



MORRISON HERSHFIELD

Date: **September 28, 2021**

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

Subject: **Structural Analysis Report**

Carrier Designation:

Site Number: CTHA667A
Site Name: CT03XC221

Crown Castle Designation:

BU Number: 876348
Site Name: Enfield
JDE Job Number: 650690
Work Order Number: 2027039
Order Number: 557903 Rev. 2

Engineering Firm Designation:

Morrison Hershfield Project Number: CN8-725R2 / 2101398

Site Data:

Bright Meadow Blvd., Enfield, Hartford County, CT 06082
Latitude 42° 1' 14.91", Longitude -72° 35' 6.59"
147.5 Foot – Summit Monopole 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:

LC7: Proposed Equipment Configuration

Sufficient Capacity – 82.9%

This analysis utilizes an ultimate 3-second gust wind speed of 116 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

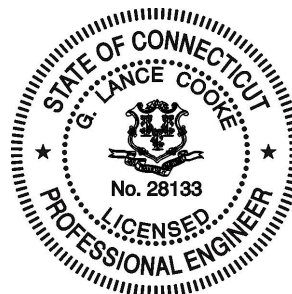


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1) INTRODUCTION

This tower is a 147.5 ft Summit monopole tower designed by Paul J Ford and Company.

The tower was modified per reinforcement drawings prepared by Paul J Ford and Company. Reinforcement consisted of adding flat members from 39 ft to 49 ft and additional anchor rods. Per the post modification inspection completed by Tower Engineering Solutions in August of 2013, these modifications have been properly installed and were considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	116 mph
Exposure Category:	B
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)
147.0	147.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	rfs/celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	-	Pipe Mount [#9' Long, P2.0 STD]		
		1	Site Pro 1	Platform Reinforcement Kit [#PRK-1245L]		
		1	Site Pro 1	Support Rail Kit [#HRK-12]		
		1	-	Platform Mount [LP 1201-1]		

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)
145.0	146.0	2	alcatel lucent	TME-800MHz 2x50W RRH	-	-
		1	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz		
	145.0	1	-	Side Arm Mount [SO 102-3]		
	144.0	1	alcatel lucent	TME-800MHz 2x50W RRH		
		2	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz		
137.0	139.0	3	samsung telecommunications	MT6407-77A w/ Mount Pipe	8	1-5/8
		1	symmetricom	58532A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137.0	137.0	3	antel	BXA-70063-6CF-EDIN-2 w/ Mount Pipe	-	-
		6	commscope	SBNHH-1D65B		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		2	rfs/celwave	DB-T1-6Z-8AB-0Z		
		3	-	Dual Antenna Mount Kit		
		1	-	Platform Mount [LP 1201-1_HR-2]		
	135.0	3	samsung telecommunications	CBRS w/ Mount Pipe		
117.0	119.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	9 2 1 1	1-5/8 3/4 3/8 2C
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		1	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		3	ericsson	RRUS 32 B2		
		4	kathrein	860 10025		
	117.0	2	powerwave technologies	LGP17201		
		1	-	Platform Mount [LP 1201-1]		
115.0	119.0	3	raycap	TME-RRU-11	-	-
		1	raycap	TME-DC6-48-60-18-8F		
	115.0	1	-	Side Arm Mount [SO 102-3]		
107.0	107.0	3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	7 2	1-5/8 1-3/8
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	rfs/celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B12/B71		
		1	-	T-Arm Mount [TA 701-3]		
97.0	97.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		
49.0	50.0	1	symmetricom	58532A	1	1/2
	49.0	1	-	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1532963	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1613614	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1613591	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3667620	CCISITES
4-POST-MODIFICATION INSPECTION	3966655	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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	% Capacity	Pass / Fail
L1	147.5 - 142.5	Pole	TP22.95x22x0.25	Pole	4.5	Pass
L2	142.5 - 137.5	Pole	TP23.9x22.95x0.25	Pole	8.7	Pass
L3	137.5 - 132.5	Pole	TP24.85x23.9x0.25	Pole	15.5	Pass
L4	132.5 - 127.5	Pole	TP25.8x24.85x0.25	Pole	21.4	Pass
L5	127.5 - 122.5	Pole	TP26.75x25.8x0.25	Pole	26.8	Pass
L6	122.5 - 117.5	Pole	TP27.7x26.75x0.25	Pole	31.7	Pass
L7	117.5 - 112.5	Pole	TP28.65x27.7x0.25	Pole	38.2	Pass
L8	112.5 - 112.25	Pole	TP29.41x28.65x0.25	Pole	38.5	Pass
L9	112.25 - 107.25	Pole	TP29.148x28.198x0.25	Pole	42.4	Pass
L10	107.25 - 102.25	Pole	TP30.098x29.148x0.25	Pole	48.9	Pass
L11	102.25 - 97.25	Pole	TP31.048x30.098x0.25	Pole	54.5	Pass
L12	97.25 - 92.25	Pole	TP31.998x31.048x0.25	Pole	61.2	Pass
L13	92.25 - 87.25	Pole	TP32.948x31.998x0.25	Pole	67.3	Pass
L14	87.25 - 82.25	Pole	TP33.898x32.948x0.25	Pole	73.0	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L15	82.25 - 77.25	Pole	TP34.848x33.898x0.25	Pole	78.4	Pass
L16	77.25 - 76.75	Pole	TP35.798x34.848x0.25	Pole	79.0	Pass
L17	76.75 - 71.75	Pole	TP35.393x34.443x0.3125	Pole	64.1	Pass
L18	71.75 - 66.75	Pole	TP36.343x35.393x0.3125	Pole	67.7	Pass
L19	66.75 - 61.75	Pole	TP37.293x36.343x0.3125	Pole	71.0	Pass
L20	61.75 - 56.75	Pole	TP38.242x37.293x0.3125	Pole	74.1	Pass
L21	56.75 - 51.75	Pole	TP39.192x38.242x0.3125	Pole	77.1	Pass
L22	51.75 - 47.83	Pole	TP39.937x39.192x0.3125	Pole	79.3	Pass
L23	47.83 - 47.58	Pole	TP39.984x39.937x0.3125	Pole	79.4	Pass
L24	47.58 - 42.58	Pole	TP40.934x39.984x0.3125	Pole	82.1	Pass
L25	42.58 - 41	Pole	TP42.232x40.934x0.3125	Pole	82.9	Pass
L26	41 - 34.75	Pole	TP41.797x40.61x0.375	Pole	69.6	Pass
L27	34.75 - 29.75	Pole	TP42.747x41.797x0.375	Pole	71.3	Pass
L28	29.75 - 24.75	Pole	TP43.697x42.747x0.375	Pole	72.9	Pass
L29	24.75 - 19.75	Pole	TP44.647x43.697x0.375	Pole	74.3	Pass
L30	19.75 - 14.75	Pole	TP45.597x44.647x0.375	Pole	75.7	Pass
L31	14.75 - 9.75	Pole	TP46.547x45.597x0.375	Pole	77.0	Pass
L32	9.75 - 4.75	Pole	TP47.497x46.547x0.375	Pole	78.2	Pass
L33	4.75 - 0	Pole	TP48.4x47.497x0.375	Pole	79.3	Pass
					Summary	
				Pole	82.9	Pass
				Reinforcement	0.0	Pass
				Overall	82.9	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.2	Pass
1	Base Plate		63.5	Pass
1	Base Foundation (Structure)	0	49.0	Pass
1	Base Foundation (Soil Interaction)		54.3	Pass

Structure Rating (max from all components) =	82.9%*
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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.

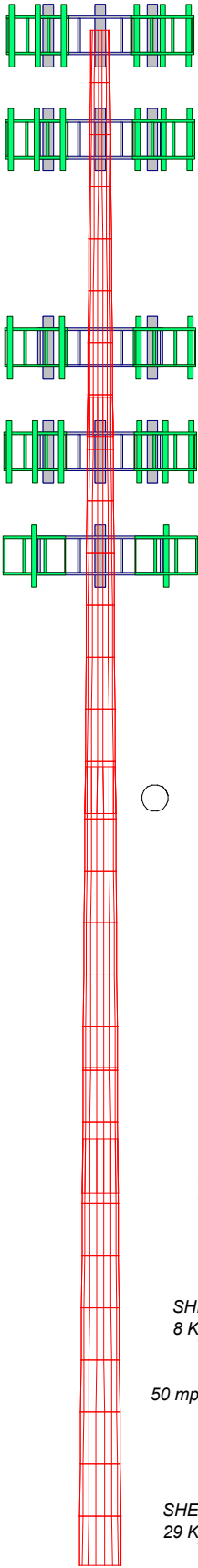
4.1) Recommendations

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

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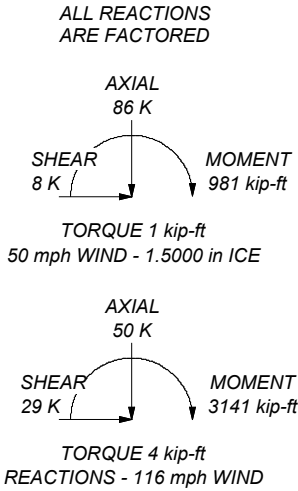


MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 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. CCIPOLE RATING: 82.9%





Morrison Hershfield
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Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job: **CN8-725R2 / 2101398**

Project: 876348 / Enfield	Client: Crown Castle USA	Drawn by: RP	App'd:
Code: TIA-222-H	Date: 09/28/21	Scale: NTS	Dwg No. E-1
Path: C:\Users\RPeddemar\OneDrive - MORRISON HERSHFIELD\Desktop\CN8-725R2 SA Re_nrlAnalysis\CN8-725R2 BU_876348 WD_202708.dwg			

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Tower base elevation above sea level: 110.00 ft.

Basic wind speed of 116 mph.

Risk Category II.

Exposure Category B.

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 pole 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

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retention Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist.
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Use TIA-222-H Tension Splice
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Exemption
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	147.50-142.50	5.00	0.00	18	22.0000	22.9500	0.2500	1.0000	A607-60 (60 ksi)
L2	142.50-137.50	5.00	0.00	18	22.9500	23.9000	0.2500	1.0000	A607-60 (60 ksi)
L3	137.50-132.50	5.00	0.00	18	23.9000	24.8500	0.2500	1.0000	A607-60 (60 ksi)
L4	132.50-127.50	5.00	0.00	18	24.8500	25.8000	0.2500	1.0000	A607-60 (60 ksi)
L5	127.50-122.50	5.00	0.00	18	25.8000	26.7500	0.2500	1.0000	A607-60 (60 ksi)
L6	122.50-117.50	5.00	0.00	18	26.7500	27.7000	0.2500	1.0000	A607-60 (60 ksi)
L7	117.50-112.50	5.00	0.00	18	27.7000	28.6500	0.2500	1.0000	A607-60 (60 ksi)
L8	112.50-108.50	4.00	3.75	18	28.6500	29.4100	0.2500	1.0000	A607-60 (60 ksi)
L9	108.50-107.25	5.00	0.00	18	28.1975	29.1476	0.2500	1.0000	A607-65 (65 ksi)
L10	107.25-102.25	5.00	0.00	18	29.1476	30.0976	0.2500	1.0000	A607-65 (65 ksi)
L11	102.25-97.25	5.00	0.00	18	30.0976	31.0477	0.2500	1.0000	A607-65 (65 ksi)
L12	97.25-92.25	5.00	0.00	18	31.0477	31.9978	0.2500	1.0000	A607-65 (65 ksi)
L13	92.25-87.25	5.00	0.00	18	31.9978	32.9478	0.2500	1.0000	A607-65 (65 ksi)
L14	87.25-82.25	5.00	0.00	18	32.9478	33.8979	0.2500	1.0000	A607-65 (65 ksi)
L15	82.25-77.25	5.00	0.00	18	33.8979	34.8479	0.2500	1.0000	A607-65 (65 ksi)
L16	77.25-72.25	5.00	4.50	18	34.8479	35.7980	0.2500	1.0000	A607-65 (65 ksi)
L17	72.25-71.75	5.00	0.00	18	34.4429	35.3928	0.3125	1.2500	A607-65 (65 ksi)
L18	71.75-66.75	5.00	0.00	18	35.3928	36.3427	0.3125	1.2500	A607-65 (65 ksi)
L19	66.75-61.75	5.00	0.00	18	36.3427	37.2926	0.3125	1.2500	A607-65 (65 ksi)
L20	61.75-56.75	5.00	0.00	18	37.2926	38.2425	0.3125	1.2500	A607-65 (65 ksi)
L21	56.75-51.75	5.00	0.00	18	38.2425	39.1924	0.3125	1.2500	A607-65 (65 ksi)
L22	51.75-47.83	3.92	0.00	18	39.1924	39.9365	0.3125	1.2500	A607-65 (65 ksi)
L23	47.83-47.58	0.25	0.00	18	39.9365	39.9840	0.3125	1.2500	A607-65 (65 ksi)
L24	47.58-42.58	5.00	0.00	18	39.9840	40.9339	0.3125	1.2500	A607-65 (65 ksi)
L25	42.58-35.75	6.83	5.25	18	40.9339	42.2320	0.3125	1.2500	A607-65 (65 ksi)
L26	35.75-34.75	6.25	0.00	18	40.6096	41.7972	0.3750	1.5000	A607-65 (65 ksi)
L27	34.75-29.75	5.00	0.00	18	41.7972	42.7472	0.3750	1.5000	A607-65 (65 ksi)
L28	29.75-24.75	5.00	0.00	18	42.7472	43.6973	0.3750	1.5000	A607-65 (65 ksi)
L29	24.75-19.75	5.00	0.00	18	43.6973	44.6473	0.3750	1.5000	A607-65 (65 ksi)
L30	19.75-14.75	5.00	0.00	18	44.6473	45.5974	0.3750	1.5000	A607-65 (65 ksi)
L31	14.75-9.75	5.00	0.00	18	45.5974	46.5474	0.3750	1.5000	A607-65 (65 ksi)
L32	9.75-4.75	5.00	0.00	18	46.5474	47.4975	0.3750	1.5000	A607-65 (65 ksi)
L33	4.75-0.00	4.75		18	47.4975	48.4000	0.3750	1.5000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.3008	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	23.2655	18.0125	1172.6326	8.0585	11.6586	100.5809	2346.8081	9.0079	3.5992	14.397
L2	23.2655	18.0125	1172.6326	8.0585	11.6586	100.5809	2346.8081	9.0079	3.5992	14.397
	24.2301	18.7663	1326.1047	8.3957	12.1412	109.2235	2653.9543	9.3849	3.7664	15.066
L3	24.2301	18.7663	1326.1047	8.3957	12.1412	109.2235	2653.9543	9.3849	3.7664	15.066
	25.1948	19.5201	1492.4153	8.7330	12.6238	118.2224	2986.7944	9.7619	3.9336	15.734
L4	25.1948	19.5201	1492.4153	8.7330	12.6238	118.2224	2986.7944	9.7619	3.9336	15.734
	26.1594	20.2739	1672.0802	9.0702	13.1064	127.5774	3346.3605	10.1389	4.1008	16.403
L5	26.1594	20.2739	1672.0802	9.0702	13.1064	127.5774	3346.3605	10.1389	4.1008	16.403
	27.1241	21.0278	1865.6149	9.4075	13.5890	137.2886	3733.6846	10.5159	4.2680	17.072
L6	27.1241	21.0278	1865.6149	9.4075	13.5890	137.2886	3733.6846	10.5159	4.2680	17.072
	28.0888	21.7816	2073.5353	9.7447	14.0716	147.3560	4149.7990	10.8929	4.4352	17.741
L7	28.0888	21.7816	2073.5353	9.7447	14.0716	147.3560	4149.7990	10.8929	4.4352	17.741
	29.0534	22.5354	2296.3570	10.0820	14.5542	157.7797	4595.7356	11.2698	4.6024	18.41
L8	29.0534	22.5354	2296.3570	10.0820	14.5542	157.7797	4595.7356	11.2698	4.6024	18.41
	29.8251	23.1385	2485.6899	10.3518	14.9403	166.3751	4974.6504	11.5714	4.7362	18.945
L9	29.3175	22.1763	2188.3323	9.9214	14.3243	152.7703	4379.5441	11.0903	4.5228	18.091
	29.5586	22.9302	2419.1791	10.2586	14.8070	163.3812	4841.5414	11.4673	4.6900	18.76
L10	29.5586	22.9302	2419.1791	10.2586	14.8070	163.3812	4841.5414	11.4673	4.6900	18.76
	30.5234	23.6841	2665.7150	10.5959	15.2896	174.3483	5334.9377	11.8443	4.8572	19.429
L11	30.5234	23.6841	2665.7150	10.5959	15.2896	174.3483	5334.9377	11.8443	4.8572	19.429
	31.4881	24.4380	2928.4560	10.9332	15.7722	185.6717	5860.7654	12.2213	5.0244	20.098
L12	31.4881	24.4380	2928.4560	10.9332	15.7722	185.6717	5860.7654	12.2213	5.0244	20.098
	32.4528	25.1918	3207.9178	11.2705	16.2549	197.3513	6420.0567	12.5983	5.1916	20.766
L13	32.4528	25.1918	3207.9178	11.2705	16.2549	197.3513	6420.0567	12.5983	5.1916	20.766
	33.4175	25.9457	3504.6163	11.6077	16.7375	209.3872	7013.8441	12.9753	5.3588	21.435
L14	33.4175	25.9457	3504.6163	11.6077	16.7375	209.3872	7013.8441	12.9753	5.3588	21.435
	34.3822	26.6996	3819.0673	11.9450	17.2201	221.7794	7643.1597	13.3523	5.5260	22.104
L15	34.3822	26.6996	3819.0673	11.9450	17.2201	221.7794	7643.1597	13.3523	5.5260	22.104
	35.3470	27.4535	4151.7865	12.2823	17.7028	234.5277	8309.0360	13.7293	5.6932	22.773
L16	35.3470	27.4535	4151.7865	12.2823	17.7028	234.5277	8309.0360	13.7293	5.6932	22.773
	36.3117	28.2073	4503.2898	12.6195	18.1854	247.6324	9012.5051	14.1063	5.8604	23.442
L17	35.7942	33.8531	4982.1890	12.1163	17.4970	284.7451	9970.9337	16.9298	5.5120	17.638
	35.8906	34.7953	5409.8516	12.4535	17.9796	300.8890	10826.821	17.4010	5.6791	18.173
L18	35.8906	34.7953	5409.8516	12.4535	17.9796	300.8890	10826.821	17.4010	5.6791	18.173
	36.8552	35.7375	5861.3129	12.7907	18.4621	317.4781	11730.338	17.8721	5.8463	18.708
L19	36.8552	35.7375	5861.3129	12.7907	18.4621	317.4781	11730.338	17.8721	5.8463	18.708
	37.8197	36.6796	6337.2171	13.1279	18.9446	334.5124	12682.772	18.3433	6.0135	19.243
L20	37.8197	36.6796	6337.2171	13.1279	18.9446	334.5124	12682.772	18.3433	6.0135	19.243
	38.7842	37.6218	6838.2087	13.4651	19.4272	351.9918	13685.415	18.8145	6.1807	19.778
L21	38.7842	37.6218	6838.2087	13.4651	19.4272	351.9918	13685.415	18.8145	6.1807	19.778
	39.7488	38.5640	7364.9321	13.8024	19.9097	369.9164	14739.555	19.2856	6.3479	20.313
L22	39.7488	38.5640	7364.9321	13.8024	19.9097	369.9164	14739.555	19.2856	6.3479	20.313
	40.5044	39.3021	7795.9601	14.0665	20.2877	384.2694	15602.178	19.6548	6.4788	20.732
L23	40.5044	39.3021	7795.9601	14.0665	20.2877	384.2694	15602.178	19.6548	6.4788	20.732
	40.5526	39.3492	7824.0269	14.0834	20.3119	385.1948	15658.348	19.6783	6.4872	20.759
L24	40.5526	39.3492	7824.0269	14.0834	20.3119	385.1948	15658.348	19.6783	6.4872	20.759
	41.5172	40.2913	8399.6008	14.4206	20.7944	403.9354	16810.254	20.1495	6.6544	21.294
L25	41.5172	40.2913	8399.6008	14.4206	20.7944	403.9354	16810.254	20.1495	6.6544	21.294
	42.8353	41.5789	9230.8709	14.8814	21.4539	430.2663	18473.888	20.7934	6.8828	22.025

