STRUCTURAL CALCULATIONS

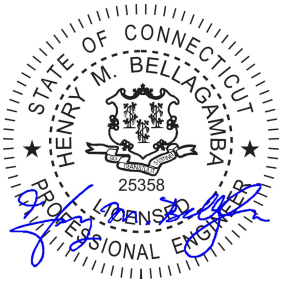
Prepared for: Smartlink / AT&T LTE 3C

New Antenna Installation
on Existing Self-Support Tower

Site No. CTL02164
FA No. 10035132
Site Name: New Londongroton PD
68 Groton Long Point Road
Groton, CT 06340

January 11, 2017

Revision I



Henry M. Bellagamba, P.E.

FULLERTON
ENGINEERING · DESIGN

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Project Number: 2016.0200.0026

Summary

The rigorous structural analysis was performed by Fullerton Engineering Consultants, as requested by the client, to determine the conformance of existing structure with the 2012 International Building Code and the industry standard, TIA-222-G (Structural Standard for Steel Antenna Supporting Structures and Antennas). The analysis considers the tower properties, existing antennas and proposed antennas and the required loading criteria.

Conclusion

- **The tower member stresses are in conformance for the loading considered.**
- **The tower foundation is in conformance for the loading considered.**

Analysis Data

The following is based on information provided by the client, field investigation, and other determination by Fullerton Engineering Consultants or third parties.

Configuration 140', 3-sided self-support tower with a 2.5' top and 16.7' bottom face width.

References
Tower Appurtenances Mapping Report by Hudson Design Group, LLC., dated 01/06/2011.
Original Foundation Drawings by Paul J. Ford and Company, project #20598-09, dated 06/02/1998.
Original Tower Drawings ROHN, Inc., dated 04/02/1997.
Geotechnical Report prepared by FDH Velocitel, project #16PTWP1600, dated 10/12/2016
Site visit pictures dated 05/10/2016
Tower Elevation drawing (S-1) by GEM Inc., dated 04/16/2005

Appurtenance Loading Schedule

ELEV. (FT.=AGL)	APPURTENANCE	TRANSMISSION LINES
	Proposed AT&T	
133’	(3) Quintel QS66512-2 (3) RRUS-32 (1) Raycap DC6-48-60-18-8F Mounted on existing (3) T-Arm Frames	(1) 3/8” Fiber (2) 3/4” DC Power
	Existing AT&T (to be removed prior antenna installation)	
133’	(3) Powerwave 7770 (3) Powerwave TT19-08BP111-001 TMA Mounted on existing (3) T-Arm Frames	
	Existing AT&T (to remain)	
133’	(3) Powerwave 7770 (3) KMW AM-X-CD-14-65-00T-RET (6) RRUS-11 (3) Powerwave TT19-08BP111-001 TMA (1) Raycap DC6-48-60-18-8F Mounted on existing (3) T-Arm Frames	(1) 3/8” Fiber (2) 3/4” DC Power (12) 7/8” Coaxial
	Existing (to remain)	
145’ 143’	(1) Flash Beacon Lighting (1) Lightning Rod Mounted on top of tower	(1) 1/2” Coaxial
142’	(9) Commscope SBNHH-1D65B (3) Amphenol BXA-80080/4CF (3) ALU RRH4x45 AWS (3) ALU RRH2x60-PCS (3) ALU RRH2x60-700 (6) RFS FD9R6004/1C-3L Diplexer (2) RFS DB-T1-6Z-8AB-0Z (Raycap) Mounted on existing (1) Rotatable Platform w/ handrail	(2) 1/2" Hybrid (12) 1-5/8” Coaxial
121’	(1) DB212 DiPole Mounted on tower leg	(1) 7/8” Coaxial
119’	(1) DB212 DiPole Mounted on tower leg	
110’	(1) DB212 DiPole Mounted on tower leg	(1) 7/8” Coaxial
110’	(1) DB540 Whip Mounted on existing (1) stand-off mount frames	(1) 1-1/4” Coaxial
104’	(1) DB212 DiPole Mounted on tower leg	(1) 7/8” Coaxial
112.5’ 89.5’	(1) PD340 4-bay DiPole (1) PD340 4-bay DiPole Mounted on existing (1) stand-off mount frames	(2) 1-1/4” Coaxial

108.25' 93.75'	(1) DB810T3 Whip (1) DB810T3 Whip Mounted on existing (1) stand-off mount frames	(2) 1-5/8" Coaxial
101'	(2) PD1121 DiPole Mounted on tower leg	(1) 1-1/4" Coaxial
96'	(1) DB212 DiPole Mounted on tower leg	
90'	(1) DB212 DiPole Mounted on tower leg	(1) 7/8" Coaxial
80'	(1) 3'Ø Dish Mounted on dish pipe mount to tower leg	(1) 1/2" Coaxial
68'	(1) DB212 DiPole Mounted on tower leg	
67'	(2) Obstruction Lights Mounted on tower legs	(1) 1/2" Coaxial
66'	(1) CCTV camera Mounted on tower leg	(2) 3/4" Coaxial
65.5'	(1) PD340 4-bay DiPole Mounted on existing (1) stand-off mount frame	(1) 7/8" Coaxial
64' 44'	(1) PD220 Whip (1) PD220 Whip Mounted on existing (1) stand-off mount frames	(2) 7/8" Coaxial
58'	(1) 3'Ø Dish Mounted on dish pipe mount to tower leg	(1) 1/2" Coaxial
44'	(1) 2'Ø Dish (1) 18"x12" Panel Mounted on existing (1) stand-off mount frame	(1) 3/8" Coaxial
40'	(1) 3'Ø Dish Mounted on dish pipe mount to tower leg	(1) 1/2" Coaxial
40'	(1) BA1012 Whip Mounted on existing (1) stand-off mount frame	(1) 7/8" Coaxial
37'	(1) 2'Ø Dish (1) 18"x12" Panel Mounted on existing (1) stand-off mount frame	(2) 3/8" Coaxial (1) 1/2" Coaxial

Results

The results of the structural analysis are summarized as follows:

Tower Mast	The tower leg members are **adequate** for new loads, with a maximum stress ratio of 84.1% @ Elev. 100'-120' AGL. The tower main diagonal members are **adequate** for new loads, with a maximum stress ratio of 80.2% @ Elev. 40'-60' AGL. The tower top girt members are **adequate** for new loads, with a maximum stress ratio of 10.9% @ Elev. 140' AGL. The tower main leg bolts are **adequate** for new loads, with a maximum stress ratio of 62.0% @ Elev. 40' AGL. The tower main diagonal bolts are **adequate** for new loads, with a maximum stress ratio of 73.7% @ Elev. 40'-60' AGL.
Anchor Bolts	The tower anchor bolts are **adequate** for new loads, with a maximum stress ratio of 76.6%
Foundation	The tower foundation is **adequate** for new loads.

Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. Fullerton has been instructed by the client to assume the information supplied is accurate, and Fullerton has made no independent determination of its accuracy. The exception to the previous statement is if Fullerton has been contracted by the client to provide an independent structural mapping report of the tower and related appurtenances, in which case Fullerton has made an independent determination of the accuracy of the information resulting from the mapping report.

- The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
- The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, remote radios, cables and cable supports are assumed to be properly installed and supported as per the manufacturer's requirements.
- The antennas, mounts, remote radios, cables and cable supports and lines stated in the appurtenance loading schedule represent Fullerton's understanding of the overall antenna configuration. If the actual configuration is different than above, then this analysis is invalid. Please refer to this report for the projected wind areas used in the calculations for antennas and mounts. If variations or discrepancies are identified, please inform Fullerton.
- Some assumptions are made regarding antenna and mount sizes and their projected areas based on a best interpretation of the data supplied and a best knowledge of antenna type and industry practice.
- The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The soil parameters are as per data supplied, or as assumed, and stated in the calculations.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per date supplied/ available, to be properly installed and to be fully effective.

Scope and Limitations

The engineering services rendered by Fullerton Engineering Consultants, Inc. (Fullerton) in connection with this structural analysis are limited to an analysis of the structure, size and capacity of its members. Fullerton does not analyze the fabrication, including welding and connection capacities, except as included in this report.

The information and conclusions contained in this report were determined by application of the current engineering standards and analysis procedures and formulae, and Fullerton assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

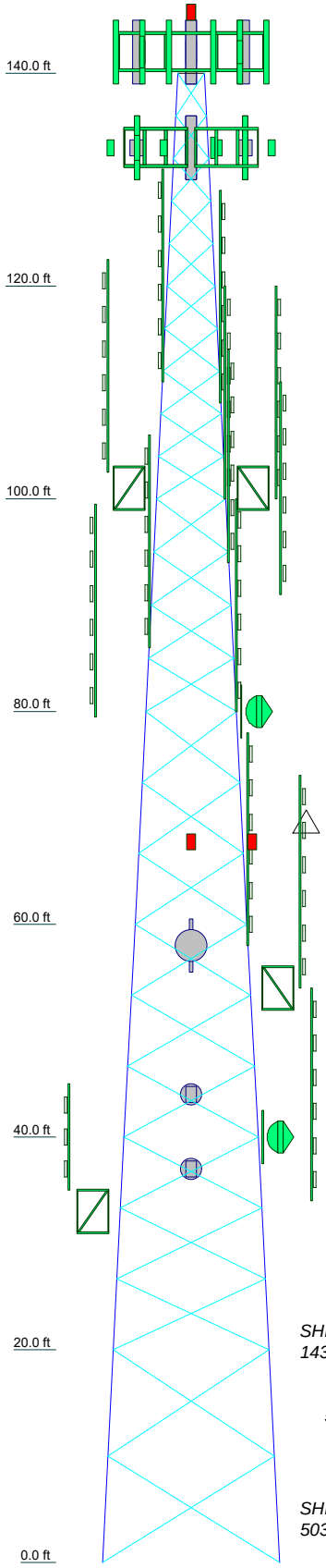
Fullerton makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the “as-built” condition of this tower. Fullerton will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

Installation procedures and loading are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor.

