

Date: **May 26, 2021**



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00077A
Site Name: CT-CCI-T-876313

Crown Castle Designation: **BU Number:** 876313
Site Name: WEST JOHNSON AVE. BURNT HOUSE
JDE Job Number: 650067
Work Order Number: 1966750
Order Number: 556616 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1966750

Site Data: **1394 Meriden Waterbury Tpk, Southington, Hartford County, CT**
Latitude 41° 33' 51.39", Longitude -72° 53' 30.7"
160 Foot - Monopole Tower

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

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

LC5: Proposed Equipment Configuration

Sufficient Capacity – 99.9%

The structure has sufficient capacity once the loading changes, described in the Recommendations section of this report, are completed.

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

Structural analysis prepared by: Steven Hu

Respectfully submitted by:

Maribel Dentinger
Maribel Dentinger, P.E.
Senior Project Engineer

Maribel
Dentinger

Digitally signed by Maribel
Dentinger
Date: 2021.11.03 12:41:31
-04'00'

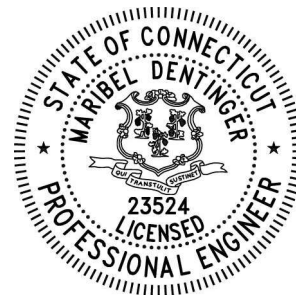


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

- Table 1 - Proposed Equipment Configuration
- Table 2 – Non-Carrier Equipment to be Conditionally Removed
- Table 3 - Other Considered Equipment

3) ANALYSIS PROCEDURE

- Table 4 - Documents Provided
- 3.1) Analysis Method
- 3.2) Assumptions

4) ANALYSIS RESULTS

- Table 5 - Section Capacity (Summary)
- Table 6 - Tower Component Stresses vs. Capacity - LC5
- 4.1) Recommendations

5) APPENDIX A

- tnxTower Output

6) APPENDIX B

- Base Level Drawing

7) APPENDIX C

- Additional Calculations

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by Summit. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 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)
119.0	119.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-K6MHDX-9-96 (3)		

Table 2 – Non-Carrier Equipment to be Conditionally Removed

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
119.0	119.0	3	andrew	HBX-6516DS-VTM w/ Mount Pipe	6	1-5/8
		1	tower mounts	T-Arm Mount [TA 601-3]	1	3/8

Table 3 - 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)
157.0	158.0	3	cci antennas	HPA-85R-BUU-H8 w/ Mount Pipe	3 8 6	3/8 3/4 1-5/8
		3	cci antennas	TPA-65R-LCUUUU-H8-K w/ Mount Pipe		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		3	ericsson	RRUS-11		
		3	kathrein	800 10121 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	kathrein	80010966 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		4	raycap	DC6-48-60-18-8F		
	157.0	3	sitepro1	VFA12-SD		
150.0	150.0	1	tower mounts	Side Arm Mount [SO 103-3]	-	-
	148.0	3	alcatel lucent	800MHZ 2X50W RRH W/FILTER		
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
148.0	148.0	3	alcatel lucent	TD-RRH8X20-25	4	1-1/4
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		3	rfs celwave	IBC1900BB-1		
		3	rfs celwave	IBC1900HG-2A		
		1	tower mounts	Miscellaneous [NA 510-1]		
		1	tower mounts	Platform Mount [LP 1201-1]		
138.0	142.0	1	lucent	KS24019-L112A	1 6 1	1/2 1-5/8 2-1/4
	138.0	6	antel	LPA-80063-6CF-EDIN-2 w/ Mount Pipe		
		6	commscope	NNHH-65B-R4 w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	Platform Mount [LP 303-1_KCKR-HR-1]		
127.0	129.0	3	commscope	LNx-6515DS-VTM w/ Mount Pipe	1 6	1-1/4 1-5/8
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 11 B12		
	127.0	1	tower mounts	Platform Mount [LP 1201-1]		
48.0	50.0	1	lucent	KS24019-L112A	1	1/2
	48.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	5939573	CCISITES
4-POST-MODIFICATION INSPECTION	5617077	CCISITES
4-POST-MODIFICATION INSPECTION	5380973	CCISITES
4-POST-MODIFICATION INSPECTION	4600286	CCISITES
4-POST-MODIFICATION INSPECTION	4077468	CCISITES
4-POST-MODIFICATION INSPECTION	3846956	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1633746	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2134246	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5266558	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5105790	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4094328	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4077469	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3348783	CCISITES

3.1) Analysis Method

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

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 included 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. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP10.75x10.75x0.349	Pole	21.0%	Pass
155 - 150	Pole	TP10.75x10.75x0.349	Pole	58.0%	Pass
150 - 148	Pole	TP10.75x10.75x0.349	Pole	74.6%	Pass
148 - 143	Pole	TP23.81x23x0.25	Pole	22.3%	Pass
143 - 138	Pole	TP24.62x23.81x0.25	Pole	30.4%	Pass

138 - 133	Pole	TP25.43x24.62x0.25	Pole	42.1%	Pass
133 - 128	Pole	TP26.24x25.43x0.25	Pole	52.3%	Pass
128 - 123	Pole	TP27.05x26.24x0.25	Pole	63.6%	Pass
123 - 118	Pole	TP27.86x27.05x0.25	Pole	74.0%	Pass
118 - 114.75	Pole	TP28.994x27.86x0.25	Pole	80.8%	Pass
114.75 - 109.75	Pole	TP28.696x27.887x0.3125	Pole	72.3%	Pass
109.75 - 105.33	Pole	TP29.412x28.696x0.3125	Pole	78.0%	Pass
105.33 - 105.08	Pole + Reinf.	TP29.453x29.412x0.4688	Reinf. 5 Tension Rupture	74.2%	Pass
105.08 - 100.08	Pole + Reinf.	TP30.263x29.453x0.4625	Reinf. 5 Tension Rupture	80.5%	Pass
100.08 - 95.08	Pole + Reinf.	TP31.073x30.263x0.4625	Reinf. 5 Tension Rupture	86.2%	Pass
95.08 - 90.08	Pole + Reinf.	TP31.883x31.073x0.45	Reinf. 5 Tension Rupture	91.4%	Pass
90.08 - 85.08	Pole + Reinf.	TP32.693x31.883x0.45	Reinf. 5 Tension Rupture	96.3%	Pass
85.08 - 81	Pole + Reinf.	TP34.042x32.693x0.45	Reinf. 5 Tension Rupture	99.9%	Pass
81 - 75.75	Pole	TP33.579x32.729x0.375	Pole	84.3%	Pass
75.75 - 70.75	Pole	TP34.389x33.579x0.375	Pole	86.8%	Pass
70.75 - 70.58	Pole	TP34.416x34.389x0.375	Pole	86.9%	Pass
70.58 - 70.33	Pole + Reinf.	TP34.457x34.416x0.675	Reinf. 4 Tension Rupture	76.0%	Pass
70.33 - 70	Pole + Reinf.	TP34.51x34.457x0.675	Reinf. 4 Tension Rupture	76.2%	Pass
70 - 69.75	Pole	TP34.551x34.51x0.375	Pole	87.2%	Pass
69.75 - 64.75	Pole	TP35.361x34.551x0.375	Pole	89.4%	Pass
64.75 - 59.75	Pole	TP36.171x35.361x0.375	Pole	91.4%	Pass
59.75 - 54.75	Pole	TP36.981x36.171x0.375	Pole	93.5%	Pass
54.75 - 49.75	Pole	TP37.791x36.981x0.375	Pole	95.5%	Pass
49.75 - 48	Pole	TP38.884x37.791x0.375	Pole	96.2%	Pass
48 - 42	Pole	TP38.296x37.324x0.4375	Pole	86.3%	Pass
42 - 37	Pole	TP39.106x38.296x0.4375	Pole	87.2%	Pass
37 - 32	Pole	TP39.916x39.106x0.4375	Pole	88.0%	Pass
32 - 27.91	Pole	TP40.579x39.916x0.4375	Pole	88.5%	Pass
27.91 - 27.66	Pole + Reinf.	TP40.619x40.579x0.675	Reinf. 6 Tension Rupture	86.4%	Pass
27.66 - 27.25	Pole + Reinf.	TP40.686x40.619x0.675	Reinf. 6 Tension Rupture	86.5%	Pass
27.25 - 26.98	Pole + Reinf.	TP40.729x40.686x0.675	Reinf. 1 Tension Rupture	84.6%	Pass
26.98 - 26.83	Pole + Reinf.	TP40.754x40.729x0.6625	Reinf. 1 Tension Rupture	84.7%	Pass
26.83 - 21.83	Pole + Reinf.	TP41.564x40.754x0.6625	Reinf. 1 Tension Rupture	85.8%	Pass
21.83 - 16.83	Pole + Reinf.	TP42.374x41.564x0.6625	Reinf. 1 Tension Rupture	86.8%	Pass
16.83 - 16	Pole + Reinf.	TP42.508x42.374x0.6625	Reinf. 1 Tension Rupture	86.9%	Pass
16 - 15.75	Pole + Reinf.	TP42.549x42.508x0.8125	Reinf. 7 Tension Rupture	77.9%	Pass
15.75 - 14.75	Pole + Reinf.	TP42.711x42.549x0.8125	Reinf. 7 Tension Rupture	78.1%	Pass
14.75 - 14.5	Pole + Reinf.	TP42.751x42.711x0.4875	Pole	88.7%	Pass
14.5 - 12.08	Pole + Reinf.	TP43.143x42.751x0.4875	Pole	89.1%	Pass

12.08 - 11.83	Pole + Reinf.	TP43.184x43.143x0.7375	Reinf. 1 Tension Rupture	79.8%	Pass
11.83 - 10	Pole + Reinf.	TP43.48x43.184x0.7375	Reinf. 1 Tension Rupture	80.1%	Pass
10 - 9.75	Pole + Reinf.	TP43.521x43.48x0.7375	Reinf. 1 Tension Rupture	80.1%	Pass
9.75 - 4.75	Pole + Reinf.	TP44.331x43.521x0.725	Reinf. 1 Tension Rupture	81.0%	Pass
4.75 - 0	Pole + Reinf.	TP45.1x44.331x0.7125	Reinf. 1 Tension Rupture	81.7%	Pass
				Summary	
			Pole	96.2%	Pass
			Reinforcement	99.9%	Pass
			Overall	99.9%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Extension Connection	148	56.2	Pass
1	Anchor Rods	0	74.6	Pass
1	Base Plate	0	61.2	Pass
1	Base Foundation (Structure)	0	77.6	Pass
1	Base Foundation (Soil Interaction)	0	70.2	Pass

Structure Rating (max from all components) =	99.9%
---	--------------

Notes:

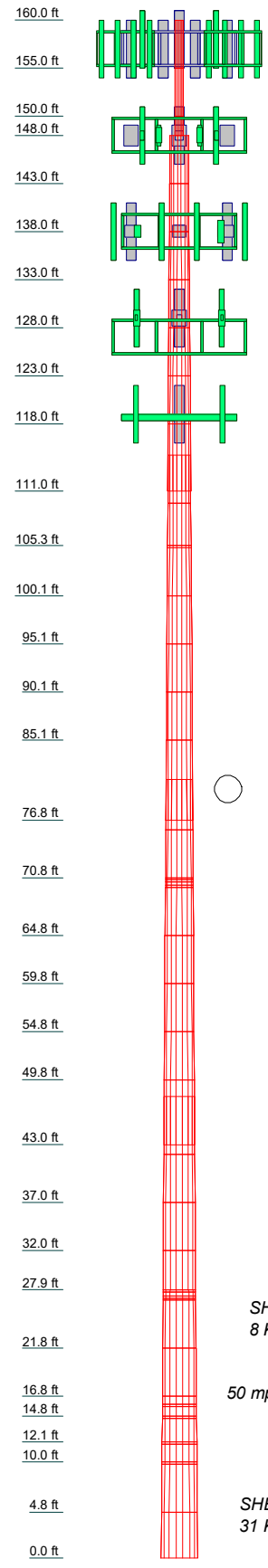
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

Once the equipment in Table 2 is removed, 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

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.2
2	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.2
3	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.1
4	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.3
5	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.3
6	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.3
7	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.3
8	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.4
9	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.4
10	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.4
11	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.5
12	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.5
13	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.4
14	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
15	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
16	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
17	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
18	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
19	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.3
20	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
21	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
22	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
23	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
24	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
25	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
26	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
27	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
28	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.7
29	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.0
30	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.0
31	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.9
32	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.9
33	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	0.8
34	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
35	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
36	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
37	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
38	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
39	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
40	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
41	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
42	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
43	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
44	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.4
45	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.5
46	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.5
47	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.5
48	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.5
49	5.00	0	0	3.75	7500.7500	7500.7500	A53-B-35	1.5



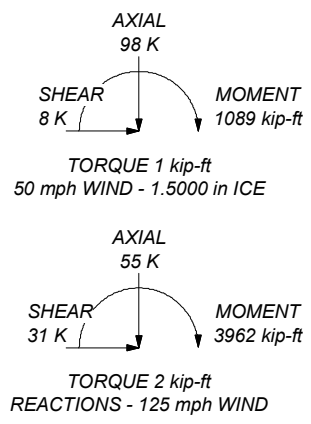
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi
A607-60	60 ksi	75 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 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.9%

ALL REACTIONS ARE FACTORED



Crown Castle
 2000 Corporate Drive
 Canonsburg, PA 15317
 The Pathway to Possible Phone: (724) 416-2000 FAX: (724) 416-4623

Job: 876313	Project:	
Client: Crown Castle	Drawn by: Steven Hu	App'd:
Code: TIA-222-H	Date: 05/26/21	Scale: NTS
Path: C:\Users\SHU\Documents\WFH\876313\WD_1966750 - SAIProd\876313R.dwg	Dwg No. E-1	

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: 133.00 ft.
- Basic wind speed of 125 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.
- TOWER RATING: 99.9%.
- 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">Poles</div> ✓ 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	160.00-155.00	5.00	0.00	Round	10.7500	10.7500	0.3490		A53-B-35 (35 ksi)
L2	155.00-150.00	5.00	0.00	Round	10.7500	10.7500	0.3490		A53-B-35 (35 ksi)
L3	150.00-148.00	2.00	0.00	Round	10.7500	10.7500	0.3490		A53-B-35 (35 ksi)
L4	148.00-143.00	5.00	0.00	18	23.0000	23.8100	0.2500	1.0000	A607-60 (60 ksi)
L5	143.00-138.00	5.00	0.00	18	23.8100	24.6200	0.2500	1.0000	A607-60 (60 ksi)
L6	138.00-133.00	5.00	0.00	18	24.6200	25.4300	0.2500	1.0000	A607-60 (60 ksi)
L7	133.00-128.00	5.00	0.00	18	25.4300	26.2400	0.2500	1.0000	A607-60 (60 ksi)
L8	128.00-123.00	5.00	0.00	18	26.2400	27.0500	0.2500	1.0000	A607-60 (60 ksi)
L9	123.00-118.00	5.00	0.00	18	27.0500	27.8600	0.2500	1.0000	A607-60 (60 ksi)
L10	118.00-111.00	7.00	3.75	18	27.8600	28.9940	0.2500	1.0000	A607-60 (60 ksi)
L11	111.00-109.75	5.00	0.00	18	27.8865	28.6964	0.3125	1.2500	A607-60 (60 ksi)
L12	109.75-105.33	4.42	0.00	18	28.6964	29.4124	0.3125	1.2500	A607-60 (60 ksi)
L13	105.33-105.08	0.25	0.00	18	29.4124	29.4529	0.4688	1.8750	A607-60 (60 ksi)
L14	105.08-100.08	5.00	0.00	18	29.4529	30.2628	0.4625	1.8500	A607-60 (60 ksi)
L15	100.08-95.08	5.00	0.00	18	30.2628	31.0728	0.4625	1.8500	A607-60 (60 ksi)
L16	95.08-90.08	5.00	0.00	18	31.0728	31.8827	0.4500	1.8000	A607-60 (60 ksi)
L17	90.08-85.08	5.00	0.00	18	31.8827	32.6926	0.4500	1.8000	A607-60 (60 ksi)
L18	85.08-76.75	8.33	4.25	18	32.6926	34.0420	0.4500	1.8000	A607-60 (60 ksi)
L19	76.75-75.75	5.25	0.00	18	32.7286	33.5790	0.3750	1.5000	A607-65 (65 ksi)
L20	75.75-70.75	5.00	0.00	18	33.5790	34.3889	0.3750	1.5000	A607-65 (65 ksi)
L21	70.75-70.58	0.17	0.00	18	34.3889	34.4164	0.3750	1.5000	A607-65 (65 ksi)
L22	70.58-70.33	0.25	0.00	18	34.4164	34.4569	0.6750	2.7000	A607-65 (65 ksi)
L23	70.33-70.00	0.33	0.00	18	34.4569	34.5104	0.6750	2.7000	A607-65 (65 ksi)
L24	70.00-69.75	0.25	0.00	18	34.5104	34.5509	0.3750	1.5000	A607-65 (65 ksi)
L25	69.75-64.75	5.00	0.00	18	34.5509	35.3608	0.3750	1.5000	A607-65 (65 ksi)
L26	64.75-59.75	5.00	0.00	18	35.3608	36.1707	0.3750	1.5000	A607-65 (65 ksi)
L27	59.75-54.75	5.00	0.00	18	36.1707	36.9807	0.3750	1.5000	A607-65 (65 ksi)
L28	54.75-49.75	5.00	0.00	18	36.9807	37.7906	0.3750	1.5000	A607-65 (65 ksi)
L29	49.75-43.00	6.75	5.00	18	37.7906	38.8840	0.3750	1.5000	A607-65 (65 ksi)
L30	43.00-42.00	6.00	0.00	18	37.3241	38.2961	0.4375	1.7500	A607-65 (65 ksi)
L31	42.00-37.00	5.00	0.00	18	38.2961	39.1061	0.4375	1.7500	A607-65 (65 ksi)
L32	37.00-32.00	5.00	0.00	18	39.1061	39.9160	0.4375	1.7500	A607-65 (65 ksi)
L33	32.00-27.91	4.09	0.00	18	39.9160	40.5786	0.4375	1.7500	A607-65 (65 ksi)
L34	27.91-27.66	0.25	0.00	18	40.5786	40.6191	0.6750	2.7000	A607-65 (65 ksi)
L35	27.66-27.25	0.41	0.00	18	40.6191	40.6855	0.6750	2.7000	A607-65

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
L36	27.25-26.98	0.27	0.00	18	40.6855	40.7293	0.6750	2.7000	(65 ksi) A607-65
L37	26.98-26.83	0.15	0.00	18	40.7293	40.7536	0.6625	2.6500	(65 ksi) A607-65
L38	26.83-21.83	5.00	0.00	18	40.7536	41.5636	0.6625	2.6500	(65 ksi) A607-65
L39	21.83-16.83	5.00	0.00	18	41.5636	42.3736	0.6625	2.6500	(65 ksi) A607-65
L40	16.83-16.00	0.83	0.00	18	42.3736	42.5080	0.6625	2.6500	(65 ksi) A607-65
L41	16.00-15.75	0.25	0.00	18	42.5080	42.5485	0.8125	3.2500	(65 ksi) A607-65
L42	15.75-14.75	1.00	0.00	18	42.5485	42.7105	0.8125	3.2500	(65 ksi) A607-65
L43	14.75-14.50	0.25	0.00	18	42.7105	42.7510	0.4875	1.9500	(65 ksi) A607-65
L44	14.50-12.08	2.42	0.00	18	42.7510	43.1431	0.4875	1.9500	(65 ksi) A607-65
L45	12.08-11.83	0.25	0.00	18	43.1431	43.1836	0.7375	2.9500	(65 ksi) A607-65
L46	11.83-10.00	1.83	0.00	18	43.1836	43.4800	0.7375	2.9500	(65 ksi) A607-65
L47	10.00-9.75	0.25	0.00	18	43.4800	43.5205	0.7375	2.9500	(65 ksi) A607-65
L48	9.75-4.75	5.00	0.00	18	43.5205	44.3305	0.7250	2.9000	(65 ksi) A607-65
L49	4.75-0.00	4.75		18	44.3305	45.1000	0.7125	2.8500	(65 ksi) A607-65

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	10.7500	11.4038	154.3829	3.6794	5.3750	28.7224	308.7659	5.6985	0.0000	0
L2	10.7500	11.4038	154.3829	3.6794	5.3750	28.7224	308.7659	5.6985	0.0000	0
L3	10.7500	11.4038	154.3829	3.6794	5.3750	28.7224	308.7659	5.6985	0.0000	0
L4	23.3162	18.0521	1180.3983	8.0762	11.6840	101.0269	2362.3498	9.0278	3.6080	14.432
L5	24.1387	18.6949	1311.0228	8.3638	12.0955	108.3895	2623.7706	9.3492	3.7506	15.002
L6	24.9612	19.3376	1450.9451	8.6514	12.5070	116.0110	2903.7993	9.6706	3.8931	15.572
L7	25.7837	19.9803	1600.4848	8.9389	12.9184	123.8915	3203.0756	9.9921	4.0357	16.143
L8	26.6062	20.6231	1759.9617	9.2264	13.3299	132.0309	3522.2392	10.3135	4.1782	16.713
L9	27.4287	21.2658	1929.6954	9.5140	13.7414	140.4293	3861.9300	10.6349	4.3208	17.283
L10	28.2512	21.9085	2110.0056	9.8016	14.1529	149.0867	4222.7875	10.9563	4.4634	17.853
L11	29.0909	22.8084	2380.8169	10.2041	14.7290	161.6420	4764.7665	11.4063	4.6629	18.652
L12	29.8179	28.1533	2865.5776	10.0763	14.5778	196.5715	5734.9257	14.0793	4.5006	14.402
L13	29.7938	43.0627	4557.7056	10.2750	14.9415	305.0365	9121.4084	21.5355	4.3516	9.283
L14	29.8359	43.7462	4908.1754	10.2916	14.9621	305.8975	9159.7488	21.5656	4.3587	9.299
L15	30.6584	43.7462	4908.1754	10.5791	15.3735	319.2615	9822.8090	21.8772	4.5123	9.756
	31.4808	44.9351	5319.3439	10.8666	15.7850	336.9878	10645.687	22.4718	4.6548	10.064

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
L16	31.4827	43.7385	5181.9209	10.8711	15.7850	328.2819	10370.660	21.8734	4.6768	10.393
	32.3051	44.8953	5604.0576	11.1586	16.1964	346.0060	11215.489	22.4519	4.8194	10.71
L17	32.3051	44.8953	5604.0576	11.1586	16.1964	346.0060	11215.489	22.4519	4.8194	10.71
	33.1276	46.0522	6048.5191	11.4461	16.6079	364.1960	12104.997	23.0305	4.9619	11.026
L18	33.1276	46.0522	6048.5191	11.4461	16.6079	364.1960	12104.997	23.0305	4.9619	11.026
	34.4977	47.9795	6840.1318	11.9252	17.2933	395.5357	13689.264	23.9943	5.1994	11.554
L19	33.8747	38.5088	5092.6250	11.4855	16.6261	306.3029	10191.951	19.2581	5.1002	13.601
	34.0391	39.5210	5504.8569	11.7874	17.0581	322.7118	11016.957	19.7643	5.2499	14
L20	34.0391	39.5210	5504.8569	11.7874	17.0581	322.7118	11016.957	19.7643	5.2499	14
	34.8616	40.4851	5917.5939	12.0749	17.4696	338.7374	11842.974	20.2464	5.3924	14.38
L21	34.8616	40.4851	5917.5939	12.0749	17.4696	338.7374	11842.974	20.2464	5.3924	14.38
	34.8895	40.5178	5931.9782	12.0847	17.4836	339.2890	11871.761	20.2628	5.3973	14.393
L22	34.8432	72.2894	10397.744	11.9782	17.4836	594.7157	20809.169	36.1515	4.8693	7.214
	34.8844	72.3761	10435.226	11.9926	17.5041	596.1581	20884.184	36.1949	4.8764	7.224
L23	34.8844	72.3761	10435.226	11.9926	17.5041	596.1581	20884.184	36.1949	4.8764	7.224
	34.9386	72.4906	10484.842	12.0116	17.5313	598.0648	20983.480	36.2522	4.8858	7.238
L24	34.9849	40.6297	5981.2291	12.1181	17.5313	341.1747	11970.328	20.3187	5.4138	14.437
	35.0260	40.6779	6002.5418	12.1324	17.5519	341.9891	12012.981	20.3428	5.4210	14.456
L25	35.0260	40.6779	6002.5418	12.1324	17.5519	341.9891	12012.981	20.3428	5.4210	14.456
	35.8485	41.6419	6439.4940	12.4200	17.9633	358.4807	12887.461	20.8249	5.5635	14.836
L26	35.8485	41.6419	6439.4940	12.4200	17.9633	358.4807	12887.461	20.8249	5.5635	14.836
	36.6709	42.6059	6897.1530	12.7075	18.3747	375.3606	13803.381	21.3070	5.7061	15.216
L27	36.6709	42.6059	6897.1530	12.7075	18.3747	375.3606	13803.381	21.3070	5.7061	15.216
	37.4933	43.5699	7375.9980	12.9950	18.7862	392.6289	14761.701	21.7891	5.8486	15.596
L28	37.4933	43.5699	7375.9980	12.9950	18.7862	392.6289	14761.701	21.7891	5.8486	15.596
	38.3157	44.5339	7876.5084	13.2825	19.1976	410.2856	15763.380	22.2712	5.9911	15.976
L29	38.3157	44.5339	7876.5084	13.2825	19.1976	410.2856	15763.380	22.2712	5.9911	15.976
	39.4260	45.8353	8587.4133	13.6707	19.7531	434.7381	17186.126	22.9220	6.1836	16.49
L30	38.6549	51.2216	8804.9595	13.0947	18.9606	464.3812	17621.504	25.6157	5.7990	13.255
	38.8194	52.5713	9519.5154	13.4398	19.4544	489.3245	19051.556	26.2907	5.9701	13.646
L31	38.8194	52.5713	9519.5154	13.4398	19.4544	489.3245	19051.556	26.2907	5.9701	13.646
	39.6418	53.6961	10143.697	13.7273	19.8659	510.6091	20300.743	26.8532	6.1127	13.972
L32	39.6418	53.6961	10143.697	13.7273	19.8659	510.6091	20300.743	26.8532	6.1127	13.972
	40.4643	54.8209	10794.585	14.0149	20.2774	532.3469	21603.374	27.4157	6.2552	14.298
L33	40.4643	54.8209	10794.585	14.0149	20.2774	532.3469	21603.374	27.4157	6.2552	14.298

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
	41.1371	55.7410	11347.2590	14.2501	20.6139	550.4653	22709.4491	27.8758	6.3718	14.564
L34	41.1005	85.4915	17198.2840	14.1658	20.6139	834.3036	34419.1979	42.7539	5.9538	8.821
	41.1416	85.5783	17250.7026	14.1802	20.6345	836.0121	34524.1042	42.7973	5.9610	8.831
L35	41.1416	85.5783	17250.7026	14.1802	20.6345	836.0121	34524.1042	42.7973	5.9610	8.831
	41.2091	85.7206	17336.8996	14.2037	20.6683	838.8178	34696.6115	42.8684	5.9727	8.848
L36	41.2091	85.7206	17336.8996	14.2037	20.6683	838.8178	34696.6115	42.8684	5.9727	8.848
	41.2535	85.8143	17393.8199	14.2193	20.6905	840.6680	34810.5271	42.9153	5.9804	8.86
L37	41.2554	84.2514	17087.7002	14.2237	20.6905	825.8728	34197.8848	42.1337	6.0024	9.06
	41.2801	84.3025	17118.8092	14.2323	20.7028	826.8830	34260.1437	42.1593	6.0066	9.067
L38	41.2801	84.3025	17118.8092	14.2323	20.7028	826.8830	34260.1437	42.1593	6.0066	9.067
	42.1026	86.0058	18177.5090	14.5199	21.1143	860.9101	36378.9364	43.0110	6.1492	9.282
L39	42.1026	86.0058	18177.5090	14.5199	21.1143	860.9101	36378.9364	43.0110	6.1492	9.282
	42.9250	87.7090	19278.9826	14.8074	21.5258	895.6233	38583.3330	43.8628	6.2917	9.497
L40	42.9250	87.7090	19278.9826	14.8074	21.5258	895.6233	38583.3330	43.8628	6.2917	9.497
	43.0616	87.9917	19466.0260	14.8552	21.5941	901.4521	38957.6659	44.0042	6.3154	9.533
L41	43.0384	107.5275	23617.6163	14.8019	21.5941	1093.7081	47266.3093	53.7740	6.0514	7.448
	43.0796	107.6320	23686.5038	14.8163	21.6147	1095.8541	47404.1750	53.8262	6.0585	7.457
L42	43.0796	107.6320	23686.5038	14.8163	21.6147	1095.8541	47404.1750	53.8262	6.0585	7.457
	43.2441	108.0498	23963.3935	14.8738	21.6969	1104.4593	47958.3186	54.0351	6.0871	7.492
L43	43.2942	65.3327	14715.2264	14.9892	21.6969	678.2165	29449.8155	32.6726	6.6591	13.66
	43.3353	65.3954	14757.6108	15.0036	21.7175	679.5256	29534.6401	32.7039	6.6662	13.674
L44	43.3353	65.3954	14757.6108	15.0036	21.7175	679.5256	29534.6401	32.7039	6.6662	13.674
	43.7334	66.0020	15172.1067	15.1427	21.9167	692.2632	30364.1772	33.0073	6.7352	13.816
L45	43.6948	99.2640	22551.4648	15.0540	21.9167	1028.9638	45132.6035	49.6414	6.2952	8.536
	43.7360	99.3588	22616.1402	15.0684	21.9372	1030.9470	45262.0393	49.6888	6.3023	8.545
L46	43.7360	99.3588	22616.1402	15.0684	21.9372	1030.9470	45262.0393	49.6888	6.3023	8.545
	44.0370	100.0527	23093.3333	15.1736	22.0878	1045.5221	46217.0533	50.0359	6.3545	8.616
L47	44.0370	100.0527	23093.3333	15.1736	22.0878	1045.5221	46217.0533	50.0359	6.3545	8.616
	44.0781	100.1476	23159.0400	15.1880	22.1084	1047.5212	46348.5533	50.0833	6.3616	8.626
L48	44.0800	98.4789	22786.4750	15.1924	22.1084	1030.6695	45602.9330	49.2488	6.3836	8.805
	44.9025	100.3428	24104.9596	15.4800	22.5199	1070.3850	48241.6371	50.1809	6.5262	9.002
L49	44.9045	98.6410	23709.7351	15.4844	22.5199	1052.8349	47450.6681	49.3299	6.5482	9.19
	45.6858	100.3812	24986.8378	15.7576	22.9108	1090.6139	50006.5539	50.2001	6.6836	9.38