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L26	42.1912	47.8893	9794.3446	14.2833	20.6297	474.7694	19601.5768	23.9492	6.4873	17.299
	42.3841	49.3027	10687.4588	14.7049	21.2330	503.3427	21388.9804	24.6561	6.6963	17.857
L27	42.3841	49.3027	10687.4588	14.7049	21.2330	503.3427	21388.9804	24.6561	6.6963	17.857
	43.3488	50.4335	11439.8267	15.0421	21.7156	526.8025	22894.7062	25.2216	6.8635	18.303
L28	43.3488	50.4335	11439.8267	15.0421	21.7156	526.8025	22894.7062	25.2216	6.8635	18.303
	44.3135	51.5643	12226.7009	15.3794	22.1982	550.7966	24469.4900	25.7871	7.0307	18.749
L29	44.3135	51.5643	12226.7009	15.3794	22.1982	550.7966	24469.4900	25.7871	7.0307	18.749
	45.2782	52.6951	13048.8550	15.7167	22.6808	575.3251	26114.8800	26.3526	7.1979	19.194
L30	45.2782	52.6951	13048.8550	15.7167	22.6808	575.3251	26114.8800	26.3526	7.1979	19.194
	46.2429	53.8259	13907.0627	16.0539	23.1635	600.3880	27832.4247	26.9181	7.3651	19.64
L31	46.2429	53.8259	13907.0627	16.0539	23.1635	600.3880	27832.4247	26.9181	7.3651	19.64
	47.2076	54.9567	14802.0977	16.3912	23.6461	625.9852	29623.6724	27.4836	7.5323	20.086
L32	47.2076	54.9567	14802.0977	16.3912	23.6461	625.9852	29623.6724	27.4836	7.5323	20.086
	48.1723	56.0875	15734.7336	16.7285	24.1287	652.1167	31490.1714	28.0491	7.6996	20.532
L33	48.1723	56.0875	15734.7336	16.7285	24.1287	652.1167	31490.1714	28.0491	7.6996	20.532
	49.0888	57.1618	16656.2703	17.0489	24.5872	677.4366	33334.4574	28.5863	7.8584	20.956

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 in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 147.50- 142.50				1	1	1			
L2 142.50- 137.50				1	1	1			
L3 137.50- 132.50				1	1	1			
L4 132.50- 127.50				1	1	1			
L5 127.50- 122.50				1	1	1			
L6 122.50- 117.50				1	1	1			
L7 117.50- 112.50				1	1	1			
L8 112.50- 108.50				1	1	1			
L9 108.50- 107.25				1	1	1			
L10 107.25- 102.25				1	1	1			
L11 102.25- 97.25				1	1	1			
L12 97.25- 92.25				1	1	1			
L13 92.25- 87.25				1	1	1			
L14 87.25- 82.25				1	1	1			
L15 82.25- 77.25				1	1	1			
L16 77.25-				1	1	1			

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 in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
72.25									
L17 72.25-71.75				1	1	1			
L18 71.75-66.75				1	1	1			
L19 66.75-61.75				1	1	1			
L20 61.75-56.75				1	1	1			
L21 56.75-51.75				1	1	1			
L22 51.75-47.83				1	1	1			
L23 47.83-47.58				1	1	1			
L24 47.58-42.58				1	1	1			
L25 42.58-35.75				1	1	1			
L26 35.75-34.75				1	1	1			
L27 34.75-29.75				1	1	1			
L28 29.75-24.75				1	1	1			
L29 24.75-19.75				1	1	1			
L30 19.75-14.75				1	1	1			
L31 14.75-9.75				1	1	1			
L32 9.75-4.75				1	1	1			
L33 4.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf

Safety Line 5/8"	B	No	Surface Ar (CaAa)	147.50 - 8.00	1	1	0.000 0.000	0.8800		0.40
Climbing Pegs	B	No	Surface Ar (CaAa)	147.50 - 8.00	1	1	-0.100 0.100	0.7050		1.80

HCS 6X12 6AWG(1-3/8)	A	No	Surface Ar (CaAa)	107.00 - 6.00	2	2	0.400 0.440	1.3800		1.70
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	A	No	Surface Ar (CaAa)	107.00 - 6.00	1	1	0.400 0.400	1.6250		1.07
LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	107.00 - 6.00	6	4	0.350 0.450	1.9800		0.82

CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	97.00 - 6.00	1	1	-0.450 -0.450	1.6000		2.35

MP3-03 Reinforcement	A	No	Surface Af (CaAa)	49.00 - 39.00	1	1	-0.417 -0.417	4.0600	11.2600	0.00
MP3-03 Reinforcement	B	No	Surface Af (CaAa)	49.00 - 39.00	1	1	-0.417 -0.417	4.0600	11.2600	0.00
MP3-03 Reinforcement	C	No	Surface Af (CaAa)	49.00 - 39.00	1	1	-0.417 -0.417	4.0600	11.2600	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf

HB158-21U6S24- xxM_TMO(1-5/8)	A	No	No	Inside Pole	147.00 - 6.00	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	2.50 2.50 2.50 2.50
HB158-1-08U8- S8J18(1-5/8)	B	No	No	Inside Pole	137.00 - 6.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.30 1.30 1.30 1.30
LDF7-50A(1-5/8)	B	No	No	Inside Pole	137.00 - 6.00	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82
LDF7-50A(1-5/8)	C	No	No	Inside Pole	117.00 - 6.00	9	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82
FB-L98B-002- 75000(3/8)	C	No	No	Inside Pole	117.00 - 6.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.06 0.06 0.06 0.06
WR-VG86ST- BRD(3/4)	C	No	No	Inside Pole	117.00 - 6.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.58 0.58 0.58 0.58
2" Conduit	C	No	No	Inside Pole	117.00 - 6.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	2.80 2.80 2.80 2.80
LDF4-50A(1/2)	B	No	No	Inside Pole	49.00 - 6.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.15 0.15 0.15 0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	147.50-142.50	A	0.000	0.000	0.000	0.000	0.034
		B	0.000	0.000	0.792	0.000	0.011
		C	0.000	0.000	0.000	0.000	0.000
L2	142.50-137.50	A	0.000	0.000	0.000	0.000	0.037
		B	0.000	0.000	0.792	0.000	0.011
		C	0.000	0.000	0.000	0.000	0.000
L3	137.50-132.50	A	0.000	0.000	0.000	0.000	0.037
		B	0.000	0.000	0.792	0.000	0.045
		C	0.000	0.000	0.000	0.000	0.000
L4	132.50-127.50	A	0.000	0.000	0.000	0.000	0.037

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
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.000
L5	127.50-122.50	A	0.000	0.000	0.000	0.000	0.037
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.000
L6	122.50-117.50	A	0.000	0.000	0.000	0.000	0.037
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.000
L7	117.50-112.50	A	0.000	0.000	0.000	0.000	0.037
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.051
L8	112.50-108.50	A	0.000	0.000	0.000	0.000	0.030
		B	0.000	0.000	0.634	0.000	0.039
		C	0.000	0.000	0.000	0.000	0.046
L9	108.50-107.25	A	0.000	0.000	0.000	0.000	0.009
		B	0.000	0.000	0.198	0.000	0.012
		C	0.000	0.000	0.000	0.000	0.014
L10	107.25-102.25	A	0.000	0.000	5.845	0.000	0.082
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.057
L11	102.25-97.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	0.792	0.000	0.049
		C	0.000	0.000	0.000	0.000	0.057
L12	97.25-92.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.553	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L13	92.25-87.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L14	87.25-82.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L15	82.25-77.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L16	77.25-72.25	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L17	72.25-71.75	A	0.000	0.000	0.615	0.000	0.008
		B	0.000	0.000	0.159	0.000	0.006
		C	0.000	0.000	0.000	0.000	0.006
L18	71.75-66.75	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L19	66.75-61.75	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L20	61.75-56.75	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L21	56.75-51.75	A	0.000	0.000	6.152	0.000	0.084
		B	0.000	0.000	1.593	0.000	0.060
		C	0.000	0.000	0.000	0.000	0.057
L22	51.75-47.83	A	0.000	0.000	5.610	0.000	0.066
		B	0.000	0.000	2.037	0.000	0.047
		C	0.000	0.000	0.790	0.000	0.045
L23	47.83-47.58	A	0.000	0.000	0.477	0.000	0.004
		B	0.000	0.000	0.249	0.000	0.003
		C	0.000	0.000	0.169	0.000	0.003
L24	47.58-42.58	A	0.000	0.000	9.536	0.000	0.084
		B	0.000	0.000	4.976	0.000	0.061
		C	0.000	0.000	3.383	0.000	0.057
L25	42.58-35.75	A	0.000	0.000	10.833	0.000	0.115
		B	0.000	0.000	4.601	0.000	0.084
		C	0.000	0.000	2.424	0.000	0.078
L26	35.75-34.75	A	0.000	0.000	1.230	0.000	0.017
		B	0.000	0.000	0.319	0.000	0.012
		C	0.000	0.000	0.000	0.000	0.011
L27	34.75-29.75	A	0.000	0.000	6.152	0.000	0.084

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L28	29.75-24.75	B	0.000	0.000	1.593	0.000	0.061
		C	0.000	0.000	0.000	0.000	0.057
		A	0.000	0.000	6.152	0.000	0.084
L29	24.75-19.75	B	0.000	0.000	1.593	0.000	0.061
		C	0.000	0.000	0.000	0.000	0.057
		A	0.000	0.000	6.152	0.000	0.084
L30	19.75-14.75	B	0.000	0.000	1.593	0.000	0.061
		C	0.000	0.000	0.000	0.000	0.057
		A	0.000	0.000	6.152	0.000	0.084
L31	14.75-9.75	B	0.000	0.000	1.593	0.000	0.061
		C	0.000	0.000	0.000	0.000	0.057
		A	0.000	0.000	6.152	0.000	0.084
L32	9.75-4.75	B	0.000	0.000	0.877	0.000	0.041
		C	0.000	0.000	0.000	0.000	0.043
		A	0.000	0.000	4.614	0.000	0.063
L33	4.75-0.00	B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
		A	0.000	0.000	0.000	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	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
L1	147.50-142.50	A	1.478	0.000	0.000	0.000	0.000	0.034
		B		0.000	0.000	3.749	0.000	0.052
		C		0.000	0.000	0.000	0.000	0.000
L2	142.50-137.50	A	1.473	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.739	0.000	0.052
		C		0.000	0.000	0.000	0.000	0.000
L3	137.50-132.50	A	1.468	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.728	0.000	0.085
		C		0.000	0.000	0.000	0.000	0.000
L4	132.50-127.50	A	1.462	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.717	0.000	0.089
		C		0.000	0.000	0.000	0.000	0.000
L5	127.50-122.50	A	1.457	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.706	0.000	0.089
		C		0.000	0.000	0.000	0.000	0.000
L6	122.50-117.50	A	1.451	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.694	0.000	0.088
		C		0.000	0.000	0.000	0.000	0.000
L7	117.50-112.50	A	1.445	0.000	0.000	0.000	0.000	0.037
		B		0.000	0.000	3.682	0.000	0.088
		C		0.000	0.000	0.000	0.000	0.051
L8	112.50-108.50	A	1.439	0.000	0.000	0.000	0.000	0.030
		B		0.000	0.000	2.936	0.000	0.070
		C		0.000	0.000	0.000	0.000	0.046
L9	108.50-107.25	A	1.435	0.000	0.000	0.000	0.000	0.009
		B		0.000	0.000	0.918	0.000	0.022
		C		0.000	0.000	0.000	0.000	0.014
L10	107.25-102.25	A	1.431	0.000	0.000	11.872	0.000	0.215
		B		0.000	0.000	3.655	0.000	0.087
		C		0.000	0.000	0.000	0.000	0.057
L11	102.25-97.25	A	1.424	0.000	0.000	12.472	0.000	0.223
		B		0.000	0.000	3.641	0.000	0.087
		C		0.000	0.000	0.000	0.000	0.057
L12	97.25-92.25	A	1.417	0.000	0.000	12.446	0.000	0.222
		B		0.000	0.000	5.732	0.000	0.123
		C		0.000	0.000	0.000	0.000	0.057
L13	92.25-87.25	A	1.409	0.000	0.000	12.420	0.000	0.221
		B		0.000	0.000	5.820	0.000	0.124
		C		0.000	0.000	0.000	0.000	0.057
L14	87.25-82.25	A	1.401	0.000	0.000	12.391	0.000	0.220

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
L15	82.25-77.25	B	1.393	0.000	0.000	5.796	0.000	0.124
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	12.362	0.000	0.219
L16	77.25-72.25	B	1.384	0.000	0.000	5.770	0.000	0.123
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	12.330	0.000	0.218
L17	72.25-71.75	B	1.378	0.000	0.000	5.743	0.000	0.122
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	1.233	0.000	0.022
L18	71.75-66.75	B	1.373	0.000	0.000	0.574	0.000	0.012
		C		0.000	0.000	0.000	0.000	0.006
		A		0.000	0.000	12.293	0.000	0.217
L19	66.75-61.75	B	1.363	0.000	0.000	5.712	0.000	0.122
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	12.257	0.000	0.216
L20	61.75-56.75	B	1.352	0.000	0.000	5.681	0.000	0.121
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	12.219	0.000	0.215
L21	56.75-51.75	B	1.340	0.000	0.000	5.648	0.000	0.120
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	12.177	0.000	0.213
L22	51.75-47.83	B	1.329	0.000	0.000	5.612	0.000	0.119
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	10.498	0.000	0.176
L23	47.83-47.58	B	1.323	0.000	0.000	5.359	0.000	0.103
		C		0.000	0.000	0.989	0.000	0.055
		A		0.000	0.000	0.818	0.000	0.013
L24	47.58-42.58	B	1.315	0.000	0.000	0.490	0.000	0.008
		C		0.000	0.000	0.212	0.000	0.005
		A		0.000	0.000	16.323	0.000	0.252
L25	42.58-35.75	B	1.297	0.000	0.000	9.771	0.000	0.160
		C		0.000	0.000	4.232	0.000	0.099
		A		0.000	0.000	19.462	0.000	0.314
L26	35.75-34.75	B	1.283	0.000	0.000	10.520	0.000	0.189
		C		0.000	0.000	3.026	0.000	0.107
		A		0.000	0.000	2.405	0.000	0.042
L27	34.75-29.75	B	1.272	0.000	0.000	1.097	0.000	0.023
		C		0.000	0.000	0.000	0.000	0.011
		A		0.000	0.000	11.940	0.000	0.206
L28	29.75-24.75	B	1.251	0.000	0.000	5.409	0.000	0.116
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	11.865	0.000	0.203
L29	24.75-19.75	B	1.226	0.000	0.000	5.345	0.000	0.114
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	11.777	0.000	0.201
L30	19.75-14.75	B	1.195	0.000	0.000	5.270	0.000	0.112
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	11.669	0.000	0.197
L31	14.75-9.75	B	1.155	0.000	0.000	5.177	0.000	0.111
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	11.529	0.000	0.193
L32	9.75-4.75	B	1.096	0.000	0.000	5.056	0.000	0.108
		C		0.000	0.000	0.000	0.000	0.057
		A		0.000	0.000	8.492	0.000	0.140
L33	4.75-0.00	B	0.980	0.000	0.000	2.466	0.000	0.064
		C		0.000	0.000	0.000	0.000	0.043
		A		0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
		A		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation	CP_x	CP_z	CP_x	CP_z
	ft	in	in	Ice in	Ice in
L1	147.50-142.50	1.0344	-0.5972	2.2731	-1.3124