Section 1

Structural Calculations

Section	T1	T2	T3	T4	T5	T6	T7
Legs	ROHN 2.5 EH	ROHN 3 EH	ROHN 4 EH	ROHN 5 EH	ROHN 6 EHS	ROHN 6 EH	ROHN 8 EHS
Leg Grade	A572-50						
Diagonals	L2x2x1/4	L2x2x1/4		L2 1/2x2 1/2x1/4		L3x3x1/4	L3 1/2x3 1/2x1/4
Diagonal Grade	A36						A572-50
Top Girts	L2x2x1/4	N.A.					
Face Width (ft)	2.5	4.521	6.5625	8.5625	10.5625	12.6042	14.6563
# Panels @ (ft)	10 @ 4		4 @ 5	9 @ 6.66667			2 @ 10
Weight (lb)	1046.0	1335.8	1676.1	2205.0	2464.8	3210.5	3435.0



MATERIAL STRENGTH

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

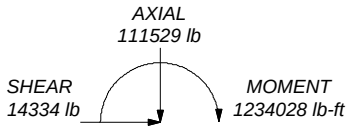
TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

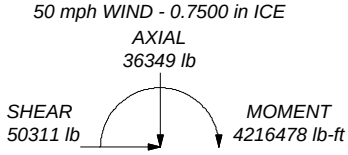
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 298862 lb
SHEAR: 31049 lb

UPLIFT: -269598 lb
SHEAR: 28535 lb



TORQUE 3425 lb-ft
50 mph WIND - 0.7500 in ICE



TORQUE 8033 lb-ft
REACTIONS - 105 mph WIND

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1100 E. Woodfield Road, Suite 500
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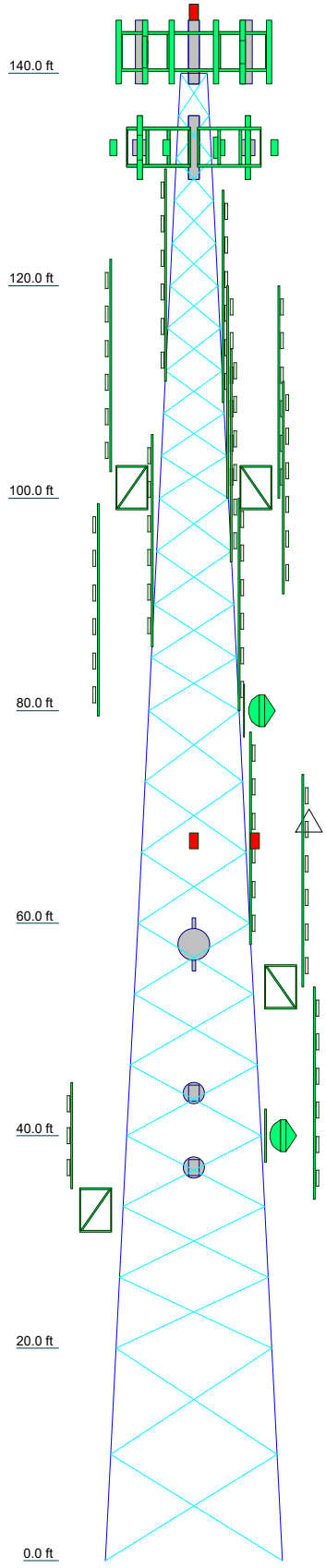
Phone: (847) 908-8400
FAX: fax@fullertonengineering.com

Job:	***CTL02164***		
Project:	***140 ft. Self-Support Tower***		
Client: AT&T	Drawn by: VY		App'd:
Code: TIA-222-G	Date: 01/11/17		Scale: NTS
Path: P:\Dept 400\SMLINK-ATT-NEWEN 2\CTL02164\Structural\Tower Analysis\R1\Analysis\tnxTower\CTL02164_R1.eri			Dwg No. E-1

Section	T1	T2	T3	T4	T5	T6	T7
Legs	ROHN 2.5 EH	ROHN 3 EH	ROHN 4 EH	ROHN 5 EH	ROHN 6 EHS	ROHN 6 EH	ROHN 8 EHS
Leg Grade	A572-50						
Diagonals	L2x2x1/4	L2x2x1/4		L2 1/2x2 1/2x1/4		L3x3x1/4	L3 1/2x3 1/2x1/4
Diagonal Grade	A36						A572-50
Top Girts	L2x2x1/4			N.A.			
Face Width (ft) 16.7	2.5	4.521	6.5625	8.5625	10.5625	12.6042	14.6563
# Panels @ (ft)	10 @ 4		4 @ 5	9 @ 6.66667			2 @ 10
Weight (lb) 15373.2	1046.0	1335.8	1676.1	2205.0	2464.8	3210.5	3435.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	145	RRUS-32 B30	133
Lightning Rod 5/8x4'	143	RRUS-32 B30	133
PiROD 13' Rotatable Platform w/handrails (Lattice)	142	RRUS-32 B30	133
		Raycap DC6-48-60-18-8F	133
(3) Commscope SBNHH-1D65B	142	DB212 DiPole	121
(3) Commscope SBNHH-1D65B	142	DB212 DiPole	119
(3) Commscope SBNHH-1D65B	142	PD340	112.5
Amphenol BXA-80080/4CF	142	DB212 DiPole	110
Amphenol BXA-80080/4CF	142	DB540	110
Amphenol BXA-80080/4CF	142	DB810T3	108.25
ALU RRH4x45 AWS	142	DB212 DiPole	104
ALU RRH4x45 AWS	142	SO308-1	101
ALU RRH4x45 AWS	142	(2) PD1121	101
ALU RRH2x60-PCS 1900 MHz	142	SO308-1	101
ALU RRH2x60-PCS 1900 MHz	142	SO308-1	101
ALU RRH2x60-PCS 1900 MHz	142	DB212 DiPole	96
ALU RRH2x60-700	142	DB810T3	93.75
ALU RRH2x60-700	142	DB212 DiPole	90
ALU RRH2x60-700	142	PD340	89.5
(2) RFS FD9R6004/1C-3L Diplexer	142	3" x 60" Dish Pipe Mount	80
(2) RFS FD9R6004/1C-3L Diplexer	142	3' Dish w/ Radome	80
(2) RFS FD9R6004/1C-3L Diplexer	142	DB212 DiPole	68
RFS DB-T1-6Z-8AB-0Z (Raycap)	142	Obstruction Light	67
RFS DB-T1-6Z-8AB-0Z (Raycap)	142	Obstruction Light	67
SM502-1	133	CPD Camera	66
SM502-1	133	PD340	65.5
SM502-1	133	PD220	64
KMW AM-X-CD-14-65-00T	133	3" x 60" Dish Pipe Mount	58
KMW AM-X-CD-14-65-00T	133	3' HP Dish	58
KMW AM-X-CD-14-65-00T	133	SO308-1	54
Powerwave 7770.00	133	SO308-1	54
Powerwave 7770.00	133	PD220	44
Powerwave 7770.00	133	18"x12" Panel	44
(2) RRUS-11	133	SO312-1	44
(2) RRUS-11	133	2' Dish w/o Radome	44
(2) RRUS-11	133	3" x 60" Dish Pipe Mount	40
Powerwave TT19-08BP111-001 TMA	133	(2) BA1012	40
Powerwave TT19-08BP111-001 TMA	133	3' Dish w/ Radome	40
Powerwave TT19-08BP111-001 TMA	133	18"x12" Panel	37
Raycap DC6-48-60-18-8F	133	SO312-1	37
Quintel QS66512-2	133	2' Dish w/o Radome	37
Quintel QS66512-2	133	SO308-1	33
Quintel QS66512-2	133		

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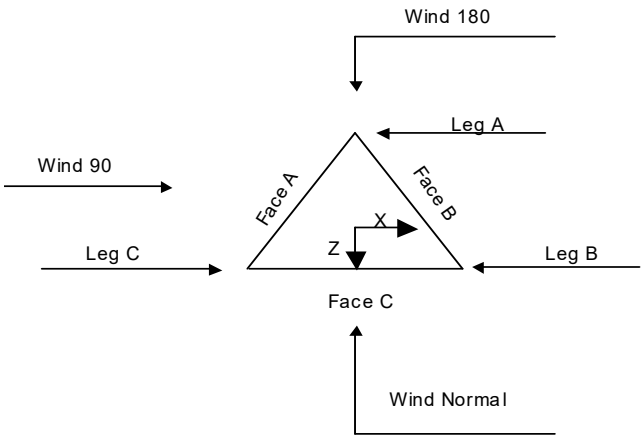
Client: AT&T	Drawn by: VY		App'd:
Code: TIA-222-G	Date: 01/12/17		Scale: NTS
Path: P:\Dept 400\SMLINK-ATT-NEWEN 2\CTL02164\Structural\Tower Analysis\R1\Analysis\tnxTower\CTL02164_R1.eri			Dwg No. E-1

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 140.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 2.50 ft at the top and 16.70 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	140.00-120.00			2.50	1	20.00
T2	120.00-100.00			4.52	1	20.00
T3	100.00-80.00			6.56	1	20.00
T4	80.00-60.00			8.56	1	20.00
T5	60.00-40.00			10.56	1	20.00
T6	40.00-20.00			12.60	1	20.00
T7	20.00-0.00			14.66	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	140.00-120.00	4.00	X Brace	No	No	0.0000	0.0000
T2	120.00-100.00	4.00	X Brace	No	No	0.0000	0.0000
T3	100.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T4	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T5	60.00-40.00	6.67	X Brace	No	No	0.0000	0.0000
T6	40.00-20.00	6.67	X Brace	No	No	0.0000	0.0000
T7	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 140.00-120.00	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 120.00-100.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 100.00-80.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 80.00-60.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 60.00-40.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T6 40.00-20.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T7 20.00-0.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 140.00-120.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

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 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K 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	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1
T7 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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
T1 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 140.00-120.00	Flange	0.7500 A325X	4	0.6250 A325X	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 120.00-100.00	Flange	0.8750 A325X	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 100.00-80.00	Flange	1.0000 A325X	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 80.00-60.00	Flange	1.0000 A325X	6	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 60.00-40.00	Flange	1.0000 A325X	6	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 40.00-20.00	Flange	1.0000 A325X	8	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 20.00-0.00	Flange	1.0000 A354-BC (1/4" to 2-1/2")	0	0.7500 A325X	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	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4-50A (1/2 FOAM)	B	No	Ar (CaAa)	140.00 - 6.00	0.0000	0.25	1	1	0.6300	0.6300		0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	121.00 - 6.00	0.0000	0.25	1	1	1.0900	1.0900		0.33
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	110.00 - 6.00	0.0000	0.25	1	1	1.0900	1.0900		0.33
LDF6-50A (1-1/4 FOAM)	B	No	Ar (CaAa)	110.00 - 6.00	0.0000	0.3	1	1	1.5500	1.5500		0.66
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	104.00 - 6.00	0.0000	0.25	1	1	1.0900	1.0900		0.33
LDF6-50A (1-1/4 FOAM)	B	No	Ar (CaAa)	101.00 - 6.00	0.0000	0.3	1	1	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM)	B	No	Ar (CaAa)	101.00 - 6.00	0.0000	0.3	1	1	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	101.00 - 6.00	0.0000	0.3	2	2	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	90.00 - 6.00	0.0000	0.2	1	1	1.0900	1.0900		0.33
LDF4-50A (1/2 FOAM)	B	No	Ar (CaAa)	67.00 - 6.00	0.0000	0.2	1	1	0.6300	0.6300		0.15
0 3/4	B	No	Ar (CaAa)	66.00 - 6.00	0.0000	0.2	1	1	0.7500	0.7500		0.30
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	54.00 - 6.00	0.0000	0.2	3	3	1.0900	1.0900		0.33
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	44.00 - 6.00	0.0000	0.3	1	1	0.4400	0.4400		0.08
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	37.00 - 6.00	0.0000	0.3	2	2	0.4400	0.4400		0.08
LDF4-50A (1/2 FOAM)	B	No	Ar (CaAa)	37.00 - 6.00	0.0000	0.3	1	1	0.6300	0.6300		0.15
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	33.00 - 6.00	0.0000	0.3	1	1	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	140.00 - 6.00	0.0000	0	12	12	1.9800	1.9800		0.82
1/2" Fiber	C	No	Ar (CaAa)	140.00 - 6.00	0.0000	0	2	2	0.2500	0.2500		0.15
LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	133.00 - 6.00	0.0000	-0.25	12	12	1.9800	1.9800		0.82
3/4" DC power cable	A	No	Ar (CaAa)	133.00 - 6.00	0.0000	-0.3	2	2	0.7500	0.7500		0.40
3/8" Fiber	A	No	Ar (CaAa)	133.00 - 6.00	0.0000	-0.3	1	1	0.4000	0.4000		0.08
LDF4P-50A (1/2 FOAM)	A	No	Ar (CaAa)	80.00 - 6.00	0.0000	-0.25	1	1	0.6300	0.6300		0.15
LDF4P-50A (1/2 FOAM)	A	No	Ar (CaAa)	58.00 - 6.00	0.0000	0.3	1	1	0.6300	0.6300		0.15
LDF4P-50A (1/2 FOAM)	A	No	Ar (CaAa)	40.00 - 6.00	0.0000	-0.25	1	1	0.6300	0.6300		0.15
Proposed												
3/4" DC power cable	A	No	Ar (CaAa)	133.00 - 6.00	0.0000	-0.3	2	2	0.7500	0.7500		0.40
3/8" Fiber	A	No	Ar (CaAa)	133.00 - 6.00	0.0000	-0.3	1	1	0.4000	0.4000		0.08

