



STATE OF CONNECTICUT  
*CONNECTICUT SITING COUNCIL*

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**VIA ELECTRONIC MAIL**

May 2, 2024

Jeffrey Barbadora  
Permitting Specialist  
Crown Castle  
1800 West Park Drive  
Westborough, MA 01581  
[Jeff.Barbadora@crowncastle.com](mailto:Jeff.Barbadora@crowncastle.com)

RE: **EM-VER-168-230803** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 186 Minortown Road, Woodbury, Connecticut.  
**Request for Project Change.**

Dear Jeffrey Barbadora:

The Connecticut Siting Council (Council) is in receipt of the correspondence dated April 30, 2024 and the associated Structural Analysis dated October 18, 2023, regarding a project change for the above-referenced exempt modification request acknowledged by the Council on August 21, 2023.

Pursuant to Condition No. 1 of the Council's August 21, 2023 exempt modification approval, the request to increase the number of Kaelus interference mitigation filters to be installed from one to two is hereby approved.

This approval applies only to the project change in the correspondence dated April 24, 2024.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/ANM/laf

c: The Honorable Barbara Perkinson, First Selectperson, Town of Woodbury  
([barbaraperkinson@woodburyct.org](mailto:barbaraperkinson@woodburyct.org))

**From:** Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>  
**Sent:** Tuesday, April 30, 2024 10:31 AM  
**To:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** EM-VER-168-230803 - 186 Minortown Road Woodbury CT - 876405

Good morning,

Would the CSC please update the approval for EM-VER-168-230803 to include a total of 2 filters?

The original SA submitted with the application and dated 7/21/2023 stated only 1 filter and should have stated 2 filters.

Please see updated SA stating a total of 2 filters and let me know if you have any questions.

Thanks,

**Jeffrey Barbadora**  
Permitting Specialist  
781-970-0053

**Crown Castle**  
1800 W. Park Drive, Suite 250  
Westborough, MA 01581

Date: **October 18, 2023**



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

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **Verizon Wireless Co-Locate**  
**Site Number:** 5000248228  
**Site Name:** WOODBURY CT

**Crown Castle Designation:** **BU Number:** 876405  
**Site Name:** WOODBURY NORTH  
**JDE Job Number:** 2103470  
**Work Order Number:** 2264908  
**Order Number:** 658778 Rev. 0

**Engineering Firm Designation:** **Crown Castle Project Number:** 2264908

**Site Data:** **186 MinorTown, WOODBURY, Litchfield County, CT**  
**Latitude 41° 34' 4.79", Longitude -73° 10' 46.85"**  
**110 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:

LC7: Proposed Equipment Configuration

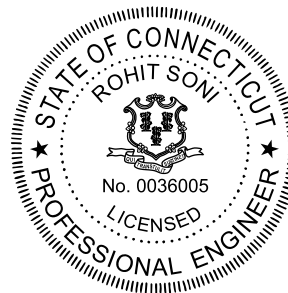
**Sufficient Capacity-89.4%**

This analysis has been performed in accordance with the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 116 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Rohit Soni

Respectfully submitted by:

Rohit Soni, P.E.  
Senior Project Engineer



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## 1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. The tower has been modified multiple times to accommodate additional loading.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	116 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)	
108.0	110.0	3	samsung telecommunications	RFV01U-D1A	6 1	1-5/8 1-1/4	
	109.0	1	raycap	RVZDC-6627-PF-48_CCIV2			
	108.0	108.0	3	commscope			CBC78T-DS-43-2X
			2	kaelus			BSF0020F3V1
			3	samsung telecommunications			RFV01U-D2A
	107.0	107.0	1	tower mounts			T-Arm Mount [TA 602-3]
			1	antel_cfd			BXA-80063/4CFx5 w/ Mount Pipe
			2	antel_cfd			BXA-80080/4CF w/ Mount Pipe
			6	commscope_cfd			JAHH-65B-R3B w/ Mount Pipe
			3	samsung telecommunications_cfd			MT6407-77A w/ Mount Pipe

**Table 2 - Other Considered Equipment**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
95.0	95.0	3	rfs celwave_cfd	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	3	1-5/8
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson_cfd	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	rfs celwave_cfd	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		1	tower mounts	SitePro1 RMQP-4096-HK		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
79.0	79.0	1	tower mounts	Pipe Mount [PM 601-3]	12 2 2 2	1-5/8 7/8 7/16 3/8
		1	tower mounts	T-Arm Mount [TA 602-3]		
	78.0	2	cci antennas_cfd	DMP65R-BU4D w/ Mount Pipe		
		4	cci antennas_cfd	DMP65R-BU6D w/ Mount Pipe		
		6	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		6	powerwave technologies	LGP21401		
		3	powerwave technologies_cfd	7770.00 w/ Mount Pipe		
		1	raycap	DC6-48-60-0-8C-EV		
		1	raycap	DC6-48-60-18-8F		
74.0	74.0	1	tower mounts	Side Arm Mount [SO 901-3]	-	-
68.0	68.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless_cfd	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		
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 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2158106	CCISITES
4-POST-MODIFICATION INSPECTION	3849745	CCISITES
4-POST-MODIFICATION INSPECTION	3373272	CCISITES
4-POST-MODIFICATION INSPECTION	2309564	CCISITES
4-POST-MODIFICATION INSPECTION	1956156	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1613643	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1614551	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3382709	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2177138	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2055775	CCISITES

#### 3.1) Analysis Method

tnxTower (version 8.1.4.0), 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 4 - Section Capacity (Summary)**

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP13.693x12.7x0.1875	Pole	6.5%	Pass
105 - 100	Pole	TP14.686x13.693x0.1875	Pole	15.4%	Pass
100 - 98.5	Pole	TP14.984x14.686x0.1875	Pole	17.7%	Pass
98.5 - 93.5	Pole	TP16.012x14.984x0.1875	Pole	27.9%	Pass
93.5 - 88.5	Pole	TP17.039x16.012x0.1875	Pole	40.3%	Pass
88.5 - 83.5	Pole	TP18.066x17.039x0.1875	Pole	50.0%	Pass
83.5 - 78.67	Pole	TP19.058x18.066x0.1875	Pole	58.5%	Pass
78.67 - 78.42	Pole + Reinf.	TP19.11x19.058x0.5625	Reinf. 5 Bolt-Shaft Bearing	31.9%	Pass
78.42 - 73.42	Pole + Reinf.	TP20.137x19.11x0.5375	Reinf. 5 Tension Rupture	38.9%	Pass
73.42 - 68.42	Pole + Reinf.	TP21.164x20.137x0.5125	Reinf. 5 Tension Rupture	45.4%	Pass
68.42 - 63.42	Pole + Reinf.	TP22.191x21.164x0.4875	Reinf. 5 Tension Rupture	53.3%	Pass
63.42 - 58.67	Pole + Reinf.	TP23.167x22.191x0.475	Reinf. 5 Bolt-Shaft Bearing	60.4%	Pass
58.67 - 58.42	Pole + Reinf.	TP23.218x23.167x0.475	Reinf. 4 Bolt-Shaft Bearing	60.8%	Pass
58.42 - 53.42	Pole + Reinf.	TP24.246x23.218x0.4625	Reinf. 4 Tension Rupture	66.5%	Pass
53.42 - 50.87	Pole + Reinf.	TP25.54x24.246x0.45	Reinf. 4 Tension Rupture	69.4%	Pass
50.87 - 45.87	Pole + Reinf.	TP25.363x24.395x0.5125	Reinf. 4 Tension Rupture	67.0%	Pass
45.87 - 40.87	Pole + Reinf.	TP26.332x25.363x0.5	Reinf. 4 Tension Rupture	71.2%	Pass
40.87 - 35.87	Pole + Reinf.	TP27.301x26.332x0.4875	Reinf. 4 Tension Rupture	74.9%	Pass
35.87 - 30.87	Pole + Reinf.	TP28.269x27.301x0.475	Reinf. 4 Tension Rupture	78.2%	Pass
30.87 - 28.67	Pole + Reinf.	TP28.696x28.269x0.475	Reinf. 4 Tension Rupture	79.6%	Pass
28.67 - 28.42	Pole + Reinf.	TP28.744x28.696x0.475	Reinf. 7 Tension Rupture	79.7%	Pass
28.42 - 23.42	Pole + Reinf.	TP29.713x28.744x0.4625	Reinf. 7 Tension Rupture	82.5%	Pass
23.42 - 18.42	Pole + Reinf.	TP30.681x29.713x0.4563	Reinf. 7 Tension Rupture	85.0%	Pass
18.42 - 14.17	Pole + Reinf.	TP31.505x30.681x0.45	Reinf. 7 Tension Rupture	86.9%	Pass
14.17 - 13.92	Pole + Reinf.	TP31.553x31.505x0.55	Reinf. 3 Tension Rupture	77.3%	Pass
13.92 - 13.67	Pole + Reinf.	TP31.602x31.553x0.55	Reinf. 3 Tension Rupture	77.4%	Pass

13.67 - 13.42	Pole + Reinf.	TP31.65x31.602x0.4688	Reinf. 6 Tension Rupture	86.2%	Pass
13.42 - 8.42	Pole + Reinf.	TP32.619x31.65x0.4625	Reinf. 6 Tension Rupture	88.3%	Pass
8.42 - 5.75	Pole + Reinf.	TP33.136x32.619x0.4625	Reinf. 6 Tension Rupture	89.4%	Pass
5.75 - 5.5	Pole + Reinf.	TP33.184x33.136x0.525	Reinf. 3 Tension Rupture	80.4%	Pass
5.5 - 3.57	Pole + Reinf.	TP33.558x33.184x0.5875	Reinf. 1 Compression	66.6%	Pass
3.57 - 3.32	Pole + Reinf.	TP33.607x33.558x0.5875	Reinf. 1 Compression	66.7%	Pass
3.32 - 3.17	Pole + Reinf.	TP33.636x33.607x0.5875	Reinf. 1 Compression	66.7%	Pass
3.17 - 2.92	Pole + Reinf.	TP33.684x33.636x0.5	Reinf. 1 Compression	76.6%	Pass
2.92 - 2.75	Pole + Reinf.	TP33.717x33.684x0.5	Reinf. 1 Compression	76.7%	Pass
2.75 - 2.5	Pole + Reinf.	TP33.766x33.717x0.4875	Reinf. 1 Compression	76.1%	Pass
2.5 - 0	Pole + Reinf.	TP34.25x33.766x0.4875	Reinf. 1 Compression	76.8%	Pass
				Summary	
			Pole	66.1%	Pass
			Reinforcement	89.4%	Pass
			Overall	89.4%	Pass

**Table 5 - Tower Component Stresses vs. Capacity - LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.8	Pass
1	Base Plate	0	85.9	Pass
1	Base Foundation (Structure)	0	51.6	Pass
1	Base Foundation (Soil Interaction)	0	81.2	Pass
1	Flange Connection	98.5	49.8	Pass

<b>Structure Rating (max from all components) =</b>	<b>89.4%</b>
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Notes:

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

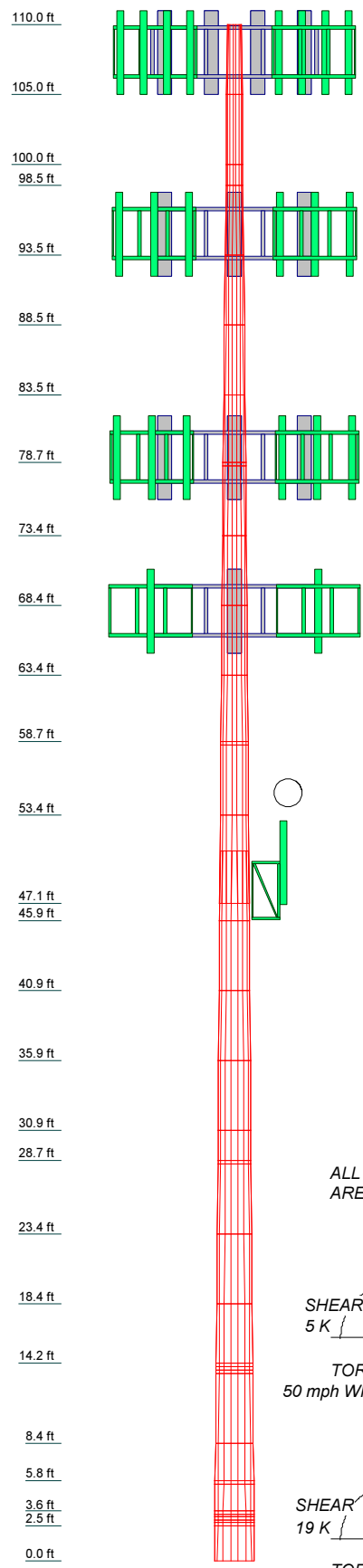
#### 4.1) Recommendations

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



**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875		12.7000	13.6932		0.1
2	5.00	18	0.1875		14.9843	16.0115		0.1
3	1.50	18	0.1875		16.0115	17.0387		0.0
4	5.00	18	0.1875		16.0115	17.0387		0.2
5	5.00	18	0.1875		16.0115	17.0387		0.2
6	5.00	18	0.1875		16.0115	17.0387		0.2
7	5.00	18	0.1875		16.0115	17.0387		0.2
8	4.83	18	0.1875		16.0115	17.0387		0.2
9	0.25	18	0.1875		16.0115	17.0387		0.5
10	5.00	18	0.1875		16.0115	17.0387		0.5
11	5.00	18	0.1875		16.0115	17.0387		0.5
12	4.75	18	0.1875		16.0115	17.0387		0.5
13	0.25	18	0.1875		16.0115	17.0387		0.5
14	4.75	18	0.1875		16.0115	17.0387		0.5
15	3.00	18	0.1875	3.75	16.0115	17.0387	A572-65	0.7
16	5.00	18	0.1875		20.1368	21.1640		0.6
17	5.00	18	0.1875		20.1368	21.1640		0.6
18	5.00	18	0.1875		20.1368	21.1640		0.6
19	5.00	18	0.1875		20.1368	21.1640		0.6
20	5.00	18	0.1875		20.1368	21.1640		0.7
21	5.00	18	0.1875		20.1368	21.1640		0.7
22	5.00	18	0.1875		20.1368	21.1640		0.7
23	5.00	18	0.1875		20.1368	21.1640		0.7
24	4.25	18	0.1875		20.1368	21.1640		0.6
25	4.25	18	0.1875		20.1368	21.1640		0.6
26	4.25	18	0.1875		20.1368	21.1640		0.6
27	4.25	18	0.1875		20.1368	21.1640		0.6
28	4.25	18	0.1875		20.1368	21.1640		0.8
29	4.25	18	0.1875		20.1368	21.1640		0.8
30	4.25	18	0.1875		20.1368	21.1640		0.4
31	4.25	18	0.1875		20.1368	21.1640		0.4
32	4.25	18	0.1875		20.1368	21.1640		0.4
33	4.25	18	0.1875		20.1368	21.1640		0.4
34	4.25	18	0.1875		20.1368	21.1640		0.4
35	4.25	18	0.1875		20.1368	21.1640		0.4
36	4.25	18	0.1875		20.1368	21.1640		0.4
37	4.25	18	0.1875		20.1368	21.1640		0.4



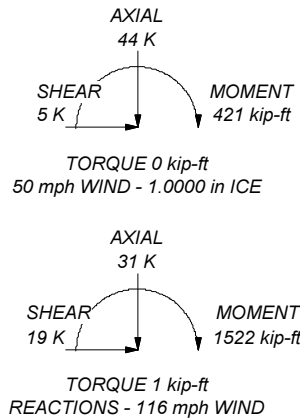
**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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 : 87.2%

ALL REACTIONS ARE FACTORED



<b>Crown Castle</b>		Job: <b>876405</b>	
2000 Corporate Drive Canonsburg, PA 15317 Phone: (724) 416-2000 FAX:			
Project:	Client: Crown Castle	Drawn by: RSONI	App'd:
Code: TIA-222-H	Date: 10/18/23	Scale: NTS	Dwg No. E-1
Path: C:\Users\rsoni\SAP\Work Area\876405\WO 2264908 - SAIProd\876405.ed			

## 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 Litchfield County, Connecticut.
- Tower base elevation above sea level: 460.00 ft.
- Basic wind speed of 116 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 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 : 87.2%.
- 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 Forces in Supporting Bracing Members 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 Poles ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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## 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	110.00-105.00	5.00	0.00	18	12.7000	13.6932	0.1875	0.7500	A572-65

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
L2	105.00-100.00	5.00	0.00	18	13.6932	14.6863	0.1875	0.7500	(65 ksi) A572-65
L3	100.00-98.50	1.50	0.00	18	14.6863	14.9843	0.1875	0.7500	(65 ksi) A572-65
L4	98.50-93.50	5.00	0.00	18	14.9843	16.0115	0.1875	0.7500	(65 ksi) A572-65
L5	93.50-88.50	5.00	0.00	18	16.0115	17.0387	0.1875	0.7500	(65 ksi) A572-65
L6	88.50-83.50	5.00	0.00	18	17.0387	18.0660	0.1875	0.7500	(65 ksi) A572-65
L7	83.50-78.67	4.83	0.00	18	18.0660	19.0583	0.1875	0.7500	(65 ksi) A572-65
L8	78.67-78.42	0.25	0.00	18	19.0583	19.1096	0.5625	2.2500	(65 ksi) A572-65
L9	78.42-73.42	5.00	0.00	18	19.1096	20.1368	0.5375	2.1500	(65 ksi) A572-65
L10	73.42-68.42	5.00	0.00	18	20.1368	21.1640	0.5125	2.0500	(65 ksi) A572-65
L11	68.42-63.42	5.00	0.00	18	21.1640	22.1913	0.4875	1.9500	(65 ksi) A572-65
L12	63.42-58.67	4.75	0.00	18	22.1913	23.1671	0.4750	1.9000	(65 ksi) A572-65
L13	58.67-58.42	0.25	0.00	18	23.1671	23.2185	0.4750	1.9000	(65 ksi) A572-65
L14	58.42-53.42	5.00	0.00	18	23.2185	24.2457	0.4625	1.8500	(65 ksi) A572-65
L15	53.42-47.12	6.30	3.75	18	24.2457	25.5400	0.4500	1.8000	(65 ksi) A572-65
L16	47.12-45.87	5.00	0.00	18	24.3946	25.3633	0.5125	2.0500	(65 ksi) A572-65
L17	45.87-40.87	5.00	0.00	18	25.3633	26.3320	0.5000	2.0000	(65 ksi) A572-65
L18	40.87-35.87	5.00	0.00	18	26.3320	27.3006	0.4875	1.9500	(65 ksi) A572-65
L19	35.87-30.87	5.00	0.00	18	27.3006	28.2693	0.4750	1.9000	(65 ksi) A572-65
L20	30.87-28.67	2.20	0.00	18	28.2693	28.6956	0.4750	1.9000	(65 ksi) A572-65
L21	28.67-28.42	0.25	0.00	18	28.6956	28.7440	0.4750	1.9000	(65 ksi) A572-65
L22	28.42-23.42	5.00	0.00	18	28.7440	29.7127	0.4625	1.8500	(65 ksi) A572-65
L23	23.42-18.42	5.00	0.00	18	29.7127	30.6814	0.4562	1.8250	(65 ksi) A572-65
L24	18.42-14.17	4.25	0.00	18	30.6814	31.5047	0.4500	1.8000	(65 ksi) A572-65
L25	14.17-13.92	0.25	0.00	18	31.5047	31.5532	0.5500	2.2000	(65 ksi) A572-65
L26	13.92-13.67	0.25	0.00	18	31.5532	31.6016	0.5500	2.2000	(65 ksi) A572-65
L27	13.67-13.42	0.25	0.00	18	31.6016	31.6500	0.4688	1.8750	(65 ksi) A572-65
L28	13.42-8.42	5.00	0.00	18	31.6500	32.6187	0.4625	1.8500	(65 ksi) A572-65
L29	8.42-5.75	2.67	0.00	18	32.6187	33.1360	0.4625	1.8500	(65 ksi) A572-65
L30	5.75-5.50	0.25	0.00	18	33.1360	33.1844	0.5250	2.1000	(65 ksi) A572-65
L31	5.50-3.57	1.93	0.00	18	33.1844	33.5584	0.5875	2.3500	(65 ksi) A572-65
L32	3.57-3.32	0.25	0.00	18	33.5584	33.6068	0.5875	2.3500	(65 ksi) A572-65
L33	3.32-3.17	0.15	0.00	18	33.6068	33.6359	0.5875	2.3500	(65 ksi) A572-65
L34	3.17-2.92	0.25	0.00	18	33.6359	33.6843	0.5000	2.0000	(65 ksi) A572-65
L35	2.92-2.75	0.17	0.00	18	33.6843	33.7172	0.5000	2.0000	(65 ksi) A572-65