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L2	142.50-137.50	1.0372	-0.5988	2.2949	-1.3250
L3	137.50-132.50	1.0398	-0.6003	2.3150	-1.3365
L4	132.50-127.50	1.0422	-0.6017	2.3333	-1.3471
L5	127.50-122.50	1.0445	-0.6030	2.3501	-1.3568
L6	122.50-117.50	1.0466	-0.6043	2.3653	-1.3656
L7	117.50-112.50	1.0486	-0.6054	2.3791	-1.3736
L8	112.50-108.50	1.0503	-0.6064	2.3903	-1.3801
L9	108.50-107.25	1.0503	-0.6064	2.3907	-1.3803
L10	107.25-102.25	-0.5454	-6.3213	0.2731	-5.7978
L11	102.25-97.25	-0.6012	-6.5724	0.2187	-6.0117
L12	97.25-92.25	-0.5040	-7.0690	0.2990	-6.6345
L13	92.25-87.25	-0.5028	-7.1660	0.3070	-6.7630
L14	87.25-82.25	-0.5065	-7.2395	0.3107	-6.8626
L15	82.25-77.25	-0.5101	-7.3107	0.3140	-6.9589
L16	77.25-72.25	-0.5136	-7.3796	0.3168	-7.0522
L17	72.25-71.75	-0.5138	-7.3824	0.3170	-7.0561
L18	71.75-66.75	-0.5156	-7.4193	0.3161	-7.1012
L19	66.75-61.75	-0.5190	-7.4849	0.3179	-7.1890
L20	61.75-56.75	-0.5222	-7.5485	0.3191	-7.2734
L21	56.75-51.75	-0.5253	-7.6102	0.3197	-7.3544
L22	51.75-47.83	-0.4585	-6.6549	0.2944	-6.8416
L23	47.83-47.58	-0.3515	-5.1062	0.2485	-5.8040
L24	47.58-42.58	-0.3535	-5.1396	0.2483	-5.8403
L25	42.58-35.75	-0.4244	-6.1855	0.2756	-6.6061
L26	35.75-34.75	-0.5347	-7.7938	0.3169	-7.5895
L27	34.75-29.75	-0.5363	-7.8268	0.3080	-7.6124
L28	29.75-24.75	-0.5391	-7.8805	0.3024	-7.6710
L29	24.75-19.75	-0.5417	-7.9328	0.2945	-7.7225
L30	19.75-14.75	-0.5443	-7.9837	0.2832	-7.7645
L31	14.75-9.75	-0.5468	-8.0332	0.2663	-7.7920
L32	9.75-4.75	-0.7860	-6.5382	-0.4184	-6.4210
L33	4.75-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	2	Safety Line 5/8"	142.50 - 147.50	1.0000	1.0000
L1	3	Climbing Pegs	142.50 - 147.50	1.0000	1.0000
L2	2	Safety Line 5/8"	137.50 - 142.50	1.0000	1.0000
L2	3	Climbing Pegs	137.50 - 142.50	1.0000	1.0000
L3	2	Safety Line 5/8"	132.50 - 137.50	1.0000	1.0000
L3	3	Climbing Pegs	132.50 - 137.50	1.0000	1.0000
L4	2	Safety Line 5/8"	127.50 - 132.50	1.0000	1.0000
L4	3	Climbing Pegs	127.50 - 132.50	1.0000	1.0000
L5	2	Safety Line 5/8"	122.50 - 127.50	1.0000	1.0000
L5	3	Climbing Pegs	122.50 - 127.50	1.0000	1.0000
L6	2	Safety Line 5/8"	117.50 - 122.50	1.0000	1.0000
L6	3	Climbing Pegs	117.50 - 122.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L7	2	Safety Line 5/8"	112.50 - 117.50	1.0000	1.0000
L7	3	Climbing Pegs	112.50 - 117.50	1.0000	1.0000
L8	2	Safety Line 5/8"	108.50 - 112.50	1.0000	1.0000
L8	3	Climbing Pegs	108.50 - 112.50	1.0000	1.0000
L9	2	Safety Line 5/8"	107.25 - 108.50	1.0000	1.0000
L9	3	Climbing Pegs	107.25 - 108.50	1.0000	1.0000
L10	2	Safety Line 5/8"	102.25 - 107.25	1.0000	1.0000
L10	3	Climbing Pegs	102.25 - 107.25	1.0000	1.0000
L10	19	HCS 6X12 6AWG(1-3/8)	102.25 - 107.00	1.0000	1.0000
L10	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	102.25 - 107.00	1.0000	1.0000
L10	21	LDF7-50A(1-5/8)	102.25 - 107.00	1.0000	1.0000
L11	2	Safety Line 5/8"	97.25 - 102.25	1.0000	1.0000
L11	3	Climbing Pegs	97.25 - 102.25	1.0000	1.0000
L11	19	HCS 6X12 6AWG(1-3/8)	97.25 - 102.25	1.0000	1.0000
L11	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	97.25 - 102.25	1.0000	1.0000
L11	21	LDF7-50A(1-5/8)	97.25 - 102.25	1.0000	1.0000
L12	2	Safety Line 5/8"	92.25 - 97.25	1.0000	1.0000
L12	3	Climbing Pegs	92.25 - 97.25	1.0000	1.0000
L12	19	HCS 6X12 6AWG(1-3/8)	92.25 - 97.25	1.0000	1.0000
L12	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	92.25 - 97.25	1.0000	1.0000
L12	21	LDF7-50A(1-5/8)	92.25 - 97.25	1.0000	1.0000
L12	23	CU12PSM9P6XXX(1-1/2)	92.25 - 97.00	1.0000	1.0000
L13	2	Safety Line 5/8"	87.25 - 92.25	1.0000	1.0000
L13	3	Climbing Pegs	87.25 - 92.25	1.0000	1.0000
L13	19	HCS 6X12 6AWG(1-3/8)	87.25 - 92.25	1.0000	1.0000
L13	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	87.25 - 92.25	1.0000	1.0000
L13	21	LDF7-50A(1-5/8)	87.25 - 92.25	1.0000	1.0000
L13	23	CU12PSM9P6XXX(1-1/2)	87.25 - 92.25	1.0000	1.0000
L14	2	Safety Line 5/8"	82.25 - 87.25	1.0000	1.0000
L14	3	Climbing Pegs	82.25 - 87.25	1.0000	1.0000
L14	19	HCS 6X12 6AWG(1-3/8)	82.25 - 87.25	1.0000	1.0000
L14	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	82.25 - 87.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L14	21	LDF7-50A(1-5/8)	82.25 - 87.25	1.0000	1.0000
L14	23	CU12PSM9P6XXX(1-1/2)	82.25 - 87.25	1.0000	1.0000
L15	2	Safety Line 5/8"	77.25 - 82.25	1.0000	1.0000
L15	3	Climbing Pegs	77.25 - 82.25	1.0000	1.0000
L15	19	HCS 6X12 6AWG(1-3/8)	77.25 - 82.25	1.0000	1.0000
L15	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	77.25 - 82.25	1.0000	1.0000
L15	21	LDF7-50A(1-5/8)	77.25 - 82.25	1.0000	1.0000
L15	23	CU12PSM9P6XXX(1-1/2)	77.25 - 82.25	1.0000	1.0000
L16	2	Safety Line 5/8"	72.25 - 77.25	1.0000	1.0000
L16	3	Climbing Pegs	72.25 - 77.25	1.0000	1.0000
L16	19	HCS 6X12 6AWG(1-3/8)	72.25 - 77.25	1.0000	1.0000
L16	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	72.25 - 77.25	1.0000	1.0000
L16	21	LDF7-50A(1-5/8)	72.25 - 77.25	1.0000	1.0000
L16	23	CU12PSM9P6XXX(1-1/2)	72.25 - 77.25	1.0000	1.0000
L17	2	Safety Line 5/8"	71.75 - 72.25	1.0000	1.0000
L17	3	Climbing Pegs	71.75 - 72.25	1.0000	1.0000
L17	19	HCS 6X12 6AWG(1-3/8)	71.75 - 72.25	1.0000	1.0000
L17	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	71.75 - 72.25	1.0000	1.0000
L17	21	LDF7-50A(1-5/8)	71.75 - 72.25	1.0000	1.0000
L17	23	CU12PSM9P6XXX(1-1/2)	71.75 - 72.25	1.0000	1.0000
L18	2	Safety Line 5/8"	66.75 - 71.75	1.0000	1.0000
L18	3	Climbing Pegs	66.75 - 71.75	1.0000	1.0000
L18	19	HCS 6X12 6AWG(1-3/8)	66.75 - 71.75	1.0000	1.0000
L18	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	66.75 - 71.75	1.0000	1.0000
L18	21	LDF7-50A(1-5/8)	66.75 - 71.75	1.0000	1.0000
L18	23	CU12PSM9P6XXX(1-1/2)	66.75 - 71.75	1.0000	1.0000
L19	2	Safety Line 5/8"	61.75 - 66.75	1.0000	1.0000
L19	3	Climbing Pegs	61.75 - 66.75	1.0000	1.0000
L19	19	HCS 6X12 6AWG(1-3/8)	61.75 - 66.75	1.0000	1.0000
L19	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	61.75 - 66.75	1.0000	1.0000
L19	21	LDF7-50A(1-5/8)	61.75 - 66.75	1.0000	1.0000
L19	23	CU12PSM9P6XXX(1-1/2)	61.75 - 66.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L20	2	Safety Line 5/8"	56.75 - 61.75	1.0000	1.0000
L20	3	Climbing Pegs	56.75 - 61.75	1.0000	1.0000
L20	19	HCS 6X12 6AWG(1-3/8)	56.75 - 61.75	1.0000	1.0000
L20	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	56.75 - 61.75	1.0000	1.0000
L20	21	LDF7-50A(1-5/8)	56.75 - 61.75	1.0000	1.0000
L20	23	CU12PSM9P6XXX(1-1/2)	56.75 - 61.75	1.0000	1.0000
L21	2	Safety Line 5/8"	51.75 - 56.75	1.0000	1.0000
L21	3	Climbing Pegs	51.75 - 56.75	1.0000	1.0000
L21	19	HCS 6X12 6AWG(1-3/8)	51.75 - 56.75	1.0000	1.0000
L21	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	51.75 - 56.75	1.0000	1.0000
L21	21	LDF7-50A(1-5/8)	51.75 - 56.75	1.0000	1.0000
L21	23	CU12PSM9P6XXX(1-1/2)	51.75 - 56.75	1.0000	1.0000
L22	2	Safety Line 5/8"	47.83 - 51.75	1.0000	1.0000
L22	3	Climbing Pegs	47.83 - 51.75	1.0000	1.0000
L22	19	HCS 6X12 6AWG(1-3/8)	47.83 - 51.75	1.0000	1.0000
L22	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	47.83 - 51.75	1.0000	1.0000
L22	21	LDF7-50A(1-5/8)	47.83 - 51.75	1.0000	1.0000
L22	23	CU12PSM9P6XXX(1-1/2)	47.83 - 51.75	1.0000	1.0000
L22	27	MP3-03 Reinforcement	47.83 - 49.00	1.0000	1.0000
L22	28	MP3-03 Reinforcement	47.83 - 49.00	1.0000	1.0000
L22	29	MP3-03 Reinforcement	47.83 - 49.00	1.0000	1.0000
L23	2	Safety Line 5/8"	47.58 - 47.83	1.0000	1.0000
L23	3	Climbing Pegs	47.58 - 47.83	1.0000	1.0000
L23	19	HCS 6X12 6AWG(1-3/8)	47.58 - 47.83	1.0000	1.0000
L23	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	47.58 - 47.83	1.0000	1.0000
L23	21	LDF7-50A(1-5/8)	47.58 - 47.83	1.0000	1.0000
L23	23	CU12PSM9P6XXX(1-1/2)	47.58 - 47.83	1.0000	1.0000
L23	27	MP3-03 Reinforcement	47.58 - 47.83	1.0000	1.0000
L23	28	MP3-03 Reinforcement	47.58 - 47.83	1.0000	1.0000
L23	29	MP3-03 Reinforcement	47.58 - 47.83	1.0000	1.0000
L24	2	Safety Line 5/8"	42.58 - 47.58	1.0000	1.0000
L24	3	Climbing Pegs	42.58 - 47.58	1.0000	1.0000
L24	19	HCS 6X12 6AWG(1-3/8)	42.58 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L24	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	47.58 42.58 - 47.58	1.0000	1.0000
L24	21	LDF7-50A(1-5/8)	42.58 - 47.58	1.0000	1.0000
L24	23	CU12PSM9P6XXX(1-1/2)	42.58 - 47.58	1.0000	1.0000
L24	27	MP3-03 Reinforcement	42.58 - 47.58	1.0000	1.0000
L24	28	MP3-03 Reinforcement	42.58 - 47.58	1.0000	1.0000
L24	29	MP3-03 Reinforcement	42.58 - 47.58	1.0000	1.0000
L25	2	Safety Line 5/8"	35.75 - 42.58	1.0000	1.0000
L25	3	Climbing Pegs	35.75 - 42.58	1.0000	1.0000
L25	19	HCS 6X12 6AWG(1-3/8)	35.75 - 42.58	1.0000	1.0000
L25	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	35.75 - 42.58	1.0000	1.0000
L25	21	LDF7-50A(1-5/8)	35.75 - 42.58	1.0000	1.0000
L25	23	CU12PSM9P6XXX(1-1/2)	35.75 - 42.58	1.0000	1.0000
L25	27	MP3-03 Reinforcement	39.00 - 42.58	1.0000	1.0000
L25	28	MP3-03 Reinforcement	39.00 - 42.58	1.0000	1.0000
L25	29	MP3-03 Reinforcement	39.00 - 42.58	1.0000	1.0000
L26	2	Safety Line 5/8"	34.75 - 35.75	1.0000	1.0000
L26	3	Climbing Pegs	34.75 - 35.75	1.0000	1.0000
L26	19	HCS 6X12 6AWG(1-3/8)	34.75 - 35.75	1.0000	1.0000
L26	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	34.75 - 35.75	1.0000	1.0000
L26	21	LDF7-50A(1-5/8)	34.75 - 35.75	1.0000	1.0000
L26	23	CU12PSM9P6XXX(1-1/2)	34.75 - 35.75	1.0000	1.0000
L27	2	Safety Line 5/8"	29.75 - 34.75	1.0000	1.0000
L27	3	Climbing Pegs	29.75 - 34.75	1.0000	1.0000
L27	19	HCS 6X12 6AWG(1-3/8)	29.75 - 34.75	1.0000	1.0000
L27	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	29.75 - 34.75	1.0000	1.0000
L27	21	LDF7-50A(1-5/8)	29.75 - 34.75	1.0000	1.0000
L27	23	CU12PSM9P6XXX(1-1/2)	29.75 - 34.75	1.0000	1.0000
L28	2	Safety Line 5/8"	24.75 - 29.75	1.0000	1.0000
L28	3	Climbing Pegs	24.75 - 29.75	1.0000	1.0000
L28	19	HCS 6X12 6AWG(1-3/8)	24.75 - 29.75	1.0000	1.0000
L28	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	24.75 - 29.75	1.0000	1.0000
L28	21	LDF7-50A(1-5/8)	24.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L28	23	CU12PSM9P6XXX(1-1/2)	29.75 24.75 - 29.75	1.0000	1.0000
L29	2	Safety Line 5/8"	19.75 - 24.75	1.0000	1.0000
L29	3	Climbing Pegs	19.75 - 24.75	1.0000	1.0000
L29	19	HCS 6X12 6AWG(1-3/8)	19.75 - 24.75	1.0000	1.0000
L29	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	19.75 - 24.75	1.0000	1.0000
L29	21	LDF7-50A(1-5/8)	19.75 - 24.75	1.0000	1.0000
L29	23	CU12PSM9P6XXX(1-1/2)	19.75 - 24.75	1.0000	1.0000
L30	2	Safety Line 5/8"	14.75 - 19.75	1.0000	1.0000
L30	3	Climbing Pegs	14.75 - 19.75	1.0000	1.0000
L30	19	HCS 6X12 6AWG(1-3/8)	14.75 - 19.75	1.0000	1.0000
L30	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	14.75 - 19.75	1.0000	1.0000
L30	21	LDF7-50A(1-5/8)	14.75 - 19.75	1.0000	1.0000
L30	23	CU12PSM9P6XXX(1-1/2)	14.75 - 19.75	1.0000	1.0000
L31	2	Safety Line 5/8"	9.75 - 14.75	1.0000	1.0000
L31	3	Climbing Pegs	9.75 - 14.75	1.0000	1.0000
L31	19	HCS 6X12 6AWG(1-3/8)	9.75 - 14.75	1.0000	1.0000
L31	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	9.75 - 14.75	1.0000	1.0000
L31	21	LDF7-50A(1-5/8)	9.75 - 14.75	1.0000	1.0000
L31	23	CU12PSM9P6XXX(1-1/2)	9.75 - 14.75	1.0000	1.0000
L32	2	Safety Line 5/8"	8.00 - 9.75	1.0000	1.0000
L32	3	Climbing Pegs	8.00 - 9.75	1.0000	1.0000
L32	19	HCS 6X12 6AWG(1-3/8)	6.00 - 9.75	1.0000	1.0000
L32	20	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	6.00 - 9.75	1.0000	1.0000
L32	21	LDF7-50A(1-5/8)	6.00 - 9.75	1.0000	1.0000
L32	23	CU12PSM9P6XXX(1-1/2)	6.00 - 9.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	27	MP3-03 Reinforcement	47.83 - 49.00	Auto	0.0000
L22	28	MP3-03 Reinforcement	47.83 - 49.00	Auto	0.0000
L22	29	MP3-03 Reinforcement	47.83 - 49.00	Auto	0.0000
L23	27	MP3-03 Reinforcement	47.58 - 47.83	Auto	0.0000
L23	28	MP3-03 Reinforcement	47.58 - 47.83	Auto	0.0000
L23	29	MP3-03 Reinforcement	47.58 - 47.83	Auto	0.0000
L24	27	MP3-03 Reinforcement	42.58 - 47.58	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	28	MP3-03 Reinforcement	42.58 - 47.58	Auto	0.0000
L24	29	MP3-03 Reinforcement	42.58 - 47.58	Auto	0.0000
L25	27	MP3-03 Reinforcement	39.00 - 42.58	Auto	0.0000
L25	28	MP3-03 Reinforcement	39.00 - 42.58	Auto	0.0000
L25	29	MP3-03 Reinforcement	39.00 - 42.58	Auto	0.0000

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

Platform Mount [LP 1201-1]	C	None		0.0000	147.00	No Ice	18.38	18.38	2.100
						1/2" Ice	22.11	22.11	2.652
						1" Ice	25.87	25.87	3.263
						2" Ice	33.47	33.47	4.662

APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00	0.0000	147.00	No Ice	14.69	6.87	0.183
			0.00			1/2" Ice	15.46	7.55	0.311
			0.00			1" Ice	16.23	8.25	0.453
			0.00			2" Ice	17.82	9.67	0.782
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00	0.0000	147.00	No Ice	14.69	6.87	0.183
			0.00			1/2" Ice	15.46	7.55	0.311
			0.00			1" Ice	16.23	8.25	0.453
			0.00			2" Ice	17.82	9.67	0.782
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00	0.0000	147.00	No Ice	14.69	6.87	0.183
			0.00			1/2" Ice	15.46	7.55	0.311
			0.00			1" Ice	16.23	8.25	0.453
			0.00			2" Ice	17.82	9.67	0.782
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	147.00	No Ice	5.19	2.71	0.128
			0.00			1/2" Ice	5.59	3.04	0.174
			0.00			1" Ice	6.02	3.38	0.227
			0.00			2" Ice	6.90	4.12	0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00	0.0000	147.00	No Ice	5.19	2.71	0.128
			0.00			1/2" Ice	5.59	3.04	0.174
			0.00			1" Ice	6.02	3.38	0.227
			0.00			2" Ice	6.90	4.12	0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	147.00	No Ice	5.19	2.71	0.128
			0.00			1/2" Ice	5.59	3.04	0.174
			0.00			1" Ice	6.02	3.38	0.227
			0.00			2" Ice	6.90	4.12	0.354
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00	0.0000	147.00	No Ice	2.14	1.69	0.109
			0.00			1/2" Ice	2.32	1.85	0.131
			0.00			1" Ice	2.51	2.02	0.156
			0.00			2" Ice	2.91	2.39	0.217
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00	0.0000	147.00	No Ice	2.14	1.69	0.109
			0.00			1/2" Ice	2.32	1.85	0.131
			0.00			1" Ice	2.51	2.02	0.156

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
						1" Ice	2.91	2.39	0.217
						2" Ice			
						No Ice	2.14	1.69	0.109
RADIO 4460 B2/B25	C	From Leg	4.00	0.0000	147.00	1/2"	2.32	1.85	0.131
B66_TMO			0.00			Ice	2.51	2.02	0.156
			0.00			1" Ice	2.91	2.39	0.217
						2" Ice			
Radio 4480_TMOV2	A	From Leg	4.00	0.0000	147.00	No Ice	2.88	1.40	0.081
			0.00			1/2"	3.09	1.56	0.103
			0.00			Ice	3.31	1.73	0.128
						1" Ice	3.78	2.09	0.188
						2" Ice			
Radio 4480_TMOV2	B	From Leg	4.00	0.0000	147.00	No Ice	2.88	1.40	0.081
			0.00			1/2"	3.09	1.56	0.103
			0.00			Ice	3.31	1.73	0.128
						1" Ice	3.78	2.09	0.188
						2" Ice			
Radio 4480_TMOV2	C	From Leg	4.00	0.0000	147.00	No Ice	2.88	1.40	0.081
			0.00			1/2"	3.09	1.56	0.103
			0.00			Ice	3.31	1.73	0.128
						1" Ice	3.78	2.09	0.188
						2" Ice			
Pipe Mount [#9' Long, P2.0	A	From Leg	4.00	0.0000	147.00	No Ice	2.14	2.14	0.070
STD]			0.00			1/2"	3.07	3.07	0.081
			0.00			Ice	4.01	4.01	0.103
						1" Ice	5.13	5.13	0.165
						2" Ice			
Pipe Mount [#9' Long, P2.0	B	From Leg	4.00	0.0000	147.00	No Ice	2.14	2.14	0.070
STD]			0.00			1/2"	3.07	3.07	0.081
			0.00			Ice	4.01	4.01	0.103
						1" Ice	5.13	5.13	0.165
						2" Ice			
Pipe Mount [#9' Long, P2.0	C	From Leg	4.00	0.0000	147.00	No Ice	2.14	2.14	0.070
STD]			0.00			1/2"	3.07	3.07	0.081
			0.00			Ice	4.01	4.01	0.103
						1" Ice	5.13	5.13	0.165
						2" Ice			
(2) 6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	147.00	No Ice	1.43	1.43	0.022
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	147.00	No Ice	1.43	1.43	0.022
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	147.00	No Ice	1.43	1.43	0.022
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
Support Rail Kit [#HRK-12]	C	None		0.0000	147.00	No Ice	12.17	12.17	0.508
						1/2"	16.47	16.47	0.700
						Ice	20.42	20.42	0.954
						1" Ice	27.62	27.62	1.648
						2" Ice			
Platform Reinforcement Kit	C	None		0.0000	147.00	No Ice	11.84	11.84	0.275
[#PRK-1245L]						1/2"	16.96	16.96	0.296
						Ice	22.08	22.08	0.317
						1" Ice	32.32	32.32	0.360
						2" Ice			