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
Feedline Ladder (Af)	B	No	CaAa (In Face)	140.00 - 6.00	0.0000	0.25	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
Feedline Ladder (Af)	C	No	CaAa (In Face)	140.00 - 6.00	0.0000	0	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60
Feedline Ladder (Af)	A	No	CaAa (In Face)	140.00 - 6.00	0.0000	-0.25	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	140.00-120.00	A	0.000	0.000	45.828	0.000	318.80
		B	0.000	0.000	11.369	0.000	171.33
		C	0.000	0.000	58.520	0.000	370.80
T2	120.00-100.00	A	0.000	0.000	65.120	0.000	400.00
		B	0.000	0.000	17.222	0.000	191.78
		C	0.000	0.000	58.520	0.000	370.80
T3	100.00-80.00	A	0.000	0.000	65.120	0.000	400.00
		B	0.000	0.000	36.110	0.000	266.50
		C	0.000	0.000	58.520	0.000	370.80
T4	80.00-60.00	A	0.000	0.000	66.380	0.000	403.00
		B	0.000	0.000	38.091	0.000	272.65
		C	0.000	0.000	58.520	0.000	370.80
T5	60.00-40.00	A	0.000	0.000	67.514	0.000	405.70
		B	0.000	0.000	44.714	0.000	292.98
		C	0.000	0.000	58.520	0.000	370.80
T6	40.00-20.00	A	0.000	0.000	68.900	0.000	409.00
		B	0.000	0.000	51.364	0.000	309.76
		C	0.000	0.000	58.520	0.000	370.80
T7	20.00-0.00	A	0.000	0.000	48.230	0.000	286.30
		B	0.000	0.000	36.806	0.000	219.10
		C	0.000	0.000	40.964	0.000	259.56

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	140.00-120.00	A	1.720	0.000	0.000	130.682	0.000	2103.40
		B		0.000	0.000	26.241	0.000	627.01
		C		0.000	0.000	154.807	0.000	2547.27
T2	120.00-100.00	A	1.692	0.000	0.000	190.636	0.000	2915.24
		B		0.000	0.000	48.024	0.000	923.50
		C		0.000	0.000	154.322	0.000	2515.62
T3	100.00-80.00	A	1.658	0.000	0.000	189.563	0.000	2866.77
		B		0.000	0.000	111.971	0.000	1763.89
		C		0.000	0.000	153.750	0.000	2478.39
T4	80.00-60.00	A	1.617	0.000	0.000	195.978	0.000	2899.58
		B		0.000	0.000	119.693	0.000	1832.60
		C		0.000	0.000	153.050	0.000	2432.96
T5	60.00-40.00	A	1.564	0.000	0.000	200.819	0.000	2896.67
		B		0.000	0.000	145.705	0.000	2075.40
		C		0.000	0.000	152.141	0.000	2374.13
T6	40.00-20.00	A	1.486	0.000	0.000	205.668	0.000	2861.73

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	176.811	0.000	2297.69
		C		0.000	0.000	150.818	0.000	2289.03
T7	20.00-0.00	A	1.331	0.000	0.000	139.223	0.000	1826.87
		B		0.000	0.000	119.631	0.000	1450.44
		C		0.000	0.000	103.737	0.000	1485.29

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	140.00-120.00	-1.1444	1.6914	-0.9474	1.3737
T2	120.00-100.00	-1.8218	2.3227	-1.4562	1.9636
T3	100.00-80.00	-1.2850	2.9831	-0.8971	2.5371
T4	80.00-60.00	-1.5001	3.5906	-1.0813	3.1186
T5	60.00-40.00	-1.3292	4.0105	-0.8675	3.3775
T6	40.00-20.00	-1.0947	4.5171	-0.6080	3.8483
T7	20.00-0.00	-0.9927	4.4561	-0.6889	4.1386

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4470
T1	2	LDF4-50A (1/2 FOAM)	120.00 - 140.00	0.6000	0.4470
T1	3	LDF5-50A (7/8 FOAM)	120.00 - 121.00	0.6000	0.4470
T1	18	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4470
T1	19	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4470
T1	20	1/2" Fiber	120.00 - 140.00	0.6000	0.4470
T1	21	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.4470
T1	22	LDF7-50A (1-5/8 FOAM)	120.00 - 133.00	0.6000	0.4470
T1	23	3/4" DC power cable	120.00 - 133.00	0.6000	0.4470
T1	24	3/8" Fiber	120.00 - 133.00	0.6000	0.4470
T1	29	3/4" DC power cable	120.00 - 133.00	0.6000	0.4470
T1	30	3/8" Fiber	120.00 - 133.00	0.6000	0.4470
T2	1	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5741
T2	2	LDF4-50A (1/2 FOAM)	100.00 - 120.00	0.6000	0.5741

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	3	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.5741
T2	4	LDF5-50A (7/8 FOAM)	100.00 - 110.00	0.6000	0.5741
T2	5	LDF6-50A (1-1/4 FOAM)	100.00 - 110.00	0.6000	0.5741
T2	6	LDF5-50A (7/8 FOAM)	100.00 - 104.00	0.6000	0.5741
T2	7	LDF6-50A (1-1/4 FOAM)	100.00 - 101.00	0.6000	0.5741
T2	8	LDF6-50A (1-1/4 FOAM)	100.00 - 101.00	0.6000	0.5741
T2	9	LDF7-50A (1-5/8 FOAM)	100.00 - 101.00	0.6000	0.5741
T2	18	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5741
T2	19	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5741
T2	20	1/2" Fiber	100.00 - 120.00	0.6000	0.5741
T2	21	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5741
T2	22	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5741
T2	23	3/4" DC power cable	100.00 - 120.00	0.6000	0.5741
T2	24	3/8" Fiber	100.00 - 120.00	0.6000	0.5741
T2	29	3/4" DC power cable	100.00 - 120.00	0.6000	0.5741
T2	30	3/8" Fiber	100.00 - 120.00	0.6000	0.5741
T3	1	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	2	LDF4-50A (1/2 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	3	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	4	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	5	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	6	LDF5-50A (7/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	7	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	8	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	9	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	10	LDF5-50A (7/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	19	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	20	1/2" Fiber	80.00 - 100.00	0.6000	0.6000
T3	21	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	22	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T3	23	3/4" DC power cable	80.00 - 100.00	0.6000	0.6000
T3	24	3/8" Fiber	80.00 - 100.00	0.6000	0.6000
T3	29	3/4" DC power cable	80.00 - 100.00	0.6000	0.6000
T3	30	3/8" Fiber	80.00 - 100.00	0.6000	0.6000
T4	1	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	2	LDF4-50A (1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	3	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	4	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	5	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	6	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	7	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	8	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	9	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	10	LDF5-50A (7/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	11	LDF4-50A (1/2 FOAM)	60.00 - 67.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	12	0 3/4	60.00 - 66.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	19	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	20	1/2" Fiber	60.00 - 80.00	0.6000	0.6000
T4	21	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	22	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	23	3/4" DC power cable	60.00 - 80.00	0.6000	0.6000
T4	24	3/8" Fiber	60.00 - 80.00	0.6000	0.6000
T4	25	LDF4P-50A (1/2 FOAM)	60.00 - 80.00	0.6000	0.6000
T4	29	3/4" DC power cable	60.00 - 80.00	0.6000	0.6000
T4	30	3/8" Fiber	60.00 - 80.00	0.6000	0.6000
T5	1	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	2	LDF4-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	3	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	4	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	5	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	6	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	7	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	8	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	9	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	10	LDF5-50A (7/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	11	LDF4-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	12	0 3/4	40.00 - 60.00	0.6000	0.6000
T5	13	LDF5-50A (7/8 FOAM)	40.00 - 54.00	0.6000	0.6000
T5	14	LDF2-50A (3/8 FOAM)	40.00 - 44.00	0.6000	0.6000
T5	18	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	19	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	20	1/2" Fiber	40.00 - 60.00	0.6000	0.6000
T5	21	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	22	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	23	3/4" DC power cable	40.00 - 60.00	0.6000	0.6000
T5	24	3/8" Fiber	40.00 - 60.00	0.6000	0.6000
T5	25	LDF4P-50A (1/2 FOAM)	40.00 - 60.00	0.6000	0.6000
T5	26	LDF4P-50A (1/2 FOAM)	40.00 - 58.00	0.6000	0.6000
T5	29	3/4" DC power cable	40.00 - 60.00	0.6000	0.6000
T5	30	3/8" Fiber	40.00 - 60.00	0.6000	0.6000
T6	1	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	2	LDF4-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	3	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	4	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	5	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	6	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	7	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	8	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	9	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	10	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	11	LDF4-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	12	0 3/4	20.00 - 40.00	0.6000	0.6000
T6	13	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	14	LDF2-50A (3/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	15	LDF2-50A (3/8 FOAM)	20.00 - 37.00	0.6000	0.6000
T6	16	LDF4-50A (1/2 FOAM)	20.00 - 37.00	0.6000	0.6000
T6	17	LDF5-50A (7/8 FOAM)	20.00 - 33.00	0.6000	0.6000
T6	18	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	19	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	20	1/2" Fiber	20.00 - 40.00	0.6000	0.6000
T6	21	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	22	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	23	3/4" DC power cable	20.00 - 40.00	0.6000	0.6000
T6	24	3/8" Fiber	20.00 - 40.00	0.6000	0.6000
T6	25	LDF4P-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	26	LDF4P-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	27	LDF4P-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T6	29	3/4" DC power cable	20.00 - 40.00	0.6000	0.6000
T6	30	3/8" Fiber	20.00 - 40.00	0.6000	0.6000
T7	1	Feedline Ladder (Af)	6.00 - 20.00	0.6000	0.6000
T7	2	LDF4-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	3	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	4	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	5	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	6	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	7	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	8	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	9	LDF7-50A (1-5/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	10	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	11	LDF4-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	12	0 3/4	6.00 - 20.00	0.6000	0.6000
T7	13	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	14	LDF2-50A (3/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	15	LDF2-50A (3/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	16	LDF4-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	17	LDF5-50A (7/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	6.00 - 20.00	0.6000	0.6000
T7	19	LDF7-50A (1-5/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	20	1/2" Fiber	6.00 - 20.00	0.6000	0.6000
T7	21	Feedline Ladder (Af)	6.00 - 20.00	0.6000	0.6000
T7	22	LDF7-50A (1-5/8 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	23	3/4" DC power cable	6.00 - 20.00	0.6000	0.6000
T7	24	3/8" Fiber	6.00 - 20.00	0.6000	0.6000
T7	25	LDF4P-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	26	LDF4P-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	27	LDF4P-50A (1/2 FOAM)	6.00 - 20.00	0.6000	0.6000
T7	29	3/4" DC power cable	6.00 - 20.00	0.6000	0.6000
T7	30	3/8" Fiber	6.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	B	None		0.0000	145.00	No Ice	2.70	2.70	50.00
						1/2" Ice	3.10	3.10	70.00
						1" Ice	3.50	3.50	90.00
Lightning Rod 5/8x4'	A	None		0.0000	143.00	No Ice	0.25	0.25	31.00
						1/2" Ice	0.66	0.66	33.82
						1" Ice	0.97	0.97	39.29
PiROD 13' Rotatable Platform w/handrails (Lattice)	C	None		0.0000	142.00	No Ice	38.90	38.90	2166.00
						1/2" Ice	48.80	48.80	2888.00
						1" Ice	58.70	58.70	3610.00
(3) Commscope SBNHH-1D65B	A	From Leg	4.00 0.00 0.00	0.0000	142.00	No Ice	8.08	6.77	62.50
						1/2" Ice	8.53	7.72	128.44
						1" Ice	9.00	8.55	202.15
(3) Commscope	B	From Leg	4.00	0.0000	142.00	No Ice	8.08	6.77	62.50

