



MORRISON HERSHFIELD

Date: **April 27, 2021**

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta GA 30346
(770) 379-8500

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 468991
Site Name: NHV 106 943628

Crown Castle Designation: **BU Number:** 806386
Site Name: NHV 106 943628
JDE Job Number: 644614
Work Order Number: 1950510
Order Number: 552665 Rev. 0

Engineering Firm Designation: **Morrison Hershfield Project Number:** CN8-036 / 2101398

Site Data: **83 Reeds Gap Road, North Branford, New Haven County, CT 06472**
Latitude 41° 24' 12.47", Longitude -72° 44' 38.9"
92 Foot - Rohn Self Support Tower

Morrison Hershfield is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity - 78.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

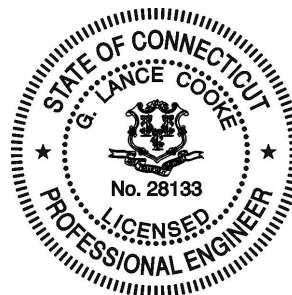


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1) INTRODUCTION

This tower is a 92 ft self support tower designed by Rohn.

The tower was modified multiple times in the past to accommodate additional loading. All the modifications have been considered in this analysis per their respective post modification inspection reports.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
89.0	90.0	2	antel	LPA-80063/6CF w/ Mount Pipe	12 2	1-5/8 1-1/4
		4	decibel	DB844G65ZAXY w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		6	commscope	JAHH-65B-R3B		
		3	commscope	CBC78T-DS-43-2X		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		2	rfs/celwave	DB-T1-6Z-8AB-0Z		
	3	-	Dual Mount Bracket [#BSAMNT-SBS-2-2]			
	89.0	1	-	Sector Mount [SM 502-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
91.0	97.0	1	sinclair	SD210D-SF2P4SNM	3	7/8
	94.0	1	sinclair	SD310-HF2P4SNM		
	91.0	2	-	Side Arm Mount [SO 304-1]		
65.0	67.0	3	cci antennas	HPA65R-BU6A w/ Mount Pipe	12	7/8
		3	kathrein	80010965 w/ Mount Pipe	2	3/4
	66.0	3	powerwave technologies	7770.00 w/ Mount Pipe	2	3/8
		3	kathrein	782 10253	1	7/16 2.25C

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
65.0	66.0	3	ericsson	RRUS 4449 B5/B12	-	-
		3	ericsson	RRUS 8843 B2/B66A		
		2	raycap	DC6-48-60-18-8F		
	65.0	6	powerwave technologies	LGP21401		
		1	-	Sector Mount [SM 502-3]		
59.0	60.0	1	gps	GPS_A	1	1/2
	59.0	1	tower mounts	Side Arm Mount [SO 305-1]		
34.0	35.0	1	spectracom	8225	1	1/2

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1069632	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4063555	CCISITES
4-TOWER MANUFACTURER DRAWINGS	962042	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	1093271	CCISITES
4-POST-MODIFICATION INSPECTION	1285457	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	962041	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3841012	CCISITES
4-POST-MODIFICATION INSPECTION	4061638	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.9.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	92 - 80	Leg	ROHN 2 STD	3	-9.38	38.68	24.3	Pass
T2	80 - 75	Leg	ROHN 2.5 STD	27	-13.22	59.99	22.0	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail	
T3	75 - 70	Leg	ROHN 2.5 STD	36	-18.12	59.99	30.2	Pass	
T4	70 - 65	Leg	ROHN 2.5 STD	45	-22.05	59.99	36.8	Pass	
T5	65 - 60	Leg	ROHN 2.5 STD	53	-29.15	59.99	48.6	Pass	
T6	60 - 40	Leg	ROHN 2.5 X-STR	65	-53.48	91.95	58.2	Pass	
T7	40 - 20	Leg	ROHN 3 X-STR	95	-77.94	129.46	60.2	Pass	
T8	20 - 13.3333	Leg	ROHN 3.5 X-STR	125	-85.81	161.66	53.1	Pass	
T9	13.3333 - 6.66667	Leg	ROHN 3.5 X-STR	137	-93.88	161.69	58.1	Pass	
T10	6.66667 - 0	Leg	ROHN 3.5 X-STR	149	-101.55	161.71	62.8	Pass	
T1	92 - 80	Diagonal	L1 1/2x1 1/2x1/8	17	-2.37	5.03	47.2 68.0 (b)	Pass	
T2	80 - 75	Diagonal	L1 3/4x1 3/4x1/8	32	-2.53	6.21	40.7 57.3 (b)	Pass	
T3	75 - 70	Diagonal	L2x2x1/4	42	-2.35	16.10	14.6 34.4 (b)	Pass	
T4	70 - 65	Diagonal	L1 3/4x1 3/4x1/8	50	-2.54	5.14	49.5 58.1 (b)	Pass	
T5	65 - 60	Diagonal	L2x2x1/4	59	-3.49	13.37	26.1 47.3 (b)	Pass	
T6	60 - 40	Diagonal	L2x2x1/4	68	-4.11	8.11	50.7 54.9 (b)	Pass	
T7	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	98	-4.47	9.64	46.4 69.2 (b)	Pass	
T8	20 - 13.3333	Diagonal	L2 1/2x2 1/2x3/16	128	-4.71	8.90	52.9 70.8 (b)	Pass	
T9	13.3333 - 6.66667	Diagonal	L2 1/2x2 1/2x3/8	141	-4.74	15.29	31.0 62.4 (b)	Pass	
T10	6.66667 - 0	Diagonal	L2 1/2x2 1/2x3/8	152	-5.15	14.09	36.5 64.8 (b)	Pass	
T6	60 - 40	Secondary Horizontal	L2 1/2x2 1/2x1/4	73	-0.93	24.82	3.7 12.9 (b)	Pass	
T7	40 - 20	Secondary Horizontal	L2x2x1/4	103	-1.35	8.74	15.5 19.7 (b)	Pass	
T8	20 - 13.3333	Secondary Horizontal	L2x2x1/4	133	-1.49	7.86	18.9 21.7 (b)	Pass	
T9	13.3333 - 6.66667	Secondary Horizontal	L2x2x1/4	145	-1.63	7.05	23.1 23.7 (b)	Pass	
T10	6.66667 - 0	Secondary Horizontal	L2x2x1/4	157	-1.76	6.36	27.7	Pass	
T1	92 - 80	Top Girt	L2x2x1/8	4	-0.35	4.27	8.2 8.6 (b)	Pass	
T5	65 - 60	Top Girt	L2 1/2x2 1/2x3/16	55	-0.51	7.96	6.4 8.2 (b)	Pass	
							Summary		
							Leg (T10)	62.8	Pass
							Diagonal (T8)	70.8	Pass
							Secondary Horizontal (T10)	27.7	Pass
							Top Girt (T1)	8.6	Pass
							Bolt Checks	67.4	Pass
							Rating =	70.8	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	51.5	Pass
1	Base Foundation (Structure)	0	14.0	Pass
1	Base Foundation (Soil Interaction)	0	78.1	Pass
Structure Rating (max from all components) =				78.1%*

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) *Rating per TIA-222-H, Section 15.5.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 3/4x1 3/4x1/8	B	L2 1/2x2 1/2x3/16

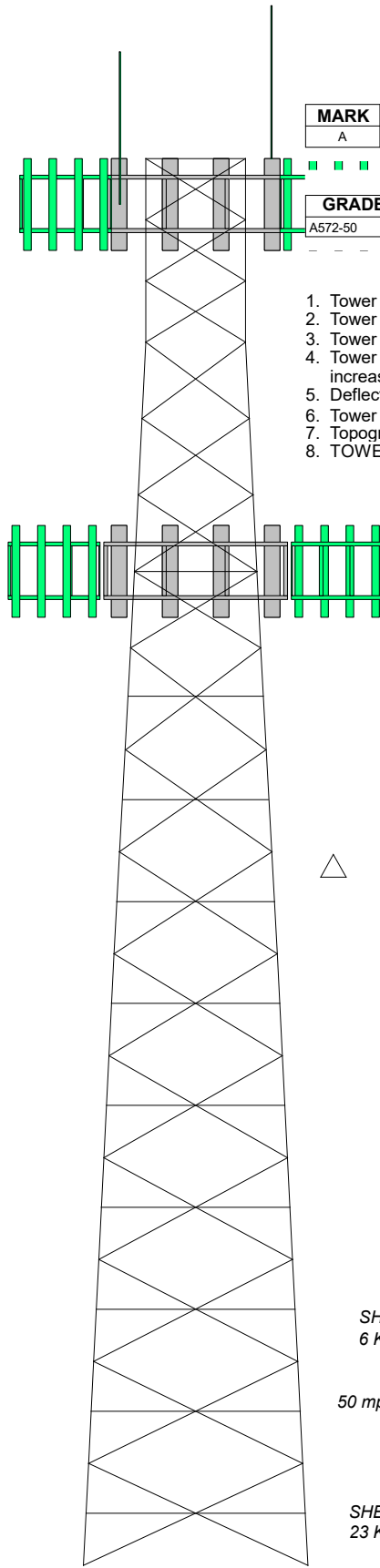
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

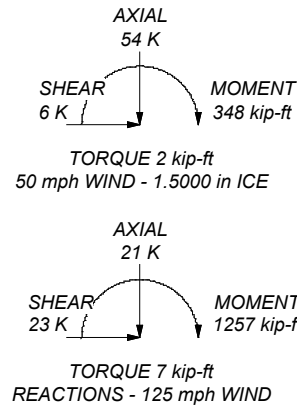
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 70.8%

92.0 ft
80.0 ft
75.0 ft
70.0 ft
65.0 ft
60.0 ft
40.0 ft
20.0 ft
13.3 ft
6.7 ft
0.0 ft




ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 106 K
SHEAR: 14 K
UPLIFT: -90 K
SHEAR: 12 K



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	ROHN 2 STD		ROHN 2.5 STD			ROHN 2.5 X-STR	ROHN 3 X-STR	ROHN 3.5 X-STR		
Leg Grade						A572-50				
Diagonals	L1 1/2x1 1/2x1/8	A	L2x2x1/4	A		L2x2x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/8		
Diagonal Grade						A36				
Top Girts	L2x2x1/8				B					
Sec. Horizontals		N.A.				L2 1/2x2 1/2x1/4	N.A.	L2x2x1/4		
Face Width (ft)	6.52083	6.5625	7.0625	7.5625	8.0625	8.5625	10.6042	12.6354	13.3229	14.0104
# Panels @ (ft)	3 @ 4		4 @ 5		4 @ 5		9 @ 6.66667			
Weight (K)	0.3	0.2	0.3	0.2	0.3	1.5	1.7	0.6	0.9	0.9

 Morrison Hershfield Consulting Engineers	1455 Lincoln Parkway, Suite 500 Atlanta GA 30346 Phone: (770) 379-8500 FAX: (770) 379-8501		Job: CN8-036 / 2101398 Project: 806386 / NHV 106 943628
	Client: Crown Castle USA Code: TIA-222-H Path:	Drawn by: RA Date: 04/27/21	App'd: Scale: NTS Dwg No. E-1

