-50A (1-5/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	5	LDF7-50A (1-5/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	6	LDF5-50A (7/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	7	LDF5-50A (7/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	8	LDF4-50A (1/2 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	9	EW63	95.63 - 102.30	0.6000	0.6000
T6	10	EW90	95.63 - 102.30	0.6000	0.6000
T6	12	EW63	95.63 - 102.30	0.6000	0.6000
T6	14	LDF5-50A (7/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	16	EW63	95.63 - 102.30	0.6000	0.6000
T6	17	LDF5-50A (7/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	19	LDF5-50A (7/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	21	LDF2-50A (3/8 FOAM)	95.63 - 102.30	0.6000	0.6000
T6	22	EW63	95.63 - 102.30	0.6000	0.6000
T6	23	3/8	95.63 - 100.30	0.6000	0.6000
T6	28	7/8	95.63 - 102.30	0.6000	0.6000
T6	29	1 5/8	95.63 - 102.30	0.6000	0.6000
T6	30	1/2	95.63 - 102.30	0.6000	0.6000
T7	1	LDF12-50A (2-1/4 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	2	LDF4.5-50 (5/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	3	LDF7-50A (1-5/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	4	LDF7-50A (1-5/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	5	LDF7-50A (1-5/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	6	LDF5-50A (7/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	7	LDF5-50A (7/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	8	LDF4-50A (1/2 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	9	EW63	82.30 - 95.63	0.6000	0.6000
T7	10	EW90	82.30 - 95.63	0.6000	0.6000
T7	12	EW63	82.30 - 95.63	0.6000	0.6000
T7	14	LDF5-50A (7/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	16	EW63	82.30 - 95.63	0.6000	0.6000
T7	17	LDF5-50A (7/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	19	LDF5-50A (7/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	21	LDF2-50A (3/8 FOAM)	82.30 - 95.63	0.6000	0.6000
T7	22	EW63	82.30 - 95.63	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	23	3/8	93.30 - 95.63	0.6000	0.6000
T7	24	3/8	82.30 - 93.30	0.6000	0.6000
T7	25	LDF5-50A (7/8 FOAM)	87.30 - 89.30	0.6000	0.6000
T7	26	LDF5-50A (7/8 FOAM)	82.30 - 87.30	0.6000	0.6000
T7	28	7/8	82.30 - 95.63	0.6000	0.6000
T7	29	1 5/8	82.30 - 95.63	0.6000	0.6000
T7	30	1/2	82.30 - 95.63	0.6000	0.6000
T8	1	LDF12-50A (2-1/4 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	2	LDF4.5-50 (5/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	3	LDF7-50A (1-5/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	4	LDF7-50A (1-5/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	5	LDF7-50A (1-5/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	6	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	7	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	8	LDF4-50A (1/2 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	9	EW63	75.63 - 82.30	0.6000	0.6000
T8	10	EW90	75.63 - 82.30	0.6000	0.6000
T8	12	EW63	75.63 - 82.30	0.6000	0.6000
T8	14	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	16	EW63	75.63 - 82.30	0.6000	0.6000
T8	17	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	19	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	21	LDF2-50A (3/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	22	EW63	75.63 - 82.30	0.6000	0.6000
T8	24	3/8	75.63 - 82.30	0.6000	0.6000
T8	26	LDF5-50A (7/8 FOAM)	75.63 - 82.30	0.6000	0.6000
T8	28	7/8	75.63 - 82.30	0.6000	0.6000
T8	29	1 5/8	75.63 - 82.30	0.6000	0.6000
T8	30	1/2	75.63 - 82.30	0.6000	0.6000
T9	1	LDF12-50A (2-1/4 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	2	LDF4.5-50 (5/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	3	LDF7-50A (1-5/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	4	LDF7-50A (1-5/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	5	LDF7-50A (1-5/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	6	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	7	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	8	LDF4-50A (1/2 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	9	EW63	62.30 - 75.63	0.6000	0.6000
T9	10	EW90	62.30 - 75.63	0.6000	0.6000
T9	12	EW63	62.30 - 75.63	0.6000	0.6000
T9	14	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	16	EW63	62.30 - 75.63	0.6000	0.6000
T9	17	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	19	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	21	LDF2-50A (3/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	22	EW63	62.30 - 75.63	0.6000	0.6000
T9	24	3/8	62.30 - 75.63	0.6000	0.6000
T9	26	LDF5-50A (7/8 FOAM)	62.30 - 75.63	0.6000	0.6000
T9	27	Cat5e	62.30 - 68.30	0.6000	0.6000
T9	28	7/8	62.30 - 75.63	0.6000	0.6000
T9	29	1 5/8	62.30 - 75.63	0.6000	0.6000
T9	30	1/2	62.30 - 75.63	0.6000	0.6000
T10	1	LDF12-50A (2-1/4 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	2	LDF4.5-50 (5/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	3	LDF7-50A (1-5/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	4	LDF7-50A (1-5/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	5	LDF7-50A (1-5/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	6	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	7	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	8	LDF4-50A (1/2 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	9	EW63	55.63 - 62.30	0.6000	0.6000
T10	10	EW90	55.63 - 62.30	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	12	EW63	55.63 - 62.30	0.6000	0.6000
T10	14	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	16	EW63	55.63 - 62.30	0.6000	0.6000
T10	17	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	19	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	21	LDF2-50A (3/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	22	EW63	55.63 - 62.30	0.6000	0.6000
T10	24	3/8	55.63 - 62.30	0.6000	0.6000
T10	26	LDF5-50A (7/8 FOAM)	55.63 - 62.30	0.6000	0.6000
T10	27	Cat5e	55.63 - 62.30	0.6000	0.6000
T10	28	7/8	55.63 - 62.30	0.6000	0.6000
T10	29	1 5/8	55.63 - 62.30	0.6000	0.6000
T10	30	1/2	55.63 - 62.30	0.6000	0.6000
T11	1	LDF12-50A (2-1/4 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	2	LDF4.5-50 (5/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	3	LDF7-50A (1-5/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	4	LDF7-50A (1-5/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	5	LDF7-50A (1-5/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	6	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	7	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	8	LDF4-50A (1/2 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	9	EW63	42.30 - 55.63	0.6000	0.6000
T11	10	EW90	42.30 - 55.63	0.6000	0.6000
T11	12	EW63	42.30 - 55.63	0.6000	0.6000
T11	14	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	16	EW63	42.30 - 55.63	0.6000	0.6000
T11	17	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	19	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	21	LDF2-50A (3/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	22	EW63	42.30 - 55.63	0.6000	0.6000
T11	24	3/8	42.30 - 55.63	0.6000	0.6000
T11	26	LDF5-50A (7/8 FOAM)	42.30 - 55.63	0.6000	0.6000
T11	27	Cat5e	42.30 - 55.63	0.6000	0.6000
T11	28	7/8	42.30 - 55.63	0.6000	0.6000
T11	29	1 5/8	42.30 - 55.63	0.6000	0.6000
T11	30	1/2	42.30 - 55.63	0.6000	0.6000
T12	1	LDF12-50A (2-1/4 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	2	LDF4.5-50 (5/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	3	LDF7-50A (1-5/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	4	LDF7-50A (1-5/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	5	LDF7-50A (1-5/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	6	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	7	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	8	LDF4-50A (1/2 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	9	EW63	35.63 - 42.30	0.6000	0.6000
T12	10	EW90	35.63 - 42.30	0.6000	0.6000
T12	12	EW63	35.63 - 42.30	0.6000	0.6000
T12	14	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	16	EW63	35.63 - 42.30	0.6000	0.6000
T12	17	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	19	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	21	LDF2-50A (3/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	22	EW63	35.63 - 42.30	0.6000	0.6000
T12	24	3/8	35.63 - 42.30	0.6000	0.6000
T12	26	LDF5-50A (7/8 FOAM)	35.63 - 42.30	0.6000	0.6000
T12	27	Cat5e	35.63 - 42.30	0.6000	0.6000
T12	28	7/8	35.63 - 42.30	0.6000	0.6000
T12	29	1 5/8	35.63 - 42.30	0.6000	0.6000
T12	30	1/2	35.63 - 42.30	0.6000	0.6000
T13	1	LDF12-50A (2-1/4 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	2	LDF4.5-50 (5/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	3	LDF7-50A (1-5/8 FOAM)	22.30 - 35.63	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	4	LDF7-50A (1-5/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	5	LDF7-50A (1-5/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	6	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	7	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	8	LDF4-50A (1/2 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	9	EW63	22.30 - 35.63	0.6000	0.6000
T13	10	EW90	22.30 - 35.63	0.6000	0.6000
T13	12	EW63	22.30 - 35.63	0.6000	0.6000
T13	14	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	16	EW63	22.30 - 35.63	0.6000	0.6000
T13	17	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	19	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	21	LDF2-50A (3/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	22	EW63	22.30 - 35.63	0.6000	0.6000
T13	24	3/8	22.30 - 35.63	0.6000	0.6000
T13	26	LDF5-50A (7/8 FOAM)	22.30 - 35.63	0.6000	0.6000
T13	27	Cat5e	22.30 - 35.63	0.6000	0.6000
T13	28	7/8	22.30 - 35.63	0.6000	0.6000
T13	29	1 5/8	22.30 - 35.63	0.6000	0.6000
T13	30	1/2	22.30 - 35.63	0.6000	0.6000
T14	1	LDF12-50A (2-1/4 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	2	LDF4.5-50 (5/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	3	LDF7-50A (1-5/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	4	LDF7-50A (1-5/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	5	LDF7-50A (1-5/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	6	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	7	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	8	LDF4-50A (1/2 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	9	EW63	15.63 - 22.30	0.6000	0.6000
T14	10	EW90	15.63 - 22.30	0.6000	0.6000
T14	12	EW63	15.63 - 22.30	0.6000	0.6000
T14	14	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	16	EW63	15.63 - 22.30	0.6000	0.6000
T14	17	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	19	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	21	LDF2-50A (3/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	22	EW63	15.63 - 22.30	0.6000	0.6000
T14	24	3/8	15.63 - 22.30	0.6000	0.6000
T14	26	LDF5-50A (7/8 FOAM)	15.63 - 22.30	0.6000	0.6000
T14	27	Cat5e	15.63 - 22.30	0.6000	0.6000
T14	28	7/8	15.63 - 22.30	0.6000	0.6000
T14	29	1 5/8	15.63 - 22.30	0.6000	0.6000
T14	30	1/2	15.63 - 22.30	0.6000	0.6000
T15	1	LDF12-50A (2-1/4 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	2	LDF4.5-50 (5/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	3	LDF7-50A (1-5/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	4	LDF7-50A (1-5/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	5	LDF7-50A (1-5/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	6	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	7	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	8	LDF4-50A (1/2 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	9	EW63	8.30 - 15.63	0.6000	0.6000
T15	10	EW90	8.30 - 15.63	0.6000	0.6000
T15	12	EW63	8.30 - 15.63	0.6000	0.6000
T15	14	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	16	EW63	8.30 - 15.63	0.6000	0.6000
T15	17	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	19	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	21	LDF2-50A (3/8 FOAM)	8.30 - 15.63	0.6000	0.6000
T15	22	EW63	8.30 - 15.63	0.6000	0.6000
T15	24	3/8	8.30 - 15.63	0.6000	0.6000
T15	26	LDF5-50A (7/8 FOAM)	8.30 - 15.63	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	27	Cat5e	8.30 - 15.63	0.6000	0.6000
T15	28	7/8	8.30 - 15.63	0.6000	0.6000
T15	29	1 5/8	8.30 - 15.63	0.6000	0.6000
T15	30	1/2	8.30 - 15.63	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
AIR6449	A	From Leg	4.00	0.0000	140.00	No Ice	4.05	2.74	0.10
(T-Mobile)			-4.00			1/2" Ice	4.32	2.97	0.13
			0.00			1" Ice	4.59	3.20	0.17
						2" Ice	5.15	3.68	0.25
APXVAALL24-43	A	From Leg	0.00	0.0000	140.00	No Ice	20.24	8.89	0.15
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
						2" Ice	22.87	11.33	0.66
APX16DWV-16DWVS-E-A20	A	From Leg	4.00	0.0000	140.00	No Ice	6.46	2.15	0.05
(T-Mobile)			4.00			1/2" Ice	6.83	2.49	0.08
			0.00			1" Ice	7.21	2.84	0.12
						2" Ice	8.00	3.55	0.21
AIR6449	B	From Leg	4.00	0.0000	140.00	No Ice	4.05	2.74	0.10
(T-Mobile)			-4.00			1/2" Ice	4.32	2.97	0.13
			0.00			1" Ice	4.59	3.20	0.17
						2" Ice	5.15	3.68	0.25
APXVAALL24-43	B	From Leg	0.00	0.0000	140.00	No Ice	20.24	8.89	0.15
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
						2" Ice	22.87	11.33	0.66
APX16DWV-16DWVS-E-A20	B	From Leg	4.00	0.0000	140.00	No Ice	6.46	2.15	0.05
(T-Mobile)			4.00			1/2" Ice	6.83	2.49	0.08
			0.00			1" Ice	7.21	2.84	0.12
						2" Ice	8.00	3.55	0.21
AIR6449	C	From Leg	4.00	0.0000	140.00	No Ice	4.05	2.74	0.10
(T-Mobile)			-4.00			1/2" Ice	4.32	2.97	0.13
			0.00			1" Ice	4.59	3.20	0.17
						2" Ice	5.15	3.68	0.25
APXVAALL24-43	C	From Leg	0.00	0.0000	140.00	No Ice	20.24	8.89	0.15
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
						2" Ice	22.87	11.33	0.66
APX16DWV-16DWVS-E-A20	C	From Leg	4.00	0.0000	140.00	No Ice	6.46	2.15	0.05
(T-Mobile)			4.00			1/2" Ice	6.83	2.49	0.08
			0.00			1" Ice	7.21	2.84	0.12
						2" Ice	8.00	3.55	0.21
4449 B12,B71	A	From Leg	4.00	0.0000	140.00	No Ice	1.65	1.16	0.08
(T-Mobile)			0.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
						2" Ice	2.34	1.75	0.16
4449 B12,B71	B	From Leg	4.00	0.0000	140.00	No Ice	1.65	1.16	0.08

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)			0.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
						2" Ice	2.34	1.75	0.16
4449 B12,B71	C	From Leg	4.00	0.0000	140.00	No Ice	1.65	1.16	0.08
(T-Mobile)			0.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
						2" Ice	2.34	1.75	0.16
4460 B25+B66	A	From Leg	4.00	0.0000	140.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.13
			0.00			1" Ice	2.97	2.34	0.16
						2" Ice	3.41	2.74	0.23
4460 B25+B66	B	From Leg	4.00	0.0000	140.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.13
			0.00			1" Ice	2.97	2.34	0.16
						2" Ice	3.41	2.74	0.23
4460 B25+B66	C	From Leg	4.00	0.0000	140.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.13
			0.00			1" Ice	2.97	2.34	0.16
						2" Ice	3.41	2.74	0.23
SitePro VFA10-HD	A	From Leg	2.00	0.0000	140.00	No Ice	17.00	17.00	0.60
(T-Mobile)			0.00			1/2" Ice	21.00	21.00	0.75
			0.00			1" Ice	25.00	25.00	0.90
						2" Ice	33.00	33.00	1.20
SitePro VFA10-HD	B	From Leg	2.00	0.0000	140.00	No Ice	17.00	17.00	0.60
(T-Mobile)			0.00			1/2" Ice	21.00	21.00	0.75
			0.00			1" Ice	25.00	25.00	0.90
						2" Ice	33.00	33.00	1.20
SitePro VFA10-HD	C	From Leg	2.00	0.0000	140.00	No Ice	17.00	17.00	0.60
(T-Mobile)			0.00			1/2" Ice	21.00	21.00	0.75
			0.00			1" Ice	25.00	25.00	0.90
						2" Ice	33.00	33.00	1.20
80010966	A	From Leg	4.00	0.0000	163.30	No Ice	17.36	7.50	0.13
(AT&T)			-6.00			1/2" Ice	17.99	8.09	0.22
			0.00			1" Ice	18.63	8.69	0.32
						2" Ice	19.92	9.90	0.54
7770.00	A	From Leg	4.00	0.0000	163.30	No Ice	5.51	2.93	0.04
(AT&T)			-2.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
						2" Ice	6.99	4.35	0.20
OPA-65R-LCUU-H8	A	From Leg	4.00	0.0000	163.30	No Ice	12.98	7.52	0.09
(AT&T)			2.00			1/2" Ice	13.56	8.09	0.16
			0.00			1" Ice	14.15	8.67	0.24
						2" Ice	15.35	9.85	0.43
80010966	A	From Leg	4.00	0.0000	163.30	No Ice	17.36	7.50	0.13
(AT&T)			6.00			1/2" Ice	17.99	8.09	0.22
			0.00			1" Ice	18.63	8.69	0.32
						2" Ice	19.92	9.90	0.54
80010965	B	From Leg	4.00	0.0000	163.30	No Ice	13.81	5.83	0.11
(AT&T)			-6.00			1/2" Ice	14.35	6.32	0.19
			0.00			1" Ice	14.89	6.82	0.27
						2" Ice	15.99	7.84	0.46
7770.00	B	From Leg	4.00	0.0000	163.30	No Ice	5.51	2.93	0.04
(AT&T)			-2.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
						2" Ice	6.99	4.35	0.20
OPA-65R-LCUU-H6	B	From Leg	4.00	0.0000	163.30	No Ice	9.66	5.52	0.07
(AT&T)			2.00			1/2" Ice	10.13	5.97	0.13

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	10.61	6.43	0.20
						2" Ice	11.58	7.38	0.35
80010965	B	From Leg	4.00	0.0000	163.30	No Ice	13.81	5.83	0.11
(AT&T)			6.00			1/2" Ice	14.35	6.32	0.19
			0.00			1" Ice	14.89	6.82	0.27
						2" Ice	15.99	7.84	0.46
80010966	C	From Leg	4.00	0.0000	163.30	No Ice	17.36	7.50	0.13
(AT&T)			-6.00			1/2" Ice	17.99	8.09	0.22
			0.00			1" Ice	18.63	8.69	0.32
						2" Ice	19.92	9.90	0.54
7770.00	C	From Leg	4.00	0.0000	163.30	No Ice	5.51	2.93	0.04
(AT&T)			-2.00			1/2" Ice	5.87	3.27	0.07
			0.00			1" Ice	6.23	3.63	0.11
						2" Ice	6.99	4.35	0.20
OPA-65R-LCUU-H8	C	From Leg	4.00	0.0000	163.30	No Ice	12.98	7.52	0.09
(AT&T)			2.00			1/2" Ice	13.56	8.09	0.16
			0.00			1" Ice	14.15	8.67	0.24
						2" Ice	15.35	9.85	0.43
80010966	C	From Leg	4.00	0.0000	163.30	No Ice	17.36	7.50	0.13
(AT&T)			6.00			1/2" Ice	17.99	8.09	0.22
			0.00			1" Ice	18.63	8.69	0.32
						2" Ice	19.92	9.90	0.54
TT08-19DB111-001 TMA	A	From Leg	4.00	0.0000	163.30	No Ice	0.79	0.64	0.02
(AT&T)			5.00			1/2" Ice	0.91	0.75	0.03
			0.00			1" Ice	1.04	0.87	0.04
						2" Ice	1.32	1.13	0.06
TT08-19DB111-001 TMA	B	From Leg	4.00	0.0000	163.30	No Ice	0.79	0.64	0.02
(AT&T)			5.00			1/2" Ice	0.91	0.75	0.03
			0.00			1" Ice	1.04	0.87	0.04
						2" Ice	1.32	1.13	0.06
TT08-19DB111-001 TMA	C	From Leg	4.00	0.0000	163.30	No Ice	0.79	0.64	0.02
(AT&T)			5.00			1/2" Ice	0.91	0.75	0.03
			0.00			1" Ice	1.04	0.87	0.04
						2" Ice	1.32	1.13	0.06
DC6-48-60-18-8F Surge	A	From Face	0.50	0.0000	163.30	No Ice	1.91	1.91	0.03
Arrestor			0.50			1/2" Ice	2.10	2.10	0.05
(AT&T)			0.00			1" Ice	2.29	2.29	0.07
						2" Ice	2.71	2.71	0.12
DC6-48-60-18-8F Surge	B	From Face	0.50	0.0000	163.30	No Ice	1.91	1.91	0.03
Arrestor			0.50			1/2" Ice	2.10	2.10	0.05
(AT&T)			0.00			1" Ice	2.29	2.29	0.07
						2" Ice	2.71	2.71	0.12
DC6-48-60-18-8F Surge	C	From Face	0.50	0.0000	163.30	No Ice	1.91	1.91	0.03
Arrestor			0.50			1/2" Ice	2.10	2.10	0.05
(AT&T)			0.00			1" Ice	2.29	2.29	0.07
						2" Ice	2.71	2.71	0.12
4478 B14	A	From Face	4.00	0.0000	163.30	No Ice	1.84	1.06	0.06
(AT&T)			-2.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
4478 B14	B	From Face	4.00	0.0000	163.30	No Ice	1.84	1.06	0.06
(AT&T)			-2.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
4478 B14	C	From Face	4.00	0.0000	163.30	No Ice	1.84	1.06	0.06
(AT&T)			-2.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09

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" Ice	2.57	1.66	0.14
4449 B5/B12	A	From Face	4.00	0.0000	163.30	No Ice	1.97	1.41	0.07
(AT&T)			-2.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
4449 B5/B12	B	From Face	4.00	0.0000	163.30	No Ice	1.97	1.41	0.07
(AT&T)			-2.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
4449 B5/B12	C	From Face	4.00	0.0000	163.30	No Ice	1.97	1.41	0.07
(AT&T)			-2.00			1/2" Ice	2.14	1.56	0.09
			0.00			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
8843 B2/B66A	A	From Face	4.00	0.0000	163.30	No Ice	1.64	1.35	0.07
(AT&T)			-2.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
8843 B2/B66A	B	From Face	4.00	0.0000	163.30	No Ice	1.64	1.35	0.07
(AT&T)			-2.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
8843 B2/B66A	C	From Face	4.00	0.0000	163.30	No Ice	1.64	1.35	0.07
(AT&T)			-2.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS-32	A	From Face	4.00	0.0000	163.30	No Ice	3.31	2.42	0.08
(AT&T)			-2.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
						2" Ice	4.33	3.32	0.21
RRUS-32	B	From Face	4.00	0.0000	163.30	No Ice	3.31	2.42	0.08
(AT&T)			-2.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
						2" Ice	4.33	3.32	0.21
RRUS-32	C	From Face	4.00	0.0000	163.30	No Ice	3.31	2.42	0.08
(AT&T)			-2.00			1/2" Ice	3.56	2.64	0.10
			0.00			1" Ice	3.81	2.86	0.14
						2" Ice	4.33	3.32	0.21
RRUS-E2	A	From Face	4.00	0.0000	163.30	No Ice	3.15	1.29	0.06
(AT&T)			-2.00			1/2" Ice	3.36	1.44	0.08
			0.00			1" Ice	3.59	1.60	0.11
						2" Ice	4.07	1.95	0.17
RRUS-E2	B	From Face	4.00	0.0000	163.30	No Ice	3.15	1.29	0.06
(AT&T)			-2.00			1/2" Ice	3.36	1.44	0.08
			0.00			1" Ice	3.59	1.60	0.11
						2" Ice	4.07	1.95	0.17
RRUS-E2	C	From Face	4.00	0.0000	163.30	No Ice	3.15	1.29	0.06
(AT&T)			-2.00			1/2" Ice	3.36	1.44	0.08
			0.00			1" Ice	3.59	1.60	0.11
						2" Ice	4.07	1.95	0.17
Pirod 12' T-Frame Sector	A	From Leg	2.00	0.0000	163.30	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(AT&T)			0.00			1" Ice	23.20	23.20	0.73
						2" Ice	32.80	32.80	1.00
Pirod 12' T-Frame Sector	B	From Leg	2.00	0.0000	163.30	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(AT&T)			0.00			1" Ice	23.20	23.20	0.73
						2" Ice	32.80	32.80	1.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pirod 12' T-Frame Sector Mount (1) (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	163.30	No Ice 1/2" Ice 1" Ice 2" Ice	13.60 18.40 23.20 32.80	13.60 18.40 23.20 32.80	0.47 0.60 0.73 1.00
LNX-6514DS (Verizon)	A	From Leg	4.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.17 8.63 9.10 10.05	5.41 5.86 6.33 7.28	0.04 0.09 0.15 0.28
NHH-65B-R2B (Verizon)	A	From Leg	4.00 1.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
NHH-65B-R2B (Verizon)	A	From Leg	4.00 3.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
MT6407-77A (Verizon)	A	From Leg	4.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.06 2.29 2.77	0.09 0.12 0.15 0.23
LNX-6514DS (Verizon)	B	From Leg	4.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.17 8.63 9.10 10.05	5.41 5.86 6.33 7.28	0.04 0.09 0.15 0.28
NHH-65B-R2B (Verizon)	B	From Leg	4.00 1.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
NHH-65B-R2B (Verizon)	B	From Leg	4.00 3.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
MT6407-77A (Verizon)	B	From Leg	4.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.06 2.29 2.77	0.09 0.12 0.15 0.23
LNX-6514DS (Verizon)	C	From Leg	4.00 -6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.17 8.63 9.10 10.05	5.41 5.86 6.33 7.28	0.04 0.09 0.15 0.28
NHH-65B-R2B (Verizon)	C	From Leg	4.00 1.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
NHH-65B-R2B (Verizon)	C	From Leg	4.00 3.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.19 11.69 12.20 13.25	8.69 9.17 9.66 10.66	0.07 0.15 0.24 0.43
MT6407-77A (Verizon)	C	From Leg	4.00 6.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.71 5.00 5.29 5.91	1.84 2.06 2.29 2.77	0.09 0.12 0.15 0.23
B2/B66A RRH (Verizon)	A	From Leg	4.00 -4.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.54 2.75 2.97 3.43	1.61 1.79 1.98 2.37	0.06 0.08 0.10 0.16
B2/B66A RRH	B	From Leg	4.00	0.0000	155.00	No Ice	2.54	1.61	0.06