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 160.00-155.00				1	1	1			
L2 155.00-150.00				1	1	1			
L3 150.00-148.00				1	1	1			
L4 148.00-143.00				1	1	1			
L5 143.00-138.00				1	1	1			
L6 138.00-133.00				1	1	1			
L7 133.00-128.00				1	1	1			
L8 128.00-123.00				1	1	1			
L9 123.00-118.00				1	1	1			
L10 118.00-111.00				1	1	1			
L11 111.00-109.75				1	1	1			
L12 109.75-105.33				1	1	1			
L13 105.33-105.08				1	1	0.957589			
L14 105.08-100.08				1	1	0.962312			
L15 100.08-95.08				1	1	0.954727			
L16 95.08-90.08				1	1	0.973467			
L17 90.08-85.08				1	1	0.966458			
L18 85.08-76.75				1	1	0.960995			
L19 76.75-75.75				1	1	1			
L20 75.75-70.75				1	1	1			
L21 70.75-70.58				1	1	1			
L22 70.58-70.33				1	1	1.0434			
L23 70.33-70.00				1	1	1.04263			
L24 70.00-69.75				1	1	1			
L25 69.75-64.75				1	1	1			
L26 64.75-59.75				1	1	1			
L27 59.75-54.75				1	1	1			
L28 54.75-49.75				1	1	1			
L29 49.75-43.00				1	1	1			
L30 43.00-42.00				1	1	1			
L31 42.00-37.00				1	1	1			
L32 37.00-32.00				1	1	1			
L33 32.00-27.91				1	1	1			
L34 27.91-				1	1	1.03582			

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							
27.66									
L35 27.66-27.25				1	1	1.03517			
L36 27.25-26.98				1	1	0.948106			
L37 26.98-26.83				1	1	0.965509			
L38 26.83-21.83				1	1	0.959466			
L39 21.83-16.83				1	1	0.953658			
L40 16.83-16.00				1	1	0.952716			
L41 16.00-15.75				1	1	0.946633			
L42 15.75-14.75				1	1	0.945055			
L43 14.75-14.50				1	1	1.15755			
L44 14.50-12.08				1	1	1.15516			
L45 12.08-11.83				1	1	0.938412			
L46 11.83-10.00				1	1	0.936018			
L47 10.00-9.75				1	1	0.935693			
L48 9.75-4.75				1	1	0.945082			
L49 4.75-0.00				1	1	0.955365			

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
127 LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	127.00 - 0.00	6	6	0.280 0.450	1.9800		0.82
** **										
MP306	A	No	Surface Af (CaAa)	30.50 - 0.50	1	1	0.330 0.330	6.8900	19.0000	0.00
MP306	C	No	Surface Af (CaAa)	30.50 - 0.50	1	1	0.330 0.330	6.8900	19.0000	0.00
MP306	B	No	Surface Af (CaAa)	15.50 - 0.50	1	1	0.000 0.000	6.8900	19.0000	0.00
MP306	C	No	Surface Af (CaAa)	15.50 - 0.50	1	1	-0.330 -0.330	6.8900	19.0000	0.00
MP306	B	No	Surface Af (CaAa)	31.33 - 11.33	1	1	0.330 0.330	6.8900	19.0000	0.00
MP305	A	No	Surface Af (CaAa)	73.00 - 43.00	1	1	0.330 0.330	5.3300	14.8400	0.00
MP305	B	No	Surface Af (CaAa)	73.00 - 43.00	1	1	0.330 0.330	5.3300	14.8400	0.00
MP305	C	No	Surface Af (CaAa)	73.00 - 43.00	1	1	0.330 0.330	5.3300	14.8400	0.00
MP304	A	No	Surface Af (CaAa)	106.75 - 76.75	1	1	0.330 0.330	4.7800	12.7800	0.00
MP304	B	No	Surface Af (CaAa)	106.75 - 76.75	1	1	0.330 0.330	4.7800	12.7800	0.00
MP304	C	No	Surface Af (CaAa)	106.75 - 76.75	1	1	0.330 0.330	4.7800	12.7800	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
6.5"x1.25" Flat Reinforcement	A	No	Surface Af (CaAa)	49.50 - 24.50	1	1	-0.167 -0.167	6.5000	15.5000	0.00
6.5"x1.25" Flat Reinforcement	B	No	Surface Af (CaAa)	49.50 - 24.50	1	1	-0.167 -0.167	6.5000	15.5000	0.00
6.5"x1.25" Flat Reinforcement	C	No	Surface Af (CaAa)	49.50 - 24.50	1	1	-0.167 -0.167	6.5000	15.5000	0.00
6"x1" Flat Reinforcement	A	No	Surface Af (CaAa)	18.00 - 8.00	1	1	-0.167 -0.167	6.0000	14.0000	0.00
6"x1" Flat Reinforcement	B	No	Surface Af (CaAa)	18.00 - 8.00	1	1	-0.167 -0.167	6.0000	14.0000	0.00
6"x1" Flat Reinforcement	C	No	Surface Af (CaAa)	18.00 - 8.00	1	1	-0.167 -0.167	6.0000	14.0000	0.00
6"x1" Flat Reinforcement	A	No	Surface Af (CaAa)	82.50 - 67.50	1	1	-0.330 -0.330	6.0000	14.0000	0.00
6"x1" Flat Reinforcement	B	No	Surface Af (CaAa)	82.50 - 67.50	1	1	0.000 0.000	6.0000	14.0000	0.00
6"x1" Flat Reinforcement	C	No	Surface Af (CaAa)	82.50 - 67.50	1	1	-0.330 -0.330	6.0000	14.0000	0.00
HSS6x6	A	No	Surface Af (CaAa)	155.50 - 140.00	1	1	0.000 0.000	6.0000	24.0000	0.00
HSS6x6	B	No	Surface Af (CaAa)	155.50 - 140.00	1	1	0.000 0.000	6.0000	24.0000	0.00
HSS6x6	C	No	Surface Af (CaAa)	155.50 - 140.00	1	1	0.000 0.000	6.0000	24.0000	0.00
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	119.00 - 0.00	1	1	0.000 0.000	1.6000		2.35

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CAAA	Weight
							ft ² /ft	plf
157								
LDF7-50A(1-5/8)	A	No	No	Inside Pole	157.00 - 0.00	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.82 0.82 0.82 0.82
FB-L98B-002-75000(3/8)	A	No	No	Inside Pole	157.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.06 0.06 0.06 0.06
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	157.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.06 0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	157.00 - 0.00	8	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.58 0.58 0.58
2" (Nominal) Conduit	A	No	No	Inside Pole	157.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.72 0.72 0.72 0.72
148								
HB114-1-08U4-M5J(1-1/4)	B	No	No	Inside Pole	148.00 - 0.00	3	No Ice 1/2" Ice 1" Ice 2" Ice	1.08 1.08 1.08 1.08
HB114-21U3M12-XXXF(1-1/4)	B	No	No	Inside Pole	148.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	1.22 1.22 1.22

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
							2" Ice	0.00	1.22
138 AL7-50(1-5/8)	B	No	No	Inside Pole	138.00 - 0.00	6	No Ice	0.00	0.52
							1/2" Ice	0.00	0.52
							1" Ice	0.00	0.52
							2" Ice	0.00	0.52
LCF214-50JA(2-1/4)	B	No	No	Inside Pole	138.00 - 0.00	1	No Ice	0.00	1.14
							1/2" Ice	0.00	1.14
							1" Ice	0.00	1.14
							2" Ice	0.00	1.14
LDF4-50A(1/2)	B	No	No	Inside Pole	138.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF7-50A(1-5/8)	A	No	No	Inside Pole	127.00 - 0.00	1	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
48 LDF4-50A(1/2)	B	No	No	Inside Pole	48.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
**									

Feed Line/Linear Appurtenances Section Areas

Tower Section	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
L1	160.00-155.00	A	0.000	0.000	0.474	0.000	0.02
		B	0.000	0.000	0.474	0.000	0.00
		C	0.000	0.000	0.474	0.000	0.00
L2	155.00-150.00	A	0.000	0.000	4.743	0.000	0.06
		B	0.000	0.000	4.743	0.000	0.00
		C	0.000	0.000	4.743	0.000	0.00
L3	150.00-148.00	A	0.000	0.000	1.897	0.000	0.02
		B	0.000	0.000	1.897	0.000	0.00
		C	0.000	0.000	1.897	0.000	0.00
L4	148.00-143.00	A	0.000	0.000	4.743	0.000	0.06
		B	0.000	0.000	4.743	0.000	0.02
		C	0.000	0.000	4.743	0.000	0.00
L5	143.00-138.00	A	0.000	0.000	2.846	0.000	0.06
		B	0.000	0.000	2.846	0.000	0.02
		C	0.000	0.000	2.846	0.000	0.00
L6	138.00-133.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L7	133.00-128.00	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L8	128.00-123.00	A	0.000	0.000	4.752	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L9	123.00-118.00	A	0.000	0.000	5.940	0.000	0.08
		B	0.000	0.000	0.160	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L10	118.00-111.00	A	0.000	0.000	8.316	0.000	0.12
		B	0.000	0.000	1.120	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.00
L11	111.00-109.75	A	0.000	0.000	1.485	0.000	0.02
		B	0.000	0.000	0.200	0.000	0.01

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
L12	109.75-105.33	C	0.000	0.000	0.000	0.000	0.00
		A	0.000	0.000	6.382	0.000	0.07
		B	0.000	0.000	1.838	0.000	0.05
L13	105.33-105.08	C	0.000	0.000	1.131	0.000	0.00
		A	0.000	0.000	0.496	0.000	0.00
		B	0.000	0.000	0.239	0.000	0.00
		C	0.000	0.000	0.199	0.000	0.00
L14	105.08-100.08	A	0.000	0.000	9.923	0.000	0.08
		B	0.000	0.000	4.783	0.000	0.06
		C	0.000	0.000	3.983	0.000	0.00
L15	100.08-95.08	A	0.000	0.000	9.923	0.000	0.08
		B	0.000	0.000	4.783	0.000	0.06
		C	0.000	0.000	3.983	0.000	0.00
L16	95.08-90.08	A	0.000	0.000	9.923	0.000	0.08
		B	0.000	0.000	4.783	0.000	0.06
		C	0.000	0.000	3.983	0.000	0.00
L17	90.08-85.08	A	0.000	0.000	9.923	0.000	0.08
		B	0.000	0.000	4.783	0.000	0.06
		C	0.000	0.000	3.983	0.000	0.00
L18	85.08-76.75	A	0.000	0.000	22.282	0.000	0.14
		B	0.000	0.000	13.719	0.000	0.09
		C	0.000	0.000	12.386	0.000	0.00
L19	76.75-75.75	A	0.000	0.000	2.188	0.000	0.02
		B	0.000	0.000	1.160	0.000	0.01
		C	0.000	0.000	1.000	0.000	0.00
L20	75.75-70.75	A	0.000	0.000	12.939	0.000	0.08
		B	0.000	0.000	7.799	0.000	0.06
		C	0.000	0.000	6.999	0.000	0.00
L21	70.75-70.58	A	0.000	0.000	0.523	0.000	0.00
		B	0.000	0.000	0.348	0.000	0.00
		C	0.000	0.000	0.321	0.000	0.00
L22	70.58-70.33	A	0.000	0.000	0.769	0.000	0.00
		B	0.000	0.000	0.512	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.00
L23	70.33-70.00	A	0.000	0.000	1.015	0.000	0.01
		B	0.000	0.000	0.676	0.000	0.00
		C	0.000	0.000	0.623	0.000	0.00
L24	70.00-69.75	A	0.000	0.000	0.769	0.000	0.00
		B	0.000	0.000	0.512	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.00
L25	69.75-64.75	A	0.000	0.000	12.632	0.000	0.08
		B	0.000	0.000	7.492	0.000	0.06
		C	0.000	0.000	6.692	0.000	0.00
L26	64.75-59.75	A	0.000	0.000	10.382	0.000	0.08
		B	0.000	0.000	5.242	0.000	0.06
		C	0.000	0.000	4.442	0.000	0.00
L27	59.75-54.75	A	0.000	0.000	10.382	0.000	0.08
		B	0.000	0.000	5.242	0.000	0.06
		C	0.000	0.000	4.442	0.000	0.00
L28	54.75-49.75	A	0.000	0.000	10.382	0.000	0.08
		B	0.000	0.000	5.242	0.000	0.06
		C	0.000	0.000	4.442	0.000	0.00
L29	49.75-43.00	A	0.000	0.000	21.057	0.000	0.11
		B	0.000	0.000	14.118	0.000	0.08
		C	0.000	0.000	13.038	0.000	0.00
L30	43.00-42.00	A	0.000	0.000	2.271	0.000	0.02
		B	0.000	0.000	1.243	0.000	0.01
		C	0.000	0.000	1.083	0.000	0.00
L31	42.00-37.00	A	0.000	0.000	11.357	0.000	0.08
		B	0.000	0.000	6.217	0.000	0.06
		C	0.000	0.000	5.417	0.000	0.00
L32	37.00-32.00	A	0.000	0.000	11.357	0.000	0.08
		B	0.000	0.000	6.217	0.000	0.06
		C	0.000	0.000	5.417	0.000	0.00
L33	32.00-27.91	A	0.000	0.000	12.264	0.000	0.07
		B	0.000	0.000	9.013	0.000	0.05
		C	0.000	0.000	7.405	0.000	0.00
L34	27.91-27.66	A	0.000	0.000	0.855	0.000	0.00
		B	0.000	0.000	0.598	0.000	0.00

Tower Section	Tower Elevation	Face	A_R	A_F	C_{AA} In Face	C_{AA} Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L35	27.66-27.25	C	0.000	0.000	0.558	0.000	0.00
		A	0.000	0.000	1.402	0.000	0.01
		B	0.000	0.000	0.981	0.000	0.00
L36	27.25-26.98	C	0.000	0.000	0.915	0.000	0.00
		A	0.000	0.000	0.923	0.000	0.00
		B	0.000	0.000	0.646	0.000	0.00
L37	26.98-26.83	C	0.000	0.000	0.603	0.000	0.00
		A	0.000	0.000	0.513	0.000	0.00
		B	0.000	0.000	0.359	0.000	0.00
L38	26.83-21.83	C	0.000	0.000	0.335	0.000	0.00
		A	0.000	0.000	14.206	0.000	0.08
		B	0.000	0.000	9.066	0.000	0.06
L39	21.83-16.83	C	0.000	0.000	8.266	0.000	0.00
		A	0.000	0.000	12.749	0.000	0.08
		B	0.000	0.000	7.609	0.000	0.06
L40	16.83-16.00	C	0.000	0.000	6.809	0.000	0.00
		A	0.000	0.000	2.696	0.000	0.01
		B	0.000	0.000	1.843	0.000	0.01
L41	16.00-15.75	C	0.000	0.000	1.710	0.000	0.00
		A	0.000	0.000	0.812	0.000	0.00
		B	0.000	0.000	0.555	0.000	0.00
L42	15.75-14.75	C	0.000	0.000	0.515	0.000	0.00
		A	0.000	0.000	3.248	0.000	0.02
		B	0.000	0.000	3.074	0.000	0.01
L43	14.75-14.50	C	0.000	0.000	2.914	0.000	0.00
		A	0.000	0.000	0.812	0.000	0.00
		B	0.000	0.000	0.839	0.000	0.00
L44	14.50-12.08	C	0.000	0.000	0.799	0.000	0.00
		A	0.000	0.000	7.861	0.000	0.04
		B	0.000	0.000	8.126	0.000	0.03
L45	12.08-11.83	C	0.000	0.000	7.739	0.000	0.00
		A	0.000	0.000	0.812	0.000	0.00
		B	0.000	0.000	0.839	0.000	0.00
L46	11.83-10.00	C	0.000	0.000	0.799	0.000	0.00
		A	0.000	0.000	5.945	0.000	0.03
		B	0.000	0.000	4.618	0.000	0.02
L47	10.00-9.75	C	0.000	0.000	5.852	0.000	0.00
		A	0.000	0.000	0.812	0.000	0.00
		B	0.000	0.000	0.552	0.000	0.00
L48	9.75-4.75	C	0.000	0.000	0.799	0.000	0.00
		A	0.000	0.000	13.278	0.000	0.08
		B	0.000	0.000	8.083	0.000	0.06
L49	4.75-0.00	C	0.000	0.000	13.025	0.000	0.00
		A	0.000	0.000	10.523	0.000	0.08
		B	0.000	0.000	5.594	0.000	0.05
		C	0.000	0.000	9.715	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A_R	A_F	C_{AA} In Face	C_{AA} Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	160.00-155.00	A	1.491	0.000	0.000	0.567	0.000	0.03
		B		0.000	0.000	0.567	0.000	0.01
		C		0.000	0.000	0.567	0.000	0.01
L2	155.00-150.00	A	1.486	0.000	0.000	5.665	0.000	0.14
		B		0.000	0.000	5.665	0.000	0.09
		C		0.000	0.000	5.665	0.000	0.09
L3	150.00-148.00	A	1.482	0.000	0.000	2.265	0.000	0.06
		B		0.000	0.000	2.265	0.000	0.03
		C		0.000	0.000	2.265	0.000	0.03
L4	148.00-143.00	A	1.479	0.000	0.000	5.661	0.000	0.14
		B		0.000	0.000	5.661	0.000	0.11
		C		0.000	0.000	5.661	0.000	0.09
L5	143.00-138.00	A	1.474	0.000	0.000	3.395	0.000	0.11
		B		0.000	0.000	3.395	0.000	0.07

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
L6	138.00-133.00	C	1.468	0.000	0.000	3.395	0.000	0.05
		A		0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.04
L7	133.00-128.00	C	1.463	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	0.000	0.000	0.04
L8	128.00-123.00	C	1.457	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	7.397	0.000	0.15
		B		0.000	0.000	0.000	0.000	0.04
L9	123.00-118.00	C	1.451	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	9.239	0.000	0.18
		B		0.000	0.000	0.450	0.000	0.05
L10	118.00-111.00	C	1.444	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	12.922	0.000	0.25
		B		0.000	0.000	3.141	0.000	0.12
L11	111.00-109.75	C	1.439	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	2.307	0.000	0.04
		B		0.000	0.000	0.561	0.000	0.02
L12	109.75-105.33	C	1.435	0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	9.688	0.000	0.17
		B		0.000	0.000	3.514	0.000	0.09
L13	105.33-105.08	C	1.432	0.000	0.000	1.539	0.000	0.01
		A		0.000	0.000	0.731	0.000	0.01
		B		0.000	0.000	0.382	0.000	0.01
L14	105.08-100.08	C	1.428	0.000	0.000	0.271	0.000	0.00
		A		0.000	0.000	14.622	0.000	0.23
		B		0.000	0.000	7.640	0.000	0.13
L15	100.08-95.08	C	1.421	0.000	0.000	5.411	0.000	0.05
		A		0.000	0.000	14.606	0.000	0.23
		B		0.000	0.000	7.625	0.000	0.13
L16	95.08-90.08	C	1.414	0.000	0.000	5.404	0.000	0.05
		A		0.000	0.000	14.589	0.000	0.23
		B		0.000	0.000	7.610	0.000	0.13
L17	90.08-85.08	C	1.406	0.000	0.000	5.397	0.000	0.05
		A		0.000	0.000	14.571	0.000	0.23
		B		0.000	0.000	7.595	0.000	0.13
L18	85.08-76.75	C	1.395	0.000	0.000	5.389	0.000	0.05
		A		0.000	0.000	31.256	0.000	0.43
		B		0.000	0.000	19.638	0.000	0.28
L19	76.75-75.75	C	1.386	0.000	0.000	15.981	0.000	0.14
		A		0.000	0.000	3.056	0.000	0.05
		B		0.000	0.000	1.661	0.000	0.03
L20	75.75-70.75	C	1.381	0.000	0.000	1.222	0.000	0.01
		A		0.000	0.000	17.870	0.000	0.25
		B		0.000	0.000	10.900	0.000	0.16
L21	70.75-70.58	C	1.376	0.000	0.000	8.719	0.000	0.08
		A		0.000	0.000	0.716	0.000	0.01
		B		0.000	0.000	0.479	0.000	0.01
L22	70.58-70.33	C	1.375	0.000	0.000	0.405	0.000	0.00
		A		0.000	0.000	1.053	0.000	0.01
		B		0.000	0.000	0.704	0.000	0.01
L23	70.33-70.00	C	1.375	0.000	0.000	0.596	0.000	0.01
		A		0.000	0.000	1.390	0.000	0.02
		B		0.000	0.000	0.930	0.000	0.01
L24	70.00-69.75	C	1.374	0.000	0.000	0.786	0.000	0.01
		A		0.000	0.000	1.053	0.000	0.01
		B		0.000	0.000	0.704	0.000	0.01
L25	69.75-64.75	C	1.369	0.000	0.000	0.596	0.000	0.01
		A		0.000	0.000	17.689	0.000	0.25
		B		0.000	0.000	10.722	0.000	0.16
L26	64.75-59.75	C	1.359	0.000	0.000	8.553	0.000	0.08
		A		0.000	0.000	14.923	0.000	0.23
		B		0.000	0.000	7.959	0.000	0.13
L27	59.75-54.75	C	1.347	0.000	0.000	5.800	0.000	0.05
		A		0.000	0.000	14.898	0.000	0.22
		B		0.000	0.000	7.936	0.000	0.13
L28	54.75-49.75	C	1.335	0.000	0.000	5.789	0.000	0.05
		A		0.000	0.000	14.870	0.000	0.22
		B		0.000	0.000	7.912	0.000	0.13

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
L29	49.75-43.00	C	1.319	0.000	0.000	5.777	0.000	0.05
		A		0.000	0.000	28.783	0.000	0.37
		B		0.000	0.000	19.394	0.000	0.25
L30	43.00-42.00	C	1.308	0.000	0.000	16.533	0.000	0.14
		A		0.000	0.000	3.162	0.000	0.04
		B		0.000	0.000	1.771	0.000	0.03
L31	42.00-37.00	C	1.298	0.000	0.000	1.347	0.000	0.01
		A		0.000	0.000	15.762	0.000	0.22
		B		0.000	0.000	8.813	0.000	0.13
L32	37.00-32.00	C	1.281	0.000	0.000	6.715	0.000	0.05
		A		0.000	0.000	15.723	0.000	0.22
		B		0.000	0.000	8.778	0.000	0.13
L33	32.00-27.91	C	1.263	0.000	0.000	6.697	0.000	0.05
		A		0.000	0.000	16.457	0.000	0.21
		B		0.000	0.000	11.934	0.000	0.15
L34	27.91-27.66	C	1.253	0.000	0.000	9.092	0.000	0.07
		A		0.000	0.000	1.133	0.000	0.01
		B		0.000	0.000	0.785	0.000	0.01
L35	27.66-27.25	C	1.252	0.000	0.000	0.683	0.000	0.01
		A		0.000	0.000	1.857	0.000	0.02
		B		0.000	0.000	1.288	0.000	0.02
L36	27.25-26.98	C	1.250	0.000	0.000	1.120	0.000	0.01
		A		0.000	0.000	1.223	0.000	0.01
		B		0.000	0.000	0.848	0.000	0.01
L37	26.98-26.83	C	1.249	0.000	0.000	0.738	0.000	0.01
		A		0.000	0.000	0.679	0.000	0.01
		B		0.000	0.000	0.471	0.000	0.01
L38	26.83-21.83	C	1.237	0.000	0.000	0.410	0.000	0.00
		A		0.000	0.000	19.050	0.000	0.24
		B		0.000	0.000	12.107	0.000	0.16
L39	21.83-16.83	C	1.209	0.000	0.000	10.079	0.000	0.08
		A		0.000	0.000	17.104	0.000	0.23
		B		0.000	0.000	10.172	0.000	0.14
L40	16.83-16.00	C	1.189	0.000	0.000	8.168	0.000	0.07
		A		0.000	0.000	3.492	0.000	0.04
		B		0.000	0.000	2.343	0.000	0.03
L41	16.00-15.75	C	1.185	0.000	0.000	2.013	0.000	0.02
		A		0.000	0.000	1.051	0.000	0.01
		B		0.000	0.000	0.705	0.000	0.01
L42	15.75-14.75	C	1.180	0.000	0.000	0.606	0.000	0.00
		A		0.000	0.000	4.203	0.000	0.05
		B		0.000	0.000	3.769	0.000	0.04
L43	14.75-14.50	C	1.175	0.000	0.000	3.373	0.000	0.03
		A		0.000	0.000	1.050	0.000	0.01
		B		0.000	0.000	1.021	0.000	0.01
L44	14.50-12.08	C	1.164	0.000	0.000	0.922	0.000	0.01
		A		0.000	0.000	10.149	0.000	0.12
		B		0.000	0.000	9.864	0.000	0.11
L45	12.08-11.83	C	1.152	0.000	0.000	8.913	0.000	0.07
		A		0.000	0.000	1.047	0.000	0.01
		B		0.000	0.000	1.017	0.000	0.01
L46	11.83-10.00	C	1.141	0.000	0.000	0.920	0.000	0.01
		A		0.000	0.000	7.651	0.000	0.09
		B		0.000	0.000	5.603	0.000	0.07
L47	10.00-9.75	C	1.130	0.000	0.000	6.723	0.000	0.05
		A		0.000	0.000	1.044	0.000	0.01
		B		0.000	0.000	0.670	0.000	0.01
L48	9.75-4.75	C	1.096	0.000	0.000	0.917	0.000	0.01
		A		0.000	0.000	17.433	0.000	0.22
		B		0.000	0.000	9.988	0.000	0.14
L49	4.75-0.00	C	0.980	0.000	0.000	14.930	0.000	0.11
		A		0.000	0.000	13.930	0.000	0.18
		B		0.000	0.000	6.986	0.000	0.11
		C		0.000	0.000	11.008	0.000	0.07

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L1	160.00-155.00	0.0000	0.0000	0.0000	0.0000
L2	155.00-150.00	0.0000	0.0000	0.0000	0.0000
L3	150.00-148.00	0.0000	0.0000	0.0000	0.0000
L4	148.00-143.00	0.0000	0.0000	0.0000	0.0000
L5	143.00-138.00	0.0000	0.0000	0.0000	0.0000
L6	138.00-133.00	0.0000	0.0000	0.0000	0.0000
L7	133.00-128.00	0.0000	0.0000	0.0000	0.0000
L8	128.00-123.00	-1.4672	-5.0500	-1.1939	-4.1094
L9	123.00-118.00	-1.5345	-5.8434	-1.1457	-4.7625
L10	118.00-111.00	-0.9539	-5.9793	-0.3284	-4.9912
L11	111.00-109.75	-0.9561	-5.9935	-0.3293	-5.0064
L12	109.75-105.33	-0.7727	-4.8440	-0.2856	-4.3072
L13	105.33-105.08	-0.5504	-3.4511	-0.2208	-3.3214
L14	105.08-100.08	-0.5552	-3.4814	-0.2234	-3.3508
L15	100.08-95.08	-0.5641	-3.5382	-0.2284	-3.4062
L16	95.08-90.08	-0.5729	-3.5941	-0.2334	-3.4605
L17	90.08-85.08	-0.5815	-3.6490	-0.2386	-3.5138
L18	85.08-76.75	1.2597	-1.7388	1.1315	-2.0619
L19	76.75-75.75	2.4695	-1.5974	2.0732	-2.0733
L20	75.75-70.75	2.1023	-1.3581	1.8119	-1.8105
L21	70.75-70.58	1.7806	-1.1490	1.5722	-1.5693
L22	70.58-70.33	1.7825	-1.1501	1.5739	-1.5708
L23	70.33-70.00	1.7844	-1.1512	1.5754	-1.5721
L24	70.00-69.75	1.7857	-1.1519	1.5765	-1.5729
L25	69.75-64.75	0.7190	-2.2899	0.7130	-2.5335
L26	64.75-59.75	-0.5896	-3.7025	-0.2566	-3.6298
L27	59.75-54.75	-0.5973	-3.7519	-0.2624	-3.6771
L28	54.75-49.75	-0.6050	-3.8004	-0.2685	-3.7234
L29	49.75-43.00	-0.4117	-2.5870	-0.2010	-2.7497
L30	43.00-42.00	-0.5612	-3.5258	-0.2610	-3.5699
L31	42.00-37.00	-0.5655	-3.5532	-0.2675	-3.5934
L32	37.00-32.00	-0.5726	-3.5982	-0.2747	-3.6354
L33	32.00-27.91	0.0309	-2.3056	0.1558	-2.5701
L34	27.91-27.66	-0.3919	-2.4634	-0.2098	-2.6832
L35	27.66-27.25	-0.3923	-2.4657	-0.2102	-2.6854
L36	27.25-26.98	-0.3927	-2.4681	-0.2106	-2.6877
L37	26.98-26.83	-0.3929	-2.4696	-0.2109	-2.6891
L38	26.83-21.83	-0.4734	-2.9758	-0.2486	-3.1425
L39	21.83-16.83	-0.5318	-3.3433	-0.2801	-3.4707
L40	16.83-16.00	-0.4249	-2.6713	-0.2386	-2.9169
L41	16.00-15.75	-0.4255	-2.6755	-0.2396	-2.9206
L42	15.75-14.75	2.8620	-2.4994	2.3812	-2.7509
L43	14.75-14.50	3.7614	-2.4539	3.1281	-2.7046
L44	14.50-12.08	3.7755	-2.4634	3.1390	-2.7125
L45	12.08-11.83	3.7904	-2.4733	3.1503	-2.7210
L46	11.83-10.00	2.6196	-3.9453	2.0921	-4.0145
L47	10.00-9.75	2.1383	-4.5632	1.6620	-4.5494
L48	9.75-4.75	2.5534	-5.4493	1.9190	-5.2446
L49	4.75-0.00	2.6582	-6.1668	1.9329	-5.7359