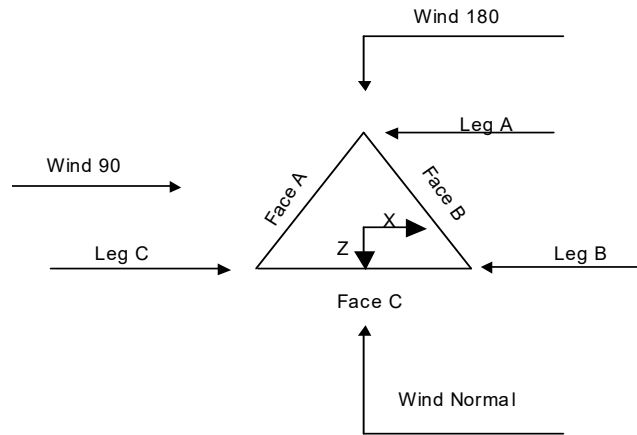
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 92.00 ft above the ground line.
 The base of the tower is set at an elevation of 0.00 ft above the ground line.
 The face width of the tower is 6.52 ft at the top and 14.70 ft at the base.
 This tower is designed using the TIA-222-H standard.
 The following design criteria apply:

- Tower is located in New Haven County, Connecticut.
- Tower base elevation above sea level: 583.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 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 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.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile
 √ Include Bolts In Member Capacity
 Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt.
 Autocalc Torque Arm Areas
 Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption
 <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets 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	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	92.00-80.00			6.52	1	12.00
T2	80.00-75.00			6.56	1	5.00
T3	75.00-70.00			7.06	1	5.00
T4	70.00-65.00			7.56	1	5.00
T5	65.00-60.00			8.06	1	5.00
T6	60.00-40.00			8.56	1	20.00
T7	40.00-20.00			10.60	1	20.00
T8	20.00-13.33			12.64	1	6.67
T9	13.33-6.67			13.32	1	6.67
T10	6.67-0.00			14.01	1	6.67

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	92.00-80.00	4.00	X Brace	No	No	0.0000	0.0000
T2	80.00-75.00	5.00	X Brace	No	No	0.0000	0.0000
T3	75.00-70.00	5.00	X Brace	No	No	0.0000	0.0000
T4	70.00-65.00	5.00	X Brace	No	No	0.0000	0.0000
T5	65.00-60.00	5.00	X Brace	No	No	0.0000	0.0000
T6	60.00-40.00	6.67	X Brace	No	Yes	0.0000	0.0000
T7	40.00-20.00	6.67	X Brace	No	Yes	0.0000	0.0000
T8	20.00-13.33	6.67	X Brace	No	Yes	0.0000	0.0000
T9	13.33-6.67	6.67	X Brace	No	Yes	0.0000	0.0000
T10	6.67-0.00	6.67	X Brace	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 92.00-80.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 80.00-75.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T3 75.00-70.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 70.00-65.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T5 65.00-60.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T6 60.00-40.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T7 40.00-20.00	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T8 20.00-13.33	Pipe	ROHN 3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T9 13.33-6.67	Pipe	ROHN 3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/8	A36 (36 ksi)
T10 6.67-0.00	Pipe	ROHN 3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/8	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 92.00-80.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Pipe		A36 (36 ksi)
T5 65.00-60.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Pipe		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
T6 60.00-40.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T7 40.00-20.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T8 20.00-13.33	Equal Angle	L2x2x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T9 13.33-6.67	Equal Angle	L2x2x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T10 6.67-0.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Pipe		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 _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
T1 92.00-80.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T2 80.00-75.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 75.00-70.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 70.00-65.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 65.00-60.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 60.00-40.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 40.00-20.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 20.00-13.33	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 13.33-6.67	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 6.67-0.00	0.00	0.1793	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
											X Y
T1 92.00-80.00	Yes	No	1	1	1	1	1	1	1	1	1
T2 80.00-75.00	Yes	No	1	1	1	1	1	1	1	1	1
T3 75.00-70.00	Yes	No	1	1	1	1	1	1	1	1	1
T4 70.00-65.00	Yes	No	1	1	1	1	1	1	1	1	1
T5 65.00-60.00	Yes	No	1	1	1	1	1	1	1	1	1
T6 60.00-40.00	Yes	No	1	1	1	1	1	1	1	1	1
T7 40.00-20.00	Yes	No	1	1	1	1	1	1	0.5	1	1
T8 20.00-13.33	Yes	No	1	1	1	1	1	1	0.5	1	1
T9 13.33-6.67	Yes	No	1	1	1	1	1	1	0.5	1	1
T10 6.67-0.00	Yes	No	1	1	1	1	1	1	0.5	1	1

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

Tower Section Geometry (cont'd)

Tower Elevation	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width	U	Net Width	U	Net Width	U	Net Width	U	Net Width	U	Net Width	U	Net Width	U
ft	Deduct		Deduct		Deduct		Deduct		Deduct		Deduct		Deduct	
	in		in		in		in		in		in		in	
T1 92.00-80.00	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

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
T2 80.00-75.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 75.00-70.00	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 70.00-65.00	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 65.00-60.00	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
T6 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
T7 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
T8 20.00-13.33	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
T9 13.33-6.67	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
T10 6.67-0.00	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 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 92.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 80.00-75.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 75.00-70.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 70.00-65.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 65.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-13.33	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 13.33-6.67	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 6.67-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	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 92.00-80.00	Flange	0.6250	4	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.5000	0
		A325X		A325X		A325X		A325N		A325N		A325N		A325N	
T2 80.00-75.00	Flange	0.6250	0	0.5000	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.5000	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T3 75.00-70.00	Flange	0.6250	0	0.5000	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.5000	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T4 70.00-65.00	Flange	0.6250	0	0.5000	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.5000	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T5 65.00-60.00	Flange	0.6250	4	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.5000	0
		A325X		A325X		A325X		A325N		A325N		A325N		A325N	

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.
T6 60.00-40.00	Flange	0.7500 A325X	4	0.5000 A325N	1	0.5000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T7 40.00-20.00	Flange	0.8750 A325X	4	0.5000 A325X	1	0.5000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	1
T8 20.00-13.33	Flange	0.8750 A449	0	0.5000 A325X	1	0.5000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	1
T9 13.33-6.67	Flange	0.8750 A449	0	0.5000 A325X	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	1
T10 6.67-0.00	Flange	0.8750 A449	0	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	1

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
Feedline Ladder (Af)	A	No	No	Af (CaAa)	92.00 - 0.00	1.5000	0.1	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	A	No	No	Af (CaAa)	92.00 - 0.00	2.0000	0.1	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	No	Af (CaAa)	65.00 - 0.00	0.0000	-0.35	1	1	3.0000	3.0000		8.40

LDF5-50A(7/8)	A	No	No	Ar (CaAa)	91.00 - 0.00	2.0000	0.1	2	2	0.5000	1.0900		0.33
LCF78-50A(7/8)	A	No	No	Ar (CaAa)	91.00 - 0.00	2.0000	0.1	1	1	0.5000	1.0900		0.34

LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	89.00 - 0.00	0.0000	0	12	12	0.5000	1.9800		0.82
HB114-1-0813U4-M5F(1-1/4)	A	No	No	Ar (CaAa)	89.00 - 0.00	0.0000	-0.1	2	2	0.5000	1.5400		1.20

AVA5-50(7/8)	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.4	12	8	0.5000	1.1020		0.30
FB-L98B-002-75000(3/8)	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.3	1	1	0.3937	0.0000		0.06
FB-L98B-034-XXX(3/8)	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.3	1	1	0.3937	0.0000		0.06
WR-VG122ST-BRDA(7/16)	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.3	2	2	0.4600	0.0000		0.14
WR-VG86ST-BRD(3/4)	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.3	2	2	0.5000	0.0000		0.58
2.25" Flexible Conduit	C	No	No	Ar (CaAa)	65.00 - 0.00	0.0000	-0.3	1	1	2.2500	2.2500		0.34

LDF4-50A(1/2)	A	No	No	Ar (CaAa)	59.00 - 0.00	0.0000	0	1	1	0.5000	0.6250		0.15

LDF4-50A(1/2)	A	No	No	Ar (CaAa)	34.00 - 0.00	0.0000	0	1	1	0.5000	0.6250		0.15

Feed Line/Linear Appurtenances Section Areas

Tower Sectio n	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	92.00-80.00	A	0.000	0.000	39.753	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	80.00-75.00	A	0.000	0.000	20.055	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	75.00-70.00	A	0.000	0.000	20.055	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T4	70.00-65.00	A	0.000	0.000	20.055	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T5	65.00-60.00	A	0.000	0.000	20.055	0.000	0.15
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.237	0.000	0.07
T6	60.00-40.00	A	0.000	0.000	81.407	0.000	0.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	40.948	0.000	0.28
T7	40.00-20.00	A	0.000	0.000	82.345	0.000	0.61
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	40.948	0.000	0.28
T8	20.00-13.33	A	0.000	0.000	27.573	0.000	0.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.649	0.000	0.09
T9	13.33-6.67	A	0.000	0.000	27.573	0.000	0.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.649	0.000	0.09
T10	6.67-0.00	A	0.000	0.000	27.573	0.000	0.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.649	0.000	0.09

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	92.00-80.00	A	1.403	0.000	0.000	77.439	0.000	1.13
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	80.00-75.00	A	1.389	0.000	0.000	38.937	0.000	0.55
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	75.00-70.00	A	1.379	0.000	0.000	38.864	0.000	0.55
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T4	70.00-65.00	A	1.370	0.000	0.000	38.787	0.000	0.54
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T5	65.00-60.00	A	1.359	0.000	0.000	38.704	0.000	0.54
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	24.431	0.000	0.32
T6	60.00-40.00	A	1.329	0.000	0.000	160.106	0.000	2.19
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	96.625	0.000	1.26
T7	40.00-20.00	A	1.263	0.000	0.000	162.492	0.000	2.15
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	94.203	0.000	1.20
T8	20.00-13.33	A	1.191	0.000	0.000	53.844	0.000	0.69
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	30.523	0.000	0.38
T9	13.33-6.67	A	1.132	0.000	0.000	53.063	0.000	0.66
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.800	0.000	0.37

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T10	6.67-0.00	A	1.014	0.000	0.000	51.515	0.000	0.61
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.367	0.000	0.34

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	92.00-80.00	-6.4951	-6.4651	-6.7268	-6.5120
T2	80.00-75.00	-7.7945	-7.2870	-8.1237	-7.4211
T3	75.00-70.00	-7.7949	-7.4225	-8.3396	-7.6965
T4	70.00-65.00	-8.5240	-8.0582	-8.9052	-8.2023
T5	65.00-60.00	1.6569	-3.1965	3.2511	-0.6548
T6	60.00-40.00	1.7665	-3.8451	3.1720	-1.1245
T7	40.00-20.00	1.7266	-4.2298	2.9940	-1.6399
T8	20.00-13.33	1.7536	-4.4931	2.9959	-1.9825
T9	13.33-6.67	1.8038	-4.6341	3.0952	-2.1635
T10	6.67-0.00	1.8515	-4.7690	3.1989	-2.4721