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
(Verizon)			-4.00			1/2" Ice	2.75	1.79	0.08
			0.00			1" Ice	2.97	1.98	0.10
						2" Ice	3.43	2.37	0.16
B2/B66A RRH	C	From Leg	4.00	0.0000	155.00	No Ice	2.54	1.61	0.06
(Verizon)			-4.00			1/2" Ice	2.75	1.79	0.08
			0.00			1" Ice	2.97	1.98	0.10
						2" Ice	3.43	2.37	0.16
B5/B13 RRH	A	From Leg	4.00	0.0000	155.00	No Ice	1.87	1.02	0.07
(Verizon)			-4.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
						2" Ice	2.59	1.59	0.15
B5/B13 RRH	B	From Leg	4.00	0.0000	155.00	No Ice	1.87	1.02	0.07
(Verizon)			-4.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
						2" Ice	2.59	1.59	0.15
B5/B13 RRH	C	From Leg	4.00	0.0000	155.00	No Ice	1.87	1.02	0.07
(Verizon)			-4.00			1/2" Ice	2.03	1.15	0.09
			0.00			1" Ice	2.21	1.29	0.11
						2" Ice	2.59	1.59	0.15
DB-T1-6Z-8AB-0Z	A	From Leg	4.00	0.0000	155.00	No Ice	4.80	2.00	0.04
(Verizon)			0.00			1/2" Ice	5.07	2.19	0.08
			0.00			1" Ice	5.35	2.39	0.12
						2" Ice	5.93	2.81	0.21
(2) BSF0020F3V1-1	A	From Leg	4.00	0.0000	155.00	No Ice	0.96	0.29	0.02
(Verizon - Proposed)			-4.00			1/2" Ice	1.09	0.36	0.03
			0.00			1" Ice	1.22	0.45	0.04
						2" Ice	1.50	0.64	0.06
(2) BSF0020F3V1-1	B	From Leg	4.00	0.0000	155.00	No Ice	0.96	0.29	0.02
(Verizon - Proposed)			-4.00			1/2" Ice	1.09	0.36	0.03
			0.00			1" Ice	1.22	0.45	0.04
						2" Ice	1.50	0.64	0.06
(2) BSF0020F3V1-1	C	From Leg	4.00	0.0000	155.00	No Ice	0.96	0.29	0.02
(Verizon - Proposed)			-4.00			1/2" Ice	1.09	0.36	0.03
			0.00			1" Ice	1.22	0.45	0.04
						2" Ice	1.50	0.64	0.06
Pirod 12' T-Frame Sector	A	From Leg	2.00	0.0000	155.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Verizon)			0.00			1" Ice	23.20	23.20	0.73
						2" Ice	32.80	32.80	1.00
Pirod 12' T-Frame Sector	B	From Leg	2.00	0.0000	155.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Verizon)			0.00			1" Ice	23.20	23.20	0.73
						2" Ice	32.80	32.80	1.00
Pirod 12' T-Frame Sector	C	From Leg	2.00	0.0000	155.00	No Ice	13.60	13.60	0.47
Mount (1)			0.00			1/2" Ice	18.40	18.40	0.60
(Verizon)			0.00			1" Ice	23.20	23.20	0.73
						2" Ice	32.80	32.80	1.00
Andrew TFL-M2-20	A	From Leg	2.00	0.0000	155.00	No Ice	9.00	9.00	0.06
(Verizon)			0.00			1/2" Ice	11.50	11.50	0.10
			0.00			1" Ice	14.00	14.00	0.14
						2" Ice	19.00	19.00	0.22
Andrew TFL-M2-20	B	From Leg	2.00	0.0000	155.00	No Ice	9.00	9.00	0.06
(Verizon)			0.00			1/2" Ice	11.50	11.50	0.10
			0.00			1" Ice	14.00	14.00	0.14
						2" Ice	19.00	19.00	0.22
Andrew TFL-M2-20	C	From Leg	2.00	0.0000	155.00	No Ice	9.00	9.00	0.06
(Verizon)			0.00			1/2" Ice	11.50	11.50	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
			0.00			1" Ice	14.00	14.00	0.14
						2" Ice	19.00	19.00	0.22
13'x2" Pipe	A	From Leg	2.00	0.0000	155.00	No Ice	3.09	3.09	0.05
(Verizon)			0.00			1/2" Ice	4.42	4.42	0.07
			0.00			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
13'x2" Pipe	B	From Leg	2.00	0.0000	155.00	No Ice	3.09	3.09	0.05
(Verizon)			0.00			1/2" Ice	4.42	4.42	0.07
			0.00			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
13'x2" Pipe	C	From Leg	2.00	0.0000	155.00	No Ice	3.09	3.09	0.05
(Verizon)			0.00			1/2" Ice	4.42	4.42	0.07
			0.00			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
6'x4" Pipe Mount	A	From Leg	1.00	0.0000	187.30	No Ice	1.66	1.66	0.05
			0.00			1/2" Ice	2.46	2.46	0.07
			2.00			1" Ice	2.83	2.83	0.09
						2" Ice	3.61	3.61	0.15
Light Beacon	A	From Leg	0.00	0.0000	187.30	No Ice	0.60	0.25	0.05
			0.00			1/2" Ice	0.70	0.31	0.06
			5.00			1" Ice	0.81	0.39	0.06
						2" Ice	1.06	0.55	0.09
13'x2" Pipe	A	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
13'x2" Pipe	A	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			-4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
CO-41A	A	From Face	0.00	0.0000	187.30	No Ice	2.27	2.27	0.01
			0.00			1/2" Ice	3.71	3.71	0.03
			4.00			1" Ice	5.16	5.16	0.06
						2" Ice	8.12	8.12	0.14
13'x2" Pipe	B	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
13'x2" Pipe	B	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			-4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
DS9A09F36D-N	C	From Face	0.00	0.0000	187.30	No Ice	5.76	5.76	0.05
			0.00			1/2" Ice	7.72	7.72	0.09
			10.00			1" Ice	9.69	9.69	0.15
						2" Ice	13.68	13.68	0.29
Tower Top Amplifier	C	From Face	0.00	0.0000	187.30	No Ice	2.67	1.03	0.04
			0.00			1/2" Ice	2.87	1.17	0.06
			0.00			1" Ice	3.08	1.32	0.08
						2" Ice	3.53	1.64	0.13
13'x2" Pipe	C	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	0.10
						2" Ice	8.50	8.50	0.19
13'x2" Pipe	C	From Face	0.00	0.0000	173.30	No Ice	3.09	3.09	0.05
			-4.00			1/2" Ice	4.42	4.42	0.07
			6.50			1" Ice	5.76	5.76	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" Ice	8.50	8.50	0.19
ANT450F6	C	From Face	0.00	0.0000	187.30	No Ice	1.86	1.86	0.02
			0.00			1/2" Ice	2.67	2.67	0.04
			2.00			1" Ice	3.30	3.30	0.05
						2" Ice	4.28	4.28	0.11
20' 8 Bay Di-Pole	A	From Face	0.00	0.0000	187.30	No Ice	4.00	4.00	0.06
			0.00			1/2" Ice	6.00	6.00	0.10
			8.00			1" Ice	8.00	8.00	0.14
						2" Ice	12.00	12.00	0.23
DB411-B	C	From Leg	0.00	0.0000	183.30	No Ice	1.50	1.50	0.03
			0.00			1/2" Ice	2.70	2.70	0.03
			-5.00			1" Ice	3.90	3.90	0.04
						2" Ice	6.30	6.30	0.06
20' Horz. 4x4x1/4"	A	From Face	0.00	0.0000	184.30	No Ice	8.00	0.13	0.24
			4.00			1/2" Ice	9.36	0.18	0.31
			6.50			1" Ice	10.73	0.24	0.40
						2" Ice	13.48	0.37	0.63
20' Horz. 4x4x1/4"	B	From Face	0.00	0.0000	184.30	No Ice	8.00	0.13	0.24
			4.00			1/2" Ice	9.36	0.18	0.31
			6.50			1" Ice	10.73	0.24	0.40
						2" Ice	13.48	0.37	0.63
20' Horz. 4x4x1/4"	C	From Face	0.00	0.0000	184.30	No Ice	8.00	0.13	0.24
			4.00			1/2" Ice	9.36	0.18	0.31
			6.50			1" Ice	10.73	0.24	0.40
						2" Ice	13.48	0.37	0.63
22' Horz. 4x4x1/4	A	From Face	0.00	0.0000	173.30	No Ice	8.80	0.13	0.27
			4.00			1/2" Ice	10.29	0.18	0.35
			6.50			1" Ice	11.79	0.24	0.44
						2" Ice	14.81	0.37	0.69
22' Horz. 4x4x1/4	B	From Face	0.00	0.0000	173.30	No Ice	8.80	0.13	0.27
			4.00			1/2" Ice	10.29	0.18	0.35
			6.50			1" Ice	11.79	0.24	0.44
						2" Ice	14.81	0.37	0.69
22' Horz. 4x4x1/4	C	From Face	0.00	0.0000	173.30	No Ice	8.80	0.13	0.27
			4.00			1/2" Ice	10.29	0.18	0.35
			6.50			1" Ice	11.79	0.24	0.44
						2" Ice	14.81	0.37	0.69
6'x4" Pipe Mount	A	From Leg	1.00	0.0000	185.30	No Ice	1.66	1.66	0.05
			0.00			1/2" Ice	2.46	2.46	0.07
			0.00			1" Ice	2.83	2.83	0.09
						2" Ice	3.61	3.61	0.15
8' x 2" Horz. Pipe	A	From Leg	0.50	0.0000	185.30	No Ice	1.90	0.05	0.03
			4.00			1/2" Ice	2.45	0.08	0.05
			0.00			1" Ice	3.01	0.11	0.07
						2" Ice	4.15	0.21	0.14
6'x4" Pipe Mount	B	From Leg	1.00	0.0000	185.30	No Ice	1.66	1.66	0.05
			0.00			1/2" Ice	2.46	2.46	0.07
			0.00			1" Ice	2.83	2.83	0.09
						2" Ice	3.61	3.61	0.15
8' x 2" Horz. Pipe	B	From Leg	0.50	0.0000	185.30	No Ice	1.90	0.05	0.03
			4.00			1/2" Ice	2.45	0.08	0.05
			0.00			1" Ice	3.01	0.11	0.07
						2" Ice	4.15	0.21	0.14
6'x4" Pipe Mount	B	From Leg	1.00	0.0000	174.30	No Ice	1.66	1.66	0.05
			0.00			1/2" Ice	2.46	2.46	0.07
			0.00			1" Ice	2.83	2.83	0.09
						2" Ice	3.61	3.61	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
8' x 2" Horz. Pipe	B	From Leg	0.50 4.00 0.00	0.0000	174.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.45 3.01 4.15	0.05 0.08 0.11 0.21	0.03 0.05 0.07 0.14
6'x4" Pipe Mount	A	From Leg	1.00 0.00 0.00	0.0000	179.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.66 2.46 2.83 3.61	1.66 2.46 2.83 3.61	0.05 0.07 0.09 0.15
8' x 2" Horz. Pipe	A	From Leg	0.50 4.00 0.00	0.0000	179.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.45 3.01 4.15	0.05 0.08 0.11 0.21	0.03 0.05 0.07 0.14
8' x 2" Horz. Pipe	A	From Leg	0.50 0.00 0.00	0.0000	167.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.45 3.01 4.15	0.05 0.08 0.11 0.21	0.03 0.05 0.07 0.14
6' Standoff Arm	A	From Leg	3.00 0.00 0.00	0.0000	167.30	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.83 3.26 4.15	0.13 0.18 0.24 0.37	0.05 0.07 0.10 0.17
ANT150F6	A	From Leg	6.00 0.00 10.00	0.0000	167.30	No Ice 1/2" Ice 1" Ice 2" Ice	5.87 8.03 10.21 14.63	5.87 8.03 10.21 14.63	0.05 0.09 0.14 0.30
6'x2" Pipe Mount	C	From Leg	0.50 0.00 0.00	0.0000	170.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.80 2.17 2.93	1.20 1.80 2.17 2.93	0.02 0.03 0.04 0.08
DS2C03F36D-D	C	From Leg	4.00 -6.00 9.30	0.0000	185.30	No Ice 1/2" Ice 1" Ice 2" Ice	7.30 9.77 12.25 17.27	7.30 9.77 12.25 17.27	0.08 0.13 0.20 0.38
DS7C09P36U-D	C	From Leg	4.00 6.00 7.00	0.0000	185.30	No Ice 1/2" Ice 1" Ice 2" Ice	4.28 5.73 7.21 10.21	4.28 5.73 7.21 10.21	0.08 0.11 0.15 0.25
DS7C09P36U-D	C	From Leg	4.00 6.00 -7.00	0.0000	185.30	No Ice 1/2" Ice 1" Ice 2" Ice	4.28 5.73 7.21 10.21	4.28 5.73 7.21 10.21	0.08 0.11 0.15 0.25
DS7C09P36U-D	C	From Leg	4.00 -6.00 -7.00	0.0000	185.30	No Ice 1/2" Ice 1" Ice 2" Ice	4.28 5.73 7.21 10.21	4.28 5.73 7.21 10.21	0.08 0.11 0.15 0.25
SitePro VFA10-HD	C	None		0.0000	185.30	No Ice 1/2" Ice 1" Ice 2" Ice	17.00 21.00 25.00 33.00	17.00 21.00 25.00 33.00	0.60 0.75 0.90 1.20
6'x4" Pipe Mount	B	From Leg	1.00 0.00 0.00	0.0000	137.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.69 2.46 2.83 3.61	1.69 2.46 2.83 3.61	0.05 0.07 0.09 0.15
6'x4" Pipe Mount	C	From Leg	1.00 0.00 0.00	0.0000	137.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.69 2.46 2.83 3.61	1.69 2.46 2.83 3.61	0.05 0.07 0.09 0.15
6'x3" Pipe Mount	A	From Leg	0.50	0.0000	127.30	No Ice	1.77	1.77	0.03

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			1/2" Ice	2.13	2.13	0.05
			0.00			1" Ice	2.50	2.50	0.07
						2" Ice	3.27	3.27	0.11
4' x 2.875" Pipe Mount	A	From Leg	0.50	0.0000	127.30	No Ice	0.97	0.97	0.02
			0.00			1/2" Ice	1.22	1.22	0.03
			0.00			1" Ice	1.48	1.48	0.04
						2" Ice	2.02	2.02	0.08
6' Standoff Arm	A	From Leg	3.00	0.0000	127.30	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
						2" Ice	4.15	0.37	0.17
531-70HD	A	From Leg	6.00	0.0000	127.30	No Ice	6.00	6.00	0.04
			0.00			1/2" Ice	6.90	6.90	0.05
			0.00			1" Ice	7.80	7.80	0.06
						2" Ice	9.60	9.60	0.08
6'x4" Pipe Mount	B	From Leg	1.00	0.0000	127.30	No Ice	1.70	1.70	0.05
			0.00			1/2" Ice	2.46	2.46	0.07
			0.00			1" Ice	2.83	2.83	0.09
						2" Ice	3.61	3.61	0.15
8' x 2" Horz. Pipe	B	From Leg	0.50	0.0000	127.30	No Ice	1.90	0.05	0.03
			4.00			1/2" Ice	2.45	0.08	0.05
			0.00			1" Ice	3.01	0.11	0.07
						2" Ice	4.15	0.21	0.14
6'x3" Pipe Mount	C	From Leg	0.50	0.0000	127.30	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.05
			0.00			1" Ice	2.50	2.50	0.07
						2" Ice	3.27	3.27	0.11
6' Standoff Arm	C	From Leg	3.00	0.0000	127.30	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
						2" Ice	4.15	0.37	0.17
ANT150F6	C	From Leg	6.00	0.0000	127.30	No Ice	5.87	5.87	0.05
			0.00			1/2" Ice	8.03	8.03	0.09
			10.00			1" Ice	10.21	10.21	0.14
						2" Ice	14.63	14.63	0.30
6'x3" Pipe Mount	A	From Leg	0.50	0.0000	111.30	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.05
			0.00			1" Ice	2.50	2.50	0.07
						2" Ice	3.27	3.27	0.11
4' x 2.875" Pipe Mount	A	From Leg	6.00	0.0000	111.30	No Ice	0.97	0.97	0.02
			0.00			1/2" Ice	1.22	1.22	0.03
			0.00			1" Ice	1.48	1.48	0.04
						2" Ice	2.02	2.02	0.08
6' Standoff Arm	A	From Leg	3.00	0.0000	111.30	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
						2" Ice	4.15	0.37	0.17
531-70HD	A	From Leg	6.00	0.0000	111.30	No Ice	6.00	6.00	0.04
			0.00			1/2" Ice	6.90	6.90	0.05
			2.00			1" Ice	7.80	7.80	0.06
						2" Ice	9.60	9.60	0.08
6'x3" Pipe Mount	B	From Leg	0.50	0.0000	110.30	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.05
			0.00			1" Ice	2.50	2.50	0.07
						2" Ice	3.27	3.27	0.11
4' x 2.875" Pipe Mount	B	From Leg	6.00	0.0000	110.30	No Ice	0.97	0.97	0.02
			0.00			1/2" Ice	1.22	1.22	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00					1" Ice	1.48	1.48	0.04
								2" Ice	2.02	2.02	0.08
6' Standoff Arm	B	From Leg	3.00			0.0000	110.30	No Ice	2.40	0.13	0.05
			0.00					1/2" Ice	2.83	0.18	0.07
			0.00					1" Ice	3.26	0.24	0.10
								2" Ice	4.15	0.37	0.17
CO-41A	B	From Leg	6.00			0.0000	110.30	No Ice	2.27	2.27	0.01
			0.00					1/2" Ice	3.71	3.71	0.03
			6.50					1" Ice	5.16	5.16	0.06
								2" Ice	8.12	8.12	0.14
Light Beacon	A	From Leg	0.50			0.0000	105.30	No Ice	0.60	0.25	0.05
			0.00					1/2" Ice	0.70	0.31	0.06
			0.00					1" Ice	0.81	0.39	0.06
								2" Ice	1.06	0.55	0.09
Light Beacon	B	From Leg	0.50			0.0000	105.30	No Ice	0.60	0.25	0.05
			0.00					1/2" Ice	0.70	0.31	0.06
			0.00					1" Ice	0.81	0.39	0.06
								2" Ice	1.06	0.55	0.09
Light Beacon	C	From Leg	0.50			0.0000	105.30	No Ice	0.60	0.25	0.05
			0.00					1/2" Ice	0.70	0.31	0.06
			0.00					1" Ice	0.81	0.39	0.06
								2" Ice	1.06	0.55	0.09
6'x4" Pipe Mount	B	From Leg	1.00			0.0000	102.30	No Ice	1.73	1.73	0.05
			0.00					1/2" Ice	2.46	2.46	0.07
			0.00					1" Ice	2.83	2.83	0.09
								2" Ice	3.61	3.61	0.15
8' x 2" Horz. Pipe	B	From Leg	0.50			0.0000	102.30	No Ice	1.90	0.05	0.03
			4.00					1/2" Ice	2.45	0.08	0.05
			0.00					1" Ice	3.01	0.11	0.07
								2" Ice	4.15	0.21	0.14
6'x4" Pipe Mount	B	From Leg	1.00			0.0000	100.30	No Ice	1.73	1.73	0.05
			0.00					1/2" Ice	2.46	2.46	0.07
			0.00					1" Ice	2.83	2.83	0.09
								2" Ice	3.61	3.61	0.15
6'x4" Pipe Mount	C	From Leg	1.00			0.0000	93.30	No Ice	1.74	1.74	0.05
			0.00					1/2" Ice	2.46	2.46	0.07
			0.00					1" Ice	2.83	2.83	0.09
								2" Ice	3.61	3.61	0.15
6'x3" Pipe Mount	A	From Leg	0.50			0.0000	87.30	No Ice	1.77	1.77	0.03
			0.00					1/2" Ice	2.13	2.13	0.05
			0.00					1" Ice	2.50	2.50	0.07
								2" Ice	3.27	3.27	0.11
4' x 2.875" Pipe Mount	A	From Leg	6.00			0.0000	87.30	No Ice	0.97	0.97	0.02
			0.00					1/2" Ice	1.22	1.22	0.03
			0.00					1" Ice	1.48	1.48	0.04
								2" Ice	2.02	2.02	0.08
6' Standoff Arm	A	From Leg	3.00			0.0000	87.30	No Ice	2.40	0.13	0.05
			0.00					1/2" Ice	2.83	0.18	0.07
			0.00					1" Ice	3.26	0.24	0.10
								2" Ice	4.15	0.37	0.17
531-70HD	A	From Leg	6.00			0.0000	87.30	No Ice	6.00	6.00	0.04
			0.00					1/2" Ice	6.90	6.90	0.05
			2.00					1" Ice	7.80	7.80	0.06
								2" Ice	9.60	9.60	0.08
6'x3" Pipe Mount	B	From Leg	0.50			0.0000	89.30	No Ice	1.77	1.77	0.03
			0.00					1/2" Ice	2.13	2.13	0.05
			0.00					1" Ice	2.50	2.50	0.07

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" Ice	3.27	3.27	0.11
4' x 2.875" Pipe Mount	B	From Leg	3.00 0.00 0.00	0.0000	89.30	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.22 1.48 2.02	0.97 1.22 1.48 2.02	0.02 0.03 0.04 0.08
6' Standoff Arm	B	From Leg	3.00 0.00 0.00	0.0000	89.30	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.83 3.26 4.15	0.13 0.18 0.24 0.37	0.05 0.07 0.10 0.17
ANT150F2	B	From Leg	3.00 0.00 3.50	0.0000	89.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.30 1.60 1.90 2.50	1.30 1.60 1.90 2.50	0.02 0.02 0.03 0.04
6'x3" Pipe Mount	B	From Leg	0.50 0.00 0.00	0.0000	68.30	No Ice 1/2" Ice 1" Ice 2" Ice	1.77 2.13 2.50 3.27	1.77 2.13 2.50 3.27	0.03 0.05 0.07 0.11
4' x 2.875" Pipe Mount	B	From Leg	3.00 0.00 0.00	0.0000	68.30	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.22 1.48 2.02	0.97 1.22 1.48 2.02	0.02 0.03 0.04 0.08
6' Standoff Arm	B	From Leg	3.00 0.00 0.00	0.0000	68.30	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.83 3.26 4.15	0.13 0.18 0.24 0.37	0.05 0.07 0.10 0.17
2'x2' Panel	B	From Leg	3.00 0.00 0.00	0.0000	68.30	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	0.72 0.87 1.03 1.36	0.02 0.05 0.07 0.14
PR-900	C	From Leg	1.00 0.00 0.00	0.0000	170.30	No Ice 1/2" Ice 1" Ice 2" Ice	6.35 11.43 16.51 26.67	6.35 11.43 16.51 26.67	0.04 0.05 0.06 0.08

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
8' Dish	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		185.30	8.00	No Ice 1/2" Ice 1" Ice 2" Ice	50.27 51.32 52.37 54.48	0.10 0.26 0.49 0.95
8' Dish	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		185.30	8.00	No Ice 1/2" Ice 1" Ice 2" Ice	50.27 51.32 52.37 54.48	0.10 0.26 0.49 0.95
8' Dish	B	Paraboloid w/o Radome	From Leg	1.00 0.00	0.0000		174.30	8.00	No Ice 1/2" Ice	50.27 51.32	0.10 0.26