TME-PCS 1900MHz	A	From Leg	4.00	0.0000	145.00	No Ice	2.32	2.24	0.060
4x45W-65MHz			0.00			1/2"	2.53	2.44	0.083

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
			1.00			Ice	2.74	2.65	0.110
						1" Ice	3.19	3.09	0.173
						2" Ice			
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00	0.0000	145.00	No Ice	2.32	2.24	0.060
			0.00			1/2"	2.53	2.44	0.083
			-1.00			Ice	2.74	2.65	0.110
						1" Ice	3.19	3.09	0.173
						2" Ice			
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00	0.0000	145.00	No Ice	2.32	2.24	0.060
			0.00			1/2"	2.53	2.44	0.083
			-1.00			Ice	2.74	2.65	0.110
						1" Ice	3.19	3.09	0.173
						2" Ice			
TME-800MHz 2x50W RRH	A	From Leg	4.00	0.0000	145.00	No Ice	2.13	1.77	0.053
			0.00			1/2"	2.32	1.95	0.074
			-1.00			Ice	2.51	2.13	0.098
						1" Ice	2.92	2.51	0.157
						2" Ice			
TME-800MHz 2x50W RRH	B	From Leg	4.00	0.0000	145.00	No Ice	2.13	1.77	0.053
			0.00			1/2"	2.32	1.95	0.074
			1.00			Ice	2.51	2.13	0.098
						1" Ice	2.92	2.51	0.157
						2" Ice			
TME-800MHz 2x50W RRH	C	From Leg	4.00	0.0000	145.00	No Ice	2.13	1.77	0.053
			0.00			1/2"	2.32	1.95	0.074
			1.00			Ice	2.51	2.13	0.098
						1" Ice	2.92	2.51	0.157
						2" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	145.00	No Ice	1.43	1.43	0.020
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	145.00	No Ice	1.43	1.43	0.020
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	145.00	No Ice	1.43	1.43	0.020
			0.00			1/2"	1.92	1.92	0.033
			0.00			Ice	2.29	2.29	0.048
						1" Ice	3.06	3.06	0.090
						2" Ice			
Side Arm Mount [SO 102- 3]	C	None		0.0000	145.00	No Ice	3.60	3.60	0.075
						1/2"	4.18	4.18	0.105
						Ice	4.75	4.75	0.135
						1" Ice	5.90	5.90	0.195
						2" Ice			

(2) SBNHH-1D65B	A	From Leg	4.00	0.0000	137.00	No Ice	4.16	2.49	0.041
			0.00			1/2"	4.57	2.88	0.091
			0.00			Ice	4.99	3.27	0.148
						1" Ice	5.85	4.09	0.281
						2" Ice			
(2) SBNHH-1D65B	B	From Leg	4.00	0.0000	137.00	No Ice	4.16	2.49	0.041
			0.00			1/2"	4.57	2.88	0.091
			0.00			Ice	4.99	3.27	0.148
						1" Ice	5.85	4.09	0.281
						2" Ice			
(2) SBNHH-1D65B	C	From Leg	4.00	0.0000	137.00	No Ice	4.16	2.49	0.041
			0.00			1/2"	4.57	2.88	0.091
			0.00			Ice	4.99	3.27	0.148
						1" Ice	5.85	4.09	0.281
						2" Ice			
BXA-70063-6CF-EDIN-2	A	From Leg	4.00	0.0000	137.00	No Ice	7.40	5.39	0.042

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
w/ Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice	8.14 8.90 10.46	6.10 6.83 8.34	0.097 0.162 0.326
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.042 0.097 0.162 0.326
BXA-70063-6CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.40 8.14 8.90 10.46	5.39 6.10 6.83 8.34	0.042 0.097 0.162 0.326
58532A	A	From Leg	4.00 0.00 2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.19 0.25 0.31 0.47	0.19 0.25 0.31 0.47	0.000 0.003 0.006 0.017
RFV01U-D1A	A	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.084 0.103 0.124 0.175
RFV01U-D1A	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.084 0.103 0.124 0.175
RFV01U-D1A	C	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.084 0.103 0.124 0.175
RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.070 0.087 0.106 0.153
RFV01U-D2A	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.070 0.087 0.106 0.153
RFV01U-D2A	C	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.070 0.087 0.106 0.153
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.044 0.080 0.120 0.213
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.044 0.080 0.120 0.213
Platform Mount [LP 1201- 1_HR-2]	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.68 38.48 44.02 54.73	32.68 38.48 44.02 54.73	2.562 3.323 4.199 6.296

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
CBRS w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.032 0.048 0.068 0.123
CBRS w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.032 0.048 0.068 0.123
CBRS w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.032 0.048 0.068 0.123
MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.096 0.136 0.180 0.288
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.096 0.136 0.180 0.288
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.096 0.136 0.180 0.288
Dual Antenna Mount Kit	A	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 1.58 1.84 2.40	1.32 1.58 1.84 2.40	0.065 0.077 0.093 0.134
Dual Antenna Mount Kit	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 1.58 1.84 2.40	1.32 1.58 1.84 2.40	0.065 0.077 0.093 0.134
Dual Antenna Mount Kit	C	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 1.58 1.84 2.40	1.32 1.58 1.84 2.40	0.065 0.077 0.093 0.134

7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.055 0.103 0.157 0.287
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice	12.25 13.19 14.16 16.14	8.33 9.23 10.15 12.05	0.105 0.194 0.297 0.543

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
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	3.04 3.34 3.65 4.31	2.45 2.75 3.05 3.68	0.054 0.104 0.162 0.307
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	9.22 9.98 10.76 12.36	6.25 6.96 7.70 9.22	0.074 0.143 0.224 0.420
LGP17201	A	From Leg	4.00 0.00 0.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	1.87 2.04 2.21 2.59	0.48 0.58 0.69 0.93	0.031 0.043 0.058 0.095
LGP17201	C	From Leg	4.00 0.00 0.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	1.87 2.04 2.21 2.59	0.48 0.58 0.69 0.93	0.031 0.043 0.058 0.095
(2) 860 10025	A	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26 0.41	0.12 0.17 0.23 0.38	0.001 0.003 0.005 0.014
(2) 860 10025	C	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26 0.41	0.12 0.17 0.23 0.38	0.001 0.003 0.005 0.014
RRUS 32 B2	A	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.053 0.074 0.098 0.157
RRUS 32 B2	B	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.053 0.074 0.098 0.157
RRUS 32 B2	C	From Leg	4.00 0.00 2.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.053 0.074 0.098 0.157
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
Platform Mount [LP 1201- 1]	C	None		0.0000	117.00	2" Ice No Ice 1/2" Ice 1" Ice	18.38 22.11 25.87 33.47	18.38 22.11 25.87 33.47	2.100 2.652 3.263 4.662

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
						2" Ice			

TME-RRU-11	A	From Leg	4.00 0.00 4.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.050 0.072 0.095 0.153
TME-RRU-11	B	From Leg	4.00 0.00 4.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.050 0.072 0.095 0.153
TME-RRU-11	C	From Leg	4.00 0.00 4.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.050 0.072 0.095 0.153
TME-DC6-48-60-18-8F	A	From Leg	4.00 0.00 4.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.58 1.77 2.18	1.00 1.58 1.77 2.18	0.033 0.053 0.075 0.127
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.020 0.033 0.048 0.090
Side Arm Mount [SO 102-3]	C	None		0.0000	115.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.18 4.75 5.90	3.60 4.18 4.75 5.90	0.075 0.105 0.135 0.195

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.112 0.164 0.225 0.375
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.112 0.164 0.225 0.375
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.45 3.77 4.43	2.59 2.88 3.19 3.84	0.112 0.164 0.225 0.375
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.186 0.315 0.458 0.788
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	107.00	No Ice 1/2"	14.69 15.46	6.87 7.55	0.186 0.315

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
			0.00			Ice	16.23	8.25	0.458
						1" Ice	17.82	9.67	0.788
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	14.69	6.87	0.186
			0.00			1/2"	15.46	7.55	0.315
			0.00			Ice	16.23	8.25	0.458
						1" Ice	17.82	9.67	0.788
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	3.76	3.15	0.194
			0.00			1/2"	4.12	3.49	0.252
			0.00			Ice	4.48	3.84	0.320
						1" Ice	5.24	4.58	0.485
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	3.76	3.15	0.194
			0.00			1/2"	4.12	3.49	0.252
			0.00			Ice	4.48	3.84	0.320
						1" Ice	5.24	4.58	0.485
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	3.76	3.15	0.194
			0.00			1/2"	4.12	3.49	0.252
			0.00			Ice	4.48	3.84	0.320
						1" Ice	5.24	4.58	0.485
						2" Ice			
KRY 112 144/1	A	From Leg	4.00	0.0000	107.00	No Ice	0.35	0.17	0.011
			0.00			1/2"	0.43	0.23	0.014
			0.00			Ice	0.51	0.30	0.019
						1" Ice	0.70	0.46	0.032
						2" Ice			
(2) KRY 112 144/1	B	From Leg	4.00	0.0000	107.00	No Ice	0.35	0.17	0.011
			0.00			1/2"	0.43	0.23	0.014
			0.00			Ice	0.51	0.30	0.019
						1" Ice	0.70	0.46	0.032
						2" Ice			
(2) RADIO 4449 B12/B71	A	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.074
			0.00			1/2"	1.81	1.30	0.090
			0.00			Ice	1.98	1.45	0.109
						1" Ice	2.34	1.76	0.155
						2" Ice			
RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.074
			0.00			1/2"	1.81	1.30	0.090
			0.00			Ice	1.98	1.45	0.109
						1" Ice	2.34	1.76	0.155
						2" Ice			
T-Arm Mount [TA 701-3]	C	None		0.0000	107.00	No Ice	23.94	23.94	1.092
						1/2"	30.04	30.04	1.476
						Ice	36.16	36.16	1.948
						1" Ice	48.72	48.72	3.157
						2" Ice			

MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	97.00	No Ice	8.01	4.23	0.108
			0.00			1/2"	8.52	4.69	0.194
			0.00			Ice	9.04	5.16	0.292
						1" Ice	10.11	6.12	0.522
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	97.00	No Ice	8.01	4.23	0.108
			0.00			1/2"	8.52	4.69	0.194
			0.00			Ice	9.04	5.16	0.292
						1" Ice	10.11	6.12	0.522
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	97.00	No Ice	8.01	4.23	0.108
			0.00			1/2"	8.52	4.69	0.194
			0.00			Ice	9.04	5.16	0.292
						1" Ice	10.11	6.12	0.522
						2" Ice			
TA08025-B604	A	From Leg	4.00	0.0000	97.00	No Ice	1.96	0.98	0.064

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
			0.00			1/2"	2.14	1.11	0.081
			0.00			Ice	2.32	1.25	0.100
						1" Ice	2.71	1.55	0.148
						2" Ice			
TA08025-B604	B	From Leg	4.00	0.0000	97.00	No Ice	1.96	0.98	0.064
			0.00			1/2"	2.14	1.11	0.081
			0.00			Ice	2.32	1.25	0.100
						1" Ice	2.71	1.55	0.148
						2" Ice			
TA08025-B604	C	From Leg	4.00	0.0000	97.00	No Ice	1.96	0.98	0.064
			0.00			1/2"	2.14	1.11	0.081
			0.00			Ice	2.32	1.25	0.100
						1" Ice	2.71	1.55	0.148
						2" Ice			
TA08025-B605	A	From Leg	4.00	0.0000	97.00	No Ice	1.96	1.13	0.075
			0.00			1/2"	2.14	1.27	0.093
			0.00			Ice	2.32	1.41	0.114
						1" Ice	2.71	1.72	0.164
						2" Ice			
TA08025-B605	B	From Leg	4.00	0.0000	97.00	No Ice	1.96	1.13	0.075
			0.00			1/2"	2.14	1.27	0.093
			0.00			Ice	2.32	1.41	0.114
						1" Ice	2.71	1.72	0.164
						2" Ice			
TA08025-B605	C	From Leg	4.00	0.0000	97.00	No Ice	1.96	1.13	0.075
			0.00			1/2"	2.14	1.27	0.093
			0.00			Ice	2.32	1.41	0.114
						1" Ice	2.71	1.72	0.164
						2" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	97.00	No Ice	2.01	1.17	0.022
			0.00			1/2"	2.19	1.31	0.040
			0.00			Ice	2.37	1.46	0.060
						1" Ice	2.76	1.78	0.110
						2" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	97.00	No Ice	1.90	1.90	0.030
			0.00			1/2"	2.73	2.73	0.044
			0.00			Ice	3.40	3.40	0.063
						1" Ice	4.40	4.40	0.119
						2" Ice			
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	97.00	No Ice	1.90	1.90	0.030
			0.00			1/2"	2.73	2.73	0.044
			0.00			Ice	3.40	3.40	0.063
						1" Ice	4.40	4.40	0.119
						2" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	97.00	No Ice	1.90	1.90	0.030
			0.00			1/2"	2.73	2.73	0.044
			0.00			Ice	3.40	3.40	0.063
						1" Ice	4.40	4.40	0.119
						2" Ice			
Commscope MC-PK8-DSH	C	None		0.0000	97.00	No Ice	34.24	34.24	1.749
						1/2"	62.95	62.95	2.099
						Ice	91.66	91.66	2.450
						1" Ice	149.08	149.08	3.151
						2" Ice			

58532A	A	From Leg	4.00	0.0000	49.00	No Ice	0.19	0.19	0.000
			0.00			1/2"	0.25	0.25	0.003
			1.00			Ice	0.31	0.31	0.006
						1" Ice	0.47	0.47	0.017
						2" Ice			
Side Arm Mount [SO 701-1]	A	From Leg	1.00	0.0000	49.00	No Ice	0.85	1.67	0.065
			0.00			1/2"	1.14	2.34	0.079
			0.00			Ice	1.43	3.01	0.093
						1" Ice	2.01	4.35	0.121
						2" Ice			

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

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
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
L1	147.5 - 142.5	Pole	Max Tension	26	0.000	-0.00	-0.00
			Max. Compression	26	-12.970	-0.04	0.06
			Max. Mx	8	-6.003	-23.58	0.02
			Max. My	2	-6.032	-0.01	23.42
			Max. Vy	20	-5.690	23.56	0.02
			Max. Vx	2	-5.658	-0.01	23.42
L2	142.5 - 137.5	Pole	Max. Torque	6			0.00
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-13.671	-0.08	0.14
			Max. Mx	8	-6.404	-52.81	0.04
			Max. My	2	-6.436	-0.02	52.49
			Max. Vy	20	-6.004	52.77	0.04
L3	137.5 - 132.5	Pole	Max. Vx	2	-5.970	-0.02	52.49
			Max. Torque	6			0.00
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-24.890	-0.87	0.73
			Max. Mx	8	-11.293	-102.05	0.02
			Max. My	2	-11.342	-0.06	101.54
L4	132.5 - 127.5	Pole	Max. Vy	20	-10.263	101.54	0.35
			Max. Vx	2	-10.244	-0.06	101.54
			Max. Torque	25			-0.30
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-25.682	-0.91	0.85
			Max. Mx	8	-11.785	-154.16	-0.13
L5	127.5 - 122.5	Pole	Max. My	2	-11.836	0.11	153.55
			Max. Vy	20	-10.584	153.63	0.56
			Max. Vx	2	-10.562	0.11	153.55
			Max. Torque	25			-0.30
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-26.496	-0.95	0.96
L6	122.5 - 117.5	Pole	Max. Mx	8	-12.299	-207.88	-0.28
			Max. My	2	-12.351	0.28	207.15
			Max. Vy	20	-10.905	207.32	0.78
			Max. Vx	2	-10.880	0.28	207.15
			Max. Torque	25			-0.30
			Max Tension	1	0.000	0.00	0.00
L7	117.5 - 112.5	Pole	Max. Compression	26	-27.333	-0.99	1.08
			Max. Mx	8	-12.834	-263.19	-0.42
			Max. My	2	-12.887	0.46	262.33
			Max. Vy	20	-11.226	262.62	0.99
			Max. Vx	2	-11.199	0.46	262.33
			Max. Torque	25			-0.30
L8	112.5 - 108.5	Pole	Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-36.150	-0.18	2.77
			Max. Mx	8	-16.936	-335.41	0.18
			Max. My	2	-16.999	0.58	335.65
			Max. Vy	20	-14.529	335.37	1.42
			Max. Vx	2	-14.560	0.58	335.65
L9	108.5 - 107.25	Pole	Max. Torque	19			-0.96
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-36.198	-0.18	2.78
			Max. Mx	8	-16.973	-339.04	0.19
			Max. My	2	-17.035	0.58	339.29
			Max. Vy	20	-14.543	339.00	1.42
L9	108.5 - 107.25	Pole	Max. Vx	2	-14.573	0.58	339.29
			Max. Torque	19			-0.96