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	49	HSS6x6	155.00 - 155.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	50	HSS6x6	155.00 - 155.50	1.0000	1.0000
L1	51	HSS6x6	155.00 - 155.50	1.0000	1.0000
L2	49	HSS6x6	150.00 - 155.00	1.0000	1.0000
L2	50	HSS6x6	150.00 - 155.00	1.0000	1.0000
L2	51	HSS6x6	150.00 - 155.00	1.0000	1.0000
L3	49	HSS6x6	148.00 - 150.00	1.0000	1.0000
L3	50	HSS6x6	148.00 - 150.00	1.0000	1.0000
L3	51	HSS6x6	148.00 - 150.00	1.0000	1.0000
L4	49	HSS6x6	143.00 - 148.00	1.0000	1.0000
L4	50	HSS6x6	143.00 - 148.00	1.0000	1.0000
L4	51	HSS6x6	143.00 - 148.00	1.0000	1.0000
L5	49	HSS6x6	140.00 - 143.00	1.0000	1.0000
L5	50	HSS6x6	140.00 - 143.00	1.0000	1.0000
L5	51	HSS6x6	140.00 - 143.00	1.0000	1.0000
L8	18	LDF7-50A(1-5/8)	123.00 - 127.00	1.0000	1.0000
L9	18	LDF7-50A(1-5/8)	118.00 - 123.00	1.0000	1.0000
L9	53	CU12PSM9P6XXX(1-1/2)	118.00 - 119.00	1.0000	1.0000
L10	18	LDF7-50A(1-5/8)	111.00 - 118.00	1.0000	1.0000
L10	53	CU12PSM9P6XXX(1-1/2)	111.00 - 118.00	1.0000	1.0000
L11	18	LDF7-50A(1-5/8)	109.75 - 111.00	1.0000	1.0000
L11	53	CU12PSM9P6XXX(1-1/2)	109.75 - 111.00	1.0000	1.0000
L12	18	LDF7-50A(1-5/8)	105.33 - 109.75	1.0000	1.0000
L12	36	MP304	105.33 - 106.75	1.0000	1.0000
L12	37	MP304	105.33 - 106.75	1.0000	1.0000
L12	38	MP304	105.33 - 106.75	1.0000	1.0000
L12	53	CU12PSM9P6XXX(1-1/2)	105.33 - 109.75	1.0000	1.0000
L13	18	LDF7-50A(1-5/8)	105.08 - 105.33	1.0000	1.0000
L13	36	MP304	105.08 - 105.33	1.0000	1.0000
L13	37	MP304	105.08 - 105.33	1.0000	1.0000
L13	38	MP304	105.08 - 105.33	1.0000	1.0000
L13	53	CU12PSM9P6XXX(1-1/2)	105.08 - 105.33	1.0000	1.0000
L14	18	LDF7-50A(1-5/8)	100.08 - 105.08	1.0000	1.0000
L14	36	MP304	100.08 - 105.08	1.0000	1.0000
L14	37	MP304	100.08 - 105.08	1.0000	1.0000
L14	38	MP304	100.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			105.08		
L14	53	CU12PSM9P6XXX(1-1/2)	100.08 -	1.0000	1.0000
			105.08		
L15	18	LDF7-50A(1-5/8)	95.08 -	1.0000	1.0000
			100.08		
L15	36	MP304	95.08 -	1.0000	1.0000
			100.08		
L15	37	MP304	95.08 -	1.0000	1.0000
			100.08		
L15	38	MP304	95.08 -	1.0000	1.0000
			100.08		
L15	53	CU12PSM9P6XXX(1-1/2)	95.08 -	1.0000	1.0000
			100.08		
L16	18	LDF7-50A(1-5/8)	90.08 -	1.0000	1.0000
			95.08		
L16	36	MP304	90.08 -	1.0000	1.0000
			95.08		
L16	37	MP304	90.08 -	1.0000	1.0000
			95.08		
L16	38	MP304	90.08 -	1.0000	1.0000
			95.08		
L16	53	CU12PSM9P6XXX(1-1/2)	90.08 -	1.0000	1.0000
			95.08		
L17	18	LDF7-50A(1-5/8)	85.08 -	1.0000	1.0000
			90.08		
L17	36	MP304	85.08 -	1.0000	1.0000
			90.08		
L17	37	MP304	85.08 -	1.0000	1.0000
			90.08		
L17	38	MP304	85.08 -	1.0000	1.0000
			90.08		
L17	53	CU12PSM9P6XXX(1-1/2)	85.08 -	1.0000	1.0000
			90.08		
L18	18	LDF7-50A(1-5/8)	76.75 -	1.0000	1.0000
			85.08		
L18	36	MP304	76.75 -	1.0000	1.0000
			85.08		
L18	37	MP304	76.75 -	1.0000	1.0000
			85.08		
L18	38	MP304	76.75 -	1.0000	1.0000
			85.08		
L18	45	6"x1" Flat Reinforcement	76.75 -	1.0000	1.0000
			82.50		
L18	46	6"x1" Flat Reinforcement	76.75 -	1.0000	1.0000
			82.50		
L18	47	6"x1" Flat Reinforcement	76.75 -	1.0000	1.0000
			82.50		
L18	53	CU12PSM9P6XXX(1-1/2)	76.75 -	1.0000	1.0000
			85.08		
L19	18	LDF7-50A(1-5/8)	75.75 -	1.0000	1.0000
			76.75		
L19	45	6"x1" Flat Reinforcement	75.75 -	1.0000	1.0000
			76.75		
L19	46	6"x1" Flat Reinforcement	75.75 -	1.0000	1.0000
			76.75		
L19	47	6"x1" Flat Reinforcement	75.75 -	1.0000	1.0000
			76.75		
L19	53	CU12PSM9P6XXX(1-1/2)	75.75 -	1.0000	1.0000
			76.75		
L20	18	LDF7-50A(1-5/8)	70.75 -	1.0000	1.0000
			75.75		
L20	33	MP305	70.75 -	1.0000	1.0000
			73.00		
L20	34	MP305	70.75 -	1.0000	1.0000
			73.00		
L20	35	MP305	70.75 -	1.0000	1.0000
			73.00		
L20	45	6"x1" Flat Reinforcement	70.75 -	1.0000	1.0000
			75.75		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L20	46	6"x1" Flat Reinforcement	70.75 - 75.75	1.0000	1.0000
L20	47	6"x1" Flat Reinforcement	70.75 - 75.75	1.0000	1.0000
L20	53	CU12PSM9P6XXX(1-1/2)	70.75 - 75.75	1.0000	1.0000
L21	18	LDF7-50A(1-5/8)	70.58 - 70.75	1.0000	1.0000
L21	33	MP305	70.58 - 70.75	1.0000	1.0000
L21	34	MP305	70.58 - 70.75	1.0000	1.0000
L21	35	MP305	70.58 - 70.75	1.0000	1.0000
L21	45	6"x1" Flat Reinforcement	70.58 - 70.75	1.0000	1.0000
L21	46	6"x1" Flat Reinforcement	70.58 - 70.75	1.0000	1.0000
L21	47	6"x1" Flat Reinforcement	70.58 - 70.75	1.0000	1.0000
L21	53	CU12PSM9P6XXX(1-1/2)	70.58 - 70.75	1.0000	1.0000
L22	18	LDF7-50A(1-5/8)	70.33 - 70.58	1.0000	1.0000
L22	33	MP305	70.33 - 70.58	1.0000	1.0000
L22	34	MP305	70.33 - 70.58	1.0000	1.0000
L22	35	MP305	70.33 - 70.58	1.0000	1.0000
L22	45	6"x1" Flat Reinforcement	70.33 - 70.58	1.0000	1.0000
L22	46	6"x1" Flat Reinforcement	70.33 - 70.58	1.0000	1.0000
L22	47	6"x1" Flat Reinforcement	70.33 - 70.58	1.0000	1.0000
L22	53	CU12PSM9P6XXX(1-1/2)	70.33 - 70.58	1.0000	1.0000
L23	18	LDF7-50A(1-5/8)	70.00 - 70.33	1.0000	1.0000
L23	33	MP305	70.00 - 70.33	1.0000	1.0000
L23	34	MP305	70.00 - 70.33	1.0000	1.0000
L23	35	MP305	70.00 - 70.33	1.0000	1.0000
L23	45	6"x1" Flat Reinforcement	70.00 - 70.33	1.0000	1.0000
L23	46	6"x1" Flat Reinforcement	70.00 - 70.33	1.0000	1.0000
L23	47	6"x1" Flat Reinforcement	70.00 - 70.33	1.0000	1.0000
L23	53	CU12PSM9P6XXX(1-1/2)	70.00 - 70.33	1.0000	1.0000
L24	18	LDF7-50A(1-5/8)	69.75 - 70.00	1.0000	1.0000
L24	33	MP305	69.75 - 70.00	1.0000	1.0000
L24	34	MP305	69.75 - 70.00	1.0000	1.0000
L24	35	MP305	69.75 - 70.00	1.0000	1.0000
L24	45	6"x1" Flat Reinforcement	69.75 - 70.00	1.0000	1.0000
L24	46	6"x1" Flat Reinforcement	69.75 - 70.00	1.0000	1.0000
L24	47	6"x1" Flat Reinforcement	69.75 - 70.00	1.0000	1.0000
L24	53	CU12PSM9P6XXX(1-1/2)	69.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			70.00		
L25	18	LDF7-50A(1-5/8)	64.75 - 69.75	1.0000	1.0000
L25	33	MP305	64.75 - 69.75	1.0000	1.0000
L25	34	MP305	64.75 - 69.75	1.0000	1.0000
L25	35	MP305	64.75 - 69.75	1.0000	1.0000
L25	45	6"x1" Flat Reinforcement	67.50 - 69.75	1.0000	1.0000
L25	46	6"x1" Flat Reinforcement	67.50 - 69.75	1.0000	1.0000
L25	47	6"x1" Flat Reinforcement	67.50 - 69.75	1.0000	1.0000
L25	53	CU12PSM9P6XXX(1-1/2)	64.75 - 69.75	1.0000	1.0000
L26	18	LDF7-50A(1-5/8)	59.75 - 64.75	1.0000	1.0000
L26	33	MP305	59.75 - 64.75	1.0000	1.0000
L26	34	MP305	59.75 - 64.75	1.0000	1.0000
L26	35	MP305	59.75 - 64.75	1.0000	1.0000
L26	53	CU12PSM9P6XXX(1-1/2)	59.75 - 64.75	1.0000	1.0000
L27	18	LDF7-50A(1-5/8)	54.75 - 59.75	1.0000	1.0000
L27	33	MP305	54.75 - 59.75	1.0000	1.0000
L27	34	MP305	54.75 - 59.75	1.0000	1.0000
L27	35	MP305	54.75 - 59.75	1.0000	1.0000
L27	53	CU12PSM9P6XXX(1-1/2)	54.75 - 59.75	1.0000	1.0000
L28	18	LDF7-50A(1-5/8)	49.75 - 54.75	1.0000	1.0000
L28	33	MP305	49.75 - 54.75	1.0000	1.0000
L28	34	MP305	49.75 - 54.75	1.0000	1.0000
L28	35	MP305	49.75 - 54.75	1.0000	1.0000
L28	53	CU12PSM9P6XXX(1-1/2)	49.75 - 54.75	1.0000	1.0000
L29	18	LDF7-50A(1-5/8)	43.00 - 49.75	1.0000	1.0000
L29	33	MP305	43.00 - 49.75	1.0000	1.0000
L29	34	MP305	43.00 - 49.75	1.0000	1.0000
L29	35	MP305	43.00 - 49.75	1.0000	1.0000
L29	39	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	1.0000	1.0000
L29	40	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	1.0000	1.0000
L29	41	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	1.0000	1.0000
L29	53	CU12PSM9P6XXX(1-1/2)	43.00 - 49.75	1.0000	1.0000
L30	18	LDF7-50A(1-5/8)	42.00 - 43.00	1.0000	1.0000
L30	39	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	1.0000	1.0000
L30	40	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L30	41	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	1.0000	1.0000
L30	53	CU12PSM9P6XXX(1-1/2)	42.00 - 43.00	1.0000	1.0000
L31	18	LDF7-50A(1-5/8)	37.00 - 42.00	1.0000	1.0000
L31	39	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	1.0000	1.0000
L31	40	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	1.0000	1.0000
L31	41	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	1.0000	1.0000
L31	53	CU12PSM9P6XXX(1-1/2)	37.00 - 42.00	1.0000	1.0000
L32	18	LDF7-50A(1-5/8)	32.00 - 37.00	1.0000	1.0000
L32	39	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	1.0000	1.0000
L32	40	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	1.0000	1.0000
L32	41	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	1.0000	1.0000
L32	53	CU12PSM9P6XXX(1-1/2)	32.00 - 37.00	1.0000	1.0000
L33	18	LDF7-50A(1-5/8)	27.91 - 32.00	1.0000	1.0000
L33	28	MP306	27.91 - 30.50	1.0000	1.0000
L33	29	MP306	27.91 - 30.50	1.0000	1.0000
L33	32	MP306	27.91 - 31.33	1.0000	1.0000
L33	39	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	1.0000	1.0000
L33	40	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	1.0000	1.0000
L33	41	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	1.0000	1.0000
L33	53	CU12PSM9P6XXX(1-1/2)	27.91 - 32.00	1.0000	1.0000
L34	18	LDF7-50A(1-5/8)	27.66 - 27.91	1.0000	1.0000
L34	28	MP306	27.66 - 27.91	1.0000	1.0000
L34	29	MP306	27.66 - 27.91	1.0000	1.0000
L34	32	MP306	27.66 - 27.91	1.0000	1.0000
L34	39	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	1.0000	1.0000
L34	40	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	1.0000	1.0000
L34	41	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	1.0000	1.0000
L34	53	CU12PSM9P6XXX(1-1/2)	27.66 - 27.91	1.0000	1.0000
L35	18	LDF7-50A(1-5/8)	27.25 - 27.66	1.0000	1.0000
L35	28	MP306	27.25 - 27.66	1.0000	1.0000
L35	29	MP306	27.25 - 27.66	1.0000	1.0000
L35	32	MP306	27.25 - 27.66	1.0000	1.0000
L35	39	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	1.0000	1.0000
L35	40	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	1.0000	1.0000
L35	41	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L35	53	Reinforcement CU12PSM9P6XXX(1-1/2)	27.66 27.25 - 27.66	1.0000	1.0000
L36	18	LDF7-50A(1-5/8)	26.98 - 27.25	1.0000	1.0000
L36	28	MP306	26.98 - 27.25	1.0000	1.0000
L36	29	MP306	26.98 - 27.25	1.0000	1.0000
L36	32	MP306	26.98 - 27.25	1.0000	1.0000
L36	39	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	1.0000	1.0000
L36	40	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	1.0000	1.0000
L36	41	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	1.0000	1.0000
L36	53	CU12PSM9P6XXX(1-1/2)	26.98 - 27.25	1.0000	1.0000
L37	18	LDF7-50A(1-5/8)	26.83 - 26.98	1.0000	1.0000
L37	28	MP306	26.83 - 26.98	1.0000	1.0000
L37	29	MP306	26.83 - 26.98	1.0000	1.0000
L37	32	MP306	26.83 - 26.98	1.0000	1.0000
L37	39	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	1.0000	1.0000
L37	40	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	1.0000	1.0000
L37	41	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	1.0000	1.0000
L37	53	CU12PSM9P6XXX(1-1/2)	26.83 - 26.98	1.0000	1.0000
L38	18	LDF7-50A(1-5/8)	21.83 - 26.83	1.0000	1.0000
L38	28	MP306	21.83 - 26.83	1.0000	1.0000
L38	29	MP306	21.83 - 26.83	1.0000	1.0000
L38	32	MP306	21.83 - 26.83	1.0000	1.0000
L38	39	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	1.0000	1.0000
L38	40	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	1.0000	1.0000
L38	41	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	1.0000	1.0000
L38	53	CU12PSM9P6XXX(1-1/2)	21.83 - 26.83	1.0000	1.0000
L39	18	LDF7-50A(1-5/8)	16.83 - 21.83	1.0000	1.0000
L39	28	MP306	16.83 - 21.83	1.0000	1.0000
L39	29	MP306	16.83 - 21.83	1.0000	1.0000
L39	32	MP306	16.83 - 21.83	1.0000	1.0000
L39	42	6"x1" Flat Reinforcement	16.83 - 18.00	1.0000	1.0000
L39	43	6"x1" Flat Reinforcement	16.83 - 18.00	1.0000	1.0000
L39	44	6"x1" Flat Reinforcement	16.83 - 18.00	1.0000	1.0000
L39	53	CU12PSM9P6XXX(1-1/2)	16.83 - 21.83	1.0000	1.0000
L40	18	LDF7-50A(1-5/8)	16.00 - 16.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L40	28	MP306	16.00 - 16.83	1.0000	1.0000
L40	29	MP306	16.00 - 16.83	1.0000	1.0000
L40	32	MP306	16.00 - 16.83	1.0000	1.0000
L40	42	6"x1" Flat Reinforcement	16.00 - 16.83	1.0000	1.0000
L40	43	6"x1" Flat Reinforcement	16.00 - 16.83	1.0000	1.0000
L40	44	6"x1" Flat Reinforcement	16.00 - 16.83	1.0000	1.0000
L40	53	CU12PSM9P6XXX(1-1/2)	16.00 - 16.83	1.0000	1.0000
L41	18	LDF7-50A(1-5/8)	15.75 - 16.00	1.0000	1.0000
L41	28	MP306	15.75 - 16.00	1.0000	1.0000
L41	29	MP306	15.75 - 16.00	1.0000	1.0000
L41	32	MP306	15.75 - 16.00	1.0000	1.0000
L41	42	6"x1" Flat Reinforcement	15.75 - 16.00	1.0000	1.0000
L41	43	6"x1" Flat Reinforcement	15.75 - 16.00	1.0000	1.0000
L41	44	6"x1" Flat Reinforcement	15.75 - 16.00	1.0000	1.0000
L41	53	CU12PSM9P6XXX(1-1/2)	15.75 - 16.00	1.0000	1.0000
L42	18	LDF7-50A(1-5/8)	14.75 - 15.75	1.0000	1.0000
L42	28	MP306	14.75 - 15.75	1.0000	1.0000
L42	29	MP306	14.75 - 15.75	1.0000	1.0000
L42	30	MP306	14.75 - 15.50	1.0000	1.0000
L42	31	MP306	14.75 - 15.50	1.0000	1.0000
L42	32	MP306	14.75 - 15.75	1.0000	1.0000
L42	42	6"x1" Flat Reinforcement	14.75 - 15.75	1.0000	1.0000
L42	43	6"x1" Flat Reinforcement	14.75 - 15.75	1.0000	1.0000
L42	44	6"x1" Flat Reinforcement	14.75 - 15.75	1.0000	1.0000
L42	53	CU12PSM9P6XXX(1-1/2)	14.75 - 15.75	1.0000	1.0000
L43	18	LDF7-50A(1-5/8)	14.50 - 14.75	1.0000	1.0000
L43	28	MP306	14.50 - 14.75	1.0000	1.0000
L43	29	MP306	14.50 - 14.75	1.0000	1.0000
L43	30	MP306	14.50 - 14.75	1.0000	1.0000
L43	31	MP306	14.50 - 14.75	1.0000	1.0000
L43	32	MP306	14.50 - 14.75	1.0000	1.0000
L43	42	6"x1" Flat Reinforcement	14.50 - 14.75	1.0000	1.0000
L43	43	6"x1" Flat Reinforcement	14.50 - 14.75	1.0000	1.0000
L43	44	6"x1" Flat Reinforcement	14.50 - 14.75	1.0000	1.0000
L43	53	CU12PSM9P6XXX(1-1/2)	14.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L44	18	LDF7-50A(1-5/8)	14.75 12.08 - 14.50	1.0000	1.0000
L44	28	MP306	12.08 - 14.50	1.0000	1.0000
L44	29	MP306	12.08 - 14.50	1.0000	1.0000
L44	30	MP306	12.08 - 14.50	1.0000	1.0000
L44	31	MP306	12.08 - 14.50	1.0000	1.0000
L44	32	MP306	12.08 - 14.50	1.0000	1.0000
L44	42	6"x1" Flat Reinforcement	12.08 - 14.50	1.0000	1.0000
L44	43	6"x1" Flat Reinforcement	12.08 - 14.50	1.0000	1.0000
L44	44	6"x1" Flat Reinforcement	12.08 - 14.50	1.0000	1.0000
L44	53	CU12PSM9P6XXX(1-1/2)	12.08 - 14.50	1.0000	1.0000
L45	18	LDF7-50A(1-5/8)	11.83 - 12.08	1.0000	1.0000
L45	28	MP306	11.83 - 12.08	1.0000	1.0000
L45	29	MP306	11.83 - 12.08	1.0000	1.0000
L45	30	MP306	11.83 - 12.08	1.0000	1.0000
L45	31	MP306	11.83 - 12.08	1.0000	1.0000
L45	32	MP306	11.83 - 12.08	1.0000	1.0000
L45	42	6"x1" Flat Reinforcement	11.83 - 12.08	1.0000	1.0000
L45	43	6"x1" Flat Reinforcement	11.83 - 12.08	1.0000	1.0000
L45	44	6"x1" Flat Reinforcement	11.83 - 12.08	1.0000	1.0000
L45	53	CU12PSM9P6XXX(1-1/2)	11.83 - 12.08	1.0000	1.0000
L46	18	LDF7-50A(1-5/8)	10.00 - 11.83	1.0000	1.0000
L46	28	MP306	10.00 - 11.83	1.0000	1.0000
L46	29	MP306	10.00 - 11.83	1.0000	1.0000
L46	30	MP306	10.00 - 11.83	1.0000	1.0000
L46	31	MP306	10.00 - 11.83	1.0000	1.0000
L46	32	MP306	11.33 - 11.83	1.0000	1.0000
L46	42	6"x1" Flat Reinforcement	10.00 - 11.83	1.0000	1.0000
L46	43	6"x1" Flat Reinforcement	10.00 - 11.83	1.0000	1.0000
L46	44	6"x1" Flat Reinforcement	10.00 - 11.83	1.0000	1.0000
L46	53	CU12PSM9P6XXX(1-1/2)	10.00 - 11.83	1.0000	1.0000
L47	18	LDF7-50A(1-5/8)	9.75 - 10.00	1.0000	1.0000
L47	28	MP306	9.75 - 10.00	1.0000	1.0000
L47	29	MP306	9.75 - 10.00	1.0000	1.0000
L47	30	MP306	9.75 - 10.00	1.0000	1.0000
L47	31	MP306	9.75 - 10.00	1.0000	1.0000
L47	42	6"x1" Flat Reinforcement	9.75 - 10.00	1.0000	1.0000
L47	43	6"x1" Flat Reinforcement	9.75 - 10.00	1.0000	1.0000
L47	44	6"x1" Flat Reinforcement	9.75 - 10.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L47	53	CU12PSM9P6XXX(1-1/2)	9.75 - 10.00	1.0000	1.0000
L48	18	LDF7-50A(1-5/8)	4.75 - 9.75	1.0000	1.0000
L48	28	MP306	4.75 - 9.75	1.0000	1.0000
L48	29	MP306	4.75 - 9.75	1.0000	1.0000
L48	30	MP306	4.75 - 9.75	1.0000	1.0000
L48	31	MP306	4.75 - 9.75	1.0000	1.0000
L48	42	6"x1" Flat Reinforcement	8.00 - 9.75	1.0000	1.0000
L48	43	6"x1" Flat Reinforcement	8.00 - 9.75	1.0000	1.0000
L48	44	6"x1" Flat Reinforcement	8.00 - 9.75	1.0000	1.0000
L48	53	CU12PSM9P6XXX(1-1/2)	4.75 - 9.75	1.0000	1.0000
L49	18	LDF7-50A(1-5/8)	0.00 - 4.75	1.0000	1.0000
L49	28	MP306	0.50 - 4.75	1.0000	1.0000
L49	29	MP306	0.50 - 4.75	1.0000	1.0000
L49	30	MP306	0.50 - 4.75	1.0000	1.0000
L49	31	MP306	0.50 - 4.75	1.0000	1.0000
L49	53	CU12PSM9P6XXX(1-1/2)	0.00 - 4.75	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
L1	49	HSS6x6	155.00 - 155.50	Auto	1.0000
L1	50	HSS6x6	155.00 - 155.50	Auto	1.0000
L1	51	HSS6x6	155.00 - 155.50	Auto	1.0000
L2	49	HSS6x6	150.00 - 155.00	Auto	1.0000
L2	50	HSS6x6	150.00 - 155.00	Auto	1.0000
L2	51	HSS6x6	150.00 - 155.00	Auto	1.0000
L3	49	HSS6x6	148.00 - 150.00	Auto	1.0000
L3	50	HSS6x6	148.00 - 150.00	Auto	1.0000
L3	51	HSS6x6	148.00 - 150.00	Auto	1.0000
L4	49	HSS6x6	143.00 - 148.00	Auto	0.3868
L4	50	HSS6x6	143.00 - 148.00	Auto	0.3868
L4	51	HSS6x6	143.00 - 148.00	Auto	0.3868
L5	49	HSS6x6	140.00 - 143.00	Auto	0.3678
L5	50	HSS6x6	140.00 - 143.00	Auto	0.3678
L5	51	HSS6x6	140.00 - 143.00	Auto	0.3678
L12	36	MP304	105.33 - 106.75	Auto	0.0363
L12	37	MP304	105.33 - 106.75	Auto	0.0363
L12	38	MP304	105.33 - 106.75	Auto	0.0363
L13	36	MP304	105.08 - 105.33	Auto	0.0889

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L13	37	MP304	105.08 - 105.33	Auto	0.0889
L13	38	MP304	105.08 - 105.33	Auto	0.0889
L14	36	MP304	100.08 - 105.08	Auto	0.0709
L14	37	MP304	100.08 - 105.08	Auto	0.0709
L14	38	MP304	100.08 - 105.08	Auto	0.0709
L15	36	MP304	95.08 - 100.08	Auto	0.0411
L15	37	MP304	95.08 - 100.08	Auto	0.0411
L15	38	MP304	95.08 - 100.08	Auto	0.0411
L16	36	MP304	90.08 - 95.08	Auto	0.0078
L16	37	MP304	90.08 - 95.08	Auto	0.0078
L16	38	MP304	90.08 - 95.08	Auto	0.0078
L17	36	MP304	85.08 - 90.08	Auto	0.0000
L17	37	MP304	85.08 - 90.08	Auto	0.0000
L17	38	MP304	85.08 - 90.08	Auto	0.0000
L18	36	MP304	76.75 - 85.08	Auto	0.0000
L18	37	MP304	76.75 - 85.08	Auto	0.0000
L18	38	MP304	76.75 - 85.08	Auto	0.0000
L18	45	6"x1" Flat Reinforcement	76.75 - 82.50	Auto	0.1471
L18	46	6"x1" Flat Reinforcement	76.75 - 82.50	Auto	0.1471
L18	47	6"x1" Flat Reinforcement	76.75 - 82.50	Auto	0.1471
L19	45	6"x1" Flat Reinforcement	75.75 - 76.75	Auto	0.1274
L19	46	6"x1" Flat Reinforcement	75.75 - 76.75	Auto	0.1274
L19	47	6"x1" Flat Reinforcement	75.75 - 76.75	Auto	0.1274
L20	33	MP305	70.75 - 73.00	Auto	0.0000
L20	34	MP305	70.75 - 73.00	Auto	0.0000
L20	35	MP305	70.75 - 73.00	Auto	0.0000
L20	45	6"x1" Flat Reinforcement	70.75 - 75.75	Auto	0.1131
L20	46	6"x1" Flat Reinforcement	70.75 - 75.75	Auto	0.1131
L20	47	6"x1" Flat Reinforcement	70.75 - 75.75	Auto	0.1131
L21	33	MP305	70.58 - 70.75	Auto	0.0000
L21	34	MP305	70.58 - 70.75	Auto	0.0000
L21	35	MP305	70.58 - 70.75	Auto	0.0000
L21	45	6"x1" Flat Reinforcement	70.58 - 70.75	Auto	0.1009
L21	46	6"x1" Flat Reinforcement	70.58 - 70.75	Auto	0.1009