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)	80.00 - 92.00	0.6000	0.6000
T1	2	Feedline Ladder (Af)	80.00 - 92.00	0.6000	0.6000
T1	5	LDF5-50A(7/8)	80.00 - 91.00	0.6000	0.6000
T1	6	LCF78-50A(7/8)	80.00 - 91.00	0.6000	0.6000
T1	8	LDF7-50A(1-5/8)	80.00 - 89.00	0.6000	0.6000
T1	9	HB114-1-0813U4-M5F(1-1/4)	80.00 - 89.00	0.6000	0.6000
T2	1	Feedline Ladder (Af)	75.00 - 80.00	0.6000	0.6000
T2	2	Feedline Ladder (Af)	75.00 - 80.00	0.6000	0.6000
T2	5	LDF5-50A(7/8)	75.00 - 80.00	0.6000	0.6000
T2	6	LCF78-50A(7/8)	75.00 - 80.00	0.6000	0.6000
T2	8	LDF7-50A(1-5/8)	75.00 - 80.00	0.6000	0.6000
T2	9	HB114-1-0813U4-M5F(1-1/4)	75.00 - 80.00	0.6000	0.6000
T3	1	Feedline Ladder (Af)	70.00 - 75.00	0.6000	0.6000
T3	2	Feedline Ladder (Af)	70.00 - 75.00	0.6000	0.6000
T3	5	LDF5-50A(7/8)	70.00 - 75.00	0.6000	0.6000
T3	6	LCF78-50A(7/8)	70.00 - 75.00	0.6000	0.6000
T3	8	LDF7-50A(1-5/8)	70.00 - 75.00	0.6000	0.6000
T3	9	HB114-1-0813U4-M5F(1-1/4)	70.00 - 75.00	0.6000	0.6000
T4	1	Feedline Ladder (Af)	65.00 - 70.00	0.6000	0.6000
T4	2	Feedline Ladder (Af)	65.00 - 70.00	0.6000	0.6000
T4	5	LDF5-50A(7/8)	65.00 - 70.00	0.6000	0.6000
T4	6	LCF78-50A(7/8)	65.00 - 70.00	0.6000	0.6000
T4	8	LDF7-50A(1-5/8)	65.00 - 70.00	0.6000	0.6000
T4	9	HB114-1-0813U4-M5F(1-1/4)	65.00 - 70.00	0.6000	0.6000
T5	1	Feedline Ladder (Af)	60.00 - 65.00	0.6000	0.6000
T5	2	Feedline Ladder (Af)	60.00 - 65.00	0.6000	0.6000
T5	3	Feedline Ladder (Af)	60.00 - 65.00	0.6000	0.6000
T5	5	LDF5-50A(7/8)	60.00 - 65.00	0.6000	0.6000
T5	6	LCF78-50A(7/8)	60.00 - 65.00	0.6000	0.6000
T5	8	LDF7-50A(1-5/8)	60.00 - 65.00	0.6000	0.6000
T5	9	HB114-1-0813U4-M5F(1-1/4)	60.00 - 65.00	0.6000	0.6000
T5	11	AVA5-50(7/8)	60.00 - 65.00	0.6000	0.6000
T5	12	FB-L98B-002-75000(3/8)	60.00 - 65.00	0.6000	0.6000
T5	13	FB-L98B-034-XXX(3/8)	60.00 - 65.00	0.6000	0.6000
T5	14	WR-VG122ST-BRDA(7/16)	60.00 - 65.00	0.6000	0.6000
T5	15	WR-VG86ST-BRD(3/4)	60.00 - 65.00	0.6000	0.6000
T5	16	2.25" Flexible Conduit	60.00 - 65.00	0.6000	0.6000
T6	1	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	2	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T6	3	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	5	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T6	6	LCF78-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T6	8	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T6	9	HB114-1-0813U4-M5F(1-1/4)	40.00 - 60.00	0.6000	0.6000
T6	11	AVA5-50(7/8)	40.00 - 60.00	0.6000	0.6000
T6	12	FB-L98B-002-75000(3/8)	40.00 - 60.00	0.6000	0.6000
T6	13	FB-L98B-034-XXX(3/8)	40.00 - 60.00	0.6000	0.6000
T6	14	WR-VG122ST-BRDA(7/16)	40.00 - 60.00	0.6000	0.6000
T6	15	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T6	16	2.25" Flexible Conduit	40.00 - 60.00	0.6000	0.6000
T6	18	LDF4-50A(1/2)	40.00 - 59.00	0.6000	0.6000
T7	1	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	2	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	5	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T7	6	LCF78-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T7	8	LDF7-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T7	9	HB114-1-0813U4-M5F(1-1/4)	20.00 - 40.00	0.6000	0.6000
T7	11	AVA5-50(7/8)	20.00 - 40.00	0.6000	0.6000
T7	12	FB-L98B-002-75000(3/8)	20.00 - 40.00	0.6000	0.6000
T7	13	FB-L98B-034-XXX(3/8)	20.00 - 40.00	0.6000	0.6000
T7	14	WR-VG122ST-BRDA(7/16)	20.00 - 40.00	0.6000	0.6000
T7	15	WR-VG86ST-BRD(3/4)	20.00 - 40.00	0.6000	0.6000
T7	16	2.25" Flexible Conduit	20.00 - 40.00	0.6000	0.6000
T7	18	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T7	20	LDF4-50A(1/2)	20.00 - 34.00	0.6000	0.6000
T8	1	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T8	2	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T8	3	Feedline Ladder (Af)	13.33 - 20.00	0.6000	0.6000
T8	5	LDF5-50A(7/8)	13.33 - 20.00	0.6000	0.6000
T8	6	LCF78-50A(7/8)	13.33 - 20.00	0.6000	0.6000
T8	8	LDF7-50A(1-5/8)	13.33 - 20.00	0.6000	0.6000
T8	9	HB114-1-0813U4-M5F(1-1/4)	13.33 - 20.00	0.6000	0.6000
T8	11	AVA5-50(7/8)	13.33 - 20.00	0.6000	0.6000
T8	12	FB-L98B-002-75000(3/8)	13.33 - 20.00	0.6000	0.6000
T8	13	FB-L98B-034-XXX(3/8)	13.33 - 20.00	0.6000	0.6000
T8	14	WR-VG122ST-BRDA(7/16)	13.33 - 20.00	0.6000	0.6000
T8	15	WR-VG86ST-BRD(3/4)	13.33 - 20.00	0.6000	0.6000
T8	16	2.25" Flexible Conduit	13.33 - 20.00	0.6000	0.6000
T8	18	LDF4-50A(1/2)	13.33 - 20.00	0.6000	0.6000
T8	20	LDF4-50A(1/2)	13.33 - 20.00	0.6000	0.6000
T9	1	Feedline Ladder (Af)	6.67 - 13.33	0.6000	0.6000
T9	2	Feedline Ladder (Af)	6.67 - 13.33	0.6000	0.6000
T9	3	Feedline Ladder (Af)	6.67 - 13.33	0.6000	0.6000
T9	5	LDF5-50A(7/8)	6.67 - 13.33	0.6000	0.6000
T9	6	LCF78-50A(7/8)	6.67 - 13.33	0.6000	0.6000
T9	8	LDF7-50A(1-5/8)	6.67 - 13.33	0.6000	0.6000
T9	9	HB114-1-0813U4-M5F(1-1/4)	6.67 - 13.33	0.6000	0.6000
T9	11	AVA5-50(7/8)	6.67 - 13.33	0.6000	0.6000
T9	12	FB-L98B-002-75000(3/8)	6.67 - 13.33	0.6000	0.6000
T9	13	FB-L98B-034-XXX(3/8)	6.67 - 13.33	0.6000	0.6000
T9	14	WR-VG122ST-BRDA(7/16)	6.67 - 13.33	0.6000	0.6000
T9	15	WR-VG86ST-BRD(3/4)	6.67 - 13.33	0.6000	0.6000
T9	16	2.25" Flexible Conduit	6.67 - 13.33	0.6000	0.6000
T9	18	LDF4-50A(1/2)	6.67 - 13.33	0.6000	0.6000
T9	20	LDF4-50A(1/2)	6.67 - 13.33	0.6000	0.6000
T10	1	Feedline Ladder (Af)	0.00 - 6.67	0.6000	0.6000
T10	2	Feedline Ladder (Af)	0.00 - 6.67	0.6000	0.6000
T10	3	Feedline Ladder (Af)	0.00 - 6.67	0.6000	0.6000
T10	5	LDF5-50A(7/8)	0.00 - 6.67	0.6000	0.6000
T10	6	LCF78-50A(7/8)	0.00 - 6.67	0.6000	0.6000
T10	8	LDF7-50A(1-5/8)	0.00 - 6.67	0.6000	0.6000
T10	9	HB114-1-0813U4-M5F(1-1/4)	0.00 - 6.67	0.6000	0.6000
T10	11	AVA5-50(7/8)	0.00 - 6.67	0.6000	0.6000
T10	12	FB-L98B-002-75000(3/8)	0.00 - 6.67	0.6000	0.6000
T10	13	FB-L98B-034-XXX(3/8)	0.00 - 6.67	0.6000	0.6000
T10	14	WR-VG122ST-BRDA(7/16)	0.00 - 6.67	0.6000	0.6000
T10	15	WR-VG86ST-BRD(3/4)	0.00 - 6.67	0.6000	0.6000
T10	16	2.25" Flexible Conduit	0.00 - 6.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T10	18	LDF4-50A(1/2)	0.00 - 6.67	0.6000	0.6000
T10	20	LDF4-50A(1/2)	0.00 - 6.67	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
****RA****									
SD210D-SF2P4SNM	B	From Leg	2.00	0.0000	91.00	No Ice	4.24	4.24	0.04
			0.00			1/2"	6.47	6.47	0.10
			6.00			Ice	8.68	8.68	0.18
						1" Ice	13.00	13.00	0.42
SD310-HF2P4SNM	C	From Leg	2.00	0.0000	91.00	No Ice	10.74	10.74	0.02
			0.00			1/2"	15.26	15.26	0.18
			3.00			Ice	15.95	15.95	0.35
						1" Ice	17.36	17.36	0.71
Side Arm Mount [SO 304-1]	B	From Leg	1.00	0.0000	91.00	No Ice	0.31	0.88	0.02
			0.00			1/2"	0.50	1.26	0.03
			0.00			Ice	0.73	1.67	0.05
						1" Ice	1.29	2.58	0.09
Side Arm Mount [SO 304-1]	C	From Leg	1.00	0.0000	91.00	No Ice	0.31	0.88	0.02
			0.00			1/2"	0.50	1.26	0.03
			0.00			Ice	0.73	1.67	0.05
						1" Ice	1.29	2.58	0.09
(2) JAHH-65B-R3B	A	From Leg	4.00	49.0000	89.00	No Ice	5.29	3.05	0.06
			0.00			1/2"	5.75	3.48	0.12
			1.00			Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
(2) JAHH-65B-R3B	B	From Leg	4.00	49.0000	89.00	No Ice	5.29	3.05	0.06
			0.00			1/2"	5.75	3.48	0.12
			1.00			Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
(2) JAHH-65B-R3B	C	From Leg	4.00	59.0000	89.00	No Ice	5.29	3.05	0.06
			0.00			1/2"	5.75	3.48	0.12
			1.00			Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.00	49.0000	89.00	No Ice	4.23	4.51	0.03
			0.00			1/2"	4.71	5.00	0.08
			1.00			Ice	5.21	5.50	0.13
						1" Ice	6.26	6.57	0.25
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.00	49.0000	89.00	No Ice	4.23	4.51	0.03
			0.00			1/2"	4.71	5.00	0.08
			1.00			Ice	5.21	5.50	0.13
						1" Ice	6.26	6.57	0.25
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.00	59.0000	89.00	No Ice	9.83	10.22	0.05
			0.00			1/2"	10.40	11.38	0.14
			1.00			Ice	10.93	12.27	0.25
						1" Ice	12.03	14.09	0.48
CBC78T-DS-43-2X	A	From Leg	4.00	0.0000	89.00	No Ice	0.37	0.51	0.02
			0.00			1/2"	0.45	0.60	0.03
			1.00			Ice	0.53	0.70	0.04