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	2.75-2.50	0.25	0.00	18	33.7172	33.7657	0.4875	1.9500	A572-65 (65 ksi)
L37	2.50-0.00	2.50		18	33.7657	34.2500	0.4875	1.9500	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	12.8670	7.4465	147.2916	4.4419	6.4516	22.8302	294.7770	3.7240	1.9052	10.161
	13.8755	8.0376	185.2228	4.7945	6.9561	26.6273	370.6893	4.0195	2.0800	11.093
L2	13.8755	8.0376	185.2228	4.7945	6.9561	26.6273	370.6893	4.0195	2.0800	11.093
	14.8840	8.6286	229.1639	5.1471	7.4607	30.7163	458.6293	4.3151	2.2548	12.026
L3	14.8840	8.6286	229.1639	5.1471	7.4607	30.7163	458.6293	4.3151	2.2548	12.026
	15.1865	8.8059	243.5842	5.2529	7.6120	31.9999	487.4888	4.4038	2.3072	12.305
L4	15.1865	8.8059	243.5842	5.2529	7.6120	31.9999	487.4888	4.4038	2.3072	12.305
	16.2296	9.4173	297.9175	5.6175	8.1339	36.6269	596.2270	4.7095	2.4880	13.269
L5	16.2296	9.4173	297.9175	5.6175	8.1339	36.6269	596.2270	4.7095	2.4880	13.269
	17.2727	10.0286	359.7834	5.9822	8.6557	41.5662	720.0401	5.0152	2.6688	14.234
L6	17.2727	10.0286	359.7834	5.9822	8.6557	41.5662	720.0401	5.0152	2.6688	14.234
	18.3157	10.6399	429.6706	6.3469	9.1775	46.8178	859.9066	5.3210	2.8496	15.198
L7	18.3157	10.6399	429.6706	6.3469	9.1775	46.8178	859.9066	5.3210	2.8496	15.198
	19.3233	11.2305	505.2579	6.6991	9.6816	52.1875	1011.1807	5.6163	3.0243	16.129
L8	19.3233	11.2305	505.2579	6.6991	9.6816	52.1875	1011.1807	5.6163	3.0243	16.129
	19.2655	33.0218	1427.1931	6.5660	9.6816	147.4131	2856.2641	16.5141	2.3643	4.203
L9	19.2655	33.0218	1427.1931	6.5660	9.6816	147.4131	2856.2641	16.5141	2.3643	4.203
	19.3176	33.1135	1439.1157	6.5842	9.7077	148.2450	2880.1250	16.5599	2.3733	4.219
L9	19.3215	31.6845	1380.7233	6.5931	9.7077	142.2300	2763.2634	15.8453	2.4173	4.497
	20.3646	33.4369	1622.7307	6.9578	10.2295	158.6323	3247.5966	16.7216	2.5981	4.834
L10	20.3684	31.9224	1553.1832	6.9666	10.2295	151.8336	3108.4102	15.9642	2.6421	5.155
	21.4115	33.5934	1810.0729	7.3313	10.7513	168.3579	3622.5276	16.7999	2.8229	5.508
L11	21.4153	31.9933	1728.0372	7.3402	10.7513	160.7277	3458.3483	15.9997	2.8669	5.881
	22.4584	33.5828	1998.5929	7.7048	11.2732	177.2877	3999.8157	16.7946	3.0477	6.252
L12	22.4603	32.7405	1950.7135	7.7093	11.2732	173.0405	3903.9939	16.3734	3.0697	6.462
	23.4512	34.2118	2225.6839	8.0557	11.7689	189.1157	4454.2964	17.1091	3.2414	6.824
L13	23.4512	34.2118	2225.6839	8.0557	11.7689	189.1157	4454.2964	17.1091	3.2414	6.824
	23.5034	34.2892	2240.8309	8.0739	11.7950	189.9816	4484.6103	17.1479	3.2505	6.843
L14	23.5053	33.4052	2185.4611	8.0784	11.7950	185.2872	4373.7979	16.7058	3.2725	7.076
	24.5484	34.9131	2494.9807	8.4430	12.3168	202.5670	4993.2444	17.4599	3.4532	7.466
L15	24.5503	33.9874	2431.3784	8.4475	12.3168	197.4031	4865.9561	16.9969	3.4752	7.723
	25.8646	35.8360	2850.0919	8.9070	12.9743	219.6718	5703.9341	17.9214	3.7030	8.229
L16	25.8646	35.8360	2850.0919	8.9070	12.9743	219.6718	5703.9341	17.9214	3.7030	8.229
	25.4296	38.8484	2799.3359	8.4781	12.3924	225.8904	5602.3553	19.4279	3.3914	6.617
L17	25.6755	40.4241	3153.9725	8.8220	12.8845	244.7873	6312.0950	20.2159	3.5619	6.95
	25.6774	39.4580	3081.6919	8.8265	12.8845	239.1774	6167.4388	19.7328	3.5839	7.168
L18	26.6610	40.9953	3456.1004	9.1703	13.3766	258.3685	6916.7485	20.5016	3.7544	7.509
	26.6630	39.9898	3374.5920	9.1748	13.3766	252.2751	6753.6245	19.9987	3.7764	7.747
L19	27.6466	41.4886	3768.4457	9.5187	13.8687	271.7225	7541.8500	20.7483	3.9469	8.096
	27.6485	40.4437	3676.9566	9.5231	13.8687	265.1257	7358.7514	20.2257	3.9689	8.356
L20	28.6322	41.9041	4089.8432	9.8670	14.3608	284.7918	8185.0679	20.9560	4.1394	8.715
	28.6322	41.9041	4089.8432	9.8670	14.3608	284.7918	8185.0679	20.9560	4.1394	8.715
	29.0650	42.5467	4280.8947	10.0183	14.5773	293.6677	8567.4222	21.2774	4.2144	8.872
L21	29.0650	42.5467	4280.8947	10.0183	14.5773	293.6677	8567.4222	21.2774	4.2144	8.872
	29.1141	42.6197	4302.9740	10.0355	14.6019	294.6850	8611.6099	21.3139	4.2229	8.89
L22	29.1161	41.5165	4195.2982	10.0399	14.6019	287.3109	8396.1166	20.7622	4.2449	9.178
	30.0997	42.9385	4641.3196	10.3838	15.0940	307.4936	9288.7463	21.4733	4.4154	9.547
L23	30.1007	42.3673	4581.5346	10.3860	15.0940	303.5327	9169.0978	21.1877	4.4264	9.702
	31.0843	43.7701	5051.8555	10.7299	15.5861	324.1251	10110.3584	21.8892	4.5969	10.075
L24	31.0852	43.1795	4985.7436	10.7321	15.5861	319.8833	9978.0476	21.5938	4.6079	10.24
	31.9213	44.3555	5404.3156	11.0244	16.0044	337.6767	10815.7424	22.1820	4.7528	10.562
L25	31.9059	54.0377	6541.6706	10.9889	16.0044	408.7418	13091.9488	27.0240	4.5768	8.322
	31.9551	54.1222	6572.4253	11.0061	16.0290	410.0330	13153.4988	27.0663	4.5854	8.337
L26	31.9551	54.1222	6572.4253	11.0061	16.0290	410.0330	13153.4988	27.0663	4.5854	8.337

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
	32.0043	54.2068	6603.2770	11.0233	16.0536	411.3264	13215.2427	27.1086	4.5939	8.353
L27	32.0168	46.3199	5672.0858	11.0522	16.0536	353.3213	11351.6351	23.1643	4.7369	10.105
	32.0660	46.3919	5698.5995	11.0694	16.0782	354.4297	11404.6975	23.2004	4.7454	10.124
L28	32.0670	45.7825	5625.9999	11.0716	16.0782	349.9143	11259.4026	22.8956	4.7564	10.284
	33.0506	47.2045	6166.6822	11.4155	16.5703	372.1524	12341.4787	23.6068	4.9269	10.653
L29	33.0506	47.2045	6166.6822	11.4155	16.5703	372.1524	12341.4787	23.6068	4.9269	10.653
	33.5758	47.9639	6469.0949	11.5991	16.8331	384.3081	12946.7021	23.9865	5.0179	10.85
L30	33.5662	54.3414	7301.2373	11.5769	16.8331	433.7430	14612.0818	27.1758	4.9079	9.348
	33.6154	54.4221	7333.8171	11.5941	16.8577	435.0426	14677.2843	27.2162	4.9165	9.365
L31	33.6057	60.7843	8159.8644	11.5719	16.8577	484.0438	16330.4658	30.3979	4.8065	8.181
	33.9854	61.4816	8443.8982	11.7047	17.0476	495.3117	16898.9072	30.7466	4.8723	8.293
L32	33.9854	61.4816	8443.8982	11.7047	17.0476	495.3117	16898.9072	30.7466	4.8723	8.293
	34.0346	61.5719	8481.1650	11.7218	17.0723	496.7807	16973.4898	30.7918	4.8808	8.308
L33	34.0346	61.5719	8481.1650	11.7218	17.0723	496.7807	16973.4898	30.7918	4.8808	8.308
	34.0641	61.6261	8503.5781	11.7322	17.0870	497.6632	17018.3455	30.8189	4.8859	8.316
L34	34.0776	52.5866	7294.7236	11.7632	17.0870	426.9162	14599.0458	26.2983	5.0399	10.08
	34.1268	52.6635	7326.7580	11.7804	17.1116	428.1745	14663.1568	26.3367	5.0484	10.097
L35	34.1268	52.6635	7326.7580	11.7804	17.1116	428.1745	14663.1568	26.3367	5.0484	10.097
	34.1602	52.7157	7348.5955	11.7921	17.1283	429.0312	14706.8608	26.3629	5.0542	10.108
L36	34.1622	51.4172	7172.9723	11.7966	17.1283	418.7778	14355.3835	25.7135	5.0762	10.413
	34.2113	51.4921	7204.3830	11.8137	17.1530	420.0083	14418.2457	25.7510	5.0848	10.43
L37	34.2113	51.4921	7204.3830	11.8137	17.1530	420.0083	14418.2457	25.7510	5.0848	10.43
	34.7032	52.2416	7523.5495	11.9857	17.3990	432.4128	15056.9987	26.1257	5.1700	10.605

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor Ar	Adjust. Factor Ar	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L1 110.00-105.00				1	1	1			
L2 105.00-100.00				1	1	1			
L3 100.00-98.50				1	1	1			
L4 98.50-93.50				1	1	1			
L5 93.50-88.50				1	1	1			
L6 88.50-83.50				1	1	1			
L7 83.50-78.67				1	1	1			
L8 78.67-78.42				1	1	0.851966			
L9 78.42-				1	1	0.862009			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	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 <sup>2</sup>	in							
73.42									
L10 73.42-68.42				1	1	0.876193			
L11 68.42-63.42				1	1	0.894673			
L12 63.42-58.67				1	1	0.895199			
L13 58.67-58.42				1	1	0.894069			
L14 58.42-53.42				1	1	0.895601			
L15 53.42-47.12				1	1	0.909153			
L16 47.12-45.87				1	1	0.912277			
L17 45.87-40.87				1	1	0.918316			
L18 40.87-35.87				1	1	0.925923			
L19 35.87-30.87				1	1	0.935086			
L20 30.87-28.67				1	1	0.928912			
L21 28.67-28.42				1	1	0.928222			
L22 28.42-23.42				1	1	0.939232			
L23 23.42-18.42				1	1	0.938949			
L24 18.42-14.17				1	1	0.941287			
L25 14.17-13.92				1	1	0.95543			
L26 13.92-13.67				1	1	0.954649			
L27 13.67-13.42				1	1	0.994499			
L28 13.42-8.42				1	1	0.993662			
L29 8.42-5.75				1	1	0.986488			
L30 5.75-5.50				1	1	0.973951			
L31 5.50-3.57				1	1	1.01862			
L32 3.57-3.32				1	1	1.01775			
L33 3.32-3.17				1	1	1.01723			
L34 3.17-2.92				1	1	1.00271			
L35 2.92-2.75				1	1	1.00221			
L36 2.75-2.50				1	1	0.917042			
L37 2.50-0.00				1	1	0.911243			

**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 r in	Perimeter r in	Weight plf
**48**										
LDF4-50A(1/2)	B	No	Surface Ar (CaAa)	48.00 - 0.00	1	1	0.500 0.500	0.6300		0.15
*****										
***Mods***										
MP3-05 (1.25in)	A	No	Surface Af (CaAa)	8.25 - 0.00	1	1	0.000 0.000	5.3300	14.8400	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
MP3-05 (1.25in)	C	No	Surface Af (CaAa)	31.17 - 0.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 (1.25in)	B	No	Surface Af (CaAa)	31.17 - 0.00	1	1	0.000 0.000	5.3300	14.8400	0.00
***										
MP3-05 (1.25in)	C	No	Surface Af (CaAa)	61.17 - 31.17	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 (1.25in)	B	No	Surface Af (CaAa)	61.17 - 31.17	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 (1.25in)	A	No	Surface Af (CaAa)	61.17 - 31.17	1	1	0.000 0.000	5.3300	14.8400	0.00
***										
MP3-05 (1.25in)	C	No	Surface Af (CaAa)	81.17 - 61.17	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 (1.25in)	B	No	Surface Af (CaAa)	81.17 - 61.17	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 (1.25in)	A	No	Surface Af (CaAa)	81.17 - 61.17	1	1	0.000 0.000	5.3300	14.8400	0.00
***										
MP3-08.5 (1.25")	A	No	Surface Af (CaAa)	16.17 - 0.00	1	1	0.333 0.333	3.8400	13.2800	0.00
MP3-08.5 (1.25")	A	No	Surface Af (CaAa)	16.17 - 0.00	1	1	-0.333 -0.333	3.8400	13.2800	0.00
***										
MP3-05 (1.25in)	A	No	Surface Af (CaAa)	31.17 - 11.17	1	1	0.000 0.000	5.3300	14.8400	0.00
***										

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CaAa ft <sup>2</sup> /ft	Weight plf	
<b>**108**</b>									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	108.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
HB114-13U3M12-XXXF(1-1/4)	B	No	No	Inside Pole	108.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.99 0.99 0.99
<b>**95**</b>									
HB158-21U6S24-xxM_TMO(1-5/8)	B	No	No	Inside Pole	95.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	2.50 2.50 2.50
<b>**79**</b>									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	79.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82
WR-VG66ST-BRD(7/8)	C	No	No	Inside Pole	79.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.91 0.91 0.91
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	79.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
WR-VG122ST-BRDA(7/16)	C	No	No	Inside Pole	79.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.14 0.14 0.14
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	79.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
2" Flexible Conduit	C	No	No	Inside Pole	79.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.34 0.34 0.34
<b>**68**</b>									



Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
CU12PSM9P8XXX (1-3/8)	B	No	No	Inside Pole	68.00 - 0.00	1	No Ice	0.00	1.66
							1/2" Ice	0.00	1.66
							1" Ice	0.00	1.66
***									
3/8" Ground	C	No	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.22
							1/2" Ice	0.00	0.22
							1" Ice	0.00	0.22
1/2" Ground	C	No	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.52
							1/2" Ice	0.00	0.52
							1" Ice	0.00	0.52
*****									
***									

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.01
L2	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.01
L3	100.00-98.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L4	98.50-93.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.01
L5	93.50-88.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.01
L6	88.50-83.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.01
L7	83.50-78.67	A	0.000	0.000	2.221	0.000	0.00
		B	0.000	0.000	2.221	0.000	0.06
		C	0.000	0.000	2.221	0.000	0.01
L8	78.67-78.42	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.222	0.000	0.00
		C	0.000	0.000	0.222	0.000	0.00
L9	78.42-73.42	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.07
		C	0.000	0.000	4.442	0.000	0.07
L10	73.42-68.42	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.07
		C	0.000	0.000	4.442	0.000	0.07
L11	68.42-63.42	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.07
		C	0.000	0.000	4.442	0.000	0.07
L12	63.42-58.67	A	0.000	0.000	4.220	0.000	0.00
		B	0.000	0.000	4.220	0.000	0.07
		C	0.000	0.000	4.220	0.000	0.07
L13	58.67-58.42	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.222	0.000	0.00
		C	0.000	0.000	0.222	0.000	0.00
L14	58.42-53.42	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.08
		C	0.000	0.000	4.442	0.000	0.07
L15	53.42-47.12	A	0.000	0.000	5.596	0.000	0.00
		B	0.000	0.000	5.652	0.000	0.10

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L16	47.12-45.87	C	0.000	0.000	5.596	0.000	0.09
		A	0.000	0.000	1.110	0.000	0.00
		B	0.000	0.000	1.189	0.000	0.02
L17	45.87-40.87	C	0.000	0.000	1.110	0.000	0.02
		A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L18	40.87-35.87	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L19	35.87-30.87	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L20	30.87-28.67	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	1.954	0.000	0.00
		B	0.000	0.000	2.093	0.000	0.03
L21	28.67-28.42	C	0.000	0.000	1.954	0.000	0.03
		A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L22	28.42-23.42	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L23	23.42-18.42	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L24	18.42-14.17	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	6.335	0.000	0.00
		B	0.000	0.000	4.043	0.000	0.06
L25	14.17-13.92	C	0.000	0.000	3.775	0.000	0.06
		A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L26	13.92-13.67	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L27	13.67-13.42	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	0.542	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L28	13.42-8.42	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	8.399	0.000	0.00
		B	0.000	0.000	4.757	0.000	0.08
L29	8.42-5.75	C	0.000	0.000	4.442	0.000	0.07
		A	0.000	0.000	5.353	0.000	0.00
		B	0.000	0.000	2.540	0.000	0.04
L30	5.75-5.50	C	0.000	0.000	2.372	0.000	0.04
		A	0.000	0.000	0.514	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L31	5.50-3.57	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	3.965	0.000	0.00
		B	0.000	0.000	1.836	0.000	0.03
L32	3.57-3.32	C	0.000	0.000	1.714	0.000	0.03
		A	0.000	0.000	0.514	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L33	3.32-3.17	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	0.308	0.000	0.00
		B	0.000	0.000	0.143	0.000	0.00
L34	3.17-2.92	C	0.000	0.000	0.133	0.000	0.00
		A	0.000	0.000	0.514	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L35	2.92-2.75	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	0.349	0.000	0.00
		B	0.000	0.000	0.162	0.000	0.00
L36	2.75-2.50	C	0.000	0.000	0.151	0.000	0.00
		A	0.000	0.000	0.514	0.000	0.00
		B	0.000	0.000	0.238	0.000	0.00
L37	2.50-0.00	C	0.000	0.000	0.222	0.000	0.00
		A	0.000	0.000	5.136	0.000	0.00
		B	0.000	0.000	2.378	0.000	0.04
		C	0.000	0.000	2.221	0.000	0.03