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft ft ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		C_AA_A *Front* *ft²*	C_AA_A *Side* *ft²*	*Weight* *lb*
SBNHH-1D65B			0.00			1/2" Ice	8.53	7.72	128.44
			0.00			1" Ice	9.00	8.55	202.15
(3) Commscope SBNHH-1D65B	C	From Leg	4.00	0.0000	142.00	No Ice	8.08	6.77	62.50
			0.00			1/2" Ice	8.53	7.72	128.44
			0.00			1" Ice	9.00	8.55	202.15
Amphenol BXA-80080/4CF	A	From Leg	4.00	0.0000	142.00	No Ice	5.03	4.03	43.25
			0.00			1/2" Ice	5.42	4.65	87.53
			0.00			1" Ice	5.81	5.27	137.72
Amphenol BXA-80080/4CF	A	From Leg	4.00	0.0000	142.00	No Ice	5.03	4.03	43.25
			0.00			1/2" Ice	5.42	4.65	87.53
			0.00			1" Ice	5.81	5.27	137.72
Amphenol BXA-80080/4CF	B	From Leg	4.00	0.0000	142.00	No Ice	5.03	4.03	43.25
			0.00			1/2" Ice	5.42	4.65	87.53
			0.00			1" Ice	5.81	5.27	137.72
ALU RRH4x45 AWS	A	From Leg	4.00	0.0000	142.00	No Ice	2.66	1.59	64.00
			0.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
ALU RRH4x45 AWS	B	From Leg	4.00	0.0000	142.00	No Ice	2.66	1.59	64.00
			0.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
ALU RRH4x45 AWS	C	From Leg	4.00	0.0000	142.00	No Ice	2.66	1.59	64.00
			0.00			1/2" Ice	2.88	1.77	84.35
			0.00			1" Ice	3.10	1.96	107.85
ALU RRH2x60-PCS 1900 MHz	A	From Leg	4.00	0.0000	142.00	No Ice	3.35	2.00	55.00
			0.00			1/2" Ice	3.60	2.24	78.12
			0.00			1" Ice	3.87	2.48	104.86
ALU RRH2x60-PCS 1900 MHz	B	From Leg	4.00	0.0000	142.00	No Ice	3.35	2.00	55.00
			0.00			1/2" Ice	3.60	2.24	78.12
			0.00			1" Ice	3.87	2.48	104.86
ALU RRH2x60-PCS 1900 MHz	C	From Leg	4.00	0.0000	142.00	No Ice	3.35	2.00	55.00
			0.00			1/2" Ice	3.60	2.24	78.12
			0.00			1" Ice	3.87	2.48	104.86
ALU RRH2x60-700	A	From Leg	4.00	0.0000	142.00	No Ice	3.50	1.82	55.00
			0.00			1/2" Ice	3.76	2.05	75.00
			0.00			1" Ice	4.02	2.28	95.00
ALU RRH2x60-700	B	From Leg	4.00	0.0000	142.00	No Ice	3.50	1.82	55.00
			0.00			1/2" Ice	3.76	2.05	75.00
			0.00			1" Ice	4.02	2.28	95.00
ALU RRH2x60-700	C	From Leg	4.00	0.0000	142.00	No Ice	3.50	1.82	55.00
			0.00			1/2" Ice	3.76	2.05	75.00
			0.00			1" Ice	4.02	2.28	95.00
(2) RFS FD9R6004/1C-3L Diplexer	A	From Leg	4.00	0.0000	142.00	No Ice	0.31	0.08	2.60
			0.00			1/2" Ice	0.39	0.12	4.90
			0.00			1" Ice	0.47	0.17	8.29
(2) RFS FD9R6004/1C-3L Diplexer	A	From Leg	4.00	0.0000	142.00	No Ice	0.31	0.08	2.60
			0.00			1/2" Ice	0.39	0.12	4.90
			0.00			1" Ice	0.47	0.17	8.29
(2) RFS FD9R6004/1C-3L Diplexer	A	From Leg	4.00	0.0000	142.00	No Ice	0.31	0.08	2.60
			0.00			1/2" Ice	0.39	0.12	4.90
			0.00			1" Ice	0.47	0.17	8.29
RFS DB-T1-6Z-8AB-0Z (Raycap)	A	From Leg	4.00	0.0000	142.00	No Ice	4.80	2.00	40.00
			0.00			1/2" Ice	5.07	2.19	80.00
			0.00			1" Ice	5.34	2.38	120.00
RFS DB-T1-6Z-8AB-0Z (Raycap)	B	From Leg	4.00	0.0000	142.00	No Ice	4.80	2.00	40.00
			0.00			1/2" Ice	5.07	2.19	80.00
			0.00			1" Ice	5.34	2.38	120.00
SM502-1	C	From Leg	2.00	0.0000	133.00	No Ice	15.35	14.00	557.70

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1/2" Ice	21.29	20.81	741.30
			0.00				1" Ice	27.23	27.62	924.90
SM502-1	B	From Leg	2.00		0.0000	133.00	No Ice	15.35	14.00	557.70
			0.00				1/2" Ice	21.29	20.81	741.30
			0.00				1" Ice	27.23	27.62	924.90
SM502-1	C	From Leg	2.00		0.0000	133.00	No Ice	15.35	14.00	557.70
			0.00				1/2" Ice	21.29	20.81	741.30
			0.00				1" Ice	27.23	27.62	924.90
KMW AM-X-CD-14-65-00T	A	From Leg	4.00		0.0000	133.00	No Ice	5.47	4.25	71.90
			0.00				1/2" Ice	5.96	5.06	119.74
			0.00				1" Ice	6.42	5.74	173.71
KMW AM-X-CD-14-65-00T	B	From Leg	4.00		0.0000	133.00	No Ice	5.47	4.25	71.90
			0.00				1/2" Ice	5.96	5.06	119.74
			0.00				1" Ice	6.42	5.74	173.71
KMW AM-X-CD-14-65-00T	C	From Leg	4.00		0.0000	133.00	No Ice	5.47	4.25	71.90
			0.00				1/2" Ice	5.96	5.06	119.74
			0.00				1" Ice	6.42	5.74	173.71
Powerwave 7770.00	A	From Leg	4.00		0.0000	133.00	No Ice	8.30	7.66	89.20
			0.00				1/2" Ice	9.01	8.88	165.07
			0.00				1" Ice	9.67	9.94	248.72
Powerwave 7770.00	B	From Leg	4.00		0.0000	133.00	No Ice	8.30	7.66	89.20
			0.00				1/2" Ice	9.01	8.88	165.07
			0.00				1" Ice	9.67	9.94	248.72
Powerwave 7770.00	C	From Leg	4.00		0.0000	133.00	No Ice	8.30	7.66	89.20
			0.00				1/2" Ice	9.01	8.88	165.07
			0.00				1" Ice	9.67	9.94	248.72
(2) RRUS-11	A	From Leg	4.00		0.0000	133.00	No Ice	2.52	1.07	55.00
			0.00				1/2" Ice	2.72	1.21	74.32
			0.00				1" Ice	2.92	1.36	96.56
(2) RRUS-11	B	From Leg	4.00		0.0000	133.00	No Ice	2.52	1.07	55.00
			0.00				1/2" Ice	2.72	1.21	74.32
			0.00				1" Ice	2.92	1.36	96.56
(2) RRUS-11	C	From Leg	4.00		0.0000	133.00	No Ice	2.52	1.07	55.00
			0.00				1/2" Ice	2.72	1.21	74.32
			0.00				1" Ice	2.92	1.36	96.56
Powerwave TT19-08BP111-001 TMA	A	From Leg	4.00		0.0000	133.00	No Ice	0.55	0.45	16.00
			0.00				1/2" Ice	0.65	0.53	21.80
			0.00				1" Ice	0.75	0.63	29.22
Powerwave TT19-08BP111-001 TMA	B	From Leg	4.00		0.0000	133.00	No Ice	0.55	0.45	16.00
			0.00				1/2" Ice	0.65	0.53	21.80
			0.00				1" Ice	0.75	0.63	29.22
Powerwave TT19-08BP111-001 TMA	C	From Leg	4.00		0.0000	133.00	No Ice	0.55	0.45	16.00
			0.00				1/2" Ice	0.65	0.53	21.80
			0.00				1" Ice	0.75	0.63	29.22
Raycap DC6-48-60-18-8F	A	From Leg	0.50		0.0000	133.00	No Ice	0.83	0.83	22.00
			0.00				1/2" Ice	1.34	1.34	37.91
			0.00				1" Ice	1.52	1.52	56.21
DB212 DiPole	C	From Leg	0.50		0.0000	121.00	No Ice	2.40	2.40	16.00
			0.00				1/2" Ice	5.42	5.42	39.91
			0.00				1" Ice	8.45	8.45	82.37
DB212 DiPole	B	From Leg	0.50		0.0000	119.00	No Ice	2.40	2.40	16.00
			0.00				1/2" Ice	5.42	5.42	39.91
			0.00				1" Ice	8.45	8.45	82.37
DB212 DiPole	B	From Leg	0.50		0.0000	110.00	No Ice	2.40	2.40	16.00
			0.00				1/2" Ice	5.42	5.42	39.91
			0.00				1" Ice	8.45	8.45	82.37
SO308-1	B	From Leg	3.00		0.0000	101.00	No Ice	0.98	3.03	53.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
DB540	B	From Leg	6.00	0.0000	110.00	No Ice	4.50	4.50	66.00
			0.00			1/2" Ice	6.33	6.33	99.30
			0.00			1" Ice	8.18	8.18	144.00
DB212 DiPole	B	From Leg	0.50	0.0000	104.00	No Ice	2.40	2.40	16.00
			0.00			1/2" Ice	5.42	5.42	39.91
			0.00			1" Ice	8.45	8.45	82.37
SO308-1	C	From Leg	3.00	0.0000	101.00	No Ice	0.98	3.03	53.00
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
PD340	C	From Leg	6.00	0.0000	112.50	No Ice	3.38	3.38	40.00
			0.00			1/2" Ice	5.65	5.65	67.65
			0.00			1" Ice	7.93	7.93	109.35
PD340	C	From Leg	6.00	0.0000	89.50	No Ice	3.38	3.38	40.00
			0.00			1/2" Ice	5.65	5.65	67.65
			0.00			1" Ice	7.93	7.93	109.35
SO308-1	A	From Leg	3.00	0.0000	101.00	No Ice	0.98	3.03	53.00
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
DB810T3	A	From Leg	6.00	0.0000	108.25	No Ice	3.63	3.63	35.00
			0.00			1/2" Ice	5.10	5.10	61.88
			0.00			1" Ice	6.60	6.60	98.03
DB810T3	A	From Leg	6.00	0.0000	93.75	No Ice	3.63	3.63	35.00
			0.00			1/2" Ice	5.10	5.10	61.88
			0.00			1" Ice	6.60	6.60	98.03
(2) PD1121	B	From Leg	6.00	0.0000	101.00	No Ice	0.41	0.41	3.00
			0.00			1/2" Ice	1.52	1.52	11.00
			0.00			1" Ice	2.63	2.63	19.00
DB212 DiPole	C	From Leg	0.50	0.0000	96.00	No Ice	2.40	2.40	16.00
			0.00			1/2" Ice	5.42	5.42	39.91
			0.00			1" Ice	8.45	8.45	82.37
DB212 DiPole	B	From Leg	0.50	0.0000	90.00	No Ice	2.40	2.40	16.00
			0.00			1/2" Ice	5.42	5.42	39.91
			0.00			1" Ice	8.45	8.45	82.37
3" x 60" Dish Pipe Mount	B	From Leg	0.50	0.0000	80.00	No Ice	1.44	1.44	37.90
			0.00			1/2" Ice	1.80	1.80	50.63
			0.00			1" Ice	2.12	2.12	66.93
DB212 DiPole	B	From Leg	0.50	0.0000	68.00	No Ice	2.40	2.40	16.00
			0.00			1/2" Ice	5.42	5.42	39.91
			0.00			1" Ice	8.45	8.45	82.37
Obstruction Light	A	From Leg	1.00	0.0000	67.00	No Ice	0.80	0.80	10.00
			0.00			1/2" Ice	0.94	0.94	21.94
			0.00			1" Ice	1.09	1.09	35.86
Obstruction Light	B	From Leg	1.00	0.0000	67.00	No Ice	0.80	0.80	10.00
			0.00			1/2" Ice	0.94	0.94	21.94
			0.00			1" Ice	1.09	1.09	35.86
CPD Camera	A	From Leg	0.50	0.0000	66.00	No Ice	3.49	3.47	41.00
			0.00			1/2" Ice	3.88	4.06	74.00
			0.00			1" Ice	4.27	4.65	107.00
SO308-1	A	From Leg	3.00	0.0000	54.00	No Ice	0.98	3.03	53.00
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
PD340	A	From Leg	6.00	0.0000	65.50	No Ice	3.38	3.38	40.00
			0.00			1/2" Ice	5.65	5.65	67.65
			0.00			1" Ice	7.93	7.93	109.35
SO308-1	B	From Leg	3.00	0.0000	54.00	No Ice	0.98	3.03	53.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
PD220	B	From Leg	6.00	0.0000	64.00	No Ice	3.56	3.56	23.00
			0.00			1/2" Ice	7.13	7.13	46.00
			0.00			1" Ice	10.70	10.70	69.00
PD220	B	From Leg	6.00	0.0000	44.00	No Ice	3.56	3.56	23.00
			0.00			1/2" Ice	7.13	7.13	46.00
			0.00			1" Ice	10.70	10.70	69.00
3" x 60" Dish Pipe Mount	A	From Leg	0.50	0.0000	58.00	No Ice	1.48	1.48	37.90
			0.00			1/2" Ice	1.80	1.80	50.63
			0.00			1" Ice	2.12	2.12	66.93
SO312-1	A	From Leg	2.00	0.0000	44.00	No Ice	2.97	4.03	70.00
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
18"x12" Panel	A	From Leg	4.00	0.0000	44.00	No Ice	1.80	0.51	20.00
			0.00			1/2" Ice	1.97	0.63	31.02
			0.00			1" Ice	2.15	0.75	44.37
3" x 60" Dish Pipe Mount	B	From Leg	0.50	0.0000	40.00	No Ice	1.50	1.50	37.90
			0.00			1/2" Ice	1.80	1.80	50.63
			0.00			1" Ice	2.12	2.12	66.93
SO312-1	A	From Leg	2.00	0.0000	37.00	No Ice	2.97	4.03	70.00
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
18"x12" Panel	A	From Leg	4.00	0.0000	37.00	No Ice	1.80	0.51	20.00
			0.00			1/2" Ice	1.97	0.63	31.02
			0.00			1" Ice	2.15	0.75	44.37
SO308-1	C	From Leg	3.00	0.0000	33.00	No Ice	0.98	3.03	53.00
			0.00			1/2" Ice	1.70	5.22	78.75
			0.00			1" Ice	2.42	7.41	104.50
(2) BA1012	C	From Leg	6.00	0.0000	40.00	No Ice	0.25	0.25	2.00
			0.00			1/2" Ice	0.36	0.36	5.08
			0.00			1" Ice	0.47	0.47	9.38
Proposed									
Quintel QS66512-2	A	From Leg	4.00	0.0000	133.00	No Ice	8.37	8.46	151.55
			0.00			1/2" Ice	8.93	9.66	227.24
			0.00			1" Ice	9.46	10.55	311.07
Quintel QS66512-2	B	From Leg	4.00	0.0000	133.00	No Ice	8.37	8.46	151.55
			0.00			1/2" Ice	8.93	9.66	227.24
			0.00			1" Ice	9.46	10.55	311.07
Quintel QS66512-2	C	From Leg	4.00	0.0000	133.00	No Ice	8.37	8.46	151.55
			0.00			1/2" Ice	8.93	9.66	227.24
			0.00			1" Ice	9.46	10.55	311.07
RRUS-32 B30	A	From Leg	4.00	0.0000	133.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
RRUS-32 B30	B	From Leg	4.00	0.0000	133.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
RRUS-32 B30	C	From Leg	4.00	0.0000	133.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
Raycap DC6-48-60-18-8F	B	From Leg	0.50	0.0000	133.00	No Ice	0.83	0.83	22.00
			0.00			1/2" Ice	1.34	1.34	37.91
			0.00			1" Ice	1.52	1.52	56.21