Section n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	107.25 - 102.25	Pole	Max. Compression	26	-37.692	-0.21	2.92
			Max. Mx	8	-17.946	-412.71	0.28
			Max. My	2	-18.011	0.52	413.10
			Max. Vy	20	-14.919	412.65	1.40
			Max. Vx	2	-14.945	0.52	413.10
			Max. Torque	19			-0.96
			Max Tension	1	0.000	0.00	0.00
L11	102.25 - 97.25	Pole	Max. Compression	26	-46.184	0.39	4.33
			Max. Mx	20	-21.793	501.33	2.09
			Max. My	2	-21.883	0.79	502.10
			Max. Vy	20	-18.006	501.33	2.09
			Max. Vx	2	-17.941	0.79	502.10
			Max. Torque	19			-1.22
			Max Tension	1	0.000	0.00	0.00
L12	97.25 - 92.25	Pole	Max. Compression	26	-47.361	0.59	4.62
			Max. Mx	20	-22.531	592.90	2.10
			Max. My	2	-22.656	0.78	592.49
			Max. Vy	20	-18.621	592.90	2.10
			Max. Vx	2	-18.219	0.78	592.49
			Max. Torque	21			-1.33
			Max Tension	1	0.000	0.00	0.00
L13	92.25 - 87.25	Pole	Max. Compression	26	-54.414	0.76	5.40
			Max. Mx	20	-26.317	699.49	2.24
			Max. My	2	-26.487	0.77	696.35
			Max. Vy	20	-21.762	699.49	2.24
			Max. Vx	2	-20.998	0.77	696.35
			Max. Torque	21			-1.70
			Max Tension	1	0.000	0.00	0.00
L14	87.25 - 82.25	Pole	Max. Compression	26	-55.673	0.93	5.73
			Max. Mx	20	-27.137	809.79	2.25
			Max. My	2	-27.337	0.75	801.93
			Max. Vy	20	-22.375	809.79	2.25
			Max. Vx	2	-21.241	0.75	801.93
			Max. Torque	21			-1.91
			Max Tension	1	0.000	0.00	0.00
L15	82.25 - 77.25	Pole	Max. Compression	26	-56.953	1.10	6.05
			Max. Mx	20	-27.987	923.12	2.27
			Max. My	2	-28.211	0.74	908.69
			Max. Vy	20	-22.976	923.12	2.27
			Max. Vx	2	-21.472	0.74	908.69
			Max. Torque	21			-2.13
			Max Tension	1	0.000	0.00	0.00
L16	77.25 - 72.25	Pole	Max. Compression	26	-58.253	1.27	6.37
			Max. Mx	20	-28.866	1039.43	2.28
			Max. My	2	-29.108	0.72	1016.59
			Max. Vy	20	-23.566	1039.43	2.28
			Max. Vx	2	-21.694	0.72	1016.59
			Max. Torque	21			-2.35
			Max Tension	1	0.000	0.00	0.00
L17	72.25 - 71.75	Pole	Max. Compression	26	-58.384	1.29	6.41
			Max. Mx	20	-28.962	1051.22	2.28
			Max. My	2	-29.206	0.72	1027.44
			Max. Vy	20	-23.615	1051.22	2.28
			Max. Vx	2	-21.707	0.72	1027.44
			Max. Torque	21			-2.37
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-60.630	1.46	6.72
			Max. Mx	20	-30.438	1171.11	2.30
			Max. My	2	-30.702	0.70	1136.88
			Max. Vy	20	-24.331	1171.11	2.30
			Max. Vx	2	-22.051	0.70	1136.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	71.75 - 66.75	Pole	Max. Torque	21			-2.59
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-62.102	1.63	7.04
			Max. Mx	20	-31.476	1294.24	2.32
			Max. My	2	-31.751	0.69	1247.74
			Max. Vy	20	-24.933	1294.24	2.32
L19	66.75 - 61.75	Pole	Max. Vx	2	-22.291	0.69	1247.74
			Max. Torque	21			-2.80
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-63.596	1.80	7.35
			Max. Mx	20	-32.550	1420.31	2.33
			Max. My	2	-32.829	0.67	1359.74
L20	61.75 - 56.75	Pole	Max. Vy	20	-25.514	1420.31	2.33
			Max. Vx	2	-22.515	0.67	1359.74
			Max. Torque	21			-3.02
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-65.114	1.98	7.66
			Max. Mx	20	-33.652	1549.24	2.35
L21	56.75 - 51.75	Pole	Max. My	2	-33.931	0.66	1472.83
			Max. Vy	20	-26.082	1549.24	2.35
			Max. Vx	2	-22.728	0.66	1472.83
			Max. Torque	21			-3.24
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-66.653	2.16	7.96
L22	51.75 - 47.833	Pole	Max. Mx	20	-34.796	1680.34	2.37
			Max. My	2	-35.055	0.64	1586.95
			Max. Vy	20	-26.377	1680.34	2.37
			Max. Vx	2	-22.931	0.64	1586.95
			Max. Torque	21			-3.24
			Max Tension	1	0.000	0.00	0.00
L23	47.833 - 47.583	Pole	Max. Compression	26	-68.028	2.29	8.56
			Max. Mx	20	-35.771	1784.51	2.59
			Max. My	2	-36.025	0.63	1677.30
			Max. Vy	20	-26.862	1784.51	2.59
			Max. Vx	2	-23.119	0.63	1677.30
			Max. Torque	21			-3.52
L24	47.583 - 42.583	Pole	Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-68.113	2.30	8.58
			Max. Mx	20	-35.845	1791.23	2.59
			Max. My	2	-36.096	0.63	1683.08
			Max. Vy	20	-26.871	1791.23	2.59
			Max. Vx	2	-23.111	0.63	1683.08
L25	42.583 - 35.75	Pole	Max. Torque	21			-3.52
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-69.816	2.48	8.87
			Max. Mx	20	-37.014	1926.93	2.61
			Max. My	2	-37.253	0.62	1799.12
			Max. Vy	20	-27.420	1926.93	2.61
L26	35.75 - 34.75	Pole	Max. Vx	2	-23.303	0.62	1799.12
			Max. Torque	21			-3.63
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-70.340	2.53	8.96
			Max. Mx	20	-37.387	1970.38	2.62
			Max. My	2	-37.619	0.61	1836.04
			Max. Vy	20	-27.513	1970.38	2.62
			Max. Vx	2	-23.367	0.61	1836.04
			Max. Torque	21			-3.63
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-73.844	2.76	9.33
			Max. Mx	20	-39.907	2143.74	2.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L27	34.75 - 29.75	Pole	Max. My	2	-40.121	0.60	1983.16
			Max. Vy	20	-27.969	2143.74	2.65
			Max. Vx	2	-23.708	0.60	1983.16
			Max. Torque	21			-3.63
			Max Tension	1	0.000	0.00	0.00
L28	29.75 - 24.75	Pole	Max. Compression	26	-75.622	2.93	9.61
			Max. Mx	20	-41.295	2284.11	2.68
			Max. My	2	-41.482	0.59	2102.10
			Max. Vy	20	-28.201	2284.11	2.68
			Max. Vx	2	-23.874	0.59	2102.10
L29	24.75 - 19.75	Pole	Max. Torque	21			-3.63
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-77.422	3.11	9.89
			Max. Mx	20	-42.708	2425.60	2.70
			Max. My	2	-42.867	0.58	2221.85
L30	19.75 - 14.75	Pole	Max. Vy	20	-28.417	2425.60	2.70
			Max. Vx	2	-24.032	0.58	2221.85
			Max. Torque	21			-3.63
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-79.240	3.27	10.13
L31	14.75 - 9.75	Pole	Max. Mx	20	-44.147	2568.16	2.72
			Max. My	2	-44.276	0.56	2342.38
			Max. Vy	20	-28.628	2568.16	2.72
			Max. Vx	2	-24.187	0.56	2342.38
			Max. Torque	21			-3.63
L32	9.75 - 4.75	Pole	Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-82.920	3.60	10.61
			Max. Mx	20	-47.098	2856.35	2.77
			Max. My	2	-47.165	0.55	2585.73
			Max. Vy	20	-29.029	2856.35	2.77
L33	4.75 - 0	Pole	Max. Vx	2	-24.490	0.55	2585.73
			Max. Torque	21			-3.62
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-84.655	3.75	10.77
			Max. Mx	20	-48.545	3001.80	2.76
			Max. My	2	-48.580	0.53	2708.51
			Max. Vy	20	-29.179	3001.80	2.76
			Max. Vx	2	-24.638	0.53	2708.51
			Max. Torque	21			-3.62
			Max Tension	1	0.000	0.00	0.00
			Max. Compression	26	-86.034	3.75	10.77
			Max. Mx	20	-49.771	3140.57	2.70
			Max. My	2	-49.775	0.47	2825.77
			Max. Vy	20	-29.301	3140.57	2.70
			Max. Vx	2	-24.781	0.47	2825.77
			Max. Torque	21			-3.62

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	86.034	8.207	-0.002
	Max. H _x	20	49.787	29.273	-0.012

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H _z	3	37.340	-0.012	24.756
	Max. M _x	2	2825.77	-0.012	24.756
	Max. M _z	8	3138.03	-29.273	0.012
	Max. Torsion	9	3.62	-29.273	0.012
	Min. Vert	23	37.340	21.310	12.367
	Min. H _x	8	49.787	-29.273	0.012
	Min. H _z	15	37.340	0.012	-24.756
	Min. M _x	14	-2818.69	0.012	-24.756
	Min. M _z	20	-3140.57	29.273	-0.012
	Min. Torsion	21	-3.62	29.273	-0.012

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	41.489	-0.000	-0.000	-2.82	1.01	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	49.787	0.012	-24.756	-2825.77	0.47	-0.41
0.9 Dead+1.0 Wind 0 deg - No Ice	37.340	0.012	-24.756	-2764.55	0.14	-0.41
1.2 Dead+1.0 Wind 30 deg - No Ice	49.787	12.318	-21.446	-2448.08	-1400.54	-1.08
0.9 Dead+1.0 Wind 30 deg - No Ice	37.340	12.318	-21.446	-2394.94	-1370.97	-1.09
1.2 Dead+1.0 Wind 60 deg - No Ice	49.787	21.624	-12.563	-1429.99	-2451.30	-1.46
0.9 Dead+1.0 Wind 60 deg - No Ice	37.340	21.624	-12.563	-1398.68	-2399.44	-1.47
1.2 Dead+1.0 Wind 90 deg - No Ice	49.787	29.273	-0.012	-4.29	-3138.03	-3.60
0.9 Dead+1.0 Wind 90 deg - No Ice	37.340	29.273	-0.012	-3.34	-3073.94	-3.62
1.2 Dead+1.0 Wind 120 deg - No Ice	49.787	21.310	12.367	1406.93	-2425.18	-1.06
0.9 Dead+1.0 Wind 120 deg - No Ice	37.340	21.310	12.367	1377.76	-2373.71	-1.07
1.2 Dead+1.0 Wind 150 deg - No Ice	49.787	12.296	21.433	2440.21	-1399.16	-0.38
0.9 Dead+1.0 Wind 150 deg - No Ice	37.340	12.296	21.433	2388.98	-1369.59	-0.39
1.2 Dead+1.0 Wind 180 deg - No Ice	49.787	-0.012	24.756	2818.69	2.06	0.40
0.9 Dead+1.0 Wind 180 deg - No Ice	37.340	-0.012	24.756	2759.39	1.72	0.40
1.2 Dead+1.0 Wind 210 deg - No Ice	49.787	-12.318	21.446	2441.01	1403.07	1.08
0.9 Dead+1.0 Wind 210 deg - No Ice	37.340	-12.318	21.446	2389.78	1372.82	1.09
1.2 Dead+1.0 Wind 240 deg - No Ice	49.787	-21.624	12.563	1422.93	2453.83	1.47
0.9 Dead+1.0 Wind 240 deg - No Ice	37.340	-21.624	12.563	1393.53	2401.30	1.48
1.2 Dead+1.0 Wind 270 deg - No Ice	49.787	-29.273	0.012	-2.70	3140.57	3.61
0.9 Dead+1.0 Wind 270 deg - No Ice	37.340	-29.273	0.012	-1.75	3075.80	3.62
1.2 Dead+1.0 Wind 300 deg - No Ice	49.787	-21.310	-12.367	-1414.00	2427.72	1.06
0.9 Dead+1.0 Wind 300 deg - No Ice	37.340	-21.310	-12.367	-1382.91	2375.58	1.07
1.2 Dead+1.0 Wind 330 deg - No Ice	49.787	-12.296	-21.433	-2447.29	1401.70	0.37
0.9 Dead+1.0 Wind 330 deg - No Ice	37.340	-12.296	-21.433	-2394.14	1371.46	0.38

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
1.2 Dead+1.0 Ice+1.0 Temp	86.034	-0.000	-0.000	-10.77	3.75	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.034	0.002	-7.719	-950.12	3.63	-0.11
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.034	3.850	-6.686	-824.37	-463.92	-0.28
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	86.034	6.666	-3.862	-480.63	-806.14	-0.38
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.034	8.207	-0.002	-11.01	-973.82	-0.89
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.034	6.663	3.857	458.64	-805.99	-0.27
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	86.034	3.846	6.684	802.49	-463.66	-0.10
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	86.034	-0.002	7.719	928.40	3.93	0.11
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	86.034	-3.850	6.686	802.64	471.47	0.28
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	86.034	-6.666	3.862	458.90	813.70	0.38
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	86.034	-8.207	0.002	-10.71	981.38	0.89
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	86.034	-6.663	-3.857	-480.37	813.55	0.27
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	86.034	-3.846	-6.684	-824.22	471.21	0.10
Dead+Wind 0 deg - Service	41.489	0.003	-6.239	-705.40	0.85	-0.10
Dead+Wind 30 deg - Service	41.489	3.104	-5.405	-611.39	-347.87	-0.28
Dead+Wind 60 deg - Service	41.489	5.450	-3.166	-358.00	-609.44	-0.38
Dead+Wind 90 deg - Service	41.489	7.377	-0.003	-3.12	-780.87	-0.93
Dead+Wind 120 deg - Service	41.489	5.371	3.117	348.15	-602.91	-0.28
Dead+Wind 150 deg - Service	41.489	3.099	5.401	605.34	-347.53	-0.10
Dead+Wind 180 deg - Service	41.489	-0.003	6.239	699.56	1.25	0.10
Dead+Wind 210 deg - Service	41.489	-3.104	5.405	605.54	349.97	0.28
Dead+Wind 240 deg - Service	41.489	-5.450	3.166	352.15	611.54	0.38
Dead+Wind 270 deg - Service	41.489	-7.377	0.003	-2.72	782.97	0.93
Dead+Wind 300 deg - Service	41.489	-5.371	-3.117	-353.99	605.01	0.28
Dead+Wind 330 deg - Service	41.489	-3.099	-5.401	-611.19	349.63	0.10

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	0.000	-41.489	0.000	0.000	41.489	0.000	0.000%
2	0.012	-49.787	-24.756	-0.012	49.787	24.756	0.000%
3	0.012	-37.340	-24.756	-0.012	37.340	24.756	0.000%
4	12.318	-49.787	-21.446	-12.318	49.787	21.446	0.000%
5	12.318	-37.340	-21.446	-12.318	37.340	21.446	0.000%
6	21.624	-49.787	-12.563	-21.624	49.787	12.563	0.000%
7	21.624	-37.340	-12.563	-21.624	37.340	12.563	0.000%
8	29.273	-49.787	-0.012	-29.273	49.787	0.012	0.000%
9	29.273	-37.340	-0.012	-29.273	37.340	0.012	0.000%
10	21.310	-49.787	12.367	-21.310	49.787	-12.367	0.000%
11	21.310	-37.340	12.367	-21.310	37.340	-12.367	0.000%
12	12.296	-49.787	21.433	-12.296	49.787	-21.433	0.000%
13	12.296	-37.340	21.433	-12.296	37.340	-21.433	0.000%
14	-0.012	-49.787	24.756	0.012	49.787	-24.756	0.000%
15	-0.012	-37.340	24.756	0.012	37.340	-24.756	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
16	-12.318	-49.787	21.446	12.318	49.787	-21.446	0.000%
17	-12.318	-37.340	21.446	12.318	37.340	-21.446	0.000%
18	-21.624	-49.787	12.563	21.624	49.787	-12.563	0.000%
19	-21.624	-37.340	12.563	21.624	37.340	-12.563	0.000%
20	-29.273	-49.787	0.012	29.273	49.787	-0.012	0.000%
21	-29.273	-37.340	0.012	29.273	37.340	-0.012	0.000%
22	-21.310	-49.787	-12.367	21.310	49.787	12.367	0.000%
23	-21.310	-37.340	-12.367	21.310	37.340	12.367	0.000%
24	-12.296	-49.787	-21.433	12.296	49.787	21.433	0.000%
25	-12.296	-37.340	-21.433	12.296	37.340	21.433	0.000%
26	0.000	-86.034	0.000	0.000	86.034	0.000	0.000%
27	0.002	-86.034	-7.719	-0.002	86.034	7.719	0.000%
28	3.850	-86.034	-6.686	-3.850	86.034	6.686	0.000%
29	6.666	-86.034	-3.862	-6.666	86.034	3.862	0.000%
30	8.207	-86.034	-0.002	-8.207	86.034	0.002	0.000%
31	6.663	-86.034	3.857	-6.663	86.034	-3.857	0.000%
32	3.846	-86.034	6.684	-3.846	86.034	-6.684	0.000%
33	-0.002	-86.034	7.719	0.002	86.034	-7.719	0.000%
34	-3.850	-86.034	6.686	3.850	86.034	-6.686	0.000%
35	-6.666	-86.034	3.862	6.666	86.034	-3.862	0.000%
36	-8.207	-86.034	0.002	8.207	86.034	-0.002	0.000%
37	-6.663	-86.034	-3.857	6.663	86.034	3.857	0.000%
38	-3.846	-86.034	-6.684	3.846	86.034	6.684	0.000%
39	0.003	-41.489	-6.239	-0.003	41.489	6.239	0.000%
40	3.104	-41.489	-5.405	-3.104	41.489	5.405	0.000%
41	5.450	-41.489	-3.166	-5.450	41.489	3.166	0.000%
42	7.377	-41.489	-0.003	-7.377	41.489	0.003	0.000%
43	5.371	-41.489	3.117	-5.371	41.489	-3.117	0.000%
44	3.099	-41.489	5.401	-3.099	41.489	-5.401	0.000%
45	-0.003	-41.489	6.239	0.003	41.489	-6.239	0.000%
46	-3.104	-41.489	5.405	3.104	41.489	-5.405	0.000%
47	-5.450	-41.489	3.166	5.450	41.489	-3.166	0.000%
48	-7.377	-41.489	0.003	7.377	41.489	-0.003	0.000%
49	-5.371	-41.489	-3.117	5.371	41.489	3.117	0.000%
50	-3.099	-41.489	-5.401	3.099	41.489	5.401	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00001230
2	Yes	6	0.00000001	0.00015753
3	Yes	5	0.00000001	0.00070202
4	Yes	7	0.00000001	0.00096731
5	Yes	7	0.00000001	0.00024021
6	Yes	8	0.00000001	0.00010030
7	Yes	7	0.00000001	0.00025309
8	Yes	6	0.00000001	0.00072126
9	Yes	6	0.00000001	0.00026032
10	Yes	7	0.00000001	0.00096181
11	Yes	7	0.00000001	0.00023947
12	Yes	7	0.00000001	0.00098293
13	Yes	7	0.00000001	0.00024539
14	Yes	6	0.00000001	0.00015981
15	Yes	5	0.00000001	0.00071479
16	Yes	7	0.00000001	0.00099604
17	Yes	7	0.00000001	0.00024900
18	Yes	7	0.00000001	0.00096883
19	Yes	7	0.00000001	0.00024024
20	Yes	6	0.00000001	0.00071798
21	Yes	6	0.00000001	0.00025908
22	Yes	7	0.00000001	0.00099832
23	Yes	7	0.00000001	0.00024917
24	Yes	7	0.00000001	0.00098007
25	Yes	7	0.00000001	0.00024364

26	Yes	5	0.00000001	0.00029645
27	Yes	7	0.00000001	0.00077619
28	Yes	8	0.00000001	0.00028855
29	Yes	8	0.00000001	0.00029555
30	Yes	7	0.00000001	0.00078882
31	Yes	8	0.00000001	0.00027567
32	Yes	8	0.00000001	0.00027970
33	Yes	7	0.00000001	0.00075288
34	Yes	8	0.00000001	0.00028470
35	Yes	8	0.00000001	0.00027720
36	Yes	7	0.00000001	0.00079410
37	Yes	8	0.00000001	0.00029727
38	Yes	8	0.00000001	0.00029381
39	Yes	5	0.00000001	0.00020919
40	Yes	6	0.00000001	0.00014187
41	Yes	6	0.00000001	0.00016062
42	Yes	5	0.00000001	0.00047988
43	Yes	6	0.00000001	0.00013842
44	Yes	6	0.00000001	0.00014701
45	Yes	5	0.00000001	0.00020694
46	Yes	6	0.00000001	0.00015315
47	Yes	6	0.00000001	0.00013956
48	Yes	5	0.00000001	0.00048080
49	Yes	6	0.00000001	0.00015587
50	Yes	6	0.00000001	0.00014732