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	47	6"x1" Flat Reinforcement	70.58 - 70.75	Auto	0.1009
L22	33	MP305	70.33 - 70.58	Auto	0.0858
L22	34	MP305	70.33 - 70.58	Auto	0.0858
L22	35	MP305	70.33 - 70.58	Auto	0.0858
L22	45	6"x1" Flat Reinforcement	70.33 - 70.58	Auto	0.1879
L22	46	6"x1" Flat Reinforcement	70.33 - 70.58	Auto	0.1879
L22	47	6"x1" Flat Reinforcement	70.33 - 70.58	Auto	0.1879
L23	33	MP305	70.00 - 70.33	Auto	0.0842
L23	34	MP305	70.00 - 70.33	Auto	0.0842
L23	35	MP305	70.00 - 70.33	Auto	0.0842
L23	45	6"x1" Flat Reinforcement	70.00 - 70.33	Auto	0.1865
L23	46	6"x1" Flat Reinforcement	70.00 - 70.33	Auto	0.1865
L23	47	6"x1" Flat Reinforcement	70.00 - 70.33	Auto	0.1865
L24	33	MP305	69.75 - 70.00	Auto	0.0000
L24	34	MP305	69.75 - 70.00	Auto	0.0000
L24	35	MP305	69.75 - 70.00	Auto	0.0000
L24	45	6"x1" Flat Reinforcement	69.75 - 70.00	Auto	0.0971
L24	46	6"x1" Flat Reinforcement	69.75 - 70.00	Auto	0.0971
L24	47	6"x1" Flat Reinforcement	69.75 - 70.00	Auto	0.0971
L25	33	MP305	64.75 - 69.75	Auto	0.0000
L25	34	MP305	64.75 - 69.75	Auto	0.0000
L25	35	MP305	64.75 - 69.75	Auto	0.0000
L25	45	6"x1" Flat Reinforcement	67.50 - 69.75	Auto	0.0912
L25	46	6"x1" Flat Reinforcement	67.50 - 69.75	Auto	0.0912
L25	47	6"x1" Flat Reinforcement	67.50 - 69.75	Auto	0.0912
L26	33	MP305	59.75 - 64.75	Auto	0.0000
L26	34	MP305	59.75 - 64.75	Auto	0.0000
L26	35	MP305	59.75 - 64.75	Auto	0.0000
L27	33	MP305	54.75 - 59.75	Auto	0.0000
L27	34	MP305	54.75 - 59.75	Auto	0.0000
L27	35	MP305	54.75 - 59.75	Auto	0.0000
L28	33	MP305	49.75 - 54.75	Auto	0.0000
L28	34	MP305	49.75 - 54.75	Auto	0.0000
L28	35	MP305	49.75 - 54.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L29	33	MP305	43.00 - 49.75	Auto	0.0000
L29	34	MP305	43.00 - 49.75	Auto	0.0000
L29	35	MP305	43.00 - 49.75	Auto	0.0000
L29	39	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	Auto	0.0629
L29	40	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	Auto	0.0629
L29	41	6.5"x1.25" Flat Reinforcement	43.00 - 49.50	Auto	0.0629
L30	39	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	Auto	0.0837
L30	40	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	Auto	0.0837
L30	41	6.5"x1.25" Flat Reinforcement	42.00 - 43.00	Auto	0.0837
L31	39	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	Auto	0.0706
L31	40	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	Auto	0.0706
L31	41	6.5"x1.25" Flat Reinforcement	37.00 - 42.00	Auto	0.0706
L32	39	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	Auto	0.0486
L32	40	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	Auto	0.0486
L32	41	6.5"x1.25" Flat Reinforcement	32.00 - 37.00	Auto	0.0486
L33	28	MP306	27.91 - 30.50	Auto	0.0806
L33	29	MP306	27.91 - 30.50	Auto	0.0806
L33	32	MP306	27.91 - 31.33	Auto	0.0823
L33	39	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	Auto	0.0287
L33	40	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	Auto	0.0287
L33	41	6.5"x1.25" Flat Reinforcement	27.91 - 32.00	Auto	0.0287
L34	28	MP306	27.66 - 27.91	Auto	0.1354
L34	29	MP306	27.66 - 27.91	Auto	0.1354
L34	32	MP306	27.66 - 27.91	Auto	0.1354
L34	39	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	Auto	0.0835
L34	40	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	Auto	0.0835
L34	41	6.5"x1.25" Flat Reinforcement	27.66 - 27.91	Auto	0.0835
L35	28	MP306	27.25 - 27.66	Auto	0.1340
L35	29	MP306	27.25 - 27.66	Auto	0.1340
L35	32	MP306	27.25 - 27.66	Auto	0.1340
L35	39	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	Auto	0.0820
L35	40	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	Auto	0.0820
L35	41	6.5"x1.25" Flat Reinforcement	27.25 - 27.66	Auto	0.0820
L36	28	MP306	26.98 - 27.25	Auto	0.1326

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L36	29	MP306	26.98 - 27.25	Auto	0.1326
L36	32	MP306	26.98 - 27.25	Auto	0.1326
L36	39	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	Auto	0.0805
L36	40	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	Auto	0.0805
L36	41	6.5"x1.25" Flat Reinforcement	26.98 - 27.25	Auto	0.0805
L37	28	MP306	26.83 - 26.98	Auto	0.1285
L37	29	MP306	26.83 - 26.98	Auto	0.1285
L37	32	MP306	26.83 - 26.98	Auto	0.1285
L37	39	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	Auto	0.0762
L37	40	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	Auto	0.0762
L37	41	6.5"x1.25" Flat Reinforcement	26.83 - 26.98	Auto	0.0762
L38	28	MP306	21.83 - 26.83	Auto	0.1179
L38	29	MP306	21.83 - 26.83	Auto	0.1179
L38	32	MP306	21.83 - 26.83	Auto	0.1179
L38	39	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	Auto	0.0708
L38	40	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	Auto	0.0708
L38	41	6.5"x1.25" Flat Reinforcement	24.50 - 26.83	Auto	0.0708
L39	28	MP306	16.83 - 21.83	Auto	0.0972
L39	29	MP306	16.83 - 21.83	Auto	0.0972
L39	32	MP306	16.83 - 21.83	Auto	0.0972
L39	42	6"x1" Flat Reinforcement	16.83 - 18.00	Auto	0.0000
L39	43	6"x1" Flat Reinforcement	16.83 - 18.00	Auto	0.0000
L39	44	6"x1" Flat Reinforcement	16.83 - 18.00	Auto	0.0000
L40	28	MP306	16.00 - 16.83	Auto	0.0851
L40	29	MP306	16.00 - 16.83	Auto	0.0851
L40	32	MP306	16.00 - 16.83	Auto	0.0851
L40	42	6"x1" Flat Reinforcement	16.00 - 16.83	Auto	0.0000
L40	43	6"x1" Flat Reinforcement	16.00 - 16.83	Auto	0.0000
L40	44	6"x1" Flat Reinforcement	16.00 - 16.83	Auto	0.0000
L41	28	MP306	15.75 - 16.00	Auto	0.1212
L41	29	MP306	15.75 - 16.00	Auto	0.1212
L41	32	MP306	15.75 - 16.00	Auto	0.1212
L41	42	6"x1" Flat Reinforcement	15.75 - 16.00	Auto	0.0000
L41	43	6"x1" Flat Reinforcement	15.75 - 16.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L41	44	6"x1" Flat Reinforcement	15.75 - 16.00	Auto	0.0000
L42	28	MP306	14.75 - 15.75	Auto	0.1186
L42	29	MP306	14.75 - 15.75	Auto	0.1186
L42	30	MP306	14.75 - 15.50	Auto	0.1181
L42	31	MP306	14.75 - 15.50	Auto	0.1181
L42	32	MP306	14.75 - 15.75	Auto	0.1186
L42	42	6"x1" Flat Reinforcement	14.75 - 15.75	Auto	0.0000
L42	43	6"x1" Flat Reinforcement	14.75 - 15.75	Auto	0.0000
L42	44	6"x1" Flat Reinforcement	14.75 - 15.75	Auto	0.0000
L43	28	MP306	14.50 - 14.75	Auto	0.0330
L43	29	MP306	14.50 - 14.75	Auto	0.0330
L43	30	MP306	14.50 - 14.75	Auto	0.0330
L43	31	MP306	14.50 - 14.75	Auto	0.0330
L43	32	MP306	14.50 - 14.75	Auto	0.0330
L43	42	6"x1" Flat Reinforcement	14.50 - 14.75	Auto	0.0000
L43	43	6"x1" Flat Reinforcement	14.50 - 14.75	Auto	0.0000
L43	44	6"x1" Flat Reinforcement	14.50 - 14.75	Auto	0.0000
L44	28	MP306	12.08 - 14.50	Auto	0.0275
L44	29	MP306	12.08 - 14.50	Auto	0.0275
L44	30	MP306	12.08 - 14.50	Auto	0.0275
L44	31	MP306	12.08 - 14.50	Auto	0.0275
L44	32	MP306	12.08 - 14.50	Auto	0.0275
L44	42	6"x1" Flat Reinforcement	12.08 - 14.50	Auto	0.0000
L44	43	6"x1" Flat Reinforcement	12.08 - 14.50	Auto	0.0000
L44	44	6"x1" Flat Reinforcement	12.08 - 14.50	Auto	0.0000
L45	28	MP306	11.83 - 12.08	Auto	0.0858
L45	29	MP306	11.83 - 12.08	Auto	0.0858
L45	30	MP306	11.83 - 12.08	Auto	0.0858
L45	31	MP306	11.83 - 12.08	Auto	0.0858
L45	32	MP306	11.83 - 12.08	Auto	0.0858
L45	42	6"x1" Flat Reinforcement	11.83 - 12.08	Auto	0.0000
L45	43	6"x1" Flat Reinforcement	11.83 - 12.08	Auto	0.0000
L45	44	6"x1" Flat Reinforcement	11.83 - 12.08	Auto	0.0000
L46	28	MP306	10.00 - 11.83	Auto	0.0815

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L46	29	MP306	10.00 - 11.83	Auto	0.0815
L46	30	MP306	10.00 - 11.83	Auto	0.0815
L46	31	MP306	10.00 - 11.83	Auto	0.0815
L46	32	MP306	11.33 - 11.83	Auto	0.0843
L46	42	6"x1" Flat Reinforcement	10.00 - 11.83	Auto	0.0000
L46	43	6"x1" Flat Reinforcement	10.00 - 11.83	Auto	0.0000
L46	44	6"x1" Flat Reinforcement	10.00 - 11.83	Auto	0.0000
L47	28	MP306	9.75 - 10.00	Auto	0.0772
L47	29	MP306	9.75 - 10.00	Auto	0.0772
L47	30	MP306	9.75 - 10.00	Auto	0.0772
L47	31	MP306	9.75 - 10.00	Auto	0.0772
L47	42	6"x1" Flat Reinforcement	9.75 - 10.00	Auto	0.0000
L47	43	6"x1" Flat Reinforcement	9.75 - 10.00	Auto	0.0000
L47	44	6"x1" Flat Reinforcement	9.75 - 10.00	Auto	0.0000
L48	28	MP306	4.75 - 9.75	Auto	0.0632
L48	29	MP306	4.75 - 9.75	Auto	0.0632
L48	30	MP306	4.75 - 9.75	Auto	0.0632
L48	31	MP306	4.75 - 9.75	Auto	0.0632
L48	42	6"x1" Flat Reinforcement	8.00 - 9.75	Auto	0.0000
L48	43	6"x1" Flat Reinforcement	8.00 - 9.75	Auto	0.0000
L48	44	6"x1" Flat Reinforcement	8.00 - 9.75	Auto	0.0000
L49	28	MP306	0.50 - 4.75	Auto	0.0408
L49	29	MP306	0.50 - 4.75	Auto	0.0408
L49	30	MP306	0.50 - 4.75	Auto	0.0408
L49	31	MP306	0.50 - 4.75	Auto	0.0408

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	CA _{AA} Front ft ²	CA _{AA} Side ft ²	Weight K	
157									
800 10121 w/ Mount Pipe	A	From Leg	4.00	0.0000	157.00	No Ice	3.60	2.95	0.07
			0.00			1/2"	4.00	3.34	0.11
			1.00			Ice	4.42	3.74	0.17
						1" Ice	5.29	4.59	0.30
						2" Ice			
800 10121 w/ Mount Pipe	B	From Leg	4.00	0.0000	157.00	No Ice	3.60	2.95	0.07
			0.00			1/2"	4.00	3.34	0.11
			1.00			Ice	4.42	3.74	0.17
						1" Ice	5.29	4.59	0.30
						2" Ice			
800 10121 w/ Mount Pipe	C	From Leg	4.00	0.0000	157.00	No Ice	3.60	2.95	0.07
			0.00			1/2"	4.00	3.34	0.11
			1.00			Ice	4.42	3.74	0.17
						1" Ice	5.29	4.59	0.30
						2" Ice			
HPA-85R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.0000	157.00	No Ice	12.04	8.13	0.10
			0.00			1/2"	12.99	9.04	0.19
			1.00			Ice	13.97	9.97	0.29

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						ft
							ft ²	ft ²	K	
HPA-85R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	157.00	1" Ice	15.96	11.88	0.53
							2" Ice			
							No Ice	12.04	8.13	0.10
							1/2" Ice	12.99	9.04	0.19
							1" Ice	13.97	9.97	0.29
HPA-85R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	157.00	1" Ice	15.96	11.88	0.53
							2" Ice			
							No Ice	12.04	8.13	0.10
							1/2" Ice	12.99	9.04	0.19
							1" Ice	13.97	9.97	0.29
TPA-65R-LCUUUU-H8-K w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	157.00	1" Ice	15.96	11.88	0.53
							2" Ice			
							No Ice	11.85	8.99	0.13
							1/2" Ice	12.77	9.88	0.22
							1" Ice	13.71	10.79	0.33
TPA-65R-LCUUUU-H8-K w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	157.00	1" Ice	15.64	12.66	0.59
							2" Ice			
							No Ice	11.85	8.99	0.13
							1/2" Ice	12.77	9.88	0.22
							1" Ice	13.71	10.79	0.33
TPA-65R-LCUUUU-H8-K w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	157.00	1" Ice	15.64	12.66	0.59
							2" Ice			
							No Ice	11.85	8.99	0.13
							1/2" Ice	12.77	9.88	0.22
							1" Ice	13.71	10.79	0.33
80010966 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	157.00	1" Ice	18.14	10.06	0.68
							2" Ice			
							No Ice	14.61	6.84	0.16
							1/2" Ice	15.47	7.63	0.27
							1" Ice	16.35	8.42	0.39
80010966 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	157.00	1" Ice	18.14	10.06	0.68
							2" Ice			
							No Ice	14.61	6.84	0.16
							1/2" Ice	15.47	7.63	0.27
							1" Ice	16.35	8.42	0.39
80010966 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	157.00	1" Ice	18.14	10.06	0.68
							2" Ice			
							No Ice	14.61	6.84	0.16
							1/2" Ice	15.47	7.63	0.27
							1" Ice	16.35	8.42	0.39
(2) LGP21401	A	From Leg	4.00	0.00	0.0000	157.00	1" Ice	18.14	10.06	0.68
							2" Ice			
							No Ice	1.10	0.21	0.01
							1/2" Ice	1.24	0.27	0.02
							1" Ice	1.38	0.35	0.03
(4) LGP21401	B	From Leg	4.00	0.00	0.0000	157.00	1" Ice	1.69	0.52	0.05
							2" Ice			
							No Ice	1.10	0.21	0.01
							1/2" Ice	1.24	0.27	0.02
							1" Ice	1.38	0.35	0.03
(2) DC6-48-60-18-8F	A	From Leg	4.00	0.00	0.0000	157.00	1" Ice	1.69	0.52	0.05
							2" Ice			
							No Ice	1.21	1.21	0.02
							1/2" Ice	1.89	1.89	0.04
							1" Ice	2.11	2.11	0.07
(2) DC6-48-60-18-8F	C	From Leg	4.00	0.00	0.0000	157.00	1" Ice	2.57	2.57	0.13
							2" Ice			
							No Ice	1.21	1.21	0.02
							1/2" Ice	1.89	1.89	0.04
							1" Ice	2.11	2.11	0.07
RRUS 32	A	From Leg	4.00	0.00	0.0000	157.00	1" Ice	2.57	2.57	0.13
							2" Ice			
							No Ice	2.86	1.78	0.06
							1/2" Ice	3.08	1.97	0.08
							1" Ice	3.32	2.17	0.10

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
RRUS 32	B	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.81	2.58	0.16
								2" Ice			
								No Ice	2.86	1.78	0.06
								1/2" Ice	3.08	1.97	0.08
								Ice	3.32	2.17	0.10
RRUS 32	C	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.81	2.58	0.16
								2" Ice			
								No Ice	2.86	1.78	0.06
								1/2" Ice	3.08	1.97	0.08
								Ice	3.32	2.17	0.10
RRUS-11	A	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.81	2.58	0.16
								2" Ice			
								No Ice	2.78	1.19	0.05
								1/2" Ice	2.99	1.33	0.07
								Ice	3.21	1.49	0.09
RRUS-11	B	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.66	1.83	0.15
								2" Ice			
								No Ice	2.78	1.19	0.05
								1/2" Ice	2.99	1.33	0.07
								Ice	3.21	1.49	0.09
RRUS-11	C	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.66	1.83	0.15
								2" Ice			
								No Ice	2.78	1.19	0.05
								1/2" Ice	2.99	1.33	0.07
								Ice	3.21	1.49	0.09
RRUS 4449 B5/B12	A	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	3.66	1.83	0.15
								2" Ice			
								No Ice	1.97	1.41	0.07
								1/2" Ice	2.14	1.56	0.09
								Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	B	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	2.72	2.07	0.16
								2" Ice			
								No Ice	1.97	1.41	0.07
								1/2" Ice	2.14	1.56	0.09
								Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	C	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	2.72	2.07	0.16
								2" Ice			
								No Ice	1.97	1.41	0.07
								1/2" Ice	2.14	1.56	0.09
								Ice	2.33	1.73	0.11
RRUS 4478 B14	A	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	2.72	2.07	0.16
								2" Ice			
								No Ice	0.00	1.06	0.06
								1/2" Ice	0.00	1.20	0.08
								Ice	0.00	1.34	0.09
RRUS 4478 B14	B	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	0.00	1.66	0.14
								2" Ice			
								No Ice	0.00	1.06	0.06
								1/2" Ice	0.00	1.20	0.08
								Ice	0.00	1.34	0.09
RRUS 4478 B14	C	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	0.00	1.66	0.14
								2" Ice			
								No Ice	0.00	1.06	0.06
								1/2" Ice	0.00	1.20	0.08
								Ice	0.00	1.34	0.09
RRUS 8843 B2/B66A	A	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	0.00	1.66	0.14
								2" Ice			
								No Ice	1.64	1.35	0.07
								1/2" Ice	1.80	1.50	0.09
								Ice	1.97	1.65	0.11
RRUS 8843 B2/B66A	B	From Leg	4.00	0.00	1.00	0.0000	157.00	1" Ice	2.32	1.99	0.16
								2" Ice			
								No Ice	1.64	1.35	0.07
								1/2" Ice	1.80	1.50	0.09
								Ice	1.97	1.65	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CA _A Front ft ²	CA _A Side ft ²	Weight K	
RRUS 8843 B2/B66A	C	From Leg	4.00 0.00 1.00	0.0000	157.00	1" Ice	2.32	1.99	0.16
						2" Ice			
						No Ice	1.64	1.35	0.07
						1/2" Ice	1.80	1.50	0.09
						1" Ice	1.97	1.65	0.11
VFA12-SD	C	None		0.0000	157.00	2" Ice			
						No Ice	11.50	8.60	0.51
						1/2" Ice	17.20	13.30	0.64
						1" Ice	22.60	17.70	0.83
						2" Ice	34.30	26.50	1.21
VFA12-SD	C	None		0.0000	157.00	No Ice	11.50	8.60	0.51
						1/2" Ice	17.20	13.30	0.64
						1" Ice	22.60	17.70	0.83
						2" Ice	34.30	26.50	1.21
						No Ice	11.50	8.60	0.51
VFA12-SD	C	None		0.0000	157.00	1/2" Ice	17.20	13.30	0.64
						1" Ice	22.60	17.70	0.83
						2" Ice	34.30	26.50	1.21
						No Ice	11.50	8.60	0.51
						1/2" Ice	17.20	13.30	0.64
PCS 1900MHZ 4X45W-65MHZ **150**	A	From Leg	2.00 0.00 -2.00	0.0000	150.00	No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
						1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
						No Ice	2.32	2.24	0.06
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	2.00 0.00 -2.00	0.0000	150.00	1/2" Ice	2.53	2.44	0.08
						1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
						No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	2.00 0.00 -2.00	0.0000	150.00	Ice	2.74	2.65	0.11
						1" Ice	3.19	3.09	0.17
						2" Ice	3.19	3.09	0.17
						No Ice	2.32	2.24	0.06
						1/2" Ice	2.53	2.44	0.08
800MHZ 2X50W RRH W/FILTER	A	From Leg	2.00 0.00 -2.00	0.0000	150.00	Ice	2.74	2.65	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice	2.83	2.68	0.17
						No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
800MHZ 2X50W RRH W/FILTER	B	From Leg	2.00 0.00 -2.00	0.0000	150.00	Ice	2.43	2.29	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice	2.83	2.68	0.17
						No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
800MHZ 2X50W RRH W/FILTER	C	From Leg	2.00 0.00 -2.00	0.0000	150.00	Ice	2.43	2.29	0.11
						1" Ice	2.83	2.68	0.17
						2" Ice	2.83	2.68	0.17
						No Ice	2.06	1.93	0.06
						1/2" Ice	2.24	2.11	0.09
Side Arm Mount [SO 103-3]	C	None		0.0000	150.00	1" Ice	2.83	2.68	0.17
						2" Ice	2.83	2.68	0.17
						No Ice	7.64	7.64	0.23
						1/2" Ice	8.80	8.80	0.36
						Ice	10.16	10.16	0.52
APXVTM14-C-120 w/ Mount Pipe **148**	A	From Leg	4.00 0.00 0.00	0.0000	148.00	1" Ice	5.71	4.40	0.33
						2" Ice	5.71	4.40	0.33
						No Ice	4.09	2.86	0.08
						1/2" Ice	4.48	3.23	0.13
						Ice	4.88	3.61	0.19
APXVTM14-C-120 w/	B	From Leg	4.00	0.0000	148.00	No Ice	4.09	2.86	0.08
						Ice	4.88	3.61	0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice	4.48 3.23 4.88 3.61 5.71 4.40	0.13 0.19 0.33	
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71 4.40	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44 4.01	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44 4.01	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44 4.01	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
(3) TD-RRH8X20-25	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10 1.53	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
IBC1900BB-1	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
IBC1900BB-1	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
IBC1900BB-1	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
IBC1900HG-2A	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
IBC1900HG-2A	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
IBC1900HG-2A	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.97 1.09 1.22 1.51 0.46	0.46 0.56 0.66 0.89	0.02 0.03 0.04 0.06
Platform Mount [LP 1201-1]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.38 22.11 25.87 33.47	18.38 22.11 25.87 33.47	2.10 2.65 3.26 4.66
Miscellaneous [NA 510-1]	C	None		0.0000	148.00	No Ice	6.36	6.36	0.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
						1/2"	8.52	8.52	0.34
						Ice	10.62	10.62	0.46
						1" Ice	14.64	14.64	0.77
						2" Ice			
5'-P2x0.154	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice	1.19	1.19	0.02
						1/2"	1.50	1.50	0.03
						Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice			
5'-P2x0.154	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice	1.19	1.19	0.02
						1/2"	1.50	1.50	0.03
						Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice			
5'-P2x0.154	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice	1.19	1.19	0.02
						1/2"	1.50	1.50	0.03
						Ice	1.81	1.81	0.04
						1" Ice	2.46	2.46	0.08
						2" Ice			
138									
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	9.97	10.25	0.05
						1/2"	10.54	11.42	0.15
						Ice	11.08	12.31	0.25
						1" Ice	12.17	14.13	0.48
						2" Ice			
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	9.97	10.25	0.05
						1/2"	10.54	11.42	0.15
						Ice	11.08	12.31	0.25
						1" Ice	12.17	14.13	0.48
						2" Ice			
(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	9.97	10.25	0.05
						1/2"	10.54	11.42	0.15
						Ice	11.08	12.31	0.25
						1" Ice	12.17	14.13	0.48
						2" Ice			
(2) NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	7.55	4.23	0.11
						1/2"	8.04	4.67	0.20
						Ice	8.53	5.12	0.30
						1" Ice	9.56	6.05	0.53
						2" Ice			
(2) NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	7.55	4.23	0.11
						1/2"	8.04	4.67	0.20
						Ice	8.53	5.12	0.30
						1" Ice	9.56	6.05	0.53
						2" Ice			
(2) NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	7.55	4.23	0.11
						1/2"	8.04	4.67	0.20
						Ice	8.53	5.12	0.30
						1" Ice	9.56	6.05	0.53
						2" Ice			
KS24019-L112A	C	From Leg	4.00 0.00 4.00	0.0000	138.00	No Ice	0.10	0.10	0.01
						1/2"	0.18	0.18	0.01
						Ice	0.26	0.26	0.01
						1" Ice	0.42	0.42	0.01
						2" Ice			
(3) RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	1.88	1.01	0.07
						1/2"	2.05	1.14	0.09
						Ice	2.22	1.28	0.11
						1" Ice	2.60	1.59	0.15
						2" Ice			
RFV01U-D1A	A	From Leg	4.00 0.00 0.00	0.0000	138.00	No Ice	1.88	1.25	0.08
						1/2"	2.05	1.39	0.10
						Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
RFV01U-D1A	B	From Leg	4.00	0.0000	138.00	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			0.00			Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			
RFV01U-D1A	C	From Leg	4.00	0.0000	138.00	No Ice	1.88	1.25	0.08
			0.00			1/2"	2.05	1.39	0.10
			0.00			Ice	2.22	1.54	0.12
						1" Ice	2.60	1.86	0.18
						2" Ice			
RVZDC-6627-PF-48	B	From Leg	4.00	0.0000	138.00	No Ice	3.79	2.51	0.03
			0.00			1/2"	4.04	2.73	0.06
			0.00			Ice	4.30	2.95	0.10
						1" Ice	4.84	3.42	0.18
						2" Ice			
Platform Mount [LP 303-1_KCKR-HR-1]	C	None		0.0000	138.00	No Ice	28.31	28.31	1.77
						1/2"	35.69	35.69	2.30
						Ice	43.11	43.11	2.94
						1" Ice	58.21	58.21	4.60
						2" Ice			
127									
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	127.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			2.00			Ice	6.30	5.24	0.26
						1" Ice	7.33	6.24	0.49
						2" Ice			
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	127.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			2.00			Ice	6.30	5.24	0.26
						1" Ice	7.33	6.24	0.49
						2" Ice			
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	127.00	No Ice	5.31	4.27	0.08
			0.00			1/2"	5.80	4.75	0.17
			2.00			Ice	6.30	5.24	0.26
						1" Ice	7.33	6.24	0.49
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	127.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			2.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RRUS 11 B12	A	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	2.83	1.18	0.05
						1/2"	3.04	1.33	0.07
						Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
RRUS 11 B12	B	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	2.83	1.18	0.05
						1/2"	3.04	1.33	0.07
						Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
RRUS 11 B12	C	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	2.83	1.18	0.05
						1/2"	3.04	1.33	0.07
						Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
KRY 112 144/1	A	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	0.35	0.17	0.01
						1/2"	0.43	0.23	0.01
						Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
KRY 112 144/1	B	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	0.35	0.17	0.01
						1/2"	0.43	0.23	0.01
						Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
KRY 112 144/1	C	From Leg	4.00 0.00 2.00	0.0000	127.00	2" Ice			
						No Ice	0.35	0.17	0.01
						1/2"	0.43	0.23	0.01
						Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
Platform Mount [LP 1201-1]	C	None		0.0000	127.00	2" Ice			
						No Ice	18.38	18.38	2.10
						1/2"	22.11	22.11	2.65
						Ice	25.87	25.87	3.26
						1" Ice	33.47	33.47	4.66
119									
**									
KS24019-L112A	A	From Leg	4.00 0.00 2.00	0.0000	48.00	2" Ice			
						No Ice	0.10	0.10	0.01
						1/2"	0.18	0.18	0.01
						Ice	0.26	0.26	0.01
						1" Ice	0.42	0.42	0.01
2'-P2x0.154	A	From Leg	4.00 0.00 0.00	0.0000	48.00	2" Ice			
						No Ice	0.34	0.34	0.01
						1/2"	0.47	0.47	0.01
						Ice	0.61	0.61	0.02
						1" Ice	0.92	0.92	0.03
Side Arm Mount [SO 701-1]	A	From Leg	0.50 0.00 0.00	0.0000	48.00	2" Ice			
						No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
**									
**									
**									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	2" Ice			
						No Ice	8.01	4.23	0.11
						1/2"	8.52	4.69	0.19
						Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	2" Ice			
						No Ice	8.01	4.23	0.11
						1/2"	8.52	4.69	0.19
						Ice	9.04	5.16	0.29
						1" Ice	10.11	6.12	0.52