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
3' Dish w/ Radome	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		80.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	45.00 83.35 121.69
3' HP Dish	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		58.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	50.00 88.35 126.69
2' Dish w/o Radome	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		44.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	40.00 57.50 75.01
3' Dish w/ Radome	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		40.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	45.00 83.35 121.69
2' Dish w/o Radome	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		37.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	40.00 57.50 75.01

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	8724.29					
Bracing Weight	6648.92					
Total Member Self-Weight	15373.22			9967.01	2769.57	
Total Weight	30291.08			9967.01	2769.57	
Wind 0 deg - No Ice		-59.35	-31176.20	-2569769.56	8212.95	315.07
Wind 30 deg - No Ice		13667.48	-23954.09	-2005809.31	-1148250.13	2484.29
Wind 60 deg - No Ice		24447.14	-14244.19	-1182814.87	-2048864.61	4077.18
Wind 90 deg - No Ice		27414.13	11.10	12539.31	-2293603.52	4462.25
Wind 120 deg - No Ice		26746.14	15807.07	1308619.93	-2210214.73	4875.27
Wind 150 deg - No Ice		15565.56	27321.79	2280667.80	-1297153.14	2844.68
Wind 180 deg - No Ice		12.71	29959.00	2512189.70	192.70	-255.50
Wind 210 deg - No Ice		-13695.18	24056.91	2029733.89	1156638.84	-2977.10
Wind 240 deg - No Ice		-25576.59	15063.30	1250214.99	2125480.30	-4958.92
Wind 270 deg - No Ice		-27504.38	-50.70	5149.53	2304689.49	-4618.42
Wind 300 deg - No Ice		-25761.08	-15017.46	-1243033.22	2153551.24	-4053.10
Wind 330 deg - No Ice		-15658.41	-27253.59	-2258871.06	1307250.84	-2195.70
Member Ice	20729.59					
Total Weight Ice	105470.44			62745.61	17266.52	
Wind 0 deg - Ice		-18.64	-14006.89	-1066543.57	19019.03	1106.87
Wind 30 deg - Ice		6366.20	-11102.49	-840151.85	-499875.98	2480.71
Wind 60 deg - Ice		10562.83	-6130.65	-436079.57	-842206.59	3100.25
Wind 90 deg - Ice		12789.24	5.72	63729.03	-1017378.49	3088.35
Wind 120 deg - Ice		12107.22	7091.78	630899.44	-955575.12	2461.18
Wind 150 deg - Ice		7125.75	12437.74	1063061.97	-556835.96	881.80
Wind 180 deg - Ice		6.18	13797.73	1180415.14	16281.20	-1071.37
Wind 210 deg - Ice		-6372.53	11131.94	966788.33	535129.07	-2621.93
Wind 240 deg - Ice		-10781.71	6304.98	571136.12	890100.07	-3318.68
Wind 270 deg - Ice		-12813.35	-16.36	61159.93	1053396.07	-3130.01

Load Case	*Vertical Forces* lb	*Sum of Forces X* lb	*Sum of Forces Z* lb	*Sum of Overturning Moments, M_x* lb-ft	*Sum of Overturning Moments, M_z* lb-ft	*Sum of Torques* lb-ft
Wind 300 deg - Ice		-11926.92	-6925.34	-496328.23	979122.72	-2276.69
Wind 330 deg - Ice		-7151.62	-12417.54	-936994.97	592631.64	-698.92
Total Weight	30291.08			9967.01	2769.57	
Wind 0 deg - Service		-19.38	-10179.98	-842301.21	1659.58	102.88
Wind 30 deg - Service		4462.85	-7821.74	-658150.93	-375961.02	811.20
Wind 60 deg - Service		7982.74	-4651.16	-389418.05	-670039.22	1331.32
Wind 90 deg - Service		8951.55	3.62	901.68	-749953.96	1457.06
Wind 120 deg - Service		8733.43	5161.49	424111.68	-722724.97	1591.92
Wind 150 deg - Service		5082.63	8921.40	741515.07	-424582.41	928.88
Wind 180 deg - Service		4.15	9782.53	817114.06	-959.28	-83.43
Wind 210 deg - Service		-4471.90	7855.32	659577.46	376655.79	-972.11
Wind 240 deg - Service		-8351.54	4918.63	405040.68	693012.18	-1619.24
Wind 270 deg - Service		-8981.02	-16.55	-1511.31	751529.47	-1508.06
Wind 300 deg - Service		-8411.78	-4903.66	-409081.18	702178.20	-1323.46
Wind 330 deg - Service		-5112.95	-8899.13	-740783.34	425835.22	-716.96

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	140 - 120	Leg	Max Tension	15	49273.17	-156.18	-6.36
			Max. Compression	18	-55009.23	146.67	4.40
			Max. Mx	6	13184.79	769.61	-83.18
			Max. My	24	-3950.47	-32.58	-1001.08
			Max. Vy	3	1544.24	-0.00	0.00
			Max. Vx	20	-2074.37	-0.00	-0.00
		Diagonal	Max Tension	8	5380.96	28.11	-10.63
			Max. Compression	8	-5612.38	0.00	0.00
			Max. Mx	18	4216.02	57.30	-0.40
			Max. My	20	-5491.54	-27.57	16.65
			Max. Vy	35	-26.66	37.14	-1.15
			Max. Vx	24	7.56	0.00	0.00
		Top Girt	Max Tension	2	992.92	0.00	0.00
			Max. Compression	14	-1082.71	0.00	0.00
			Max. Mx	33	-252.40	-10.61	0.00
			Max. My	31	-114.87	0.00	0.31
			Max. Vy	33	-16.97	0.00	0.00
			Max. Vx	31	0.50	0.00	0.00
T2	120 - 100	Leg	Max Tension	15	91760.16	-233.84	-14.41
			Max. Compression	18	-100139.42	328.41	14.94
			Max. Mx	14	91173.93	-331.11	3.37
			Max. My	16	-5059.21	-2.38	356.85
			Max. Vy	18	-119.82	279.37	40.08
			Max. Vx	12	203.31	-6.60	-299.84
		Diagonal	Max Tension	8	4767.07	0.00	0.00
			Max. Compression	8	-4882.36	0.00	0.00
			Max. Mx	18	3828.23	47.41	-0.39
			Max. My	22	-3778.09	-16.00	5.05
			Max. Vy	35	-30.07	34.41	2.91
			Max. Vx	31	1.84	0.00	0.00
T3	100 - 80	Leg	Max Tension	15	128587.16	-411.63	-8.31
			Max. Compression	18	-140022.86	614.84	-3.22
			Max. Mx	10	-139916.22	616.21	-14.12
			Max. My	12	-6549.02	-3.61	-658.60
			Max. Vy	6	-118.82	-438.01	12.60
			Max. Vx	12	-201.32	-3.75	-486.43
		Diagonal	Max Tension	8	5776.03	0.00	0.00
			Max. Compression	8	-5928.91	0.00	0.00
			Max. Mx	35	1161.37	41.76	4.34