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.01
L2	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	0.000	0.01
L3	100.00-98.50	A	0.949	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L4	98.50-93.50	A	0.946	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.01
L5	93.50-88.50	A	0.941	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.01
L6	88.50-83.50	A	0.935	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.01
L7	83.50-78.67	A	0.930	0.000	0.000	2.686	0.000	0.02
		B		0.000	0.000	2.686	0.000	0.08
		C		0.000	0.000	2.686	0.000	0.03
L8	78.67-78.42	A	0.927	0.000	0.000	0.268	0.000	0.00
		B		0.000	0.000	0.268	0.000	0.01
		C		0.000	0.000	0.268	0.000	0.01
L9	78.42-73.42	A	0.924	0.000	0.000	5.365	0.000	0.03
		B		0.000	0.000	5.365	0.000	0.10
		C		0.000	0.000	5.365	0.000	0.10
L10	73.42-68.42	A	0.918	0.000	0.000	5.359	0.000	0.03
		B		0.000	0.000	5.359	0.000	0.10
		C		0.000	0.000	5.359	0.000	0.10
L11	68.42-63.42	A	0.911	0.000	0.000	5.353	0.000	0.03
		B		0.000	0.000	5.353	0.000	0.11
		C		0.000	0.000	5.353	0.000	0.10
L12	63.42-58.67	A	0.904	0.000	0.000	5.078	0.000	0.03
		B		0.000	0.000	5.078	0.000	0.10
		C		0.000	0.000	5.078	0.000	0.10
L13	58.67-58.42	A	0.900	0.000	0.000	0.267	0.000	0.00
		B		0.000	0.000	0.267	0.000	0.01
		C		0.000	0.000	0.267	0.000	0.01
L14	58.42-53.42	A	0.896	0.000	0.000	5.338	0.000	0.03
		B		0.000	0.000	5.338	0.000	0.11
		C		0.000	0.000	5.338	0.000	0.10
L15	53.42-47.12	A	0.886	0.000	0.000	6.713	0.000	0.04
		B		0.000	0.000	6.925	0.000	0.14
		C		0.000	0.000	6.713	0.000	0.13
L16	47.12-45.87	A	0.880	0.000	0.000	1.332	0.000	0.01
		B		0.000	0.000	1.632	0.000	0.03
		C		0.000	0.000	1.332	0.000	0.03
L17	45.87-40.87	A	0.874	0.000	0.000	5.315	0.000	0.03
		B		0.000	0.000	6.504	0.000	0.11
		C		0.000	0.000	5.315	0.000	0.10
L18	40.87-35.87	A	0.863	0.000	0.000	5.305	0.000	0.03
		B		0.000	0.000	6.482	0.000	0.11
		C		0.000	0.000	5.305	0.000	0.10
L19	35.87-30.87	A	0.851	0.000	0.000	5.293	0.000	0.03
		B		0.000	0.000	6.458	0.000	0.11
		C		0.000	0.000	5.293	0.000	0.10
L20	30.87-28.67	A	0.841	0.000	0.000	2.324	0.000	0.01
		B		0.000	0.000	2.833	0.000	0.05
		C		0.000	0.000	2.324	0.000	0.04
L21	28.67-28.42	A	0.838	0.000	0.000	0.264	0.000	0.00
		B		0.000	0.000	0.322	0.000	0.01
		C		0.000	0.000	0.264	0.000	0.00
L22	28.42-23.42	A	0.830	0.000	0.000	5.271	0.000	0.03
		B		0.000	0.000	6.416	0.000	0.11

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L23	23.42-18.42	C		0.000	0.000	5.271	0.000	0.10
		A	0.812	0.000	0.000	5.254	0.000	0.03
		B		0.000	0.000	6.381	0.000	0.11
L24	18.42-14.17	C		0.000	0.000	5.254	0.000	0.10
		A	0.792	0.000	0.000	7.642	0.000	0.04
		B		0.000	0.000	5.390	0.000	0.09
L25	14.17-13.92	C		0.000	0.000	4.449	0.000	0.08
		A	0.780	0.000	0.000	0.659	0.000	0.00
		B		0.000	0.000	0.316	0.000	0.01
L26	13.92-13.67	C		0.000	0.000	0.261	0.000	0.00
		A	0.779	0.000	0.000	0.659	0.000	0.00
		B		0.000	0.000	0.316	0.000	0.01
L27	13.67-13.42	C		0.000	0.000	0.261	0.000	0.00
		A	0.778	0.000	0.000	0.659	0.000	0.00
		B		0.000	0.000	0.316	0.000	0.01
L28	13.42-8.42	C		0.000	0.000	0.261	0.000	0.00
		A	0.761	0.000	0.000	10.263	0.000	0.06
		B		0.000	0.000	6.279	0.000	0.11
L29	8.42-5.75	C		0.000	0.000	5.203	0.000	0.10
		A	0.729	0.000	0.000	6.334	0.000	0.04
		B		0.000	0.000	3.318	0.000	0.06
L30	5.75-5.50	C		0.000	0.000	2.761	0.000	0.05
		A	0.712	0.000	0.000	0.605	0.000	0.00
		B		0.000	0.000	0.309	0.000	0.01
L31	5.50-3.57	C		0.000	0.000	0.258	0.000	0.00
		A	0.697	0.000	0.000	4.652	0.000	0.03
		B		0.000	0.000	2.374	0.000	0.04
L32	3.57-3.32	C		0.000	0.000	1.984	0.000	0.04
		A	0.678	0.000	0.000	0.600	0.000	0.00
		B		0.000	0.000	0.306	0.000	0.01
L33	3.32-3.17	C		0.000	0.000	0.256	0.000	0.00
		A	0.674	0.000	0.000	0.360	0.000	0.00
		B		0.000	0.000	0.183	0.000	0.00
L34	3.17-2.92	C		0.000	0.000	0.153	0.000	0.00
		A	0.670	0.000	0.000	0.599	0.000	0.00
		B		0.000	0.000	0.305	0.000	0.01
L35	2.92-2.75	C		0.000	0.000	0.256	0.000	0.00
		A	0.665	0.000	0.000	0.407	0.000	0.00
		B		0.000	0.000	0.207	0.000	0.00
L36	2.75-2.50	C		0.000	0.000	0.174	0.000	0.00
		A	0.660	0.000	0.000	0.598	0.000	0.00
		B		0.000	0.000	0.304	0.000	0.01
L37	2.50-0.00	C		0.000	0.000	0.255	0.000	0.00
		A	0.613	0.000	0.000	5.919	0.000	0.03
		B		0.000	0.000	2.991	0.000	0.05
		C		0.000	0.000	2.527	0.000	0.04

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	110.00-105.00	0.0000	0.0000	0.0000	0.0000
L2	105.00-100.00	0.0000	0.0000	0.0000	0.0000
L3	100.00-98.50	0.0000	0.0000	0.0000	0.0000
L4	98.50-93.50	0.0000	0.0000	0.0000	0.0000
L5	93.50-88.50	0.0000	0.0000	0.0000	0.0000
L6	88.50-83.50	0.0000	0.0000	0.0000	0.0000
L7	83.50-78.67	0.0000	0.0000	0.0000	0.0000
L8	78.67-78.42	0.0000	0.0000	0.0000	0.0000
L9	78.42-73.42	0.0000	0.0000	0.0000	0.0000
L10	73.42-68.42	0.0000	0.0000	0.0000	0.0000
L11	68.42-63.42	0.0000	0.0000	0.0000	0.0000
L12	63.42-58.67	0.0000	0.0000	0.0000	0.0000
L13	58.67-58.42	0.0000	0.0000	0.0000	0.0000

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L14	58.42-53.42	0.0000	0.0000	0.0000	0.0000
L15	53.42-47.12	0.0236	0.0136	0.0639	0.0369
L16	47.12-45.87	0.1648	0.0952	0.4364	0.2520
L17	45.87-40.87	0.1672	0.0965	0.4383	0.2530
L18	40.87-35.87	0.1709	0.0987	0.4440	0.2563
L19	35.87-30.87	0.1746	0.1008	0.4488	0.2591
L20	30.87-28.67	0.1772	0.1023	0.4517	0.2608
L21	28.67-28.42	0.1780	0.1028	0.4525	0.2613
L22	28.42-23.42	0.1798	0.1038	0.4541	0.2622
L23	23.42-18.42	0.1833	0.1058	0.4559	0.2632
L24	18.42-14.17	-0.4670	-0.2696	-0.1476	-0.0852
L25	14.17-13.92	-1.0436	-0.6025	-0.6951	-0.4013
L26	13.92-13.67	-1.0444	-0.6030	-0.6957	-0.4017
L27	13.67-13.42	-1.0450	-0.6033	-0.6963	-0.4020
L28	13.42-8.42	0.1782	0.1029	0.3449	0.1991
L29	8.42-5.75	-0.6738	-0.3890	-0.3021	-0.1744
L30	5.75-5.50	-0.7964	-0.4598	-0.4061	-0.2345
L31	5.50-3.57	-0.7987	-0.4611	-0.4115	-0.2376
L32	3.57-3.32	-0.8008	-0.4624	-0.4180	-0.2413
L33	3.32-3.17	-0.8012	-0.4626	-0.4194	-0.2421
L34	3.17-2.92	-0.8015	-0.4627	-0.4208	-0.2429
L35	2.92-2.75	-0.8019	-0.4630	-0.4224	-0.2439
L36	2.75-2.50	-0.8023	-0.4632	-0.4241	-0.2449
L37	2.50-0.00	-0.8050	-0.4648	-0.4401	-0.2541

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 <sub>a</sub> No Ice	K <sub>a</sub> Ice
L7	31	MP3-05 (1.25in)	78.67 - 81.17	1.0000	1.0000
L7	32	MP3-05 (1.25in)	78.67 - 81.17	1.0000	1.0000
L7	33	MP3-05 (1.25in)	78.67 - 81.17	1.0000	1.0000
L8	31	MP3-05 (1.25in)	78.42 - 78.67	1.0000	1.0000
L8	32	MP3-05 (1.25in)	78.42 - 78.67	1.0000	1.0000
L8	33	MP3-05 (1.25in)	78.42 - 78.67	1.0000	1.0000
L9	31	MP3-05 (1.25in)	73.42 - 78.42	1.0000	1.0000
L9	32	MP3-05 (1.25in)	73.42 - 78.42	1.0000	1.0000
L9	33	MP3-05 (1.25in)	73.42 - 78.42	1.0000	1.0000
L10	31	MP3-05 (1.25in)	68.42 - 73.42	1.0000	1.0000
L10	32	MP3-05 (1.25in)	68.42 - 73.42	1.0000	1.0000
L10	33	MP3-05 (1.25in)	68.42 - 73.42	1.0000	1.0000
L11	31	MP3-05 (1.25in)	63.42 - 68.42	1.0000	1.0000
L11	32	MP3-05 (1.25in)	63.42 - 68.42	1.0000	1.0000
L11	33	MP3-05 (1.25in)	63.42 - 68.42	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L12	27	MP3-05 (1.25in)	58.67 - 61.17	1.0000	1.0000
L12	28	MP3-05 (1.25in)	58.67 - 61.17	1.0000	1.0000
L12	29	MP3-05 (1.25in)	58.67 - 61.17	1.0000	1.0000
L12	31	MP3-05 (1.25in)	61.17 - 63.42	1.0000	1.0000
L12	32	MP3-05 (1.25in)	61.17 - 63.42	1.0000	1.0000
L12	33	MP3-05 (1.25in)	61.17 - 63.42	1.0000	1.0000
L13	27	MP3-05 (1.25in)	58.42 - 58.67	1.0000	1.0000
L13	28	MP3-05 (1.25in)	58.42 - 58.67	1.0000	1.0000
L13	29	MP3-05 (1.25in)	58.42 - 58.67	1.0000	1.0000
L14	27	MP3-05 (1.25in)	53.42 - 58.42	1.0000	1.0000
L14	28	MP3-05 (1.25in)	53.42 - 58.42	1.0000	1.0000
L14	29	MP3-05 (1.25in)	53.42 - 58.42	1.0000	1.0000
L15	16	LDF4-50A(1/2)	47.12 - 48.00	1.0000	1.0000
L15	27	MP3-05 (1.25in)	47.12 - 53.42	1.0000	1.0000
L15	28	MP3-05 (1.25in)	47.12 - 53.42	1.0000	1.0000
L15	29	MP3-05 (1.25in)	47.12 - 53.42	1.0000	1.0000
L16	16	LDF4-50A(1/2)	45.87 - 47.12	1.0000	1.0000
L16	27	MP3-05 (1.25in)	45.87 - 47.12	1.0000	1.0000
L16	28	MP3-05 (1.25in)	45.87 - 47.12	1.0000	1.0000
L16	29	MP3-05 (1.25in)	45.87 - 47.12	1.0000	1.0000
L17	16	LDF4-50A(1/2)	40.87 - 45.87	1.0000	1.0000
L17	27	MP3-05 (1.25in)	40.87 - 45.87	1.0000	1.0000
L17	28	MP3-05 (1.25in)	40.87 - 45.87	1.0000	1.0000
L17	29	MP3-05 (1.25in)	40.87 - 45.87	1.0000	1.0000
L18	16	LDF4-50A(1/2)	35.87 - 40.87	1.0000	1.0000
L18	27	MP3-05 (1.25in)	35.87 - 40.87	1.0000	1.0000
L18	28	MP3-05 (1.25in)	35.87 - 40.87	1.0000	1.0000
L18	29	MP3-05 (1.25in)	35.87 - 40.87	1.0000	1.0000
L19	16	LDF4-50A(1/2)	30.87 - 35.87	1.0000	1.0000
L19	24	MP3-05 (1.25in)	30.87 - 31.17	1.0000	1.0000
L19	25	MP3-05 (1.25in)	30.87 - 31.17	1.0000	1.0000
L19	27	MP3-05 (1.25in)	31.17 - 35.87	1.0000	1.0000
L19	28	MP3-05 (1.25in)	31.17 - 35.87	1.0000	1.0000
L19	29	MP3-05 (1.25in)	31.17 - 35.87	1.0000	1.0000
L19	38	MP3-05 (1.25in)	30.87 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L20	16	LDF4-50A(1/2)	31.17 28.67 - 30.87	1.0000	1.0000
L20	24	MP3-05 (1.25in)	28.67 - 30.87	1.0000	1.0000
L20	25	MP3-05 (1.25in)	28.67 - 30.87	1.0000	1.0000
L20	38	MP3-05 (1.25in)	28.67 - 30.87	1.0000	1.0000
L21	16	LDF4-50A(1/2)	28.42 - 28.67	1.0000	1.0000
L21	24	MP3-05 (1.25in)	28.42 - 28.67	1.0000	1.0000
L21	25	MP3-05 (1.25in)	28.42 - 28.67	1.0000	1.0000
L21	38	MP3-05 (1.25in)	28.42 - 28.67	1.0000	1.0000
L22	16	LDF4-50A(1/2)	23.42 - 28.42	1.0000	1.0000
L22	24	MP3-05 (1.25in)	23.42 - 28.42	1.0000	1.0000
L22	25	MP3-05 (1.25in)	23.42 - 28.42	1.0000	1.0000
L22	38	MP3-05 (1.25in)	23.42 - 28.42	1.0000	1.0000
L23	16	LDF4-50A(1/2)	18.42 - 23.42	1.0000	1.0000
L23	24	MP3-05 (1.25in)	18.42 - 23.42	1.0000	1.0000
L23	25	MP3-05 (1.25in)	18.42 - 23.42	1.0000	1.0000
L23	38	MP3-05 (1.25in)	18.42 - 23.42	1.0000	1.0000
L24	16	LDF4-50A(1/2)	14.17 - 18.42	1.0000	1.0000
L24	24	MP3-05 (1.25in)	14.17 - 18.42	1.0000	1.0000
L24	25	MP3-05 (1.25in)	14.17 - 18.42	1.0000	1.0000
L24	35	MP3-08.5 (1.25")	14.17 - 16.17	1.0000	1.0000
L24	36	MP3-08.5 (1.25")	14.17 - 16.17	1.0000	1.0000
L24	38	MP3-05 (1.25in)	14.17 - 18.42	1.0000	1.0000
L25	16	LDF4-50A(1/2)	13.92 - 14.17	1.0000	1.0000
L25	24	MP3-05 (1.25in)	13.92 - 14.17	1.0000	1.0000
L25	25	MP3-05 (1.25in)	13.92 - 14.17	1.0000	1.0000
L25	35	MP3-08.5 (1.25")	13.92 - 14.17	1.0000	1.0000
L25	36	MP3-08.5 (1.25")	13.92 - 14.17	1.0000	1.0000
L25	38	MP3-05 (1.25in)	13.92 - 14.17	1.0000	1.0000
L26	16	LDF4-50A(1/2)	13.67 - 13.92	1.0000	1.0000
L26	24	MP3-05 (1.25in)	13.67 - 13.92	1.0000	1.0000
L26	25	MP3-05 (1.25in)	13.67 - 13.92	1.0000	1.0000
L26	35	MP3-08.5 (1.25")	13.67 - 13.92	1.0000	1.0000
L26	36	MP3-08.5 (1.25")	13.67 - 13.92	1.0000	1.0000
L26	38	MP3-05 (1.25in)	13.67 - 13.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L27	16	LDF4-50A(1/2)	13.42 - 13.67	1.0000	1.0000
L27	24	MP3-05 (1.25in)	13.42 - 13.67	1.0000	1.0000
L27	25	MP3-05 (1.25in)	13.42 - 13.67	1.0000	1.0000
L27	35	MP3-08.5 (1.25")	13.42 - 13.67	1.0000	1.0000
L27	36	MP3-08.5 (1.25")	13.42 - 13.67	1.0000	1.0000
L27	38	MP3-05 (1.25in)	13.42 - 13.67	1.0000	1.0000
L28	16	LDF4-50A(1/2)	8.42 - 13.42	1.0000	1.0000
L28	24	MP3-05 (1.25in)	8.42 - 13.42	1.0000	1.0000
L28	25	MP3-05 (1.25in)	8.42 - 13.42	1.0000	1.0000
L28	35	MP3-08.5 (1.25")	8.42 - 13.42	1.0000	1.0000
L28	36	MP3-08.5 (1.25")	8.42 - 13.42	1.0000	1.0000
L28	38	MP3-05 (1.25in)	11.17 - 13.42	1.0000	1.0000
L29	16	LDF4-50A(1/2)	5.75 - 8.42	1.0000	1.0000
L29	22	MP3-05 (1.25in)	5.75 - 8.25	1.0000	1.0000
L29	24	MP3-05 (1.25in)	5.75 - 8.42	1.0000	1.0000
L29	25	MP3-05 (1.25in)	5.75 - 8.42	1.0000	1.0000
L29	35	MP3-08.5 (1.25")	5.75 - 8.42	1.0000	1.0000
L29	36	MP3-08.5 (1.25")	5.75 - 8.42	1.0000	1.0000
L30	16	LDF4-50A(1/2)	5.50 - 5.75	1.0000	1.0000
L30	22	MP3-05 (1.25in)	5.50 - 5.75	1.0000	1.0000
L30	24	MP3-05 (1.25in)	5.50 - 5.75	1.0000	1.0000
L30	25	MP3-05 (1.25in)	5.50 - 5.75	1.0000	1.0000
L30	35	MP3-08.5 (1.25")	5.50 - 5.75	1.0000	1.0000
L30	36	MP3-08.5 (1.25")	5.50 - 5.75	1.0000	1.0000
L31	16	LDF4-50A(1/2)	3.57 - 5.50	1.0000	1.0000
L31	22	MP3-05 (1.25in)	3.57 - 5.50	1.0000	1.0000
L31	24	MP3-05 (1.25in)	3.57 - 5.50	1.0000	1.0000
L31	25	MP3-05 (1.25in)	3.57 - 5.50	1.0000	1.0000
L31	35	MP3-08.5 (1.25")	3.57 - 5.50	1.0000	1.0000
L31	36	MP3-08.5 (1.25")	3.57 - 5.50	1.0000	1.0000
L32	16	LDF4-50A(1/2)	3.32 - 3.57	1.0000	1.0000
L32	22	MP3-05 (1.25in)	3.32 - 3.57	1.0000	1.0000
L32	24	MP3-05 (1.25in)	3.32 - 3.57	1.0000	1.0000
L32	25	MP3-05 (1.25in)	3.32 - 3.57	1.0000	1.0000
L32	35	MP3-08.5 (1.25")	3.32 - 3.57	1.0000	1.0000
L32	36	MP3-08.5 (1.25")	3.32 - 3.57	1.0000	1.0000
L33	16	LDF4-50A(1/2)	3.17 - 3.32	1.0000	1.0000
L33	22	MP3-05 (1.25in)	3.17 - 3.32	1.0000	1.0000
L33	24	MP3-05 (1.25in)	3.17 - 3.32	1.0000	1.0000
L33	25	MP3-05 (1.25in)	3.17 - 3.32	1.0000	1.0000
L33	35	MP3-08.5 (1.25")	3.17 - 3.32	1.0000	1.0000
L33	36	MP3-08.5 (1.25")	3.17 - 3.32	1.0000	1.0000
L34	16	LDF4-50A(1/2)	2.92 - 3.17	1.0000	1.0000
L34	22	MP3-05 (1.25in)	2.92 - 3.17	1.0000	1.0000
L34	24	MP3-05 (1.25in)	2.92 - 3.17	1.0000	1.0000
L34	25	MP3-05 (1.25in)	2.92 - 3.17	1.0000	1.0000
L34	35	MP3-08.5 (1.25")	2.92 - 3.17	1.0000	1.0000
L34	36	MP3-08.5 (1.25")	2.92 - 3.17	1.0000	1.0000
L35	16	LDF4-50A(1/2)	2.75 - 2.92	1.0000	1.0000
L35	22	MP3-05 (1.25in)	2.75 - 2.92	1.0000	1.0000
L35	24	MP3-05 (1.25in)	2.75 - 2.92	1.0000	1.0000
L35	25	MP3-05 (1.25in)	2.75 - 2.92	1.0000	1.0000
L35	35	MP3-08.5 (1.25")	2.75 - 2.92	1.0000	1.0000
L35	36	MP3-08.5 (1.25")	2.75 - 2.92	1.0000	1.0000
L36	16	LDF4-50A(1/2)	2.50 - 2.75	1.0000	1.0000
L36	22	MP3-05 (1.25in)	2.50 - 2.75	1.0000	1.0000
L36	24	MP3-05 (1.25in)	2.50 - 2.75	1.0000	1.0000
L36	25	MP3-05 (1.25in)	2.50 - 2.75	1.0000	1.0000
L36	35	MP3-08.5 (1.25")	2.50 - 2.75	1.0000	1.0000
L36	36	MP3-08.5 (1.25")	2.50 - 2.75	1.0000	1.0000
L37	16	LDF4-50A(1/2)	0.00 - 2.50	1.0000	1.0000
L37	22	MP3-05 (1.25in)	0.00 - 2.50	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L37	24	MP3-05 (1.25in)	0.00 - 2.50	1.0000	1.0000
L37	25	MP3-05 (1.25in)	0.00 - 2.50	1.0000	1.0000
L37	35	MP3-08.5 (1.25")	0.00 - 2.50	1.0000	1.0000
L37	36	MP3-08.5 (1.25")	0.00 - 2.50	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
L7	31	MP3-05 (1.25in)	78.67 - 81.17	Auto	0.4411
L7	32	MP3-05 (1.25in)	78.67 - 81.17	Auto	0.4411
L7	33	MP3-05 (1.25in)	78.67 - 81.17	Auto	0.4411
L8	31	MP3-05 (1.25in)	78.42 - 78.67	Auto	0.5556
L8	32	MP3-05 (1.25in)	78.42 - 78.67	Auto	0.5556
L8	33	MP3-05 (1.25in)	78.42 - 78.67	Auto	0.5556
L9	31	MP3-05 (1.25in)	73.42 - 78.42	Auto	0.5295
L9	32	MP3-05 (1.25in)	73.42 - 78.42	Auto	0.5295
L9	33	MP3-05 (1.25in)	73.42 - 78.42	Auto	0.5295
L10	31	MP3-05 (1.25in)	68.42 - 73.42	Auto	0.4873
L10	32	MP3-05 (1.25in)	68.42 - 73.42	Auto	0.4873
L10	33	MP3-05 (1.25in)	68.42 - 73.42	Auto	0.4873
L11	31	MP3-05 (1.25in)	63.42 - 68.42	Auto	0.4452
L11	32	MP3-05 (1.25in)	63.42 - 68.42	Auto	0.4452
L11	33	MP3-05 (1.25in)	63.42 - 68.42	Auto	0.4452
L12	27	MP3-05 (1.25in)	58.67 - 61.17	Auto	0.4003
L12	28	MP3-05 (1.25in)	58.67 - 61.17	Auto	0.4003
L12	29	MP3-05 (1.25in)	58.67 - 61.17	Auto	0.4003
L12	31	MP3-05 (1.25in)	61.17 - 63.42	Auto	0.4164
L12	32	MP3-05 (1.25in)	61.17 - 63.42	Auto	0.4164
L12	33	MP3-05 (1.25in)	61.17 - 63.42	Auto	0.4164
L13	27	MP3-05 (1.25in)	58.42 - 58.67	Auto	0.3910
L13	28	MP3-05 (1.25in)	58.42 - 58.67	Auto	0.3910
L13	29	MP3-05 (1.25in)	58.42 - 58.67	Auto	0.3910
L14	27	MP3-05 (1.25in)	53.42 - 58.42	Auto	0.3691