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	0.0000	119.00	2" Ice			
								No Ice	8.01	4.23	0.11
								1/2"	8.52	4.69	0.19
								Ice	9.04	5.16	0.29
TA08025-B604	A	From Leg	4.00	0.00	0.00	0.0000	119.00	1" Ice	10.11	6.12	0.52
								2" Ice			
								No Ice	0.00	0.98	0.06
								1/2"	0.00	1.11	0.08
TA08025-B604	B	From Leg	4.00	0.00	0.00	0.0000	119.00	Ice	0.00	1.25	0.10
								1" Ice	0.00	1.55	0.15
								2" Ice			
								No Ice	0.00	0.98	0.06
TA08025-B604	C	From Leg	4.00	0.00	0.00	0.0000	119.00	1/2"	0.00	1.11	0.08
								Ice	0.00	1.25	0.10
								1" Ice	0.00	1.55	0.15
								2" Ice			
TA08025-B605	A	From Leg	4.00	0.00	0.00	0.0000	119.00	No Ice	0.00	1.13	0.08
								1/2"	0.00	1.27	0.09
								Ice	0.00	1.41	0.11
								1" Ice	0.00	1.72	0.16
TA08025-B605	B	From Leg	4.00	0.00	0.00	0.0000	119.00	2" Ice			
								No Ice	0.00	1.13	0.08
								1/2"	0.00	1.27	0.09
								Ice	0.00	1.41	0.11
TA08025-B605	C	From Leg	4.00	0.00	0.00	0.0000	119.00	1" Ice	0.00	1.72	0.16
								2" Ice			
								No Ice	0.00	1.13	0.08
								1/2"	0.00	1.27	0.09
RDIDC-9181-PF-48	A	From Leg	4.00	0.00	0.00	0.0000	119.00	Ice	0.00	1.41	0.11
								1" Ice	0.00	1.72	0.16
								2" Ice			
								No Ice	2.31	1.29	0.02
Commscope MC-K6MHDX-9-96 (3)	C	None				0.0000	119.00	1/2"	2.50	1.45	0.04
								Ice	2.70	1.61	0.06
								1" Ice	3.12	1.96	0.12
								2" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.00	0.0000	119.00	No Ice	15.30	15.30	1.19
								1/2"	20.48	20.48	1.71
								Ice	25.66	25.66	2.22
								1" Ice	36.02	36.02	3.25
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.00	0.0000	119.00	2" Ice			
								No Ice	1.90	1.90	0.03
								1/2"	2.73	2.73	0.04
								Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.00	0.0000	119.00	1" Ice	4.40	4.40	0.12
								2" Ice			
								No Ice	1.90	1.90	0.03
								1/2"	2.73	2.73	0.04
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.00	0.0000	119.00	Ice	3.40	3.40	0.06
								1" Ice	4.40	4.40	0.12
								2" Ice			
								No Ice	1.90	1.90	0.03
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.00	0.0000	119.00	1/2"	2.73	2.73	0.04
								Ice	3.40	3.40	0.06
								1" Ice	4.40	4.40	0.12
								2" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.00	0.0000	119.00	No Ice	1.90	1.90	0.03
								1/2"	2.73	2.73	0.04
								Ice	3.40	3.40	0.06
								1" Ice	4.40	4.40	0.12
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.00	0.0000	119.00	2" Ice			
								No Ice	1.90	1.90	0.03
								1/2"	2.73	2.73	0.04
								Ice	3.40	3.40	0.06

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	160 - 155	Pole	Max Tension	39	0.00	-0.00	-0.00
			Max. Compression	26	-11.68	0.09	0.47
			Max. Mx	20	-3.80	20.12	0.26
			Max. My	2	-3.77	0.13	20.26
			Max. Vy	8	7.36	-20.12	-0.09
			Max. Vx	2	-7.38	0.13	20.26
			Max. Torque	18			-0.29

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.34	0.09	0.54
			Max. Mx	20	-4.06	58.09	0.57
			Max. My	2	-4.03	0.43	58.35
			Max. Vy	20	-7.83	58.09	0.57
			Max. Vx	14	7.89	-0.50	-58.21
			Max. Torque	18			-0.29
L3	150 - 148	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.29	0.09	0.57
			Max. Mx	20	-4.75	74.80	0.70
			Max. My	2	-4.71	0.54	75.15
			Max. Vy	20	-8.90	74.80	0.70
			Max. Vx	14	8.98	-0.62	-75.07
			Max. Torque	18			-0.29
L4	148 - 143	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.15	0.09	3.05
			Max. Mx	20	-8.62	135.78	2.03
			Max. My	2	-8.51	0.85	138.93
			Max. Vy	20	-12.56	135.78	2.03
			Max. Vx	14	12.97	-0.93	-136.85
			Max. Torque	20			-1.10
L5	143 - 138	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.01	0.10	3.16
			Max. Mx	20	-9.07	199.62	2.37
			Max. My	2	-8.96	1.16	204.61
			Max. Vy	20	-12.98	199.62	2.37
			Max. Vx	14	13.42	-1.24	-202.79
			Max. Torque	20			-1.10
L6	138 - 133	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.70	-0.48	5.07
			Max. Mx	8	-12.64	-292.72	0.71
			Max. My	2	-12.50	1.50	301.06
			Max. Vy	20	-18.78	292.46	3.93
			Max. Vx	14	19.29	-1.72	-297.18
			Max. Torque	20			-1.58
L7	133 - 128	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.48	-0.47	5.22
			Max. Mx	8	-13.21	-387.44	0.34
			Max. My	2	-13.08	1.91	398.10
			Max. Vy	20	-19.13	387.18	4.39
			Max. Vx	14	19.64	-2.14	-394.48
			Max. Torque	20			-1.58
L8	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.24	-0.36	5.44
			Max. Mx	8	-17.34	-496.85	-0.02
			Max. My	2	-17.21	2.35	509.91
			Max. Vy	20	-22.06	496.64	4.87
			Max. Vx	14	22.59	-2.54	-506.52
			Max. Torque	20			-1.58
L9	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.88	-0.22	6.15
			Max. Mx	8	-20.33	-609.95	-0.29
			Max. My	2	-20.19	2.80	625.59
			Max. Vy	20	-24.46	609.80	5.45
			Max. Vx	14	25.03	-2.93	-622.19
			Max. Torque	20			-1.81
L10	118 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.53	-0.15	6.32
			Max. Mx	8	-20.81	-689.69	-0.52
			Max. My	2	-20.68	3.09	707.04
			Max. Vy	20	-24.65	689.57	5.77
			Max. Vx	14	25.22	-3.20	-703.77
			Max. Torque	20			-1.81
L11	111 - 109.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.20	-0.05	6.58
			Max. Mx	8	-21.95	-813.90	-0.88
			Max. My	2	-21.82	3.54	833.86
			Max. Vy	20	-25.05	813.82	6.27
			Max. Vx	14	25.62	-3.61	-830.81

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L12	109.75 - 105.33	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.25	0.05	6.81
			Max. Mx	8	-22.73	-925.09	-1.20
			Max. My	2	-22.60	3.93	947.36
			Max. Vy	20	-25.30	925.04	6.70
			Max. Vx	14	25.87	-3.97	-944.50
L13	105.33 - 105.08	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.33	0.05	6.82
			Max. Mx	8	-22.80	-931.41	-1.21
			Max. My	2	-22.68	3.95	953.82
			Max. Vy	8	25.31	-931.41	-1.21
			Max. Vx	14	25.89	-4.00	-950.97
L14	105.08 - 100.08	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.89	0.16	7.06
			Max. Mx	8	-23.89	-1058.81	-1.57
			Max. My	2	-23.77	4.39	1083.83
			Max. Vy	20	-25.67	1058.80	7.22
			Max. Vx	14	26.24	-4.40	-1081.19
L15	100.08 - 95.08	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.48	0.28	7.31
			Max. Mx	20	-25.01	1188.00	7.71
			Max. My	2	-24.90	4.84	1215.61
			Max. Vy	20	-26.02	1188.00	7.71
			Max. Vx	14	26.59	-4.80	-1213.18
L16	95.08 - 90.08	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.08	0.39	7.54
			Max. Mx	20	-26.17	1318.90	8.19
			Max. My	2	-26.06	5.28	1349.09
			Max. Vy	20	-26.36	1318.90	8.19
			Max. Vx	14	26.93	-5.21	-1346.88
L17	90.08 - 85.08	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.71	0.51	7.78
			Max. Mx	20	-27.35	1451.46	8.68
			Max. My	2	-27.24	5.72	1484.21
			Max. Vy	20	-26.68	1451.46	8.68
			Max. Vx	14	27.25	-5.61	-1482.22
L18	85.08 - 76.75	Pole	Max. Torque	20			-1.80
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.14	0.59	7.94
			Max. Mx	20	-28.33	1560.80	9.07
			Max. My	2	-28.23	6.08	1595.65
			Max. Vy	20	-26.94	1560.80	9.07
			Max. Vx	14	27.51	-5.94	-1593.83
L19	76.75 - 75.75	Pole	Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.88	0.70	8.15
			Max. Mx	20	-30.20	1703.40	9.58
			Max. My	2	-30.11	6.54	1740.95
			Max. Vy	20	-27.38	1703.40	9.58
			Max. Vx	14	27.95	-6.36	-1739.36
L20	75.75 - 70.75	Pole	Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.51	0.79	8.33
			Max. Mx	20	-31.36	1840.76	10.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L21	70.75 - 70.58	Pole	Max. My	2	-31.28	6.99	1880.88
			Max. Vy	20	-27.60	1840.76	10.05
			Max. Vx	14	28.17	-6.76	-1879.50
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.57	0.79	8.34
			Max. Mx	20	-31.42	1845.45	10.07
			Max. My	2	-31.34	7.00	1885.66
			Max. Vy	8	27.61	-1845.22	-3.70
			Max. Vx	14	28.20	-6.77	-1884.28
L22	70.58 - 70.33	Pole	Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.69	0.80	8.35
			Max. Mx	20	-31.51	1852.35	10.10
			Max. My	2	-31.43	7.02	1892.68
			Max. Vy	8	27.62	-1852.11	-3.72
			Max. Vx	14	28.19	-6.79	-1891.32
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.85	0.81	8.36
L23	70.33 - 70	Pole	Max. Mx	20	-31.63	1861.47	10.13
			Max. My	2	-31.54	7.05	1901.97
			Max. Vy	8	27.64	-1861.23	-3.75
			Max. Vx	14	28.21	-6.82	-1900.62
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.94	0.81	8.37
			Max. Mx	20	-31.69	1868.38	10.15
			Max. My	2	-31.60	7.07	1909.00
			Max. Vy	8	27.65	-1868.13	-3.76
L24	70 - 69.75	Pole	Max. Vx	14	28.23	-6.84	-1907.67
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.60	0.92	8.56
			Max. Mx	20	-32.86	2007.10	10.62
			Max. My	2	-32.78	7.51	2050.28
			Max. Vy	20	-27.87	2007.10	10.62
			Max. Vx	14	28.43	-7.23	-2049.15
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
L25	69.75 - 64.75	Pole	Max. Compression	26	-70.21	1.04	8.77
			Max. Mx	20	-34.08	2146.81	11.09
			Max. My	2	-34.01	7.95	2192.52
			Max. Vy	20	-28.06	2146.81	11.09
			Max. Vx	14	28.62	-7.62	-2191.61
			Max. Torque	20			-1.79
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.84	1.16	8.96
			Max. Mx	20	-35.32	2287.42	11.55
			Max. My	2	-35.26	8.38	2335.64
L26	64.75 - 59.75	Pole	Max. Vy	20	-28.23	2287.42	11.55
			Max. Vx	14	28.79	-8.01	-2334.94
			Max. Torque	20			-1.78
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.49	1.29	9.16
			Max. Mx	20	-36.58	2428.85	12.00
			Max. My	2	-36.53	8.81	2479.56
			Max. Vy	20	-28.39	2428.85	12.00
			Max. Vx	14	28.94	-8.39	-2479.07
			Max. Torque	20			-1.78
L27	59.75 - 54.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.13	1.33	9.22
			Max. Mx	20	-37.01	2478.53	12.16
			Max. My	2			
			Max. Vy	20			
			Max. Vx	14			
			Max. Torque	20			
			Max Tension	1			
			Max. Compression	26			
			Max. Mx	20			
L28	54.75 - 49.75	Pole	Max. My	2			
			Max. Vy	20			
			Max. Vx	14			
			Max. Torque	20			
			Max Tension	1			
			Max. Compression	26			
			Max. Mx	20			
			Max. My	2			
			Max. Vy	20			
			Max. Vx	14			
L29	49.75 - 43	Pole	Max. Torque	20			
			Max Tension	1			
			Max. Compression	26			
			Max. Mx	20			
			Max. My	2			
			Max. Vy	20			
			Max. Vx	14			
			Max. Torque	20			
			Max Tension	1			
			Max. Compression	26			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L30	43 - 42	Pole	Max. My	2	-36.96	8.95	2530.11
			Max. Vy	20	-28.46	2478.53	12.16
			Max. Vx	14	29.01	-8.52	-2529.69
			Max. Torque	20			-1.78
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.85	1.48	9.87
			Max. Mx	20	-39.64	2650.62	12.94
			Max. My	2	-39.60	9.46	2705.26
			Max. Vy	20	-28.87	2650.62	12.94
			Max. Vx	14	29.39	-8.98	-2704.60
L31	42 - 37	Pole	Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.69	1.60	10.05
			Max. Mx	20	-41.08	2795.16	13.38
			Max. My	2	-41.04	9.89	2852.13
			Max. Vy	20	-29.00	2795.16	13.38
			Max. Vx	14	29.51	-9.35	-2851.68
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.55	1.72	10.21
L32	37 - 32	Pole	Max. Mx	20	-42.54	2940.30	13.82
			Max. My	2	-42.51	10.30	2999.57
			Max. Vy	20	-29.11	2940.30	13.82
			Max. Vx	14	29.62	-9.72	-2999.33
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.18	1.79	10.31
			Max. Mx	20	-43.76	3059.39	14.18
			Max. My	2	-43.73	10.64	3120.52
			Max. Vy	20	-29.18	3059.39	14.18
L33	32 - 27.91	Pole	Max. Vx	14	29.69	-10.02	-3120.45
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.32	1.80	10.32
			Max. Mx	20	-43.88	3066.68	14.20
			Max. My	2	-43.86	10.67	3127.92
			Max. Vy	8	29.17	-3066.03	-6.51
			Max. Vx	14	29.68	-10.04	-3127.86
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
L34	27.91 - 27.66	Pole	Max. Compression	26	-83.54	1.81	10.33
			Max. Mx	20	-44.05	3078.64	14.24
			Max. My	2	-44.03	10.70	3140.07
			Max. Vy	8	29.18	-3077.99	-6.54
			Max. Vx	14	29.69	-10.07	-3140.03
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.68	1.81	10.34
			Max. Mx	20	-44.16	3086.52	14.26
			Max. My	2	-44.13	10.72	3148.07
L35	27.66 - 27.25	Pole	Max. Vy	8	29.19	-3085.87	-6.56
			Max. Vx	14	29.71	-10.09	-3148.04
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.76	1.82	10.34
			Max. Mx	20	-44.22	3090.90	14.27
			Max. My	2	-44.19	10.73	3152.52
			Max. Vy	8	29.21	-3090.24	-6.57
			Max. Vx	14	29.73	-10.10	-3152.49
			Max. Torque	20			-1.98
L36	27.25 - 26.98	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.26	1.93	10.47
			Max. Mx	20	-46.17	3237.34	14.70
			Max. My	14	-46.15	-10.46	-3301.41
			Max. Vy	8	29.21	-3090.24	-6.57
			Max. Vx	14	29.73	-10.10	-3152.49
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.26	1.93	10.47
			Max. Mx	20	-46.17	3237.34	14.70
L37	26.98 - 26.83	Pole	Max. My	14	-46.15	-10.46	-3301.41
			Max. Vy	8	29.21	-3090.24	-6.57
			Max. Vx	14	29.73	-10.10	-3152.49
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.26	1.93	10.47
			Max. Mx	20	-46.17	3237.34	14.70
			Max. My	14	-46.15	-10.46	-3301.41
			Max. Vy	8	29.21	-3090.24	-6.57
			Max. Vx	14	29.73	-10.10	-3152.49
L38	26.83 - 21.83	Pole	Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.26	1.93	10.47
			Max. Mx	20	-46.17	3237.34	14.70
			Max. My	14	-46.15	-10.46	-3301.41
			Max. Vy	8	29.21	-3090.24	-6.57
			Max. Vx	14	29.73	-10.10	-3152.49
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-86.26	1.93	10.47

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L39	21.83 - 16.83	Pole	Max. Vy	20	-29.40	3237.34	14.70
			Max. Vx	14	29.90	-10.46	-3301.41
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.74	2.05	10.60
L40	16.83 - 16	Pole	Max. Mx	20	-48.15	3384.71	15.13
			Max. My	14	-48.14	-10.82	-3451.22
			Max. Vy	20	-29.58	3384.71	15.13
			Max. Vx	14	30.08	-10.82	-3451.22
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.17	2.07	10.62
			Max. Mx	20	-48.49	3409.26	15.20
			Max. My	14	-48.47	-10.88	-3476.18
			Max. Vy	20	-29.61	3409.26	15.20
L41	16 - 15.75	Pole	Max. Vx	14	30.11	-10.88	-3476.18
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.32	2.07	10.63
			Max. Mx	20	-48.61	3416.66	15.22
			Max. My	14	-48.60	-10.90	-3483.70
			Max. Vy	8	29.61	-3415.89	-7.32
			Max. Vx	14	30.11	-10.90	-3483.70
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
L42	15.75 - 14.75	Pole	Max. Compression	26	-89.92	2.08	10.64
			Max. Mx	20	-49.07	3446.29	15.31
			Max. My	14	-49.06	-10.97	-3513.81
			Max. Vy	20	-29.66	3446.29	15.31
			Max. Vx	14	30.16	-10.97	-3513.81
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.05	2.07	10.65
			Max. Mx	20	-49.17	3453.70	15.33
			Max. My	14	-49.16	-10.99	-3521.34
L43	14.75 - 14.5	Pole	Max. Vy	8	29.66	-3452.92	-7.41
			Max. Vx	14	30.16	-10.99	-3521.34
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.27	2.06	10.68
			Max. Mx	20	-50.07	3525.52	15.53
			Max. My	14	-50.06	-11.16	-3594.33
			Max. Vy	20	-29.73	3525.52	15.53
			Max. Vx	14	30.23	-11.16	-3594.33
			Max. Torque	20			-1.98
L44	14.5 - 12.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.41	2.06	10.69
			Max. Mx	20	-50.20	3532.94	15.55
			Max. My	14	-50.19	-11.18	-3601.88
			Max. Vy	8	29.71	-3532.13	-7.59
			Max. Vx	14	30.21	-11.18	-3601.88
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.45	2.07	10.72
			Max. Mx	20	-50.98	3587.37	15.71
L45	12.08 - 11.83	Pole	Max. My	14	-50.97	-11.30	-3657.20
			Max. Vy	20	-29.81	3587.37	15.71
			Max. Vx	14	30.31	-11.30	-3657.20
			Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.59	2.08	10.72
			Max. Mx	20	-51.11	3594.82	15.73
			Max. My	14	-51.10	-11.32	-3664.77
			Max. Vy	8	29.79	-3593.99	-7.73
			Max. Vx	14	30.29	-11.32	-3664.77
L46	11.83 - 10	Pole	Max. Torque	20			-1.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.59	2.08	10.72
			Max. Mx	20	-51.11	3594.82	15.73
			Max. My	14	-51.10	-11.32	-3664.77
L47	10 - 9.75	Pole	Max. Vy	8	29.79	-3593.99	-7.73
			Max. Vx	14	30.29	-11.32	-3664.77
			Max. Torque	20			-1.98

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L48	9.75 - 4.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.31	2.16	10.80
			Max. Mx	20	-53.30	3744.23	16.15
			Max. My	14	-53.30	-11.67	-3816.58
			Max. Vy	20	-29.99	3744.23	16.15
			Max. Vx	14	30.48	-11.67	-3816.58
			Max. Torque	20			-1.98
L49	4.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-97.80	2.24	10.88
			Max. Mx	20	-55.42	3887.00	16.54
			Max. My	14	-55.41	-12.00	-3961.60
			Max. Vy	20	-30.16	3887.00	16.54
			Max. Vx	14	30.65	-12.00	-3961.60
			Max. Torque	20			-1.98

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	97.80	-0.00	-0.00
	Max. H _x	21	41.57	30.13	0.07
	Max. H _z	3	41.57	0.07	30.56
	Max. M _x	2	3960.55	0.07	30.56
	Max. M _z	8	3886.06	-30.13	-0.07
	Max. Torsion	8	1.96	-30.13	-0.07
	Min. Vert	3	41.57	0.07	30.56
	Min. H _x	9	41.57	-30.13	-0.07
	Min. H _z	15	41.57	-0.07	-30.62
	Min. M _x	14	-3961.60	-0.07	-30.62
	Min. M _z	20	-3887.00	30.13	0.07
	Min. Torsion	20	-1.98	30.13	0.07

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	46.19	0.00	0.00	-3.18	0.36	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	55.43	-0.07	-30.56	-3960.55	12.91	0.15
0.9 Dead+1.0 Wind 0 deg - No Ice	41.57	-0.07	-30.56	-3871.01	12.48	0.15
1.2 Dead+1.0 Wind 30 deg - No Ice	55.43	15.00	-26.35	-3411.69	-1931.91	-0.84
0.9 Dead+1.0 Wind 30 deg - No Ice	41.57	15.00	-26.35	-3334.42	-1888.91	-0.79
1.2 Dead+1.0 Wind 60 deg - No Ice	55.43	26.46	-15.40	-1981.68	-3389.11	-1.62
0.9 Dead+1.0 Wind 60 deg - No Ice	41.57	26.46	-15.40	-1936.42	-3313.63	-1.53
1.2 Dead+1.0 Wind 90 deg - No Ice	55.43	30.13	0.07	8.38	-3886.06	-1.96
0.9 Dead+1.0 Wind 90 deg - No Ice	41.57	30.13	0.07	9.19	-3799.39	-1.86
1.2 Dead+1.0 Wind 120 deg - No Ice	55.43	26.22	15.35	1985.23	-3384.47	-1.79
0.9 Dead+1.0 Wind 120 deg - No Ice	41.57	26.22	15.35	1941.86	-3308.99	-1.69
1.2 Dead+1.0 Wind 150 deg - No Ice	55.43	15.16	26.47	3416.23	-1953.63	-1.13

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 150 deg - No Ice	41.57	15.16	26.48	3340.91	-1910.10	-1.07
1.2 Dead+1.0 Wind 180 deg - No Ice	55.43	0.07	30.62	3961.60	-12.00	-0.17
0.9 Dead+1.0 Wind 180 deg - No Ice	41.57	0.07	30.62	3874.09	-11.81	-0.16
1.2 Dead+1.0 Wind 210 deg - No Ice	55.43	-15.00	26.35	3403.53	1932.81	0.85
0.9 Dead+1.0 Wind 210 deg - No Ice	41.57	-15.00	26.35	3328.51	1889.58	0.80
1.2 Dead+1.0 Wind 240 deg - No Ice	55.43	-26.41	15.37	1968.91	3382.03	1.64
0.9 Dead+1.0 Wind 240 deg - No Ice	41.57	-26.41	15.37	1926.01	3306.51	1.55
1.2 Dead+1.0 Wind 270 deg - No Ice	55.43	-30.13	-0.07	-16.54	3887.00	1.98
0.9 Dead+1.0 Wind 270 deg - No Ice	41.57	-30.13	-0.07	-15.10	3800.09	1.87
1.2 Dead+1.0 Wind 300 deg - No Ice	55.43	-26.26	-15.38	-1997.99	3393.35	1.78
0.9 Dead+1.0 Wind 300 deg - No Ice	41.57	-26.26	-15.38	-1952.25	3317.44	1.69
1.2 Dead+1.0 Wind 330 deg - No Ice	55.43	-15.16	-26.47	-3424.38	1954.53	1.11
0.9 Dead+1.0 Wind 330 deg - No Ice	41.57	-15.16	-26.48	-3346.81	1910.77	1.05
1.2 Dead+1.0 Ice+1.0 Temp	97.80	0.00	0.00	-10.88	2.24	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97.80	-0.01	-7.65	-1089.36	4.97	0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97.80	3.78	-6.60	-940.25	-527.24	-0.29
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97.80	6.58	-3.82	-548.92	-922.72	-0.53
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97.80	7.58	0.01	-8.33	-1061.43	-0.63
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97.80	6.59	3.84	530.48	-923.59	-0.56
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97.80	3.80	6.62	920.88	-531.92	-0.34
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97.80	0.01	7.66	1069.40	-0.44	-0.03
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97.80	-3.78	6.60	918.17	531.78	0.29
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97.80	-6.57	3.81	525.80	925.43	0.54
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97.80	-7.58	-0.01	-13.74	1065.96	0.63
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97.80	-6.60	-3.84	-553.61	929.96	0.56
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	97.80	-3.80	-6.62	-942.95	536.46	0.34
Dead+Wind 0 deg - Service	46.19	-0.02	-6.65	-854.98	3.04	0.02
Dead+Wind 30 deg - Service	46.19	3.26	-5.73	-736.98	-415.66	-0.19
Dead+Wind 60 deg - Service	46.19	5.75	-3.35	-429.13	-729.39	-0.36
Dead+Wind 90 deg - Service	46.19	6.55	0.02	-0.70	-836.17	-0.43
Dead+Wind 120 deg - Service	46.19	5.70	3.34	424.88	-728.38	-0.38
Dead+Wind 150 deg - Service	46.19	3.30	5.76	733.01	-420.35	-0.24
Dead+Wind 180 deg - Service	46.19	0.02	6.66	850.23	-2.30	-0.02
Dead+Wind 210 deg - Service	46.19	-3.26	5.73	730.24	416.42	0.19
Dead+Wind 240 deg - Service	46.19	-5.74	3.34	421.37	728.39	0.36
Dead+Wind 270 deg - Service	46.19	-6.55	-0.02	-6.04	836.92	0.43
Dead+Wind 300 deg - Service	46.19	-5.71	-3.34	-432.64	730.88	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
Dead+Wind 330 deg - Service	46.19	-3.30	-5.76	-739.76	421.10	0.24

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-46.19	0.00	-0.00	46.19	-0.00	0.002%
2	-0.07	-55.43	-30.57	0.07	55.43	30.56	0.003%
3	-0.07	-41.57	-30.57	0.07	41.57	30.56	0.004%
4	15.00	-55.43	-26.35	-15.00	55.43	26.35	0.000%
5	15.00	-41.57	-26.35	-15.00	41.57	26.35	0.000%
6	26.46	-55.43	-15.40	-26.46	55.43	15.40	0.000%
7	26.46	-41.57	-15.40	-26.46	41.57	15.40	0.000%
8	30.13	-55.43	0.07	-30.13	55.43	-0.07	0.001%
9	30.13	-41.57	0.07	-30.13	41.57	-0.07	0.001%
10	26.22	-55.43	15.35	-26.22	55.43	-15.35	0.000%
11	26.22	-41.57	15.35	-26.22	41.57	-15.35	0.000%
12	15.16	-55.43	26.48	-15.16	55.43	-26.47	0.000%
13	15.16	-41.57	26.48	-15.16	41.57	-26.48	0.000%
14	0.07	-55.43	30.62	-0.07	55.43	-30.62	0.003%
15	0.07	-41.57	30.62	-0.07	41.57	-30.62	0.004%
16	-15.00	-55.43	26.35	15.00	55.43	-26.35	0.000%
17	-15.00	-41.57	26.35	15.00	41.57	-26.35	0.000%
18	-26.41	-55.43	15.37	26.41	55.43	-15.37	0.000%
19	-26.41	-41.57	15.37	26.41	41.57	-15.37	0.000%
20	-30.13	-55.43	-0.07	30.13	55.43	0.07	0.001%
21	-30.13	-41.57	-0.07	30.13	41.57	0.07	0.001%
22	-26.26	-55.43	-15.38	26.26	55.43	15.38	0.000%
23	-26.26	-41.57	-15.38	26.26	41.57	15.38	0.000%
24	-15.16	-55.43	-26.48	15.16	55.43	26.47	0.000%
25	-15.16	-41.57	-26.48	15.16	41.57	26.48	0.000%
26	0.00	-97.80	0.00	-0.00	97.80	-0.00	0.000%
27	-0.01	-97.80	-7.65	0.01	97.80	7.65	0.000%
28	3.78	-97.80	-6.60	-3.78	97.80	6.60	0.000%
29	6.58	-97.80	-3.82	-6.58	97.80	3.82	0.000%
30	7.58	-97.80	0.01	-7.58	97.80	-0.01	0.000%
31	6.59	-97.80	3.84	-6.59	97.80	-3.84	0.000%
32	3.80	-97.80	6.62	-3.80	97.80	-6.62	0.000%
33	0.01	-97.80	7.66	-0.01	97.80	-7.66	0.000%
34	-3.78	-97.80	6.60	3.78	97.80	-6.60	0.000%
35	-6.57	-97.80	3.81	6.57	97.80	-3.81	0.000%
36	-7.58	-97.80	-0.01	7.58	97.80	0.01	0.000%
37	-6.60	-97.80	-3.84	6.60	97.80	3.84	0.000%
38	-3.80	-97.80	-6.62	3.80	97.80	6.62	0.000%
39	-0.02	-46.19	-6.65	0.02	46.19	6.65	0.005%
40	3.26	-46.19	-5.73	-3.26	46.19	5.73	0.001%
41	5.75	-46.19	-3.35	-5.75	46.19	3.35	0.000%
42	6.55	-46.19	0.02	-6.55	46.19	-0.02	0.003%
43	5.70	-46.19	3.34	-5.70	46.19	-3.34	0.001%
44	3.30	-46.19	5.76	-3.30	46.19	-5.76	0.000%
45	0.02	-46.19	6.66	-0.02	46.19	-6.66	0.005%
46	-3.26	-46.19	5.73	3.26	46.19	-5.73	0.000%
47	-5.74	-46.19	3.34	5.74	46.19	-3.34	0.001%
48	-6.55	-46.19	-0.02	6.55	46.19	0.02	0.003%
49	-5.71	-46.19	-3.34	5.71	46.19	3.34	0.000%
50	-3.30	-46.19	-5.76	3.30	46.19	5.76	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	11	0.00000001	0.00001493
2	Yes	24	0.00002568	0.00010844
3	Yes	23	0.00002471	0.00010521
4	Yes	31	0.00000001	0.00000000
5	Yes	30	0.00000001	0.00000000
6	Yes	31	0.00000001	0.00000000
7	Yes	30	0.00000001	0.00000000
8	Yes	26	0.00000001	0.00009448
9	Yes	25	0.00000001	0.00009619
10	Yes	31	0.00000001	0.00000000
11	Yes	30	0.00000001	0.00000000
12	Yes	31	0.00000001	0.00000000
13	Yes	30	0.00000001	0.00000000
14	Yes	24	0.00002567	0.00014157
15	Yes	23	0.00002470	0.00014746
16	Yes	31	0.00000001	0.00000000
17	Yes	30	0.00000001	0.00000000
18	Yes	31	0.00000001	0.00000000
19	Yes	30	0.00000001	0.00000000
20	Yes	27	0.00000001	0.00010122
21	Yes	26	0.00000001	0.00010431
22	Yes	31	0.00000001	0.00000000
23	Yes	30	0.00000001	0.00000000
24	Yes	31	0.00000001	0.00000000
25	Yes	30	0.00000001	0.00000000
26	Yes	20	0.00000001	0.00009599
27	Yes	30	0.00000001	0.00012529
28	Yes	31	0.00000001	0.00012344
29	Yes	31	0.00000001	0.00012614
30	Yes	30	0.00000001	0.00012174
31	Yes	31	0.00000001	0.00012006
32	Yes	31	0.00000001	0.00012137
33	Yes	30	0.00000001	0.00012162
34	Yes	31	0.00000001	0.00012062
35	Yes	31	0.00000001	0.00011931
36	Yes	30	0.00000001	0.00012222
37	Yes	31	0.00000001	0.00012794
38	Yes	31	0.00000001	0.00012521
39	Yes	20	0.00014355	0.00011469
40	Yes	24	0.00000001	0.00014871
41	Yes	25	0.00000001	0.00010029
42	Yes	21	0.00008953	0.00009773
43	Yes	24	0.00000001	0.00014614
44	Yes	25	0.00000001	0.00009703
45	Yes	20	0.00014343	0.00011408
46	Yes	25	0.00000001	0.00009468
47	Yes	24	0.00000001	0.00014391
48	Yes	21	0.00008952	0.00010402
49	Yes	25	0.00000001	0.00010236
50	Yes	25	0.00000001	0.00009422