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	31	-98.49	34.10	-5.62
			Max. Vy	33	35.86	38.79	-4.66
			Max. Vx	31	2.11	0.00	0.00
T4	80 - 60	Leg	Max Tension	15	162699.22	-717.18	29.27
			Max. Compression	10	-177721.97	892.55	35.92
			Max. Mx	14	161458.43	-916.89	25.75
			Max. My	16	-7576.23	2.24	992.05
			Max. Vy	22	-157.04	-605.25	19.46
			Max. Vx	18	182.17	-313.21	548.82
		Diagonal	Max Tension	20	7075.64	0.00	0.00
			Max. Compression	20	-7307.45	0.00	0.00
			Max. Mx	35	1784.17	73.66	-7.26
			Max. My	35	-81.81	63.04	9.58
			Max. Vy	33	51.50	70.06	8.60
			Max. Vx	35	-2.95	0.00	0.00
T5	60 - 40	Leg	Max Tension	15	197369.58	-966.48	18.11
			Max. Compression	10	-216562.39	1312.87	70.37
			Max. Mx	18	-216276.82	1312.88	-62.39
			Max. My	16	-8969.28	-14.42	1280.16
			Max. Vy	19	-186.32	1165.63	-36.21
			Max. Vx	16	195.36	-14.42	1280.16
		Diagonal	Max Tension	20	7692.85	0.00	0.00
			Max. Compression	20	-7943.02	0.00	0.00
			Max. Mx	35	1891.85	91.40	-10.31
			Max. My	35	-228.26	84.79	11.90
			Max. Vy	33	59.42	90.64	11.40
			Max. Vx	35	3.25	0.00	0.00
T6	40 - 20	Leg	Max Tension	15	231786.12	-826.70	-2.80
			Max. Compression	10	-255680.45	1963.87	-27.71
			Max. Mx	33	38375.95	-2279.15	0.92
			Max. My	16	-9585.28	37.89	1132.39
			Max. Vy	29	513.64	-2262.21	-15.47
			Max. Vx	16	222.59	37.89	1132.39
		Diagonal	Max Tension	20	8542.70	0.00	0.00
			Max. Compression	20	-8757.76	0.00	0.00
			Max. Mx	35	1719.52	128.89	-14.02
			Max. My	35	-640.50	120.59	15.95
			Max. Vy	33	74.43	110.89	14.00
			Max. Vx	35	-3.98	0.00	0.00
T7	20 - 0	Leg	Max Tension	15	261409.23	-1778.69	-3.88
			Max. Compression	10	-289230.55	0.00	-0.40
			Max. Mx	35	-108026.85	2534.81	-51.69
			Max. My	12	-13070.96	-151.74	-4339.47
			Max. Vy	29	-431.73	-2262.21	-15.47
			Max. Vx	12	-553.95	-151.74	-4339.47
		Diagonal	Max Tension	21	9980.93	0.00	0.00
			Max. Compression	20	-10445.62	0.00	0.00
			Max. Mx	33	580.44	205.03	-21.75
			Max. My	20	-9725.87	-7.68	32.01
			Max. Vy	33	90.25	205.03	-21.75
			Max. Vx	36	-5.57	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	298535.00	26964.83	-15290.21
	Max. H_x	18	298535.00	26964.83	-15290.21
	Max. H_z	5	-240116.69	-21473.20	13995.99
	Min. Vert	7	-266422.92	-24572.42	13945.77
	Min. H_x	7	-266422.92	-24572.42	13945.77
	Min. H_z	18	298535.00	26964.83	-15290.21
Leg B	Max. Vert	10	298862.12	-27006.99	-15317.79
	Max. H_x	23	-268404.53	24740.42	14044.24
	Max. H_z	25	-242186.31	21636.12	14114.58
	Min. Vert	23	-268404.53	24740.42	14044.24
	Min. H_x	10	298862.12	-27006.99	-15317.79
	Min. H_z	10	298862.12	-27006.99	-15317.79
Leg A	Max. Vert	2	298312.32	15.31	31076.10
	Max. H_x	21	8996.28	2731.10	654.78
	Max. H_z	2	298312.32	15.31	31076.10
	Min. Vert	15	-269597.94	-14.40	-28534.80
	Min. H_x	9	8174.13	-2733.30	590.48
	Min. H_z	15	-269597.94	-14.40	-28534.80

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	30291.08	0.00	-0.00	9996.03	2782.24	-0.01
1.2 Dead+1.6 Wind 0 deg - No Ice	36349.29	-94.96	-49920.92	-4139143.68	12135.74	446.93
0.9 Dead+1.6 Wind 0 deg - No Ice	27261.97	-94.96	-49920.92	-4136836.39	11274.58	460.58
1.2 Dead+1.6 Wind 30 deg - No Ice	36349.29	24799.39	-43403.89	-3621211.16	-2073783.84	4015.38
0.9 Dead+1.6 Wind 30 deg - No Ice	27261.97	24799.38	-43403.89	-3619565.45	-2071949.96	4008.61
1.2 Dead+1.6 Wind 60 deg - No Ice	36349.29	41074.42	-23921.73	-1996103.30	-3451958.61	6619.66
0.9 Dead+1.6 Wind 60 deg - No Ice	27261.97	41074.42	-23921.73	-1996537.76	-3448319.52	6595.14
1.2 Dead+1.6 Wind 90 deg - No Ice	36349.29	49853.10	17.75	16250.11	-4173311.80	7271.99
0.9 Dead+1.6 Wind 90 deg - No Ice	27261.97	49853.10	17.75	13207.15	-4168773.35	7234.82
1.2 Dead+1.6 Wind 120 deg - No Ice	36349.29	42911.50	25359.25	2109366.40	-3570809.80	7956.18
0.9 Dead+1.6 Wind 120 deg - No Ice	27261.97	42911.50	25359.25	2103641.65	-3567051.86	7917.46
1.2 Dead+1.6 Wind 150 deg - No Ice	36349.29	24904.90	43714.86	3663703.03	-2087096.23	4691.17
0.9 Dead+1.6 Wind 150 deg - No Ice	27261.97	24904.90	43714.86	3655966.40	-2085245.49	4660.51
1.2 Dead+1.6 Wind 180 deg - No Ice	36349.29	20.33	47973.39	4038775.05	-788.25	-356.52
0.9 Dead+1.6 Wind 180 deg - No Ice	27261.97	20.33	47973.39	4030520.24	-1626.02	-369.84
1.2 Dead+1.6 Wind 210 deg - No Ice	36349.29	-24843.70	43568.40	3651752.50	2085029.17	-4808.06
0.9 Dead+1.6 Wind 210 deg - No Ice	27261.97	-24843.70	43568.40	3644032.68	2081501.81	-4801.21

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.6 Wind 240 deg - No Ice	36349.29	-42881.54	25232.31	2096487.99	3572782.19	-8032.81
0.9 Dead+1.6 Wind 240 deg - No Ice	27261.97	-42881.54	25232.31	2090785.99	3567340.17	-8007.75
1.2 Dead+1.6 Wind 270 deg - No Ice	36349.29	-49997.51	-81.12	4336.33	4188932.52	-7518.43
0.9 Dead+1.6 Wind 270 deg - No Ice	27261.97	-49997.51	-81.12	1316.67	4182692.95	-7481.29
1.2 Dead+1.6 Wind 300 deg - No Ice	36349.29	-41335.41	-24095.88	-2011865.44	3477681.13	-6633.57
0.9 Dead+1.6 Wind 300 deg - No Ice	27261.97	-41335.41	-24095.88	-2012275.91	3472326.00	-6595.68
1.2 Dead+1.6 Wind 330 deg - No Ice	36349.29	-25053.45	-43605.74	-3636549.30	2101224.43	-3652.25
0.9 Dead+1.6 Wind 330 deg - No Ice	27261.97	-25053.45	-43605.74	-3634885.17	2097667.80	-3621.58
1.2 Dead+1.0 Ice+1.0 Temp	111528.65	0.00	-0.00	65949.10	18274.68	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	111528.65	-18.64	-14089.06	-1085745.88	20074.32	1048.06
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	111528.65	7104.38	-12381.05	-945776.36	-561654.17	2507.55
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	111528.65	11940.22	-6925.89	-502827.46	-962392.63	3205.69
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	111528.65	14254.94	5.72	67016.28	-1145861.04	3246.05
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	111528.65	12149.81	7116.37	645897.00	-974749.86	2625.97
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	111528.65	7125.75	12437.73	1081250.41	-564397.83	1012.50
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	111528.65	6.18	13879.90	1206002.71	17277.43	-1013.08
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	111528.65	-7110.71	12410.50	1078924.70	598954.00	-2650.03
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	111528.65	-12142.02	7090.35	643183.34	1010216.04	-3424.71
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	111528.65	-14279.05	-16.36	64378.33	1183936.80	-3287.53
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	111528.65	-11986.58	-6959.76	-506030.54	1002478.98	-2440.82
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	111528.65	-7151.62	-12417.54	-948676.30	602256.23	-829.36
Dead+Wind 0 deg - Service	30291.08	-19.38	-10187.94	-836460.24	4582.62	93.38
Dead+Wind 30 deg - Service	30291.08	5061.10	-8857.94	-730845.35	-420762.22	813.07
Dead+Wind 60 deg - Service	30291.08	8382.53	-4881.98	-399459.16	-701786.17	1347.81
Dead+Wind 90 deg - Service	30291.08	10174.10	3.62	10885.46	-848892.36	1484.89
Dead+Wind 120 deg - Service	30291.08	8757.45	5175.36	437705.84	-726039.45	1618.29
Dead+Wind 150 deg - Service	30291.08	5082.63	8921.40	754661.53	-423488.44	947.33
Dead+Wind 180 deg - Service	30291.08	4.15	9790.49	831139.65	1947.82	-74.27
Dead+Wind 210 deg - Service	30291.08	-5070.14	8891.51	752226.96	427284.59	-974.16
Dead+Wind 240 deg - Service	30291.08	-8751.33	5149.45	435082.59	730661.93	-1636.10
Dead+Wind 270 deg - Service	30291.08	-10203.57	-16.55	8456.69	856299.70	-1535.76
Dead+Wind 300 deg - Service	30291.08	-8435.80	-4917.53	-402675.43	711252.04	-1349.15
Dead+Wind 330 deg - Service	30291.08	-5112.95	-8899.13	-733975.91	430575.19	-735.43