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L14	28	MP3-05 (1.25in)	53.42 - 58.42	Auto	0.3691
L14	29	MP3-05 (1.25in)	53.42 - 58.42	Auto	0.3691
L15	27	MP3-05 (1.25in)	47.12 - 53.42	Auto	0.3266
L15	28	MP3-05 (1.25in)	47.12 - 53.42	Auto	0.3266
L15	29	MP3-05 (1.25in)	47.12 - 53.42	Auto	0.3266
L16	27	MP3-05 (1.25in)	45.87 - 47.12	Auto	0.3357
L16	28	MP3-05 (1.25in)	45.87 - 47.12	Auto	0.3357
L16	29	MP3-05 (1.25in)	45.87 - 47.12	Auto	0.3357
L17	27	MP3-05 (1.25in)	40.87 - 45.87	Auto	0.3116
L17	28	MP3-05 (1.25in)	40.87 - 45.87	Auto	0.3116
L17	29	MP3-05 (1.25in)	40.87 - 45.87	Auto	0.3116
L18	27	MP3-05 (1.25in)	35.87 - 40.87	Auto	0.2755
L18	28	MP3-05 (1.25in)	35.87 - 40.87	Auto	0.2755
L18	29	MP3-05 (1.25in)	35.87 - 40.87	Auto	0.2755
L19	24	MP3-05 (1.25in)	30.87 - 31.17	Auto	0.2243
L19	25	MP3-05 (1.25in)	30.87 - 31.17	Auto	0.2243
L19	27	MP3-05 (1.25in)	31.17 - 35.87	Auto	0.2403
L19	28	MP3-05 (1.25in)	31.17 - 35.87	Auto	0.2403
L19	29	MP3-05 (1.25in)	31.17 - 35.87	Auto	0.2403
L19	38	MP3-05 (1.25in)	30.87 - 31.17	Auto	0.2243
L20	24	MP3-05 (1.25in)	28.67 - 30.87	Auto	0.2163
L20	25	MP3-05 (1.25in)	28.67 - 30.87	Auto	0.2163
L20	38	MP3-05 (1.25in)	28.67 - 30.87	Auto	0.2163
L21	24	MP3-05 (1.25in)	28.42 - 28.67	Auto	0.2085
L21	25	MP3-05 (1.25in)	28.42 - 28.67	Auto	0.2085
L21	38	MP3-05 (1.25in)	28.42 - 28.67	Auto	0.2085
L22	24	MP3-05 (1.25in)	23.42 - 28.42	Auto	0.1876
L22	25	MP3-05 (1.25in)	23.42 - 28.42	Auto	0.1876
L22	38	MP3-05 (1.25in)	23.42 - 28.42	Auto	0.1876
L23	24	MP3-05 (1.25in)	18.42 - 23.42	Auto	0.1535
L23	25	MP3-05 (1.25in)	18.42 - 23.42	Auto	0.1535
L23	38	MP3-05 (1.25in)	18.42 - 23.42	Auto	0.1535
L24	24	MP3-05 (1.25in)	14.17 - 18.42	Auto	0.1219
L24	25	MP3-05 (1.25in)	14.17 - 18.42	Auto	0.1219

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	35	MP3-08.5 (1.25")	14.17 - 16.17	Auto	0.0000
L24	36	MP3-08.5 (1.25")	14.17 - 16.17	Auto	0.0000
L24	38	MP3-05 (1.25in)	14.17 - 18.42	Auto	0.1219
L25	24	MP3-05 (1.25in)	13.92 - 14.17	Auto	0.1405
L25	25	MP3-05 (1.25in)	13.92 - 14.17	Auto	0.1405
L25	35	MP3-08.5 (1.25")	13.92 - 14.17	Auto	0.0000
L25	36	MP3-08.5 (1.25")	13.92 - 14.17	Auto	0.0000
L25	38	MP3-05 (1.25in)	13.92 - 14.17	Auto	0.1405
L26	24	MP3-05 (1.25in)	13.67 - 13.92	Auto	0.1389
L26	25	MP3-05 (1.25in)	13.67 - 13.92	Auto	0.1389
L26	35	MP3-08.5 (1.25")	13.67 - 13.92	Auto	0.0000
L26	36	MP3-08.5 (1.25")	13.67 - 13.92	Auto	0.0000
L26	38	MP3-05 (1.25in)	13.67 - 13.92	Auto	0.1389
L27	24	MP3-05 (1.25in)	13.42 - 13.67	Auto	0.1105
L27	25	MP3-05 (1.25in)	13.42 - 13.67	Auto	0.1105
L27	35	MP3-08.5 (1.25")	13.42 - 13.67	Auto	0.0000
L27	36	MP3-08.5 (1.25")	13.42 - 13.67	Auto	0.0000
L27	38	MP3-05 (1.25in)	13.42 - 13.67	Auto	0.1105
L28	24	MP3-05 (1.25in)	8.42 - 13.42	Auto	0.0916
L28	25	MP3-05 (1.25in)	8.42 - 13.42	Auto	0.0916
L28	35	MP3-08.5 (1.25")	8.42 - 13.42	Auto	0.0000
L28	36	MP3-08.5 (1.25")	8.42 - 13.42	Auto	0.0000
L28	38	MP3-05 (1.25in)	11.17 - 13.42	Auto	0.1004
L29	22	MP3-05 (1.25in)	5.75 - 8.25	Auto	0.0665
L29	24	MP3-05 (1.25in)	5.75 - 8.42	Auto	0.0671
L29	25	MP3-05 (1.25in)	5.75 - 8.42	Auto	0.0671
L29	35	MP3-08.5 (1.25")	5.75 - 8.42	Auto	0.0000
L29	36	MP3-08.5 (1.25")	5.75 - 8.42	Auto	0.0000
L30	22	MP3-05 (1.25in)	5.50 - 5.75	Auto	0.0784
L30	24	MP3-05 (1.25in)	5.50 - 5.75	Auto	0.0784
L30	25	MP3-05 (1.25in)	5.50 - 5.75	Auto	0.0784
L30	35	MP3-08.5 (1.25")	5.50 - 5.75	Auto	0.0000
L30	36	MP3-08.5 (1.25")	5.50 - 5.75	Auto	0.0000
L31	22	MP3-05 (1.25in)	3.57 - 5.50	Auto	0.0921
L31	24	MP3-05 (1.25in)	3.57 - 5.50	Auto	0.0921
L31	25	MP3-05 (1.25in)	3.57 - 5.50	Auto	0.0921
L31	35	MP3-08.5 (1.25")	3.57 - 5.50	Auto	0.0000
L31	36	MP3-08.5 (1.25")	3.57 - 5.50	Auto	0.0000
L32	22	MP3-05 (1.25in)	3.32 - 3.57	Auto	0.0851
L32	24	MP3-05 (1.25in)	3.32 - 3.57	Auto	0.0851
L32	25	MP3-05 (1.25in)	3.32 - 3.57	Auto	0.0851
L32	35	MP3-08.5 (1.25")	3.32 - 3.57	Auto	0.0000
L32	36	MP3-08.5 (1.25")	3.32 - 3.57	Auto	0.0000
L33	22	MP3-05 (1.25in)	3.17 - 3.32	Auto	0.0838
L33	24	MP3-05 (1.25in)	3.17 - 3.32	Auto	0.0838
L33	25	MP3-05 (1.25in)	3.17 - 3.32	Auto	0.0838
L33	35	MP3-08.5 (1.25")	3.17 - 3.32	Auto	0.0000
L33	36	MP3-08.5 (1.25")	3.17 - 3.32	Auto	0.0000
L34	22	MP3-05 (1.25in)	2.92 - 3.17	Auto	0.0536

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L34	24	MP3-05 (1.25in)	2.92 - 3.17	Auto	0.0536
L34	25	MP3-05 (1.25in)	2.92 - 3.17	Auto	0.0536
L34	35	MP3-08.5 (1.25")	2.92 - 3.17	Auto	0.0000
L34	36	MP3-08.5 (1.25")	2.92 - 3.17	Auto	0.0000
L35	22	MP3-05 (1.25in)	2.75 - 2.92	Auto	0.0523
L35	24	MP3-05 (1.25in)	2.75 - 2.92	Auto	0.0523
L35	25	MP3-05 (1.25in)	2.75 - 2.92	Auto	0.0523
L35	35	MP3-08.5 (1.25")	2.75 - 2.92	Auto	0.0000
L35	36	MP3-08.5 (1.25")	2.75 - 2.92	Auto	0.0000
L36	22	MP3-05 (1.25in)	2.50 - 2.75	Auto	0.0468
L36	24	MP3-05 (1.25in)	2.50 - 2.75	Auto	0.0468
L36	25	MP3-05 (1.25in)	2.50 - 2.75	Auto	0.0468
L36	35	MP3-08.5 (1.25")	2.50 - 2.75	Auto	0.0000
L36	36	MP3-08.5 (1.25")	2.50 - 2.75	Auto	0.0000
L37	22	MP3-05 (1.25in)	0.00 - 2.50	Auto	0.0380
L37	24	MP3-05 (1.25in)	0.00 - 2.50	Auto	0.0380
L37	25	MP3-05 (1.25in)	0.00 - 2.50	Auto	0.0380
L37	35	MP3-08.5 (1.25")	0.00 - 2.50	Auto	0.0000
L37	36	MP3-08.5 (1.25")	0.00 - 2.50	Auto	0.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
**108**					
BXA-80080/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 -1.00	0.0000	108.00
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 -1.00	0.0000	108.00
BXA-80063/4CFx5 w/ Mount Pipe	C	From Leg	4.00 0.00 -1.00	0.0000	108.00
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 -1.00	0.0000	108.00
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 -1.00	0.0000	108.00
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 -1.00	0.0000	108.00
MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 -1.00	0.0000	108.00
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 -1.00	0.0000	108.00
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 -1.00	0.0000	108.00
(2) BSF0020F3V1	A	From Leg	4.00 0.00 0.00	0.0000	108.00
CBC78T-DS-43-2X	A	From Leg	4.00	0.0000	108.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			0.00		
CBC78T-DS-43-2X	B	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
CBC78T-DS-43-2X	C	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
RFV01U-D2A	A	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
RFV01U-D2A	B	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
RFV01U-D2A	C	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
RFV01U-D1A	A	From Leg	4.00	0.0000	108.00
			0.00		
			2.00		
RFV01U-D1A	B	From Leg	4.00	0.0000	108.00
			0.00		
			2.00		
RFV01U-D1A	C	From Leg	4.00	0.0000	108.00
			0.00		
			2.00		
RVZDC-6627-PF-48_CCIV2	A	From Leg	4.00	0.0000	108.00
			0.00		
			1.00		
2.4" Dia. x 6-ft	A	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
2.4" Dia. x 6-ft	B	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
2.4" Dia. x 6-ft	C	From Leg	4.00	0.0000	108.00
			0.00		
			0.00		
T-Arm Mount [TA 602-3] **95**	C	None		0.0000	108.00
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			1.00		
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			1.00		
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			1.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	95.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			0.00		
RADIO 4415 B66A_CCIV3	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4415 B66A_CCIV3	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4415 B66A_CCIV3	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4449 B71 B85A_T-MOBILE	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4424 B25_TMO	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4424 B25_TMO	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
RADIO 4424 B25_TMO	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
2.4" x 8' Pipe	A	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
2.4" x 8' Pipe	B	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
2.4" x 8' Pipe	C	From Centroid-Leg	4.00	0.0000	95.00
			0.00		
			0.00		
SitePro1 RMQP-4096-HK **79**	C	None		0.0000	95.00
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) DMP65R-BU4D w/ Mount Pipe	B	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) LGP21401	A	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) LGP21401	B	From Leg	4.00	0.0000	79.00
			0.00		
			-1.00		
(2) LGP21401	C	From Leg	4.00	0.0000	79.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
(2) RRUS 4478 B14	A	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
(2) RRUS 4478 B14	B	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
(2) RRUS 4478 B14	C	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
DC6-48-60-0-8C-EV	A	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
RRUS 8843 B2/B66A	A	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
RRUS 8843 B2/B66A	B	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
RRUS 8843 B2/B66A	C	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
DC6-48-60-18-8F	B	From Leg	-1.00 4.00	0.0000	79.00
			0.00		
Pipe Mount [PM 601-3]	C	None	-1.00	0.0000	79.00
T-Arm Mount [TA 602-3]	C	None		0.0000	79.00
**74**					
2.4" Dia. x 4-ft	A	From Leg	2.00	0.0000	74.00
			0.00		
2.4" Dia. x 4-ft	B	From Leg	0.00 2.00	0.0000	74.00
			0.00		
2.4" Dia. x 4-ft	C	From Leg	0.00 2.00	0.0000	74.00
			0.00		
Side Arm Mount [SO 901-3]	C	None	0.00	0.0000	74.00
**68**					
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	68.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B604	A	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B604	B	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B604	C	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B605	A	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B605	B	From Centroid-Leg	0.00 4.00	0.0000	68.00
			0.00		
TA08025-B605	C	From Centroid-Leg	0.00 4.00	0.0000	68.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
RDIDC-9181-PF-48	A	From Centroid-Leg	0.00 4.00	0.0000	68.00
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Centroid-Leg	0.00 4.00	0.0000	68.00
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Centroid-Leg	0.00 4.00	0.0000	68.00
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Centroid-Leg	0.00 4.00	0.0000	68.00
Commscope MC-PK8-DSH **48**	C	None	0.00	0.0000	68.00
KS24019-L112A	B	From Leg	3.00 0.00	0.0000	48.00
Side Arm Mount [SO 701-1]	B	From Leg	2.00 1.50	0.0000	48.00
			0.00 0.00		
*****					

### 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



Comb. No.	Description
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	110 - 105	Pole	Max Tension	45	0.00	-0.00	0.00
			Max. Compression	26	-5.51	-0.04	0.87
			Max. Mx	8	-2.72	-9.56	0.33
			Max. My	2	-2.71	-0.03	10.22
			Max. Vy	8	3.69	-9.56	0.33
			Max. Vx	14	3.78	-0.01	-9.44
			Max. Torque	8			0.70
L2	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.81	-0.04	0.89
			Max. Mx	8	-2.92	-28.53	0.37
			Max. My	2	-2.91	-0.04	29.61
			Max. Vy	8	3.90	-28.53	0.37
			Max. Vx	14	3.98	0.01	-28.83
			Max. Torque	8			0.70
L3	100 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.91	-0.04	0.89
			Max. Mx	8	-2.99	-34.42	0.37
			Max. My	2	-2.97	-0.05	35.63
			Max. Vy	8	3.96	-34.42	0.37
			Max. Vx	14	4.05	0.02	-34.85
			Max. Torque	8			0.70
L4	98.5 - 93.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.37	-0.04	0.91
			Max. Mx	8	-7.37	-61.26	0.41
			Max. My	2	-7.35	-0.07	62.89
			Max. Vy	8	8.22	-61.26	0.41
			Max. Vx	14	8.31	0.04	-62.14
			Max. Torque	8			0.70
L5	93.5 - 88.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.76	-0.04	0.93
			Max. Mx	8	-7.68	-102.80	0.45
			Max. My	2	-7.67	-0.09	104.87
			Max. Vy	8	8.41	-102.80	0.45
			Max. Vx	14	8.50	0.06	-104.14
			Max. Torque	8			0.70
L6	88.5 - 83.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.17	-0.03	0.95
			Max. Mx	8	-8.03	-145.30	0.49
			Max. My	2	-8.02	-0.11	147.80
			Max. Vy	8	8.60	-145.30	0.49
			Max. Vx	14	8.69	0.09	-147.11
			Max. Torque	8			0.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	83.5 - 78.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.80	0.34	1.53
			Max. Mx	20	-11.09	185.91	0.50
			Max. My	2	-11.07	-0.04	189.05
			Max. Vy	8	12.07	-185.86	0.68
			Max. Vx	14	12.24	0.14	-187.93
			Max. Torque	6			1.21
L8	78.67 - 78.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.85	0.34	1.54
			Max. Mx	20	-11.14	188.92	0.49
			Max. My	2	-11.12	-0.05	192.10
			Max. Vy	8	12.08	-188.87	0.69
			Max. Vx	14	12.25	0.16	-190.99
			Max. Torque	6			1.21
L9	78.42 - 73.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.33	0.34	1.56
			Max. Mx	8	-12.28	-250.37	1.05
			Max. My	2	-12.28	-0.40	253.97
			Max. Vy	8	12.65	-250.37	1.05
			Max. Vx	14	12.83	0.50	-253.35
			Max. Torque	6			1.21
L10	73.42 - 68.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.30	0.35	1.58
			Max. Mx	8	-13.07	-314.24	1.41
			Max. My	14	-13.02	0.85	-318.50
			Max. Vy	8	12.91	-314.24	1.41
			Max. Vx	14	13.25	0.85	-318.50
			Max. Torque	6			1.21
L11	68.42 - 63.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.09	0.35	1.84
			Max. Mx	8	-16.93	-392.28	1.86
			Max. My	14	-16.88	1.20	-398.27
			Max. Vy	8	15.97	-392.28	1.86
			Max. Vx	14	16.34	1.20	-398.27
			Max. Torque	6			1.33
L12	63.42 - 58.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.05	0.35	1.86
			Max. Mx	8	-17.73	-468.62	2.21
			Max. My	14	-17.69	1.54	-476.36
			Max. Vy	8	16.19	-468.62	2.21
			Max. Vx	14	16.56	1.54	-476.36
			Max. Torque	6			1.33
L13	58.67 - 58.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.10	0.35	1.86
			Max. Mx	8	-17.78	-472.66	2.23
			Max. My	14	-17.74	1.56	-480.49
			Max. Vy	8	16.19	-472.66	2.23
			Max. Vx	14	16.56	1.56	-480.49
			Max. Torque	6			1.33
L14	58.42 - 53.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.13	0.35	1.88
			Max. Mx	8	-18.64	-554.18	2.59
			Max. My	14	-18.61	1.91	-563.85
			Max. Vy	8	16.42	-554.18	2.59
			Max. Vx	14	16.79	1.91	-563.85
			Max. Torque	6			1.33
L15	53.42 - 47.12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.66	0.35	1.88
			Max. Mx	8	-19.09	-596.17	2.77
			Max. My	14	-19.06	2.09	-606.78
			Max. Vy	8	16.54	-596.17	2.77