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
							1" Ice	0.72	0.93	0.06
							2" Ice			
							No Ice	0.37	0.51	0.02
			4.00	0.0000	89.00		1/2"	0.45	0.60	0.03
			0.00				Ice	0.53	0.70	0.04
			1.00				1" Ice	0.72	0.93	0.06
							2" Ice			
(2) DB-T1-6Z-8AB-0Z	A	From Leg	4.00	0.0000	89.00		No Ice	4.80	2.00	0.04
			0.00				1/2"	5.07	2.19	0.08
			1.00				Ice	5.35	2.39	0.12
							1" Ice	5.93	2.81	0.21
							2" Ice			
CBC78T-DS-43-2X	C	From Leg	4.00	0.0000	89.00		No Ice	0.37	0.51	0.02
			0.00				1/2"	0.45	0.60	0.03
			1.00				Ice	0.53	0.70	0.04
							1" Ice	0.72	0.93	0.06
							2" Ice			
RFV01U-D1A	A	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.25	0.08
			0.00				1/2"	2.05	1.39	0.10
			1.00				Ice	2.22	1.54	0.12
							1" Ice	2.60	1.86	0.18
							2" Ice			
RFV01U-D1A	B	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.25	0.08
			0.00				1/2"	2.05	1.39	0.10
			1.00				Ice	2.22	1.54	0.12
							1" Ice	2.60	1.86	0.18
							2" Ice			
RFV01U-D1A	C	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.25	0.08
			0.00				1/2"	2.05	1.39	0.10
			1.00				Ice	2.22	1.54	0.12
							1" Ice	2.60	1.86	0.18
							2" Ice			
RFV01U-D2A	A	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.01	0.07
			0.00				1/2"	2.05	1.14	0.09
			1.00				Ice	2.22	1.28	0.11
							1" Ice	2.60	1.59	0.15
							2" Ice			
RFV01U-D2A	B	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.01	0.07
			0.00				1/2"	2.05	1.14	0.09
			1.00				Ice	2.22	1.28	0.11
							1" Ice	2.60	1.59	0.15
							2" Ice			
RFV01U-D2A	C	From Leg	4.00	0.0000	89.00		No Ice	1.88	1.01	0.07
			0.00				1/2"	2.05	1.14	0.09
			1.00				Ice	2.22	1.28	0.11
							1" Ice	2.60	1.59	0.15
							2" Ice			
Sector Mount [SM 502-3]	C	None		0.0000	89.00		No Ice	29.82	29.82	1.67
							1/2"	42.21	42.21	2.27
							Ice	54.43	54.43	3.05
							1" Ice	78.49	78.49	5.18
							2" Ice			
(3) 4' x 2" Pipe Mount	A	From Leg	4.00	0.0000	89.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04
							1" Ice	1.81	1.81	0.07
							2" Ice			
(3) 4' x 2" Pipe Mount	B	From Leg	4.00	0.0000	89.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04
							1" Ice	1.81	1.81	0.07
							2" Ice			
(3) 4' x 2" Pipe Mount	C	From Leg	4.00	0.0000	89.00		No Ice	0.79	0.79	0.03
			0.00				1/2"	1.03	1.03	0.04
			0.00				Ice	1.28	1.28	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
						1" Ice 2" Ice	1.81 1.81	0.07	
Dual Mount Bracket [#BSAMNT-SBS-2-2]	A	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40 4.40	0.03 0.04 0.06 0.12	
Dual Mount Bracket [#BSAMNT-SBS-2-2]	B	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40 4.40	0.03 0.04 0.06 0.12	
Dual Mount Bracket [#BSAMNT-SBS-2-2]	C	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40 4.40	0.03 0.04 0.06 0.12	

MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36 4.63	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36 4.63	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36 4.63	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29

7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	29.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49 7.16	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	29.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49 7.16	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	49.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49 7.16	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
HPA65R-BU6A w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	69.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.83 6.40 6.99 8.19 7.32	5.00 5.56 6.13 7.32	0.08 0.14 0.22 0.40
HPA65R-BU6A w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	69.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.83 6.40 6.99 8.19 7.32	5.00 5.56 6.13 7.32	0.08 0.14 0.22 0.40
HPA65R-BU6A w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	69.0000	65.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.83 6.40 6.99 8.19 7.32	5.00 5.56 6.13 7.32	0.08 0.14 0.22 0.40
80010965 w/ Mount Pipe	A	From Leg	4.00	69.0000	65.00	No Ice	12.26	5.79	0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	13.03	6.47	0.23
			1.00			Ice	13.80	7.17	0.33
						1" Ice	15.41	8.60	0.57
						2" Ice			
80010965 w/ Mount Pipe	B	From Leg	4.00	69.0000	65.00	No Ice	12.26	5.79	0.14
			0.00			1/2"	13.03	6.47	0.23
			1.00			Ice	13.80	7.17	0.33
						1" Ice	15.41	8.60	0.57
						2" Ice			
80010965 w/ Mount Pipe	C	From Leg	4.00	69.0000	65.00	No Ice	12.26	5.79	0.14
			0.00			1/2"	13.03	6.47	0.23
			1.00			Ice	13.80	7.17	0.33
						1" Ice	15.41	8.60	0.57
						2" Ice			
(2) LGP21401	A	From Leg	4.00	0.0000	65.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	65.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	C	From Leg	4.00	0.0000	65.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			0.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
782 10253	A	From Leg	4.00	0.0000	65.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			1.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice			
782 10253	B	From Leg	4.00	0.0000	65.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			1.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice			
782 10253	C	From Leg	4.00	0.0000	65.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			1.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice			
RRUS 8843 B2/B66A	A	From Leg	4.00	0.0000	65.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			
RRUS 8843 B2/B66A	B	From Leg	4.00	0.0000	65.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			
RRUS 8843 B2/B66A	C	From Leg	4.00	0.0000	65.00	No Ice	1.64	1.35	0.07
			0.00			1/2"	1.80	1.50	0.09
			1.00			Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16
						2" Ice			
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	65.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			1.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	65.00	No Ice	1.97	1.41	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	2.14	1.56	0.09
			1.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	65.00	No Ice	1.97	1.41	0.07
			0.00			1/2"	2.14	1.56	0.09
			1.00			Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	65.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			1.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	65.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			1.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
Sector Mount [SM 502-3]	C	None		0.0000	65.00	No Ice	29.82	29.82	1.67
						1/2"	42.21	42.21	2.27
						Ice	54.43	54.43	3.05
						1" Ice	78.49	78.49	5.18
						2" Ice			

GPS_A	C	From Leg	3.00	0.0000	59.00	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			1.00			Ice	0.39	0.39	0.01
						1" Ice	0.56	0.56	0.02
						2" Ice			
Side Arm Mount [SO 305-1]	C	From Leg	1.50	0.0000	59.00	No Ice	0.53	1.52	0.03
			0.00			1/2"	0.78	2.07	0.04
			0.00			Ice	1.06	2.66	0.06
						1" Ice	1.73	3.91	0.13
						2" Ice			

8225	B	From Leg	2.00	0.0000	34.00	No Ice	0.89	0.89	0.00
			0.00			1/2"	1.06	1.06	0.01
			1.00			Ice	1.23	1.23	0.02
						1" Ice	1.59	1.59	0.05
						2" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	92 - 80	Leg	Max Tension	23	6.35	-0.09	0.01
			Max. Compression	2	-9.38	0.10	0.02
			Max. Mx	2	-2.47	-0.64	0.09
			Max. My	24	-1.50	-0.01	-0.80
			Max. Vy	2	-1.17	0.52	0.09
			Max. Vx	12	1.34	0.01	-0.53
		Diagonal	Max Tension	14	2.37	0.00	0.00
			Max. Compression	2	-2.37	0.00	0.00
			Max. Mx	36	0.27	0.01	0.00
			Max. My	2	-2.37	-0.00	0.00
			Max. Vy	36	-0.02	0.01	0.00
			Max. Vx	2	-0.00	-0.00	0.00
		Top Girt	Max Tension	14	0.35	0.00	0.00
			Max. Compression	2	-0.35	0.00	0.00
			Max. Mx	37	0.08	-0.05	0.00
			Max. My	38	-0.01	0.00	0.00
Max. Vy	37		-0.03	0.00	0.00		
Max. Vx	38		-0.00	0.00	0.00		
T2	80 - 75	Leg	Max Tension	23	10.10	-0.05	0.00
			Max. Compression	2	-13.22	0.05	0.02
			Max. Mx	2	-13.14	0.10	0.02
			Max. My	24	-1.61	-0.00	0.10
			Max. Vy	10	0.04	0.10	-0.01
			Max. Vx	20	0.06	-0.00	-0.10
		Diagonal	Max Tension	15	2.37	0.00	0.00
			Max. Compression	2	-2.53	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
T3	75 - 70	Leg	Max. Mx	36	0.18	0.02	0.00
			Max. My	2	-2.53	-0.00	0.00
			Max. Vy	37	0.02	0.02	0.00
			Max. Vx	33	0.00	0.00	0.00
			Max Tension	23	14.61	-0.01	-0.01
			Max. Compression	2	-18.12	-0.00	0.00
			Max. Mx	10	-17.92	0.06	-0.00
			Max. My	24	-1.78	-0.00	0.10
			Max. Vy	10	0.04	0.06	-0.00
			Max. Vx	12	-0.05	-0.00	-0.10
			Max Tension	2	2.47	0.00	0.00
			Max. Compression	15	-2.35	0.00	0.00
			Max. Mx	35	0.58	0.03	-0.00
			Max. My	38	-0.27	0.02	0.00
T4	70 - 65	Leg	Max. Vy	37	0.03	0.02	-0.00
			Max. Vx	38	-0.00	0.00	0.00
			Max Tension	23	18.53	-0.10	0.01
			Max. Compression	2	-22.05	0.12	0.02
			Max. Mx	10	-22.02	0.13	-0.01
			Max. My	20	-2.22	-0.01	-0.05
			Max. Vy	10	-0.05	0.13	-0.01
			Max. Vx	20	-0.05	-0.01	-0.05
			Max Tension	15	2.40	0.00	0.00
			Max. Compression	2	-2.54	0.00	0.00
			Max. Mx	35	0.40	0.02	0.00
			Max. My	38	0.43	0.02	0.00
			Max. Vy	36	0.02	0.02	-0.00
			Max. Vx	33	0.00	0.00	0.00
T5	65 - 60	Leg	Max Tension	23	23.04	-0.10	0.01
			Max. Compression	10	-29.15	-0.06	-0.00
			Max. Mx	10	-29.14	0.13	-0.01
			Max. My	24	-3.21	-0.03	0.15
			Max. Vy	10	0.08	0.13	-0.01
			Max. Vx	4	0.07	-0.02	-0.15
			Max Tension	8	3.39	0.00	0.00
			Max. Compression	8	-3.49	0.00	0.00
			Max. Mx	36	0.64	0.03	-0.00
			Max. My	14	-3.19	0.00	-0.01
			Max. Vy	37	0.03	0.03	0.00
			Max. Vx	14	0.00	0.00	0.00
			Max Tension	31	0.27	0.00	0.00
			Max. Compression	6	-0.19	0.00	0.00
T6	60 - 40	Leg	Max. Mx	35	0.24	-0.10	0.00
			Max. My	38	0.20	0.00	0.00
			Max. Vy	35	0.05	0.00	0.00
			Max. Vx	38	-0.00	0.00	0.00
			Max Tension	23	44.94	0.14	-0.00
			Max. Compression	10	-53.48	-0.23	0.00
			Max. Mx	10	-53.46	0.33	-0.00
			Max. My	24	-3.77	-0.04	0.21
			Max. Vy	10	-0.19	0.33	-0.00
			Max. Vx	20	-0.11	-0.04	-0.21
			Max Tension	9	3.94	0.02	-0.00
			Max. Compression	10	-4.11	0.00	0.00
			Max. Mx	35	1.11	0.04	0.00
			Max. My	2	-3.92	-0.00	0.01
T7	40 - 20	Leg	Max. Vy	37	0.03	0.04	0.00
			Max. Vx	38	-0.00	0.00	0.00
			Max Tension	20	0.23	0.02	-0.00
			Max. Compression	25	-0.23	0.01	0.01
			Max. Mx	38	-0.00	0.04	0.01
			Max. My	36	0.01	0.03	0.01
			Max. Vy	38	-0.04	0.04	0.01
			Max. Vx	38	-0.00	0.00	0.00
			Max Tension	23	66.46	0.24	-0.00
			Max. Compression	10	-77.94	-0.42	0.00
			Max. Mx	10	-77.91	0.56	-0.00
			Max. My	24	-5.04	-0.07	0.39