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	38.392	39	2.2369	0.0053
L2	155 - 150	36.052	39	2.2262	0.0050
L3	150 - 148	33.756	39	2.1471	0.0044
L4	148 - 143	32.867	39	2.0937	0.0042
L5	143 - 138	30.689	39	2.0663	0.0039
L6	138 - 133	28.545	39	2.0273	0.0036
L7	133 - 128	26.448	39	1.9749	0.0032
L8	128 - 123	24.414	39	1.9098	0.0029
L9	123 - 118	22.453	39	1.8332	0.0026
L10	118 - 111	20.579	39	1.7461	0.0023

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	114.75 - 109.75	19.411	39	1.6843	0.0021
L12	109.75 - 105.33	17.673	39	1.6272	0.0020
L13	105.33 - 105.08	16.204	39	1.5455	0.0018
L14	105.08 - 100.08	16.124	39	1.5423	0.0018
L15	100.08 - 95.08	14.543	39	1.4757	0.0016
L16	95.08 - 90.08	13.034	39	1.4064	0.0015
L17	90.08 - 85.08	11.600	39	1.3332	0.0014
L18	85.08 - 76.75	10.243	39	1.2585	0.0012
L19	81 - 75.75	9.194	39	1.1966	0.0012
L20	75.75 - 70.75	7.904	39	1.1409	0.0011
L21	70.75 - 70.58	6.760	39	1.0435	0.0010
L22	70.58 - 70.33	6.723	39	1.0402	0.0009
L23	70.33 - 70	6.669	39	1.0375	0.0009
L24	70 - 69.75	6.597	39	1.0338	0.0009
L25	69.75 - 64.75	6.543	39	1.0289	0.0009
L26	64.75 - 59.75	5.517	39	0.9313	0.0008
L27	59.75 - 54.75	4.593	39	0.8337	0.0007
L28	54.75 - 49.75	3.771	39	0.7364	0.0006
L29	49.75 - 43	3.050	39	0.6396	0.0005
L30	48 - 42	2.822	39	0.6058	0.0005
L31	42 - 37	2.096	39	0.5426	0.0004
L32	37 - 32	1.573	39	0.4559	0.0004
L33	32 - 27.91	1.141	39	0.3701	0.0003
L34	27.91 - 27.66	0.853	39	0.3008	0.0002
L35	27.66 - 27.25	0.838	39	0.2980	0.0002
L36	27.25 - 26.98	0.812	39	0.2935	0.0002
L37	26.98 - 26.83	0.796	39	0.2905	0.0002
L38	26.83 - 21.83	0.787	39	0.2888	0.0002
L39	21.83 - 16.83	0.514	39	0.2327	0.0002
L40	16.83 - 16	0.299	39	0.1773	0.0001
L41	16 - 15.75	0.269	39	0.1683	0.0001
L42	15.75 - 14.75	0.260	39	0.1660	0.0001
L43	14.75 - 14.5	0.227	39	0.1571	0.0001
L44	14.5 - 12.08	0.218	39	0.1534	0.0001
L45	12.08 - 11.83	0.150	39	0.1181	0.0001
L46	11.83 - 10	0.144	39	0.1157	0.0001
L47	10 - 9.75	0.103	39	0.0980	0.0001
L48	9.75 - 4.75	0.098	39	0.0956	0.0001
L49	4.75 - 0	0.023	39	0.0466	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	800 10121 w/ Mount Pipe	39	36.986	2.2349	0.0052	6797
150.00	PCS 1900MHZ 4X45W-65MHZ	39	33.756	2.1471	0.0045	3148
148.00	APXVTM14-C-120 w/ Mount Pipe	39	32.867	2.0937	0.0042	3874
138.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	39	28.545	2.0273	0.0036	6324
127.00	LNx-6515DS-VTM w/ Mount Pipe	39	24.015	1.8952	0.0029	3938
119.00	MX08FRO665-21 w/ Mount Pipe	39	20.946	1.7654	0.0024	3219
48.00	KS24019-L112A	39	2.822	0.6058	0.0005	4112

Maximum Tower Deflections - Design Wind

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

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	177.166	2	10.3152	0.0227
L2	155 - 150	166.431	2	10.2673	0.0218
L3	150 - 148	155.892	2	9.9070	0.0195
L4	148 - 143	151.811	2	9.6628	0.0187
L5	143 - 138	141.798	2	9.5407	0.0173
L6	138 - 133	131.940	2	9.3642	0.0160
L7	133 - 128	122.294	2	9.1285	0.0144
L8	128 - 123	112.923	2	8.8329	0.0130
L9	123 - 118	103.886	2	8.4834	0.0117
L10	118 - 111	95.238	2	8.0844	0.0104
L11	114.75 - 109.75	89.848	2	7.8007	0.0095
L12	109.75 - 105.33	81.820	2	7.5379	0.0089
L13	105.33 - 105.08	75.034	2	7.1617	0.0080
L14	105.08 - 100.08	74.660	2	7.1469	0.0079
L15	100.08 - 95.08	67.354	2	6.8394	0.0073
L16	95.08 - 90.08	60.374	2	6.5196	0.0067
L17	90.08 - 85.08	53.737	2	6.1813	0.0062
L18	85.08 - 76.75	47.456	2	5.8354	0.0056
L19	81 - 75.75	42.599	2	5.5488	0.0052
L20	75.75 - 70.75	36.626	2	5.2907	0.0049
L21	70.75 - 70.58	31.328	2	4.8396	0.0043
L22	70.58 - 70.33	31.157	2	4.8242	0.0043
L23	70.33 - 70	30.905	2	4.8113	0.0043
L24	70 - 69.75	30.573	2	4.7943	0.0043
L25	69.75 - 64.75	30.323	2	4.7718	0.0043
L26	64.75 - 59.75	25.568	14	4.3190	0.0038
L27	59.75 - 54.75	21.287	14	3.8663	0.0033
L28	54.75 - 49.75	17.477	14	3.4149	0.0028
L29	49.75 - 43	14.138	14	2.9657	0.0024
L30	48 - 42	13.081	14	2.8092	0.0023
L31	42 - 37	9.715	14	2.5157	0.0020
L32	37 - 32	7.292	14	2.1137	0.0016
L33	32 - 27.91	5.288	14	1.7160	0.0013
L34	27.91 - 27.66	3.956	14	1.3944	0.0010
L35	27.66 - 27.25	3.883	14	1.3815	0.0010
L36	27.25 - 26.98	3.765	14	1.3604	0.0010
L37	26.98 - 26.83	3.689	14	1.3465	0.0010
L38	26.83 - 21.83	3.647	14	1.3387	0.0010
L39	21.83 - 16.83	2.381	14	1.0785	0.0008
L40	16.83 - 16	1.387	14	0.8220	0.0006
L41	16 - 15.75	1.247	14	0.7799	0.0005
L42	15.75 - 14.75	1.207	14	0.7695	0.0005
L43	14.75 - 14.5	1.050	14	0.7280	0.0005
L44	14.5 - 12.08	1.012	14	0.7110	0.0005
L45	12.08 - 11.83	0.693	14	0.5473	0.0004
L46	11.83 - 10	0.665	14	0.5360	0.0004
L47	10 - 9.75	0.475	14	0.4542	0.0003
L48	9.75 - 4.75	0.452	14	0.4429	0.0003
L49	4.75 - 0	0.107	14	0.2159	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157.00	800 10121 w/ Mount Pipe	2	170.716	10.3068	0.0240	1597
150.00	PCS 1900MHZ 4X45W-65MHZ	2	155.892	9.9070	0.0208	733
148.00	APXVTM14-C-120 w/ Mount Pipe	2	151.811	9.6628	0.0197	902
138.00	(2) LPA-80063-6CF-EDIN-2 w/ Mount Pipe	2	131.940	9.3642	0.0168	1474
127.00	LNx-6515DS-VTM w/ Mount Pipe	2	111.088	8.7662	0.0133	903
119.00	MX08FRO665-21 w/ Mount Pipe	2	96.932	8.1727	0.0111	730
48.00	KS24019-L112A	14	13.081	2.8092	0.0023	891

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	160 - 155 (1)	TP10.75x10.75x0.349	5.00	0.00	0.0	11.403	-3.77	359.22	0.010
L2	155 - 150 (2)	TP10.75x10.75x0.349	5.00	0.00	0.0	11.403	-4.02	359.22	0.011
L3	150 - 148 (3)	TP10.75x10.75x0.349	2.00	0.00	0.0	11.403	-4.71	359.22	0.013
L4	148 - 143 (4)	TP23.81x23x0.25	5.00	0.00	0.0	18.694	-8.51	1009.52	0.008
L5	143 - 138 (5)	TP24.62x23.81x0.25	5.00	0.00	0.0	19.337	-8.96	1044.23	0.009
L6	138 - 133 (6)	TP25.43x24.62x0.25	5.00	0.00	0.0	19.980	-12.50	1078.94	0.012
L7	133 - 128 (7)	TP26.24x25.43x0.25	5.00	0.00	0.0	20.623	-13.08	1113.65	0.012
L8	128 - 123 (8)	TP27.05x26.24x0.25	5.00	0.00	0.0	21.265	-17.21	1148.35	0.015
L9	123 - 118 (9)	TP27.86x27.05x0.25	5.00	0.00	0.0	21.908	-20.19	1183.06	0.017
L10	118 - 111 (10)	TP28.994x27.86x0.25	7.00	0.00	0.0	22.326	-20.68	1205.62	0.017
L11	111 - 109.75 (11)	TP28.6964x27.8865x0.31	5.00	0.00	0.0	28.153	-21.82	1520.28	0.014
L12	109.75 - 105.33 (12)	TP29.4124x28.6964x0.31	4.42	0.00	0.0	28.863	-22.60	1558.63	0.015
L13	105.33 - 105.08 (13)	TP29.4529x29.4124x0.46	0.25	0.00	0.0	43.123	-22.68	2328.64	0.010
L14	105.08 - 100.08 (14)	TP30.2628x29.4529x0.46	5.00	0.00	0.0	43.746	-23.77	2362.29	0.010
L15	100.08 - 95.08 (15)	TP31.0728x30.2628x0.46	5.00	0.00	0.0	44.935	-24.90	2426.50	0.010
L16	95.08 - 90.08 (16)	TP31.8827x31.0728x0.45	5.00	0.00	0.0	44.895	-26.06	2424.35	0.011
L17	90.08 - 85.08 (17)	TP32.6926x31.8827x0.45	5.00	0.00	0.0	46.052	-27.24	2486.82	0.011
L18	85.08 - 76.75 (18)	TP34.042x32.6926x0.45	8.33	0.00	0.0	46.996	-28.23	2537.79	0.011
L19	76.75 - 75.75 (19)	TP33.579x32.7286x0.375	5.25	0.00	0.0	39.521	-30.11	2311.98	0.013
L20	75.75 - 70.75 (20)	TP34.3889x33.579x0.375	5.00	0.00	0.0	40.485	-31.28	2368.38	0.013
L21	70.75 - 70.58 (21)	TP34.4164x34.3889x0.37	0.17	0.00	0.0	40.517	-31.34	2370.29	0.013
L22	70.58 - 70.33 (22)	TP34.4569x34.4164x0.67	0.25	0.00	0.0	72.376	-31.43	4234.00	0.007
L23	70.33 - 70 (23)	TP34.5104x34.4569x0.67	0.33	0.00	0.0	72.490	-31.54	4240.70	0.007
L24	70 - 69.75 (24)	TP34.5509x34.5104x0.37	0.25	0.00	0.0	40.677	-31.60	2379.65	0.013
L25	69.75 - 64.75 (25)	TP35.3608x34.5509x0.37	5.00	0.00	0.0	41.641	-32.78	2436.05	0.013
L26	64.75 - 59.75 (26)	TP36.1707x35.3608x0.37	5.00	0.00	0.0	42.605	-34.01	2492.44	0.014
L27	59.75 - 54.75 (27)	TP36.9807x36.1707x0.37	5.00	0.00	0.0	43.569	-35.26	2548.84	0.014
L28	54.75 - 49.75 (28)	TP37.7906x36.9807x0.37	5.00	0.00	0.0	44.533	-36.53	2605.23	0.014
L29	49.75 - 43 (29)	TP38.884x37.7906x0.375	6.75	0.00	0.0	44.871	-36.96	2624.97	0.014

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L30	43 - 42 (30)	TP38.2961x37.3241x0.43 75	6.00	0.00	0.0	52.571 4	-39.60	3075.42	0.013
L31	42 - 37 (31)	TP39.1061x38.2961x0.43 75	5.00	0.00	0.0	53.696 1	-41.04	3141.22	0.013
L32	37 - 32 (32)	TP39.916x39.1061x0.437 5	5.00	0.00	0.0	54.820 9	-42.51	3207.02	0.013
L33	32 - 27.91 (33)	TP40.5786x39.916x0.437 5	4.09	0.00	0.0	55.741 0	-43.73	3260.85	0.013
L34	27.91 - 27.66 (34)	TP40.6191x40.5786x0.67 5	0.25	0.00	0.0	85.578 3	-43.86	5006.33	0.009
L35	27.66 - 27.25 (35)	TP40.6855x40.6191x0.67 5	0.41	0.00	0.0	85.720 6	-44.03	5014.65	0.009
L36	27.25 - 26.98 (36)	TP40.7293x40.6855x0.67 5	0.27	0.00	0.0	85.814 3	-44.13	5020.14	0.009
L37	26.98 - 26.83 (37)	TP40.7536x40.7293x0.66 25	0.15	0.00	0.0	84.302 5	-44.19	4931.70	0.009
L38	26.83 - 21.83 (38)	TP41.5636x40.7536x0.66 25	5.00	0.00	0.0	86.005 8	-46.15	5031.34	0.009
L39	21.83 - 16.83 (39)	TP42.3736x41.5636x0.66 25	5.00	0.00	0.0	87.709 0	-48.14	5130.98	0.009
L40	16.83 - 16 (40)	TP42.508x42.3736x0.662 5	0.83	0.00	0.0	87.991 7	-48.47	5147.52	0.009
L41	16 - 15.75 (41)	TP42.5485x42.508x0.812 5	0.25	0.00	0.0	107.63 20	-48.60	6296.47	0.008
L42	15.75 - 14.75 (42)	TP42.7105x42.5485x0.81 25	1.00	0.00	0.0	108.05 00	-49.06	6320.91	0.008
L43	14.75 - 14.5 (43)	TP42.751x42.7105x0.487 5	0.25	0.00	0.0	65.395 4	-49.16	3825.63	0.013
L44	14.5 - 12.08 (44)	TP43.1431x42.751x0.487 5	2.42	0.00	0.0	66.002 0	-50.06	3861.12	0.013
L45	12.08 - 11.83 (45)	TP43.1836x43.1431x0.73 75	0.25	0.00	0.0	99.358 8	-50.19	5812.49	0.009
L46	11.83 - 10 (46)	TP43.48x43.1836x0.7375	1.83	0.00	0.0	100.05 30	-50.97	5853.09	0.009
L47	10 - 9.75 (47)	TP43.5205x43.48x0.7375	0.25	0.00	0.0	100.14 80	-51.10	5858.63	0.009
L48	9.75 - 4.75 (48)	TP44.3305x43.5205x0.72 5	5.00	0.00	0.0	100.34 30	-53.30	5870.05	0.009
L49	4.75 - 0 (49)	TP45.1x44.3305x0.7125	4.75	0.00	0.0	100.38 10	-55.41	5872.30	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio M _{ux} / φM _{nx}	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio M _{uy} / φM _{ny}
L1	160 - 155 (1)	TP10.75x10.75x0.349	20.38	99.14	0.206	0.00	99.14	0.000
L2	155 - 150 (2)	TP10.75x10.75x0.349	58.73	99.14	0.592	0.00	99.14	0.000
L3	150 - 148 (3)	TP10.75x10.75x0.349	75.69	99.14	0.763	0.00	99.14	0.000
L4	148 - 143 (4)	TP23.81x23x0.25	138.93	619.45	0.224	0.00	619.45	0.000
L5	143 - 138 (5)	TP24.62x23.81x0.25	204.61	663.00	0.309	0.00	663.00	0.000
L6	138 - 133 (6)	TP25.43x24.62x0.25	301.06	704.73	0.427	0.00	704.73	0.000
L7	133 - 128 (7)	TP26.24x25.43x0.25	398.10	745.14	0.534	0.00	745.14	0.000
L8	128 - 123 (8)	TP27.05x26.24x0.25	509.91	786.27	0.649	0.00	786.27	0.000
L9	123 - 118 (9)	TP27.86x27.05x0.25	625.60	828.10	0.755	0.00	828.10	0.000
L10	118 - 111 (10)	TP28.994x27.86x0.25	707.05	855.63	0.826	0.00	855.63	0.000
L11	111 - 109.75 (11)	TP28.6964x27.8865x0.31 25	833.88	1123.41	0.742	0.00	1123.41	0.000
L12	109.75 - 105.33 (12)	TP29.4124x28.6964x0.31 25	947.38	1181.12	0.802	0.00	1181.12	0.000
L13	105.33 - 105.08 (13)	TP29.4529x29.4124x0.46 88	953.83	1748.21	0.546	0.00	1748.21	0.000
L14	105.08 - 100.08 (14)	TP30.2628x29.4529x0.46 25	1083.84	1824.58	0.594	0.00	1824.58	0.000
L15	100.08 -	TP31.0728x30.2628x0.46	1215.62	1925.88	0.631	0.00	1925.88	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 $\frac{M_{uy}}{\phi M_{ny}}$
L16	95.08 (15) 95.08 - 90.08 (16)	25 TP31.8827x31.0728x0.45	1349.10	1977.43	0.682	0.00	1977.43	0.000
L17	90.08 - 85.08 (17)	TP32.6926x31.8827x0.45	1484.22	2081.38	0.713	0.00	2081.38	0.000
L18	85.08 - 76.75 (18)	TP34.042x32.6926x0.45	1595.66	2168.18	0.736	0.00	2168.18	0.000
L19	76.75 - 75.75 (19)	TP33.579x32.7286x0.375	1740.97	1997.99	0.871	0.00	1997.99	0.000
L20	75.75 - 70.75 (20)	TP34.3889x33.579x0.375	1880.89	2097.21	0.897	0.00	2097.21	0.000
L21	70.75 - 70.58 (21)	TP34.4164x34.3889x0.375	1885.67	2100.63	0.898	0.00	2100.63	0.000
L22	70.58 - 70.33 (22)	TP34.4569x34.4164x0.675	1892.70	3690.97	0.513	0.00	3690.97	0.000
L23	70.33 - 70 (23)	TP34.5104x34.4569x0.675	1901.98	3702.77	0.514	0.00	3702.77	0.000
L24	70 - 69.75 (24)	TP34.5509x34.5104x0.375	1909.02	2117.34	0.902	0.00	2117.34	0.000
L25	69.75 - 64.75 (25)	TP35.3608x34.5509x0.375	2050.29	2219.44	0.924	0.00	2219.44	0.000
L26	64.75 - 59.75 (26)	TP36.1707x35.3608x0.375	2192.53	2321.66	0.944	0.00	2321.66	0.000
L27	59.75 - 54.75 (27)	TP36.9807x36.1707x0.375	2335.66	2415.30	0.967	0.00	2415.30	0.000
L28	54.75 - 49.75 (28)	TP37.7906x36.9807x0.375	2479.58	2510.16	0.988	0.00	2510.16	0.000
L29	49.75 - 43 (29)	TP38.884x37.7906x0.375	2530.13	2543.64	0.995	0.00	2543.64	0.000
L30	43 - 42 (30)	TP38.2961x37.3241x0.4375	2705.28	3029.53	0.893	0.00	3029.53	0.000
L31	42 - 37 (31)	TP39.1061x38.2961x0.4375	2852.14	3161.31	0.902	0.00	3161.31	0.000
L32	37 - 32 (32)	TP39.916x39.1061x0.4375	2999.58	3295.89	0.910	0.00	3295.89	0.000
L33	32 - 27.91 (33)	TP40.5786x39.916x0.4375	3120.54	3408.07	0.916	0.00	3408.07	0.000
L34	27.91 - 27.66 (34)	TP40.6191x40.5786x0.675	3127.94	5175.96	0.604	0.00	5175.96	0.000
L35	27.66 - 27.25 (35)	TP40.6855x40.6191x0.675	3140.09	5193.33	0.605	0.00	5193.33	0.000
L36	27.25 - 26.98 (36)	TP40.7293x40.6855x0.675	3148.09	5204.78	0.605	0.00	5204.78	0.000
L37	26.98 - 26.83 (37)	TP40.7536x40.7293x0.6625	3152.54	5119.44	0.616	0.00	5119.44	0.000
L38	26.83 - 21.83 (38)	TP41.5636x40.7536x0.6625	3301.43	5330.11	0.619	0.00	5330.11	0.000
L39	21.83 - 16.83 (39)	TP42.3736x41.5636x0.6625	3451.24	5545.02	0.622	0.00	5545.02	0.000
L40	16.83 - 16 (40)	TP42.508x42.3736x0.6625	3476.19	5581.12	0.623	0.00	5581.12	0.000
L41	16 - 15.75 (41)	TP42.5485x42.508x0.8125	3483.72	6784.71	0.513	0.00	6784.71	0.000
L42	15.75 - 14.75 (42)	TP42.7105x42.5485x0.8125	3513.82	6837.98	0.514	0.00	6837.98	0.000
L43	14.75 - 14.5 (43)	TP42.751x42.7105x0.4875	3521.36	4207.12	0.837	0.00	4207.12	0.000
L44	14.5 - 12.08 (44)	TP43.1431x42.751x0.4875	3594.35	4285.98	0.839	0.00	4285.98	0.000
L45	12.08 - 11.83 (45)	TP43.1836x43.1431x0.7375	3601.90	6382.85	0.564	0.00	6382.85	0.000
L46	11.83 - 10 (46)	TP43.48x43.1836x0.7375	3657.22	6473.09	0.565	0.00	6473.09	0.000
L47	10 - 9.75 (47)	TP43.5205x43.48x0.7375	3664.78	6485.47	0.565	0.00	6485.47	0.000
L48	9.75 - 4.75 (48)	TP44.3305x43.5205x0.725	3816.59	6627.02	0.576	0.00	6627.02	0.000
L49	4.75 - 0 (49)	TP45.1x44.3305x0.7125	3961.62	6752.27	0.587	0.00	6752.27	0.000

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	160 - 155 (1)	TP10.75x10.75x0.349	7.42	107.77	0.069	0.09	98.55	0.001
L2	155 - 150 (2)	TP10.75x10.75x0.349	7.94	107.77	0.074	0.07	98.55	0.001
L3	150 - 148 (3)	TP10.75x10.75x0.349	9.03	107.77	0.084	0.07	98.55	0.001
L4	148 - 143 (4)	TP23.81x23x0.25	12.92	302.86	0.043	0.22	624.87	0.000
L5	143 - 138 (5)	TP24.62x23.81x0.25	13.36	313.27	0.043	0.22	668.58	0.000
L6	138 - 133 (6)	TP25.43x24.62x0.25	19.24	323.68	0.059	0.16	713.76	0.000
L7	133 - 128 (7)	TP26.24x25.43x0.25	19.59	334.09	0.059	0.16	760.42	0.000
L8	128 - 123 (8)	TP27.05x26.24x0.25	22.54	344.51	0.065	0.16	808.56	0.000
L9	123 - 118 (9)	TP27.86x27.05x0.25	24.98	354.92	0.070	0.16	858.17	0.000
L10	118 - 111 (10)	TP28.994x27.86x0.25	25.16	361.69	0.070	0.16	891.22	0.000
L11	111 - 109.75 (11)	TP28.6964x27.8865x0.3125	25.57	456.08	0.056	0.16	1133.70	0.000
L12	109.75 - 105.33 (12)	TP29.4124x28.6964x0.3125	25.82	467.59	0.055	0.16	1191.62	0.000
L13	105.33 - 105.08 (13)	TP29.4529x29.4124x0.4688	25.84	698.59	0.037	0.16	1773.22	0.000
L14	105.08 - 100.08 (14)	TP30.2628x29.4529x0.4625	26.19	708.69	0.037	0.16	1849.51	0.000
L15	100.08 - 95.08 (15)	TP31.0728x30.2628x0.4625	26.54	727.95	0.036	0.16	1951.41	0.000
L16	95.08 - 90.08 (16)	TP31.8827x31.0728x0.45	26.87	727.30	0.037	0.16	2002.07	0.000
L17	90.08 - 85.08 (17)	TP32.6926x31.8827x0.45	27.20	746.04	0.036	0.16	2106.57	0.000
L18	85.08 - 76.75 (18)	TP34.042x32.6926x0.45	27.45	761.34	0.036	0.16	2193.82	0.000
L19	76.75 - 75.75 (19)	TP33.579x32.7286x0.375	27.89	693.59	0.040	0.16	2016.86	0.000
L20	75.75 - 70.75 (20)	TP34.3889x33.579x0.375	28.11	710.51	0.040	0.15	2116.45	0.000
L21	70.75 - 70.58 (21)	TP34.4164x34.3889x0.375	28.15	711.09	0.040	0.15	2119.88	0.000
L22	70.58 - 70.33 (22)	TP34.4569x34.4164x0.675	28.14	1270.20	0.022	0.15	3757.82	0.000
L23	70.33 - 70 (23)	TP34.5104x34.4569x0.675	28.15	1272.21	0.022	0.15	3769.73	0.000
L24	70 - 69.75 (24)	TP34.5509x34.5104x0.375	28.18	713.90	0.039	0.15	2136.66	0.000
L25	69.75 - 64.75 (25)	TP35.3608x34.5509x0.375	28.38	730.82	0.039	0.15	2239.13	0.000
L26	64.75 - 59.75 (26)	TP36.1707x35.3608x0.375	28.56	747.73	0.038	0.15	2344.00	0.000
L27	59.75 - 54.75 (27)	TP36.9807x36.1707x0.375	28.73	764.65	0.038	0.15	2451.28	0.000
L28	54.75 - 49.75 (28)	TP37.7906x36.9807x0.375	28.88	781.57	0.037	0.15	2560.95	0.000
L29	49.75 - 43 (29)	TP38.884x37.7906x0.375	28.95	787.49	0.037	0.15	2599.90	0.000
L30	43 - 42 (30)	TP38.2961x37.3241x0.4375	29.33	922.63	0.032	0.15	3058.93	0.000
L31	42 - 37 (31)	TP39.1061x38.2961x0.4375	29.46	942.37	0.031	0.15	3191.23	0.000
L32	37 - 32 (32)	TP39.916x39.1061x0.4375	29.56	962.11	0.031	0.15	3326.32	0.000
L33	32 - 27.91 (33)	TP40.5786x39.916x0.4375	29.63	978.25	0.030	0.15	3438.92	0.000
L34	27.91 - 27.66 (34)	TP40.6191x40.5786x0.675	29.63	1501.90	0.020	0.15	5253.80	0.000
L35	27.66 - 27.25 (35)	TP40.6855x40.6191x0.675	29.64	1504.40	0.020	0.15	5271.28	0.000
L36	27.25 - 26.98 (36)	TP40.7293x40.6855x0.675	29.65	1506.04	0.020	0.15	5282.82	0.000
L37	26.98 - 26.83	TP40.7536x40.7293x0.66	29.68	1479.51	0.020	0.15	5194.52	0.000