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
				0.00					1" Ice	52.37	0.49
									2" Ice	54.48	0.95
8' Dish	C	Paraboloid w/o Radome	From Leg	1.00	0.0000		174.30	8.00	No Ice	50.27	0.10
				0.00					1/2" Ice	51.32	0.26
				0.00					1" Ice	52.37	0.49
									2" Ice	54.48	0.95
4' Dish	A	Paraboloid w/Radome	From Leg	1.00	0.0000		179.30	4.00	No Ice	12.57	0.08
				0.00					1/2" Ice	13.10	0.14
				0.00					1" Ice	13.62	0.21
									2" Ice	14.68	0.34
6' Dish	B	Paraboloid w/o Radome	From Leg	1.00	0.0000		137.30	6.00	No Ice	28.27	0.08
				0.00					1/2" Ice	29.07	0.10
				0.00					1" Ice	29.87	0.12
									2" Ice	31.47	0.16
6' Dish	C	Paraboloid w/o Radome	From Leg	1.00	0.0000		137.30	6.00	No Ice	28.27	0.08
				0.00					1/2" Ice	29.07	0.10
				0.00					1" Ice	29.87	0.12
									2" Ice	31.47	0.16
8' Dish	B	Paraboloid w/o Radome	From Leg	1.00	0.0000		127.30	8.00	No Ice	50.27	0.10
				0.00					1/2" Ice	51.32	0.26
				0.00					1" Ice	52.37	0.49
									2" Ice	54.48	0.95
8' Dish	B	Paraboloid w/o Radome	From Leg	1.00	0.0000		102.30	8.00	No Ice	50.27	0.10
				0.00					1/2" Ice	51.32	0.26
				0.00					1" Ice	52.37	0.49
									2" Ice	54.48	0.95
SC3-W100AB	A	Paraboloid w/o Radome	From Leg	1.00	0.0000		100.30	3.27	No Ice	8.40	0.04
				0.00					1/2" Ice	8.83	0.09
				0.00					1" Ice	9.27	0.13
									2" Ice	10.13	0.22
SC3-W100AB	A	Paraboloid w/o Radome	From Leg	1.00	0.0000		93.30	3.27	No Ice	8.40	0.04
				0.00					1/2" Ice	8.83	0.09
				0.00					1" Ice	9.27	0.13
									2" Ice	10.13	0.22

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	184.80	1.178	53	96.514	A	18.465	5.530	5.530	23.05	0.000	0.000
187.30-182.30					B	18.465	5.530		23.05	7.796	0.000
					C	18.465	5.530		23.05	1.964	0.000
T2	172.30	1.154	52	411.055	A	28.995	22.120	22.120	43.28	0.000	0.000
182.30-162.30					B	28.995	22.120		43.28	52.133	0.000
					C	28.995	22.120		43.28	11.017	0.000
T3	152.30	1.114	51	451.055	A	39.270	22.120	22.120	36.03	15.840	0.000
162.30-142.30					B	39.270	22.120		36.03	57.781	0.000
					C	39.270	22.120		36.03	68.260	0.000
T4	132.30	1.071	50	491.055	A	42.340	22.120	22.120	34.32	47.520	0.000
142.30-122.30					B	42.340	22.120		34.32	69.891	0.000
					C	42.340	22.120		34.32	68.260	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
T5	112.30	1.022	48	534.393	A	45.148	28.798	28.798	38.94	47.520	0.000
122.30-102.30					B	45.148	28.798		38.94	82.857	0.000
					C	45.148	28.798		38.94	68.392	0.000
T6	98.97	0.985	47	187.113	A	14.658	9.604	9.604	39.58	15.848	0.000
102.30-95.63					B	14.658	9.604		39.58	28.712	0.000
					C	14.658	9.604		39.58	25.158	0.000
T7 95.63-82.30	88.97	0.956	46	387.276	A	35.903	19.194	19.194	34.84	31.672	0.000
					B	35.903	19.194		34.84	59.426	0.000
					C	35.903	19.194		34.84	50.279	0.000
T8 82.30-75.63	78.97	0.924	45	200.453	A	15.566	9.604	9.604	38.16	15.848	0.000
					B	15.566	9.604		38.16	30.599	0.000
					C	15.566	9.604		38.16	25.158	0.000
T9 75.63-62.30	68.97	0.889	44	413.936	A	37.768	19.194	19.194	33.70	31.888	0.000
					B	37.768	19.194		33.70	61.153	0.000
					C	37.768	19.194		33.70	50.279	0.000
T10	58.97	0.85	42	214.976	A	16.388	11.970	11.970	42.21	16.088	0.000
62.30-55.63					B	16.388	11.970		42.21	30.599	0.000
					C	16.388	11.970		42.21	25.158	0.000
T11	48.97	0.806	40	442.960	A	41.946	23.923	23.923	36.32	32.152	0.000
55.63-42.30					B	41.946	23.923		36.32	61.153	0.000
					C	41.946	23.923		36.32	50.279	0.000
T12	38.97	0.755	38	228.316	A	17.315	11.970	11.970	40.87	16.088	0.000
42.30-35.63					B	17.315	11.970		40.87	30.599	0.000
					C	17.315	11.970		40.87	25.158	0.000
T13	28.97	0.7	36	469.620	A	44.027	23.923	23.923	35.21	32.152	0.000
35.63-22.30					B	44.027	23.923		35.21	61.153	0.000
					C	44.027	23.923		35.21	50.279	0.000
T14	18.97	0.7	36	242.769	A	18.160	14.197	14.197	43.88	16.088	0.000
22.30-15.63					B	18.160	14.197		43.88	30.599	0.000
					C	18.160	14.197		43.88	25.158	0.000
T15 15.63-2.30	8.97	0.7	37	498.504	A	48.957	28.373	28.373	36.69	17.680	0.000
					B	48.957	28.373		36.69	33.627	0.000
					C	48.957	28.373		36.69	27.648	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	184.80	1.178	8	2.2042	98.353	A	18.465	29.642	9.210	19.14	0.000	0.000
187.30-182.30						B	18.465	29.642		19.14	29.455	0.000
						C	18.465	29.642		19.14	10.029	0.000
T2	172.30	1.154	8	2.1957	418.383	A	28.995	68.614	36.782	37.68	0.000	0.000
182.30-162.30						B	28.995	68.614		37.68	191.463	0.000
						C	28.995	68.614		37.68	55.783	0.000
T3	152.30	1.114	8	2.1802	458.332	A	39.270	70.925	36.679	33.29	43.307	0.000
162.30-142.30						B	39.270	70.925		33.29	205.507	0.000
						C	39.270	70.925		33.29	212.736	0.000
T4	132.30	1.071	7	2.1617	498.270	A	42.340	73.167	36.556	31.65	134.619	0.000
142.30-122.30						B	42.340	73.167		31.65	235.974	0.000
						C	42.340	73.167		31.65	212.111	0.000
T5	112.30	1.022	7	2.1393	541.533	A	45.148	81.718	43.084	33.96	134.345	0.000
122.30-102.30						B	45.148	81.718		33.96	274.180	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
						C	45.148	81.718		33.96	212.680	0.000
T6 102.30-95.63	98.97	0.985	7	2.1213	189.474	A	14.658	24.693	14.328	36.41	44.731	0.000
						B	14.658	24.693		36.41	97.519	0.000
						C	14.658	24.693		36.41	82.131	0.000
T7 95.63-82.30	88.97	0.956	7	2.1056	391.960	A	35.903	62.327	28.565	29.08	89.268	0.000
						B	35.903	62.327		29.08	207.850	0.000
						C	35.903	62.327		29.08	163.681	0.000
T8 82.30-75.63	78.97	0.924	7	2.0877	202.777	A	15.566	25.086	14.253	35.06	44.595	0.000
						B	15.566	25.086		35.06	108.553	0.000
						C	15.566	25.086		35.06	81.639	0.000
T9 75.63-62.30	68.97	0.889	6	2.0667	418.534	A	37.768	63.346	28.392	28.08	91.649	0.000
						B	37.768	63.346		28.08	215.818	0.000
						C	37.768	63.346		28.08	162.544	0.000
T10 62.30-55.63	58.97	0.85	6	2.0418	217.249	A	16.388	27.671	16.518	37.49	47.373	0.000
						B	16.388	27.671		37.49	107.322	0.000
						C	16.388	27.671		37.49	80.970	0.000
T11 55.63-42.30	48.97	0.806	6	2.0116	447.434	A	41.946	68.411	32.876	29.79	94.350	0.000
						B	41.946	68.411		29.79	212.861	0.000
						C	41.946	68.411		29.79	160.936	0.000
T12 42.30-35.63	38.97	0.755	6	1.9736	230.513	A	17.315	27.757	16.366	36.31	47.006	0.000
						B	17.315	27.757		36.31	105.490	0.000
						C	17.315	27.757		36.31	79.974	0.000
T13 35.63-22.30	28.97	0.7	5	1.9234	473.898	A	44.027	68.189	32.483	28.95	93.403	0.000
						B	44.027	68.189		28.95	208.130	0.000
						C	44.027	68.189		28.95	158.365	0.000
T14 22.30-15.63	18.97	0.7	5	1.8511	244.829	A	18.160	29.525	18.320	38.42	46.348	0.000
						B	18.160	29.525		38.42	102.203	0.000
						C	18.160	29.525		38.42	78.188	0.000
T15 15.63-2.30	8.97	0.7	5	1.7246	502.340	A	48.957	69.411	36.049	30.46	50.191	0.000
						B	48.957	69.411		30.46	108.593	0.000
						C	48.957	69.411		30.46	83.903	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	184.80	1.178	32	96.514	A	18.465	5.530	5.530	23.05	0.000	0.000
187.30-182.30					B	18.465	5.530		23.05	7.796	0.000
					C	18.465	5.530		23.05	1.964	0.000
T2	172.30	1.154	31	411.055	A	28.995	22.120	22.120	43.28	0.000	0.000
182.30-162.30					B	28.995	22.120		43.28	52.133	0.000
					C	28.995	22.120		43.28	11.017	0.000
T3	152.30	1.114	31	451.055	A	39.270	22.120	22.120	36.03	15.840	0.000
162.30-142.30					B	39.270	22.120		36.03	57.781	0.000
					C	39.270	22.120		36.03	68.260	0.000
T4	132.30	1.071	30	491.055	A	42.340	22.120	22.120	34.32	47.520	0.000
142.30-122.30					B	42.340	22.120		34.32	69.891	0.000
					C	42.340	22.120		34.32	68.260	0.000
T5	112.30	1.022	29	534.393	A	45.148	28.798	28.798	38.94	47.520	0.000
122.30-102.30					B	45.148	28.798		38.94	82.857	0.000
					C	45.148	28.798		38.94	68.392	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
T6	98.97	0.985	28	187.113	A	14.658	9.604	9.604	39.58	15.848	0.000
102.30-95.63					B	14.658	9.604		39.58	28.712	0.000
					C	14.658	9.604		39.58	25.158	0.000
T7 95.63-82.30	88.97	0.956	28	387.276	A	35.903	19.194	19.194	34.84	31.672	0.000
					B	35.903	19.194		34.84	59.426	0.000
					C	35.903	19.194		34.84	50.279	0.000
T8 82.30-75.63	78.97	0.924	27	200.453	A	15.566	9.604	9.604	38.16	15.848	0.000
					B	15.566	9.604		38.16	30.599	0.000
					C	15.566	9.604		38.16	25.158	0.000
T9 75.63-62.30	68.97	0.889	26	413.936	A	37.768	19.194	19.194	33.70	31.888	0.000
					B	37.768	19.194		33.70	61.153	0.000
					C	37.768	19.194		33.70	50.279	0.000
T10	58.97	0.85	25	214.976	A	16.388	11.970	11.970	42.21	16.088	0.000
62.30-55.63					B	16.388	11.970		42.21	30.599	0.000
					C	16.388	11.970		42.21	25.158	0.000
T11	48.97	0.806	24	442.960	A	41.946	23.923	23.923	36.32	32.152	0.000
55.63-42.30					B	41.946	23.923		36.32	61.153	0.000
					C	41.946	23.923		36.32	50.279	0.000
T12	38.97	0.755	23	228.316	A	17.315	11.970	11.970	40.87	16.088	0.000
42.30-35.63					B	17.315	11.970		40.87	30.599	0.000
					C	17.315	11.970		40.87	25.158	0.000
T13	28.97	0.7	22	469.620	A	44.027	23.923	23.923	35.21	32.152	0.000
35.63-22.30					B	44.027	23.923		35.21	61.153	0.000
					C	44.027	23.923		35.21	50.279	0.000
T14	18.97	0.7	22	242.769	A	18.160	14.197	14.197	43.88	16.088	0.000
22.30-15.63					B	18.160	14.197		43.88	30.599	0.000
					C	18.160	14.197		43.88	25.158	0.000
T15 15.63-2.30	8.97	0.7	22	498.504	A	48.957	28.373	28.373	36.69	17.680	0.000
					B	48.957	28.373		36.69	33.627	0.000
					C	48.957	28.373		36.69	27.648	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	0.04	1.53	A	0.249	2.442	53	1	1	21.091	2.56	512.46	C
187.30-182.30			B	0.249	2.442		1	1	21.091			
			C	0.249	2.442		1	1	21.091			
T2	0.24	2.91	A	0.124	2.868	52	1	1	37.978	6.49	324.34	C
182.30-162.30			B	0.124	2.868		1	1	37.978			
			C	0.124	2.868		1	1	37.978			
T3	0.53	4.13	A	0.136	2.823	51	1	1	48.379	9.60	479.98	C
162.30-142.30			B	0.136	2.823		1	1	48.379			
			C	0.136	2.823		1	1	48.379			
T4	0.70	4.36	A	0.131	2.842	50	1	1	51.397	10.88	544.00	C
142.30-122.30			B	0.131	2.842		1	1	51.397			
			C	0.131	2.842		1	1	51.397			
T5	0.74	5.82	A	0.138	2.815	48	1	1	57.038	11.48	573.87	C
122.30-102.30			B	0.138	2.815		1	1	57.038			
			C	0.138	2.815		1	1	57.038			
T6	0.26	1.91	A	0.13	2.848	47	1	1	18.583	3.79	568.77	C
102.30-95.63			B	0.13	2.848		1	1	18.583			
			C	0.13	2.848		1	1	18.583			
T7	0.53	4.42	A	0.142	2.8	46	1	1	43.864	8.14	610.67	C
95.63-82.30			B	0.142	2.8		1	1	43.864			

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	0.142	2.8		1	1	43.864			
T8	0.27	2.29	A	0.126	2.863	45	1	1	19.472	3.78	566.16	C
82.30-75.63			B	0.126	2.863		1	1	19.472			
			C	0.126	2.863		1	1	19.472			
T9	0.53	5.01	A	0.138	2.818	44	1	1	45.686	7.98	598.66	C
75.63-62.30			B	0.138	2.818		1	1	45.686			
			C	0.138	2.818		1	1	45.686			
T10	0.27	2.31	A	0.132	2.839	42	1	1	21.292	3.72	557.43	C
62.30-55.63			B	0.132	2.839		1	1	21.292			
			C	0.132	2.839		1	1	21.292			
T11	0.53	5.42	A	0.149	2.776	40	1	1	51.946	7.93	594.58	C
55.63-42.30			B	0.149	2.776		1	1	51.946			
			C	0.149	2.776		1	1	51.946			
T12	0.27	2.68	A	0.128	2.853	38	1	1	22.199	3.47	519.94	C
42.30-35.63			B	0.128	2.853		1	1	22.199			
			C	0.128	2.853		1	1	22.199			
T13	0.53	6.80	A	0.145	2.791	36	1	1	53.979	7.23	542.70	C
35.63-22.30			B	0.145	2.791		1	1	53.979			
			C	0.145	2.791		1	1	53.979			
T14	0.27	3.51	A	0.133	2.834	36	1	1	23.987	3.43	514.63	C
22.30-15.63			B	0.133	2.834		1	1	23.987			
			C	0.133	2.834		1	1	23.987			
T15	0.29	7.62	A	0.155	2.753	37	1	1	60.911	6.72	504.42	C
15.63-2.30			B	0.155	2.753		1	1	60.911			
			C	0.155	2.753		1	1	60.911			
Sum Weight:	5.98	60.73						OTM	8583.52 kip-ft	97.20		

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	0.04	1.53	A	0.249	2.442	53	0.825	1	17.860	2.21	441.97	C
187.30-182.30			B	0.249	2.442		0.825	1	17.860			
			C	0.249	2.442		0.825	1	17.860			
T2	0.24	2.91	A	0.124	2.868	52	0.825	1	32.904	5.84	292.19	C
182.30-162.30			B	0.124	2.868		0.825	1	32.904			
			C	0.124	2.868		0.825	1	32.904			
T3	0.53	4.13	A	0.136	2.823	51	0.825	1	41.506	8.76	437.98	C
162.30-142.30			B	0.136	2.823		0.825	1	41.506			
			C	0.136	2.823		0.825	1	41.506			
T4	0.70	4.36	A	0.131	2.842	50	0.825	1	43.987	9.99	499.51	C
142.30-122.30			B	0.131	2.842		0.825	1	43.987			
			C	0.131	2.842		0.825	1	43.987			
T5	0.74	5.82	A	0.138	2.815	48	0.825	1	49.137	10.57	528.26	C
122.30-102.30			B	0.138	2.815		0.825	1	49.137			
			C	0.138	2.815		0.825	1	49.137			
T6	0.26	1.91	A	0.13	2.848	47	0.825	1	16.018	3.50	524.92	C
102.30-95.63			B	0.13	2.848		0.825	1	16.018			
			C	0.13	2.848		0.825	1	16.018			
T7	0.53	4.42	A	0.142	2.8	46	0.825	1	37.581	7.45	558.93	C
95.63-82.30			B	0.142	2.8		0.825	1	37.581			

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	0.142	2.8		0.825	1	37.581			
T8	0.27	2.29	A	0.126	2.863	45	0.825	1	16.748	3.48	521.43	C
82.30-75.63			B	0.126	2.863		0.825	1	16.748			
			C	0.126	2.863		0.825	1	16.748			
T9	0.53	5.01	A	0.138	2.818	44	0.825	1	39.077	7.29	546.74	C
75.63-62.30			B	0.138	2.818		0.825	1	39.077			
			C	0.138	2.818		0.825	1	39.077			
T10	0.27	2.31	A	0.132	2.839	42	0.825	1	18.424	3.43	513.60	C
62.30-55.63			B	0.132	2.839		0.825	1	18.424			
			C	0.132	2.839		0.825	1	18.424			
T11	0.53	5.42	A	0.149	2.776	40	0.825	1	44.606	7.22	541.98	C
55.63-42.30			B	0.149	2.776		0.825	1	44.606			
			C	0.149	2.776		0.825	1	44.606			
T12	0.27	2.68	A	0.128	2.853	38	0.825	1	19.169	3.19	477.71	C
42.30-35.63			B	0.128	2.853		0.825	1	19.169			
			C	0.128	2.853		0.825	1	19.169			
T13	0.53	6.80	A	0.145	2.791	36	0.825	1	46.274	6.58	493.42	C
35.63-22.30			B	0.145	2.791		0.825	1	46.274			
			C	0.145	2.791		0.825	1	46.274			
T14	0.27	3.51	A	0.133	2.834	36	0.825	1	20.809	3.15	472.91	C
22.30-15.63			B	0.133	2.834		0.825	1	20.809			
			C	0.133	2.834		0.825	1	20.809			
T15	0.29	7.62	A	0.155	2.753	37	0.825	1	52.344	5.99	449.10	C
15.63-2.30			B	0.155	2.753		0.825	1	52.344			
			C	0.155	2.753		0.825	1	52.344			
Sum Weight:	5.98	60.73						OTM	7824.12 kip-ft	88.64		

Tower Forces - No Ice - Wind 60 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	0.04	1.53	A	0.249	2.442	53	0.8	1	17.398	2.16	431.89	C
187.30-182.30			B	0.249	2.442		0.8	1	17.398			
			C	0.249	2.442		0.8	1	17.398			
T2	0.24	2.91	A	0.124	2.868	52	0.8	1	32.179	5.75	287.59	C
182.30-162.30			B	0.124	2.868		0.8	1	32.179			
			C	0.124	2.868		0.8	1	32.179			
T3	0.53	4.13	A	0.136	2.823	51	0.8	1	40.525	8.64	431.98	C
162.30-142.30			B	0.136	2.823		0.8	1	40.525			
			C	0.136	2.823		0.8	1	40.525			
T4	0.70	4.36	A	0.131	2.842	50	0.8	1	42.929	9.86	493.15	C
142.30-122.30			B	0.131	2.842		0.8	1	42.929			
			C	0.131	2.842		0.8	1	42.929			
T5	0.74	5.82	A	0.138	2.815	48	0.8	1	48.008	10.43	521.74	C
122.30-102.30			B	0.138	2.815		0.8	1	48.008			
			C	0.138	2.815		0.8	1	48.008			
T6	0.26	1.91	A	0.13	2.848	47	0.8	1	15.651	3.46	518.65	C
102.30-95.63			B	0.13	2.848		0.8	1	15.651			
			C	0.13	2.848		0.8	1	15.651			
T7	0.53	4.42	A	0.142	2.8	46	0.8	1	36.684	7.35	551.54	C
95.63-82.30			B	0.142	2.8		0.8	1	36.684			

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	0.142	2.8		0.8	1	36.684			
T8	0.27	2.29	A	0.126	2.863	45	0.8	1	16.359	3.44	515.04	C
82.30-75.63			B	0.126	2.863		0.8	1	16.359			
			C	0.126	2.863		0.8	1	16.359			
T9	0.53	5.01	A	0.138	2.818	44	0.8	1	38.132	7.19	539.32	C
75.63-62.30			B	0.138	2.818		0.8	1	38.132			
			C	0.138	2.818		0.8	1	38.132			
T10	0.27	2.31	A	0.132	2.839	42	0.8	1	18.015	3.38	507.34	C
62.30-55.63			B	0.132	2.839		0.8	1	18.015			
			C	0.132	2.839		0.8	1	18.015			
T11	0.53	5.42	A	0.149	2.776	40	0.8	1	43.557	7.12	534.46	C
55.63-42.30			B	0.149	2.776		0.8	1	43.557			
			C	0.149	2.776		0.8	1	43.557			
T12	0.27	2.68	A	0.128	2.853	38	0.8	1	18.736	3.15	471.67	C
42.30-35.63			B	0.128	2.853		0.8	1	18.736			
			C	0.128	2.853		0.8	1	18.736			
T13	0.53	6.80	A	0.145	2.791	36	0.8	1	45.174	6.48	486.38	C
35.63-22.30			B	0.145	2.791		0.8	1	45.174			
			C	0.145	2.791		0.8	1	45.174			
T14	0.27	3.51	A	0.133	2.834	36	0.8	1	20.355	3.11	466.95	C
22.30-15.63			B	0.133	2.834		0.8	1	20.355			
			C	0.133	2.834		0.8	1	20.355			
T15	0.29	7.62	A	0.155	2.753	37	0.8	1	51.120	5.88	441.20	C
15.63-2.30			B	0.155	2.753		0.8	1	51.120			
			C	0.155	2.753		0.8	1	51.120			
Sum Weight:	5.98	60.73						OTM	7715.63 kip-ft	87.42		

Tower Forces - No Ice - Wind 90 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	0.04	1.53	A	0.249	2.442	53	0.85	1	18.322	2.26	452.04	C
187.30-182.30			B	0.249	2.442		0.85	1	18.322			
			C	0.249	2.442		0.85	1	18.322			
T2	0.24	2.91	A	0.124	2.868	52	0.85	1	33.629	5.94	296.78	C
182.30-162.30			B	0.124	2.868		0.85	1	33.629			
			C	0.124	2.868		0.85	1	33.629			
T3	0.53	4.13	A	0.136	2.823	51	0.85	1	42.488	8.88	443.98	C
162.30-142.30			B	0.136	2.823		0.85	1	42.488			
			C	0.136	2.823		0.85	1	42.488			
T4	0.70	4.36	A	0.131	2.842	50	0.85	1	45.046	10.12	505.86	C
142.30-122.30			B	0.131	2.842		0.85	1	45.046			
			C	0.131	2.842		0.85	1	45.046			
T5	0.74	5.82	A	0.138	2.815	48	0.85	1	50.266	10.70	534.77	C
122.30-102.30			B	0.138	2.815		0.85	1	50.266			
			C	0.138	2.815		0.85	1	50.266			
T6	0.26	1.91	A	0.13	2.848	47	0.85	1	16.384	3.54	531.18	C
102.30-95.63			B	0.13	2.848		0.85	1	16.384			
			C	0.13	2.848		0.85	1	16.384			
T7	0.53	4.42	A	0.142	2.8	46	0.85	1	38.479	7.55	566.32	C
95.63-82.30			B	0.142	2.8		0.85	1	38.479			