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L16	47.12 - 45.87	Pole	Max. Vx	14	16.91	2.09	-606.78
			Max. Torque	6			1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.52	0.09	1.73
			Max. Mx	8	-20.62	-679.86	3.05
			Max. My	14	-20.59	2.28	-692.25
			Max. Vy	8	16.87	-679.86	3.05
L17	45.87 - 40.87	Pole	Max. Vx	14	17.26	2.28	-692.25
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.70	0.08	1.74
			Max. Mx	8	-21.63	-764.69	3.47
			Max. My	14	-21.60	2.69	-778.99
			Max. Vy	8	17.08	-764.69	3.47
L18	40.87 - 35.87	Pole	Max. Vx	14	17.47	2.69	-778.99
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.89	0.07	1.74
			Max. Mx	8	-22.66	-850.56	3.89
			Max. My	14	-22.63	3.10	-866.76
			Max. Vy	8	17.29	-850.56	3.89
L19	35.87 - 30.87	Pole	Max. Vx	14	17.67	3.10	-866.76
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.10	0.06	1.75
			Max. Mx	8	-23.71	-937.41	4.30
			Max. My	14	-23.68	3.51	-955.50
			Max. Vy	8	17.48	-937.41	4.30
L20	30.87 - 28.67	Pole	Max. Vx	14	17.86	3.51	-955.50
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.64	0.06	1.75
			Max. Mx	8	-24.17	-975.92	4.49
			Max. My	14	-24.15	3.69	-994.85
			Max. Vy	8	17.56	-975.92	4.49
L21	28.67 - 28.42	Pole	Max. Vx	14	17.94	3.69	-994.85
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.70	0.06	1.75
			Max. Mx	8	-24.24	-980.31	4.51
			Max. My	14	-24.21	3.71	-999.33
			Max. Vy	8	17.56	-980.31	4.51
L22	28.42 - 23.42	Pole	Max. Vx	14	17.94	3.71	-999.33
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.93	0.05	1.76
			Max. Mx	8	-25.31	-1068.53	4.92
			Max. My	14	-25.29	4.12	-1089.42
			Max. Vy	8	17.74	-1068.53	4.92
L23	23.42 - 18.42	Pole	Max. Vx	14	18.12	4.12	-1089.42
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.18	0.04	1.76
			Max. Mx	8	-26.40	-1157.57	5.32
			Max. My	14	-26.39	4.52	-1180.33
			Max. Vy	8	17.90	-1157.57	5.32
L24	18.42 - 14.17	Pole	Max. Vx	14	18.28	4.52	-1180.33
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.27	0.06	1.78

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L25	14.17 - 13.92	Pole	Max. Mx	8	-27.35	-1233.85	5.67
			Max. My	14	-27.34	4.87	-1258.18
			Max. Vy	8	18.02	-1233.85	5.67
			Max. Vx	14	18.40	4.87	-1258.18
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.34	0.06	1.78
			Max. Mx	8	-27.42	-1238.35	5.69
			Max. My	14	-27.41	4.89	-1262.78
			Max. Vy	8	18.02	-1238.35	5.69
L26	13.92 - 13.67	Pole	Max. Vx	14	18.39	4.89	-1262.78
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.42	0.06	1.78
			Max. Mx	8	-27.49	-1242.85	5.71
			Max. My	14	-27.48	4.91	-1267.38
			Max. Vy	8	18.03	-1242.85	5.71
			Max. Vx	14	18.40	4.91	-1267.38
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
L27	13.67 - 13.42	Pole	Max. Compression	26	-40.49	0.07	1.79
			Max. Mx	8	-27.55	-1247.36	5.73
			Max. My	14	-27.54	4.93	-1271.98
			Max. Vy	8	18.04	-1247.36	5.73
			Max. Vx	14	18.41	4.93	-1271.98
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.88	0.10	1.82
			Max. Mx	8	-28.75	-1337.92	6.13
			Max. My	14	-28.75	5.32	-1364.33
L28	13.42 - 8.42	Pole	Max. Vy	8	18.20	-1337.92	6.13
			Max. Vx	14	18.56	5.32	-1364.33
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.63	0.13	1.84
			Max. Mx	8	-29.41	-1386.59	6.34
			Max. My	14	-29.40	5.54	-1413.94
			Max. Vy	8	18.29	-1386.59	6.34
			Max. Vx	14	18.64	5.54	-1413.94
			Max. Torque	8			1.20
L29	8.42 - 5.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.71	0.13	1.84
			Max. Mx	8	-29.48	-1391.16	6.36
			Max. My	14	-29.48	5.56	-1418.59
			Max. Vy	8	18.28	-1391.16	6.36
			Max. Vx	14	18.63	5.56	-1418.59
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.37	0.15	1.85
			Max. Mx	8	-30.06	-1426.51	6.52
L30	5.75 - 5.5	Pole	Max. My	14	-30.06	5.71	-1454.60
			Max. Vy	8	18.37	-1426.51	6.52
			Max. Vx	14	18.71	5.71	-1454.60
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.46	0.15	1.85
			Max. Mx	8	-30.15	-1431.09	6.53
			Max. My	14	-30.15	5.73	-1459.27
			Max. Vy	8	18.36	-1431.09	6.53
			Max. Vx	14	18.70	5.73	-1459.27
L31	5.5 - 3.57	Pole	Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.51	0.15	1.85
			Max. Mx	8	-30.19	-1433.85	6.55
			Max. My	14	-30.19	5.74	-1462.08
			Max. Vy	8	18.37	-1433.85	6.55
			Max. Vx	8	18.37	-1433.85	6.55
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.51	0.15	1.85
L32	3.57 - 3.32	Pole	Max. Mx	8	-30.15	-1431.09	6.53
			Max. My	14	-30.15	5.73	-1459.27
			Max. Vy	8	18.36	-1431.09	6.53
			Max. Vx	14	18.70	5.73	-1459.27
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.51	0.15	1.85
			Max. Mx	8	-30.19	-1433.85	6.55
			Max. My	14	-30.19	5.74	-1462.08
			Max. Vy	8	18.37	-1433.85	6.55
L33	3.32 - 3.17	Pole	Max. Vx	8	18.37	-1433.85	6.55
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.51	0.15	1.85
			Max. Mx	8	-30.19	-1433.85	6.55
			Max. My	14	-30.19	5.74	-1462.08
			Max. Vy	8	18.37	-1433.85	6.55
			Max. Vx	8	18.37	-1433.85	6.55
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L34	3.17 - 2.92	Pole	Max. Vx	14	18.71	5.74	-1462.08
			Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.58	0.15	1.86
			Max. Mx	8	-30.26	-1438.44	6.57
			Max. My	14	-30.26	5.76	-1466.75
			Max. Vy	8	18.38	-1438.44	6.57
			Max. Vx	14	18.72	5.76	-1466.75
L35	2.92 - 2.75	Pole	Max. Torque	8			1.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.64	0.15	1.86
			Max. Mx	8	-30.31	-1441.56	6.58
			Max. My	14	-30.30	5.77	-1469.94
			Max. Vy	8	18.38	-1441.56	6.58
			Max. Vx	14	18.72	5.77	-1469.94
			L36	2.75 - 2.5	Pole	Max. Torque	8
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-43.71				0.16	1.86
Max. Mx	8	-30.37				-1446.16	6.60
Max. My	14	-30.37				5.79	-1474.62
Max. Vy	8	18.39				-1446.16	6.60
Max. Vx	14	18.73				5.79	-1474.62
L37	2.5 - 0	Pole				Max. Torque	8
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.39	0.18	1.88
			Max. Mx	8	-30.97	-1492.22	6.80
			Max. My	14	-30.97	5.99	-1521.52
			Max. Vy	8	18.48	-1492.22	6.80
			Max. Vx	14	18.82	5.99	-1521.52
			Max. Torque	8			1.20

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	44.39	-0.02	5.19
	Max. H <sub>x</sub>	21	23.24	18.30	-0.08
	Max. H <sub>z</sub>	2	30.98	-0.08	18.46
	Max. M <sub>x</sub>	2	1497.35	-0.08	18.46
	Max. M <sub>z</sub>	8	1492.22	-18.46	0.08
	Max. Torsion	8	1.20	-18.46	0.08
	Min. Vert	11	23.24	-15.78	-9.16
	Min. H <sub>x</sub>	9	23.24	-18.46	0.08
	Min. H <sub>z</sub>	14	30.98	0.08	-18.80
	Min. M <sub>x</sub>	14	-1521.52	0.08	-18.80
	Min. M <sub>z</sub>	20	-1479.17	18.30	-0.08
	Min. Torsion	20	-1.19	18.30	-0.08

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	25.82	0.00	0.00	-0.53	-0.11	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	30.98	0.08	-18.46	-1497.35	-6.26	-0.27
0.9 Dead+1.0 Wind 0 deg - No Ice	23.24	0.08	-18.46	-1475.78	-6.15	-0.27
1.2 Dead+1.0 Wind 30 deg - No Ice	30.98	9.21	-16.04	-1300.38	-745.06	-0.84

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 30 deg - No Ice	23.24	9.21	-16.04	-1281.63	-734.40	-0.84
1.2 Dead+1.0 Wind 60 deg - No Ice	30.98	16.15	-9.47	-767.09	-1305.91	-1.18
0.9 Dead+1.0 Wind 60 deg - No Ice	23.24	16.15	-9.47	-755.99	-1287.28	-1.17
1.2 Dead+1.0 Wind 90 deg - No Ice	30.98	18.46	-0.08	-6.80	-1492.22	-1.20
0.9 Dead+1.0 Wind 90 deg - No Ice	23.24	18.46	-0.08	-6.54	-1470.90	-1.19
1.2 Dead+1.0 Wind 120 deg - No Ice	30.98	15.78	9.16	742.38	-1277.69	-0.90
0.9 Dead+1.0 Wind 120 deg - No Ice	23.24	15.78	9.16	731.94	-1259.40	-0.89
1.2 Dead+1.0 Wind 150 deg - No Ice	30.98	9.08	15.98	1292.93	-734.46	-0.35
0.9 Dead+1.0 Wind 150 deg - No Ice	23.24	9.08	15.98	1274.63	-723.94	-0.35
1.2 Dead+1.0 Wind 180 deg - No Ice	30.98	-0.08	18.80	1521.52	5.99	0.28
0.9 Dead+1.0 Wind 180 deg - No Ice	23.24	-0.08	18.80	1500.00	5.95	0.28
1.2 Dead+1.0 Wind 210 deg - No Ice	30.98	-9.21	16.04	1299.02	744.78	0.83
0.9 Dead+1.0 Wind 210 deg - No Ice	23.24	-9.21	16.04	1280.64	734.19	0.83
1.2 Dead+1.0 Wind 240 deg - No Ice	30.98	-15.86	9.30	752.99	1283.52	1.17
0.9 Dead+1.0 Wind 240 deg - No Ice	23.24	-15.86	9.30	742.41	1265.23	1.16
1.2 Dead+1.0 Wind 270 deg - No Ice	30.98	-18.30	0.08	5.46	1479.17	1.19
0.9 Dead+1.0 Wind 270 deg - No Ice	23.24	-18.30	0.08	5.56	1458.09	1.19
1.2 Dead+1.0 Wind 300 deg - No Ice	30.98	-16.07	-9.33	-756.50	1299.54	0.90
0.9 Dead+1.0 Wind 300 deg - No Ice	23.24	-16.07	-9.33	-745.53	1281.05	0.89
1.2 Dead+1.0 Wind 330 deg - No Ice	30.98	-9.08	-15.98	-1294.29	734.20	0.36
0.9 Dead+1.0 Wind 330 deg - No Ice	23.24	-9.08	-15.98	-1275.62	723.74	0.36
1.2 Dead+1.0 Ice+1.0 Temp	44.39	-0.00	-0.00	-1.88	0.18	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	44.39	0.02	-5.19	-420.50	-1.10	-0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	44.39	2.59	-4.51	-365.07	-208.31	-0.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	44.39	4.47	-2.61	-212.39	-359.74	-0.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	44.39	5.15	-0.02	-3.24	-414.59	-0.28
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	44.39	4.46	2.58	206.20	-358.36	-0.23
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	44.39	2.56	4.49	359.87	-206.08	-0.11
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	44.39	-0.02	5.20	416.69	1.46	0.03
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	44.39	-2.59	4.51	361.15	208.67	0.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	44.39	-4.47	2.61	208.42	360.01	0.26
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	44.39	-5.15	0.02	-0.68	414.94	0.28
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	44.39	-4.46	-2.58	-210.17	358.82	0.23
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	44.39	-2.56	-4.49	-363.79	206.45	0.11
Dead+Wind 0 deg - Service	25.82	0.02	-4.66	-374.95	-1.64	-0.07
Dead+Wind 30 deg - Service	25.82	2.32	-4.04	-325.68	-186.46	-0.21

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg - Service	25.82	4.07	-2.39	-192.29	-326.76	-0.30
Dead+Wind 90 deg - Service	25.82	4.66	-0.02	-2.09	-373.36	-0.31
Dead+Wind 120 deg - Service	25.82	3.98	2.31	185.31	-319.69	-0.23
Dead+Wind 150 deg - Service	25.82	2.29	4.03	323.03	-183.80	-0.10
Dead+Wind 180 deg - Service	25.82	-0.02	4.74	380.23	1.42	0.07
Dead+Wind 210 deg - Service	25.82	-2.32	4.04	324.56	186.24	0.21
Dead+Wind 240 deg - Service	25.82	-4.00	2.35	187.96	321.00	0.30
Dead+Wind 270 deg - Service	25.82	-4.62	0.02	0.97	369.93	0.31
Dead+Wind 300 deg - Service	25.82	-4.05	-2.35	-189.63	325.01	0.23
Dead+Wind 330 deg - Service	25.82	-2.29	-4.03	-324.16	183.58	0.10

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-25.82	0.00	0.00	25.82	0.00	0.000%
2	0.08	-30.98	-18.46	-0.08	30.98	18.46	0.000%
3	0.08	-23.24	-18.46	-0.08	23.24	18.46	0.000%
4	9.21	-30.98	-16.04	-9.21	30.98	16.04	0.000%
5	9.21	-23.24	-16.04	-9.21	23.24	16.04	0.000%
6	16.15	-30.98	-9.47	-16.15	30.98	9.47	0.000%
7	16.15	-23.24	-9.47	-16.15	23.24	9.47	0.000%
8	18.46	-30.98	-0.08	-18.46	30.98	0.08	0.000%
9	18.46	-23.24	-0.08	-18.46	23.24	0.08	0.000%
10	15.78	-30.98	9.16	-15.78	30.98	-9.16	0.000%
11	15.78	-23.24	9.16	-15.78	23.24	-9.16	0.000%
12	9.08	-30.98	15.98	-9.08	30.98	-15.98	0.000%
13	9.08	-23.24	15.98	-9.08	23.24	-15.98	0.000%
14	-0.08	-30.98	18.80	0.08	30.98	-18.80	0.000%
15	-0.08	-23.24	18.80	0.08	23.24	-18.80	0.000%
16	-9.21	-30.98	16.04	9.21	30.98	-16.04	0.000%
17	-9.21	-23.24	16.04	9.21	23.24	-16.04	0.000%
18	-15.86	-30.98	9.30	15.86	30.98	-9.30	0.000%
19	-15.86	-23.24	9.30	15.86	23.24	-9.30	0.000%
20	-18.30	-30.98	0.08	18.30	30.98	-0.08	0.000%
21	-18.30	-23.24	0.08	18.30	23.24	-0.08	0.000%
22	-16.07	-30.98	-9.33	16.07	30.98	9.33	0.000%
23	-16.07	-23.24	-9.33	16.07	23.24	9.33	0.000%
24	-9.08	-30.98	-15.98	9.08	30.98	15.98	0.000%
25	-9.08	-23.24	-15.98	9.08	23.24	15.98	0.000%
26	0.00	-44.39	0.00	0.00	44.39	0.00	0.000%
27	0.02	-44.39	-5.19	-0.02	44.39	5.19	0.000%
28	2.59	-44.39	-4.51	-2.59	44.39	4.51	0.000%
29	4.47	-44.39	-2.61	-4.47	44.39	2.61	0.000%
30	5.15	-44.39	-0.02	-5.15	44.39	0.02	0.000%
31	4.46	-44.39	2.58	-4.46	44.39	-2.58	0.000%
32	2.56	-44.39	4.49	-2.56	44.39	-4.49	0.000%
33	-0.02	-44.39	5.20	0.02	44.39	-5.20	0.000%
34	-2.59	-44.39	4.51	2.59	44.39	-4.51	0.000%
35	-4.47	-44.39	2.61	4.47	44.39	-2.61	0.000%
36	-5.15	-44.39	0.02	5.15	44.39	-0.02	0.000%
37	-4.46	-44.39	-2.58	4.46	44.39	2.58	0.000%
38	-2.56	-44.39	-4.49	2.56	44.39	4.49	0.000%
39	0.02	-25.82	-4.66	-0.02	25.82	4.66	0.000%
40	2.32	-25.82	-4.04	-2.32	25.82	4.04	0.000%
41	4.07	-25.82	-2.39	-4.07	25.82	2.39	0.000%
42	4.66	-25.82	-0.02	-4.66	25.82	0.02	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
43	3.98	-25.82	2.31	-3.98	25.82	-2.31	0.000%
44	2.29	-25.82	4.03	-2.29	25.82	-4.03	0.000%
45	-0.02	-25.82	4.74	0.02	25.82	-4.74	0.000%
46	-2.32	-25.82	4.04	2.32	25.82	-4.04	0.000%
47	-4.00	-25.82	2.35	4.00	25.82	-2.35	0.000%
48	-4.62	-25.82	0.02	4.62	25.82	-0.02	0.000%
49	-4.05	-25.82	-2.35	4.05	25.82	2.35	0.000%
50	-2.29	-25.82	-4.03	2.29	25.82	4.03	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00027486
3	Yes	5	0.00000001	0.00012173
4	Yes	7	0.00000001	0.00007122
5	Yes	6	0.00000001	0.00035921
6	Yes	7	0.00000001	0.00007881
7	Yes	6	0.00000001	0.00039816
8	Yes	6	0.00000001	0.00009945
9	Yes	5	0.00000001	0.00070040
10	Yes	7	0.00000001	0.00006981
11	Yes	6	0.00000001	0.00035316
12	Yes	7	0.00000001	0.00007311
13	Yes	6	0.00000001	0.00037007
14	Yes	5	0.00000001	0.00055432
15	Yes	5	0.00000001	0.00026061
16	Yes	7	0.00000001	0.00007592
17	Yes	6	0.00000001	0.00038440
18	Yes	7	0.00000001	0.00007012
19	Yes	6	0.00000001	0.00035418
20	Yes	6	0.00000001	0.00007786
21	Yes	5	0.00000001	0.00055075
22	Yes	7	0.00000001	0.00007671
23	Yes	6	0.00000001	0.00038771
24	Yes	7	0.00000001	0.00007160
25	Yes	6	0.00000001	0.00036190
26	Yes	4	0.00000001	0.00030811
27	Yes	6	0.00000001	0.00043464
28	Yes	6	0.00000001	0.00054019
29	Yes	6	0.00000001	0.00054636
30	Yes	6	0.00000001	0.00042748
31	Yes	6	0.00000001	0.00052324
32	Yes	6	0.00000001	0.00052943
33	Yes	6	0.00000001	0.00042598
34	Yes	6	0.00000001	0.00053613
35	Yes	6	0.00000001	0.00052757
36	Yes	6	0.00000001	0.00042788
37	Yes	6	0.00000001	0.00054211
38	Yes	6	0.00000001	0.00053833
39	Yes	4	0.00000001	0.00073049
40	Yes	5	0.00000001	0.00027256
41	Yes	5	0.00000001	0.00034755
42	Yes	5	0.00000001	0.00009160
43	Yes	5	0.00000001	0.00026168
44	Yes	5	0.00000001	0.00029503
45	Yes	4	0.00000001	0.00077246
46	Yes	5	0.00000001	0.00032127
47	Yes	5	0.00000001	0.00026284
48	Yes	5	0.00000001	0.00008662
49	Yes	5	0.00000001	0.00032843
50	Yes	5	0.00000001	0.00027887



### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	19.509	45	1.6006	0.0095
L2	105 - 100	17.847	45	1.5939	0.0084
L3	100 - 98.5	16.201	45	1.5587	0.0069
L4	98.5 - 93.5	15.715	45	1.5440	0.0065
L5	93.5 - 88.5	14.131	45	1.4825	0.0054
L6	88.5 - 83.5	12.624	45	1.3931	0.0044
L7	83.5 - 78.67	11.222	45	1.2813	0.0036
L8	78.67 - 78.42	9.987	45	1.1589	0.0029
L9	78.42 - 73.42	9.926	45	1.1566	0.0029
L10	73.42 - 68.42	8.742	45	1.1046	0.0026
L11	68.42 - 63.42	7.616	45	1.0447	0.0022
L12	63.42 - 58.67	6.557	45	0.9769	0.0019
L13	58.67 - 58.42	5.620	45	0.9067	0.0016
L14	58.42 - 53.42	5.572	45	0.9029	0.0016
L15	53.42 - 47.12	4.668	45	0.8240	0.0014
L16	50.87 - 45.87	4.239	45	0.7820	0.0012
L17	45.87 - 40.87	3.442	45	0.7326	0.0011
L18	40.87 - 35.87	2.717	45	0.6529	0.0010
L19	35.87 - 30.87	2.076	45	0.5712	0.0008
L20	30.87 - 28.67	1.521	45	0.4881	0.0006
L21	28.67 - 28.42	1.305	45	0.4517	0.0006
L22	28.42 - 23.42	1.281	45	0.4476	0.0006
L23	23.42 - 18.42	0.856	45	0.3638	0.0005
L24	18.42 - 14.17	0.519	45	0.2801	0.0003
L25	14.17 - 13.92	0.302	45	0.2093	0.0002
L26	13.92 - 13.67	0.291	45	0.2059	0.0002
L27	13.67 - 13.42	0.280	45	0.2025	0.0002
L28	13.42 - 8.42	0.270	45	0.1985	0.0002
L29	8.42 - 5.75	0.103	45	0.1191	0.0001
L30	5.75 - 5.5	0.048	45	0.0774	0.0001
L31	5.5 - 3.57	0.044	45	0.0740	0.0001
L32	3.57 - 3.32	0.019	45	0.0506	0.0001
L33	3.32 - 3.17	0.017	45	0.0476	0.0001
L34	3.17 - 2.92	0.015	45	0.0458	0.0000
L35	2.92 - 2.75	0.013	45	0.0422	0.0000
L36	2.75 - 2.5	0.011	45	0.0398	0.0000
L37	2.5 - 0	0.009	45	0.0362	0.0000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	BXA-80080/4CF w/ Mount Pipe	45	18.843	1.6001	0.0092	13831
95.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	45	14.600	1.5037	0.0058	4193
79.00	7770.00 w/ Mount Pipe	45	10.067	1.1629	0.0030	2998
74.00	2.4" Dia. x 4-ft	45	8.876	1.1112	0.0026	5096
68.00	MX08FRO665-21 w/ Mount Pipe	45	7.524	1.0393	0.0022	4418
48.00	KS24019-L112A	45	3.774	0.7529	0.0012	4724

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	78.314	14	6.4062	0.0370
L2	105 - 100	71.623	14	6.3878	0.0327
L3	100 - 98.5	65.005	14	6.2585	0.0267
L4	98.5 - 93.5	63.051	14	6.2027	0.0252
L5	93.5 - 88.5	56.687	14	5.9608	0.0206
L6	88.5 - 83.5	50.633	14	5.6026	0.0169
L7	83.5 - 78.67	45.004	14	5.1504	0.0138
L8	78.67 - 78.42	40.046	14	4.6562	0.0115
L9	78.42 - 73.42	39.803	14	4.6468	0.0114
L10	73.42 - 68.42	35.049	14	4.4366	0.0100
L11	68.42 - 63.42	30.533	14	4.1948	0.0087
L12	63.42 - 58.67	26.285	14	3.9217	0.0074
L13	58.67 - 58.42	22.525	14	3.6386	0.0063
L14	58.42 - 53.42	22.335	14	3.6234	0.0063
L15	53.42 - 47.12	18.709	14	3.3059	0.0053
L16	50.87 - 45.87	16.989	14	3.1369	0.0048
L17	45.87 - 40.87	13.794	14	2.9384	0.0043
L18	40.87 - 35.87	10.885	14	2.6181	0.0037
L19	35.87 - 30.87	8.316	14	2.2902	0.0031
L20	30.87 - 28.67	6.094	14	1.9562	0.0025
L21	28.67 - 28.42	5.226	14	1.8104	0.0023
L22	28.42 - 23.42	5.132	14	1.7939	0.0022
L23	23.42 - 18.42	3.430	14	1.4574	0.0018
L24	18.42 - 14.17	2.080	14	1.1221	0.0013
L25	14.17 - 13.92	1.208	14	0.8382	0.0009
L26	13.92 - 13.67	1.164	14	0.8245	0.0009
L27	13.67 - 13.42	1.121	14	0.8109	0.0009
L28	13.42 - 8.42	1.079	14	0.7951	0.0009
L29	8.42 - 5.75	0.414	14	0.4769	0.0005
L30	5.75 - 5.5	0.194	14	0.3098	0.0003
L31	5.5 - 3.57	0.178	14	0.2961	0.0003
L32	3.57 - 3.32	0.077	14	0.2027	0.0002
L33	3.32 - 3.17	0.067	14	0.1905	0.0002
L34	3.17 - 2.92	0.061	14	0.1831	0.0002
L35	2.92 - 2.75	0.052	14	0.1689	0.0002
L36	2.75 - 2.5	0.046	14	0.1592	0.0002
L37	2.5 - 0	0.038	14	0.1447	0.0001

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
108.00	BXA-80080/4CF w/ Mount Pipe	14	75.634	6.4072	0.0365	3826
95.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	14	58.569	6.0455	0.0228	1086
79.00	7770.00 w/ Mount Pipe	14	40.369	4.6721	0.0117	761
74.00	2.4" Dia. x 4-ft	14	35.589	4.4632	0.0102	1292
68.00	MX08FRO665-21 w/ Mount Pipe	14	30.165	4.1731	0.0086	1115
48.00	KS24019-L112A	14	15.125	3.0199	0.0046	1181

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L1	110 - 105 (1)	TP13.6932x12.7x0.1875	5.00	0.00	0.0	8.0376	-2.71	470.20	0.006
L2	105 - 100 (2)	TP14.6863x13.6932x0.1875	5.00	0.00	0.0	8.6286	-2.91	504.77	0.006
L3	100 - 98.5 (3)	TP14.9843x14.6863x0.1875	1.50	0.00	0.0	8.8060	-2.97	515.15	0.006
L4	98.5 - 93.5 (4)	TP16.0115x14.9843x0.1875	5.00	0.00	0.0	9.4173	-7.35	550.91	0.013
L5	93.5 - 88.5 (5)	TP17.0387x16.0115x0.1875	5.00	0.00	0.0	10.0286	-7.67	586.67	0.013
L6	88.5 - 83.5 (6)	TP18.066x17.0387x0.1875	5.00	0.00	0.0	10.6399	-8.02	622.43	0.013
L7	83.5 - 78.67 (7)	TP19.0583x18.066x0.1875	4.83	0.00	0.0	11.2305	-11.07	656.98	0.017
L8	78.67 - 78.42 (8)	TP19.1096x19.0583x0.5625	0.25	0.00	0.0	33.1135	-11.12	1937.14	0.006
L9	78.42 - 73.42 (9)	TP20.1368x19.1096x0.5375	5.00	0.00	0.0	33.4369	-12.28	1956.06	0.006
L10	73.42 - 68.42 (10)	TP21.164x20.1368x0.5125	5.00	0.00	0.0	33.5934	-13.03	1965.21	0.007
L11	68.42 - 63.42 (11)	TP22.1913x21.164x0.4875	5.00	0.00	0.0	33.5828	-16.88	1964.59	0.009
L12	63.42 - 58.67 (12)	TP23.1671x22.1913x0.475	4.75	0.00	0.0	34.2118	-17.69	2001.39	0.009
L13	58.67 - 58.42 (13)	TP23.2185x23.1671x0.475	0.25	0.00	0.0	34.2892	-17.74	2005.92	0.009
L14	58.42 - 53.42 (14)	TP24.2457x23.2185x0.4625	5.00	0.00	0.0	34.9132	-18.61	2042.42	0.009
L15	53.42 - 47.12 (15)	TP25.54x24.2457x0.4525	6.30	0.00	0.0	34.7357	-19.06	2032.04	0.009
L16	47.12 - 45.87 (16)	TP25.3633x24.3946x0.5125	5.00	0.00	0.0	40.4241	-20.59	2364.81	0.009
L17	45.87 - 40.87 (17)	TP26.332x25.3633x0.5	5.00	0.00	0.0	40.9953	-21.60	2398.23	0.009
L18	40.87 - 35.87 (18)	TP27.3006x26.332x0.4875	5.00	0.00	0.0	41.4887	-22.63	2427.09	0.009
L19	35.87 - 30.87 (19)	TP28.2693x27.3006x0.475	5.00	0.00	0.0	41.9041	-23.68	2451.39	0.010
L20	30.87 - 28.67 (20)	TP28.6956x28.2693x0.475	2.20	0.00	0.0	42.5467	-24.15	2488.98	0.010
L21	28.67 - 28.42 (21)	TP28.744x28.6956x0.475	0.25	0.00	0.0	42.6197	-24.21	2493.25	0.010
L22	28.42 - 23.42 (22)	TP29.7127x28.744x0.4625	5.00	0.00	0.0	42.9385	-25.29	2511.90	0.010
L23	23.42 - 18.42 (23)	TP30.6814x29.7127x0.4563	5.00	0.00	0.0	43.7701	-26.39	2560.55	0.010
L24	18.42 - 14.17 (24)	TP31.5047x30.6814x0.455	4.25	0.00	0.0	44.3555	-27.34	2594.80	0.011
L25	14.17 - 13.92 (25)	TP31.5532x31.5047x0.552	0.25	0.00	0.0	54.1222	-27.41	3166.15	0.009
L26	13.92 - 13.67 (26)	TP31.6016x31.5532x0.558	0.25	0.00	0.0	54.2068	-27.48	3171.10	0.009
L27	13.67 - 13.42 (27)	TP31.65x31.6016x0.4688	0.25	0.00	0.0	46.3919	-27.54	2713.93	0.010
L28	13.42 - 8.42 (28)	TP32.6187x31.65x0.4625	5.00	0.00	0.0	47.2045	-28.75	2761.47	0.010
L29	8.42 - 5.75 (29)	TP33.136x32.6187x0.4625	2.67	0.00	0.0	47.9639	-29.40	2805.89	0.010
L30	5.75 - 5.5 (30)	TP33.1844x33.136x0.525	0.25	0.00	0.0	54.4221	-29.48	3183.69	0.009
L31	5.5 - 3.57 (31)	TP33.5584x33.1844x0.5875	1.93	0.00	0.0	61.4816	-30.06	3596.67	0.008
L32	3.57 - 3.32 (32)	TP33.6068x33.5584x0.5875	0.25	0.00	0.0	61.5719	-30.15	3601.96	0.008
L33	3.32 - 3.17 (33)	TP33.6359x33.6068x0.5875	0.15	0.00	0.0	61.6261	-30.19	3605.13	0.008
L34	3.17 - 2.92 (34)	TP33.6843x33.6359x0.5	0.25	0.00	0.0	52.6635	-30.26	3080.81	0.010
L35	2.92 - 2.75 (35)	TP33.7172x33.6843x0.5	0.17	0.00	0.0	52.7157	-30.30	3083.87	0.010

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L36	2.75 - 2.5 (36)	TP33.7657x33.7172x0.4875	0.25	0.00	0.0	51.492	-30.37	3012.29	0.010
L37	2.5 - 0 (37)	TP34.25x33.7657x0.4875	2.50	0.00	0.0	52.241 6	-30.97	3056.13	0.010

**Pole Bending Design Data**

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	110 - 105 (1)	TP13.6932x12.7x0.1875	10.22	164.86	0.062	0.00	164.86	0.000
L2	105 - 100 (2)	TP14.6863x13.6932x0.1875	29.61	190.17	0.156	0.00	190.17	0.000
L3	100 - 98.5 (3)	TP14.9843x14.6863x0.1875	35.63	198.12	0.180	0.00	198.12	0.000
L4	98.5 - 93.5 (4)	TP16.0115x14.9843x0.1875	62.89	226.77	0.277	0.00	226.77	0.000
L5	93.5 - 88.5 (5)	TP17.0387x16.0115x0.1875	104.87	257.35	0.408	0.00	257.35	0.000
L6	88.5 - 83.5 (6)	TP18.066x17.0387x0.1875	147.80	289.65	0.510	0.00	289.65	0.000
L7	83.5 - 78.67 (7)	TP19.0583x18.066x0.1875	189.05	318.58	0.593	0.00	318.58	0.000
L8	78.67 - 78.42 (8)	TP19.1096x19.0583x0.5625	192.10	917.83	0.209	0.00	917.83	0.000
L9	78.42 - 73.42 (9)	TP20.1368x19.1096x0.5375	253.97	982.13	0.259	0.00	982.13	0.000
L10	73.42 - 68.42 (10)	TP21.164x20.1368x0.5125	318.50	1042.35	0.306	0.00	1042.35	0.000
L11	68.42 - 63.42 (11)	TP22.1913x21.164x0.4875	398.27	1097.63	0.363	0.00	1097.63	0.000
L12	63.42 - 58.67 (12)	TP23.1671x22.1913x0.475	476.36	1170.87	0.407	0.00	1170.87	0.000
L13	58.67 - 58.42 (13)	TP23.2185x23.1671x0.475	480.50	1176.22	0.409	0.00	1176.22	0.000
L14	58.42 - 53.42 (14)	TP24.2457x23.2185x0.4625	563.85	1254.14	0.450	0.00	1254.14	0.000
L15	53.42 - 47.12 (15)	TP25.54x24.2457x0.45	606.78	1277.09	0.475	0.00	1277.09	0.000
L16	47.12 - 45.87 (16)	TP25.3633x24.3946x0.5125	692.26	1515.54	0.457	0.00	1515.54	0.000
L17	45.87 - 40.87 (17)	TP26.332x25.3633x0.5	779.00	1599.63	0.487	0.00	1599.63	0.000
L18	40.87 - 35.87 (18)	TP27.3006x26.332x0.4875	866.77	1682.30	0.515	0.00	1682.30	0.000
L19	35.87 - 30.87 (19)	TP28.2693x27.3006x0.475	955.51	1763.22	0.542	0.00	1763.22	0.000
L20	30.87 - 28.67 (20)	TP28.6956x28.2693x0.475	994.85	1818.17	0.547	0.00	1818.17	0.000
L21	28.67 - 28.42 (21)	TP28.744x28.6956x0.475	999.33	1824.47	0.548	0.00	1824.47	0.000
L22	28.42 - 23.42 (22)	TP29.7127x28.744x0.4625	1089.43	1903.77	0.572	0.00	1903.77	0.000
L23	23.42 - 18.42 (23)	TP30.6814x29.7127x0.4563	1180.34	2006.74	0.588	0.00	2006.74	0.000
L24	18.42 - 14.17 (24)	TP31.5047x30.6814x0.45	1258.19	2090.64	0.602	0.00	2090.64	0.000
L25	14.17 - 13.92 (25)	TP31.5532x31.5047x0.55	1262.79	2538.62	0.497	0.00	2538.62	0.000
L26	13.92 - 13.67 (26)	TP31.6016x31.5532x0.55	1267.38	2546.63	0.498	0.00	2546.63	0.000
L27	13.67 - 13.42 (27)	TP31.65x31.6016x0.4688	1271.98	2194.37	0.580	0.00	2194.37	0.000
L28	13.42 - 8.42 (28)	TP32.6187x31.65x0.4625	1364.34	2304.09	0.592	0.00	2304.09	0.000

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L29	8.42 - 5.75 (29)	TP33.136x32.6187x0.462 5	1413.95	2379.35	0.594	0.00	2379.35	0.000
L30	5.75 - 5.5 (30)	TP33.1844x33.136x0.525	1418.60	2693.46	0.527	0.00	2693.46	0.000
L31	5.5 - 3.57 (31)	TP33.5584x33.1844x0.58 75	1454.61	3066.60	0.474	0.00	3066.60	0.000
L32	3.57 - 3.32 (32)	TP33.6068x33.5584x0.58 75	1459.28	3075.69	0.474	0.00	3075.69	0.000
L33	3.32 - 3.17 (33)	TP33.6359x33.6068x0.58 75	1462.09	3081.16	0.475	0.00	3081.16	0.000
L34	3.17 - 2.92 (34)	TP33.6843x33.6359x0.5	1466.77	2650.93	0.553	0.00	2650.93	0.000
L35	2.92 - 2.75 (35)	TP33.7172x33.6843x0.5	1469.95	2656.24	0.553	0.00	2656.24	0.000
L36	2.75 - 2.5 (36)	TP33.7657x33.7172x0.48 75	1474.63	2600.38	0.567	0.00	2600.38	0.000
L37	2.5 - 0 (37)	TP34.25x33.7657x0.4875	1521.53	2677.18	0.568	0.00	2677.18	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	110 - 105 (1)	TP13.6932x12.7x0.1875	3.78	141.06	0.027	0.04	166.84	0.000
L2	105 - 100 (2)	TP14.6863x13.6932x0.18 75	3.98	151.43	0.026	0.04	192.28	0.000
L3	100 - 98.5 (3)	TP14.9843x14.6863x0.18 75	4.04	154.54	0.026	0.04	200.26	0.000
L4	98.5 - 93.5 (4)	TP16.0115x14.9843x0.18 75	8.30	165.27	0.050	0.04	229.03	0.000
L5	93.5 - 88.5 (5)	TP17.0387x16.0115x0.18 75	8.50	176.00	0.048	0.04	259.73	0.000
L6	88.5 - 83.5 (6)	TP18.066x17.0387x0.187 5	8.69	186.73	0.047	0.04	292.37	0.000
L7	83.5 - 78.67 (7)	TP19.0583x18.066x0.187 5	12.23	197.09	0.062	0.42	325.72	0.001
L8	78.67 - 78.42 (8)	TP19.1096x19.0583x0.56 25	12.23	581.14	0.021	0.42	943.92	0.000
L9	78.42 - 73.42 (9)	TP20.1368x19.1096x0.53 75	12.65	586.82	0.022	0.42	1007.23	0.000
L10	73.42 - 68.42 (10)	TP21.164x20.1368x0.512 5	13.25	589.56	0.022	0.43	1066.26	0.000
L11	68.42 - 63.42 (11)	TP22.1913x21.164x0.487 5	16.34	589.38	0.028	0.42	1120.23	0.000
L12	63.42 - 58.67 (12)	TP23.1671x22.1913x0.47 5	16.56	600.42	0.028	0.42	1193.18	0.000
L13	58.67 - 58.42 (13)	TP23.2185x23.1671x0.47 5	16.56	601.78	0.028	0.42	1198.59	0.000
L14	58.42 - 53.42 (14)	TP24.2457x23.2185x0.46 25	16.79	612.73	0.027	0.42	1276.19	0.000
L15	53.42 - 47.12 (15)	TP25.54x24.2457x0.45	16.91	609.61	0.028	0.42	1298.34	0.000
L16	47.12 - 45.87 (16)	TP25.3633x24.3946x0.51 25	17.26	709.44	0.024	0.28	1543.97	0.000
L17	45.87 - 40.87 (17)	TP26.332x25.3633x0.5	17.47	719.47	0.024	0.28	1627.60	0.000
L18	40.87 - 35.87 (18)	TP27.3006x26.332x0.487 5	17.67	728.13	0.024	0.28	1709.76	0.000
L19	35.87 - 30.87 (19)	TP28.2693x27.3006x0.47 5	17.86	735.42	0.024	0.28	1790.07	0.000
L20	30.87 - 28.67 (20)	TP28.6956x28.2693x0.47 5	17.94	746.70	0.024	0.28	1845.39	0.000
L21	28.67 - 28.42 (21)	TP28.744x28.6956x0.475	17.94	747.98	0.024	0.28	1851.73	0.000
L22	28.42 - 23.42 (22)	TP29.7127x28.744x0.462 5	18.12	753.57	0.024	0.28	1930.33	0.000