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 $\frac{T_u}{\phi T_n}$
L38	(37) 26.83 - 21.83	25 TP41.5636x40.7536x0.66	29.90	1509.40	0.020	0.17	5406.54	0.000
L39	(38) 21.83 - 16.83	25 TP42.3736x41.5636x0.66	30.08	1539.29	0.020	0.17	5622.80	0.000
L40	(39) 16.83 - 16	25 TP42.508x42.3736x0.662	30.11	1544.25	0.019	0.17	5659.11	0.000
L41	(40) 16 - 15.75	5 TP42.5485x42.508x0.812	30.11	1888.94	0.016	0.17	6904.14	0.000
L42	(41) 15.75 - 14.75	5 TP42.7105x42.5485x0.81	30.16	1896.27	0.016	0.17	6957.84	0.000
L43	(42) 14.75 - 14.5	25 TP42.751x42.7105x0.487	30.16	1147.69	0.026	0.17	4247.86	0.000
L44	(43) 14.5 - 12.08	5 TP43.1431x42.751x0.487	30.23	1158.34	0.026	0.17	4327.03	0.000
L45	(44) 12.08 - 11.83	5 TP43.1836x43.1431x0.73	30.21	1743.75	0.017	0.17	6481.87	0.000
L46	(45) 11.83 - 10	75 TP43.48x43.1836x0.7375	30.31	1755.93	0.017	0.17	6572.73	0.000
L47	(46) 10 - 9.75 (47)	TP43.5205x43.48x0.7375	30.29	1757.59	0.017	0.17	6585.20	0.000
L48	(48) 9.75 - 4.75	5 TP44.3305x43.5205x0.72	30.48	1761.02	0.017	0.17	6724.88	0.000
L49	(49) 4.75 - 0 (49)	5 TP45.1x44.3305x0.7125	30.65	1761.69	0.017	0.17	6848.10	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	160 - 155 (1)	0.010	0.206	0.000	0.069	0.001	0.221	1.050	4.8.2
L2	155 - 150 (2)	0.011	0.592	0.000	0.074	0.001	0.609	1.050	4.8.2
L3	150 - 148 (3)	0.013	0.763	0.000	0.084	0.001	0.784	1.050	4.8.2
L4	148 - 143 (4)	0.008	0.224	0.000	0.043	0.000	0.235	1.050	4.8.2
L5	143 - 138 (5)	0.009	0.309	0.000	0.043	0.000	0.319	1.050	4.8.2
L6	138 - 133 (6)	0.012	0.427	0.000	0.059	0.000	0.442	1.050	4.8.2
L7	133 - 128 (7)	0.012	0.534	0.000	0.059	0.000	0.549	1.050	4.8.2
L8	128 - 123 (8)	0.015	0.649	0.000	0.065	0.000	0.668	1.050	4.8.2
L9	123 - 118 (9)	0.017	0.755	0.000	0.070	0.000	0.778	1.050	4.8.2
L10	118 - 111 (10)	0.017	0.826	0.000	0.070	0.000	0.848	1.050	4.8.2
L11	111 - 109.75 (11)	0.014	0.742	0.000	0.056	0.000	0.760	1.050	4.8.2
L12	109.75 - 105.33 (12)	0.015	0.802	0.000	0.055	0.000	0.820	1.050	4.8.2
L13	105.33 - 105.08 (13)	0.010	0.546	0.000	0.037	0.000	0.557	1.050	4.8.2
L14	105.08 - 100.08 (14)	0.010	0.594	0.000	0.037	0.000	0.605	1.050	4.8.2
L15	100.08 - 95.08 (15)	0.010	0.631	0.000	0.036	0.000	0.643	1.050	4.8.2
L16	95.08 - 90.08 (16)	0.011	0.682	0.000	0.037	0.000	0.694	1.050	4.8.2
L17	90.08 - 85.08 (17)	0.011	0.713	0.000	0.036	0.000	0.725	1.050	4.8.2
L18	85.08 - 76.75 (18)	0.011	0.736	0.000	0.036	0.000	0.748	1.050	4.8.2
L19	76.75 - 75.75 (19)	0.013	0.871	0.000	0.040	0.000	0.886	1.050	4.8.2
L20	75.75 - 70.75 (20)	0.013	0.897	0.000	0.040	0.000	0.912	1.050	4.8.2
L21	70.75 - 70.58 (21)	0.013	0.898	0.000	0.040	0.000	0.912	1.050	4.8.2
L22	70.58 - 70.33 (22)	0.007	0.513	0.000	0.022	0.000	0.521	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L23	70.33 - 70 (23)	0.007	0.514	0.000	0.022	0.000	0.522	1.050	4.8.2
L24	70 - 69.75 (24)	0.013	0.902	0.000	0.039	0.000	0.916	1.050	4.8.2
L25	69.75 - 64.75 (25)	0.013	0.924	0.000	0.039	0.000	0.939	1.050	4.8.2
L26	64.75 - 59.75 (26)	0.014	0.944	0.000	0.038	0.000	0.959	1.050	4.8.2
L27	59.75 - 54.75 (27)	0.014	0.967	0.000	0.038	0.000	0.982	1.050	4.8.2
L28	54.75 - 49.75 (28)	0.014	0.988	0.000	0.037	0.000	1.003	1.050	4.8.2
L29	49.75 - 43 (29)	0.014	0.995	0.000	0.037	0.000	1.010	1.050	4.8.2
L30	43 - 42 (30)	0.013	0.893	0.000	0.032	0.000	0.907	1.050	4.8.2
L31	42 - 37 (31)	0.013	0.902	0.000	0.031	0.000	0.916	1.050	4.8.2
L32	37 - 32 (32)	0.013	0.910	0.000	0.031	0.000	0.924	1.050	4.8.2
L33	32 - 27.91 (33)	0.013	0.916	0.000	0.030	0.000	0.930	1.050	4.8.2
L34	27.91 - 27.66 (34)	0.009	0.604	0.000	0.020	0.000	0.613	1.050	4.8.2
L35	27.66 - 27.25 (35)	0.009	0.605	0.000	0.020	0.000	0.614	1.050	4.8.2
L36	27.25 - 26.98 (36)	0.009	0.605	0.000	0.020	0.000	0.614	1.050	4.8.2
L37	26.98 - 26.83 (37)	0.009	0.616	0.000	0.020	0.000	0.625	1.050	4.8.2
L38	26.83 - 21.83 (38)	0.009	0.619	0.000	0.020	0.000	0.629	1.050	4.8.2
L39	21.83 - 16.83 (39)	0.009	0.622	0.000	0.020	0.000	0.632	1.050	4.8.2
L40	16.83 - 16 (40)	0.009	0.623	0.000	0.019	0.000	0.633	1.050	4.8.2
L41	16 - 15.75 (41)	0.008	0.513	0.000	0.016	0.000	0.521	1.050	4.8.2
L42	15.75 - 14.75 (42)	0.008	0.514	0.000	0.016	0.000	0.522	1.050	4.8.2
L43	14.75 - 14.5 (43)	0.013	0.837	0.000	0.026	0.000	0.851	1.050	4.8.2
L44	14.5 - 12.08 (44)	0.013	0.839	0.000	0.026	0.000	0.852	1.050	4.8.2
L45	12.08 - 11.83 (45)	0.009	0.564	0.000	0.017	0.000	0.573	1.050	4.8.2
L46	11.83 - 10 (46)	0.009	0.565	0.000	0.017	0.000	0.574	1.050	4.8.2
L47	10 - 9.75 (47)	0.009	0.565	0.000	0.017	0.000	0.574	1.050	4.8.2
L48	9.75 - 4.75 (48)	0.009	0.576	0.000	0.017	0.000	0.585	1.050	4.8.2
L49	4.75 - 0 (49)	0.009	0.587	0.000	0.017	0.000	0.596	1.050	4.8.2

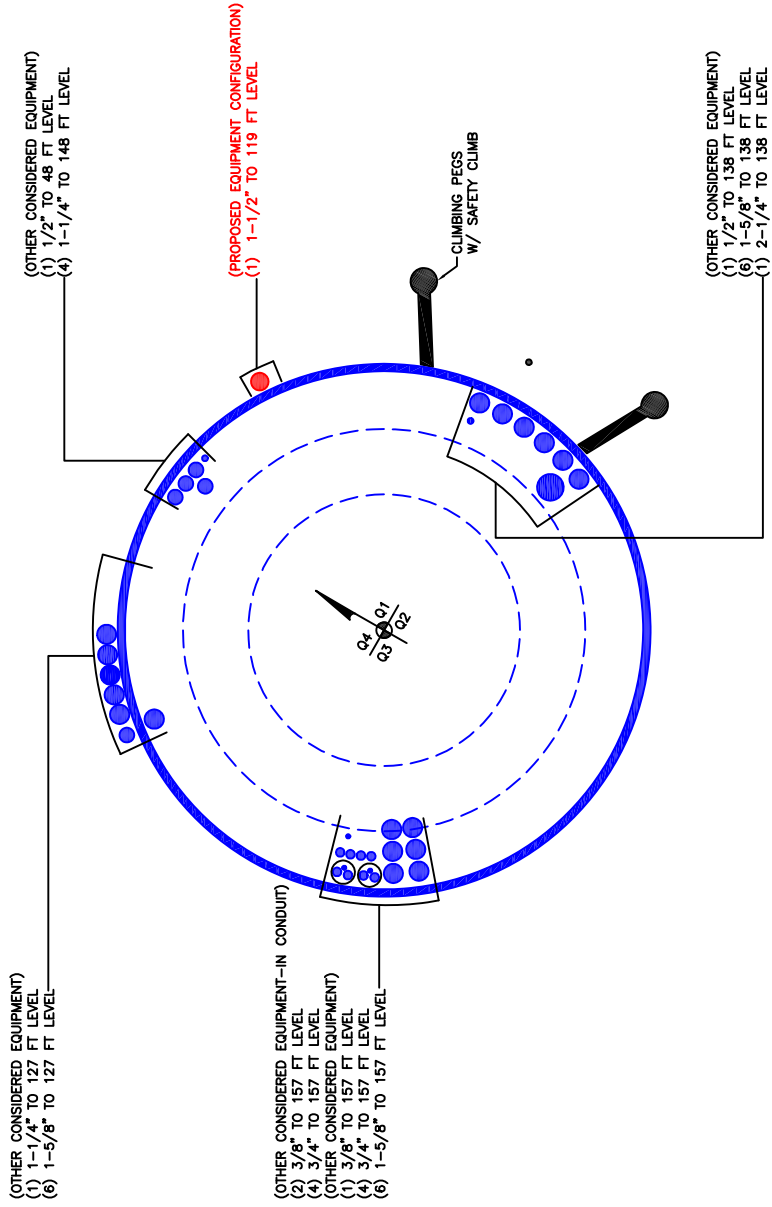
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 155	Pole	TP10.75x10.75x0.349	1	-3.77	377.18	21.0	Pass
L2	155 - 150	Pole	TP10.75x10.75x0.349	2	-4.02	377.18	58.0	Pass
L3	150 - 148	Pole	TP10.75x10.75x0.349	3	-4.71	377.18	74.6	Pass
L4	148 - 143	Pole	TP23.81x23x0.25	4	-8.51	1060.00	22.3	Pass
L5	143 - 138	Pole	TP24.62x23.81x0.25	5	-8.96	1096.44	30.4	Pass
L6	138 - 133	Pole	TP25.43x24.62x0.25	6	-12.50	1132.89	42.1	Pass
L7	133 - 128	Pole	TP26.24x25.43x0.25	7	-13.08	1169.33	52.3	Pass
L8	128 - 123	Pole	TP27.05x26.24x0.25	8	-17.21	1205.77	63.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\sigma_{P_{allow}}$ K	% Capacity	Pass Fail	
L9	123 - 118	Pole	TP27.86x27.05x0.25	9	-20.19	1242.21	74.0	Pass	
L10	118 - 111	Pole	TP28.994x27.86x0.25	10	-20.68	1265.90	80.8	Pass	
L11	111 - 109.75	Pole	TP28.6964x27.8865x0.3125	11	-21.82	1596.29	72.4	Pass	
L12	109.75 - 105.33	Pole	TP29.4124x28.6964x0.3125	12	-22.60	1636.56	78.1	Pass	
L13	105.33 - 105.08	Pole	TP29.4529x29.4124x0.4688	13	-22.68	2445.07	53.0	Pass	
L14	105.08 - 100.08	Pole	TP30.2628x29.4529x0.4625	14	-23.77	2480.40	57.7	Pass	
L15	100.08 - 95.08	Pole	TP31.0728x30.2628x0.4625	15	-24.90	2547.82	61.2	Pass	
L16	95.08 - 90.08	Pole	TP31.8827x31.0728x0.45	16	-26.06	2545.57	66.1	Pass	
L17	90.08 - 85.08	Pole	TP32.6926x31.8827x0.45	17	-27.24	2611.16	69.1	Pass	
L18	85.08 - 76.75	Pole	TP34.042x32.6926x0.45	18	-28.23	2664.68	71.3	Pass	
L19	76.75 - 75.75	Pole	TP33.579x32.7286x0.375	19	-30.11	2427.58	84.4	Pass	
L20	75.75 - 70.75	Pole	TP34.3889x33.579x0.375	20	-31.28	2486.80	86.8	Pass	
L21	70.75 - 70.58	Pole	TP34.4164x34.3889x0.375	21	-31.34	2488.80	86.9	Pass	
L22	70.58 - 70.33	Pole	TP34.4569x34.4164x0.675	22	-31.43	4445.70	49.6	Pass	
L23	70.33 - 70	Pole	TP34.5104x34.4569x0.675	23	-31.54	4452.73	49.7	Pass	
L24	70 - 69.75	Pole	TP34.5509x34.5104x0.375	24	-31.60	2498.63	87.3	Pass	
L25	69.75 - 64.75	Pole	TP35.3608x34.5509x0.375	25	-32.78	2557.85	89.4	Pass	
L26	64.75 - 59.75	Pole	TP36.1707x35.3608x0.375	26	-34.01	2617.06	91.4	Pass	
L27	59.75 - 54.75	Pole	TP36.9807x36.1707x0.375	27	-35.26	2676.28	93.5	Pass	
L28	54.75 - 49.75	Pole	TP37.7906x36.9807x0.375	28	-36.53	2735.49	95.5	Pass	
L29	49.75 - 43	Pole	TP38.884x37.7906x0.375	29	-36.96	2756.22	96.2	Pass	
L30	43 - 42	Pole	TP38.2961x37.3241x0.4375	30	-39.60	3229.19	86.4	Pass	
L31	42 - 37	Pole	TP39.1061x38.2961x0.4375	31	-41.04	3298.28	87.3	Pass	
L32	37 - 32	Pole	TP39.916x39.1061x0.4375	32	-42.51	3367.37	88.0	Pass	
L33	32 - 27.91	Pole	TP40.5786x39.916x0.4375	33	-43.73	3423.89	88.6	Pass	
L34	27.91 - 27.66	Pole	TP40.6191x40.5786x0.675	34	-43.86	5256.65	58.4	Pass	
L35	27.66 - 27.25	Pole	TP40.6855x40.6191x0.675	35	-44.03	5265.38	58.5	Pass	
L36	27.25 - 26.98	Pole	TP40.7293x40.6855x0.675	36	-44.13	5271.15	58.5	Pass	
L37	26.98 - 26.83	Pole	TP40.7536x40.7293x0.6625	37	-44.19	5178.28	59.5	Pass	
L38	26.83 - 21.83	Pole	TP41.5636x40.7536x0.6625	38	-46.15	5282.91	59.9	Pass	
L39	21.83 - 16.83	Pole	TP42.3736x41.5636x0.6625	39	-48.14	5387.53	60.2	Pass	
L40	16.83 - 16	Pole	TP42.508x42.3736x0.6625	40	-48.47	5404.90	60.3	Pass	
L41	16 - 15.75	Pole	TP42.5485x42.508x0.8125	41	-48.60	6611.29	49.7	Pass	
L42	15.75 - 14.75	Pole	TP42.7105x42.5485x0.8125	42	-49.06	6636.96	49.7	Pass	
L43	14.75 - 14.5	Pole	TP42.751x42.7105x0.4875	43	-49.16	4016.91	81.0	Pass	
L44	14.5 - 12.08	Pole	TP43.1431x42.751x0.4875	44	-50.06	4054.18	81.2	Pass	
L45	12.08 - 11.83	Pole	TP43.1836x43.1431x0.7375	45	-50.19	6103.11	54.6	Pass	
L46	11.83 - 10	Pole	TP43.48x43.1836x0.7375	46	-50.97	6145.74	54.7	Pass	
L47	10 - 9.75	Pole	TP43.5205x43.48x0.7375	47	-51.10	6151.56	54.7	Pass	
L48	9.75 - 4.75	Pole	TP44.3305x43.5205x0.725	48	-53.30	6163.55	55.7	Pass	
L49	4.75 - 0	Pole	TP45.1x44.3305x0.7125	49	-55.41	6165.91	56.8	Pass	
							Summary		
							Pole (L29)	96.2	Pass
							RATING =	96.2	Pass

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

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 876313
Work Order: 1966750



Copyright © 2019 Crown Castle

Pole Geometry

	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	160	12	0	0	10.75	10.75	0.349		A53-B-35
2	148	37	3.75	18	23.00	28.994	0.25	Auto	A607-60
3	114.75	38	4.25	18	27.89	34.042	0.3125	Auto	A607-60
4	81	38	5	18	32.73	38.884	0.375	Auto	A607-65
5	48	48	0	18	37.32	45.1	0.4375	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	0	27.08	channel	MP3-06 (1.1875in)	2			x						x										
2	0	12.08	channel	MP3-06 (1.1875in)	2												x					x		
3	14.75	27.91	channel	MP3-06 (1.1875in)	1															x				
4	45.42	70.58	channel	MP3-05 (1.1875in)	3			x						x						x				
5	78.17	105.33	channel	MP3-04 (1.1875in)	3			x						x						x				
6	27.25	46.75	plate	CCI-SFP-065125	3						x						x						x	
7	10	16	plate	CCI-SFP-060100	3						x						x						x	
8	70	80	plate	CCI-AFP-060100	3	x							x				x							
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 (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
2	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
3	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
4	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
5	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
6	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
7	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
8	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 [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	160 - 155	5		0	10.750	10.750	0.349	A53-B-35	1.000
2	155 - 150	5		0	10.750	10.750	0.349	A53-B-35	1.000
3	150 - 148	2	0	0	10.750	10.750	0.349	A53-B-35	1.000
4	148 - 143	5		18	23.000	23.810	0.25	A607-60	1.000
5	143 - 138	5		18	23.810	24.620	0.25	A607-60	1.000
6	138 - 133	5		18	24.620	25.430	0.25	A607-60	1.000
7	133 - 128	5		18	25.430	26.240	0.25	A607-60	1.000
8	128 - 123	5		18	26.240	27.050	0.25	A607-60	1.000
9	123 - 118	5		18	27.050	27.860	0.25	A607-60	1.000
10	118 - 114.75	7	3.75	18	27.860	28.994	0.25	A607-60	1.000
11	114.75 - 109.75	5		18	27.887	28.696	0.3125	A607-60	1.000
12	109.75 - 105.33	4.42		18	28.696	29.412	0.3125	A607-60	1.000
13	105.33 - 105.08	0.25		18	29.412	29.453	0.46875	A607-60	0.958
14	105.08 - 100.08	5		18	29.453	30.263	0.4625	A607-60	0.962
15	100.08 - 95.08	5		18	30.263	31.073	0.4625	A607-60	0.955
16	95.08 - 90.08	5		18	31.073	31.883	0.45	A607-60	0.973
17	90.08 - 85.08	5		18	31.883	32.693	0.45	A607-60	0.966
18	85.08 - 81	8.33	4.25	18	32.693	34.042	0.45	A607-60	0.961
19	81 - 75.75	5.25		18	32.729	33.579	0.375	A607-65	1.000
20	75.75 - 70.75	5		18	33.579	34.389	0.375	A607-65	1.000
21	70.75 - 70.58	0.17		18	34.389	34.416	0.375	A607-65	1.000
22	70.58 - 70.33	0.25		18	34.416	34.457	0.675	A607-65	1.043
23	70.33 - 70	0.33		18	34.457	34.510	0.675	A607-65	1.043
24	70 - 69.75	0.25		18	34.510	34.551	0.375	A607-65	1.000
25	69.75 - 64.75	5		18	34.551	35.361	0.375	A607-65	1.000
26	64.75 - 59.75	5		18	35.361	36.171	0.375	A607-65	1.000
27	59.75 - 54.75	5		18	36.171	36.981	0.375	A607-65	1.000
28	54.75 - 49.75	5		18	36.981	37.791	0.375	A607-65	1.000
29	49.75 - 48	6.75	5	18	37.791	38.884	0.375	A607-65	1.000
30	48 - 42	6		18	37.324	38.296	0.4375	A607-65	1.000
31	42 - 37	5		18	38.296	39.106	0.4375	A607-65	1.000
32	37 - 32	5		18	39.106	39.916	0.4375	A607-65	1.000
33	32 - 27.91	4.09		18	39.916	40.579	0.4375	A607-65	1.000
34	27.91 - 27.66	0.25		18	40.579	40.619	0.675	A607-65	1.036
35	27.66 - 27.25	0.41		18	40.619	40.686	0.675	A607-65	1.035
36	27.25 - 26.98	0.27		18	40.686	40.729	0.675	A607-65	0.948
37	26.98 - 26.83	0.15		18	40.729	40.754	0.6625	A607-65	0.966
38	26.83 - 21.83	5		18	40.754	41.564	0.6625	A607-65	0.959
39	21.83 - 16.83	5		18	41.564	42.374	0.6625	A607-65	0.954
40	16.83 - 16	0.83		18	42.374	42.508	0.6625	A607-65	0.953
41	16 - 15.75	0.25		18	42.508	42.549	0.8125	A607-65	0.947
42	15.75 - 14.75	1		18	42.549	42.711	0.8125	A607-65	0.945
43	14.75 - 14.5	0.25		18	42.711	42.751	0.4875	A607-65	1.158
44	14.5 - 12.08	2.42		18	42.751	43.143	0.4875	A607-65	1.155
45	12.08 - 11.83	0.25		18	43.143	43.184	0.7375	A607-65	0.938
46	11.83 - 10	1.83		18	43.184	43.480	0.7375	A607-65	0.936
47	10 - 9.75	0.25		18	43.480	43.521	0.7375	A607-65	0.936
48	9.75 - 4.75	5		18	43.521	44.331	0.725	A607-65	0.945
49	4.75 - 0	4.75		18	44.331	45.100	0.7125	A607-65	0.955

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	160 - 155		3.77	20.38	7.42
2	155 - 150		4.02	58.73	7.94
3	150 - 148		4.71	75.69	9.03
4	148 - 143		8.51	138.93	12.92
5	143 - 138		8.96	204.61	13.36
6	138 - 133		12.50	301.06	19.24
7	133 - 128		13.08	398.10	19.59
8	128 - 123		17.21	509.91	22.54
9	123 - 118		20.19	625.60	24.98
10	118 - 114.75		20.68	707.05	25.16
11	114.75 - 109.75		21.82	833.87	25.57
12	109.75 - 105.33		22.60	947.37	25.82
13	105.33 - 105.08		22.68	953.83	25.84
14	105.08 - 100.08		23.77	1083.84	26.19
15	100.08 - 95.08		24.90	1215.62	26.54
16	95.08 - 90.08		26.06	1349.10	26.87
17	90.08 - 85.08		27.24	1484.23	27.20
18	85.08 - 81		28.23	1595.66	27.45
19	81 - 75.75		30.11	1740.96	27.89
20	75.75 - 70.75		31.28	1880.89	28.11
21	70.75 - 70.58		31.34	1885.67	28.15
22	70.58 - 70.33		31.43	1892.70	28.14
23	70.33 - 70		31.54	1901.98	28.15
24	70 - 69.75		31.60	1909.02	28.18
25	69.75 - 64.75		32.78	2050.29	28.38
26	64.75 - 59.75		34.01	2192.53	28.56
27	59.75 - 54.75		35.26	2335.66	28.73
28	54.75 - 49.75		36.53	2479.58	28.88
29	49.75 - 48		36.96	2530.13	28.95
30	48 - 42		39.60	2705.27	29.33
31	42 - 37		41.04	2852.14	29.46
32	37 - 32		42.51	2999.58	29.56
33	32 - 27.91		43.73	3120.54	29.63
34	27.91 - 27.66		43.86	3127.94	29.63
35	27.66 - 27.25		44.03	3140.09	29.64
36	27.25 - 26.98		44.13	3148.09	29.65
37	26.98 - 26.83		44.19	3152.54	29.68
38	26.83 - 21.83		46.15	3301.42	29.90
39	21.83 - 16.83		48.14	3451.24	30.08
40	16.83 - 16		48.47	3476.19	30.11
41	16 - 15.75		48.60	3483.72	30.11
42	15.75 - 14.75		49.06	3513.83	30.16
43	14.75 - 14.5		49.16	3521.36	30.16
44	14.5 - 12.08		50.06	3594.35	30.23
45	12.08 - 11.83		50.19	3601.90	30.21
46	11.83 - 10		50.97	3657.22	30.31
47	10 - 9.75		51.10	3664.78	30.29
48	9.75 - 4.75		53.30	3816.59	30.48
49	4.75 - 0		55.41	3961.62	30.65

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP10.75x10.75x0.349	Pole	21.0%	Pass
155 - 150	Pole	TP10.75x10.75x0.349	Pole	58.0%	Pass
150 - 148	Pole	TP10.75x10.75x0.349	Pole	74.6%	Pass
148 - 143	Pole	TP23.81x23x0.25	Pole	22.3%	Pass
143 - 138	Pole	TP24.62x23.81x0.25	Pole	30.4%	Pass
138 - 133	Pole	TP25.43x24.62x0.25	Pole	42.1%	Pass
133 - 128	Pole	TP26.24x25.43x0.25	Pole	52.3%	Pass
128 - 123	Pole	TP27.05x26.24x0.25	Pole	63.6%	Pass
123 - 118	Pole	TP27.86x27.05x0.25	Pole	74.0%	Pass
118 - 114.75	Pole	TP28.994x27.86x0.25	Pole	80.8%	Pass
114.75 - 109.75	Pole	TP28.696x27.887x0.3125	Pole	72.3%	Pass
109.75 - 105.33	Pole	TP29.412x28.696x0.3125	Pole	78.0%	Pass
105.33 - 105.08	Pole + Reinf.	TP29.453x29.412x0.4688	Reinf. 5 Tension Rupture	74.2%	Pass
105.08 - 100.08	Pole + Reinf.	TP30.263x29.453x0.4625	Reinf. 5 Tension Rupture	80.5%	Pass
100.08 - 95.08	Pole + Reinf.	TP31.073x30.263x0.4625	Reinf. 5 Tension Rupture	86.2%	Pass
95.08 - 90.08	Pole + Reinf.	TP31.883x31.073x0.45	Reinf. 5 Tension Rupture	91.4%	Pass
90.08 - 85.08	Pole + Reinf.	TP32.693x31.883x0.45	Reinf. 5 Tension Rupture	96.3%	Pass
85.08 - 81	Pole + Reinf.	TP34.042x32.693x0.45	Reinf. 5 Tension Rupture	99.9%	Pass
81 - 75.75	Pole	TP33.579x32.729x0.375	Pole	84.3%	Pass
75.75 - 70.75	Pole	TP34.389x33.579x0.375	Pole	86.8%	Pass
70.75 - 70.58	Pole	TP34.416x34.389x0.375	Pole	86.9%	Pass
70.58 - 70.33	Pole + Reinf.	TP34.457x34.416x0.675	Reinf. 4 Tension Rupture	76.0%	Pass
70.33 - 70	Pole + Reinf.	TP34.51x34.457x0.675	Reinf. 4 Tension Rupture	76.2%	Pass
70 - 69.75	Pole	TP34.551x34.51x0.375	Pole	87.2%	Pass
69.75 - 64.75	Pole	TP35.361x34.551x0.375	Pole	89.4%	Pass
64.75 - 59.75	Pole	TP36.171x35.361x0.375	Pole	91.4%	Pass
59.75 - 54.75	Pole	TP36.981x36.171x0.375	Pole	93.5%	Pass
54.75 - 49.75	Pole	TP37.791x36.981x0.375	Pole	95.5%	Pass
49.75 - 48	Pole	TP38.884x37.791x0.375	Pole	96.2%	Pass
48 - 42	Pole	TP38.296x37.324x0.4375	Pole	86.3%	Pass
42 - 37	Pole	TP39.106x38.296x0.4375	Pole	87.2%	Pass
37 - 32	Pole	TP39.916x39.106x0.4375	Pole	88.0%	Pass
32 - 27.91	Pole	TP40.579x39.916x0.4375	Pole	88.5%	Pass
27.91 - 27.66	Pole + Reinf.	TP40.619x40.579x0.675	Reinf. 6 Tension Rupture	86.4%	Pass
27.66 - 27.25	Pole + Reinf.	TP40.686x40.619x0.675	Reinf. 6 Tension Rupture	86.5%	Pass
27.25 - 26.98	Pole + Reinf.	TP40.729x40.686x0.675	Reinf. 1 Tension Rupture	84.6%	Pass
26.98 - 26.83	Pole + Reinf.	TP40.754x40.729x0.6625	Reinf. 1 Tension Rupture	84.7%	Pass
26.83 - 21.83	Pole + Reinf.	TP41.564x40.754x0.6625	Reinf. 1 Tension Rupture	85.8%	Pass
21.83 - 16.83	Pole + Reinf.	TP42.374x41.564x0.6625	Reinf. 1 Tension Rupture	86.8%	Pass
16.83 - 16	Pole + Reinf.	TP42.508x42.374x0.6625	Reinf. 1 Tension Rupture	86.9%	Pass
16 - 15.75	Pole + Reinf.	TP42.549x42.508x0.8125	Reinf. 7 Tension Rupture	77.9%	Pass
15.75 - 14.75	Pole + Reinf.	TP42.711x42.549x0.8125	Reinf. 7 Tension Rupture	78.1%	Pass
14.75 - 14.5	Pole + Reinf.	TP42.751x42.711x0.4875	Pole	88.7%	Pass
14.5 - 12.08	Pole + Reinf.	TP43.143x42.751x0.4875	Pole	89.1%	Pass
12.08 - 11.83	Pole + Reinf.	TP43.184x43.143x0.7375	Reinf. 1 Tension Rupture	79.8%	Pass
11.83 - 10	Pole + Reinf.	TP43.48x43.184x0.7375	Reinf. 1 Tension Rupture	80.1%	Pass
10 - 9.75	Pole + Reinf.	TP43.521x43.48x0.7375	Reinf. 1 Tension Rupture	80.1%	Pass
9.75 - 4.75	Pole + Reinf.	TP44.331x43.521x0.725	Reinf. 1 Tension Rupture	81.0%	Pass
4.75 - 0	Pole + Reinf.	TP45.1x44.331x0.7125	Reinf. 1 Tension Rupture	81.7%	Pass
				Summary	
			Pole	96.2%	Pass
			Reinforcement	99.9%	Pass
			Overall	99.9%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*								
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8
160 - 155	154	n/a	154	11.40	n/a	11.40	21.0%								
155 - 150	154	n/a	154	11.40	n/a	11.40	58.0%								
150 - 148	154	n/a	154	11.40	n/a	11.40	74.6%								
148 - 143	1311	n/a	1311	18.69	n/a	18.69	22.3%								
143 - 138	1450	n/a	1450	19.34	n/a	19.34	30.4%								
138 - 133	1600	n/a	1600	19.98	n/a	19.98	42.1%								
133 - 128	1759	n/a	1759	20.62	n/a	20.62	52.3%								
128 - 123	1929	n/a	1929	21.27	n/a	21.27	63.6%								
123 - 118	2109	n/a	2109	21.91	n/a	21.91	74.0%								
118 - 114.75	2232	n/a	2232	22.33	n/a	22.33	80.8%								
114.75 - 109.75	2865	n/a	2865	28.15	n/a	28.15	72.3%								
109.75 - 105.33	3087	n/a	3087	28.86	n/a	28.86	78.0%								
105.33 - 105.08	3100	1464	4564	28.90	12.39	41.29	52.4%					74.2%			
105.08 - 100.08	3366	1542	4907	29.71	12.39	42.10	56.8%					80.5%			
100.08 - 95.08	3646	1622	5268	30.51	12.39	42.90	60.9%					86.2%			
95.08 - 90.08	3942	1704	5645	31.31	12.39	43.70	65.0%					91.4%			
90.08 - 85.08	4253	1788	6041	32.12	12.39	44.51	68.9%					96.3%			
85.08 - 81	4519	1858	6377	32.77	12.39	45.16	72.0%					99.9%			
81 - 75.75	5503	n/a	5503	39.52	n/a	39.52	84.3%								
75.75 - 70.75	5916	n/a	5916	40.48	n/a	40.48	86.8%								
70.75 - 70.58	5930	n/a	5930	40.52	n/a	40.52	86.9%								
70.58 - 70.33	5976	4418	10394	40.56	34.95	75.51	51.8%				76.0%				71.0%
70.33 - 70	6005	4431	10436	40.63	34.95	75.58	51.9%				76.2%				71.1%
70 - 69.75	6000	n/a	6000	40.68	n/a	40.68	87.2%								
69.75 - 64.75	6437	n/a	6437	41.64	n/a	41.64	89.4%								
64.75 - 59.75	6895	n/a	6895	42.60	n/a	42.60	91.4%								
59.75 - 54.75	7373	n/a	7373	43.57	n/a	43.57	93.5%								
54.75 - 49.75	7874	n/a	7874	44.53	n/a	44.53	95.5%								
49.75 - 48	8054	n/a	8054	44.87	n/a	44.87	96.2%								
48 - 42	9516	n/a	9516	52.57	n/a	52.57	86.3%								
42 - 37	10140	n/a	10140	53.69	n/a	53.69	87.2%								
37 - 32	10791	n/a	10791	54.82	n/a	54.82	88.0%								
32 - 27.91	11343	n/a	11343	55.74	n/a	55.74	88.5%								
27.91 - 27.66	11405	5776	17181	55.80	32.85	88.64	60.6%			64.9%			86.4%		
27.66 - 27.25	11461	5795	17256	55.89	32.85	88.73	60.6%			65.0%			86.5%		
27.25 - 26.98	11472	5787	17258	55.95	25.41	81.36	58.1%	84.6%		84.6%					
26.98 - 26.83	11492	5793	17286	55.98	25.41	81.39	58.1%	84.7%		84.7%					
26.83 - 21.83	12199	6015	18214	57.11	25.41	82.52	58.9%	85.8%		85.8%					
21.83 - 16.83	12934	6240	19174	58.23	25.41	83.64	59.8%	86.8%		86.8%					
16.83 - 16	13059	6278	19337	58.42	25.41	83.83	60.0%	86.9%		86.9%					
16 - 15.75	13097	10584	23681	58.47	43.41	101.88	49.1%	71.2%		71.2%				77.9%	
15.75 - 14.75	13248	10662	23910	58.70	43.41	102.11	49.3%	71.4%		71.4%				78.1%	
14.75 - 14.5	13650	1331	14981	58.76	16.94	75.70	88.7%	88.5%							
14.5 - 12.08	14027	1359	15386	59.30	16.94	76.24	89.1%	88.9%							
12.08 - 11.83	13727	8795	22522	59.36	33.88	93.24	57.0%	79.8%		77.7%					
11.83 - 10	14014	8911	22925	59.77	33.88	93.65	57.3%	80.1%		78.0%					
10 - 9.75	14054	8927	22981	59.82	33.88	93.70	57.3%	80.1%		78.1%					
9.75 - 4.75	14861	9248	24108	60.95	33.88	94.83	58.3%	81.0%		78.9%					
4.75 - 0	15655	9558	25213	62.02	33.88	95.90	59.1%	81.7%		79.7%					