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-30291.08	-0.00	-0.00	30291.08	0.00	0.000%
2	-94.96	-36349.29	-49920.92	94.96	36349.29	49920.92	0.000%
3	-94.96	-27261.97	-49920.92	94.96	27261.97	49920.92	0.000%
4	24799.38	-36349.29	-43403.89	-24799.39	36349.29	43403.89	0.000%
5	24799.38	-27261.97	-43403.89	-24799.38	27261.97	43403.89	0.000%
6	41074.42	-36349.29	-23921.73	-41074.42	36349.29	23921.73	0.000%
7	41074.42	-27261.97	-23921.73	-41074.42	27261.97	23921.73	0.000%
8	49853.10	-36349.29	17.75	-49853.10	36349.29	-17.75	0.000%
9	49853.10	-27261.97	17.75	-49853.10	27261.97	-17.75	0.000%
10	42911.50	-36349.29	25359.25	-42911.50	36349.29	-25359.25	0.000%
11	42911.50	-27261.97	25359.25	-42911.50	27261.97	-25359.25	0.000%
12	24904.90	-36349.29	43714.86	-24904.90	36349.29	-43714.86	0.000%
13	24904.90	-27261.97	43714.86	-24904.90	27261.97	-43714.86	0.000%
14	20.33	-36349.29	47973.39	-20.33	36349.29	-47973.39	0.000%
15	20.33	-27261.97	47973.39	-20.33	27261.97	-47973.39	0.000%
16	-24843.70	-36349.29	43568.40	24843.70	36349.29	-43568.40	0.000%
17	-24843.70	-27261.97	43568.40	24843.70	27261.97	-43568.40	0.000%
18	-42881.54	-36349.29	25232.31	42881.54	36349.29	-25232.31	0.000%
19	-42881.54	-27261.97	25232.31	42881.54	27261.97	-25232.31	0.000%
20	-49997.50	-36349.29	-81.12	49997.51	36349.29	81.12	0.000%
21	-49997.50	-27261.97	-81.12	49997.51	27261.97	81.12	0.000%
22	-41335.41	-36349.29	-24095.88	41335.41	36349.29	24095.88	0.000%
23	-41335.41	-27261.97	-24095.88	41335.41	27261.97	24095.88	0.000%
24	-25053.45	-36349.29	-43605.74	25053.45	36349.29	43605.74	0.000%
25	-25053.45	-27261.97	-43605.74	25053.45	27261.97	43605.74	0.000%
26	0.00	-111528.65	-0.00	-0.00	111528.65	0.00	0.000%
27	-18.64	-111528.66	-14089.07	18.64	111528.65	14089.06	0.000%
28	7104.38	-111528.66	-12381.05	-7104.38	111528.65	12381.05	0.000%
29	11940.22	-111528.66	-6925.89	-11940.22	111528.65	6925.89	0.000%
30	14254.94	-111528.65	5.72	-14254.94	111528.65	-5.72	0.000%
31	12149.81	-111528.65	7116.37	-12149.81	111528.65	-7116.37	0.000%
32	7125.75	-111528.65	12437.74	-7125.75	111528.65	-12437.73	0.000%
33	6.18	-111528.65	13879.90	-6.18	111528.65	-13879.90	0.000%
34	-7110.71	-111528.65	12410.50	7110.71	111528.65	-12410.50	0.000%
35	-12142.03	-111528.65	7090.35	12142.02	111528.65	-7090.35	0.000%
36	-14279.05	-111528.65	-16.36	14279.05	111528.65	16.36	0.000%
37	-11986.59	-111528.66	-6959.79	11986.58	111528.65	6959.76	0.000%
38	-7151.62	-111528.66	-12417.54	7151.62	111528.65	12417.54	0.000%
39	-19.38	-30291.08	-10187.94	19.38	30291.08	10187.94	0.000%
40	5061.10	-30291.08	-8857.94	-5061.10	30291.08	8857.94	0.000%
41	8382.53	-30291.08	-4881.98	-8382.53	30291.08	4881.98	0.000%
42	10174.10	-30291.08	3.62	-10174.10	30291.08	-3.62	0.000%
43	8757.45	-30291.08	5175.36	-8757.45	30291.08	-5175.36	0.000%
44	5082.63	-30291.08	8921.40	-5082.63	30291.08	-8921.40	0.000%
45	4.15	-30291.08	9790.49	-4.15	30291.08	-9790.49	0.000%
46	-5070.14	-30291.08	8891.51	5070.14	30291.08	-8891.51	0.000%
47	-8751.33	-30291.08	5149.45	8751.33	30291.08	-5149.45	0.000%
48	-10203.57	-30291.08	-16.55	10203.57	30291.08	16.55	0.000%
49	-8435.80	-30291.08	-4917.53	8435.80	30291.08	4917.53	0.000%
50	-5112.95	-30291.08	-8899.13	5112.95	30291.08	8899.13	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001

2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000114
5	Yes	4	0.00000001	0.00000102
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000081
9	Yes	4	0.00000001	0.00000077
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000145
13	Yes	4	0.00000001	0.00000123
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000112
17	Yes	4	0.00000001	0.00000101
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000080
21	Yes	4	0.00000001	0.00000077
22	Yes	4	0.00000001	0.00000080
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000146
25	Yes	4	0.00000001	0.00000124
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00001617
28	Yes	4	0.00000001	0.00001631
29	Yes	4	0.00000001	0.00001664
30	Yes	4	0.00000001	0.00001683
31	Yes	4	0.00000001	0.00001703
32	Yes	4	0.00000001	0.00001760
33	Yes	4	0.00000001	0.00001790
34	Yes	4	0.00000001	0.00001772
35	Yes	4	0.00000001	0.00001738
36	Yes	4	0.00000001	0.00001741
37	Yes	4	0.00000001	0.00001754
38	Yes	4	0.00000001	0.00001682
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

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		*°*	*°*
T1	140 - 120	3.790	46	0.2977	0.0120
T2	120 - 100	2.610	46	0.2459	0.0128
T3	100 - 80	1.704	46	0.1777	0.0083
T4	80 - 60	1.045	44	0.1267	0.0051
T5	60 - 40	0.576	44	0.0883	0.0031

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T6	40 - 20	0.257	44	0.0530	0.0018
T7	20 - 0	0.071	44	0.0247	0.0008

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	Flash Beacon Lighting	46	3.790	0.2977	0.0120	54455
143.00	Lightning Rod 5/8x4'	46	3.790	0.2977	0.0120	54455
142.00	PiROD 13' Rotatable Platform w/handrails (Lattice)	46	3.790	0.2977	0.0120	54455
133.00	SM502-1	46	3.359	0.2812	0.0127	38897
121.00	DB212 DiPole	46	2.663	0.2490	0.0129	14772
119.00	DB212 DiPole	46	2.557	0.2427	0.0127	14254
112.50	PD340	46	2.235	0.2207	0.0115	15540
110.00	DB212 DiPole	46	2.120	0.2119	0.0109	16309
108.25	DB810T3	46	2.042	0.2057	0.0104	16894
104.00	DB212 DiPole	46	1.862	0.1909	0.0093	18506
101.00	SO308-1	46	1.742	0.1809	0.0086	19726
96.00	DB212 DiPole	46	1.555	0.1657	0.0075	21199
93.75	DB810T3	46	1.475	0.1594	0.0071	21722
90.00	DB212 DiPole	46	1.348	0.1495	0.0064	22649
89.50	PD340	46	1.332	0.1483	0.0064	22779
80.00	3' Dish w/ Radome	44	1.045	0.1267	0.0051	25516
68.00	DB212 DiPole	44	0.744	0.1031	0.0037	29376
67.00	Obstruction Light	44	0.722	0.1012	0.0036	29746
66.00	CPD Camera	44	0.700	0.0994	0.0036	30126
65.50	PD340	44	0.689	0.0984	0.0035	30319
64.00	PD220	44	0.657	0.0957	0.0034	30914
58.00	3' HP Dish	44	0.538	0.0847	0.0029	33059
54.00	SO308-1	44	0.466	0.0773	0.0027	34090
44.00	2' Dish w/o Radome	44	0.310	0.0596	0.0020	36846
40.00	3' Dish w/ Radome	44	0.257	0.0530	0.0018	37613
37.00	2' Dish w/o Radome	44	0.221	0.0483	0.0016	37314
33.00	SO308-1	44	0.177	0.0423	0.0014	36402

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	18.289	12	1.4191	0.0595
T2	120 - 100	12.656	12	1.1807	0.0630
T3	100 - 80	8.286	12	0.8595	0.0410
T4	80 - 60	5.094	12	0.6147	0.0250
T5	60 - 40	2.811	12	0.4297	0.0151
T6	40 - 20	1.256	12	0.2582	0.0089
T7	20 - 0	0.345	12	0.1201	0.0037

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	Flash Beacon Lighting	12	18.289	1.4191	0.0595	11909
143.00	Lightning Rod 5/8x4'	12	18.289	1.4191	0.0595	11909
142.00	PiROD 13' Rotatable Platform w/handrails (Lattice)	12	18.289	1.4191	0.0595	11909
133.00	SM502-1	12	16.235	1.3438	0.0629	8506
121.00	DB212 DiPole	12	12.912	1.1951	0.0634	3227
119.00	DB212 DiPole	12	12.403	1.1659	0.0624	3109
112.50	PD340	12	10.854	1.0628	0.0564	3349
110.00	DB212 DiPole	12	10.299	1.0212	0.0535	3493
108.25	DB810T3	12	9.924	0.9920	0.0513	3602
104.00	DB212 DiPole	12	9.054	0.9221	0.0459	3896
101.00	SO308-1	12	8.474	0.8747	0.0422	4117
96.00	DB212 DiPole	12	7.564	0.8020	0.0369	4404
93.75	DB810T3	12	7.177	0.7718	0.0348	4514
90.00	DB212 DiPole	12	6.562	0.7248	0.0317	4710
89.50	PD340	12	6.483	0.7188	0.0313	4737
80.00	3' Dish w/ Radome	12	5.094	0.6147	0.0250	5314
68.00	DB212 DiPole	12	3.628	0.5009	0.0183	6085
67.00	Obstruction Light	12	3.519	0.4919	0.0179	6159
66.00	CPD Camera	12	3.412	0.4830	0.0175	6234
65.50	PD340	12	3.359	0.4785	0.0173	6272
64.00	PD220	12	3.204	0.4652	0.0167	6389
58.00	3' HP Dish	12	2.625	0.4119	0.0144	6814
54.00	SO308-1	12	2.274	0.3764	0.0131	7022
44.00	2' Dish w/o Radome	12	1.515	0.2904	0.0100	7579
40.00	3' Dish w/ Radome	12	1.256	0.2582	0.0089	7733
37.00	2' Dish w/o Radome	12	1.078	0.2353	0.0080	7668
33.00	SO308-1	12	0.863	0.2061	0.0069	7478

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	140	Leg	A325X	0.7500	4	12318.30	29820.60	0.413	1	Bolt Tension
		Diagonal	A325X	0.6250	1	5380.96	9107.81	0.591	1	Member Block Shear
		Top Girt	A325N	0.6250	1	992.92	9107.81	0.109	1	Member Block Shear
T2	120	Leg	A325X	0.8750	4	22940.70	40589.10	0.565	1	Bolt Tension
		Diagonal	A325X	0.6250	1	4767.07	9107.81	0.523	1	Member Block Shear
T3	100	Leg	A325X	1.0000	4	32146.80	53014.40	0.606	1	Bolt Tension
		Diagonal	A325X	0.6250	1	5776.03	9107.81	0.634	1	Member Block Shear
T4	80	Leg	A325X	1.0000	6	27116.50	53014.40	0.511	1	Bolt Tension
		Diagonal	A325X	0.6250	1	7075.64	10440.00	0.678	1	Member Bearing
T5	60	Leg	A325X	1.0000	6	32894.90	53014.40	0.620	1	Bolt Tension
		Diagonal	A325X	0.6250	1	7692.85	10440.00	0.737	1	Member Bearing
T6	40	Leg	A325X	1.0000	8	28973.30	53014.40	0.547	1	Bolt Tension
		Diagonal	A325X	0.6250	1	8542.70	11700.00	0.730	1	Member Bearing
T7	20	Diagonal	A325X	0.7500	1	9980.93	14137.50	0.706	1	Member Bearing