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T8	20 - 13.3333	Diagonal	Max. Vy	10	0.30	0.56	-0.00	
			Max. Vx	24	-0.17	-0.07	0.39	
			Max Tension	9	4.29	0.03	0.00	
			Max. Compression	10	-4.47	0.00	0.00	
			Max. Mx	31	0.86	0.08	0.01	
			Max. My	31	-1.75	0.07	-0.01	
		Secondary Horizontal	Max. Vy	37	0.05	0.08	0.01	
			Max. Vx	37	0.00	0.00	0.00	
			Max Tension	24	0.38	0.02	-0.00	
			Max. Compression	25	-0.37	0.02	0.00	
			Max. Mx	30	0.01	0.06	0.01	
			Max. My	36	-0.06	0.06	0.01	
		Leg	Max. Vy	30	0.04	0.06	0.01	
			Max. Vx	38	-0.00	0.00	0.00	
			Max Tension	23	73.32	0.28	-0.00	
			Max. Compression	10	-85.81	-0.21	-0.01	
			Max. Mx	35	-36.35	-0.77	0.00	
			Max. My	24	-5.24	-0.07	0.39	
			Diagonal	Max. Vy	31	0.34	0.41	0.00
				Max. Vx	24	0.16	-0.07	0.39
				Max Tension	13	4.39	0.03	-0.00
				Max. Compression	10	-4.71	0.00	0.00
				Max. Mx	31	1.57	0.05	0.01
				Max. My	38	1.60	0.05	0.01
Secondary Horizontal	Max. Vy	37	0.04	0.05	0.01			
	Max. Vx	38	-0.00	0.00	0.00			
	Max Tension	24	0.37	0.02	0.00			
	Max. Compression	25	-0.35	0.01	0.00			
	Max. Mx	38	0.23	0.04	0.01			
	Max. My	36	0.07	0.04	0.01			
T9	13.3333 - 6.66667	Leg	Max. Vy	38	-0.04	0.04	0.01	
			Max. Vx	38	-0.00	0.00	0.00	
			Max Tension	23	80.18	0.15	0.01	
			Max. Compression	10	-93.88	-0.59	0.00	
			Max. Mx	35	-38.06	-0.77	0.00	
			Max. My	24	-5.78	-0.09	0.67	
		Diagonal	Max. Vy	10	0.40	0.73	0.00	
			Max. Vx	24	-0.26	-0.09	0.67	
			Max Tension	13	4.48	0.06	-0.00	
			Max. Compression	12	-4.74	0.00	0.00	
			Max. Mx	38	0.62	0.13	0.01	
			Max. My	37	-2.06	0.12	0.01	
Secondary Horizontal	Max. Vy	37	0.06	0.13	0.01			
	Max. Vx	37	0.00	0.00	0.00			
	Max Tension	22	0.49	0.00	0.00			
	Max. Compression	25	-0.47	0.02	0.00			
	Max. Mx	38	-0.08	0.07	0.01			
	Max. My	37	-0.05	0.07	0.01			
T10	6.66667 - 0	Leg	Max. Vy	38	-0.04	0.07	0.01	
			Max. Vx	37	0.00	0.00	0.00	
			Max Tension	23	86.53	0.39	-0.00	
			Max. Compression	10	-101.55	0.00	0.00	
			Max. Mx	37	8.33	0.68	0.00	
			Max. My	24	-6.16	-0.09	0.67	
		Diagonal	Max. Vy	10	-0.40	0.67	-0.00	
			Max. Vx	24	0.24	-0.09	0.67	
			Max Tension	13	4.65	0.06	-0.01	
			Max. Compression	10	-5.15	0.00	0.00	
			Max. Mx	24	2.25	0.09	-0.01	
			Max. My	38	2.22	0.05	0.01	
Secondary Horizontal	Max. Vy	38	0.05	0.05	0.01			
	Max. Vx	38	-0.00	0.00	0.00			
	Max Tension	24	0.38	0.03	0.00			
	Max. Compression	25	-0.37	0.02	0.00			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	37	-0.00	0.04	0.00
			Max. My	24	-0.36	0.02	0.00
			Max. Vy	37	-0.04	0.04	0.00
			Max. Vx	38	-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	18	98.11	10.94	-6.46
	Max. H _x	18	98.11	10.94	-6.46
	Max. H _z	7	-81.56	-9.40	5.56
	Min. Vert	7	-81.56	-9.40	5.56
	Min. H _x	7	-81.56	-9.40	5.56
Leg B	Max. H _z	18	98.11	10.94	-6.46
	Max. Vert	10	105.70	-12.10	-6.83
	Max. H _x	23	-89.92	10.58	5.95
	Max. H _z	25	-79.86	9.15	6.02
	Min. Vert	23	-89.92	10.58	5.95
Leg A	Min. H _x	10	105.70	-12.10	-6.83
	Min. H _z	10	105.70	-12.10	-6.83
	Max. Vert	2	101.30	-0.14	13.18
	Max. H _x	21	5.55	1.92	0.45
	Max. H _z	2	101.30	-0.14	13.18
	Min. Vert	15	-84.54	0.13	-11.41
	Min. H _x	8	6.95	-1.93	0.56
	Min. H _z	15	-84.54	0.13	-11.41

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	17.30	-0.00	-0.00	-2.39	2.73	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	20.76	-0.03	-21.57	-1201.33	5.75	-3.54
0.9 Dead+1.0 Wind 0 deg - No Ice	15.57	-0.03	-21.57	-1199.61	4.93	-3.53
1.2 Dead+1.0 Wind 30 deg - No Ice	20.76	9.40	-16.51	-942.65	-528.20	2.02
0.9 Dead+1.0 Wind 30 deg - No Ice	15.57	9.40	-16.51	-941.13	-528.58	2.03
1.2 Dead+1.0 Wind 60 deg - No Ice	20.76	16.80	-9.79	-562.17	-951.12	-3.01
0.9 Dead+1.0 Wind 60 deg - No Ice	15.57	16.80	-9.79	-560.97	-951.15	-3.01
1.2 Dead+1.0 Wind 90 deg - No Ice	20.76	21.49	0.03	-0.43	-1201.40	-3.70
0.9 Dead+1.0 Wind 90 deg - No Ice	15.57	21.49	0.03	0.29	-1201.22	-3.70
1.2 Dead+1.0 Wind 120 deg - No Ice	20.76	19.71	11.51	636.23	-1084.49	3.47
0.9 Dead+1.0 Wind 120 deg - No Ice	15.57	19.71	11.51	636.43	-1084.41	3.47
1.2 Dead+1.0 Wind 150 deg - No Ice	20.76	11.21	19.58	1084.54	-616.28	7.44
0.9 Dead+1.0 Wind 150 deg - No Ice	15.57	11.21	19.58	1084.37	-616.59	7.44
1.2 Dead+1.0 Wind 180 deg - No Ice	20.76	0.03	20.29	1142.37	0.84	3.54

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 180 deg - No Ice	15.57	0.03	20.29	1142.14	0.02	3.53
1.2 Dead+1.0 Wind 210 deg - No Ice	20.76	-9.40	16.51	936.87	534.78	-2.02
0.9 Dead+1.0 Wind 210 deg - No Ice	15.57	-9.40	16.51	936.81	533.51	-2.03
1.2 Dead+1.0 Wind 240 deg - No Ice	20.76	-17.91	10.43	582.97	1003.76	3.01
0.9 Dead+1.0 Wind 240 deg - No Ice	15.57	-17.91	10.43	583.21	1002.11	3.01
1.2 Dead+1.0 Wind 270 deg - No Ice	20.76	-21.49	-0.03	-5.34	1207.97	3.70
0.9 Dead+1.0 Wind 270 deg - No Ice	15.57	-21.49	-0.03	-4.62	1206.14	3.70
1.2 Dead+1.0 Wind 300 deg - No Ice	20.76	-18.60	-10.87	-615.40	1045.01	-3.46
0.9 Dead+1.0 Wind 300 deg - No Ice	15.57	-18.60	-10.87	-614.16	1043.32	-3.47
1.2 Dead+1.0 Wind 330 deg - No Ice	20.76	-11.21	-19.58	-1090.30	622.88	-7.44
0.9 Dead+1.0 Wind 330 deg - No Ice	15.57	-11.21	-19.58	-1088.68	621.54	-7.44
1.2 Dead+1.0 Ice+1.0 Temp	53.60	0.00	0.00	-2.85	10.85	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	53.60	-0.00	-5.70	-322.32	10.88	-0.34
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	53.60	2.62	-4.58	-263.69	-137.66	0.56
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	53.60	4.61	-2.69	-156.36	-251.50	-0.17
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	53.60	5.78	0.00	-2.82	-314.47	-0.46
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	53.60	5.37	3.12	171.03	-286.71	0.86
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	53.60	2.97	5.18	287.13	-154.52	1.55
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	53.60	0.00	5.53	309.60	10.83	0.34
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	53.60	-2.62	4.58	257.99	159.37	-0.56
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	53.60	-4.76	2.77	154.18	279.29	0.17
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	53.60	-5.78	-0.00	-2.88	336.18	0.46
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	53.60	-5.22	-3.04	-173.22	302.35	-0.86
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	53.60	-2.97	-5.18	-292.82	176.23	-1.55
Dead+Wind 0 deg - Service	17.30	-0.01	-5.23	-293.03	3.33	-0.85
Dead+Wind 30 deg - Service	17.30	2.28	-4.01	-230.31	-126.16	0.50
Dead+Wind 60 deg - Service	17.30	4.08	-2.37	-138.04	-228.72	-0.73
Dead+Wind 90 deg - Service	17.30	5.21	0.01	-1.81	-289.41	-0.90
Dead+Wind 120 deg - Service	17.30	4.78	2.79	152.58	-261.05	0.83
Dead+Wind 150 deg - Service	17.30	2.72	4.75	261.30	-147.51	1.80
Dead+Wind 180 deg - Service	17.30	0.01	4.92	275.33	2.14	0.85
Dead+Wind 210 deg - Service	17.30	-2.28	4.01	225.50	131.63	-0.50
Dead+Wind 240 deg - Service	17.30	-4.34	2.53	139.67	245.36	0.73
Dead+Wind 270 deg - Service	17.30	-5.21	-0.01	-3.00	294.88	0.90
Dead+Wind 300 deg - Service	17.30	-4.51	-2.64	-150.94	255.36	-0.83
Dead+Wind 330 deg - Service	17.30	-2.72	-4.75	-266.10	152.99	-1.80