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

Bolted Extension Connection

TIA Rev. H



1. PARAMETERS

Elevation: 148'

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5?

No
Yes

Moment: $M := 75.69 \text{ kip}\cdot\text{ft}$

Axial Load: $P := 4.71 \text{ kip}$

Shear Load: $V := 9.03 \text{ kip}$

1.2 HSS Jump Properties

HSS Member: **6x6x1/2**

Number of HSS: $N_{\text{exist}} := 3$

HSS Grade: $F_{y_{\text{Ex}}} := 46 \text{ ksi}$ $F_{u_{\text{Ex}}} := 62 \text{ ksi}$

Diameter to the centroid of HSS: $BC_{\text{exist}} := 39.5 \text{ in}$

Thickness of HSS: $t_{\text{exist}} := 0.465 \text{ in}$

HSS Width: $w_{\text{exist}} := 6 \text{ in}$

Gross Area of One HSS: $A_{g_exist} := 9.74 \text{ in}^2$

Radius of Gyration of HSS: $r_{x2} := 2.23 \text{ in}$

Plastic Modulus: $Z_{\text{HSS}} := 19.8 \text{ in}^3$

Moment of Inertia of HSS: $I_{\text{exist}} := \frac{N_{\text{exist}} \cdot BC_{\text{exist}}^2 \cdot A_{g_exist}}{8} = 5698.81 \cdot \text{in}^4$

1.3 Reactions to HSS

(HSS Group to take full load)

Moment Reaction to HSS Group: $M_{\text{exist}} := M = 75.69 \cdot \text{kip}\cdot\text{ft}$

Axial Reaction to HSS Group: $P_{\text{exist}} := P = 4.71 \cdot \text{kip}$

Shear Reaction HSS Group: $V_{\text{exist}} := V = 9.03 \cdot \text{kip}$

2. HSS Checks

2.1 Maximum Axial Forces in Single HSS

Outer Radius of HSS Circle: $C := \frac{BC_{exist}}{2} = 19.75 \cdot \text{in}$

Critical Compression Bending Stress: $P_{comp} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} + \frac{P_{exist}}{N_{exist}} = 32.23 \cdot \text{kip}$

Critical Tension Bending Stress: $P_{tens} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} - \frac{P_{exist}}{N_{exist}} = 29.09 \cdot \text{kip}$

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor: $\phi_c := 0.9$

Unbraced Length: $L_u := 94 \text{in}$

Effective Length Factor: $K := 1.0$

Effective Length of Member: $L_c := K \cdot L_u = 94 \cdot \text{in}$ [AISC 15th Edition E3-2]

Strength of Bridge Stiffener: $F_{yEx} = 46 \cdot \text{ksi}$ $F_{uEx} = 62 \cdot \text{ksi}$

Elastic Buckling Stress: $F_e := \frac{\pi^2 \cdot 29000 \text{ksi}}{\left(\frac{L_c}{r_{x2}}\right)^2} = 161.08 \cdot \text{ksi}$
[AISC 15th Ed., Eq. E3-4]

Determination of Critical Stress: $F_{cr} := \begin{cases} \left(0.658 \frac{F_{yEx}}{F_e}\right) \cdot F_{yEx} & \text{if } 4.71 \cdot \sqrt{\frac{E}{F_{yEx}}} \geq \frac{L_c}{r_{x2}} \\ (0.877 \cdot F_e) & \text{otherwise} \end{cases}$
[AISC 15th Ed., Eqs. E3-2 and E3-3]

$F_{cr} = 40.82 \cdot \text{ksi}$

Allowable Compressive Strength: $\phi P_n := \begin{cases} (\phi_c \cdot F_{yEx} \cdot A_{g_exist}) & \text{if } \frac{L_c}{r_{x2}} \leq 25 \\ (\phi_c \cdot F_{cr} \cdot A_{g_exist}) & \text{otherwise} \end{cases}$
[AISC 15th Ed., Eqs. J4-6 and E3-1]

$\phi P_n = 357.81 \cdot \text{kip}$

Check Compressive Strength:
$$\text{Capacity}_{\text{comp}} := \begin{cases} \frac{P_{\text{comp}}}{\phi P_n} & \text{if } S15\text{Allowable} = \text{"No"} \\ \frac{P_{\text{comp}}}{\phi P_n} \cdot \left(\frac{1}{1.05}\right) & \text{if } S15\text{Allowable} = \text{"Yes"} \end{cases} = 8.58\%$$

$$\text{Capacity}_{\text{comp}} = 8.58\%$$

2.3 Available Tension Strength

Gross Section Yield

[AISC 15th Edition Ch. D2]

Available Tension Yield Strength:
$$\phi P_{ty} := 0.9 \cdot F_y \cdot A_{g_exist} = 403.24 \cdot \text{kip}$$

Net Section Fracture

Bolt Hole Diameter:
$$BH := 1.0625 \text{ in}$$

Thickness:
$$T := t_{\text{exist}} = 0.47 \cdot \text{in}$$

Net Area:
$$A_{\text{net}} := A_{g_exist} - 2 \left(BH + \frac{1}{16} \text{ in} \right) \cdot T = 8.69 \cdot \text{in}^2$$

Net Area Limitation:
$$A_e := A_{\text{net}} = 8.69 \cdot \text{in}^2$$

Available Fractile Strength:
$$\phi P_{tr} := 0.75 \cdot F_u \cdot A_e = 404.26 \cdot \text{kip}$$

Tension Check

Controlling Mode of Failure:
$$\text{Check}_{\text{mode}} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{\text{tens}}}{\phi P_{tr}} > \frac{P_{\text{tens}}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{mode}} = \text{"Yield Controls"}$$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } \text{Check}_{\text{mode}} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases}$$

Controlling Tension Mode Check:
$$\text{Capacity}_{\text{tension}} := \begin{cases} \frac{P_{\text{tens}}}{\phi P_{nt}} & \text{if } S15\text{Allowable} = \text{"No"} \\ \frac{P_{\text{tens}}}{\phi P_{nt}} \cdot \left(\frac{1}{1.05}\right) & \text{if } S15\text{Allowable} = \text{"Yes"} \end{cases} = 6.87\%$$

$$\text{Capacity}_{\text{tension}} = 6.87\%$$

2.4 Available Shear Strength

[AISC 15th Edition Ch. G]

Resistance Factor: $\phi_V := 0.9$

Width Resisting Shear Load: $h_{inner} := w_{exist} - 3 \cdot t_{exist} = 4.6 \cdot \text{in}$

Design Wall Thickness: $t_w := 0.93 \cdot t_{exist} = 0.432 \cdot \text{in}$

Effective Shear Area: $A_w := 2 \cdot h_{inner} \cdot t_w = 3.98 \cdot \text{in}^2$

Shear Buckling Coefficient: $k_V := 5$

$$\frac{h_{inner}}{t_w} = 10.65 < 1.1 \cdot \sqrt{\frac{k_V \cdot E}{F_{yEX}}} = 61.76 \rightarrow C_V := 1.0$$

Available Shear Strength: $\phi V_n := \phi_V \cdot 0.6 \cdot F_{yEX} \cdot A_w \cdot C_V = 98.93 \cdot \text{kip}$

Shear Load Per HSS: $V_u := \frac{V_{exist}}{N_{exist}} = 3.01 \cdot \text{kip}$

Check Shear Strength:

$$\text{Capacity}_{\text{shear}} := \begin{cases} \frac{V_u}{\phi V_n} & \text{if S15Allowable} = \text{"No"} \\ \frac{V_u}{\phi V_n} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable} = \text{"Yes"} \end{cases} = 2.9\%$$

Capacity_{shear} = 2.9%

2.4 Available Flexural Strength

[AISC 15th Edition Ch. F7]

Resistance Factor: $\phi_f := 0.9$

$$\frac{h_{inner}}{t_w} = 10.65 < 1.12 \cdot \sqrt{\frac{E}{F_{yEX}}} = 28.12 \rightarrow \text{Compact}$$

Available Flexural Strength: $\phi M_n := \phi_f \cdot F_{yEX} \cdot Z_{HSS} = 68.31 \cdot \text{ft} \cdot \text{kip}$

Flexural Load Per HSS: $M_u := V_u \cdot (L_u + 42 \text{in}) = 34.11 \cdot \text{ft} \cdot \text{kip}$

Check Flexural Strength:

$$\text{Capacity}_{\text{flexure}} := \begin{cases} \frac{M_u}{\phi M_n} & \text{if S15Allowable} = \text{"No"} \\ \frac{M_u}{\phi M_n} \cdot \left(\frac{1}{1.05}\right) & \text{if S15Allowable} = \text{"Yes"} \end{cases} = 47.56\%$$

Capacity_{flexure} = 47.56%

2.5 Combined Stresses

[AISC 15th Edition Ch. H]

Combined Flexure and Compression:

$$\text{Combined}_1 := \left[\begin{array}{l} \left[\frac{P_{\text{comp}}}{\phi P_n} + \frac{8}{9} \left(\frac{M_u}{\phi M_n} \right) \right] \text{ if } \frac{P_{\text{comp}}}{\phi P_n} \geq 0.2 \\ \left(\frac{P_{\text{comp}}}{2 \cdot \phi P_n} + \frac{M_u}{\phi M_n} \right) \text{ otherwise} \end{array} \right]$$

$$\text{Combined}_{\text{flex_comp}} := \left| \begin{array}{l} \text{Combined}_1 \text{ if S15Allowable} = \text{"No"} \\ \text{Combined}_1 \cdot \left(\frac{1}{1.05} \right) \text{ if S15Allowable} = \text{"Yes"} \end{array} \right| = 51.85\%$$

Combined_{flex_comp} = 51.85%

Combined Flexure and Tension:

$$\text{Combined}_2 := \left[\begin{array}{l} \left[\frac{P_{\text{tens}}}{\phi P_{nt}} + \frac{8}{9} \left(\frac{M_u}{\phi M_n} \right) \right] \text{ if } \frac{P_{\text{tens}}}{\phi P_{nt}} \geq 0.2 \\ \left(\frac{P_{\text{tens}}}{2 \cdot \phi P_{nt}} + \frac{M_u}{\phi M_n} \right) \text{ otherwise} \end{array} \right]$$

$$\text{Combined}_{\text{flex_tens}} := \left| \begin{array}{l} \text{Combined}_2 \text{ if S15Allowable} = \text{"No"} \\ \text{Combined}_2 \cdot \left(\frac{1}{1.05} \right) \text{ if S15Allowable} = \text{"Yes"} \end{array} \right| = 51\%$$

Combined_{flex_tens} = 51%

Combined Flexure, Compression, Shear:

$$\text{Combined}_3 := \left[\begin{array}{l} \frac{P_{\text{comp}}}{\phi P_n} + \frac{M_u}{\phi M_n} + \left(\frac{V_u}{\phi V_n} \right)^2 \text{ if S15Allowable} = \text{"No"} \\ \left[\frac{P_{\text{comp}}}{\phi P_n} + \frac{M_u}{\phi M_n} + \left(\frac{V_u}{\phi V_n} \right)^2 \right] \cdot \left(\frac{1}{1.05} \right) \text{ if S15Allowable} = \text{"Yes"} \end{array} \right]$$

Combined₃ = 56.23%

Combined Flexure, Tension, Shear:

$$\text{Combined}_4 := \left[\begin{array}{l} \frac{P_{\text{tens}}}{\phi P_{nt}} + \frac{M_u}{\phi M_n} + \left(\frac{V_u}{\phi V_n} \right)^2 \text{ if S15Allowable} = \text{"No"} \\ \left[\frac{P_{\text{tens}}}{\phi P_{nt}} + \frac{M_u}{\phi M_n} + \left(\frac{V_u}{\phi V_n} \right)^2 \right] \cdot \left(\frac{1}{1.05} \right) \text{ if S15Allowable} = \text{"Yes"} \end{array} \right]$$

Combined₄ = 54.52%

Monopole Base Plate Connection

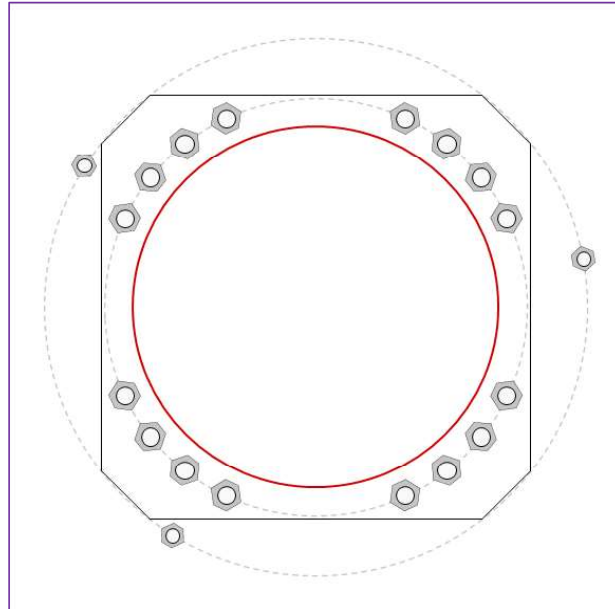


Site Info	
BU #	876313
Site Name	JOHNSON AVE. BURNT
Order #	556616 Rev. 0

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

Applied Loads	
Moment (kip-ft)	3961.62
Axial Force (kips)	55.41
Shear Force (kips)	30.65

*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
GROUP 1: (16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 52" BC <i>Anchor Spacing: 6 in</i>
GROUP 2: (3) 1-3/4" ϕ bolts (Williams R71 N; $F_y=120$ ksi, $F_u=125$ ksi) on 67.1" BC <i>pos. (deg): 10.3, 148.3, 238.3</i>
Base Plate Data
53" W x 3" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi); Clip: 6 in
Stiffener Data
N/A
Pole Data
45.1" x 0.4375" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>	
GROUP 1:		
$P_u_t = 190.9$	$\phi P_n_t = 243.75$	Stress Rating
$V_u = 1.92$	$\phi V_n = 149.1$	74.6%
$M_u = n/a$	$\phi M_n = n/a$	Pass
GROUP 2:		
$P_u_t = 189.2$	$\phi P_n_t = 243.75$	Stress Rating
$V_u = 0$	$\phi V_n = 121.88$	73.9%
$M_u = n/a$	$\phi M_n = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	28.92	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	61.2%	Pass

CCIplate

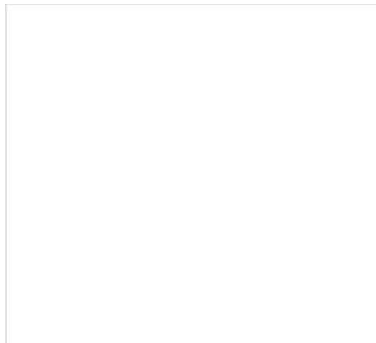
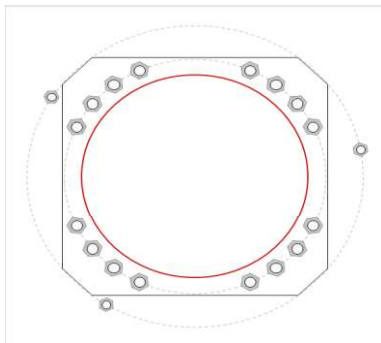
Elevation (ft) 0 (Base)

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	l_{ar} (in):	Thread Type	Area Override, in ²	Tension Only
1	1	25.1225713	2.25	A615-75	52	0.5	2.25	N-Included		No
2	1	38.3741904	2.25	A615-75	52	0.5	2.25	N-Included		No
3	1	51.6258096	2.25	A615-75	52	0.5	2.25	N-Included		No
4	1	64.8774287	2.25	A615-75	52	0.5	2.25	N-Included		No
5	1	115.122571	2.25	A615-75	52	0.5	2.25	N-Included		No
6	1	128.37419	2.25	A615-75	52	0.5	2.25	N-Included		No
7	1	141.62581	2.25	A615-75	52	0.5	2.25	N-Included		No
8	1	154.877429	2.25	A615-75	52	0.5	2.25	N-Included		No
9	1	205.122571	2.25	A615-75	52	0.5	2.25	N-Included		No
10	1	218.37419	2.25	A615-75	52	0.5	2.25	N-Included		No
11	1	231.62581	2.25	A615-75	52	0.5	2.25	N-Included		No
12	1	244.877429	2.25	A615-75	52	0.5	2.25	N-Included		No
13	1	295.122571	2.25	A615-75	52	0.5	2.25	N-Included		No
14	1	308.37419	2.25	A615-75	52	0.5	2.25	N-Included		No
15	1	321.62581	2.25	A615-75	52	0.5	2.25	N-Included		No
16	1	334.877429	2.25	A615-75	52	0.5	2.25	N-Included		No
17	2	10.3	1.75	Williams R71	67.1	0.5	0	N-Included	2.6	No
18	2	148.3	1.75	Williams R71	67.1	0.5	0	N-Included	2.6	No
19	2	238.3	1.75	Williams R71	67.1	0.5	0	N-Included	2.6	No

Plot Graphic



Drilled Pier Foundation

BU # : 1876313
Site Name: WEST JOHNSON AVE. BU
Order Number: 1556616 Rev. 0
TIA-222 Revision: H
Tower Type: Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{ult} (ft from TOC)	5.21	-
Soil Safety Factor	1.80	-
Max Moment (kip-ft)	4118.33	-
Rating*	70.2%	-
Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	236.44	-
End Bearing (kips)	123.82	-
Weight of Concrete (kips)	206.61	-
Total Capacity (kips)	360.27	-
Axial (kips)	262.04	-
Rating*	69.3%	-
Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	7.01	-
Critical Moment (kip-ft)	4060.16	-
Critical Moment Capacity	5109.78	-
Rating*	75.7%	-
Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	12.75	-
Critical Shear (kip)	407.09	-
Critical Shear Capacity	499.81	-
Rating*	77.6%	-

Rebar & Pier Options
 Embedded Pole Inputs
 Belled Pier Inputs

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3961.62	
Axial Force (kips)	55.43	
Shear Force (kips)	30.62	

Material Properties	
Concrete Strength, f _c :	3 ksi
Rebar Strength, F _y :	60 ksi
Tie Yield Strength, F _y :	40 ksi

Pier Design Data	
Depth	25.5 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
<i>From 0.5' above grade to 6.5' below grade</i>	
Pier Diameter	11 ft
Rebar Quantity	20
Rebar Size	11
Rebar Cage Diameter	73.34 in
Tie Size	5
Tie Spacing	18 in

Pier Section 2	
<i>From 6.5' below grade to 25.5' below grade</i>	
Pier Diameter	7 ft
Rebar Quantity	20
Rebar Size	11
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	18 in

Structural Foundation Rating*	77.6%
Soil Interaction Rating*	70.2%

*Rating per TIA-222-H Section 15.5

Soil Profile

# of Layers	10
-------------	----

Groundwater Depth	10
-------------------	----

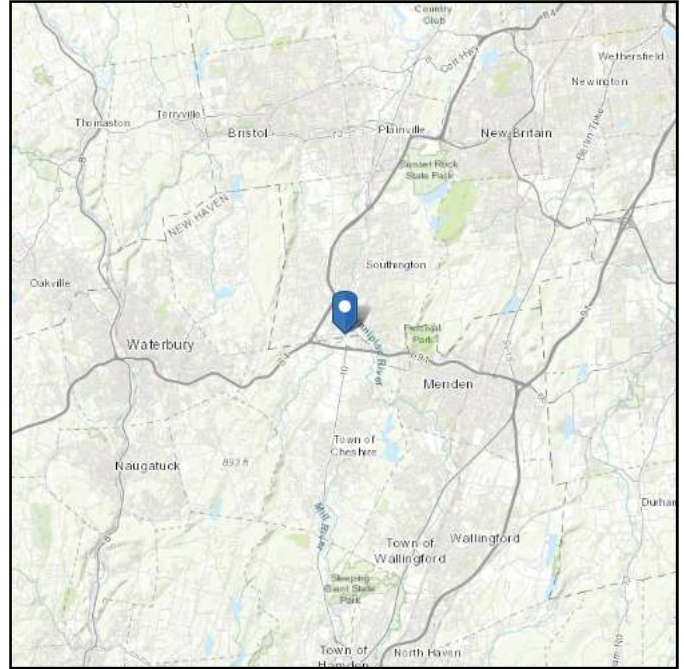
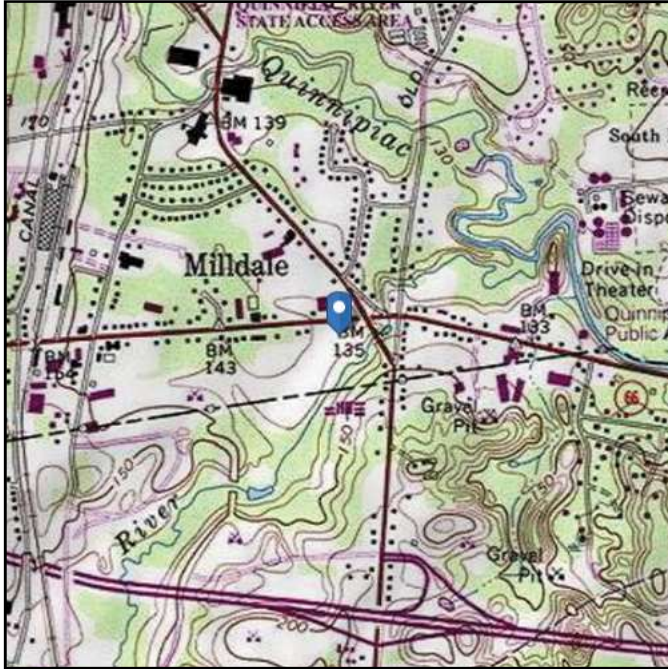
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	105	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	3.5	1.5	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.5	4	0.5	110	150	0	31	0.000	0.000	0.00	0.00			Cohesionless
4	4	4.7	0.7	110	150	0	31	0.000	0.000	0.00	0.00			Cohesionless
5	4.7	6	1.3	110	150	0	31	0.000	0.000	0.10	0.80			Cohesionless
6	6	8	2	120	150	2.5	0	1.375	1.375	1.48	1.48			Cohesive
7	8	10	2	115	150	2.25	0	1.24	1.24	1.23	1.23			Cohesive
8	10	15	5	48	87.6	1	0	0.55	0.55	0.55	0.55			Cohesive
9	15	20	5	48	87.6	1.25	0	0.69	0.69	0.66	0.66			Cohesive
10	20	25.5	5.5	43	87.6	0.75	0	0.41	0.41	0.41	0.41	4.29		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 133.13 ft (NAVD 88)
Latitude: 41.564275
Longitude: -72.891861

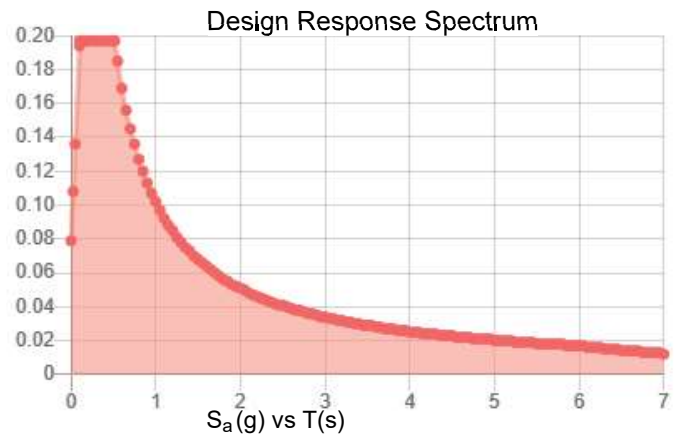
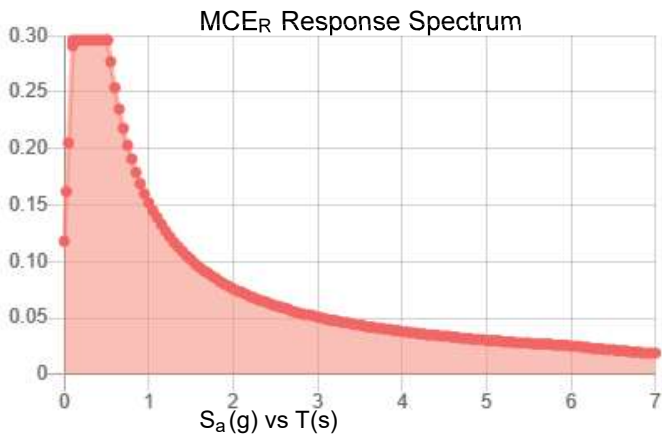


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.185	S_{DS} :	0.197
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.095
S_{MS} :	0.296	PGA _M :	0.152
S_{M1} :	0.152	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue May 04 2021

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Tue May 04 2021

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.