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 142.5	31.065	48	1.7566	0.0044
L2	142.5 - 137.5	29.227	48	1.7535	0.0044
L3	137.5 - 132.5	27.396	48	1.7429	0.0044
L4	132.5 - 127.5	25.580	48	1.7241	0.0043
L5	127.5 - 122.5	23.789	48	1.6960	0.0043
L6	122.5 - 117.5	22.031	48	1.6603	0.0042
L7	117.5 - 112.5	20.314	48	1.6186	0.0042
L8	112.5 - 108.5	18.644	48	1.5705	0.0040
L9	112.25 - 107.25	18.562	48	1.5680	0.0040
L10	107.25 - 102.25	16.935	48	1.5325	0.0039
L11	102.25 - 97.25	15.363	48	1.4693	0.0037
L12	97.25 - 92.25	13.860	48	1.4005	0.0035
L13	92.25 - 87.25	12.432	48	1.3265	0.0033
L14	87.25 - 82.25	11.084	48	1.2474	0.0030
L15	82.25 - 77.25	9.821	48	1.1641	0.0028
L16	77.25 - 72.25	8.648	48	1.0774	0.0025
L17	76.75 - 71.75	8.535	48	1.0685	0.0025
L18	71.75 - 66.75	7.438	48	1.0241	0.0023
L19	66.75 - 61.75	6.406	48	0.9470	0.0021
L20	61.75 - 56.75	5.455	48	0.8686	0.0019
L21	56.75 - 51.75	4.587	48	0.7891	0.0017
L22	51.75 - 47.833	3.803	48	0.7088	0.0015
L23	47.833 - 47.583	3.247	48	0.6456	0.0013
L24	47.583 - 42.583	3.213	48	0.6416	0.0013
L25	42.583 - 35.75	2.584	48	0.5606	0.0011
L26	41 - 34.75	2.402	48	0.5350	0.0010
L27	34.75 - 29.75	1.733	48	0.4811	0.0009
L28	29.75 - 24.75	1.267	48	0.4103	0.0007
L29	24.75 - 19.75	0.874	48	0.3399	0.0006
L30	19.75 - 14.75	0.555	48	0.2700	0.0005
L31	14.75 - 9.75	0.308	48	0.2006	0.0003
L32	9.75 - 4.75	0.134	48	0.1319	0.0002
L33	4.75 - 0	0.032	48	0.0639	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	Platform Mount [LP 1201-1]	48	30.881	1.7565	0.0044	41172
145.00	TME-PCS 1900MHz 4x45W- 65MHz	48	30.146	1.7556	0.0044	41172
137.00	(2) SBNHH-1D65B	48	27.214	1.7414	0.0044	18491
117.00	7770.00 w/ Mount Pipe	48	20.145	1.6141	0.0042	6292
115.00	TME-RRU-11	48	19.473	1.5955	0.0041	6356
107.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	16.855	1.5302	0.0039	5346
97.00	MX08FRO665-21 w/ Mount Pipe	48	13.787	1.3970	0.0035	3984
49.00	58532A	48	3.407	0.6645	0.0013	3560

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 142.5	124.955	20	7.0865	0.0168
L2	142.5 - 137.5	117.557	20	7.0737	0.0168
L3	137.5 - 132.5	110.189	20	7.0306	0.0168
L4	132.5 - 127.5	102.881	20	6.9540	0.0166
L5	127.5 - 122.5	95.673	20	6.8397	0.0165
L6	122.5 - 117.5	88.601	20	6.6948	0.0163
L7	117.5 - 112.5	81.692	20	6.5252	0.0162
L8	112.5 - 108.5	74.973	20	6.3307	0.0156
L9	112.25 - 107.25	74.642	20	6.3202	0.0156
L10	107.25 - 102.25	68.099	20	6.1765	0.0151
L11	102.25 - 97.25	61.774	20	5.9211	0.0144
L12	97.25 - 92.25	55.728	20	5.6430	0.0136
L13	92.25 - 87.25	49.982	20	5.3437	0.0127
L14	87.25 - 82.25	44.560	20	5.0239	0.0117
L15	82.25 - 77.25	39.480	20	4.6874	0.0108
L16	77.25 - 72.25	34.758	20	4.3372	0.0097
L17	76.75 - 71.75	34.306	20	4.3015	0.0096
L18	71.75 - 66.75	29.892	20	4.1222	0.0091
L19	66.75 - 61.75	25.741	20	3.8110	0.0083
L20	61.75 - 56.75	21.918	20	3.4944	0.0074
L21	56.75 - 51.75	18.428	20	3.1738	0.0065
L22	51.75 - 47.833	15.275	20	2.8503	0.0057
L23	47.833 - 47.583	13.042	20	2.5956	0.0051
L24	47.583 - 42.583	12.907	20	2.5793	0.0050
L25	42.583 - 35.75	10.377	20	2.2533	0.0042
L26	41 - 34.75	9.647	20	2.1500	0.0040
L27	34.75 - 29.75	6.960	20	1.9329	0.0035
L28	29.75 - 24.75	5.085	20	1.6482	0.0029
L29	24.75 - 19.75	3.508	20	1.3650	0.0023
L30	19.75 - 14.75	2.226	20	1.0839	0.0018
L31	14.75 - 9.75	1.237	20	0.8052	0.0013
L32	9.75 - 4.75	0.538	20	0.5293	0.0008
L33	4.75 - 0	0.127	20	0.2563	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.00	Platform Mount [LP 1201-1]	20	124.215	7.0859	0.0174	10468
145.00	TME-PCS 1900MHz 4x45W- 65MHz	20	121.255	7.0825	0.0174	10468
137.00	(2) SBNHH-1D65B	20	109.454	7.0245	0.0173	4719

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.00	7770.00 w/ Mount Pipe	20	81.011	6.5070	0.0165	1595
115.00	TME-RRU-11	20	78.307	6.4316	0.0162	1612
107.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	67.776	6.1673	0.0153	1356
97.00	MX08FRO665-21 w/ Mount Pipe	20	55.433	5.6287	0.0137	1007
49.00	58532A	20	13.686	2.6715	0.0053	887

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	147.5 - 142.5 (1)	TP22.95x22x0.25	5.00	0.00	0.0	18.012 4	-6.003	972.672	0.006
L2	142.5 - 137.5 (2)	TP23.9x22.95x0.25	5.00	0.00	0.0	18.766 3	-6.404	1013.380	0.006
L3	137.5 - 132.5 (3)	TP24.85x23.9x0.25	5.00	0.00	0.0	19.520 1	-11.293	1054.090	0.011
L4	132.5 - 127.5 (4)	TP25.8x24.85x0.25	5.00	0.00	0.0	20.273 9	-11.785	1094.790	0.011
L5	127.5 - 122.5 (5)	TP26.75x25.8x0.25	5.00	0.00	0.0	21.027 8	-12.299	1135.500	0.011
L6	122.5 - 117.5 (6)	TP27.7x26.75x0.25	5.00	0.00	0.0	21.781 6	-12.834	1176.210	0.011
L7	117.5 - 112.5 (7)	TP28.65x27.7x0.25	5.00	0.00	0.0	22.535 4	-16.999	1216.910	0.014
L8	112.5 - 108.5 (8)	TP29.41x28.65x0.25	4.00	0.00	0.0	22.573 1	-17.035	1218.950	0.014
L9	108.5 - 107.25 (9)	TP29.1476x28.1975x0.25	5.00	0.00	0.0	22.930 2	-18.011	1341.420	0.013
L10	107.25 - 102.25 (10)	TP30.0976x29.1476x0.25	5.00	0.00	0.0	23.684 1	-21.883	1385.520	0.016
L11	102.25 - 97.25 (11)	TP31.0477x30.0976x0.25	5.00	0.00	0.0	24.438 0	-22.531	1429.620	0.016
L12	97.25 - 92.25 (12)	TP31.9978x31.0477x0.25	5.00	0.00	0.0	25.191 8	-26.317	1473.720	0.018
L13	92.25 - 87.25 (13)	TP32.9478x31.9978x0.25	5.00	0.00	0.0	25.945 7	-27.137	1517.820	0.018
L14	87.25 - 82.25 (14)	TP33.8979x32.9478x0.25	5.00	0.00	0.0	26.699 6	-27.987	1561.930	0.018
L15	82.25 - 77.25 (15)	TP34.8479x33.8979x0.25	5.00	0.00	0.0	27.453 5	-28.866	1606.030	0.018
L16	77.25 - 72.25 (16)	TP35.798x34.8479x0.25	5.00	0.00	0.0	27.528 9	-28.962	1610.440	0.018
L17	72.25 - 71.75 (17)	TP35.3928x34.4429x0.31 25	5.00	0.00	0.0	34.795 3	-30.438	2035.530	0.015
L18	71.75 - 66.75 (18)	TP36.3427x35.3928x0.31 25	5.00	0.00	0.0	35.737 5	-31.476	2090.640	0.015
L19	66.75 - 61.75 (19)	TP37.2926x36.3427x0.31 25	5.00	0.00	0.0	36.679 6	-32.550	2145.760	0.015
L20	61.75 - 56.75 (20)	TP38.2425x37.2926x0.31 25	5.00	0.00	0.0	37.621 8	-33.652	2200.880	0.015
L21	56.75 - 51.75 (21)	TP39.1924x38.2425x0.31 25	5.00	0.00	0.0	38.564 0	-34.796	2255.990	0.015
L22	51.75 - 47.833 (22)	TP39.9365x39.1924x0.31 25	3.92	0.00	0.0	39.302 1	-35.771	2299.170	0.016
L23	47.833 - 47.583 (23)	TP39.984x39.9365x0.312 5	0.25	0.00	0.0	39.349 2	-35.845	2301.930	0.016
L24	47.583 - 42.583 (24)	TP40.9339x39.984x0.312 5	5.00	0.00	0.0	40.291 3	-37.014	2357.040	0.016
L25	42.583 - 35.75 (25)	TP42.232x40.9339x0.312 5	6.83	0.00	0.0	40.589 6	-37.387	2374.490	0.016

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L26	35.75 - 34.75 (26)	TP41.7972x40.6096x0.37 5	6.25	0.00	0.0	49.302 7	-39.907	2884.210	0.014
L27	34.75 - 29.75 (27)	TP42.7472x41.7972x0.37 5	5.00	0.00	0.0	50.433 5	-41.295	2950.360	0.014
L28	29.75 - 24.75 (28)	TP43.6973x42.7472x0.37 5	5.00	0.00	0.0	51.564 3	-42.708	3016.510	0.014
L29	24.75 - 19.75 (29)	TP44.6473x43.6973x0.37 5	5.00	0.00	0.0	52.695 1	-44.147	3082.660	0.014
L30	19.75 - 14.75 (30)	TP45.5974x44.6473x0.37 5	5.00	0.00	0.0	53.825 9	-45.610	3148.820	0.014
L31	14.75 - 9.75 (31)	TP46.5474x45.5974x0.37 5	5.00	0.00	0.0	54.956 7	-47.098	3214.970	0.015
L32	9.75 - 4.75 (32)	TP47.4975x46.5474x0.37 5	5.00	0.00	0.0	56.087 5	-48.545	3281.120	0.015
L33	4.75 - 0 (33)	TP48.4x47.4975x0.375	4.75	0.00	0.0	57.161 8	-49.771	3343.960	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	147.5 - 142.5 (1)	TP22.95x22x0.25	23.58	574.82	0.041	0.00	574.82	0.000
L2	142.5 - 137.5 (2)	TP23.9x22.95x0.25	52.81	624.21	0.085	0.00	624.21	0.000
L3	137.5 - 132.5 (3)	TP24.85x23.9x0.25	102.05	675.64	0.151	0.00	675.64	0.000
L4	132.5 - 127.5 (4)	TP25.8x24.85x0.25	154.16	723.10	0.213	0.00	723.10	0.000
L5	127.5 - 122.5 (5)	TP26.75x25.8x0.25	207.88	770.96	0.270	0.00	770.96	0.000
L6	122.5 - 117.5 (6)	TP27.7x26.75x0.25	263.19	819.78	0.321	0.00	819.78	0.000
L7	117.5 - 112.5 (7)	TP28.65x27.7x0.25	335.65	869.52	0.386	0.00	869.52	0.000
L8	112.5 - 108.5 (8)	TP29.41x28.65x0.25	339.29	872.02	0.389	0.00	872.02	0.000
L9	108.5 - 107.25 (9)	TP29.1476x28.1975x0.25	413.10	959.47	0.431	0.00	959.47	0.000
L10	107.25 - 102.25 (10)	TP30.0976x29.1476x0.25	502.10	1013.58	0.495	0.00	1013.58	0.000
L11	102.25 - 97.25 (11)	TP31.0477x30.0976x0.25	592.90	1068.46	0.555	0.00	1068.46	0.000
L12	97.25 - 92.25 (12)	TP31.9978x31.0477x0.25	699.49	1124.03	0.622	0.00	1124.03	0.000
L13	92.25 - 87.25 (13)	TP32.9478x31.9978x0.25	809.79	1180.22	0.686	0.00	1180.22	0.000
L14	87.25 - 82.25 (14)	TP33.8979x32.9478x0.25	923.13	1236.98	0.746	0.00	1236.98	0.000
L15	82.25 - 77.25 (15)	TP34.8479x33.8979x0.25	1039.43	1294.25	0.803	0.00	1294.25	0.000
L16	77.25 - 72.25 (16)	TP35.798x34.8479x0.25	1051.22	1300.01	0.809	0.00	1300.01	0.000
L17	72.25 - 71.75 (17)	TP35.3928x34.4429x0.31 25	1171.11	1782.56	0.657	0.00	1782.56	0.000
L18	71.75 - 66.75 (18)	TP36.3427x35.3928x0.31 25	1294.24	1865.85	0.694	0.00	1865.85	0.000
L19	66.75 - 61.75 (19)	TP37.2926x36.3427x0.31 25	1420.31	1950.18	0.728	0.00	1950.18	0.000
L20	61.75 - 56.75 (20)	TP38.2425x37.2926x0.31 25	1549.25	2035.47	0.761	0.00	2035.47	0.000
L21	56.75 - 51.75 (21)	TP39.1924x38.2425x0.31 25	1680.34	2121.67	0.792	0.00	2121.67	0.000
L22	51.75 -	TP39.9365x39.1924x0.31	1784.52	2189.78	0.815	0.00	2189.78	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L23	47.833 (22)	25						
	47.833 - 47.583 (23)	TP39.984x39.9365x0.312	1791.23	2194.15	0.816	0.00	2194.15	0.000
L24	47.583 - 42.583 (24)	5	1926.93	2281.83	0.844	0.00	2281.83	0.000
L25	42.583 - 35.75 (25)	TP40.9339x39.984x0.312	1970.38	2309.75	0.853	0.00	2309.75	0.000
L26	35.75 - 34.75 (26)	5	2143.74	2996.00	0.716	0.00	2996.00	0.000
L27	34.75 - 29.75 (27)	TP41.7972x40.6096x0.37	2284.11	3114.92	0.733	0.00	3114.92	0.000
L28	29.75 - 24.75 (28)	5	2425.60	3235.13	0.750	0.00	3235.13	0.000
L29	24.75 - 19.75 (29)	TP43.6973x42.7472x0.37	2568.16	3356.57	0.765	0.00	3356.57	0.000
L30	19.75 - 14.75 (30)	5	2711.75	3479.18	0.779	0.00	3479.18	0.000
L31	14.75 - 9.75 (31)	TP45.5974x44.6473x0.37	2856.35	3602.88	0.793	0.00	3602.88	0.000
L32	9.75 - 4.75 (32)	5	3001.80	3727.64	0.805	0.00	3727.64	0.000
L33	4.75 - 0 (33)	TP47.4975x46.5474x0.37	3140.57	3847.06	0.816	0.00	3847.06	0.000
		TP48.4x47.4975x0.375						

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	147.5 - 142.5 (1)	TP22.95x22x0.25	5.689	291.802	0.019	0.00	580.09	0.000
L2	142.5 - 137.5 (2)	TP23.9x22.95x0.25	6.004	304.014	0.020	0.00	629.66	0.000
L3	137.5 - 132.5 (3)	TP24.85x23.9x0.25	10.263	316.226	0.032	0.17	681.26	0.000
L4	132.5 - 127.5 (4)	TP25.8x24.85x0.25	10.583	328.438	0.032	0.17	734.89	0.000
L5	127.5 - 122.5 (5)	TP26.75x25.8x0.25	10.903	340.650	0.032	0.17	790.56	0.000
L6	122.5 - 117.5 (6)	TP27.7x26.75x0.25	11.225	352.862	0.032	0.17	848.26	0.000
L7	117.5 - 112.5 (7)	TP28.65x27.7x0.25	14.560	362.631	0.040	0.32	907.98	0.000
L8	112.5 - 108.5 (8)	TP29.41x28.65x0.25	14.573	365.073	0.040	0.32	911.02	0.000
L9	108.5 - 107.25 (9)	TP29.1476x28.1975x0.25	14.945	399.118	0.037	0.32	1018.42	0.000
L10	107.25 - 102.25 (10)	TP30.0976x29.1476x0.25	17.941	413.010	0.043	0.41	1086.48	0.000
L11	102.25 - 97.25 (11)	TP31.0477x30.0976x0.25	18.621	428.886	0.043	1.32	1156.75	0.001
L12	97.25 - 92.25 (12)	TP31.9978x31.0477x0.25	21.762	442.117	0.049	1.69	1229.22	0.001
L13	92.25 - 87.25 (13)	TP32.9478x31.9978x0.25	22.375	455.347	0.049	1.90	1303.89	0.001
L14	87.25 - 82.25 (14)	TP33.8979x32.9478x0.25	22.976	468.578	0.049	2.11	1380.77	0.002
L15	82.25 - 77.25 (15)	TP34.8479x33.8979x0.25	23.566	481.808	0.049	2.33	1459.83	0.002
L16	77.25 - 72.25 (16)	TP35.798x34.8479x0.25	23.615	483.131	0.049	2.35	1467.87	0.002
L17	72.25 - 71.75 (17)	TP35.3928x34.4429x0.31	24.331	610.658	0.040	2.57	1876.03	0.001
L18	71.75 - 66.75 (18)	25	24.933	627.193	0.040	2.79	1979.01	0.001
L19	66.75 - 61.75	TP36.3427x35.3928x0.31	25.514	643.728	0.040	3.01	2084.73	0.001
		25						