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

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 2.5 EH	20.03	4.01	52.0 K=1.00	2.2535	-55009.20	83196.20	0.661 [1]
T2	120 - 100	ROHN 3 EH	20.03	4.01	42.3 K=1.00	3.0159	-100139.00	119063.00	0.841 [1]
T3	100 - 80	ROHN 4 EH	20.03	5.01	40.7 K=1.00	4.4074	-140023.00	175711.00	0.797 [1]
T4	80 - 60	ROHN 5 EH	20.03	6.68	43.6 K=1.00	6.1120	-177722.00	239388.00	0.742 [1]
T5	60 - 40	ROHN 6 EHS	20.03	6.68	36.0 K=1.00	6.7133	-216562.00	274767.00	0.788 [1]
T6	40 - 20	ROHN 6 EH	20.04	6.68	36.5 K=1.00	8.4049	-255680.00	343094.00	0.745 [1]
T7	20 - 0	ROHN 8 EHS	20.03	10.02	41.2 K=1.00	9.7193	-289231.00	386390.00	0.749 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/4	5.32	2.53	88.3 K=1.14	0.9380	-5612.38	20164.00	0.278 [1]
T2	120 - 100	L2x2x1/4	7.51	3.58	112.5 K=1.02	0.9380	-4882.36	15606.10	0.313 [1]
T3	100 - 80	L2x2x1/4	9.70	4.66	143.0 K=1.00	0.9380	-5928.92	10368.80	0.572 [1]
T4	80 - 60	L2 1/2x2 1/2x1/4	12.21	5.91	144.4 K=1.00	1.1900	-7307.45	12893.70	0.567 [1]
T5	60 - 40	L2 1/2x2 1/2x1/4	13.96	6.74	164.7 K=1.00	1.1900	-7943.02	9908.19	0.802 [1]
T6	40 - 20	L3x3x1/4	15.79	7.66	155.3 K=1.00	1.4400	-8757.76	13492.60	0.649 [1]
T7	20 - 0	L3 1/2x3 1/2x1/4	19.03	9.26	160.1 K=1.00	1.6900	-10445.60	14898.90	0.701 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/4	2.50	2.02	91.0 K=1.47	0.9380	-1082.71	19650.60	0.055 [1]

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 2.5 EH	20.03	4.01	52.0	2.2535	49273.20	101409.00	0.486 [1]
T2	120 - 100	ROHN 3 EH	20.03	4.01	42.3	3.0159	91762.80	135717.00	0.676 [1]
T3	100 - 80	ROHN 4 EH	20.03	5.01	40.7	4.4074	128587.00	198335.00	0.648 [1]
T4	80 - 60	ROHN 5 EH	20.03	6.68	43.6	6.1120	162699.00	275039.00	0.592 [1]
T5	60 - 40	ROHN 6 EHS	20.03	6.68	36.0	6.7133	197370.00	302097.00	0.653 [1]
T6	40 - 20	ROHN 6 EH	20.04	6.68	36.5	8.4049	231786.00	378222.00	0.613 [1]
T7	20 - 0	ROHN 8 EHS	20.03	10.02	41.2	9.7193	261409.00	437369.00	0.598 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/4	5.32	2.53	52.2	0.5629	5380.96	24485.10	0.220 [1]
T2	120 - 100	L2x2x1/4	7.51	3.58	73.0	0.5629	4767.07	24485.10	0.195 [1]
T3	100 - 80	L2x2x1/4	9.70	4.66	94.1	0.5629	5776.03	24485.10	0.236 [1]
T4	80 - 60	L2 1/2x2 1/2x1/4	12.21	5.91	94.1	0.7519	7075.64	32706.60	0.216 [1]
T5	60 - 40	L2 1/2x2 1/2x1/4	13.96	6.74	107.0	0.7519	7692.85	32706.60	0.235 [1]
T6	40 - 20	L3x3x1/4	15.79	7.66	100.4	0.9394	8542.70	45794.50	0.187 [1]
T7	20 - 0	L3 1/2x3 1/2x1/4	19.03	9.26	103.4	1.1034	9980.93	53792.60	0.186 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/4	2.50	2.02	44.5	0.5629	992.92	24485.10	0.041 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	140 - 120	Leg	ROHN 2.5 EH	1	-55009.20	83196.20	66.1	Pass
T2	120 - 100	Leg	ROHN 3 EH	37	-100139.00	119063.00	84.1	Pass
T3	100 - 80	Leg	ROHN 4 EH	70	-140023.00	175711.00	79.7	Pass
T4	80 - 60	Leg	ROHN 5 EH	98	-177722.00	239388.00	74.2	Pass
T5	60 - 40	Leg	ROHN 6 EHS	119	-216562.00	274767.00	78.8	Pass
T6	40 - 20	Leg	ROHN 6 EH	140	-255680.00	343094.00	74.5	Pass
T7	20 - 0	Leg	ROHN 8 EHS	161	-289231.00	386390.00	74.9	Pass
T1	140 - 120	Diagonal	L2x2x1/4	20	-5612.38	20164.00	27.8 59.1 (b)	Pass
T2	120 - 100	Diagonal	L2x2x1/4	41	-4882.36	15606.10	31.3 52.3 (b)	Pass
T3	100 - 80	Diagonal	L2x2x1/4	74	-5928.92	10368.80	57.2 63.4 (b)	Pass
T4	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	100	-7307.45	12893.70	56.7 67.8 (b)	Pass
T5	60 - 40	Diagonal	L2 1/2x2 1/2x1/4	121	-7943.02	9908.19	80.2	Pass
T6	40 - 20	Diagonal	L3x3x1/4	142	-8757.76	13492.60	64.9 73.0 (b)	Pass
T7	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	163	-10445.60	14898.90	70.1 70.6 (b)	Pass
T1	140 - 120	Top Girt	L2x2x1/4	4	-1082.71	19650.60	5.5 10.9 (b)	Pass
							Summary	
							Leg (T2) 84.1	Pass
							Diagonal (T5) 80.2	Pass
							Top Girt (T1) 10.9	Pass
							Bolt Checks 73.7	Pass
							RATING = 84.1	**Pass**

Self Support Tower Anchor Rod Check

Anchor Rods assumed to be (8) 1"ϕ ASTM A354-Grade BC Bolts

$Pu := 298.862kip$ — *Max Tension force for Detail type A,B, or C Connections*

$Vu := 31.049kip$ — *Shear force Corresponfing to Max Tension or COmpression Force*

$Fub := 125ksi$ — *Steel Grade of Anchor Bolts*

$Dbolt := 1.0in$ — *Diameter of Anchor Bolt*

$Nbolt := 8$ — *Number of Anchor Bolts*

$\eta := 0.5$ — *η is dependent on Anchor Rod Detail Type per Figure 4-4 TIA Rev.G*

$Anet := 0.75\left(\frac{\pi}{4}\right)\cdot(Dbolt)^2$ $\quad Anet = 0.59\cdot in^2$ — *Net Area of Bolt taken as 0.75 x unthreaded Area*

$Rnt := Fub\cdot Anet$ $\quad Rnt = 73.6\cdot kip$ — *Nominal Tensile Strength of Anchor Rod per Section 4.9.6.1*

$$StressRatio := \frac{\left(Pu+\frac{Vu}{\eta}\right)}{0.8\cdot Rnt}$$ — *Interaction Equation*

$StressRatio = 76.6\cdot\%$ — *<100%, okay*

This check assumes the clear distance from the top of the concrete foundation to bottom leveling nut does not exceed the diameter of the anchor rod.

Section II

Foundation

Foundation Analysis

Foundation Dimension & Properties

$\gamma_{conc} := 150pcf$ — *Density of Concrete*

$\gamma_{soil} := 115pcf$ — *Density of Soil*

$top := 6in$ — *Height of pier above grade*

$H_f := 4.5ft$ — *Mat Thickness*

$H_g := H_f - top$ $\quad H_g = 4\ ft$ — *Depth from grade to the bottom of foundation*

$D := 26.5ft$ — *Side of Square shape of Foundation*

$A_1 := D^2$ $\quad A_1 = 702.25\ ft^2$ — *Area of Square shape of Foundation*

Soil Properties

$P_{ultimate} := 15.0ksf$ — *Ultimate Bearing Pressure - Per Soil Report*

$D_n := 1.0ft$ — *Soil Depth Neglected*

$D_w := \infty \cdot ft$ — *Depth of Water*

$P_{p.ultimate} := 1.437ksf$ — *Ultimate Passive Pressure - Per Soil Report*

Factored Reactions (based on Tnx calculations)

Maximum Reactions (wind without ice load case)

$P := 36.349kip$ — *Max Total Axial Reaction*

$V := 50.311kip$ — *Max Total Shear Reaction*

$M := 4216.478kip \cdot ft$ — *Max Total Moment Reaction*

Foundation Capacity

$W_{mat} := A_1 \cdot H_f \cdot \gamma_{conc}$ $\quad W_{mat} = 474.02 \cdot kip$ *Weight of mat foundation*

$W_{soil} := 0kip$ *No Soil Weight above mat*

OTM Check

$\phi_o := 0.75$ *Soil Reduction Factor for Overturning*

$M_{ot} := M + (H_f) \cdot V$ $\quad M_{ot} = 4442.88 \cdot kip \cdot ft$

$M_{res} := \left(P + 1.2 \cdot W_{mat} + W_{soil}\right) \cdot \frac{D}{2}$

$\frac{\phi_o \cdot M_{res}}{M_{ot}} = 1.35$ *>1.0. OK*

OTMCheck = "Foundation is adequate for OTM,"

Soil Bearing Pressure Check

$\phi_s := 0.75$ *Soil bearing resistance factor per TIA-222-G 9.4.1*

$S_{found} := \frac{D^3}{6} = 3101.6 \cdot ft^3$ *Square Mat Foundation Section Modulus*

$P_{soil} := \left[\frac{P + 1.2 \cdot \left(W_{mat} + W_{soil}\right)}{A_1} + \frac{M_{ot}}{S_{found}}\right]$ $\quad P_{soil} = 2294.21 \cdot psf$

$\frac{P_{soil}}{\phi_s \cdot P_{ultimate}} = 0.2$ *< 1. OK*

SoilCheck = "Foundation is adequate for soil bearing pressure."

Check Lateral Capacity

$\phi_{lat} := 0.75$ — *Soil Reduction Factor for Lateral*

$\mu := 0.35$ — *Coefficient of Friction - Per Soil Report*

$T_e := if\left(D_n < H_g - H_f, H_f, H_g - D_n\right)$ $\quad T_e = 3\ ft$ — *Effective Pad Thickness*

$A_e := D \cdot T_e$ $\quad A_e = 79.5\ ft^2$ — *Effective Pad Area*

$S_{all} := \left[P_{p.ultimate} \cdot A_e + \left[P + 0.9 \cdot \left(W_{mat} + W_{soil}\right)\right] \cdot \mu\right]$ $\quad S_{all} = 276.28 \cdot kip$ — *Lateral Capacity*

$\frac{V}{\phi_{lat} \cdot S_{all}} = 0.24$ — *< 1. OK*

LateralCapacityCheck = "Lateral Capacity is adequate."