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	0.142	2.8		0.85	1	38.479			
T8	0.27	2.29	A	0.126	2.863	45	0.85	1	17.137	3.52	527.82	C
82.30-75.63			B	0.126	2.863		0.85	1	17.137			
			C	0.126	2.863		0.85	1	17.137			
T9	0.53	5.01	A	0.138	2.818	44	0.85	1	40.021	7.39	554.15	C
75.63-62.30			B	0.138	2.818		0.85	1	40.021			
			C	0.138	2.818		0.85	1	40.021			
T10	0.27	2.31	A	0.132	2.839	42	0.85	1	18.834	3.47	519.86	C
62.30-55.63			B	0.132	2.839		0.85	1	18.834			
			C	0.132	2.839		0.85	1	18.834			
T11	0.53	5.42	A	0.149	2.776	40	0.85	1	45.655	7.32	549.49	C
55.63-42.30			B	0.149	2.776		0.85	1	45.655			
			C	0.149	2.776		0.85	1	45.655			
T12	0.27	2.68	A	0.128	2.853	38	0.85	1	19.601	3.23	483.74	C
42.30-35.63			B	0.128	2.853		0.85	1	19.601			
			C	0.128	2.853		0.85	1	19.601			
T13	0.53	6.80	A	0.145	2.791	36	0.85	1	47.375	6.67	500.46	C
35.63-22.30			B	0.145	2.791		0.85	1	47.375			
			C	0.145	2.791		0.85	1	47.375			
T14	0.27	3.51	A	0.133	2.834	36	0.85	1	21.263	3.19	478.87	C
22.30-15.63			B	0.133	2.834		0.85	1	21.263			
			C	0.133	2.834		0.85	1	21.263			
T15	0.29	7.62	A	0.155	2.753	37	0.85	1	53.568	6.09	457.00	C
15.63-2.30			B	0.155	2.753		0.85	1	53.568			
			C	0.155	2.753		0.85	1	53.568			
Sum Weight:	5.98	60.73						OTM	7932.60 kip-ft	89.86		

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	0.59	5.51	A	0.489	1.915	8	1	1	38.597	0.62	124.34	C
187.30-182.30			B	0.489	1.915		1	1	38.597			
			C	0.489	1.915		1	1	38.597			
T2	3.77	9.99	A	0.233	2.489	8	1	1	68.867	2.09	104.48	C
182.30-162.30			B	0.233	2.489		1	1	68.867			
			C	0.233	2.489		1	1	68.867			
T3	7.50	12.69	A	0.24	2.467	8	1	1	80.600	3.05	152.35	C
162.30-142.30			B	0.24	2.467		1	1	80.600			
			C	0.24	2.467		1	1	80.600			
T4	9.53	13.36	A	0.232	2.493	7	1	1	84.834	3.51	175.39	C
142.30-122.30			B	0.232	2.493		1	1	84.834			
			C	0.232	2.493		1	1	84.834			
T5	10.10	15.56	A	0.234	2.486	7	1	1	92.652	3.66	182.95	C
122.30-102.30			B	0.234	2.486		1	1	92.652			
			C	0.234	2.486		1	1	92.652			
T6	3.61	4.96	A	0.208	2.571	7	1	1	28.878	1.24	185.47	C
102.30-95.63			B	0.208	2.571		1	1	28.878			
			C	0.208	2.571		1	1	28.878			
T7	7.32	12.29	A	0.251	2.436	7	1	1	72.373	2.63	196.96	C
95.63-82.30			B	0.251	2.436		1	1	72.373			

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	0.251	2.436		1	1	72.373			
T8	3.69	5.42	A	0.2	2.594	7	1	1	29.979	1.24	185.50	C
82.30-75.63			B	0.2	2.594		1	1	29.979			
			C	0.2	2.594		1	1	29.979			
T9	7.34	13.44	A	0.242	2.463	6	1	1	74.699	2.56	192.19	C
75.63-62.30			B	0.242	2.463		1	1	74.699			
			C	0.242	2.463		1	1	74.699			
T10	3.65	5.61	A	0.203	2.587	6	1	1	32.298	1.19	179.11	C
62.30-55.63			B	0.203	2.587		1	1	32.298			
			C	0.203	2.587		1	1	32.298			
T11	7.17	14.55	A	0.247	2.448	6	1	1	81.911	2.45	183.79	C
55.63-42.30			B	0.247	2.448		1	1	81.911			
			C	0.247	2.448		1	1	81.911			
T12	3.52	5.99	A	0.196	2.611	6	1	1	33.239	1.09	163.50	C
42.30-35.63			B	0.196	2.611		1	1	33.239			
			C	0.196	2.611		1	1	33.239			
T13	6.84	15.81	A	0.237	2.478	5	1	1	83.705	2.18	163.85	C
35.63-22.30			B	0.237	2.478		1	1	83.705			
			C	0.237	2.478		1	1	83.705			
T14	3.29	6.80	A	0.195	2.614	5	1	1	35.096	1.04	156.09	C
22.30-15.63			B	0.195	2.614		1	1	35.096			
			C	0.195	2.614		1	1	35.096			
T15	3.37	16.28	A	0.236	2.481	5	1	1	89.328	1.70	127.44	C
15.63-2.30			B	0.236	2.481		1	1	89.328			
			C	0.236	2.481		1	1	89.328			
Sum Weight:	81.29	158.27						OTM	2705.95 kip-ft	30.25		

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	0.59	5.51	A	0.489	1.915	8	0.825	1	35.366	0.58	116.16	C
187.30-182.30			B	0.489	1.915		0.825	1	35.366			
			C	0.489	1.915		0.825	1	35.366			
T2	3.77	9.99	A	0.233	2.489	8	0.825	1	63.792	2.01	100.36	C
182.30-162.30			B	0.233	2.489		0.825	1	63.792			
			C	0.233	2.489		0.825	1	63.792			
T3	7.50	12.69	A	0.24	2.467	8	0.825	1	73.727	2.94	146.92	C
162.30-142.30			B	0.24	2.467		0.825	1	73.727			
			C	0.24	2.467		0.825	1	73.727			
T4	9.53	13.36	A	0.232	2.493	7	0.825	1	77.424	3.39	169.62	C
142.30-122.30			B	0.232	2.493		0.825	1	77.424			
			C	0.232	2.493		0.825	1	77.424			
T5	10.10	15.56	A	0.234	2.486	7	0.825	1	84.751	3.54	176.99	C
122.30-102.30			B	0.234	2.486		0.825	1	84.751			
			C	0.234	2.486		0.825	1	84.751			
T6	3.61	4.96	A	0.208	2.571	7	0.825	1	26.313	1.20	179.61	C
102.30-95.63			B	0.208	2.571		0.825	1	26.313			
			C	0.208	2.571		0.825	1	26.313			
T7	7.32	12.29	A	0.251	2.436	7	0.825	1	66.090	2.54	190.31	C
95.63-82.30			B	0.251	2.436		0.825	1	66.090			

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	0.251	2.436		0.825	1	66.090			
T8	3.69	5.42	A	0.2	2.594	7	0.825	1	27.255	1.20	179.50	C
82.30-75.63			B	0.2	2.594		0.825	1	27.255			
			C	0.2	2.594		0.825	1	27.255			
T9	7.34	13.44	A	0.242	2.463	6	0.825	1	68.089	2.47	185.48	C
75.63-62.30			B	0.242	2.463		0.825	1	68.089			
			C	0.242	2.463		0.825	1	68.089			
T10	3.65	5.61	A	0.203	2.587	6	0.825	1	29.430	1.16	173.20	C
62.30-55.63			B	0.203	2.587		0.825	1	29.430			
			C	0.203	2.587		0.825	1	29.430			
T11	7.17	14.55	A	0.247	2.448	6	0.825	1	74.570	2.36	176.93	C
55.63-42.30			B	0.247	2.448		0.825	1	74.570			
			C	0.247	2.448		0.825	1	74.570			
T12	3.52	5.99	A	0.196	2.611	6	0.825	1	30.209	1.05	157.78	C
42.30-35.63			B	0.196	2.611		0.825	1	30.209			
			C	0.196	2.611		0.825	1	30.209			
T13	6.84	15.81	A	0.237	2.478	5	0.825	1	76.001	2.10	157.38	C
35.63-22.30			B	0.237	2.478		0.825	1	76.001			
			C	0.237	2.478		0.825	1	76.001			
T14	3.29	6.80	A	0.195	2.614	5	0.825	1	31.918	1.00	150.40	C
22.30-15.63			B	0.195	2.614		0.825	1	31.918			
			C	0.195	2.614		0.825	1	31.918			
T15	3.37	16.28	A	0.236	2.481	5	0.825	1	80.760	1.60	120.06	C
15.63-2.30			B	0.236	2.481		0.825	1	80.760			
			C	0.236	2.481		0.825	1	80.760			
Sum Weight:	81.29	158.27						OTM	2608.07 kip-ft	29.13		

Tower Forces - With Ice - Wind 60 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	0.59	5.51	A	0.489	1.915	8	0.8	1	34.904	0.57	114.99	C
187.30-182.30			B	0.489	1.915		0.8	1	34.904			
			C	0.489	1.915		0.8	1	34.904			
T2	3.77	9.99	A	0.233	2.489	8	0.8	1	63.068	2.00	99.77	C
182.30-162.30			B	0.233	2.489		0.8	1	63.068			
			C	0.233	2.489		0.8	1	63.068			
T3	7.50	12.69	A	0.24	2.467	8	0.8	1	72.745	2.92	146.15	C
162.30-142.30			B	0.24	2.467		0.8	1	72.745			
			C	0.24	2.467		0.8	1	72.745			
T4	9.53	13.36	A	0.232	2.493	7	0.8	1	76.366	3.38	168.80	C
142.30-122.30			B	0.232	2.493		0.8	1	76.366			
			C	0.232	2.493		0.8	1	76.366			
T5	10.10	15.56	A	0.234	2.486	7	0.8	1	83.622	3.52	176.14	C
122.30-102.30			B	0.234	2.486		0.8	1	83.622			
			C	0.234	2.486		0.8	1	83.622			
T6	3.61	4.96	A	0.208	2.571	7	0.8	1	25.947	1.19	178.78	C
102.30-95.63			B	0.208	2.571		0.8	1	25.947			
			C	0.208	2.571		0.8	1	25.947			
T7	7.32	12.29	A	0.251	2.436	7	0.8	1	65.193	2.52	189.35	C
95.63-82.30			B	0.251	2.436		0.8	1	65.193			

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	0.251	2.436		0.8	1	65.193			
T8	3.69	5.42	A	0.2	2.594	7	0.8	1	26.866	1.19	178.65	C
82.30-75.63			B	0.2	2.594		0.8	1	26.866			
			C	0.2	2.594		0.8	1	26.866			
T9	7.34	13.44	A	0.242	2.463	6	0.8	1	67.145	2.46	184.52	C
75.63-62.30			B	0.242	2.463		0.8	1	67.145			
			C	0.242	2.463		0.8	1	67.145			
T10	3.65	5.61	A	0.203	2.587	6	0.8	1	29.020	1.15	172.36	C
62.30-55.63			B	0.203	2.587		0.8	1	29.020			
			C	0.203	2.587		0.8	1	29.020			
T11	7.17	14.55	A	0.247	2.448	6	0.8	1	73.521	2.35	175.95	C
55.63-42.30			B	0.247	2.448		0.8	1	73.521			
			C	0.247	2.448		0.8	1	73.521			
T12	3.52	5.99	A	0.196	2.611	6	0.8	1	29.776	1.05	156.97	C
42.30-35.63			B	0.196	2.611		0.8	1	29.776			
			C	0.196	2.611		0.8	1	29.776			
T13	6.84	15.81	A	0.237	2.478	5	0.8	1	74.900	2.09	156.46	C
35.63-22.30			B	0.237	2.478		0.8	1	74.900			
			C	0.237	2.478		0.8	1	74.900			
T14	3.29	6.80	A	0.195	2.614	5	0.8	1	31.464	1.00	149.59	C
22.30-15.63			B	0.195	2.614		0.8	1	31.464			
			C	0.195	2.614		0.8	1	31.464			
T15	3.37	16.28	A	0.236	2.481	5	0.8	1	79.536	1.59	119.01	C
15.63-2.30			B	0.236	2.481		0.8	1	79.536			
			C	0.236	2.481		0.8	1	79.536			
Sum Weight:	81.29	158.27						OTM	2594.09 kip-ft	28.97		

Tower Forces - With Ice - Wind 90 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	0.59	5.51	A	0.489	1.915	8	0.85	1	35.827	0.59	117.33	C
187.30-182.30			B	0.489	1.915		0.85	1	35.827			
			C	0.489	1.915		0.85	1	35.827			
T2	3.77	9.99	A	0.233	2.489	8	0.85	1	64.517	2.02	100.95	C
182.30-162.30			B	0.233	2.489		0.85	1	64.517			
			C	0.233	2.489		0.85	1	64.517			
T3	7.50	12.69	A	0.24	2.467	8	0.85	1	74.709	2.95	147.70	C
162.30-142.30			B	0.24	2.467		0.85	1	74.709			
			C	0.24	2.467		0.85	1	74.709			
T4	9.53	13.36	A	0.232	2.493	7	0.85	1	78.483	3.41	170.44	C
142.30-122.30			B	0.232	2.493		0.85	1	78.483			
			C	0.232	2.493		0.85	1	78.483			
T5	10.10	15.56	A	0.234	2.486	7	0.85	1	85.879	3.56	177.84	C
122.30-102.30			B	0.234	2.486		0.85	1	85.879			
			C	0.234	2.486		0.85	1	85.879			
T6	3.61	4.96	A	0.208	2.571	7	0.85	1	26.679	1.20	180.45	C
102.30-95.63			B	0.208	2.571		0.85	1	26.679			
			C	0.208	2.571		0.85	1	26.679			
T7	7.32	12.29	A	0.251	2.436	7	0.85	1	66.988	2.55	191.26	C
95.63-82.30			B	0.251	2.436		0.85	1	66.988			

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	0.251	2.436		0.85	1	66.988			
T8	3.69	5.42	A	0.2	2.594	7	0.85	1	27.644	1.20	180.36	C
82.30-75.63			B	0.2	2.594		0.85	1	27.644			
			C	0.2	2.594		0.85	1	27.644			
T9	7.34	13.44	A	0.242	2.463	6	0.85	1	69.033	2.49	186.44	C
75.63-62.30			B	0.242	2.463		0.85	1	69.033			
			C	0.242	2.463		0.85	1	69.033			
T10	3.65	5.61	A	0.203	2.587	6	0.85	1	29.840	1.16	174.05	C
62.30-55.63			B	0.203	2.587		0.85	1	29.840			
			C	0.203	2.587		0.85	1	29.840			
T11	7.17	14.55	A	0.247	2.448	6	0.85	1	75.619	2.37	177.91	C
55.63-42.30			B	0.247	2.448		0.85	1	75.619			
			C	0.247	2.448		0.85	1	75.619			
T12	3.52	5.99	A	0.196	2.611	6	0.85	1	30.642	1.06	158.60	C
42.30-35.63			B	0.196	2.611		0.85	1	30.642			
			C	0.196	2.611		0.85	1	30.642			
T13	6.84	15.81	A	0.237	2.478	5	0.85	1	77.101	2.11	158.31	C
35.63-22.30			B	0.237	2.478		0.85	1	77.101			
			C	0.237	2.478		0.85	1	77.101			
T14	3.29	6.80	A	0.195	2.614	5	0.85	1	32.372	1.01	151.22	C
22.30-15.63			B	0.195	2.614		0.85	1	32.372			
			C	0.195	2.614		0.85	1	32.372			
T15	3.37	16.28	A	0.236	2.481	5	0.85	1	81.984	1.61	121.11	C
15.63-2.30			B	0.236	2.481		0.85	1	81.984			
			C	0.236	2.481		0.85	1	81.984			
Sum Weight:	81.29	158.27						OTM	2622.06 kip-ft	29.29		

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	0.04	1.53	A	0.249	2.442	32	1	1	21.268	1.56	311.65	C
187.30-182.30			B	0.249	2.442		1	1	21.268			
			C	0.249	2.442		1	1	21.268			
T2	0.24	2.91	A	0.124	2.868	31	1	1	39.036	4.00	199.82	C
182.30-162.30			B	0.124	2.868		1	1	39.036			
			C	0.124	2.868		1	1	39.036			
T3	0.53	4.13	A	0.136	2.823	31	1	1	49.463	5.87	293.72	C
162.30-142.30			B	0.136	2.823		1	1	49.463			
			C	0.136	2.823		1	1	49.463			
T4	0.70	4.36	A	0.131	2.842	30	1	1	52.565	6.65	332.60	C
142.30-122.30			B	0.131	2.842		1	1	52.565			
			C	0.131	2.842		1	1	52.565			
T5	0.74	5.82	A	0.138	2.815	29	1	1	57.038	6.93	346.39	C
122.30-102.30			B	0.138	2.815		1	1	57.038			
			C	0.138	2.815		1	1	57.038			
T6	0.26	1.91	A	0.13	2.848	28	1	1	18.583	2.29	343.31	C
102.30-95.63			B	0.13	2.848		1	1	18.583			
			C	0.13	2.848		1	1	18.583			
T7	0.53	4.42	A	0.142	2.8	28	1	1	43.864	4.91	368.61	C
95.63-82.30			B	0.142	2.8		1	1	43.864			

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	0.142	2.8		1	1	43.864			
T8	0.27	2.29	A	0.126	2.863	27	1	1	19.472	2.28	341.74	C
82.30-75.63			B	0.126	2.863		1	1	19.472			
			C	0.126	2.863		1	1	19.472			
T9	0.53	5.01	A	0.138	2.818	26	1	1	45.686	4.82	361.36	C
75.63-62.30			B	0.138	2.818		1	1	45.686			
			C	0.138	2.818		1	1	45.686			
T10	0.27	2.31	A	0.132	2.839	25	1	1	21.292	2.24	336.47	C
62.30-55.63			B	0.132	2.839		1	1	21.292			
			C	0.132	2.839		1	1	21.292			
T11	0.53	5.42	A	0.149	2.776	24	1	1	51.946	4.78	358.89	C
55.63-42.30			B	0.149	2.776		1	1	51.946			
			C	0.149	2.776		1	1	51.946			
T12	0.27	2.68	A	0.128	2.853	23	1	1	22.199	2.09	313.84	C
42.30-35.63			B	0.128	2.853		1	1	22.199			
			C	0.128	2.853		1	1	22.199			
T13	0.53	6.80	A	0.145	2.791	22	1	1	53.979	4.37	327.58	C
35.63-22.30			B	0.145	2.791		1	1	53.979			
			C	0.145	2.791		1	1	53.979			
T14	0.27	3.51	A	0.133	2.834	22	1	1	23.987	2.07	310.64	C
22.30-15.63			B	0.133	2.834		1	1	23.987			
			C	0.133	2.834		1	1	23.987			
T15	0.29	7.62	A	0.155	2.753	22	1	1	60.911	4.06	304.47	C
15.63-2.30			B	0.155	2.753		1	1	60.911			
			C	0.155	2.753		1	1	60.911			
Sum Weight:	5.98	60.73						OTM	5219.98 kip-ft	58.93		

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	0.04	1.53	A	0.249	2.442	32	0.825	1	18.036	1.35	269.10	C
187.30-182.30			B	0.249	2.442		0.825	1	18.036			
			C	0.249	2.442		0.825	1	18.036			
T2	0.24	2.91	A	0.124	2.868	31	0.825	1	33.962	3.61	180.41	C
182.30-162.30			B	0.124	2.868		0.825	1	33.962			
			C	0.124	2.868		0.825	1	33.962			
T3	0.53	4.13	A	0.136	2.823	31	0.825	1	42.591	5.37	268.37	C
162.30-142.30			B	0.136	2.823		0.825	1	42.591			
			C	0.136	2.823		0.825	1	42.591			
T4	0.70	4.36	A	0.131	2.842	30	0.825	1	45.156	6.11	305.74	C
142.30-122.30			B	0.131	2.842		0.825	1	45.156			
			C	0.131	2.842		0.825	1	45.156			
T5	0.74	5.82	A	0.138	2.815	29	0.825	1	49.137	6.38	318.86	C
122.30-102.30			B	0.138	2.815		0.825	1	49.137			
			C	0.138	2.815		0.825	1	49.137			
T6	0.26	1.91	A	0.13	2.848	28	0.825	1	16.018	2.11	316.85	C
102.30-95.63			B	0.13	2.848		0.825	1	16.018			
			C	0.13	2.848		0.825	1	16.018			
T7	0.53	4.42	A	0.142	2.8	28	0.825	1	37.581	4.50	337.38	C
95.63-82.30			B	0.142	2.8		0.825	1	37.581			

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	0.142	2.8		0.825	1	37.581			
T8	0.27	2.29	A	0.126	2.863	27	0.825	1	16.748	2.10	314.74	C
82.30-75.63			B	0.126	2.863		0.825	1	16.748			
			C	0.126	2.863		0.825	1	16.748			
T9	0.53	5.01	A	0.138	2.818	26	0.825	1	39.077	4.40	330.02	C
75.63-62.30			B	0.138	2.818		0.825	1	39.077			
			C	0.138	2.818		0.825	1	39.077			
T10	0.27	2.31	A	0.132	2.839	25	0.825	1	18.424	2.07	310.01	C
62.30-55.63			B	0.132	2.839		0.825	1	18.424			
			C	0.132	2.839		0.825	1	18.424			
T11	0.53	5.42	A	0.149	2.776	24	0.825	1	44.606	4.36	327.14	C
55.63-42.30			B	0.149	2.776		0.825	1	44.606			
			C	0.149	2.776		0.825	1	44.606			
T12	0.27	2.68	A	0.128	2.853	23	0.825	1	19.169	1.92	288.35	C
42.30-35.63			B	0.128	2.853		0.825	1	19.169			
			C	0.128	2.853		0.825	1	19.169			
T13	0.53	6.80	A	0.145	2.791	22	0.825	1	46.274	3.97	297.83	C
35.63-22.30			B	0.145	2.791		0.825	1	46.274			
			C	0.145	2.791		0.825	1	46.274			
T14	0.27	3.51	A	0.133	2.834	22	0.825	1	20.809	1.90	285.45	C
22.30-15.63			B	0.133	2.834		0.825	1	20.809			
			C	0.133	2.834		0.825	1	20.809			
T15	0.29	7.62	A	0.155	2.753	22	0.825	1	52.344	3.61	271.08	C
15.63-2.30			B	0.155	2.753		0.825	1	52.344			
			C	0.155	2.753		0.825	1	52.344			
Sum Weight:	5.98	60.73						OTM	4761.60 kip-ft	53.76		

Tower Forces - Service - Wind 60 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	0.04	1.53	A	0.249	2.442	32	0.8	1	17.575	1.32	263.02	C
187.30-182.30			B	0.249	2.442		0.8	1	17.575			
			C	0.249	2.442		0.8	1	17.575			
T2	0.24	2.91	A	0.124	2.868	31	0.8	1	33.237	3.55	177.64	C
182.30-162.30			B	0.124	2.868		0.8	1	33.237			
			C	0.124	2.868		0.8	1	33.237			
T3	0.53	4.13	A	0.136	2.823	31	0.8	1	41.609	5.29	264.75	C
162.30-142.30			B	0.136	2.823		0.8	1	41.609			
			C	0.136	2.823		0.8	1	41.609			
T4	0.70	4.36	A	0.131	2.842	30	0.8	1	44.097	6.04	301.91	C
142.30-122.30			B	0.131	2.842		0.8	1	44.097			
			C	0.131	2.842		0.8	1	44.097			
T5	0.74	5.82	A	0.138	2.815	29	0.8	1	48.008	6.30	314.93	C
122.30-102.30			B	0.138	2.815		0.8	1	48.008			
			C	0.138	2.815		0.8	1	48.008			
T6	0.26	1.91	A	0.13	2.848	28	0.8	1	15.651	2.09	313.06	C
102.30-95.63			B	0.13	2.848		0.8	1	15.651			
			C	0.13	2.848		0.8	1	15.651			
T7	0.53	4.42	A	0.142	2.8	28	0.8	1	36.684	4.44	332.91	C
95.63-82.30			B	0.142	2.8		0.8	1	36.684			

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	0.142	2.8		0.8	1	36.684			
T8	0.27	2.29	A	0.126	2.863	27	0.8	1	16.359	2.07	310.88	C
82.30-75.63			B	0.126	2.863		0.8	1	16.359			
			C	0.126	2.863		0.8	1	16.359			
T9	0.53	5.01	A	0.138	2.818	26	0.8	1	38.132	4.34	325.54	C
75.63-62.30			B	0.138	2.818		0.8	1	38.132			
			C	0.138	2.818		0.8	1	38.132			
T10	0.27	2.31	A	0.132	2.839	25	0.8	1	18.015	2.04	306.23	C
62.30-55.63			B	0.132	2.839		0.8	1	18.015			
			C	0.132	2.839		0.8	1	18.015			
T11	0.53	5.42	A	0.149	2.776	24	0.8	1	43.557	4.30	322.61	C
55.63-42.30			B	0.149	2.776		0.8	1	43.557			
			C	0.149	2.776		0.8	1	43.557			
T12	0.27	2.68	A	0.128	2.853	23	0.8	1	18.736	1.90	284.71	C
42.30-35.63			B	0.128	2.853		0.8	1	18.736			
			C	0.128	2.853		0.8	1	18.736			
T13	0.53	6.80	A	0.145	2.791	22	0.8	1	45.174	3.91	293.58	C
35.63-22.30			B	0.145	2.791		0.8	1	45.174			
			C	0.145	2.791		0.8	1	45.174			
T14	0.27	3.51	A	0.133	2.834	22	0.8	1	20.355	1.88	281.85	C
22.30-15.63			B	0.133	2.834		0.8	1	20.355			
			C	0.133	2.834		0.8	1	20.355			
T15	0.29	7.62	A	0.155	2.753	22	0.8	1	51.120	3.55	266.31	C
15.63-2.30			B	0.155	2.753		0.8	1	51.120			
			C	0.155	2.753		0.8	1	51.120			
Sum Weight:	5.98	60.73						OTM	4696.11 kip-ft	53.02		