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $V_u$ $\phi V_n$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $T_u$ $\phi T_n$
L23	23.42 - 18.42 (23)	TP30.6814x29.7127x0.45 63	18.28	768.17	0.024	0.28	2033.31	0.000
L24	18.42 - 14.17 (24)	TP31.5047x30.6814x0.45	18.40	778.44	0.024	0.28	2117.06	0.000
L25	14.17 - 13.92 (25)	TP31.5532x31.5047x0.55	18.39	949.85	0.019	0.28	2578.93	0.000
L26	13.92 - 13.67 (26)	TP31.6016x31.5532x0.55	18.40	951.33	0.019	0.28	2586.99	0.000
L27	13.67 - 13.42 (27)	TP31.65x31.6016x0.4688	18.41	814.18	0.023	0.28	2223.28	0.000
L28	13.42 - 8.42 (28)	TP32.6187x31.65x0.4625	18.56	828.44	0.022	0.28	2332.95	0.000
L29	8.42 - 5.75 (29)	TP33.136x32.6187x0.462 5	18.64	841.77	0.022	0.28	2408.62	0.000
L30	5.75 - 5.5 (30)	TP33.1844x33.136x0.525	18.63	955.11	0.020	0.28	2731.75	0.000
L31	5.5 - 3.57 (31)	TP33.5584x33.1844x0.58 75	18.71	1079.00	0.017	0.28	3115.53	0.000
L32	3.57 - 3.32 (32)	TP33.6068x33.5584x0.58 75	18.70	1080.59	0.017	0.28	3124.69	0.000
L33	3.32 - 3.17 (33)	TP33.6359x33.6068x0.58 75	18.71	1081.54	0.017	0.28	3130.20	0.000
L34	3.17 - 2.92 (34)	TP33.6843x33.6359x0.5	18.72	924.24	0.020	0.28	2685.96	0.000
L35	2.92 - 2.75 (35)	TP33.7172x33.6843x0.5	18.72	925.16	0.020	0.28	2691.29	0.000
L36	2.75 - 2.5 (36)	TP33.7657x33.7172x0.48 75	18.73	903.69	0.021	0.28	2633.64	0.000
L37	2.5 - 0 (37)	TP34.25x33.7657x0.4875	18.82	916.84	0.021	0.28	2710.87	0.000

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 105 (1)	0.006	0.062	0.000	0.027	0.000	0.068	1.050	4.8.2
L2	105 - 100 (2)	0.006	0.156	0.000	0.026	0.000	0.162	1.050	4.8.2
L3	100 - 98.5 (3)	0.006	0.180	0.000	0.026	0.000	0.186	1.050	4.8.2
L4	98.5 - 93.5 (4)	0.013	0.277	0.000	0.050	0.000	0.293	1.050	4.8.2
L5	93.5 - 88.5 (5)	0.013	0.408	0.000	0.048	0.000	0.423	1.050	4.8.2
L6	88.5 - 83.5 (6)	0.013	0.510	0.000	0.047	0.000	0.525	1.050	4.8.2
L7	83.5 - 78.67 (7)	0.017	0.593	0.000	0.062	0.001	0.614	1.050	4.8.2
L8	78.67 - 78.42 (8)	0.006	0.209	0.000	0.021	0.000	0.216	1.050	4.8.2
L9	78.42 - 73.42 (9)	0.006	0.259	0.000	0.022	0.000	0.265	1.050	4.8.2
L10	73.42 - 68.42 (10)	0.007	0.306	0.000	0.022	0.000	0.313	1.050	4.8.2
L11	68.42 - 63.42 (11)	0.009	0.363	0.000	0.028	0.000	0.372	1.050	4.8.2
L12	63.42 - 58.67 (12)	0.009	0.407	0.000	0.028	0.000	0.416	1.050	4.8.2
L13	58.67 - 58.42 (13)	0.009	0.409	0.000	0.028	0.000	0.418	1.050	4.8.2
L14	58.42 - 53.42 (14)	0.009	0.450	0.000	0.027	0.000	0.459	1.050	4.8.2
L15	53.42 - 47.12 (15)	0.009	0.475	0.000	0.028	0.000	0.485	1.050	4.8.2
L16	47.12 - 45.87 (16)	0.009	0.457	0.000	0.024	0.000	0.466	1.050	4.8.2
L17	45.87 - 40.87 (17)	0.009	0.487	0.000	0.024	0.000	0.497	1.050	4.8.2
L18	40.87 - 35.87	0.009	0.515	0.000	0.024	0.000	0.525	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$ $\phi P_n$	$M_{ux}$ $\phi M_{nx}$	$M_{uy}$ $\phi M_{ny}$	$V_u$ $\phi V_n$	$T_u$ $\phi T_n$			
L19	35.87 - 30.87 (18)	0.010	0.542	0.000	0.024	0.000	0.552	1.050	4.8.2
L20	30.87 - 28.67 (19)	0.010	0.547	0.000	0.024	0.000	0.557	1.050	4.8.2
L21	28.67 - 28.42 (20)	0.010	0.548	0.000	0.024	0.000	0.558	1.050	4.8.2
L22	28.42 - 23.42 (21)	0.010	0.572	0.000	0.024	0.000	0.583	1.050	4.8.2
L23	23.42 - 18.42 (22)	0.010	0.588	0.000	0.024	0.000	0.599	1.050	4.8.2
L24	18.42 - 14.17 (23)	0.011	0.602	0.000	0.024	0.000	0.613	1.050	4.8.2
L25	14.17 - 13.92 (24)	0.009	0.497	0.000	0.019	0.000	0.506	1.050	4.8.2
L26	13.92 - 13.67 (25)	0.009	0.498	0.000	0.019	0.000	0.507	1.050	4.8.2
L27	13.67 - 13.42 (26)	0.010	0.580	0.000	0.023	0.000	0.590	1.050	4.8.2
L28	13.42 - 8.42 (27)	0.010	0.592	0.000	0.022	0.000	0.603	1.050	4.8.2
L29	8.42 - 5.75 (28)	0.010	0.594	0.000	0.022	0.000	0.605	1.050	4.8.2
L30	5.75 - 5.5 (30)	0.009	0.527	0.000	0.020	0.000	0.536	1.050	4.8.2
L31	5.5 - 3.57 (31)	0.008	0.474	0.000	0.017	0.000	0.483	1.050	4.8.2
L32	3.57 - 3.32 (32)	0.008	0.474	0.000	0.017	0.000	0.483	1.050	4.8.2
L33	3.32 - 3.17 (33)	0.008	0.475	0.000	0.017	0.000	0.483	1.050	4.8.2
L34	3.17 - 2.92 (34)	0.010	0.553	0.000	0.020	0.000	0.564	1.050	4.8.2
L35	2.92 - 2.75 (35)	0.010	0.553	0.000	0.020	0.000	0.564	1.050	4.8.2
L36	2.75 - 2.5 (36)	0.010	0.567	0.000	0.021	0.000	0.578	1.050	4.8.2
L37	2.5 - 0 (37)	0.010	0.568	0.000	0.021	0.000	0.579	1.050	4.8.2

### Section Capacity Table

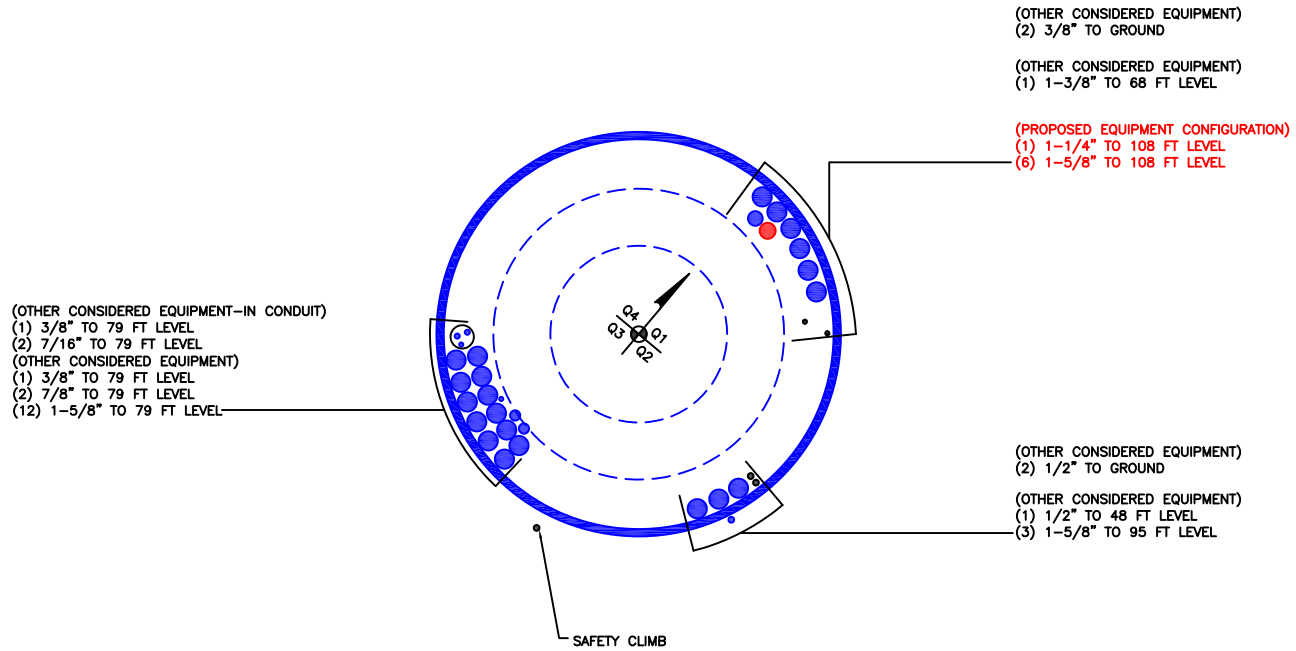
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	110 - 105	Pole	TP13.6932x12.7x0.1875	1	-2.71	493.71	6.5	Pass
L2	105 - 100	Pole	TP14.6863x13.6932x0.1875	2	-2.91	530.01	15.4	Pass
L3	100 - 98.5	Pole	TP14.9843x14.6863x0.1875	3	-2.97	540.91	17.7	Pass
L4	98.5 - 93.5	Pole	TP16.0115x14.9843x0.1875	4	-7.35	578.46	27.9	Pass
L5	93.5 - 88.5	Pole	TP17.0387x16.0115x0.1875	5	-7.67	616.01	40.3	Pass
L6	88.5 - 83.5	Pole	TP18.066x17.0387x0.1875	6	-8.02	653.56	50.0	Pass
L7	83.5 - 78.67	Pole	TP19.0583x18.066x0.1875	7	-11.07	689.83	58.5	Pass
L8	78.67 - 78.42	Pole	TP19.1096x19.0583x0.5625	8	-11.12	2034.00	20.5	Pass
L9	78.42 - 73.42	Pole	TP20.1368x19.1096x0.5375	9	-12.28	2053.86	25.3	Pass
L10	73.42 - 68.42	Pole	TP21.164x20.1368x0.5125	10	-13.03	2063.47	29.8	Pass
L11	68.42 - 63.42	Pole	TP22.1913x21.164x0.4875	11	-16.88	2062.82	35.5	Pass
L12	63.42 - 58.67	Pole	TP23.1671x22.1913x0.475	12	-17.69	2101.46	39.7	Pass
L13	58.67 - 58.42	Pole	TP23.2185x23.1671x0.475	13	-17.74	2106.22	39.8	Pass
L14	58.42 - 53.42	Pole	TP24.2457x23.2185x0.4625	14	-18.61	2144.54	43.8	Pass
L15	53.42 - 47.12	Pole	TP25.54x24.2457x0.45	15	-19.06	2133.64	46.2	Pass
L16	47.12 - 45.87	Pole	TP25.3633x24.3946x0.5125	16	-20.59	2483.05	44.4	Pass
L17	45.87 - 40.87	Pole	TP26.332x25.3633x0.5	17	-21.60	2518.14	47.3	Pass
L18	40.87 - 35.87	Pole	TP27.3006x26.332x0.4875	18	-22.63	2548.44	50.0	Pass
L19	35.87 - 30.87	Pole	TP28.2693x27.3006x0.475	19	-23.68	2573.96	52.6	Pass
L20	30.87 - 28.67	Pole	TP28.6956x28.2693x0.475	20	-24.15	2613.43	53.1	Pass
L21	28.67 - 28.42	Pole	TP28.744x28.6956x0.475	21	-24.21	2617.91	53.1	Pass
L22	28.42 - 23.42	Pole	TP29.7127x28.744x0.4625	22	-25.29	2637.49	55.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L23	23.42 - 18.42	Pole	TP30.6814x29.7127x0.4563	23	-26.39	2688.58	57.1	Pass	
L24	18.42 - 14.17	Pole	TP31.5047x30.6814x0.45	24	-27.34	2724.54	58.4	Pass	
L25	14.17 - 13.92	Pole	TP31.5532x31.5047x0.55	25	-27.41	3324.46	48.2	Pass	
L26	13.92 - 13.67	Pole	TP31.6016x31.5532x0.55	26	-27.48	3329.65	48.3	Pass	
L27	13.67 - 13.42	Pole	TP31.65x31.6016x0.4688	27	-27.54	2849.63	56.2	Pass	
L28	13.42 - 8.42	Pole	TP32.6187x31.65x0.4625	28	-28.75	2899.54	57.4	Pass	
L29	8.42 - 5.75	Pole	TP33.136x32.6187x0.4625	29	-29.40	2946.18	57.6	Pass	
L30	5.75 - 5.5	Pole	TP33.1844x33.136x0.525	30	-29.48	3342.87	51.1	Pass	
L31	5.5 - 3.57	Pole	TP33.5584x33.1844x0.5875	31	-30.06	3776.50	46.0	Pass	
L32	3.57 - 3.32	Pole	TP33.6068x33.5584x0.5875	32	-30.15	3782.06	46.0	Pass	
L33	3.32 - 3.17	Pole	TP33.6359x33.6068x0.5875	33	-30.19	3785.39	46.0	Pass	
L34	3.17 - 2.92	Pole	TP33.6843x33.6359x0.5	34	-30.26	3234.85	53.7	Pass	
L35	2.92 - 2.75	Pole	TP33.7172x33.6843x0.5	35	-30.30	3238.06	53.7	Pass	
L36	2.75 - 2.5	Pole	TP33.7657x33.7172x0.4875	36	-30.37	3162.90	55.0	Pass	
L37	2.5 - 0	Pole	TP34.25x33.7657x0.4875	37	-30.97	3208.94	55.1	Pass	
							Summary		
							Pole (L7)	58.5	Pass
							<b>RATING =</b>	<b>58.5</b>	<b>Pass</b>

**\*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**



# TNX Geometry Input

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

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	110 - 105	5		18	12.700	13.693	0.1875	A572-65	1.000
2	105 - 100	5		18	13.693	14.686	0.1875	A572-65	1.000
3	100 - 98.5	1.5	0	18	14.686	14.984	0.1875	A572-65	1.000
4	98.5 - 93.5	5		18	14.984	16.012	0.1875	A572-65	1.000
5	93.5 - 88.5	5		18	16.012	17.039	0.1875	A572-65	1.000
6	88.5 - 83.5	5		18	17.039	18.066	0.1875	A572-65	1.000
7	83.5 - 78.67	4.83		18	18.066	19.058	0.1875	A572-65	1.000
8	78.67 - 78.42	0.25		18	19.058	19.110	0.5625	A572-65	0.852
9	78.42 - 73.42	5		18	19.110	20.137	0.5375	A572-65	0.862
10	73.42 - 68.42	5		18	20.137	21.164	0.5125	A572-65	0.876
11	68.42 - 63.42	5		18	21.164	22.191	0.4875	A572-65	0.895
12	63.42 - 58.67	4.75		18	22.191	23.167	0.475	A572-65	0.895
13	58.67 - 58.42	0.25		18	23.167	23.218	0.475	A572-65	0.894
14	58.42 - 53.42	5		18	23.218	24.246	0.4625	A572-65	0.896
15	53.42 - 50.87	6.3	3.75	18	24.246	25.540	0.45	A572-65	0.909
16	50.87 - 45.87	5		18	24.395	25.363	0.5125	A572-65	0.912
17	45.87 - 40.87	5		18	25.363	26.332	0.5	A572-65	0.918
18	40.87 - 35.87	5		18	26.332	27.301	0.4875	A572-65	0.926
19	35.87 - 30.87	5		18	27.301	28.269	0.475	A572-65	0.935
20	30.87 - 28.67	2.2		18	28.269	28.696	0.475	A572-65	0.929
21	28.67 - 28.42	0.25		18	28.696	28.744	0.475	A572-65	0.928
22	28.42 - 23.42	5		18	28.744	29.713	0.4625	A572-65	0.939
23	23.42 - 18.42	5		18	29.713	30.681	0.45625	A572-65	0.939
24	18.42 - 14.17	4.25		18	30.681	31.505	0.45	A572-65	0.941
25	14.17 - 13.92	0.25		18	31.505	31.553	0.55	A572-65	0.955
26	13.92 - 13.67	0.25		18	31.553	31.602	0.55	A572-65	0.955
27	13.67 - 13.42	0.25		18	31.602	31.650	0.46875	A572-65	0.994
28	13.42 - 8.42	5		18	31.650	32.619	0.4625	A572-65	0.994
29	8.42 - 5.75	2.67		18	32.619	33.136	0.4625	A572-65	0.986
30	5.75 - 5.5	0.25		18	33.136	33.184	0.525	A572-65	0.974
31	5.5 - 3.57	1.93		18	33.184	33.558	0.5875	A572-65	1.019
32	3.57 - 3.32	0.25		18	33.558	33.607	0.5875	A572-65	1.018
33	3.32 - 3.17	0.15		18	33.607	33.636	0.5875	A572-65	1.017
34	3.17 - 2.92	0.25		18	33.636	33.684	0.5	A572-65	1.003
35	2.92 - 2.75	0.17		18	33.684	33.717	0.5	A572-65	1.002
36	2.75 - 2.5	0.25		18	33.717	33.766	0.4875	A572-65	0.917
37	2.5 - 0	2.5		18	33.766	34.250	0.4875	A572-65	0.911

## TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)
1	110 - 105		2.71	10.22	3.78
2	105 - 100		2.91	29.61	3.98
3	100 - 98.5		2.97	35.63	4.04
4	98.5 - 93.5		7.35	62.89	8.30
5	93.5 - 88.5		7.67	104.87	8.50
6	88.5 - 83.5		8.02	147.80	8.69
7	83.5 - 78.67		11.07	189.05	12.23
8	78.67 - 78.42		11.12	192.10	12.23
9	78.42 - 73.42		12.28	253.97	12.65
10	73.42 - 68.42		13.02	318.50	13.25
11	68.42 - 63.42		16.88	398.27	16.34
12	63.42 - 58.67		17.69	476.36	16.56
13	58.67 - 58.42		17.74	480.50	16.56
14	58.42 - 53.42		18.61	563.85	16.79
15	53.42 - 50.87		19.06	606.78	16.91
16	50.87 - 45.87		20.59	692.26	17.26
17	45.87 - 40.87		21.60	779.00	17.47
18	40.87 - 35.87		22.63	866.76	17.67
19	35.87 - 30.87		23.68	955.51	17.86
20	30.87 - 28.67		24.15	994.85	17.94
21	28.67 - 28.42		24.21	999.34	17.94
22	28.42 - 23.42		25.29	1089.43	18.12
23	23.42 - 18.42		26.39	1180.34	18.28
24	18.42 - 14.17		27.34	1258.19	18.40
25	14.17 - 13.92		27.41	1262.79	18.39
26	13.92 - 13.67		27.48	1267.39	18.40
27	13.67 - 13.42		27.54	1271.99	18.41
28	13.42 - 8.42		28.75	1364.34	18.56
29	8.42 - 5.75		29.40	1413.95	18.64
30	5.75 - 5.5		29.48	1418.60	18.63
31	5.5 - 3.57		30.06	1454.61	18.71
32	3.57 - 3.32		30.15	1459.28	18.70
33	3.32 - 3.17		30.19	1462.09	18.71
34	3.17 - 2.92		30.26	1466.77	18.72
35	2.92 - 2.75		30.30	1469.95	18.72
36	2.75 - 2.5		30.37	1474.63	18.73
37	2.5 - 0		30.97	1521.53	18.82