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L20	(19) 61.75 - 56.75	25 TP38.2425x37.2926x0.31	26.081	660.263	0.040	3.22	2193.21	0.001
L21	(20) 56.75 - 51.75	25 TP39.1924x38.2425x0.31	26.377	676.798	0.039	3.22	2304.43	0.001
L22	(21) 51.75 - 47.833	25 TP39.9365x39.1924x0.31	26.862	689.751	0.039	3.50	2393.48	0.001
L23	(22) 47.833 - 47.583	25 TP39.984x39.9365x0.312	26.872	690.578	0.039	3.51	2399.22	0.001
L24	(23) 47.583 - 42.583	5 TP40.9339x39.984x0.312	27.421	707.113	0.039	3.62	2515.49	0.001
L25	(24) 42.583 - 35.75	5 TP42.232x40.9339x0.312	27.513	712.348	0.039	3.62	2552.88	0.001
L26	(25) 35.75 - 34.75	5 TP41.7972x40.6096x0.37	27.969	865.263	0.032	3.61	3138.78	0.001
L27	(26) 34.75 - 29.75	5 TP42.7472x41.7972x0.37	28.201	885.109	0.032	3.61	3284.42	0.001
L28	(27) 29.75 - 24.75	5 TP43.6973x42.7472x0.37	28.417	904.954	0.031	3.61	3433.35	0.001
L29	(28) 24.75 - 19.75	5 TP44.6473x43.6973x0.37	28.628	924.799	0.031	3.61	3585.58	0.001
L30	(29) 19.75 - 14.75	5 TP45.5974x44.6473x0.37	28.832	944.645	0.031	3.61	3741.13	0.001
L31	(30) 14.75 - 9.75	5 TP46.5474x45.5974x0.37	29.029	964.490	0.030	3.61	3899.96	0.001
L32	(31) 9.75 - 4.75	5 TP47.4975x46.5474x0.37	29.179	984.336	0.030	3.61	4062.11	0.001
L33	(32) 4.75 - 0 (33)	5 TP48.4x47.4975x0.375	29.301	1003.190	0.029	3.61	4219.20	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	147.5 - 142.5 (1)	0.006	0.041	0.000	0.019	0.000	0.048	1.050	4.8.2
L2	142.5 - 137.5 (2)	0.006	0.085	0.000	0.020	0.000	0.091	1.050	4.8.2
L3	137.5 - 132.5 (3)	0.011	0.151	0.000	0.032	0.000	0.163	1.050	4.8.2
L4	132.5 - 127.5 (4)	0.011	0.213	0.000	0.032	0.000	0.225	1.050	4.8.2
L5	127.5 - 122.5 (5)	0.011	0.270	0.000	0.032	0.000	0.282	1.050	4.8.2
L6	122.5 - 117.5 (6)	0.011	0.321	0.000	0.032	0.000	0.333	1.050	4.8.2
L7	117.5 - 112.5 (7)	0.014	0.386	0.000	0.040	0.000	0.402	1.050	4.8.2
L8	112.5 - 108.5 (8)	0.014	0.389	0.000	0.040	0.000	0.405	1.050	4.8.2
L9	108.5 - 107.25 (9)	0.013	0.431	0.000	0.037	0.000	0.445	1.050	4.8.2
L10	107.25 - 102.25 (10)	0.016	0.495	0.000	0.043	0.000	0.513	1.050	4.8.2
L11	102.25 - 97.25 (11)	0.016	0.555	0.000	0.043	0.001	0.573	1.050	4.8.2
L12	97.25 - 92.25 (12)	0.018	0.622	0.000	0.049	0.001	0.643	1.050	4.8.2
L13	92.25 - 87.25 (13)	0.018	0.686	0.000	0.049	0.001	0.707	1.050	4.8.2
L14	87.25 - 82.25 (14)	0.018	0.746	0.000	0.049	0.002	0.767	1.050	4.8.2
L15	82.25 - 77.25 (15)	0.018	0.803	0.000	0.049	0.002	0.824	1.050	4.8.2
L16	77.25 - 72.25	0.018	0.809	0.000	0.049	0.002	0.829	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(16)								
L17	72.25 - 71.75	0.015	0.657	0.000	0.040	0.001	0.674	1.050	4.8.2
	(17)								
L18	71.75 - 66.75	0.015	0.694	0.000	0.040	0.001	0.710	1.050	4.8.2
	(18)								
L19	66.75 - 61.75	0.015	0.728	0.000	0.040	0.001	0.745	1.050	4.8.2
	(19)								
L20	61.75 - 56.75	0.015	0.761	0.000	0.040	0.001	0.778	1.050	4.8.2
	(20)								
L21	56.75 - 51.75	0.015	0.792	0.000	0.039	0.001	0.809	1.050	4.8.2
	(21)								
L22	51.75 - 47.833 (22)	0.016	0.815	0.000	0.039	0.001	0.832	1.050	4.8.2
	47.833 - 47.583 (23)	0.016	0.816	0.000	0.039	0.001	0.834	1.050	4.8.2
L23	47.583 - 42.583 (24)	0.016	0.844	0.000	0.039	0.001	0.862	1.050	4.8.2
	42.583 - 35.75 (25)	0.016	0.853	0.000	0.039	0.001	0.870	1.050	4.8.2
L24	35.75 - 34.75 (26)	0.014	0.716	0.000	0.032	0.001	0.730	1.050	4.8.2
	34.75 - 29.75 (27)	0.014	0.733	0.000	0.032	0.001	0.748	1.050	4.8.2
L25	29.75 - 24.75 (28)	0.014	0.750	0.000	0.031	0.001	0.765	1.050	4.8.2
	24.75 - 19.75 (29)	0.014	0.765	0.000	0.031	0.001	0.780	1.050	4.8.2
L26	19.75 - 14.75 (30)	0.014	0.779	0.000	0.031	0.001	0.795	1.050	4.8.2
	14.75 - 9.75 (31)	0.015	0.793	0.000	0.030	0.001	0.808	1.050	4.8.2
L27	9.75 - 4.75 (32)	0.015	0.805	0.000	0.030	0.001	0.821	1.050	4.8.2
	4.75 - 0 (33)	0.015	0.816	0.000	0.029	0.001	0.832	1.050	4.8.2

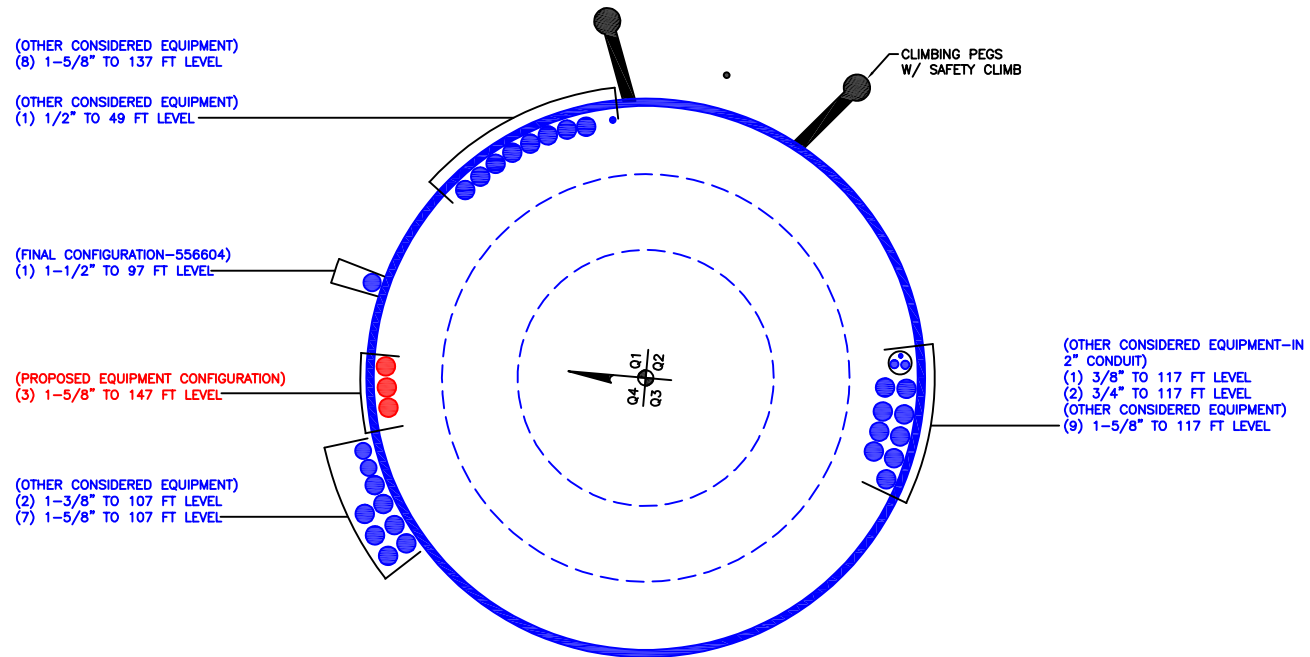
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	147.5 - 142.5	Pole	TP22.95x22x0.25	1	-6.003	1021.306	4.5	Pass
L2	142.5 - 137.5	Pole	TP23.9x22.95x0.25	2	-6.404	1064.049	8.7	Pass
L3	137.5 - 132.5	Pole	TP24.85x23.9x0.25	3	-11.293	1106.794	15.5	Pass
L4	132.5 - 127.5	Pole	TP25.8x24.85x0.25	4	-11.785	1149.529	21.4	Pass
L5	127.5 - 122.5	Pole	TP26.75x25.8x0.25	5	-12.299	1192.275	26.8	Pass
L6	122.5 - 117.5	Pole	TP27.7x26.75x0.25	6	-12.834	1235.020	31.7	Pass
L7	117.5 - 112.5	Pole	TP28.65x27.7x0.25	7	-16.999	1277.755	38.2	Pass
L8	112.5 - 108.5	Pole	TP29.41x28.65x0.25	8	-17.035	1279.897	38.5	Pass
L9	108.5 - 107.25	Pole	TP29.1476x28.1975x0.25	9	-18.011	1408.491	42.4	Pass
L10	107.25 - 102.25	Pole	TP30.0976x29.1476x0.25	10	-21.883	1454.796	48.9	Pass
L11	102.25 - 97.25	Pole	TP31.0477x30.0976x0.25	11	-22.531	1501.101	54.5	Pass
L12	97.25 - 92.25	Pole	TP31.9978x31.0477x0.25	12	-26.317	1547.406	61.2	Pass
L13	92.25 - 87.25	Pole	TP32.9478x31.9978x0.25	13	-27.137	1593.711	67.3	Pass
L14	87.25 - 82.25	Pole	TP33.8979x32.9478x0.25	14	-27.987	1640.026	73.0	Pass
L15	82.25 - 77.25	Pole	TP34.8479x33.8979x0.25	15	-28.866	1686.331	78.4	Pass
L16	77.25 - 72.25	Pole	TP35.798x34.8479x0.25	16	-28.962	1690.962	79.0	Pass
L17	72.25 - 71.75	Pole	TP35.3928x34.4429x0.3125	17	-30.438	2137.306	64.2	Pass
L18	71.75 - 66.75	Pole	TP36.3427x35.3928x0.3125	18	-31.476	2195.172	67.7	Pass
L19	66.75 - 61.75	Pole	TP37.2926x36.3427x0.3125	19	-32.550	2253.048	71.0	Pass
L20	61.75 - 56.75	Pole	TP38.2425x37.2926x0.3125	20	-33.652	2310.924	74.1	Pass
L21	56.75 - 51.75	Pole	TP39.1924x38.2425x0.3125	21	-34.796	2368.789	77.1	Pass
L22	51.75 - 47.833	Pole	TP39.9365x39.1924x0.3125	22	-35.771	2414.128	79.2	Pass
L23	47.833 - 47.583	Pole	TP39.984x39.9365x0.3125	23	-35.845	2417.026	79.4	Pass
L24	47.583 - 42.583	Pole	TP40.9339x39.984x0.3125	24	-37.014	2474.892	82.1	Pass
L25	42.583 - 35.75	Pole	TP42.232x40.9339x0.3125	25	-37.387	2493.214	82.9	Pass
L26	35.75 - 34.75	Pole	TP41.7972x40.6096x0.375	26	-39.907	3028.420	69.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L27	34.75 - 29.75	Pole	TP42.7472x41.7972x0.375	27	-41.295	3097.878	71.3	Pass
L28	29.75 - 24.75	Pole	TP43.6973x42.7472x0.375	28	-42.708	3167.335	72.9	Pass
L29	24.75 - 19.75	Pole	TP44.6473x43.6973x0.375	29	-44.147	3236.793	74.3	Pass
L30	19.75 - 14.75	Pole	TP45.5974x44.6473x0.375	30	-45.610	3306.261	75.7	Pass
L31	14.75 - 9.75	Pole	TP46.5474x45.5974x0.375	31	-47.098	3375.718	77.0	Pass
L32	9.75 - 4.75	Pole	TP47.4975x46.5474x0.375	32	-48.545	3445.176	78.2	Pass
L33	4.75 - 0	Pole	TP48.4x47.4975x0.375	33	-49.771	3511.158	79.3	Pass
							Summary	
							Pole (L25)	82.9 Pass
							RATING =	82.9 Pass

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B
BASE LEVEL DRAWING



Site BU: 876348
Work Order: 2027039



Pole Geometry

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	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	147.5	39	3.75	18	22	29.41	0.25	Auto	A607-60
2	112.25	40	4.5	18	28.20	35.798	0.25	Auto	A607-65
3	76.75	41	5.25	18	34.44	42.232	0.3125	Auto	A607-65
4	41	41	0	18	40.61	48.4	0.375	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	40.167	47.833	channel	MP3-03 (1.1875in)	3					x						x						x	
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.545	1.1875	A572-65

TNX Geometry Input

Increment (ft): [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	147.5 - 142.5	5		18	22.000	22.950	0.25	A607-60	1.000
2	142.5 - 137.5	5		18	22.950	23.900	0.25	A607-60	1.000
3	137.5 - 132.5	5		18	23.900	24.850	0.25	A607-60	1.000
4	132.5 - 127.5	5		18	24.850	25.800	0.25	A607-60	1.000
5	127.5 - 122.5	5		18	25.800	26.750	0.25	A607-60	1.000
6	122.5 - 117.5	5		18	26.750	27.700	0.25	A607-60	1.000
7	117.5 - 112.5	5		18	27.700	28.650	0.25	A607-60	1.000
8	112.5 - 112.25	4	3.75	18	28.650	29.410	0.25	A607-60	1.000
9	112.25 - 107.25	5		18	28.198	29.148	0.25	A607-65	1.000
10	107.25 - 102.25	5		18	29.148	30.098	0.25	A607-65	1.000
11	102.25 - 97.25	5		18	30.098	31.048	0.25	A607-65	1.000
12	97.25 - 92.25	5		18	31.048	31.998	0.25	A607-65	1.000
13	92.25 - 87.25	5		18	31.998	32.948	0.25	A607-65	1.000
14	87.25 - 82.25	5		18	32.948	33.898	0.25	A607-65	1.000
15	82.25 - 77.25	5		18	33.898	34.848	0.25	A607-65	1.000
16	77.25 - 76.75	5	4.5	18	34.848	35.798	0.25	A607-65	1.000
17	76.75 - 71.75	5		18	34.443	35.393	0.3125	A607-65	1.000
18	71.75 - 66.75	5		18	35.393	36.343	0.3125	A607-65	1.000
19	66.75 - 61.75	5		18	36.343	37.293	0.3125	A607-65	1.000
20	61.75 - 56.75	5		18	37.293	38.242	0.3125	A607-65	1.000
21	56.75 - 51.75	5		18	38.242	39.192	0.3125	A607-65	1.000
22	51.75 - 47.833	3.917		18	39.192	39.937	0.3125	A607-65	1.000
23	47.833 - 47.583	0.25		18	39.937	39.984	0.3125	A607-65	1.000
24	47.583 - 42.583	5		18	39.984	40.934	0.3125	A607-65	1.000
25	42.583 - 41	6.833	5.25	18	40.934	42.232	0.3125	A607-65	1.000
26	41 - 34.75	6.25		18	40.610	41.797	0.375	A607-65	1.000
27	34.75 - 29.75	5		18	41.797	42.747	0.375	A607-65	1.000
28	29.75 - 24.75	5		18	42.747	43.697	0.375	A607-65	1.000
29	24.75 - 19.75	5		18	43.697	44.647	0.375	A607-65	1.000
30	19.75 - 14.75	5		18	44.647	45.597	0.375	A607-65	1.000
31	14.75 - 9.75	5		18	45.597	46.547	0.375	A607-65	1.000
32	9.75 - 4.75	5		18	46.547	47.497	0.375	A607-65	1.000
33	4.75 - 0	4.75		18	47.497	48.400	0.375	A607-65	1.000

TNX Section Forces

Increment (ft):		TNX Output		
		5		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	147.5 - 142.5	6.00	23.58	5.69
2	142.5 - 137.5	6.40	52.81	6.00
3	137.5 - 132.5	11.29	102.05	10.26
4	132.5 - 127.5	11.79	154.16	10.58
5	127.5 - 122.5	12.30	207.88	10.90
6	122.5 - 117.5	12.83	263.19	11.22
7	117.5 - 112.5	17.00	335.65	14.56
8	112.5 - 112.25	17.04	339.29	14.57
9	112.25 - 107.25	18.01	413.10	14.94
10	107.25 - 102.25	21.88	502.10	17.94
11	102.25 - 97.25	22.53	592.90	18.62
12	97.25 - 92.25	26.32	699.49	21.76
13	92.25 - 87.25	27.14	809.79	22.37
14	87.25 - 82.25	27.99	923.12	22.98
15	82.25 - 77.25	28.87	1039.43	23.57
16	77.25 - 76.75	28.96	1051.22	23.62
17	76.75 - 71.75	30.44	1171.11	24.33
18	71.75 - 66.75	31.48	1294.24	24.93
19	66.75 - 61.75	32.55	1420.31	25.51
20	61.75 - 56.75	33.65	1549.25	26.08
21	56.75 - 51.75	34.80	1680.34	26.38
22	51.75 - 47.833	35.77	1784.52	26.86
23	47.833 - 47.583	35.85	1791.23	26.87
24	47.583 - 42.583	37.01	1926.93	27.42
25	42.583 - 41	37.39	1970.38	27.51
26	41 - 34.75	39.91	2143.74	27.97
27	34.75 - 29.75	41.29	2284.11	28.20
28	29.75 - 24.75	42.71	2425.60	28.42
29	24.75 - 19.75	44.15	2568.16	28.63
30	19.75 - 14.75	45.61	2711.75	28.83
31	14.75 - 9.75	47.10	2856.35	29.03
32	9.75 - 4.75	48.55	3001.80	29.18
33	4.75 - 0	49.77	3140.57	29.30