Tower Forces - Service - Wind 90 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	0.04	1.53	A	0.249	2.442	32	0.85	1	18.498	1.38	275.18	C
187.30-182.30			B	0.249	2.442		0.85	1	18.498			
			C	0.249	2.442		0.85	1	18.498			
T2	0.24	2.91	A	0.124	2.868	31	0.85	1	34.687	3.66	183.18	C
182.30-162.30			B	0.124	2.868		0.85	1	34.687			
			C	0.124	2.868		0.85	1	34.687			
T3	0.53	4.13	A	0.136	2.823	31	0.85	1	43.573	5.44	271.99	C
162.30-142.30			B	0.136	2.823		0.85	1	43.573			
			C	0.136	2.823		0.85	1	43.573			
T4	0.70	4.36	A	0.131	2.842	30	0.85	1	46.214	6.19	309.58	C
142.30-122.30			B	0.131	2.842		0.85	1	46.214			
			C	0.131	2.842		0.85	1	46.214			
T5	0.74	5.82	A	0.138	2.815	29	0.85	1	50.266	6.46	322.79	C
122.30-102.30			B	0.138	2.815		0.85	1	50.266			
			C	0.138	2.815		0.85	1	50.266			
T6	0.26	1.91	A	0.13	2.848	28	0.85	1	16.384	2.14	320.63	C
102.30-95.63			B	0.13	2.848		0.85	1	16.384			
			C	0.13	2.848		0.85	1	16.384			
T7	0.53	4.42	A	0.142	2.8	28	0.85	1	38.479	4.56	341.84	C
95.63-82.30			B	0.142	2.8		0.85	1	38.479			

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	0.142	2.8		0.85	1	38.479			
T8	0.27	2.29	A	0.126	2.863	27	0.85	1	17.137	2.13	318.60	C
82.30-75.63			B	0.126	2.863		0.85	1	17.137			
			C	0.126	2.863		0.85	1	17.137			
T9	0.53	5.01	A	0.138	2.818	26	0.85	1	40.021	4.46	334.49	C
75.63-62.30			B	0.138	2.818		0.85	1	40.021			
			C	0.138	2.818		0.85	1	40.021			
T10	0.27	2.31	A	0.132	2.839	25	0.85	1	18.834	2.09	313.79	C
62.30-55.63			B	0.132	2.839		0.85	1	18.834			
			C	0.132	2.839		0.85	1	18.834			
T11	0.53	5.42	A	0.149	2.776	24	0.85	1	45.655	4.42	331.68	C
55.63-42.30			B	0.149	2.776		0.85	1	45.655			
			C	0.149	2.776		0.85	1	45.655			
T12	0.27	2.68	A	0.128	2.853	23	0.85	1	19.601	1.95	291.99	C
42.30-35.63			B	0.128	2.853		0.85	1	19.601			
			C	0.128	2.853		0.85	1	19.601			
T13	0.53	6.80	A	0.145	2.791	22	0.85	1	47.375	4.03	302.08	C
35.63-22.30			B	0.145	2.791		0.85	1	47.375			
			C	0.145	2.791		0.85	1	47.375			
T14	0.27	3.51	A	0.133	2.834	22	0.85	1	21.263	1.93	289.05	C
22.30-15.63			B	0.133	2.834		0.85	1	21.263			
			C	0.133	2.834		0.85	1	21.263			
T15	0.29	7.62	A	0.155	2.753	22	0.85	1	53.568	3.68	275.85	C
15.63-2.30			B	0.155	2.753		0.85	1	53.568			
			C	0.155	2.753		0.85	1	53.568			
Sum Weight:	5.98	60.73						OTM	4827.08 kip-ft	54.50		

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	19.42					
Bracing Weight	41.31					
Total Member Self-Weight	60.73			-14.56	24.07	
Total Weight	82.62			-14.56	24.07	
Wind 0 deg - No Ice		-8.54	-141.98	-15445.32	1187.46	-155.78
Wind 30 deg - No Ice		66.08	-109.63	-11793.79	-7218.71	-149.16
Wind 45 deg - No Ice		93.53	-87.56	-9399.52	-10238.96	-133.28
Wind 60 deg - No Ice		111.37	-63.07	-6873.37	-12119.03	-104.48
Wind 90 deg - No Ice		131.29	-2.04	-359.58	-14222.77	-38.31
Wind 120 deg - No Ice		123.04	70.70	7652.60	-13324.06	16.40
Wind 135 deg - No Ice		96.40	96.62	10491.76	-10416.06	47.91
Wind 150 deg - No Ice		64.02	114.96	12548.98	-6823.28	67.32
Wind 180 deg - No Ice		1.27	128.32	13994.66	-139.67	124.26
Wind 210 deg - No Ice		-61.68	112.07	12162.20	6567.59	153.56
Wind 225 deg - No Ice		-95.57	87.70	9447.69	10532.96	133.24
Wind 240 deg - No Ice		-126.90	63.06	6621.30	13912.70	139.39
Wind 270 deg - No Ice		-134.26	-7.88	-1141.85	14679.52	84.84
Wind 300 deg - No Ice		-116.16	-67.30	-7436.34	12814.78	-19.77
Wind 315 deg - No Ice		-98.83	-91.67	-9949.96	11002.23	-74.91
Wind 330 deg - No Ice		-73.96	-112.76	-12213.03	8331.66	-118.27

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
Member Ice	97.54					
Total Weight Ice	294.25			-173.81	240.94	
Wind 0 deg - Ice		-1.39	-40.74	-4498.95	430.69	-52.08
Wind 30 deg - Ice		19.65	-33.32	-3681.13	-1849.63	-63.60
Wind 45 deg - Ice		27.84	-26.91	-3001.32	-2722.87	-63.44
Wind 60 deg - Ice		33.63	-19.22	-2209.12	-3324.82	-58.35
Wind 90 deg - Ice		39.21	-0.30	-225.24	-3907.80	-38.50
Wind 120 deg - Ice		35.28	20.36	1985.09	-3498.42	-11.82
Wind 135 deg - Ice		28.24	28.31	2830.24	-2747.13	4.02
Wind 150 deg - Ice		19.37	34.22	3463.89	-1792.56	18.14
Wind 180 deg - Ice		0.23	38.85	3951.25	210.75	47.05
Wind 210 deg - Ice		-18.94	33.72	3398.10	2218.93	64.26
Wind 225 deg - Ice		-28.16	26.94	2667.28	3243.68	63.39
Wind 240 deg - Ice		-35.86	19.09	1813.46	4062.52	63.90
Wind 270 deg - Ice		-39.68	-1.29	-358.21	4454.90	45.92
Wind 300 deg - Ice		-34.43	-19.95	-2306.00	3914.12	11.29
Wind 315 deg - Ice		-28.73	-27.61	-3094.91	3324.62	-8.28
Wind 330 deg - Ice		-20.96	-33.85	-3752.10	2508.49	-26.23
Total Weight	82.62			-14.56	24.07	
Wind 0 deg - Service		-5.15	-86.06	-9369.66	697.04	-93.56
Wind 30 deg - Service		40.07	-66.49	-7158.27	-4404.24	-89.53
Wind 45 deg - Service		56.71	-53.11	-5704.41	-6238.56	-79.98
Wind 60 deg - Service		67.54	-38.25	-4168.32	-7382.05	-62.66
Wind 90 deg - Service		79.61	-1.23	-209.31	-8659.18	-22.93
Wind 120 deg - Service		74.58	42.85	4654.15	-8109.41	9.83
Wind 135 deg - Service		58.45	58.58	6379.17	-6345.47	28.73
Wind 150 deg - Service		38.83	69.71	7629.58	-4165.55	40.33
Wind 180 deg - Service		0.76	77.82	8509.51	-104.03	74.53
Wind 210 deg - Service		-37.41	67.96	7396.12	3971.77	92.19
Wind 225 deg - Service		-57.94	53.19	5748.96	6376.58	79.95
Wind 240 deg - Service		-76.91	38.25	4031.65	8425.28	83.73
Wind 270 deg - Service		-81.40	-4.76	-681.49	8895.43	51.02
Wind 300 deg - Service		-70.43	-40.81	-4508.14	7762.56	-11.87
Wind 315 deg - Service		-59.91	-55.59	-6036.66	6659.83	-45.02
Wind 330 deg - Service		-44.82	-68.38	-7411.32	5036.58	-71.08

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 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

Comb. No.	Description
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
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	187.3 - 182.3	Leg	Max Tension	29	0.51	0.00	0.00
			Max. Compression	46	-5.20	0.19	0.05
			Max. Mx	16	-0.15	2.34	0.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	12	-1.13	-0.98	2.86
			Max. Vy	28	1.49	-1.86	0.01
			Max. Vx	2	-1.52	-0.69	1.51
		Diagonal	Max Tension	18	2.20	0.00	0.00
			Max. Compression	12	-2.17	0.00	0.00
			Max. Mx	43	-0.73	0.30	-0.03
			Max. My	35	0.67	0.28	0.04
			Max. Vy	44	0.15	0.29	-0.03
			Max. Vx	35	0.01	0.00	0.00
		Top Girt	Max Tension	3	0.17	0.00	0.00
			Max. Compression	48	-0.87	0.00	0.00
			Max. Mx	34	-0.76	-1.60	0.00
			Max. My	46	-0.81	0.00	0.05
			Max. Vy	34	0.35	0.00	0.00
			Max. Vx	46	-0.01	0.00	0.00
T2	182.3 - 162.3	Leg	Max Tension	29	13.55	-1.44	0.06
			Max. Compression	35	-21.69	0.32	0.04
			Max. Mx	18	10.61	-2.63	-0.12
			Max. My	26	-7.37	-0.16	-2.42
			Max. Vy	18	2.59	-2.63	-0.12
			Max. Vx	26	2.56	-0.16	-2.42
		Diagonal	Max Tension	16	7.48	0.00	0.00
			Max. Compression	2	-8.15	0.00	0.00
			Max. Mx	36	1.38	0.44	-0.05
			Max. My	46	0.25	0.40	-0.06
			Max. Vy	50	0.19	0.44	0.06
			Max. Vx	46	-0.01	0.00	0.00
T3	162.3 - 142.3	Leg	Max Tension	29	44.11	-1.49	-0.01
			Max. Compression	2	-59.45	1.53	0.31
			Max. Mx	8	21.74	3.37	0.31
			Max. My	10	-6.71	-0.16	-3.28
			Max. Vy	18	1.83	-1.49	-0.13
			Max. Vx	16	1.90	-0.04	-1.76
		Diagonal	Max Tension	4	14.59	0.00	0.00
			Max. Compression	14	-14.58	0.00	0.00
			Max. Mx	48	3.10	0.64	0.08
			Max. My	46	0.49	0.62	-0.09
			Max. Vy	48	0.26	0.64	0.08
			Max. Vx	46	-0.01	0.00	0.00
T4	142.3 - 122.3	Leg	Max Tension	29	88.05	-2.95	0.32
			Max. Compression	2	-111.67	0.82	-0.84
			Max. Mx	29	88.05	-2.95	0.32
			Max. My	32	-20.30	0.38	2.67
			Max. Vy	8	-1.85	-1.72	-0.05
			Max. Vx	32	1.89	0.05	1.81
		Diagonal	Max Tension	26	19.84	0.00	0.00
			Max. Compression	10	-19.63	0.00	0.00
			Max. Mx	49	3.62	0.75	-0.09
			Max. My	50	-2.18	0.70	0.10
			Max. Vy	49	0.28	0.75	-0.09
			Max. Vx	50	0.01	0.00	0.00
T5	122.3 - 102.3	Leg	Max Tension	29	140.97	-1.16	0.02
			Max. Compression	2	-171.11	-0.58	0.14
			Max. Mx	2	-170.41	2.00	0.29
			Max. My	32	-27.63	-0.50	4.14
			Max. Vy	12	0.66	1.99	0.04
			Max. Vx	32	-0.89	-0.50	4.14
		Diagonal	Max Tension	20	22.53	0.00	0.00
			Max. Compression	20	-22.20	0.00	0.00
			Max. Mx	35	3.29	0.91	0.11
			Max. My	37	-4.95	0.82	0.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	50	0.32	0.90	-0.11
			Max. Vx	38	0.02	0.00	0.00
T6	102.3 - 95.63	Leg	Max Tension	29	171.43	-0.32	-0.03
			Max. Compression	2	-204.48	1.49	-0.04
			Max. Mx	35	-104.91	-1.62	-0.02
			Max. My	32	-30.93	-0.50	4.14
			Max. Vy	2	-0.48	1.49	-0.04
			Max. Vx	16	-0.76	-0.50	-4.11
		Diagonal	Max Tension	26	25.38	0.00	0.00
			Max. Compression	2	-26.07	0.00	0.00
			Max. Mx	50	6.99	-1.15	0.00
			Max. My	46	2.13	0.00	0.04
			Max. Vy	50	-0.31	0.00	0.00
			Max. Vx	46	-0.01	0.00	0.00
T7	95.63 - 82.3	Leg	Max Tension	29	169.55	-1.26	-0.01
			Max. Compression	2	-204.19	-5.61	-0.11
			Max. Mx	2	-204.19	-5.61	-0.11
			Max. My	26	-32.69	-1.21	-3.20
			Max. Vy	2	1.86	5.27	0.02
			Max. Vx	24	0.97	1.20	-3.16
		Diagonal	Max Tension	21	31.47	0.42	0.01
			Max. Compression	2	-32.99	0.00	0.00
			Max. Mx	30	27.53	0.60	-0.02
			Max. My	44	-11.22	0.08	-0.13
			Max. Vy	48	0.19	0.33	-0.07
			Max. Vx	44	-0.02	0.00	0.00
		Horizontal	Max Tension	25	1.02	0.20	-0.01
			Max. Compression	6	-1.17	0.23	-0.01
			Max. Mx	48	0.04	0.74	-0.02
			Max. My	40	-0.24	0.72	-0.02
			Max. Vy	48	-0.26	0.74	-0.02
			Max. Vx	35	0.01	0.72	-0.02
		Redund Horz 1 Bracing	Max Tension	24	1.65	0.00	0.00
			Max. Compression	11	-1.45	0.00	0.00
			Max. Mx	46	0.22	-0.13	0.00
			Max. My	47	0.68	0.00	0.00
			Max. Vy	46	-0.08	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	10	1.28	0.00	0.00
			Max. Compression	25	-1.03	0.00	0.00
			Max. Mx	50	0.04	-0.17	0.00
			Max. My	46	0.42	0.00	0.01
			Max. Vy	50	0.07	0.00	0.00
			Max. Vx	46	-0.00	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	48	-0.05	0.00	0.00
			Max. Mx	34	-0.04	-0.53	0.00
			Max. My	35	-0.04	0.00	-0.00
			Max. Vy	34	-0.15	0.00	0.00
			Max. Vx	35	0.00	0.00	0.00
T8	82.3 - 75.63	Leg	Max Tension	29	228.66	3.95	-0.06
			Max. Compression	2	-269.67	3.48	0.17
			Max. Mx	2	-269.28	-5.61	-0.11
			Max. My	26	-40.21	-1.21	-3.20
			Max. Vy	2	-1.49	3.48	0.17
			Max. Vx	2	0.48	1.23	3.17
		Diagonal	Max Tension	20	27.54	0.00	0.00
			Max. Compression	21	-26.87	0.00	0.00
			Max. Mx	50	8.43	-1.30	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	46	2.35	0.00	0.04
			Max. Vy	50	0.32	0.00	0.00
			Max. Vx	46	-0.01	0.00	0.00
T9	75.63 - 62.3	Leg	Max Tension	29	227.06	-2.97	0.03
			Max. Compression	2	-269.65	-6.83	-0.16
			Max. Mx	2	-269.65	-6.83	-0.16
			Max. My	32	-40.73	-1.55	5.86
			Max. Vy	12	1.95	4.73	0.04
			Max. Vx	32	-1.50	-1.55	5.86
		Diagonal	Max Tension	21	33.74	0.00	0.00
			Max. Compression	20	-34.62	0.00	0.00
			Max. Mx	20	15.82	0.41	-0.03
			Max. My	44	-11.73	0.26	-0.11
			Max. Vy	49	0.21	0.39	-0.09
			Max. Vx	37	0.02	0.00	0.00
		Horizontal	Max Tension	3	1.43	0.21	-0.01
			Max. Compression	18	-1.52	0.26	-0.01
			Max. Mx	48	0.22	0.82	-0.02
			Max. My	40	-0.25	0.82	-0.02
			Max. Vy	48	-0.27	0.82	-0.02
			Max. Vx	35	0.01	0.81	-0.02
		Redund Horz 1 Bracing	Max Tension	28	1.97	0.00	0.00
			Max. Compression	3	-1.86	0.00	0.00
			Max. Mx	34	0.47	-0.15	0.00
			Max. My	46	0.72	0.00	0.00
			Max. Vy	34	0.08	0.00	0.00
			Max. Vx	46	0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	1.46	0.00	0.00
			Max. Compression	29	-1.17	0.00	0.00
			Max. Mx	50	0.31	-0.19	0.00
			Max. My	46	0.69	0.00	0.01
			Max. Vy	50	0.08	0.00	0.00
			Max. Vx	46	0.00	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	48	-0.05	0.00	0.00
			Max. Mx	34	-0.04	-0.60	0.00
			Max. My	35	-0.04	0.00	-0.00
			Max. Vy	34	0.16	0.00	0.00
			Max. Vx	35	0.00	0.00	0.00
T10	62.3 - 55.63	Leg	Max Tension	29	284.49	4.52	0.03
			Max. Compression	2	-333.38	5.20	0.13
			Max. Mx	2	-333.01	-6.83	-0.16
			Max. My	32	-46.72	-1.55	5.86
			Max. Vy	2	-1.94	5.20	0.13
			Max. Vx	32	0.69	-1.55	5.86
		Diagonal	Max Tension	20	29.57	0.00	0.00
			Max. Compression	21	-29.21	0.00	0.00
			Max. Mx	50	8.87	-1.44	0.00
			Max. My	46	2.62	0.00	0.05
			Max. Vy	50	0.34	0.00	0.00
			Max. Vx	46	-0.01	0.00	0.00
T11	55.63 - 42.3	Leg	Max Tension	29	282.25	-4.46	0.03
			Max. Compression	2	-332.69	-10.62	-0.09
			Max. Mx	2	-332.69	-10.62	-0.09
			Max. My	32	-47.99	-2.09	5.43
			Max. Vy	2	3.08	9.05	-0.30
			Max. Vx	32	-1.57	-2.09	5.43
		Diagonal	Max Tension	21	36.21	0.34	0.02
			Max. Compression	20	-37.69	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	30	29.99	0.51	-0.03
			Max. My	35	-12.01	0.23	0.13
			Max. Vy	49	0.22	0.45	-0.09
			Max. Vx	35	0.02	0.00	0.00
		Horizontal	Max Tension	3	1.85	0.33	-0.01
			Max. Compression	19	-1.99	0.27	-0.01
			Max. Mx	48	0.44	1.10	-0.03
			Max. My	48	0.41	1.10	-0.03
			Max. Vy	48	-0.34	1.10	-0.03
			Max. Vx	35	0.01	1.07	-0.03
		Redund Horz 1 Bracing	Max Tension	28	2.74	0.00	0.00
			Max. Compression	3	-2.56	0.00	0.00
			Max. Mx	39	1.76	-0.18	0.00
			Max. My	47	1.33	0.00	0.01
			Max. Vy	39	0.09	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	1.89	0.00	0.00
			Max. Compression	29	-1.60	0.00	0.00
			Max. Mx	50	-0.20	-0.22	0.00
			Max. My	46	0.39	0.00	0.01
			Max. Vy	50	0.09	0.00	0.00
			Max. Vx	46	-0.00	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	36	-0.05	0.00	0.00
			Max. Mx	34	-0.05	-0.75	0.00
			Max. My	35	-0.05	0.00	-0.00
			Max. Vy	34	0.19	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
T12	42.3 - 35.63	Leg	Max Tension	29	341.60	7.59	0.04
			Max. Compression	2	-399.69	8.02	0.32
			Max. Mx	2	-399.21	-10.62	-0.09
			Max. My	32	-54.22	-2.09	5.43
			Max. Vy	2	-2.92	8.02	0.32
			Max. Vx	2	0.46	2.49	5.32
		Diagonal	Max Tension	20	31.29	0.00	0.00
			Max. Compression	21	-30.65	0.00	0.00
			Max. Mx	50	8.88	-1.58	0.00
			Max. My	46	2.03	0.00	0.05
			Max. Vy	50	0.35	0.00	0.00
			Max. Vx	46	0.01	0.00	0.00
T13	35.63 - 22.3	Leg	Max Tension	29	339.18	-6.85	0.05
			Max. Compression	2	-399.18	-14.41	-0.39
			Max. Mx	2	-399.18	-14.41	-0.39
			Max. My	32	-55.87	-3.09	9.80
			Max. Vy	2	3.75	9.84	-0.35
			Max. Vx	32	-2.18	-3.09	9.80
		Diagonal	Max Tension	21	38.12	0.00	0.00
			Max. Compression	20	-39.59	0.00	0.00
			Max. Mx	28	32.23	0.60	0.04
			Max. My	46	-13.79	0.32	-0.14
			Max. Vy	49	0.26	0.54	-0.11
			Max. Vx	46	-0.02	0.00	0.00
		Horizontal	Max Tension	3	2.60	0.35	-0.01
			Max. Compression	30	-2.70	0.42	-0.01
			Max. Mx	48	0.64	1.26	-0.04
			Max. My	48	0.62	1.26	-0.04
			Max. Vy	48	-0.36	1.26	-0.04
			Max. Vx	46	0.01	1.24	-0.04
		Redund Horz 1	Max Tension	28	3.59	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
		Bracing					
			Max. Compression	3	-3.30	0.00	0.00
			Max. Mx	44	-0.80	-0.19	0.00
			Max. My	38	-0.39	0.00	0.01
			Max. Vy	44	0.09	0.00	0.00
			Max. Vx	38	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	2.38	0.00	0.00
			Max. Compression	29	-2.01	0.00	0.00
			Max. Mx	50	0.68	-0.23	0.00
			Max. My	46	1.35	0.00	0.01
			Max. Vy	50	0.09	0.00	0.00
			Max. Vx	46	0.00	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	46	-0.05	0.00	0.00
			Max. Mx	34	-0.05	-0.82	0.00
			Max. My	35	-0.05	0.00	-0.00
			Max. Vy	34	0.19	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
T14	22.3 - 15.63	Leg	Max Tension	29	397.17	9.79	0.03
			Max. Compression	2	-465.89	10.05	0.21
			Max. Mx	2	-465.32	-14.41	-0.39
			Max. My	32	-61.85	-3.09	9.80
			Max. Vy	2	-3.80	10.05	0.21
			Max. Vx	32	0.94	-3.09	9.80
		Diagonal	Max Tension	20	32.92	0.00	0.00
			Max. Compression	21	-32.44	0.00	0.00
			Max. Mx	35	9.02	-1.92	0.00
			Max. My	45	1.44	0.00	0.06
			Max. Vy	35	0.41	0.00	0.00
			Max. Vx	45	-0.01	0.00	0.00
T15	15.63 - 2.3	Leg	Max Tension	29	395.27	-8.34	0.05
			Max. Compression	2	-466.71	-0.00	0.00
			Max. Mx	2	-466.17	10.97	-0.59
			Max. My	32	-63.50	2.10	-5.22
			Max. Vy	2	1.79	10.97	-0.59
			Max. Vx	32	1.65	1.19	4.72
		Diagonal	Max Tension	21	39.63	0.00	0.00
			Max. Compression	20	-41.13	0.00	0.00
			Max. Mx	6	24.95	0.58	0.04
			Max. My	44	-13.79	0.40	-0.15
			Max. Vy	49	0.26	0.55	-0.11
			Max. Vx	44	-0.02	0.00	0.00
		Horizontal	Max Tension	3	2.52	0.41	-0.01
			Max. Compression	28	-2.67	0.47	-0.01
			Max. Mx	48	-0.31	1.16	-0.03
			Max. My	39	-1.29	1.13	-0.03
			Max. Vy	48	-0.34	1.16	-0.03
			Max. Vx	39	0.01	1.13	-0.03
		Redund Horz 1 Bracing	Max Tension	30	2.21	0.00	0.00
			Max. Compression	3	-2.24	0.00	0.00
			Max. Mx	44	0.37	-0.24	0.00
			Max. My	36	0.39	0.00	0.01
			Max. Vy	44	0.11	0.00	0.00
			Max. Vx	36	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	2	1.77	0.00	0.00
			Max. Compression	31	-1.13	0.00	0.00
			Max. Mx	35	0.33	-0.28	0.00
			Max. My	46	0.85	0.00	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Inner Bracing	Max. Vy	35	0.10	0.00	0.00
			Max. Vx	46	-0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	47	-0.05	0.00	0.00
			Max. Mx	34	-0.05	-0.83	0.00
			Max. My	48	-0.05	0.00	0.00
			Max. Vy	34	0.19	0.00	0.00
			Max. Vx	48	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	24	508.59	69.67	-41.76
	Max. H_x	24	508.59	69.67	-41.76
	Max. H_z	7	-395.03	-54.94	38.12
	Min. Vert	9	-406.35	-58.50	35.54
	Min. H_x	9	-406.35	-58.50	35.54
	Min. H_z	24	508.59	69.67	-41.76
Leg B	Max. Vert	12	508.51	-70.68	-40.48
	Max. H_x	29	-433.84	62.54	35.77
	Max. H_z	31	-424.16	59.85	37.27
	Min. Vert	29	-433.84	62.54	35.77
	Min. H_x	12	508.51	-70.68	-40.48
	Min. H_z	14	474.48	-64.10	-40.78
Leg A	Max. Vert	2	511.28	-1.62	81.54
	Max. H_x	25	-179.81	16.65	-32.32
	Max. H_z	2	511.28	-1.62	81.54
	Min. Vert	19	-408.31	1.82	-68.63
	Min. H_x	10	44.39	-15.60	4.43
	Min. H_z	19	-408.31	1.82	-68.63