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-17.30	0.00	0.00	17.30	0.00	0.000%
2	-0.03	-20.76	-21.57	0.03	20.76	21.57	0.005%
3	-0.03	-15.57	-21.57	0.03	15.57	21.57	0.004%
4	9.40	-20.76	-16.52	-9.40	20.76	16.51	0.005%
5	9.40	-15.57	-16.52	-9.40	15.57	16.51	0.005%
6	16.80	-20.76	-9.79	-16.80	20.76	9.79	0.006%
7	16.80	-15.57	-9.79	-16.80	15.57	9.79	0.005%
8	21.49	-20.76	0.03	-21.49	20.76	-0.03	0.005%
9	21.49	-15.57	0.03	-21.49	15.57	-0.03	0.005%
10	19.71	-20.76	11.51	-19.71	20.76	-11.51	0.005%
11	19.71	-15.57	11.51	-19.71	15.57	-11.51	0.004%
12	11.21	-20.76	19.58	-11.21	20.76	-19.58	0.005%
13	11.21	-15.57	19.58	-11.21	15.57	-19.58	0.005%
14	0.03	-20.76	20.29	-0.03	20.76	-20.29	0.006%
15	0.03	-15.57	20.29	-0.03	15.57	-20.29	0.005%
16	-9.40	-20.76	16.52	9.40	20.76	-16.51	0.005%
17	-9.40	-15.57	16.52	9.40	15.57	-16.51	0.005%
18	-17.91	-20.76	10.43	17.91	20.76	-10.43	0.005%
19	-17.91	-15.57	10.43	17.91	15.57	-10.43	0.004%
20	-21.49	-20.76	-0.03	21.49	20.76	0.03	0.006%
21	-21.49	-15.57	-0.03	21.49	15.57	0.03	0.005%
22	-18.60	-20.76	-10.87	18.60	20.76	10.87	0.006%
23	-18.60	-15.57	-10.87	18.60	15.57	10.87	0.005%
24	-11.21	-20.76	-19.58	11.21	20.76	19.58	0.006%
25	-11.21	-15.57	-19.58	11.21	15.57	19.58	0.005%
26	0.00	-53.60	0.00	-0.00	53.60	-0.00	0.000%
27	-0.00	-53.60	-5.70	0.00	53.60	5.70	0.002%
28	2.62	-53.60	-4.58	-2.62	53.60	4.58	0.002%
29	4.61	-53.60	-2.69	-4.61	53.60	2.69	0.002%
30	5.78	-53.60	0.00	-5.78	53.60	-0.00	0.002%
31	5.37	-53.60	3.12	-5.37	53.60	-3.12	0.002%
32	2.97	-53.60	5.19	-2.97	53.60	-5.18	0.002%
33	0.00	-53.60	5.53	-0.00	53.60	-5.53	0.002%
34	-2.62	-53.60	4.58	2.62	53.60	-4.58	0.002%
35	-4.76	-53.60	2.77	4.76	53.60	-2.77	0.002%
36	-5.78	-53.60	-0.00	5.78	53.60	0.00	0.002%
37	-5.22	-53.60	-3.04	5.22	53.60	3.04	0.002%
38	-2.97	-53.60	-5.19	2.97	53.60	5.18	0.002%
39	-0.01	-17.30	-5.23	0.01	17.30	5.23	0.002%
40	2.28	-17.30	-4.01	-2.28	17.30	4.01	0.002%
41	4.08	-17.30	-2.38	-4.08	17.30	2.37	0.002%
42	5.21	-17.30	0.01	-5.21	17.30	-0.01	0.002%
43	4.78	-17.30	2.79	-4.78	17.30	-2.79	0.002%
44	2.72	-17.30	4.75	-2.72	17.30	-4.75	0.002%
45	0.01	-17.30	4.92	-0.01	17.30	-4.92	0.002%
46	-2.28	-17.30	4.01	2.28	17.30	-4.01	0.002%
47	-4.35	-17.30	2.53	4.34	17.30	-2.53	0.002%
48	-5.21	-17.30	-0.01	5.21	17.30	0.01	0.002%
49	-4.51	-17.30	-2.64	4.51	17.30	2.64	0.002%
50	-2.72	-17.30	-4.75	2.72	17.30	4.75	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00025023
3	Yes	4	0.00000001	0.00018449
4	Yes	4	0.00000001	0.00026030
5	Yes	4	0.00000001	0.00019464
6	Yes	4	0.00000001	0.00026841
7	Yes	4	0.00000001	0.00020278
8	Yes	4	0.00000001	0.00025915

9	Yes	4	0.0000001	0.00019366
10	Yes	4	0.0000001	0.00024884
11	Yes	4	0.0000001	0.00018337
12	Yes	4	0.0000001	0.00025822
13	Yes	4	0.0000001	0.00019277
14	Yes	4	0.0000001	0.00026823
15	Yes	4	0.0000001	0.00020267
16	Yes	4	0.0000001	0.00026070
17	Yes	4	0.0000001	0.00019511
18	Yes	4	0.0000001	0.00025068
19	Yes	4	0.0000001	0.00018495
20	Yes	4	0.0000001	0.00025954
21	Yes	4	0.0000001	0.00019392
22	Yes	4	0.0000001	0.00026809
23	Yes	4	0.0000001	0.00020247
24	Yes	4	0.0000001	0.00025810
25	Yes	4	0.0000001	0.00019248
26	Yes	4	0.0000001	0.00004176
27	Yes	4	0.0000001	0.00047958
28	Yes	4	0.0000001	0.00045538
29	Yes	4	0.0000001	0.00044923
30	Yes	4	0.0000001	0.00045726
31	Yes	4	0.0000001	0.00046953
32	Yes	4	0.0000001	0.00047033
33	Yes	4	0.0000001	0.00046698
34	Yes	4	0.0000001	0.00046784
35	Yes	4	0.0000001	0.00048373
36	Yes	4	0.0000001	0.00049936
37	Yes	4	0.0000001	0.00050837
38	Yes	4	0.0000001	0.00049939
39	Yes	4	0.0000001	0.00020122
40	Yes	4	0.0000001	0.00020103
41	Yes	4	0.0000001	0.00020304
42	Yes	4	0.0000001	0.00020204
43	Yes	4	0.0000001	0.00020006
44	Yes	4	0.0000001	0.00020228
45	Yes	4	0.0000001	0.00020326
46	Yes	4	0.0000001	0.00020053
47	Yes	4	0.0000001	0.00020026
48	Yes	4	0.0000001	0.00020353
49	Yes	4	0.0000001	0.00020580
50	Yes	4	0.0000001	0.00020405

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	92 - 80	1.379	50	0.1197	0.0221
T2	80 - 75	1.071	50	0.1138	0.0155
T3	75 - 70	0.947	50	0.1098	0.0126
T4	70 - 65	0.833	50	0.1042	0.0113
T5	65 - 60	0.722	50	0.0980	0.0088
T6	60 - 40	0.618	50	0.0902	0.0078
T7	40 - 20	0.285	50	0.0588	0.0043
T8	20 - 13.3333	0.077	50	0.0285	0.0016
T9	13.3333 - 6.66667	0.036	50	0.0195	0.0008
T10	6.66667 - 0	0.010	43	0.0098	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
91.00	SD210D-SF2P4SNM	50	1.353	0.1193	0.0216	258595
89.00	(2) JAHH-65B-R3B	50	1.301	0.1185	0.0206	258595
65.00	7770.00 w/ Mount Pipe	50	0.722	0.0980	0.0088	42440
59.00	GPS_A	50	0.598	0.0886	0.0077	35480
34.00	8225	50	0.209	0.0494	0.0034	38580

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	92 - 80	5.613	24	0.4843	0.0916
T2	80 - 75	4.365	24	0.4613	0.0640
T3	75 - 70	3.865	24	0.4453	0.0521
T4	70 - 65	3.400	24	0.4232	0.0470
T5	65 - 60	2.948	24	0.3983	0.0367
T6	60 - 40	2.525	24	0.3672	0.0323
T7	40 - 20	1.167	10	0.2399	0.0179
T8	20 - 13.3333	0.319	10	0.1166	0.0065
T9	13.3333 - 6.66667	0.150	10	0.0796	0.0032
T10	6.66667 - 0	0.041	11	0.0402	0.0016

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
91.00	SD210D-SF2P4SNM	24	5.509	0.4828	0.0895	68334
89.00	(2) JAHH-65B-R3B	24	5.299	0.4796	0.0852	68334
65.00	7770.00 w/ Mount Pipe	24	2.948	0.3983	0.0367	10496
59.00	GPS_A	24	2.444	0.3607	0.0318	8810
34.00	8225	10	0.859	0.2016	0.0141	9470

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	92	Leg	A325X	0.6250	4	1.59	20.34	0.078	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	2.37	3.48	0.680	1.05	Member Block Shear
		Top Girt	A325X	0.5000	1	0.35	4.13	0.086	1.05	Member Bearing
T2	80	Diagonal	A325X	0.5000	1	2.37	4.13	0.573	1.05	Member Bearing
T3	75	Diagonal	A325X	0.5000	1	2.47	7.18	0.344	1.05	Gusset Bearing
T4	70	Diagonal	A325X	0.5000	1	2.40	4.13	0.581	1.05	Member Bearing
T5	65	Leg	A325X	0.6250	4	5.76	20.34	0.283	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	3.39	7.18	0.473	1.05	Gusset Bearing
		Top Girt	A325X	0.5000	1	0.51	6.20	0.082	1.05	Member Bearing
T6	60	Leg	A325X	0.7500	4	11.22	30.10	0.373	1.05	Bolt Tension
		Diagonal	A325N	0.5000	1	3.94	7.18	0.549	1.05	Gusset Bearing