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147.5 - 142.5	Pole	TP22.95x22x0.25	Pole	4.5%	Pass
142.5 - 137.5	Pole	TP23.9x22.95x0.25	Pole	8.7%	Pass
137.5 - 132.5	Pole	TP24.85x23.9x0.25	Pole	15.5%	Pass
132.5 - 127.5	Pole	TP25.8x24.85x0.25	Pole	21.4%	Pass
127.5 - 122.5	Pole	TP26.75x25.8x0.25	Pole	26.8%	Pass
122.5 - 117.5	Pole	TP27.7x26.75x0.25	Pole	31.7%	Pass
117.5 - 112.5	Pole	TP28.65x27.7x0.25	Pole	38.2%	Pass
112.5 - 112.25	Pole	TP29.41x28.65x0.25	Pole	38.5%	Pass
112.25 - 107.25	Pole	TP29.148x28.198x0.25	Pole	42.4%	Pass
107.25 - 102.25	Pole	TP30.098x29.148x0.25	Pole	48.9%	Pass
102.25 - 97.25	Pole	TP31.048x30.098x0.25	Pole	54.5%	Pass
97.25 - 92.25	Pole	TP31.998x31.048x0.25	Pole	61.2%	Pass
92.25 - 87.25	Pole	TP32.948x31.998x0.25	Pole	67.3%	Pass
87.25 - 82.25	Pole	TP33.898x32.948x0.25	Pole	73.0%	Pass
82.25 - 77.25	Pole	TP34.848x33.898x0.25	Pole	78.4%	Pass
77.25 - 76.75	Pole	TP35.798x34.848x0.25	Pole	79.0%	Pass
76.75 - 71.75	Pole	TP35.393x34.443x0.3125	Pole	64.1%	Pass
71.75 - 66.75	Pole	TP36.343x35.393x0.3125	Pole	67.7%	Pass
66.75 - 61.75	Pole	TP37.293x36.343x0.3125	Pole	71.0%	Pass
61.75 - 56.75	Pole	TP38.242x37.293x0.3125	Pole	74.1%	Pass
56.75 - 51.75	Pole	TP39.192x38.242x0.3125	Pole	77.1%	Pass
51.75 - 47.83	Pole	TP39.937x39.192x0.3125	Pole	79.3%	Pass
47.83 - 47.58	Pole	TP39.984x39.937x0.3125	Pole	79.4%	Pass
47.58 - 42.58	Pole	TP40.934x39.984x0.3125	Pole	82.1%	Pass
42.58 - 41	Pole	TP42.232x40.934x0.3125	Pole	82.9%	Pass
41 - 34.75	Pole	TP41.797x40.61x0.375	Pole	69.6%	Pass
34.75 - 29.75	Pole	TP42.747x41.797x0.375	Pole	71.3%	Pass
29.75 - 24.75	Pole	TP43.697x42.747x0.375	Pole	72.9%	Pass
24.75 - 19.75	Pole	TP44.647x43.697x0.375	Pole	74.3%	Pass
19.75 - 14.75	Pole	TP45.597x44.647x0.375	Pole	75.7%	Pass
14.75 - 9.75	Pole	TP46.547x45.597x0.375	Pole	77.0%	Pass
9.75 - 4.75	Pole	TP47.497x46.547x0.375	Pole	78.2%	Pass
4.75 - 0	Pole	TP48.4x47.497x0.375	Pole	79.3%	Pass
				Summary	
			Pole	82.9%	Pass
			Reinforcement	0.0%	Pass
			Overall	82.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*	
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1
147.5 - 142.5	1172	n/a	1172	18.01	n/a	18.01	4.5%	
142.5 - 137.5	1326	n/a	1326	18.77	n/a	18.77	8.7%	
137.5 - 132.5	1492	n/a	1492	19.52	n/a	19.52	15.5%	
132.5 - 127.5	1671	n/a	1671	20.27	n/a	20.27	21.4%	
127.5 - 122.5	1865	n/a	1865	21.03	n/a	21.03	26.8%	
122.5 - 117.5	2073	n/a	2073	21.78	n/a	21.78	31.7%	
117.5 - 112.5	2296	n/a	2296	22.53	n/a	22.53	38.2%	
112.5 - 112.25	2307	n/a	2307	22.57	n/a	22.57	38.5%	
112.25 - 107.25	2418	n/a	2418	22.93	n/a	22.93	42.4%	
107.25 - 102.25	2665	n/a	2665	23.68	n/a	23.68	48.9%	
102.25 - 97.25	2927	n/a	2927	24.44	n/a	24.44	54.5%	
97.25 - 92.25	3207	n/a	3207	25.19	n/a	25.19	61.2%	
92.25 - 87.25	3503	n/a	3503	25.94	n/a	25.94	67.3%	
87.25 - 82.25	3818	n/a	3818	26.70	n/a	26.70	73.0%	
82.25 - 77.25	4150	n/a	4150	27.45	n/a	27.45	78.4%	
77.25 - 76.75	4185	n/a	4185	27.53	n/a	27.53	79.0%	
76.75 - 71.75	5408	n/a	5408	34.79	n/a	34.79	64.1%	
71.75 - 66.75	5859	n/a	5859	35.74	n/a	35.74	67.7%	
66.75 - 61.75	6335	n/a	6335	36.68	n/a	36.68	71.0%	
61.75 - 56.75	6836	n/a	6836	37.62	n/a	37.62	74.1%	
56.75 - 51.75	7362	n/a	7362	38.56	n/a	38.56	77.1%	
51.75 - 47.83	7793	n/a	7793	39.30	n/a	39.30	79.3%	
47.83 - 47.58	7821	n/a	7821	39.35	n/a	39.35	79.4%	
47.58 - 42.58	8397	n/a	8397	40.29	n/a	40.29	82.1%	
42.58 - 41	8584	n/a	8584	40.59	n/a	40.59	82.9%	
41 - 34.75	10684	n/a	10684	49.30	n/a	49.30	69.6%	
34.75 - 29.75	11436	n/a	11436	50.43	n/a	50.43	71.3%	
29.75 - 24.75	12222	n/a	12222	51.56	n/a	51.56	72.9%	
24.75 - 19.75	13044	n/a	13044	52.69	n/a	52.69	74.3%	
19.75 - 14.75	13902	n/a	13902	53.82	n/a	53.82	75.7%	
14.75 - 9.75	14797	n/a	14797	54.95	n/a	54.95	77.0%	
9.75 - 4.75	15729	n/a	15729	56.09	n/a	56.09	78.2%	
4.75 - 0	16650	n/a	16650	57.16	n/a	57.16	79.3%	

Note: Section capacity checked using 5 degree increments.

Rating per TIA-222-H Section 15.5.

Monopole Base Plate Connection

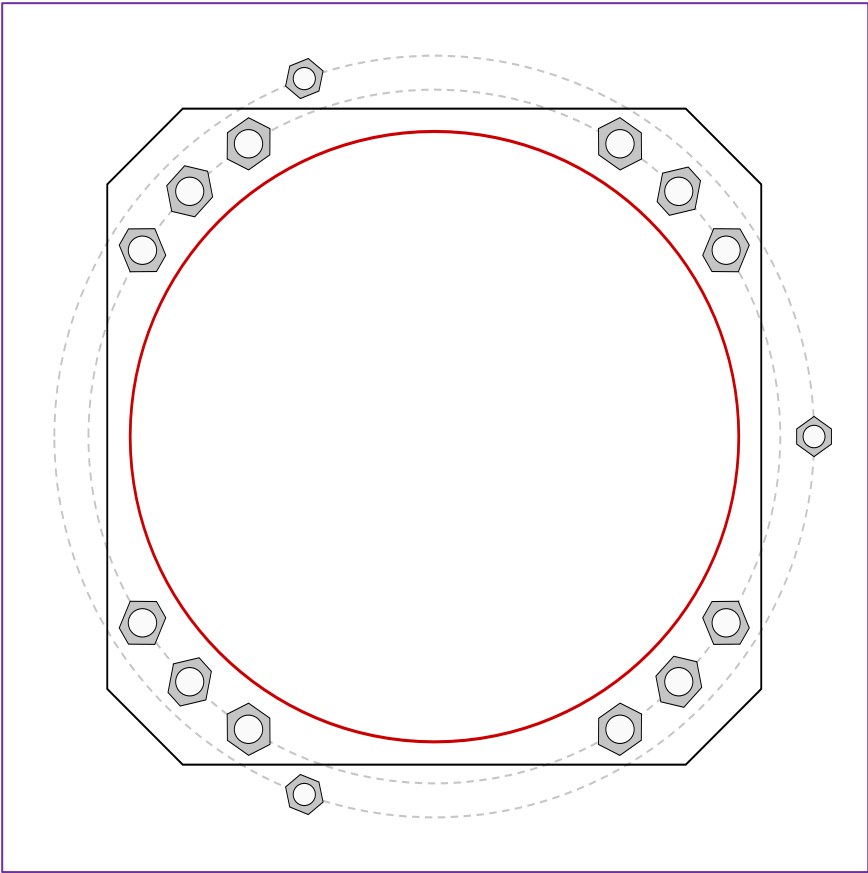


Site Info	
BU #	876348
Site Name	Enfield
Order #	557903 Rev. 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	3140.57
Axial Force (kips)	49.77
Shear Force (kips)	29.30

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
GROUP 1: (12) 2-1/4" ϕ bolts (A615-75 N; F_y =75 ksi, F_u =100 ksi) on 55" BC <i>Anchor Spacing: 6 in</i>		GROUP 1:	
GROUP 2: (3) 1-3/4" ϕ bolts (A193 Gr. B7 N; F_y =105 ksi, F_u =125 ksi) on 60.4" BC		P_u_t = 194.91	ϕP_n_t = 243.75 Stress Rating
Base Plate Data		V_u = 2.44	ϕV_n = 149.1 76.2%
52" W x 3" Plate (A572-50; F_y =50 ksi, F_u =65 ksi); Clip: 6 in		M_u = n/a	ϕM_n = n/a Pass
Stiffener Data		GROUP 2:	
N/A		P_u_t = 126.32	ϕP_n_t = 178.13 Stress Rating
Pole Data		V_u = 0	ϕV_n = 112.75 67.5%
48.4" x 0.375" 18-sided pole (A607-65; F_y =65 ksi, F_u =80 ksi)		M_u = n/a	ϕM_n = n/a Pass
		Base Plate Summary	
		Max Stress (ksi):	29.99 (Flexural)
		Allowable Stress (ksi):	45
		Stress Rating:	63.5% Pass

Elevation (ft)

0

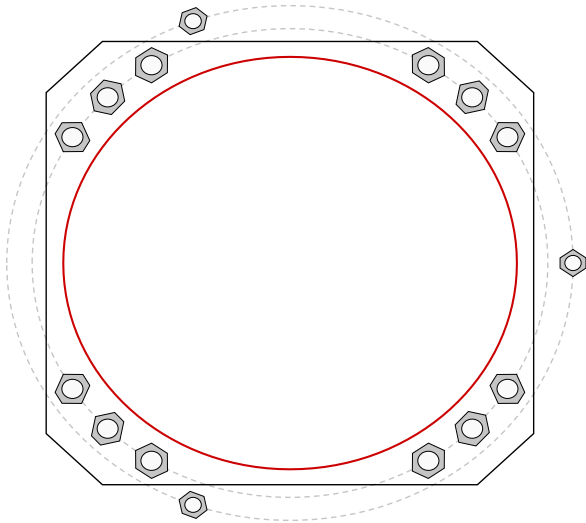
(Base)

note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	

Custom Bolt Connection										
Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	I _{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	32.474174	2.25	A615-75	55	0.5	0	N-Included		No
2	1	45	2.25	A615-75	55	0.5	0	N-Included		No
3	1	57.525826	2.25	A615-75	55	0.5	0	N-Included		No
4	1	122.47417	2.25	A615-75	55	0.5	0	N-Included		No
5	1	135	2.25	A615-75	55	0.5	0	N-Included		No
6	1	147.52583	2.25	A615-75	55	0.5	0	N-Included		No
7	1	212.47417	2.25	A615-75	55	0.5	0	N-Included		No
8	1	225	2.25	A615-75	55	0.5	0	N-Included		No
9	1	237.52583	2.25	A615-75	55	0.5	0	N-Included		No
10	1	302.47417	2.25	A615-75	55	0.5	0	N-Included		No
11	1	315	2.25	A615-75	55	0.5	0	N-Included		No
12	1	327.52583	2.25	A615-75	55	0.5	0	N-Included		No
13	2	110	1.75	A193 Gr. B7	60.4	0.5	0	N-Included		No
14	2	250	1.75	A193 Gr. B7	60.4	0.5	0	N-Included		No
15	2	360	1.75	A193 Gr. B7	60.4	0.5	0	N-Included		No

Plot Graphic



Pier and Pad Foundation



BU #: 876348
 Site Name: Enfield
 App. Number: 557903 Rev. 2

TIA-222 Revision: H
 Tower Type: Monopole

Top & Bot. Pad Rein. Different?: ☐
 Block Foundation?: ☐
 Rectangular Pad?: ☐

Superstructure Analysis Reactions		
Compression, P_{comp} :	49.79	kips
Base Shear, Vu_{comp} :	29.27	kips
Moment, M_u :	3140.57	ft-kips
Tower Height, H :	147.5	ft
BP Dist. Above Fdn, bp_{dist} :	6	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$:	8	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, Sc :	11	
Pier Rebar Quantity, mc :	24	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	9.8	ft
Pad Width, W_1 :	23.8	ft
Pad Thickness, T :	2.8	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	23	
Pad Clear Cover, cc_{pad} :	3	in

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

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Gross Bearing, Q_{ult} :	6.500	ksf
Cohesion, C_u :	1.500	ksf
Friction Angle, ϕ :		degrees
SPT Blow Count, N_{blows} :	12	
Base Friction, μ :		
Neglected Depth, N :	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	900.85	29.27	3.1%	Pass
Bearing Pressure (ksf)	4.88	2.66	52.0%	Pass
Overturning (kip*ft)	6364.45	3456.69	54.3%	Pass
Pier Flexure (Comp.) (kip*ft)	6922.85	3360.10	46.2%	Pass
Pier Compression (kip)	30551.04	136.19	0.4%	Pass
Pad Flexure (kip*ft)	2893.92	989.49	32.6%	Pass
Pad Shear - 1-way (kips)	678.31	172.11	24.2%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.035	20.2%	Pass
Flexural 2-way (Comp) (kip*ft)	3915.02	2016.06	49.0%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	49.0%
Soil Rating*:	54.3%

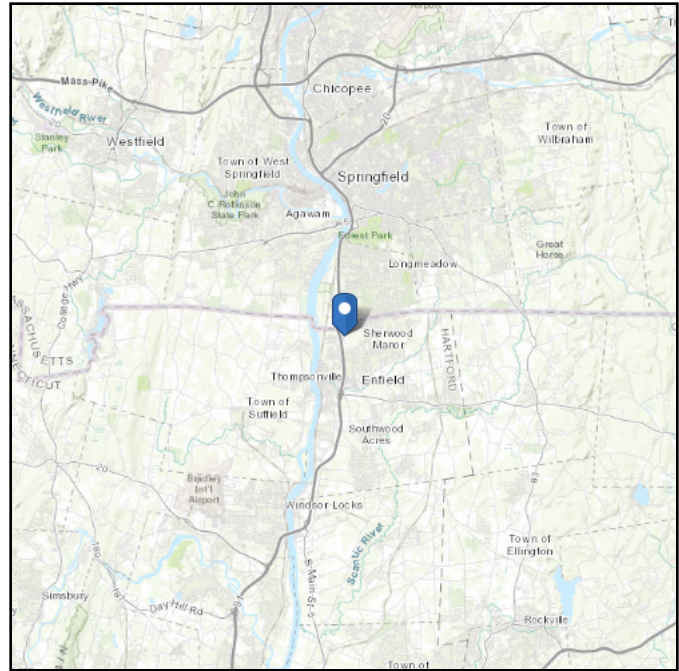
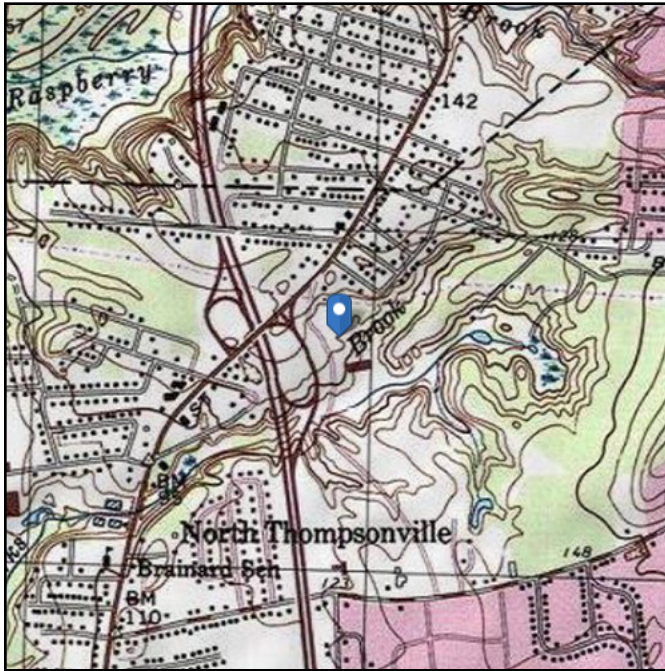
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 110.38 ft (NAVD 88)
Latitude: 42.020808
Longitude: -72.585164



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Sep 28 2021

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 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

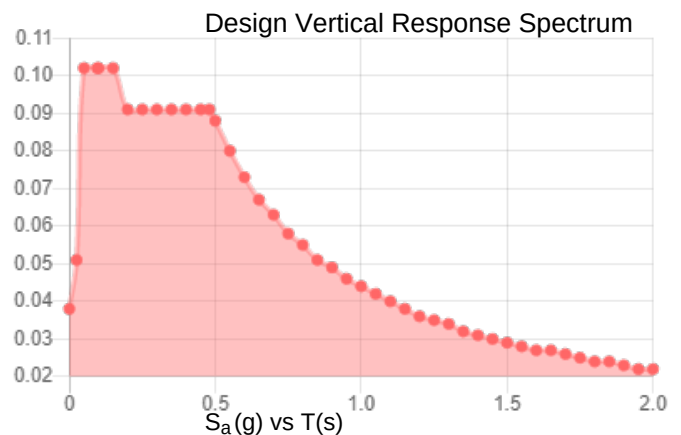
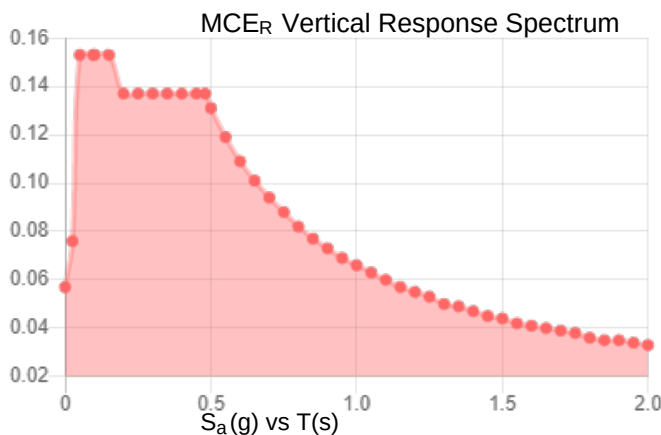
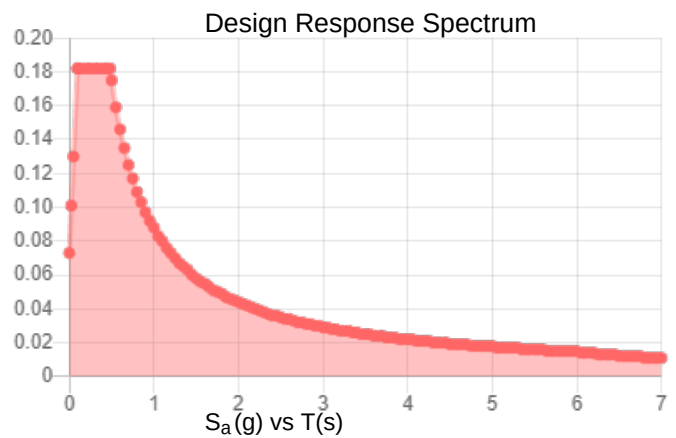
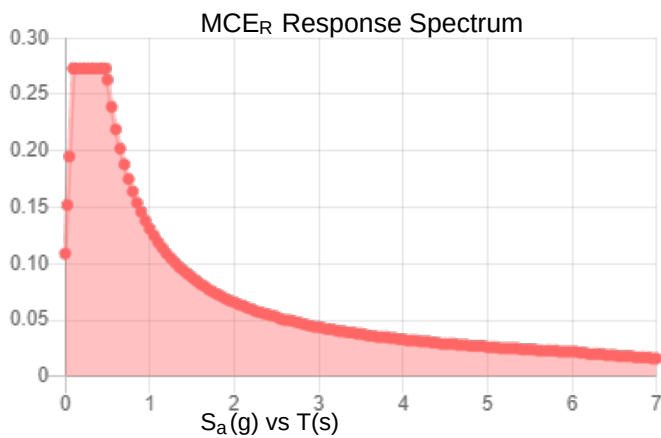
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.171	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.089
F_v :	2.4	PGA _M :	0.143
S_{MS} :	0.273	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.182	C_v :	0.7

Seismic Design Category B



Data Accessed:

Tue Sep 28 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Sep 28 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 500-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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