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	82.62	0.00	0.00	-14.56	24.08	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	99.15	-8.54	-141.98	-15323.86	1194.56	-155.84
0.9 Dead+1.0 Wind 0 deg - No Ice	74.36	-8.54	-141.98	-15313.15	1186.81	-155.82
1.2 Dead+1.0 Wind 30 deg - No Ice	99.15	66.08	-109.63	-11695.49	-7156.00	-149.29
0.9 Dead+1.0 Wind 30 deg - No Ice	74.36	66.08	-109.63	-11686.29	-7160.26	-149.25
1.2 Dead+1.0 Wind 45 deg - No Ice	99.15	93.53	-87.56	-9320.65	-10153.65	-133.38
0.9 Dead+1.0 Wind 45 deg - No Ice	74.36	93.53	-87.56	-9312.44	-10156.67	-133.36
1.2 Dead+1.0 Wind 60 deg - No Ice	99.15	111.37	-63.07	-6819.78	-12016.44	-104.57

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
0.9 Dead+1.0 Wind 60 deg - No Ice	74.36	111.37	-63.07	-6812.58	-12018.70	-104.55
1.2 Dead+1.0 Wind 90 deg - No Ice	99.15	131.29	-2.04	-363.25	-14101.97	-38.35
0.9 Dead+1.0 Wind 90 deg - No Ice	74.36	131.29	-2.04	-358.69	-14103.38	-38.34
1.2 Dead+1.0 Wind 120 deg - No Ice	99.15	123.04	70.70	7587.41	-13211.40	16.37
0.9 Dead+1.0 Wind 120 deg - No Ice	74.36	123.04	70.70	7588.65	-13213.18	16.37
1.2 Dead+1.0 Wind 135 deg - No Ice	99.15	96.40	96.62	10403.95	-10326.07	47.92
0.9 Dead+1.0 Wind 135 deg - No Ice	74.36	96.40	96.62	10404.02	-10329.04	47.91
1.2 Dead+1.0 Wind 150 deg - No Ice	99.15	64.03	114.96	12446.12	-6759.83	67.36
0.9 Dead+1.0 Wind 150 deg - No Ice	74.36	64.03	114.96	12445.36	-6764.33	67.33
1.2 Dead+1.0 Wind 180 deg - No Ice	99.15	1.27	128.32	13878.97	-134.94	124.34
0.9 Dead+1.0 Wind 180 deg - No Ice	74.36	1.27	128.32	13877.59	-142.11	124.32
1.2 Dead+1.0 Wind 210 deg - No Ice	99.15	-61.68	112.07	12058.60	6513.61	153.69
0.9 Dead+1.0 Wind 210 deg - No Ice	74.36	-61.68	112.07	12057.98	6503.72	153.66
1.2 Dead+1.0 Wind 225 deg - No Ice	99.15	-95.57	87.70	9362.90	10457.96	133.34
0.9 Dead+1.0 Wind 225 deg - No Ice	74.36	-95.57	87.70	9363.40	10446.40	133.31
1.2 Dead+1.0 Wind 240 deg - No Ice	99.15	-126.90	63.06	6554.13	13810.82	139.48
0.9 Dead+1.0 Wind 240 deg - No Ice	74.36	-126.90	63.06	6555.81	13797.88	139.45
1.2 Dead+1.0 Wind 270 deg - No Ice	99.15	-134.26	-7.88	-1146.93	14569.12	84.88
0.9 Dead+1.0 Wind 270 deg - No Ice	74.36	-134.26	-7.88	-1142.03	14555.91	84.84
1.2 Dead+1.0 Wind 300 deg - No Ice	99.15	-116.16	-67.30	-7383.58	12723.09	-19.77
0.9 Dead+1.0 Wind 300 deg - No Ice	74.36	-116.16	-67.30	-7376.14	12710.59	-19.77
1.2 Dead+1.0 Wind 315 deg - No Ice	99.15	-98.83	-91.67	-9871.81	10928.04	-74.92
0.9 Dead+1.0 Wind 315 deg - No Ice	74.36	-98.83	-91.67	-9863.37	10916.26	-74.91
1.2 Dead+1.0 Wind 330 deg - No Ice	99.15	-73.96	-112.76	-12115.18	8280.82	-118.27
0.9 Dead+1.0 Wind 330 deg - No Ice	74.36	-73.96	-112.76	-12105.81	8270.13	-118.26
1.2 Dead+1.0 Ice+1.0 Temp	310.77	-0.00	0.00	-177.67	246.88	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	310.77	-1.39	-40.74	-4474.65	437.73	-52.24
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	310.77	19.65	-33.32	-3660.60	-1829.91	-63.82
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	310.77	27.84	-26.91	-2985.27	-2697.68	-63.66
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	310.77	33.63	-19.22	-2199.27	-3295.15	-58.55
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	310.77	39.21	-0.30	-229.50	-3874.09	-38.64

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
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	310.77	35.28	20.36	1967.01	-3467.83	-11.86
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	310.77	28.24	28.31	2806.65	-2721.28	4.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	310.77	19.37	34.22	3436.31	-1772.41	18.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	310.77	0.23	38.85	3920.13	216.63	47.22
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	310.77	-18.94	33.72	3370.18	2210.57	64.49
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	310.77	-28.16	26.94	2643.54	3230.72	63.62
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	310.77	-35.86	19.09	1794.51	4044.52	64.11
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	310.77	-39.68	-1.29	-363.15	4433.59	46.05
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	310.77	-34.43	-19.95	-2296.64	3897.06	11.33
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	310.77	-28.73	-27.61	-3079.31	3312.09	-8.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	310.77	-20.96	-33.85	-3731.92	2501.75	-26.29
Dead+Wind 0 deg - Service	82.62	-5.15	-86.06	-9305.59	727.52	-93.61
Dead+Wind 30 deg - Service	82.62	40.07	-66.49	-7108.82	-4338.90	-89.60
Dead+Wind 45 deg - Service	82.62	56.71	-53.11	-5667.07	-6159.11	-80.03
Dead+Wind 60 deg - Service	82.62	67.54	-38.25	-4146.63	-7291.86	-62.71
Dead+Wind 90 deg - Service	82.62	79.61	-1.23	-223.20	-8557.67	-22.95
Dead+Wind 120 deg - Service	82.62	74.58	42.85	4601.79	-8012.85	9.82
Dead+Wind 135 deg - Service	82.62	58.45	58.58	6312.58	-6263.14	28.72
Dead+Wind 150 deg - Service	82.62	38.83	69.71	7553.76	-4099.86	40.34
Dead+Wind 180 deg - Service	82.62	0.76	77.82	8425.71	-74.82	74.58
Dead+Wind 210 deg - Service	82.62	-37.41	67.96	7319.93	3964.50	92.27
Dead+Wind 225 deg - Service	82.62	-57.94	53.19	5684.59	6356.00	80.00
Dead+Wind 240 deg - Service	82.62	-76.91	38.25	3978.25	8387.88	83.78
Dead+Wind 270 deg - Service	82.62	-81.40	-4.76	-696.07	8852.87	51.01
Dead+Wind 300 deg - Service	82.62	-70.43	-40.81	-4486.88	7731.56	-11.87
Dead+Wind 315 deg - Service	82.62	-59.91	-55.59	-5999.71	6639.65	-44.98
Dead+Wind 330 deg - Service	82.62	-44.82	-68.38	-7362.14	5030.89	-71.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-82.62	0.00	0.00	82.62	0.00	0.000%
2	-8.54	-99.15	-141.98	8.54	99.15	141.98	0.000%
3	-8.54	-74.36	-141.98	8.54	74.36	141.98	0.000%
4	66.08	-99.15	-109.63	-66.08	99.15	109.63	0.000%
5	66.08	-74.36	-109.63	-66.08	74.36	109.63	0.000%
6	93.53	-99.15	-87.56	-93.53	99.15	87.56	0.000%
7	93.53	-74.36	-87.56	-93.53	74.36	87.56	0.000%
8	111.37	-99.15	-63.07	-111.37	99.15	63.07	0.000%
9	111.37	-74.36	-63.07	-111.37	74.36	63.07	0.000%
10	131.29	-99.15	-2.04	-131.29	99.15	2.04	0.000%
11	131.29	-74.36	-2.04	-131.29	74.36	2.04	0.000%
12	123.04	-99.15	70.70	-123.04	99.15	-70.70	0.000%
13	123.04	-74.36	70.70	-123.04	74.36	-70.70	0.000%
14	96.40	-99.15	96.62	-96.40	99.15	-96.62	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
15	96.40	-74.36	96.62	-96.40	74.36	-96.62	0.000%
16	64.02	-99.15	114.96	-64.03	99.15	-114.96	0.000%
17	64.02	-74.36	114.96	-64.03	74.36	-114.96	0.000%
18	1.27	-99.15	128.32	-1.27	99.15	-128.32	0.000%
19	1.27	-74.36	128.32	-1.27	74.36	-128.32	0.000%
20	-61.68	-99.15	112.07	61.68	99.15	-112.07	0.000%
21	-61.68	-74.36	112.07	61.68	74.36	-112.07	0.000%
22	-95.57	-99.15	87.70	95.57	99.15	-87.70	0.000%
23	-95.57	-74.36	87.70	95.57	74.36	-87.70	0.000%
24	-126.90	-99.15	63.06	126.90	99.15	-63.06	0.000%
25	-126.90	-74.36	63.06	126.90	74.36	-63.06	0.000%
26	-134.26	-99.15	-7.88	134.26	99.15	7.88	0.000%
27	-134.26	-74.36	-7.88	134.26	74.36	7.88	0.000%
28	-116.16	-99.15	-67.30	116.16	99.15	67.30	0.000%
29	-116.16	-74.36	-67.30	116.16	74.36	67.30	0.000%
30	-98.83	-99.15	-91.67	98.83	99.15	91.67	0.000%
31	-98.83	-74.36	-91.67	98.83	74.36	91.67	0.000%
32	-73.96	-99.15	-112.76	73.96	99.15	112.76	0.000%
33	-73.96	-74.36	-112.76	73.96	74.36	112.76	0.000%
34	0.00	-310.77	0.00	0.00	310.77	0.00	0.000%
35	-1.39	-310.77	-40.74	1.39	310.77	40.74	0.000%
36	19.65	-310.77	-33.32	-19.65	310.77	33.32	0.000%
37	27.84	-310.77	-26.91	-27.84	310.77	26.91	0.000%
38	33.63	-310.77	-19.22	-33.63	310.77	19.22	0.000%
39	39.21	-310.77	-0.30	-39.21	310.77	0.30	0.000%
40	35.28	-310.77	20.36	-35.28	310.77	-20.36	0.000%
41	28.24	-310.77	28.31	-28.24	310.77	-28.31	0.000%
42	19.37	-310.77	34.22	-19.37	310.77	-34.22	0.000%
43	0.23	-310.77	38.85	-0.23	310.77	-38.85	0.000%
44	-18.94	-310.77	33.72	18.94	310.77	-33.72	0.000%
45	-28.16	-310.77	26.94	28.16	310.77	-26.94	0.000%
46	-35.86	-310.77	19.09	35.86	310.77	-19.09	0.000%
47	-39.68	-310.77	-1.29	39.68	310.77	1.29	0.000%
48	-34.43	-310.77	-19.95	34.43	310.77	19.95	0.000%
49	-28.73	-310.77	-27.61	28.73	310.77	27.61	0.000%
50	-20.96	-310.77	-33.85	20.96	310.77	33.85	0.000%
51	-5.15	-82.62	-86.06	5.15	82.62	86.06	0.000%
52	40.07	-82.62	-66.49	-40.07	82.62	66.49	0.000%
53	56.71	-82.62	-53.11	-56.71	82.62	53.11	0.000%
54	67.54	-82.62	-38.25	-67.54	82.62	38.25	0.000%
55	79.61	-82.62	-1.23	-79.61	82.62	1.23	0.000%
56	74.58	-82.62	42.85	-74.58	82.62	-42.85	0.000%
57	58.45	-82.62	58.58	-58.45	82.62	-58.58	0.000%
58	38.83	-82.62	69.71	-38.83	82.62	-69.71	0.000%
59	0.76	-82.62	77.82	-0.76	82.62	-77.82	0.000%
60	-37.41	-82.62	67.96	37.41	82.62	-67.96	0.000%
61	-57.94	-82.62	53.19	57.94	82.62	-53.19	0.000%
62	-76.91	-82.62	38.25	76.91	82.62	-38.25	0.000%
63	-81.40	-82.62	-4.76	81.40	82.62	4.76	0.001%
64	-70.43	-82.62	-40.81	70.43	82.62	40.81	0.000%
65	-59.91	-82.62	-55.59	59.91	82.62	55.59	0.002%
66	-44.82	-82.62	-68.38	44.82	82.62	68.38	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000342
3	Yes	4	0.00000001	0.00000260
4	Yes	4	0.00000001	0.00000322
5	Yes	4	0.00000001	0.00000242
6	Yes	4	0.00000001	0.00000287
7	Yes	4	0.00000001	0.00000214
8	Yes	4	0.00000001	0.00000256
9	Yes	4	0.00000001	0.00000192
10	Yes	4	0.00000001	0.00000307
11	Yes	4	0.00000001	0.00000231
12	Yes	4	0.00000001	0.00000342
13	Yes	4	0.00000001	0.00000260
14	Yes	4	0.00000001	0.00000319
15	Yes	4	0.00000001	0.00000241
16	Yes	4	0.00000001	0.00000298
17	Yes	4	0.00000001	0.00000222
18	Yes	4	0.00000001	0.00000258
19	Yes	4	0.00000001	0.00000192
20	Yes	4	0.00000001	0.00000326
21	Yes	4	0.00000001	0.00000245
22	Yes	4	0.00000001	0.00000314
23	Yes	4	0.00000001	0.00000238
24	Yes	4	0.00000001	0.00000337
25	Yes	4	0.00000001	0.00000257
26	Yes	4	0.00000001	0.00000295
27	Yes	4	0.00000001	0.00000220
28	Yes	4	0.00000001	0.00000294
29	Yes	4	0.00000001	0.00000219
30	Yes	4	0.00000001	0.00000291
31	Yes	4	0.00000001	0.00000217
32	Yes	4	0.00000001	0.00000284
33	Yes	4	0.00000001	0.00000213
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000103
52	Yes	4	0.00000001	0.00000098
53	Yes	4	0.00000001	0.00000088
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000094
56	Yes	4	0.00000001	0.00000104
57	Yes	4	0.00000001	0.00000098
58	Yes	4	0.00000001	0.00000091
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000100
61	Yes	4	0.00000001	0.00000095
62	Yes	4	0.00000001	0.00000102

63	Yes	4	0.00000001	0.00000174
64	Yes	4	0.00000001	0.00000091
65	Yes	4	0.00000001	0.00000291
66	Yes	4	0.00000001	0.00000087

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187.3 - 182.3	5.469	51	0.2124	0.0227
T2	182.3 - 162.3	5.242	51	0.2125	0.0223
T3	162.3 - 142.3	4.314	51	0.2093	0.0214
T4	142.3 - 122.3	3.399	51	0.1963	0.0200
T5	122.3 - 102.3	2.534	51	0.1708	0.0173
T6	102.3 - 95.63	1.770	51	0.1452	0.0140
T7	95.63 - 82.3	1.551	51	0.1343	0.0134
T8	82.3 - 75.63	1.181	51	0.1125	0.0116
T9	75.63 - 62.3	1.002	51	0.1037	0.0108
T10	62.3 - 55.63	0.696	51	0.0861	0.0087
T11	55.63 - 42.3	0.553	51	0.0751	0.0077
T12	42.3 - 35.63	0.337	51	0.0530	0.0055
T13	35.63 - 22.3	0.236	51	0.0439	0.0045
T14	22.3 - 15.63	0.106	51	0.0254	0.0027
T15	15.63 - 2.3	0.053	56	0.0170	0.0018

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.30	6'x4" Pipe Mount	51	5.469	0.2124	0.0227	105744
185.30	8' Dish	51	5.378	0.2125	0.0225	105744
184.30	20' Horz. 4x4x1/4"	51	5.333	0.2125	0.0225	105744
183.30	DB411-B	51	5.287	0.2125	0.0224	105744
179.30	4' Dish	51	5.104	0.2124	0.0221	105129
174.30	8' Dish	51	4.873	0.2120	0.0219	180771
173.30	13'x2" Pipe	51	4.827	0.2119	0.0219	210970
170.30	6'x2" Pipe Mount	51	4.687	0.2114	0.0217	366998
167.30	8' x 2" Horz. Pipe	51	4.547	0.2108	0.0216	Inf
163.30	80010966	51	4.361	0.2096	0.0214	278331
155.00	LNX-6514DS	51	3.976	0.2061	0.0210	158253
140.00	AIR6449	51	3.296	0.1938	0.0198	94311
137.30	6' Dish	51	3.176	0.1906	0.0195	81952
127.30	8' Dish	51	2.743	0.1774	0.0181	54605
111.30	6'x3" Pipe Mount	51	2.098	0.1573	0.0153	36204
110.30	6'x3" Pipe Mount	51	2.060	0.1560	0.0151	35474
105.30	Light Beacon	51	1.876	0.1495	0.0143	31985
102.30	8' Dish	51	1.770	0.1452	0.0140	27486
100.30	SC3-W100AB	51	1.702	0.1421	0.0138	23038
93.30	SC3-W100AB	51	1.481	0.1304	0.0131	20204
89.30	6'x3" Pipe Mount	51	1.369	0.1235	0.0126	39122
87.30	6'x3" Pipe Mount	51	1.315	0.1202	0.0123	77652
68.30	6'x3" Pipe Mount	51	0.828	0.0945	0.0097	53048

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187.3 - 182.3	8.997	2	0.3493	0.0381
T2	182.3 - 162.3	8.624	2	0.3493	0.0374
T3	162.3 - 142.3	7.098	2	0.3441	0.0358
T4	142.3 - 122.3	5.593	2	0.3228	0.0335
T5	122.3 - 102.3	4.170	2	0.2809	0.0289
T6	102.3 - 95.63	2.915	2	0.2388	0.0234
T7	95.63 - 82.3	2.553	2	0.2210	0.0223
T8	82.3 - 75.63	1.945	2	0.1851	0.0193
T9	75.63 - 62.3	1.651	2	0.1707	0.0180
T10	62.3 - 55.63	1.146	2	0.1417	0.0145
T11	55.63 - 42.3	0.911	2	0.1236	0.0129
T12	42.3 - 35.63	0.556	2	0.0873	0.0093
T13	35.63 - 22.3	0.389	2	0.0723	0.0074
T14	22.3 - 15.63	0.174	2	0.0418	0.0045
T15	15.63 - 2.3	0.087	3	0.0279	0.0030

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.30	6'x4" Pipe Mount	2	8.997	0.3493	0.0381	64731
185.30	8' Dish	2	8.848	0.3493	0.0378	64731
184.30	20' Horz. 4x4x1/4"	2	8.773	0.3493	0.0377	64731
183.30	DB411-B	2	8.698	0.3493	0.0376	64731
179.30	4' Dish	2	8.398	0.3492	0.0371	64360
174.30	8' Dish	2	8.017	0.3486	0.0367	110712
173.30	13'x2" Pipe	2	7.941	0.3483	0.0366	129084
170.30	6'x2" Pipe Mount	2	7.711	0.3476	0.0364	223787
167.30	8' x 2" Horz. Pipe	2	7.481	0.3465	0.0362	678733
163.30	80010966	2	7.174	0.3447	0.0359	172445
155.00	LNX-6514DS	2	6.543	0.3389	0.0351	97053
140.00	AIR6449	2	5.424	0.3187	0.0331	57411
137.30	6' Dish	2	5.227	0.3135	0.0326	49873
127.30	8' Dish	2	4.514	0.2918	0.0303	33213
111.30	6'x3" Pipe Mount	2	3.453	0.2587	0.0256	22079
110.30	6'x3" Pipe Mount	2	3.391	0.2567	0.0253	21638
105.30	Light Beacon	2	3.089	0.2459	0.0240	19524
102.30	8' Dish	2	2.915	0.2388	0.0234	16758
100.30	SC3-W100AB	2	2.802	0.2337	0.0230	14019
93.30	SC3-W100AB	2	2.439	0.2144	0.0219	12257
89.30	6'x3" Pipe Mount	2	2.254	0.2032	0.0210	23792
87.30	6'x3" Pipe Mount	2	2.165	0.1978	0.0205	47426
68.30	6'x3" Pipe Mount	2	1.364	0.1555	0.0161	32394

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	187.3	Leg	A325N	1.2500	6	0.29	87.22	0.003 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	2.20	12.62	0.174 ✔	1	Member Bearing
		Top Girt	A325N	0.7500	1	0.87	19.88	0.044 ✔	1	Bolt Shear
T2	182.3	Leg	A325N	1.2500	6	2.26	87.22	0.026 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	7.48	12.62	0.593 ✔	1	Member Bearing
T3	162.3	Leg	A325N	1.2500	6	7.35	87.22	0.084 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	1	14.59	15.77	0.925 ✔	1	Member Bearing
T4	142.3	Leg	A325N	1.2500	8	11.01	87.22	0.126 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	2	9.92	13.81	0.718 ✔	1	Bolt Shear
T5	122.3	Leg	A325N	1.5000	8	17.62	126.47	0.139 ✔	1	Bolt Tension
		Diagonal	A325N	0.7500	2	11.27	19.88	0.567 ✔	1	Bolt Shear
T6	102.3	Diagonal	A325N	1.0000	2	12.69	33.60	0.378 ✔	1	Member Bearing
T7	95.63	Leg	A325N	1.5000	8	21.15	126.47	0.167 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	2	16.50	35.34	0.467 ✔	1	Bolt Shear
		Horizontal	A325N	1.0000	2	1.77	28.00	0.063 ✔	1	Member Bearing
		Redund Horz 1 Bracing	A325N	1.0000	1	3.54	16.97	0.209 ✔	1	Member Bearing
		Redund Diag 1 Bracing	A325N	1.0000	1	2.40	16.97	0.141 ✔	1	Member Bearing
T8	82.3	Diagonal	A325N	0.8750	2	13.77	27.06	0.509 ✔	1	Bolt Shear
T9	75.63	Leg	A325N	1.5000	8	28.34	126.47	0.224 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	17.31	27.06	0.640 ✔	1	Bolt Shear
		Horizontal	A325N	0.8750	2	2.34	24.47	0.096 ✔	1	Member Bearing
		Redund Horz 1 Bracing	A325N	0.8750	1	4.68	14.79	0.316 ✔	1	Member Bearing
		Redund Diag 1 Bracing	A325N	0.8750	1	3.07	14.79	0.207 ✔	1	Member Bearing
T10	62.3	Diagonal	A325N	0.8750	2	14.78	27.06	0.546 ✔	1	Bolt Shear
T11	55.63	Leg	A325N	1.5000	8	35.23	126.47	0.279 ✔	1	Bolt Tension
		Diagonal	A325N	0.8750	2	18.84	27.06	0.696 ✔	1	Bolt Shear
		Horizontal	A325N	0.8750	2	2.88	24.47	0.118 ✔	1	Member Bearing
		Redund Horz 1 Bracing	A325N	0.8750	1	5.77	18.49	0.312 ✔	1	Member Bearing
		Redund Diag 1 Bracing	A325N	0.8750	1	3.68	18.49	0.199 ✔	1	Member Bearing
T12	42.3	Diagonal	A325N	1.0000	2	15.64	33.60	0.466 ✔	1	Member Bearing
T13	35.63	Leg	A325N	1.5000	8	42.34	126.47	0.335 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	2	19.79	35.34	0.560 ✔	1	Bolt Shear
		Horizontal	A325N	1.0000	2	3.46	28.00	0.124 ✔	1	Member Bearing
		Redund Horz 1 Bracing	A325N	1.0000	1	6.92	21.21	0.326 ✔	1	Member Bearing
		Redund Diag 1 Bracing	A325N	1.0000	1	4.31	21.21	0.203 ✔	1	Member Bearing
T14	22.3	Diagonal	A325N	1.0000	2	16.46	35.34	0.466 ✔	1	Bolt Shear
T15	15.63	Leg	F1554-105	1.7500	6	65.79	178.07	0.369 ✔	1	Bolt Tension