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
T7	40	Secondary Horizontal	A325N	0.5000	1	0.93	7.18	0.129	1.05	Gusset Bearing
		Leg	A325X	0.8750	4	16.60	41.56	0.399	1.05	Bolt Tension
		Diagonal	A325X	0.5000	1	4.29	6.20	0.692	1.05	Member Bearing
T8	20	Secondary Horizontal	A325X	0.6250	1	1.35	6.86	0.197	1.05	Gusset Bearing
		Diagonal	A325X	0.5000	1	4.39	6.20	0.708	1.05	Member Bearing
T9	13.3333	Secondary Horizontal	A325X	0.6250	1	1.49	6.86	0.217	1.05	Gusset Bearing
		Diagonal	A325X	0.5000	1	4.48	7.18	0.624	1.05	Gusset Bearing
T10	6.66667	Secondary Horizontal	A325X	0.6250	1	1.63	6.86	0.237	1.05	Gusset Bearing
		Diagonal	A325X	0.5000	1	4.65	7.18	0.648	1.05	Gusset Bearing
		Secondary Horizontal	A325X	0.6250	1	1.76	6.86	0.257	1.05	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	92 - 80	ROHN 2 STD	12.00	4.00	61.0	1.0745	-9.38	36.84	0.255 ¹
T2	80 - 75	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-13.22	57.14	0.231 ¹
T3	75 - 70	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-18.12	57.14	0.317 ¹
T4	70 - 65	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-22.05	57.14	0.386 ¹
T5	65 - 60	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-29.15	57.14	0.510 ¹
T6	60 - 40	ROHN 2.5 X-STR	20.03	3.45	44.8 K=1.00	2.2535	-53.48	87.57	0.611 ¹
T7	40 - 20	ROHN 3 X-STR	20.03	3.43	36.2 K=1.00	3.0159	-77.94	123.30	0.632 ¹
T8	20 - 13.3333	ROHN 3.5 X-STR	6.68	3.43	31.5 K=1.00	3.6784	-85.81	153.96	0.557 ¹
T9	13.3333 - 6.66667	ROHN 3.5 X-STR	6.68	3.42	31.4 K=1.00	3.6784	-93.88	153.99	0.610 ¹
T10	6.66667 - 0	ROHN 3.5 X-STR	6.68	3.42	31.4 K=1.00	3.6784	-101.55	154.01	0.659 ¹

¹ $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	92 - 80	L1 1/2x1 1/2x1/8	7.67	3.62	146.6 K=1.00	0.3594	-2.37	4.79	0.496 ¹
T2	80 - 75	L1 3/4x1 3/4x1/8	8.45	4.13	142.8 K=1.00	0.4219	-2.53	5.92	0.427 ¹
T3	75 - 70	L2x2x1/4	8.86	4.31	132.3	0.9380	-2.35	15.34	0.153 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	70 - 65	L1 3/4x1 3/4x1/8	9.28	4.54	K=1.00 157.1	0.4219	-2.54	4.89	0.519 ¹
T5	65 - 60	L2x2x1/4	9.70	4.73	K=1.00 145.2	0.9380	-3.49	12.73	0.274 ¹
T6	60 - 40	L2x2x1/4	12.24	6.08	K=1.00 186.5	0.9380	-4.11	7.72	0.532 ¹
T7	40 - 20	L2 1/2x2 1/2x3/16	13.99	6.92	K=1.00 167.7	0.9020	-4.47	9.18	0.487 ¹
T8	20 - 13.3333	L2 1/2x2 1/2x3/16	14.59	7.20	K=1.00 174.5	0.9020	-4.71	8.48	0.555 ¹
T9	13.3333 - 6.66667	L2 1/2x2 1/2x3/8	15.21	7.48	K=1.00 184.4	1.7300	-4.74	14.56	0.326 ¹
T10	6.66667 - 0	L2 1/2x2 1/2x3/8	15.83	7.79	K=1.00 192.1	1.7300	-5.15	13.42	0.383 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T6	60 - 40	L2 1/2x2 1/2x1/4	10.25	4.86	119.4	1.1900	-0.93	23.64	0.039 ¹
T7	40 - 20	L2x2x1/4	12.29	5.85	K=1.01 179.6	0.9380	-1.35	8.32	0.162 ¹
T8	20 - 13.3333	L2x2x1/4	12.97	6.17	K=1.00 189.4	0.9380	-1.49	7.48	0.199 ¹
T9	13.3333 - 6.66667	L2x2x1/4	13.66	6.52	K=1.00 200.0	0.9380	-1.63	6.71	0.243 ¹
T10	6.66667 - 0	L2x2x1/4	14.35	6.86	K=1.00 210.6	0.9380	-1.76	6.06	0.291 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	92 - 80	L2x2x1/8	6.52	6.11	184.6	0.4844	-0.35	4.07	0.086 ¹
T5	65 - 60	L2 1/2x2 1/2x3/16	8.06	7.61	K=1.00 184.6 K=1.00	0.9020	-0.51	7.58	0.067 ¹

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	92 - 80	ROHN 2 STD	12.00	4.00	61.0	1.0745	6.35	48.35	0.131 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T2	80 - 75	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	10.10	76.68	0.132 ¹
T3	75 - 70	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	14.61	76.68	0.191 ¹
T4	70 - 65	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	18.53	76.68	0.242 ¹
T5	65 - 60	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	23.05	76.68	0.301 ¹
T6	60 - 40	ROHN 2.5 X-STR	20.03	3.23	41.9	2.2535	44.94	101.41	0.443 ¹
T7	40 - 20	ROHN 3 X-STR	20.03	3.25	34.3	3.0159	66.46	135.72	0.490 ¹
T8	20 - 13.3333	ROHN 3.5 X-STR	6.68	3.25	29.9	3.6784	73.32	165.53	0.443 ¹
T9	13.3333 - 6.66667	ROHN 3.5 X-STR	6.68	3.26	29.9	3.6784	80.18	165.53	0.484 ¹
T10	6.66667 - 0	ROHN 3.5 X-STR	6.68	3.26	29.9	3.6784	86.53	165.53	0.523 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 P _u / φP _n
T1	92 - 80	L1 1/2x1 1/2x1/8	7.67	3.62	96.0	0.2109	2.37	9.18	0.258 ¹
T2	80 - 75	L1 3/4x1 3/4x1/8	8.45	4.13	93.1	0.2578	2.37	11.21	0.211 ¹
T3	75 - 70	L2x2x1/4	8.86	4.31	87.4	0.5863	2.47	25.50	0.097 ¹
T4	70 - 65	L1 3/4x1 3/4x1/8	9.28	4.54	102.1	0.2578	2.40	11.21	0.214 ¹
T5	65 - 60	L2x2x1/4	9.70	4.73	95.7	0.5863	3.39	25.50	0.133 ¹
T6	60 - 40	L2x2x1/4	12.24	6.08	121.8	0.5863	3.94	25.50	0.154 ¹
T7	40 - 20	L2 1/2x2 1/2x3/16	13.99	6.92	108.3	0.5886	4.29	25.60	0.168 ¹
T8	20 - 13.3333	L2 1/2x2 1/2x3/16	14.59	7.20	112.6	0.5886	4.39	25.60	0.171 ¹
T9	13.3333 - 6.66667	L2 1/2x2 1/2x3/8	15.21	7.48	121.3	1.1217	4.48	48.79	0.092 ¹
T10	6.66667 - 0	L2 1/2x2 1/2x3/8	15.83	7.79	126.2	1.1217	4.65	48.79	0.095 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T6	60 - 40	L2 1/2x2 1/2x1/4	9.57	4.52	145.6	0.7753	0.93	33.73	0.028 ¹
T7	40 - 20	L2x2x1/4	12.29	5.85	236.4	0.5629	1.35	24.49	0.055 ¹
T8	20 - 13.3333	L2x2x1/4	12.97	6.17	249.0	0.5629	1.49	24.49	0.061 ¹
T9	13.3333 - 6.66667	L2x2x1/4	13.66	6.52	262.6	0.5629	1.63	24.49	0.066 ¹
T10	6.66667 - 0	L2x2x1/4	14.35	6.86	276.1	0.5629	1.76	24.49	0.072 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 P _u / φP _n
T1	92 - 80	L2x2x1/8	6.52	6.11	121.2	0.3047	0.35	13.25	0.027 ¹
T5	65 - 60	L2 1/2x2 1/2x3/16	8.06	7.61	120.7	0.5886	0.51	25.60	0.020 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	92 - 80	Leg	ROHN 2 STD	3	-9.38	38.68	24.3	Pass
T2	80 - 75	Leg	ROHN 2.5 STD	27	-13.22	59.99	22.0	Pass
T3	75 - 70	Leg	ROHN 2.5 STD	36	-18.12	59.99	30.2	Pass
T4	70 - 65	Leg	ROHN 2.5 STD	45	-22.05	59.99	36.8	Pass
T5	65 - 60	Leg	ROHN 2.5 STD	53	-29.15	59.99	48.6	Pass
T6	60 - 40	Leg	ROHN 2.5 X-STR	65	-53.48	91.95	58.2	Pass
T7	40 - 20	Leg	ROHN 3 X-STR	95	-77.94	129.46	60.2	Pass
T8	20 - 13.3333	Leg	ROHN 3.5 X-STR	125	-85.81	161.66	53.1	Pass
T9	13.3333 - 6.66667	Leg	ROHN 3.5 X-STR	137	-93.88	161.69	58.1	Pass
T10	6.66667 - 0	Leg	ROHN 3.5 X-STR	149	-101.55	161.71	62.8	Pass
T1	92 - 80	Diagonal	L1 1/2x1 1/2x1/8	17	-2.37	5.03	47.2	Pass
T2	80 - 75	Diagonal	L1 3/4x1 3/4x1/8	32	-2.53	6.21	68.0 (b) 40.7	Pass
T3	75 - 70	Diagonal	L2x2x1/4	42	-2.35	16.10	57.3 (b) 14.6	Pass
T4	70 - 65	Diagonal	L1 3/4x1 3/4x1/8	50	-2.54	5.14	34.4 (b) 49.5	Pass
T5	65 - 60	Diagonal	L2x2x1/4	59	-3.49	13.37	58.1 (b) 26.1	Pass
T6	60 - 40	Diagonal	L2x2x1/4	68	-4.11	8.11	47.3 (b) 50.7	Pass
T7	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	98	-4.47	9.64	54.9 (b) 46.4	Pass
T8	20 - 13.3333	Diagonal	L2 1/2x2 1/2x3/16	128	-4.71	8.90	69.2 (b) 52.9	Pass
T9	13.3333 - 6.66667	Diagonal	L2 1/2x2 1/2x3/8	141	-4.74	15.29	70.8 (b) 31.0	Pass
T10	6.66667 - 0	Diagonal	L2 1/2x2 1/2x3/8	152	-5.15	14.09	62.4 (b) 36.5	Pass
T6	60 - 40	Secondary Horizontal	L2 1/2x2 1/2x1/4	73	-0.93	24.82	64.8 (b) 3.7	Pass
T7	40 - 20	Secondary Horizontal	L2x2x1/4	103	-1.35	8.74	12.9 (b) 15.5	Pass
T8	20 - 13.3333	Secondary Horizontal	L2x2x1/4	133	-1.49	7.86	19.7 (b) 18.9	Pass
T9	13.3333 - 6.66667	Secondary Horizontal	L2x2x1/4	145	-1.63	7.05	21.7 (b) 23.1	Pass
T10	6.66667 - 0	Secondary Horizontal	L2x2x1/4	157	-1.76	6.36	23.7 (b) 27.7	Pass
T1	92 - 80	Top Girt	L2x2x1/8	4	-0.35	4.27	8.2	Pass
T5	65 - 60	Top Girt	L2 1/2x2 1/2x3/16	55	-0.51	7.96	8.6 (b) 6.4	Pass
							8.2 (b)	
							Summary	
						Leg (T10)	62.8	Pass
						Diagonal (T8)	70.8	Pass
						Secondary Horizontal (T10)	27.7	Pass
						Top Girt (T1)	8.6	Pass
						Bolt	67.4	Pass
						Checks		
						RATING =	70.8	Pass

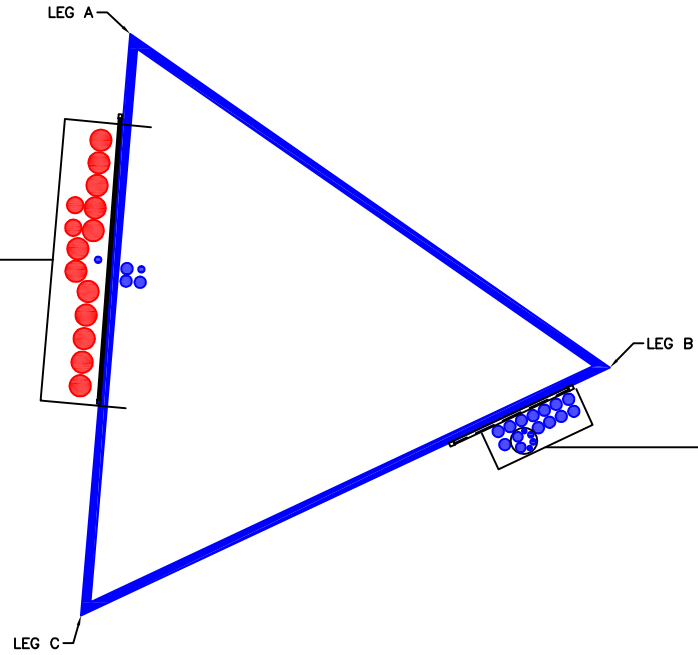
APPENDIX B
BASE LEVEL DRAWING



(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-1/4" TO 89 FT LEVEL
(12) 1-5/8" TO 89 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 34 FT LEVEL
(3) 7/8" TO 91 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 59 FT LEVEL



(OTHER CONSIDERED EQUIPMENT—IN CONDUIT)
(2) 3/8" TO 65 FT LEVEL
(2) 7/16" TO 65 FT LEVEL
(2) 3/4" TO 65 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 7/8" TO 65 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity



Site Info	
BU #	806386
Site Name	NHV 106 943628
Order #	552665 Rev. 0

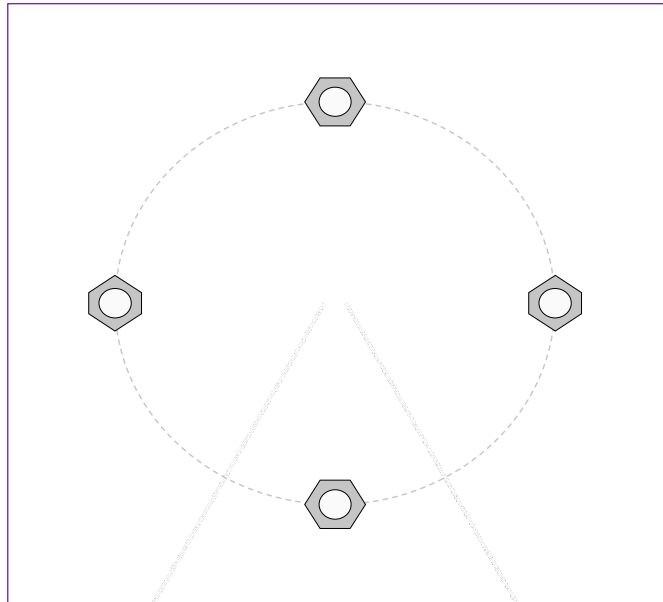
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0.125

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	105.70	89.92
Shear Force (kips)	13.89	12.14

*TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(4) 7/8" ϕ bolts (A449 N; $F_y=92$ ksi, $F_u=120$ ksi)	
l_{ar} (in):	0.125

Anchor Rod Summary		(units of kips, kip-in)
$P_{u,t} = 22.48$	$\phi P_{n,t} = 41.58$	Stress Rating
$V_u = 3.04$	$\phi V_n = 27.06$	51.5%
$M_u = n/a$	$\phi M_n = n/a$	Pass

SST Unit Base Foundation



BU #: 806386
 Site Name: NHV 106 943628
 App. Number: 552665 Rev. 0

TIA-222 Revision: H

Top & Bot. Pad Rein. Different?:	<input type="checkbox"/>
Tower Centroid Offset?:	<input type="checkbox"/>
Block Foundation?:	<input checked="" type="checkbox"/>
Rectangular Pad?:	<input type="checkbox"/>

Superstructure Analysis Reactions		
Global Moment, M :	1257.34	ft-kips
Global Axial, P :	20.76	kips
Global Shear, V :	22.82	kips
Leg Compression, P_{comp} :	105.7	kips
Leg Comp. Shear, V_{u,comp} :	13.89	kips
Leg Uplift, P_{uplift} :	89.92	kips
Leg Uplift. Shear, V_{u,uplift} :	12.14	kips
Tower Height, H :	92	ft
Base Face Width, BW :	14.7	ft
BP Dist. Above Fdn, bp_{dist} :	1	in
Anchor Bolt Circle, BC :	7.0625	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	41.88	22.82	51.9%	Pass
<i>Bearing Pressure (ksf)</i>	22.65	3.58	15.8%	Pass
<i>Overtuning (kip*ft)</i>	1714.68	1339.11	78.1%	Pass
<i>Pad Flexure (kip*ft)</i>	2862.74	420.15	14.0%	Pass
<i>Pad Shear - 1-way (kips)</i>	702.45	69.13	9.4%	Pass
<i>Pad Shear - Comp 2-way (ksi)</i>	0.164	0.020	11.4%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	1276.52	0.00	0.0%	Pass
<i>Pad Shear - Tension 2-way (ksi)</i>	0.164	0.017	9.7%	Pass
<i>Flexural 2-way (Tension) (kip*ft)</i>	1276.52	0.00	0.0%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	78.1%
Structural Rating*:	14.0%

Pad Properties		
Depth, D :	2.00	ft
Pad Width, W₁ :	19.00	ft
Pad Thickness, T :	3.50	ft
Pad Rebar Size (Bottom dir. 2), Sp₂ :	8	
Pad Rebar Quantity (Bottom dir. 2), mp₂ :	22	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, F'c :	3	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	100	pcf
Ultimate Net Bearing, Qnet :	30.000	ksf
Cohesion, Cu :		ksf
Friction Angle, φ :		degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.3	
Neglected Depth, N :	3.3	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, gw :	N/A	ft

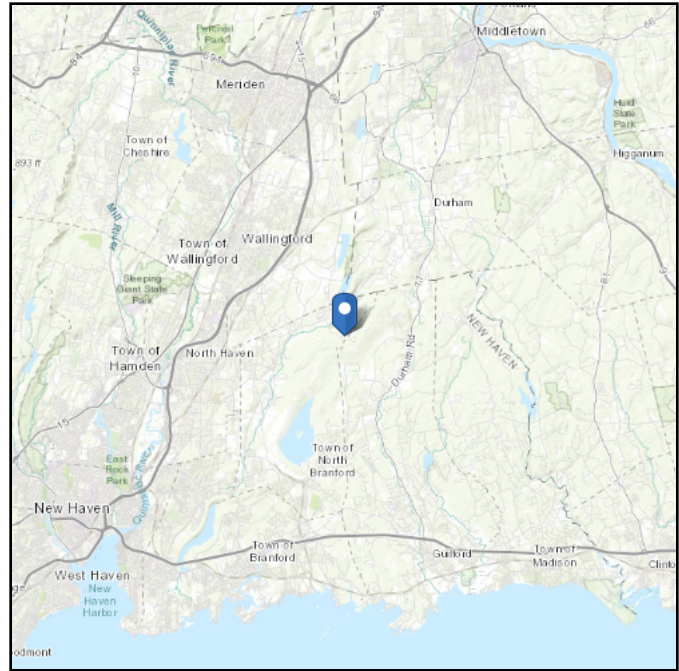
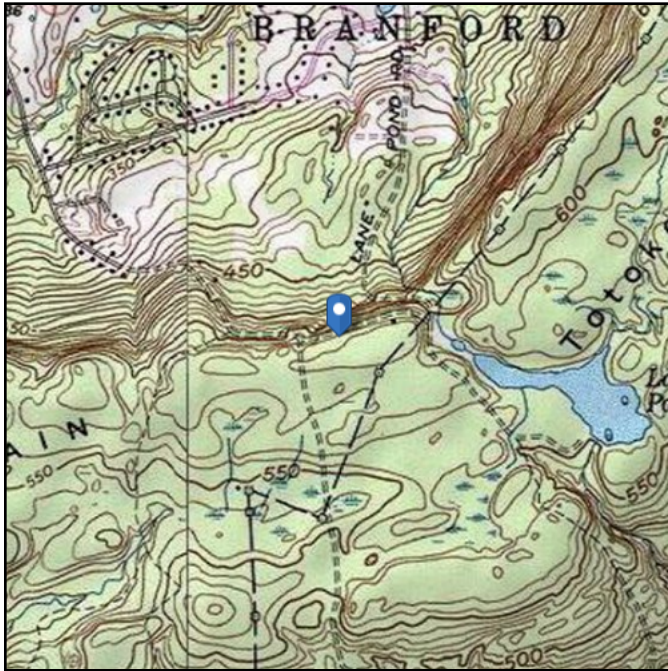
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ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 583.14 ft (NAVD 88)
Latitude: 41.403464
Longitude: -72.744139



Wind

Results:

Wind Speed:	126 Vmph
10-year MRI	78 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	103 Vmph

Ultimate windspeed of 125 mph is used per New Haven County exception

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

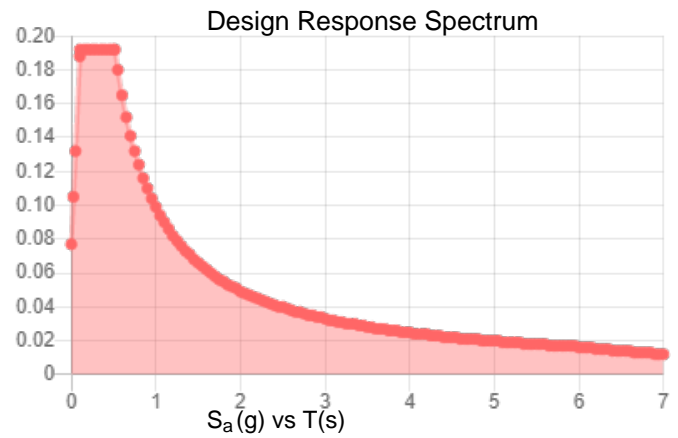
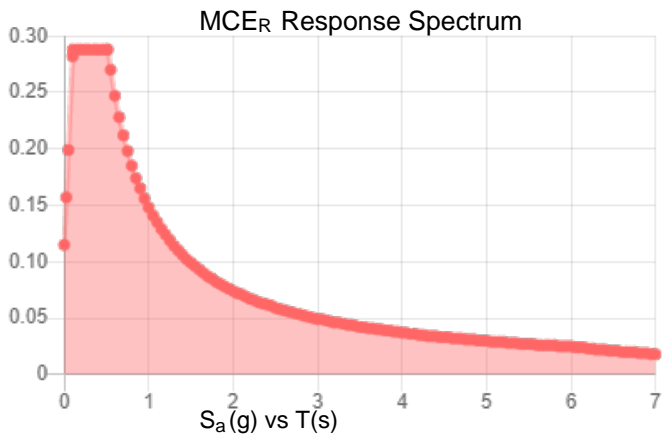
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.18	S_{DS} :	0.192
S_1 :	0.062	S_{D1} :	0.099
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.288	PGA _M :	0.147
S_{M1} :	0.148	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Apr 27 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Apr 27 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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