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
		Diagonal	A325N	1.0000	2	20.57	35.34	0.582 ✔	1	Bolt Shear
		Horizontal	A325N	1.0000	2	4.05	28.00	0.145 ✔	1	Member Bearing
		Redund Horz 1 Bracing	A325N	1.0000	1	8.09	21.21	0.382 ✔	1	Member Bearing
		Redund Diag 1 Bracing	A325N	1.0000	1	4.93	21.21	0.233 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	187.3 - 182.3	P6x.28	5.01	5.01	26.8 K=1.00	5.5813	-5.20	238.34	0.022 [1] ✔
T2	182.3 - 162.3	P6x.28	20.03	10.02	53.5 K=1.00	5.5813	-21.69	203.69	0.107 [1] ✔
T3	162.3 - 142.3	P6x.28	20.03	10.02	53.5 K=1.00	5.5813	-59.45	203.69	0.292 [1] ✔
T4	142.3 - 122.3	P6x.28	20.03	10.02	53.5 K=1.00	5.5813	-111.67	203.69	0.548 [1] ✔
T5	122.3 - 102.3	P8x.322	20.03	10.02	40.9 K=1.00	8.3993	-171.11	334.42	0.512 [1] ✔
T6	102.3 - 95.63	P8x.322	6.68	6.68	27.3 K=1.00	8.3993	-204.49	357.93	0.571 [1] ✔
T7	95.63 - 82.3	P8x.322	13.35	6.68	27.3 K=1.00	8.3993	-204.19	357.96	0.570 [1] ✔
T8	82.3 - 75.63	P8x.5	6.68	6.68	27.9 K=1.00	12.7627	-269.67	542.64	0.497 [1] ✔
T9	75.63 - 62.3	P8x.5	13.35	6.68	27.8 K=1.00	12.7627	-269.65	542.69	0.497 [1] ✔
T10	62.3 - 55.63	P10x.365	6.68	6.68	21.8 K=1.00	11.9083	-333.38	517.53	0.644 [1] ✔
T11	55.63 - 42.3	P10x.365	13.35	6.68	21.8 K=1.00	11.9083	-332.69	517.56	0.643 [1] ✔
T12	42.3 - 35.63	P10x.5	6.68	6.68	22.1 K=1.00	16.1007	-399.69	699.12	0.572 [1] ✔
T13	35.63 - 22.3	P10x.5	13.35	6.68	22.1 K=1.00	16.1007	-399.18	699.16	0.571 [1] ✔
T14	22.3 - 15.63	P12x.5	6.68	6.68	18.5 K=1.00	19.2423	-465.89	844.51	0.552 [1] ✔
T15	15.63 - 2.3	P12x.5	13.35	6.68	18.5 K=1.00	19.2423	-466.71	844.54	0.553 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	187.3 - 182.3	L3 1/2x3 1/2x1/4	19.41	9.41	162.7 K=1.00	1.6900	-2.17	18.27	0.119 [1] ✔
T2	182.3 - 162.3	L4x4x1/4	22.81	11.24	169.7 K=1.00	1.9400	-8.15	19.29	0.423 [1] ✔
T3	162.3 - 142.3	L5x5x5/16	24.62	12.15	146.7 K=1.00	3.0300	-14.58	40.32	0.362 [1] ✔
T4	142.3 - 122.3	L5x5x5/16	26.46	13.01	148.2 K=0.94	3.0300	-19.63	39.46	0.497 [1] ✔
T5	122.3 - 102.3	L5x5x3/8	28.33	13.82	156.2 K=0.93	3.6100	-22.20	42.34	0.524 [1] ✔
T6	102.3 - 95.63	L6x6x3/8	15.06	14.07	133.5 K=0.94	4.3600	-26.07	70.03	0.372 [1] ✔
T7	95.63 - 82.3	L6x4x1/2	19.70	18.63	194.4 K=1.00	4.7500	-32.99	35.98	0.917 [1] ✔
T8	82.3 - 75.63	L6x6x3/8	15.96	15.05	139.5 K=0.92	4.3600	-26.87	64.12	0.419 [1] ✔
T9	75.63 - 62.3	L6x6x3/8	20.45	19.45	124.2 K=1.00	4.3600	-34.62	80.62	0.429 [1] ✔
T10	62.3 - 55.63	L6x6x3/8	16.88	15.87	144.6 K=0.90	4.3600	-29.21	59.68	0.489 [1] ✔
T11	55.63 - 42.3	L6x6x3/8	21.22	20.12	128.4 K=1.00	4.3600	-37.69	75.67	0.498 [1] ✔
T12	42.3 - 35.63	L6x6x3/8	17.80	16.73	150.0 K=0.89	4.3600	-30.65	55.49	0.552 [1] ✔
T13	35.63 - 22.3	L6x6x1/2	22.00	20.86	134.6 K=1.00	5.7500	-39.59	90.90	0.435 [1] ✔
T14	22.3 - 15.63	L6x6x1/2	18.73	17.58	156.1 K=0.87	5.7500	-32.44	67.51	0.481 [1] ✔
T15	15.63 - 2.3	L6x6x1/2	22.81	21.57	139.1 K=1.00	5.7500	-41.13	85.00	0.484 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L4x4x5/16	27.67	13.18	181.0 K=0.91	2.4000	-3.54	20.97	0.169 [1] ✔
T9	75.63 - 62.3	L4x4x5/16	29.67	14.21	192.9 K=0.89	2.4000	-4.68	18.46	0.253 [1] ✔
T11	55.63 - 42.3	L5x5x5/16	31.67	15.13	167.7 K=0.92	3.0300	-5.77	30.82	0.187 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T13	35.63 - 22.3	L5x5x5/16	33.67	16.09	176.6 K=0.91	3.0300	-6.92	27.79	0.249 [1] ✔
T15	15.63 - 2.3	L5x5x5/16	35.67	17.01	185.1 K=0.90	3.0300	-8.09	25.32	0.320 [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	187.3 - 182.3	L5x5x5/16	18.50	17.68	213.4 K=1.00	3.0300	-0.87	19.04	0.046 [1] ✔
		KL/R > 200 (C) - 6							

[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 $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L3x3x1/4	6.92	6.22	126.2 K=1.00	1.4400	-3.54	25.89	0.137 [1] ✔
T9	75.63 - 62.3	L3x3x1/4	7.42	6.76	136.9 K=1.00	1.4400	-4.68	21.98	0.213 [1] ✔
T11	55.63 - 42.3	L3x3x5/16	7.92	7.17	146.0 K=1.00	1.7800	-5.77	23.90	0.241 [1] ✔
T13	35.63 - 22.3	L3x3x5/16	8.42	7.64	155.6 K=1.00	1.7800	-6.92	21.05	0.329 [1] ✔
T15	15.63 - 2.3	L4x3 1/2x5/16	8.92	8.05	132.4 K=1.00	2.2500	-8.09	36.76	0.220 [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 $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L3x3x1/4	9.37	8.53	172.8 K=1.00	1.4400	-2.40	13.80	0.174 [1] ✔
T9	75.63 - 62.3	L3x3x1/4	9.73	8.93	181.1	1.4400	-3.07	12.57	0.244 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	55.63 - 42.3	L3x3x5/16	10.10	9.20	187.4 K=1.00	1.7800	-3.68	14.50	0.254 [1]
T13	35.63 - 22.3	L3x3x5/16	10.48	9.56	194.9 K=1.00	1.7800	-4.31	13.42	0.321 [1]
T15	15.63 - 2.3	L4x3 1/2x5/16	10.87	9.86	162.1 K=1.00	2.2500	-4.93	24.50	0.201 [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	95.63 - 82.3	L3x3x1/4	13.83	13.83	280.4 K=1.00	1.4400	-0.05	5.24	0.009 [1]
T9	75.63 - 62.3	KL/R > 250 (C) - 106 L3x3x1/4	14.83	14.83	300.7 K=1.00	1.4400	-0.05	4.56	0.010 [1]
T11	55.63 - 42.3	KL/R > 250 (C) - 142 L3 1/2x3 1/2x1/4	15.83	15.83	273.8 K=1.00	1.6900	-0.05	6.45	0.008 [1]
T13	35.63 - 22.3	KL/R > 250 (C) - 180 L3 1/2x3 1/2x1/4	16.83	16.83	291.1 K=1.00	1.6900	-0.05	5.71	0.009 [1]
T15	15.63 - 2.3	KL/R > 250 (C) - 215 L3 1/2x3 1/2x1/4	17.83	17.83	308.4 K=1.00	1.6900	-0.05	5.09	0.011 [1]
		KL/R > 250 (C) - 251							

[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	187.3 - 182.3	P6x.28	5.01	5.01	26.8	5.5813	0.51	251.16	0.002 [1]
T2	182.3 - 162.3	P6x.28	20.03	10.02	53.5	5.5813	13.55	251.16	0.054 [1]
T3	162.3 - 142.3	P6x.28	20.03	10.02	53.5	5.5813	44.11	251.16	0.176 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	142.3 - 122.3	P6x.28	20.03	10.02	53.5	5.5813	88.05	251.16	0.351 [1]
T5	122.3 - 102.3	P8x.322	20.03	10.02	40.9	8.3993	140.97	377.97	0.373 [1]
T6	102.3 - 95.63	P8x.322	6.68	6.68	27.3	8.3993	171.44	377.97	0.454 [1]
T7	95.63 - 82.3	P8x.322	13.35	6.68	27.3	8.3993	169.55	377.97	0.449 [1]
T8	82.3 - 75.63	P8x.5	6.68	6.68	27.9	12.7627	228.66	574.32	0.398 [1]
T9	75.63 - 62.3	P8x.5	13.35	6.68	27.8	12.7627	227.06	574.32	0.395 [1]
T10	62.3 - 55.63	P10x.365	6.68	6.68	21.8	11.9083	284.49	535.87	0.531 [1]
T11	55.63 - 42.3	P10x.365	13.35	6.68	21.8	11.9083	282.25	535.87	0.527 [1]
T12	42.3 - 35.63	P10x.5	6.68	6.68	22.1	16.1007	341.60	724.53	0.471 [1]
T13	35.63 - 22.3	P10x.5	13.35	6.68	22.1	16.1007	339.18	724.53	0.468 [1]
T14	22.3 - 15.63	P12x.5	6.68	6.68	18.5	19.2423	397.17	865.90	0.459 [1]
T15	15.63 - 2.3	P12x.5	13.35	6.68	18.5	19.2423	395.27	865.90	0.456 [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	187.3 - 182.3	L3 1/2x3 1/2x1/4	19.41	9.41	105.1	1.6900	2.20	54.76	0.040 [1]
T2	182.3 - 162.3	L4x4x1/4	22.81	11.24	109.2	1.9400	7.48	62.86	0.119 [1]
T3	162.3 - 142.3	L5x5x5/16	24.62	12.15	93.9	3.0300	14.59	98.17	0.149 [1]
T4	142.3 - 122.3	L5x5x5/16	26.46	13.01	100.9	3.0300	19.84	98.17	0.202 [1]
T5	122.3 - 102.3	L5x5x3/8	28.33	13.82	108.0	3.6100	22.53	116.96	0.193 [1]
T6	102.3 - 95.63	L6x6x3/8	15.06	14.07	93.6	4.3600	25.38	141.26	0.180 [1]
T7	95.63 - 82.3	L6x4x1/2	19.70	18.63	200.5	4.7500	31.47	153.90	0.205 [1]
T8	82.3 - 75.63	L6x6x3/8	15.96	15.05	99.4	4.3600	27.54	141.26	0.195 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	75.63 - 62.3	L6x6x3/8	20.45	19.45	127.5	4.3600	33.74	141.26	0.239 [1] ✔
T10	62.3 - 55.63	L6x6x3/8	16.88	15.87	104.6	4.3600	29.57	141.26	0.209 [1] ✔
T11	55.63 - 42.3	L6x6x3/8	21.22	20.12	131.7	4.3600	36.21	141.26	0.256 [1] ✔
T12	42.3 - 35.63	L6x6x3/8	17.80	16.73	110.5	4.3600	31.29	141.26	0.221 [1] ✔
T13	35.63 - 22.3	L6x6x1/2	22.00	20.86	138.3	5.7500	38.12	186.30	0.205 [1] ✔
T14	22.3 - 15.63	L6x6x1/2	18.73	17.58	117.2	5.7500	32.92	186.30	0.177 [1] ✔
T15	15.63 - 2.3	L6x6x1/2	22.81	21.57	142.9	5.7500	39.63	186.30	0.213 [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 $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L4x4x5/16	27.67	13.18	130.4	2.4000	3.54	77.76	0.046 [1] ✔
T9	75.63 - 62.3	L4x4x5/16	29.67	14.21	140.1	2.4000	4.68	77.76	0.060 [1] ✔
T11	55.63 - 42.3	L5x5x5/16	31.67	15.13	117.6	3.0300	5.77	98.17	0.059 [1] ✔
T13	35.63 - 22.3	L5x5x5/16	33.67	16.09	125.2	3.0300	6.92	98.17	0.071 [1] ✔
T15	15.63 - 2.3	L5x5x5/16	35.67	17.01	132.2	3.0300	8.09	98.17	0.082 [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	187.3 - 182.3	L5x5x5/16	18.50	17.68	137.2	3.0300	0.17	98.17	0.002 [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 $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L3x3x1/4	6.92	6.22	84.6	0.8691	3.54	37.80	0.094 [1] ✔
T9	75.63 - 62.3	L3x3x1/4	7.42	6.76	91.1	0.8925	4.68	38.82	0.120 [1] ✔
T11	55.63 - 42.3	L3x3x5/16	7.92	7.17	97.2	1.1006	5.77	47.88	0.121 [1] ✔
T13	35.63 - 22.3	L3x3x5/16	8.42	7.64	103.7	1.0713	6.92	46.60	0.149 [1] ✔
T15	15.63 - 2.3	L4x3 1/2x5/16	8.92	8.05	94.5	1.4238	8.09	61.94	0.131 [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 $\frac{P_u}{\phi P_n}$
T7	95.63 - 82.3	L3x3x1/4	9.37	8.53	114.3	0.8691	2.40	37.80	0.063 [1] ✔
T9	75.63 - 62.3	L3x3x1/4	9.73	8.93	119.2	0.8925	3.07	38.82	0.079 [1] ✔
T11	55.63 - 42.3	L3x3x5/16	10.10	9.20	123.7	1.1006	3.68	47.88	0.077 [1] ✔
T13	35.63 - 22.3	L3x3x5/16	10.48	9.56	128.8	1.0713	4.31	46.60	0.092 [1] ✔
T15	15.63 - 2.3	L4x3 1/2x5/16	10.87	9.86	114.9	1.4238	4.93	61.94	0.080 [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	187.3 - 182.3	Leg	P6x.28	1	-5.20	238.34	2.2	Pass
T2	182.3 - 162.3	Leg	P6x.28	15	-21.69	203.69	10.7	Pass
T3	162.3 - 142.3	Leg	P6x.28	30	-59.45	203.69	29.2	Pass
T4	142.3 - 122.3	Leg	P6x.28	45	-111.67	203.69	54.8	Pass
T5	122.3 - 102.3	Leg	P8x.322	60	-171.11	334.42	51.2	Pass
T6	102.3 - 95.63	Leg	P8x.322	75	-204.49	357.93	57.1	Pass
T7	95.63 - 82.3	Leg	P8x.322	87	-204.19	357.96	57.0	Pass
T8	82.3 - 75.63	Leg	P8x.5	111	-269.67	542.64	49.7	Pass
T9	75.63 - 62.3	Leg	P8x.5	123	-269.65	542.69	49.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T10	62.3 - 55.63	Leg	P10x.365	147	-333.38	517.53	64.4	Pass
T11	55.63 - 42.3	Leg	P10x.365	159	-332.69	517.56	64.3	Pass
T12	42.3 - 35.63	Leg	P10x.5	183	-399.69	699.12	57.2	Pass
T13	35.63 - 22.3	Leg	P10x.5	195	-399.18	699.16	57.1	Pass
T14	22.3 - 15.63	Leg	P12x.5	219	-465.89	844.51	55.2	Pass
T15	15.63 - 2.3	Leg	P12x.5	231	-466.71	844.54	55.3	Pass
T1	187.3 - 182.3	Diagonal	L3 1/2x3 1/2x1/4	8	-2.17	18.27	11.9	Pass
							17.4 (b)	
T2	182.3 - 162.3	Diagonal	L4x4x1/4	19	-8.15	19.29	42.3	Pass
							59.3 (b)	
T3	162.3 - 142.3	Diagonal	L5x5x5/16	33	-14.58	40.32	36.2	Pass
							92.5 (b)	
T4	142.3 - 122.3	Diagonal	L5x5x5/16	47	-19.63	39.46	49.7	Pass
							71.8 (b)	
T5	122.3 - 102.3	Diagonal	L5x5x3/8	66	-22.20	42.34	52.4	Pass
							56.7 (b)	
T6	102.3 - 95.63	Diagonal	L6x6x3/8	84	-26.07	70.03	37.2	Pass
							37.8 (b)	
T7	95.63 - 82.3	Diagonal	L6x4x1/2	100	-32.99	35.98	91.7	Pass
T8	82.3 - 75.63	Diagonal	L6x6x3/8	119	-26.87	64.12	41.9	Pass
							50.9 (b)	
T9	75.63 - 62.3	Diagonal	L6x6x3/8	139	-34.62	80.62	42.9	Pass
							64.0 (b)	
T10	62.3 - 55.63	Diagonal	L6x6x3/8	155	-29.21	59.68	48.9	Pass
							54.6 (b)	
T11	55.63 - 42.3	Diagonal	L6x6x3/8	175	-37.69	75.67	49.8	Pass
							69.6 (b)	
T12	42.3 - 35.63	Diagonal	L6x6x3/8	191	-30.65	55.49	55.2	Pass
T13	35.63 - 22.3	Diagonal	L6x6x1/2	211	-39.59	90.90	43.5	Pass
							56.0 (b)	
T14	22.3 - 15.63	Diagonal	L6x6x1/2	227	-32.44	67.51	48.1	Pass
T15	15.63 - 2.3	Diagonal	L6x6x1/2	247	-41.13	85.00	48.4	Pass
							58.2 (b)	
T7	95.63 - 82.3	Horizontal	L4x4x5/16	79	-3.54	20.97	16.9	Pass
T9	75.63 - 62.3	Horizontal	L4x4x5/16	115	-4.68	18.46	25.3	Pass
T11	55.63 - 42.3	Horizontal	L5x5x5/16	151	-5.77	30.82	18.7	Pass
T13	35.63 - 22.3	Horizontal	L5x5x5/16	187	-6.92	27.79	24.9	Pass
T15	15.63 - 2.3	Horizontal	L5x5x5/16	223	-8.09	25.32	32.0	Pass
T1	187.3 - 182.3	Top Girt	L5x5x5/16	6	-0.87	19.04	4.6	Pass
T7	95.63 - 82.3	Redund Horz 1 Bracing	L3x3x1/4	101	-3.54	25.89	13.7	Pass
							20.9 (b)	
T9	75.63 - 62.3	Redund Horz 1 Bracing	L3x3x1/4	137	-4.68	21.98	21.3	Pass
							31.6 (b)	
T11	55.63 - 42.3	Redund Horz 1 Bracing	L3x3x5/16	170	-5.77	23.90	24.1	Pass
							31.2 (b)	
T13	35.63 - 22.3	Redund Horz 1 Bracing	L3x3x5/16	209	-6.92	21.05	32.9	Pass
T15	15.63 - 2.3	Redund Horz 1 Bracing	L4x3 1/2x5/16	245	-8.09	36.76	22.0	Pass
							38.2 (b)	
T7	95.63 - 82.3	Redund Diag 1 Bracing	L3x3x1/4	99	-2.40	13.80	17.4	Pass
T9	75.63 - 62.3	Redund Diag 1 Bracing	L3x3x1/4	135	-3.07	12.57	24.4	Pass
T11	55.63 - 42.3	Redund Diag 1 Bracing	L3x3x5/16	171	-3.68	14.50	25.4	Pass
T13	35.63 - 22.3	Redund Diag 1 Bracing	L3x3x5/16	207	-4.31	13.42	32.1	Pass
T15	15.63 - 2.3	Redund Diag 1 Bracing	L4x3 1/2x5/16	243	-4.93	24.50	20.1	Pass
							23.3 (b)	
T7	95.63 - 82.3	Inner Bracing	L3x3x1/4	107	-0.04	5.24	1.1	Pass
T9	75.63 - 62.3	Inner Bracing	L3x3x1/4	143	-0.05	4.56	1.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T11	55.63 - 42.3	Inner Bracing	L3 1/2x3 1/2x1/4	180	-0.05	6.45	1.1	Pass
T13	35.63 - 22.3	Inner Bracing	L3 1/2x3 1/2x1/4	216	-0.05	5.71	1.1	Pass
T15	15.63 - 2.3	Inner Bracing	L3 1/2x3 1/2x1/4	251	-0.05	5.09	1.1	Pass
							Summary	
						Leg (T10)	64.4	Pass
						Diagonal (T3)	92.5	Pass
						Horizontal (T15)	32.0	Pass
						Top Girt (T1)	4.6	Pass
						Redund Horz 1 Bracing (T15)	38.2	Pass
						Redund Diag 1 Bracing (T13)	32.1	Pass
						Inner Bracing (T13)	1.1	Pass
						Bolt Checks	92.5	Pass
						RATING =	**92.5**	**Pass**

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Subject:	Anchor Bolt Analysis
Location:	185-ft Lattice Tower Bloomfield, CT
Rev. 0: 8/2/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 23032.06

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 434·kips	(Input From tnxTower)
Compression Force =	Compression := 511·kips	(Input From tnxTower)
Shear Force =	Shear := 82·kips	(Input From tnxTower)

Anchor Bolt Data:

ASTM F1554 Grade 105

Number of Anchor Bolts =	N := 6	(User Input)
Bolt Ultimate Strength =	F_u := 125·ksi	(User Input)
Bolt Yield Strength =	F_y := 105·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.75·in	(User Input)
Threads per Inch =	n := 5	(User Input)
Length from Top of Pier to Bottom of Leveling Nut =	L_{ar} := 0·in	(User Input)

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 2.405 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 1.899 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.555 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.389 \cdot in$

Elastic Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.369 \cdot in^3$

Plastic Section Modulus of Bolt = $Z_x := \frac{D_n^3}{6} = 0.627 \cdot in^3$

Anchor Bolt Design Strength:

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

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

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

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

Design Tensile Strength = $\Phi R_{nt} := \phi_t \cdot F_u \cdot A_n = 178.1 \cdot k$

Design Compression Strength = $\Phi R_{nc} := \phi_c \cdot F_y \cdot A_g = 227.3 \cdot k$

Design Shear Strength (Tension) = $\Phi R_{nv} := \phi_v \cdot 0.5 F_u \cdot A_g = 112.7 \cdot k$

Design Shear Strength (Compression) = $\Phi R_{nvc} := \phi_c \cdot 0.6 F_y \cdot A_g \cdot 0.75 = 102.3 \cdot k$

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Subject:	Anchor Bolt Analysis
Location:	185-ft Lattice Tower Bloomfield, CT
Rev. 0: 8/2/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 23032.06

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $P_{ut} := \frac{Tension}{N} = 72.3 \cdot kips$

Maximum Compressive Force = $P_{uc} := \frac{Compression}{N} = 85.2 \cdot kips$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 13.7 \cdot kips$

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

Condition1 = "OK"

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

Condition2 = "OK"

Bolt % of Capacity = $\max\left[\left(\frac{P_{ut}}{\Phi R_{nt}}\right)^2 + \left(\frac{V_u}{\Phi R_{nv}}\right)^2, \left(\frac{P_{uc}}{\Phi R_{nc}}\right) + \left(\frac{V_u}{\Phi R_{nvc}}\right)^2\right] = 39.3 \cdot \%$

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Subject:	FOUNDATION ANALYSIS
Location:	Bloomfield, CT
Rev. 0: 8/2/23	Prepared by: T.J.L. Checked by: C.F.C. Job No. 23032.06

Pier and Mat Foundation Analysis:

Input Data:

Tower Data

Overturning Moment =	$OM := 15370 \cdot ft \cdot kips$	(User Input from tnxTower)	
Shear Force =	$S_t := 142 \cdot kip$	(User Input from tnxTower)	
Axial Force =	$WT_t := 99 \cdot kip$	(User Input from tnxTower)	
Max Compression Force =	$C_t := 511 \cdot kip$	(User Input from tnxTower)	
Max Uplift Force =	$U_t := 434 \cdot kip$	(User Input from tnxTower)	
Tower Height =	$H_t := 185 \cdot ft$	(User Input)	
Tower Width =	$W_t := 37 \cdot ft$	(User Input)	
Tower Position on Foundation (1=offset, 2=centered) =	$Pos_t := 1$	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 6.5 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 5.5 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 0.5 \cdot ft$	(User Input)	
Diameter of Pier =	$d_p := 6.0 \cdot ft$	(User Input)	
Thickness of Footing =	$T_f := 1.5 \cdot ft$	(User Input)	
Width of Footing =	$W_f := 45.5 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 4500 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 20000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	$Bouyancy := 0$	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	$Z := 2$	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Pier Reinforcement:

Bar Size =	$BS_{pier} := 7$	(User Input)	
Bar Diameter =	$d_{bpier} := 0.875 \cdot in$	(User Input)	
Number of Bars =	$NB_{pier} := 34$	(User Input)	
Clear Cover of Reinforcement =	$Cvr_{pier} := 3 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Diameter of Tie =	$d_{Tie} := 0.5 \cdot in$	(User Input)	

Pad Reinforcement:

Bar Size =	$BS_{top} := 10$	(User Input)	(Top of Pad)
Bar Diameter =	$d_{btop} := 1.27 \cdot in$	(User Input)	(Top of Pad)
Number of Bars =	$NB_{top} := 75$	(User Input)	(Top of Pad)
Bar Size =	$BS_{bot} := 10$	(User Input)	(Bottom of Pad)
Bar Diameter =	$d_{bbot} := 1.27 \cdot in$	(User Input)	(Bottom of Pad)
Number of Bars =	$NB_{bot} := 75$	(User Input)	(Bottom of Pad)
Clear Cover of Reinforcement =	$Cvr_{pad} := 3.0 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)

Calculated Factors:

Pier Reinforcement Bar Area = $A_{bpier} := \frac{\pi \cdot d_{bpier}^2}{4} = 0.601 \cdot in^2$

Pad Top Reinforcement Bar Area = $A_{btop} := \frac{\pi \cdot d_{btop}^2}{4} = 1.267 \cdot in^2$

Pad Bottom Reinforcement Bar Area = $A_{bbot} := \frac{\pi \cdot d_{bbot}^2}{4} = 1.267 \cdot in^2$

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

Load Factor = $LF := 1$

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := if(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

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

$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} = 1.5 \cdot ksf$

$P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}] = 1.5 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 1.95 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.725 \cdot ksf$

$T_p := if[n < (D_f - T_f), T_f, (D_f - n)] = 1.5 \cdot ft$

$A_p := W_f \cdot T_p = 68.25 \cdot ft^2$

Ultimate Shear = $S_u := P_{ave} \cdot A_p = 117.731 \cdot kip$

Weight of Concrete = $WT_c := \left[\left(W_f^2 \cdot T_f\right) + (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4} L_p\right)\right] \cdot \gamma_c = 535.785 \cdot kip$

Weight of Soil Above Footing = $WT_{s1} := \left[\left[W_f^2 - (3) \cdot \left(\frac{d_p^2 \cdot \pi}{4}\right)\right] \cdot \left(|L_p - L_{pag} - n|\right)\right] \cdot \gamma_s = 992.71 \cdot kip$

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

$X_t := if(Pos_t = 1, X_{t1}, X_{t2}) = 6.729$

$X_{off1} := \frac{W_f}{2} - \left[\frac{(W_t \cdot \cos(30 \cdot deg))}{3} + X_t\right] = 5.34$ $X_{off2} := 0$

$X_{off} := if(Pos_t = 1, X_{off1}, X_{off2})$ $X_{off} = 5.34 \cdot ft$

Total Weight = $WT_{tot} := 0.9WT_c + 0.75WT_{s1} = 1226.7 \cdot kip$

Resisting Moment = $M_r := (WT_{tot}) \cdot \frac{W_f}{2} + 0.9WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) + 0.75\left(S_u \cdot \frac{T_p}{3}\right) = 29504 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := OM + S_t \cdot (L_p + T_f) = 16364 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 1.8$

Factor of Safety Required = $FS_{req} := 1$ $OverTurning\_Moment\_Check := if(FS \geq FS_{req}, "Okay", "No Good")$

$OverTurning\_Moment\_Check = "Okay"$

Shear Capacity in Pier:

Shear Resistance of Pier = $S_p := \frac{P_{ave} \cdot A_p + \mu \cdot WT_{tot}}{FS_{req}} = 669.765 \cdot kips$

$Shear\_Check := if(S_p > S_t, "Okay", "No Good")$

$Shear\_Check = "Okay"$

Bearing Pressure Caused by Footing:

Total Load = $Load_{tot} := WT_c + WT_{s1} + WT_t = 1627 \cdot kip$

Area of the Mat = $A_{mat} := W_f^2 = 2.07 \times 10^3$

Section Modulus of Mat = $S := \frac{W_f^3}{6} = 1.57 \times 10^4 \cdot ft^3$

Maximum Pressure in Mat = $P_{max} := \frac{Load_{tot}}{A_{mat}} + \frac{M_{ot}}{S} = 1.828 \cdot ksf$

$Max\_Pressure\_Check := if(P_{max} < 0.75q_s, "Okay", "No Good")$

$Max\_Pressure\_Check = "Okay"$

Minimum Pressure in Mat = $P_{min} := \frac{Load_{tot}}{A_{mat}} - \frac{M_{ot}}{S} = -0.256 \cdot ksf$

$Min\_Pressure\_Check := if[(P_{min} \geq 0) \cdot (P_{min} < 0.75q_s), "Okay", "No Good"]$

$Min\_Pressure\_Check = "No Good"$

Distance to Resultant of Pressure Distribution = $X_p := \frac{P_{max}}{\frac{P_{max} - P_{min}}{W_f}} \cdot \frac{1}{3} = 13.303$

Distance to Kern = $X_k := \frac{W_f}{6} = 7.583$ Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity = $e := \frac{M_{ot}}{Load_{tot}} = 10.055$

Adjusted Soil Pressure = $P_a := \frac{2 \cdot Load_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} = 1.878 \cdot ksf$

$q_{adj} := if(P_{min} < 0, P_a, P_{max}) = 1.878 \cdot ksf$

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

$Pressure\_Check = "Okay"$

Concrete Bearing Capacity:

Strength Reduction Factor = $\Phi_c := 0.65$ (ACI-2008 9.3.2.2)

Bearing Strength Between Pier and Pad = $P_b := \Phi_c \cdot 0.85 \cdot f_c \cdot \frac{\pi \cdot d_p^2}{4} = 1.012 \times 10^4 \cdot kips$ (ACI-2008 10.14)

$Bearing\_Check := if(P_b > LF \cdot C_t, "Okay", "No Good")$

Bearing_Check = "Okay"

Shear Strength of Concrete:

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

$\phi_c := 0.85$ (ACI 9.3.2.5)

$d := T_f - Cvr_{pad} - d_{bbot} = 13.73 \cdot in$

$FL := LF \cdot \frac{C_t}{W_f^2} = 0.247 \cdot ksf$

$V_{req} := FL \cdot (X_t - .5 \cdot d_p - d) \cdot W_f = 29.024 \cdot kips$

$V_{Avail} := \phi_c \cdot 2 \cdot \sqrt{f_c \cdot psi} \cdot W_f \cdot d = 855 \cdot kip$ (ACI-2008 11.2.1.1)

$Beam\_Shear\_Check := if(V_{req} < V_{Avail}, "Okay", "No Good")$

Beam_Shear_Check = "Okay"

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

Critical Perimeter of Punching Shear = $b_o := (d_p + d) \cdot \pi = 22.4$

Area Included Inside Perimeter = $A_{bo} := \frac{\pi \cdot (d_p + d)^2}{4} = 40.1$

Required Shear Strength = $V_{req} := FL \cdot (W_f^2 - A_{bo}) = 501 \cdot kips$

Available Shear Strength = $V_{Avail} := \phi_c \cdot 4 \cdot \sqrt{f_c \cdot psi} \cdot b_o \cdot d = 843.4 \cdot kip$ (ACI-2008 11.11.2.1)

$Punching\_Shear\_Check := if(V_{req} < V_{Avail}, "Okay", "No Good")$

Punching_Shear_Check = "Okay"

Steel Reinforcement in Pad:

Required Reinforcement for Bending:

Strength Reduction Factor = $\phi_m := .90$ (ACI-2008 9.3.2.1)

Maximum Moment in Pad = $M_{max} := 1500 \cdot kip \cdot ft$ (User Input)

Design Moment = $M_n := \frac{LF \cdot M_{max}}{\phi_m} = 1.667 \times 10^3 \cdot kips \cdot ft$

$$\beta := \begin{cases} 0.85 & \text{if } 2500 \cdot psi \le f_c \le 4000 \cdot psi \\ 0.65 & \text{if } f_c > 8000 \cdot psi \\ \left[0.85 - \left[\frac{\left(\frac{f_c}{psi} - 4000\right)}{1000}\right] \cdot 0.5\right] & \text{otherwise} \end{cases} = 0.6$$

(ACI-200810.2.7.3)

$b_{eff} := W_t \cdot \cos(30 \cdot deg) + d_p = 456.515 \cdot in$

$A_s := \frac{M_n}{(f_y \cdot d)} = 24.278 \cdot in^2$

$a := \frac{A_s \cdot f_y}{\beta \cdot f_c \cdot b_{eff}} = 1.182 \cdot in$

$A_s := \frac{M_n}{f_y \cdot \left(d - \frac{a}{2}\right)} = 25.37 \cdot in^2$

$\rho := \frac{A_s}{b_{eff} d} = 0.04857 \cdot in$

Required Reinforcement for Temperature and Shrinkage:

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

Check Bottom Bars:

$$As := if\left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d\right) = 25.4 \cdot in^2$$

$$As_{prov} := A_{bbot} \cdot NB_{bot} = 95 \cdot in^2$$

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

Pad_Reinforcement_Bot = "Okay"

Check top Bars:

$$As := if\left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d\right) = 25.4 \cdot in^2$$

$$As_{prov} := A_{btop} \cdot NB_{top} = 95 \cdot in^2$$

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

Pad_Reinforcement_Top = "Okay"

Developement Length Pad Reinforcement:

Bar Spacing =

$$B_{sPad} := \frac{W_f - 2 \cdot Cvr_{pad} - NB_{bot} \cdot d_{bbot}}{NB_{bot} - 1} = 6.01 \cdot in$$

Spacing or Cover Dimension =

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

Transverse Reinforcement Index =

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

$$L_{dbt} := \frac{3 \cdot f_y \alpha_{pad} \cdot \beta_{pad} \cdot \gamma_{pad} \cdot \lambda_{pad}}{40 \cdot \sqrt{f_c \cdot psi} \cdot \frac{c + k_{tr}}{d_{bbot}}} \cdot d_{bbot} = 36.1 \cdot in$$

Minimum Development Length =

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

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

Available Length in Pad =

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - Cvr_{pad} = 48 \cdot in$$

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

Lpad_Check = "Okay"

Steel Reinforcement in Pier:

Area of Pier = $A_p := \frac{\pi \cdot d_p^2}{4} = 4071.5 \cdot in^2$

$A_{smin} := 0.01 \cdot 0.5 \cdot A_p = 20.36 \cdot in^2$ (ACI-2008 10.8.4 & 10.9.1)

$A_{sprov} := NB_{pier} \cdot A_{bpier} = 20.44 \cdot in^2$

$Steel\_Area\_Check := if(A_{sprov} > A_{smin}, "Okay", "No Good")$

Steel_Area_Check = "Okay"

Bar Spacing In Pier = $B_{sPier} := \frac{d_p \cdot \pi}{NB_{pier}} - d_{bpier} = 5.778 \cdot in$

Diameter of Reinforcement Cage = $Diam_{cage} := d_p - 2 \cdot Cvr_{pier} = 66 \cdot in$

Maximum Moment in Pier = $M_p := S_t \cdot (L_p) \cdot LF = 9372 \cdot in \cdot kips$

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

$(D \ N \ n \ P_u \ M_{xu}) := \left(d_p \cdot 12 \ \ NB_{pier} \ \ BS_{pier} \ \ \frac{C_t \cdot 1.333}{kips} \ \ \frac{M_p}{in \cdot kips}\right)$

$(D \ N \ n \ P_u \ M_{xu}) = (72 \ \ 34 \ \ 7 \ \ 681.163 \ \ 9.372 \times 10^3)$

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

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

$(\phi P_n \ \ \phi M_{xn} \ \ f_{sp} \ \ \rho) = (4.739 \times 10^3 \ \ 6.521 \times 10^4 \ \ -49.799 \ \ 5.01 \times 10^{-3})$

$Axial\_Load\_Check := if(\phi P_n \geq P_u, "Okay", "No Good")$

Axial_Load_Check = "Okay"

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

Bending_Check = "Okay"

Development Length Pier Reinforcement:

Available Length in Foundation:

$L_{pier} := L_p - Cvr_{pier} = 63 \cdot in$

$L_{pad} := T_f - Cvr_{pad} = 15 \cdot in$

Tension: (ACI-2008 12.2.3)

Spacing or Cover Dimension =

$c := if\left(Cvr_{pier} < \frac{B_{sPier}}{2}, Cvr_{pier}, \frac{B_{sPier}}{2}\right) = 2.889 \cdot in$

Transverse Reinforcement =

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

$L_{dbt} := \frac{3 \cdot f_y \alpha_{pier} \cdot \beta_{pier} \cdot \gamma_{pier} \cdot \lambda_{pier}}{40 \cdot \sqrt{f_c \cdot psi} \cdot \left(\frac{c + k_{tr}}{d_{bpier}}\right)} \cdot d_{bpier} = 17.78 \cdot in$

Minimum Development Length =

$L_{dh} := \frac{1200 \cdot d_{bpier}}{\sqrt{\frac{f_c}{psi}}} \cdot .7 = 10.957 \cdot in$ (ACI 12.2.1)

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

$L_{db} := \max\left(L_{dbt}, L_{dbmin}\right) = 17.778 \cdot in$

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

$L_{tension\_Check} = "Okay"$

Compression: (ACI-2008 12.3.2)

$L_{dbc1} := \frac{.02 \cdot d_{bpier} \cdot f_y}{\sqrt{f_c \cdot psi}} = 15.652 \cdot in$

$L_{dbmin} := 0.0003 \cdot \frac{in^2}{lb} \cdot \left(d_{bpier} \cdot f_y\right) = 15.75 \cdot in$

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right) = 15.75 \cdot in$

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

$L_{compression\_Check} = "Okay"$

BSF0020F3V1-1

TWIN BANDSTOP 900MHZ INTERFERENCE MITIGATION FILTER

The BSF0020 is ideal for co-located 700, 850 and 900 networks. Utilising a 2.6MHz guardband the BSF0020 provides rejection of the 900 UL band while passing 700/850 UL and DL bands. Capable of being used in an outdoor environment the BSF0020 contains two identical bandstop filters, suitable for 2x2 MIMO configuration, offering excellent insertion loss, group delay and rejection.

FEATURES

- Passes full 700 and 850 bands
- Low insertion loss
- Rejection of 900MHz uplink
- DC/AISG pass
- Twin unit
- Dual twin mounting available

TECHNICAL SPECIFICATIONS

BAND NAME	700 PATH / 850 UPLINK PATH	850 DOWNLINK PATH
Passband	698 - 849MHz	869 - 891.5MHz
Insertion loss	0.1dB typical / 0.3dB maximum	0.5dB typical, 1.45dB maximum
Return loss	24dB typical, 18dB minimum	
Maximum input power (Per Port)	100W average	200W average and 66W per 5MHz
Rejection	53dB minimum @ 894.1 - 896.5MHz	

ELECTRICAL	
Impedance	50Ohms
Intermodulation products	-160dBc maximum in UL Band (assuming 20MHz Signal), with 2 x 43dBm carriers -153dBc maximum with 2 x 43dBm

DC / AISG	
Passband	0 - 13MHz
Insertion loss	0.3dB maximum
Return loss	15dB minimum
Input voltage range	± 33V
DC current rating	2A continuous, 4A peak
Compliance	3GPP TS 25.461

ENVIRONMENTAL	
For further details of environmental compliance, please contact Kaelus.	
Temperature range	-20ºC to +60ºC | -4°F to +140°F
Ingress protection	IP67
Altitude	2600m | 8530ft
Lightning protection	RF port: ±5kA maximum (8/20us), IEC 61000-4-5 – Unit must be terminated with some lightning protection circuits.
MTBF	>1,000,000 hours
Compliance	ETSI EN 300 019 class 4.1H, RoHS, NEBS GR-487-CORE

MECHANICAL	
Dimensions H x D x W	269 x 277 x 80mm | 10.60 x 10.90 x 3.15in (Excluding brackets and connectors)
Weight	8.0 kg | 17.6 lbs (no bracket)
Finish	Powder coated, light grey (RAL7035)
Connectors	RF: 4.3-10 (F) x 4
Mounting	Optional pole/wall bracket supplied with two metal clamps 45-178mm diameter poles or custom bracket. See ordering information.

Contact Us: +1 303 768 8080 | +61 (0) 7 3907 1200 | www.kaelus.com

ORDERING INFORMATION

PART NUMBER	CONFIGURATION	OPTIONAL FEATURES	CONNECTORS
BSF0020F3V1	TWIN, 2 in / 2 out	DC/AISG PASS NO BRACKET	4.3-10 (F)
BSF0020F3V1-1	TWIN, 2 in / 2 out	DC/AISG PASS	4.3-10 (F)
BSF0020F3V1-2	QUAD, 4 in / 4 out	DC/AISG PASS	4.3-10 (F)

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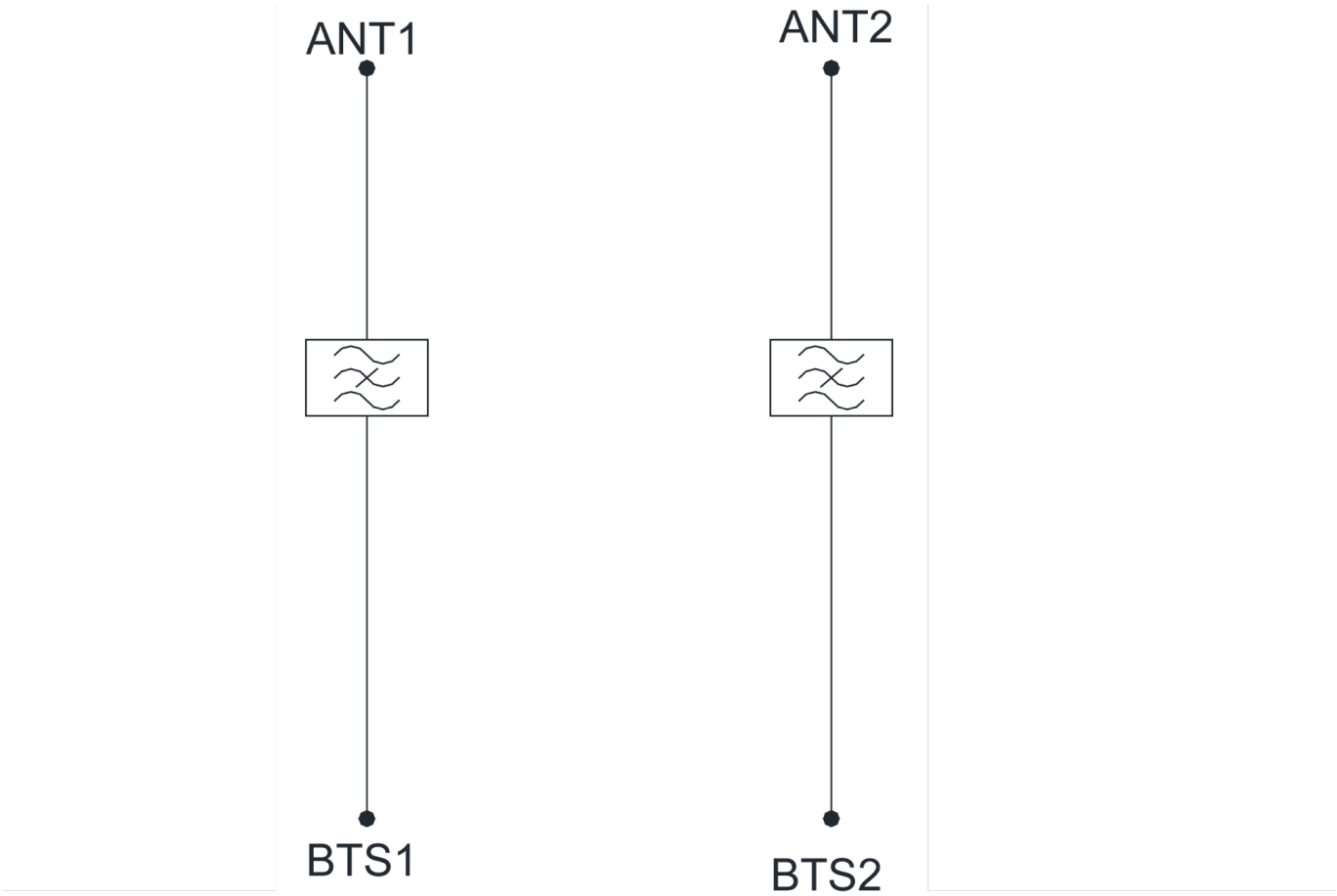
ELECTRICAL BLOCK DIAGRAM



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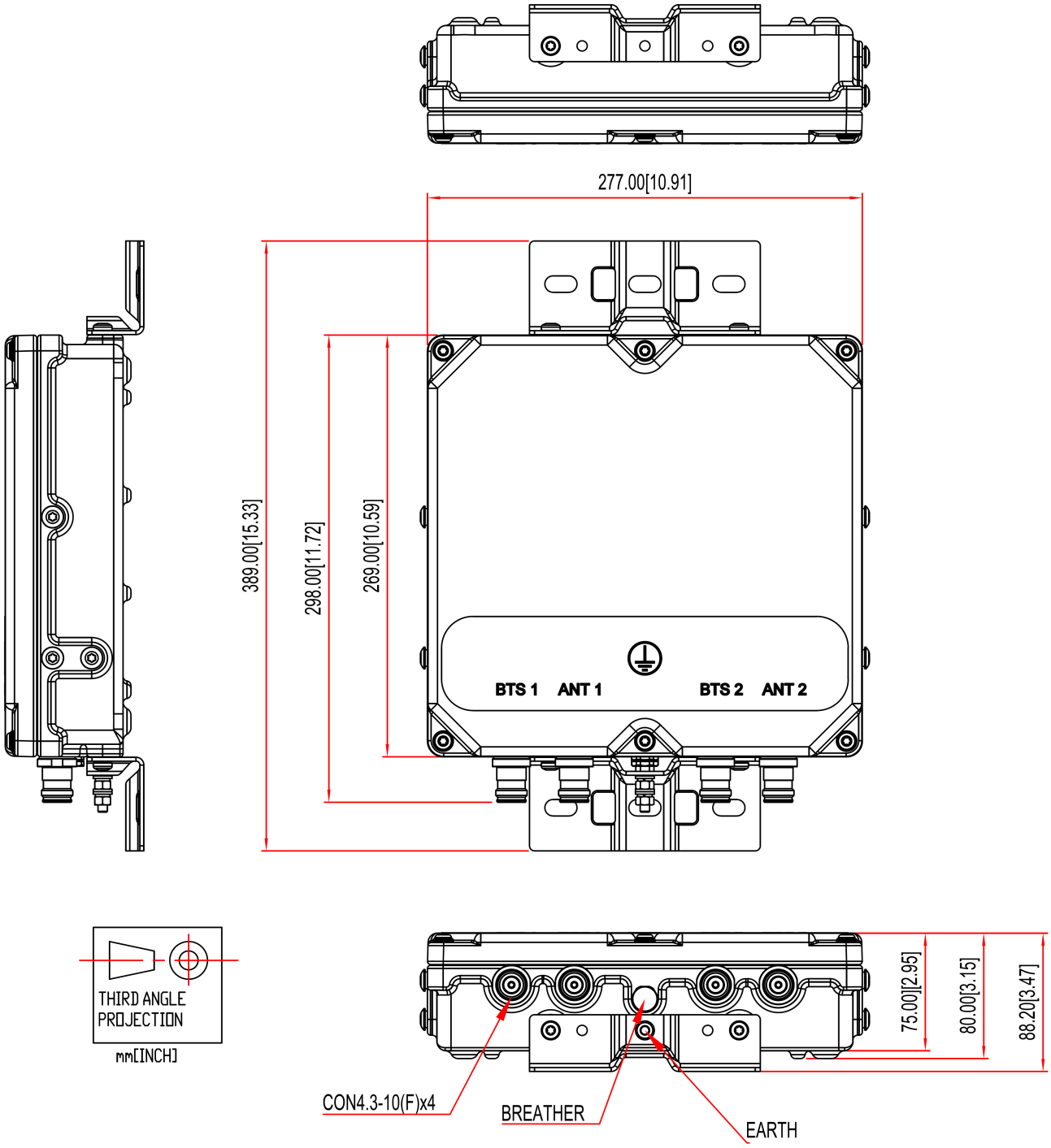
MECHANICAL BLOCK DIAGRAM



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