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP13.693x12.7x0.1875	Pole	6.5%	Pass
105 - 100	Pole	TP14.686x13.693x0.1875	Pole	15.4%	Pass
100 - 98.5	Pole	TP14.984x14.686x0.1875	Pole	17.7%	Pass
98.5 - 93.5	Pole	TP16.012x14.984x0.1875	Pole	27.9%	Pass
93.5 - 88.5	Pole	TP17.039x16.012x0.1875	Pole	40.3%	Pass
88.5 - 83.5	Pole	TP18.066x17.039x0.1875	Pole	50.0%	Pass
83.5 - 78.67	Pole	TP19.058x18.066x0.1875	Pole	58.5%	Pass
78.67 - 78.42	Pole + Reinf.	TP19.11x19.058x0.5625	Reinf. 5 Bolt-Shaft Bearing	31.9%	Pass
78.42 - 73.42	Pole + Reinf.	TP20.137x19.11x0.5375	Reinf. 5 Tension Rupture	38.9%	Pass
73.42 - 68.42	Pole + Reinf.	TP21.164x20.137x0.5125	Reinf. 5 Tension Rupture	45.4%	Pass
68.42 - 63.42	Pole + Reinf.	TP22.191x21.164x0.4875	Reinf. 5 Tension Rupture	53.3%	Pass
63.42 - 58.67	Pole + Reinf.	TP23.167x22.191x0.475	Reinf. 5 Bolt-Shaft Bearing	60.4%	Pass
58.67 - 58.42	Pole + Reinf.	TP23.218x23.167x0.475	Reinf. 4 Bolt-Shaft Bearing	60.8%	Pass
58.42 - 53.42	Pole + Reinf.	TP24.246x23.218x0.4625	Reinf. 4 Tension Rupture	66.5%	Pass
53.42 - 50.87	Pole + Reinf.	TP25.54x24.246x0.45	Reinf. 4 Tension Rupture	69.4%	Pass
50.87 - 45.87	Pole + Reinf.	TP25.363x24.395x0.5125	Reinf. 4 Tension Rupture	67.0%	Pass
45.87 - 40.87	Pole + Reinf.	TP26.332x25.363x0.5	Reinf. 4 Tension Rupture	71.2%	Pass
40.87 - 35.87	Pole + Reinf.	TP27.301x26.332x0.4875	Reinf. 4 Tension Rupture	74.9%	Pass
35.87 - 30.87	Pole + Reinf.	TP28.269x27.301x0.475	Reinf. 4 Tension Rupture	78.2%	Pass
30.87 - 28.67	Pole + Reinf.	TP28.696x28.269x0.475	Reinf. 4 Tension Rupture	79.6%	Pass
28.67 - 28.42	Pole + Reinf.	TP28.744x28.696x0.475	Reinf. 7 Tension Rupture	79.7%	Pass
28.42 - 23.42	Pole + Reinf.	TP29.713x28.744x0.4625	Reinf. 7 Tension Rupture	82.5%	Pass
23.42 - 18.42	Pole + Reinf.	TP30.681x29.713x0.4563	Reinf. 7 Tension Rupture	85.0%	Pass
18.42 - 14.17	Pole + Reinf.	TP31.505x30.681x0.45	Reinf. 7 Tension Rupture	86.9%	Pass
14.17 - 13.92	Pole + Reinf.	TP31.553x31.505x0.55	Reinf. 3 Tension Rupture	77.3%	Pass
13.92 - 13.67	Pole + Reinf.	TP31.602x31.553x0.55	Reinf. 3 Tension Rupture	77.4%	Pass
13.67 - 13.42	Pole + Reinf.	TP31.65x31.602x0.4688	Reinf. 6 Tension Rupture	86.2%	Pass
13.42 - 8.42	Pole + Reinf.	TP32.619x31.65x0.4625	Reinf. 6 Tension Rupture	88.3%	Pass
8.42 - 5.75	Pole + Reinf.	TP33.136x32.619x0.4625	Reinf. 6 Tension Rupture	89.4%	Pass
5.75 - 5.5	Pole + Reinf.	TP33.184x33.136x0.525	Reinf. 3 Tension Rupture	80.4%	Pass
5.5 - 3.57	Pole + Reinf.	TP33.558x33.184x0.5875	Reinf. 1 Compression	66.6%	Pass
3.57 - 3.32	Pole + Reinf.	TP33.607x33.558x0.5875	Reinf. 1 Compression	66.7%	Pass
3.32 - 3.17	Pole + Reinf.	TP33.636x33.607x0.5875	Reinf. 1 Compression	66.7%	Pass
3.17 - 2.92	Pole + Reinf.	TP33.684x33.636x0.5	Reinf. 1 Compression	76.6%	Pass
2.92 - 2.75	Pole + Reinf.	TP33.717x33.684x0.5	Reinf. 1 Compression	76.7%	Pass
2.75 - 2.5	Pole + Reinf.	TP33.766x33.717x0.4875	Reinf. 1 Compression	76.1%	Pass
2.5 - 0	Pole + Reinf.	TP34.25x33.766x0.4875	Reinf. 1 Compression	76.8%	Pass
				Summary	
			Pole	66.1%	Pass
			Reinforcement	89.4%	Pass
			Overall	89.4%	Pass

# Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity* (100% Max. Allowable)							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7
110 - 105	185	n/a	185	8.04	n/a	8.04	6.5%							
105 - 100	229	n/a	229	8.63	n/a	8.63	15.4%							
100 - 98.5	244	n/a	244	8.81	n/a	8.81	17.7%							
98.5 - 93.5	298	n/a	298	9.42	n/a	9.42	27.9%							
93.5 - 88.5	360	n/a	360	10.03	n/a	10.03	40.3%							
88.5 - 83.5	430	n/a	430	10.64	n/a	10.64	50.0%							
83.5 - 78.67	505	n/a	505	11.23	n/a	11.23	58.5%							
78.67 - 78.42	509	918	1427	11.26	16.95	28.21	20.8%					31.9%		
78.42 - 73.42	597	1010	1607	11.87	16.95	28.82	26.0%					38.9%		
73.42 - 68.42	694	1107	1801	12.48	16.95	29.43	30.9%					45.4%		
68.42 - 63.42	801	1208	2009	13.09	16.95	30.04	36.9%					53.3%		
63.42 - 58.67	912	1308	2220	13.68	16.95	30.63	42.1%					60.4%		
58.67 - 58.42	918	1314	2232	13.71	16.95	30.66	42.4%				60.8%			
58.42 - 53.42	1047	1424	2471	14.32	16.95	31.27	47.5%				66.5%			
53.42 - 50.87	1116	1482	2598	14.63	16.95	31.58	50.0%				69.4%			
50.87 - 45.87	1587	1549	3136	19.93	16.95	36.88	44.7%				67.0%			
45.87 - 40.87	1778	1661	3440	20.70	16.95	37.65	48.0%				71.2%			
40.87 - 35.87	1984	1778	3762	21.46	16.95	38.41	51.1%				74.9%			
35.87 - 30.87	2204	1899	4103	22.23	16.95	39.18	54.0%				78.2%			
30.87 - 28.67	2307	1953	4259	22.57	16.95	39.52	55.2%				79.6%			
28.67 - 28.42	2318	1959	4277	22.61	16.95	39.56	55.3%			79.7%				79.7%
28.42 - 23.42	2563	2086	4649	23.38	16.95	40.33	57.9%			82.5%				82.5%
23.42 - 18.42	2824	2216	5040	24.15	16.95	41.10	60.4%			85.0%				85.0%
18.42 - 14.17	3060	2330	5390	24.80	16.95	41.75	62.3%			86.9%				86.9%
14.17 - 13.92	3121	3438	6559	24.84	26.87	51.71	56.5%			77.3%			69.6%	60.6%
13.92 - 13.67	3135	3448	6583	24.88	26.87	51.75	56.6%			77.4%			69.7%	60.6%
13.67 - 13.42	3110	2599	5710	24.92	21.22	46.14	62.8%			78.9%			86.2%	
13.42 - 8.42	3407	2754	6161	25.68	21.22	46.90	65.0%			80.8%			88.3%	
8.42 - 5.75	3573	2838	6411	26.09	21.22	47.31	66.1%			81.7%			89.4%	
5.75 - 5.5	3631	3787	7419	26.13	26.87	53.00	59.9%		63.3%	80.4%			72.8%	
5.5 - 3.57	3723	4793	8516	26.43	36.20	62.62	52.7%	66.6%	44.6%				59.6%	
3.57 - 3.32	3740	4805	8545	26.47	36.20	62.66	52.8%	66.7%	44.7%				59.7%	
3.32 - 3.17	3749	4813	8562	26.49	36.20	62.69	52.8%	66.7%	44.7%				59.8%	
3.17 - 2.92	3747	3538	7285	26.53	26.28	52.80	59.7%	76.6%	56.8%					
2.92 - 2.75	3758	3544	7302	26.56	26.28	52.83	59.7%	76.7%	56.8%					
2.75 - 2.5	3773	3499	7272	26.59	20.63	47.22	59.7%	76.1%						
2.5 - 0	3939	3591	7530	26.98	20.63	47.60	60.7%	76.8%						

Note: Section capacity checked assuming all reinforcements are effective and using 5 degree increments.  
 \*Rating per TIA-222-H Section 15.5.



# Monopole Flange Plate Connection

Elevation = 98.5 ft.



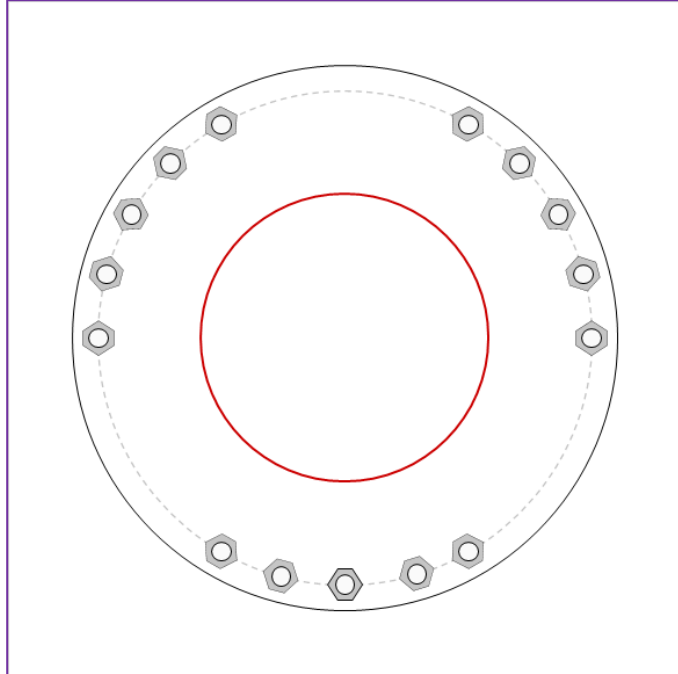
BU #	876405
Site Name	Woodbury North
Order #	654617 Rev.0

Applied Loads	
Moment (kip-ft)	35.63
Axial Force (kips)	2.97
Shear Force (kips)	4.04

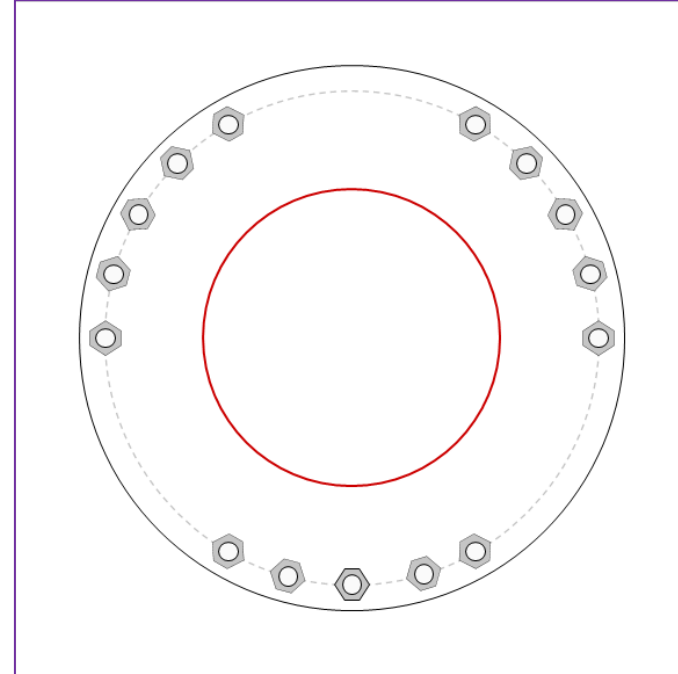
TIA-222 Revision	H
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\*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



### Connection Properties

#### Bolt Data

(15) 1"  $\phi$  bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 25.75" BC

#### Top Plate Data

28.5" OD x 1" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

#### Top Stiffener Data

N/A

#### Top Pole Data

14.9843" x 0.1875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

#### Bottom Plate Data

28.5" OD x 1" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

#### Bottom Stiffener Data

N/A

#### Bottom Pole Data

15.5" x 0.1875" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

### Analysis Results

#### Bolt Capacity

Max Load (kips)	4.25
Allowable (kips)	54.54
Stress Rating:	<b>7.4%</b> <span style="color: green;">Pass</span>

#### Top Plate Capacity

Max Stress (ksi):	18.83	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	<b>33.2%</b>	<span style="color: green;">Pass</span>
Tension Side Stress Rating:	<b>49.8%</b>	<span style="color: green;">Pass</span>

#### Bottom Plate Capacity

Max Stress (ksi):	18.09	(Flexural)
Allowable Stress (ksi):	54.00	
Stress Rating:	<b>31.9%</b>	<span style="color: green;">Pass</span>
Tension Side Stress Rating:	<b>44.9%</b>	<span style="color: green;">Pass</span>

# CCIplate

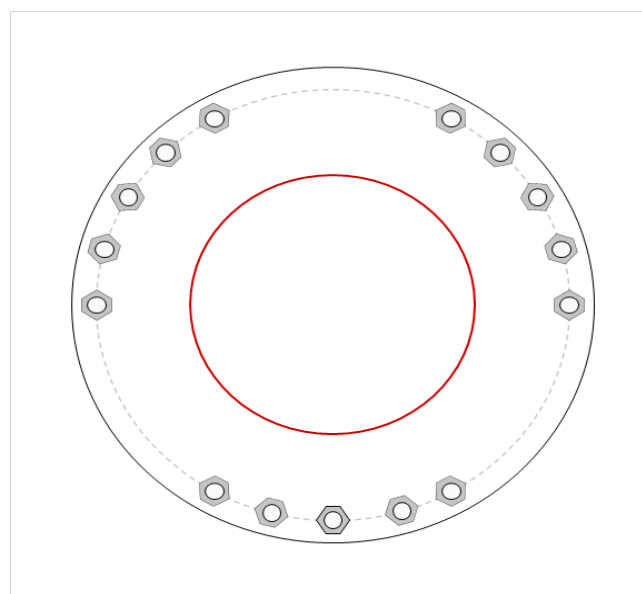
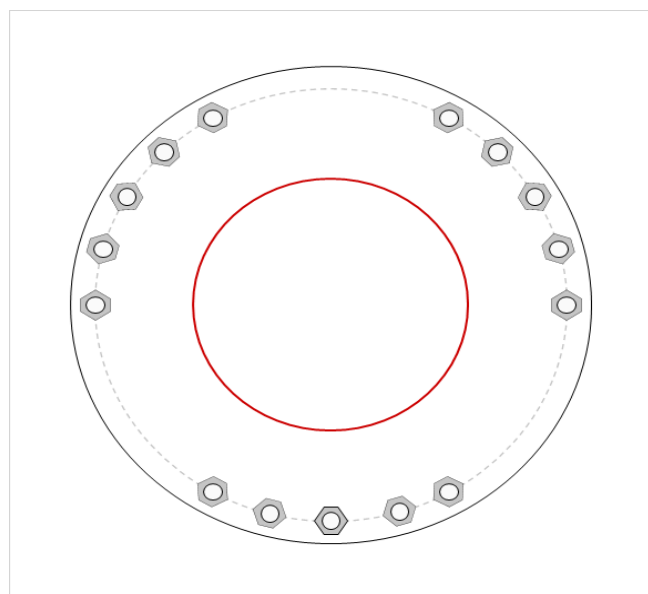
Elevation (ft) 98.5 (Flange)

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending
1	Yes	Yes	Yes

## Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, $\eta$ :	$I_{ar}$ (in):	Thread Type	Area Override, in <sup>2</sup>	Tension Only
1	1	0	1	A325	25.75	0.5	0	N-Included		No
2	1	15	1	A325	25.75	0.5	0	N-Included		No
3	1	30	1	A325	25.75	0.5	0	N-Included		No
4	1	45	1	A325	25.75	0.5	0	N-Included		No
5	1	60	1	A325	25.75	0.5	0	N-Included		No
6	1	120	1	A325	25.75	0.5	0	N-Included		No
7	1	135	1	A325	25.75	0.5	0	N-Included		No
8	1	150	1	A325	25.75	0.5	0	N-Included		No
9	1	165	1	A325	25.75	0.5	0	N-Included		No
10	1	180	1	A325	25.75	0.5	0	N-Included		No
11	1	240	1	A325	25.75	0.5	0	N-Included		No
12	1	255	1	A325	25.75	0.5	0	N-Included		No
13	1	270	1	A325	25.75	0.5	0	N-Included		No
14	1	287	1	A325	25.75	0.5	0	N-Included		No
15	1	300	1	A325	25.75	0.5	0	N-Included		No

## Plot Graphic



# Monopole Base Plate Connection

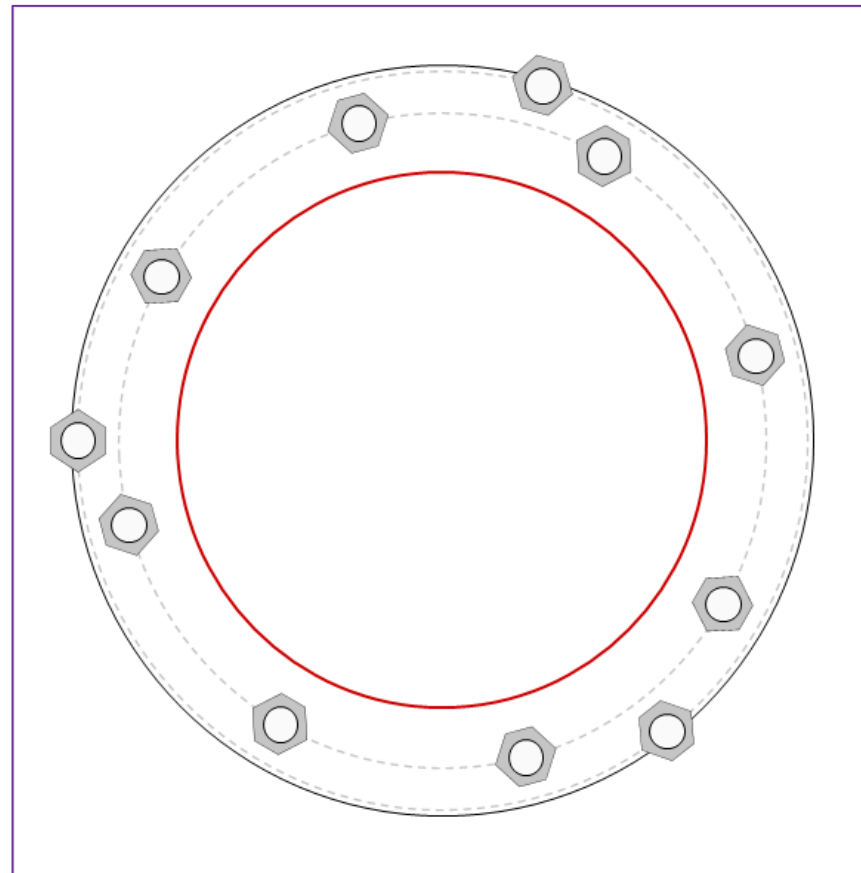


Site Info	
BU #	876405
Site Name	Woodbury North
Order #	654617 Rev.0

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

Applied Loads	
Moment (kip-ft)	1521.53
Axial Force (kips)	30.97
Shear Force (kips)	18.82

\*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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### Anchor Rod Data

GROUP 1: (8) 2-1/4"  $\phi$  bolts (A615-75 N;  $F_y=75$  ksi,  $F_u=100$  ksi) on 42" BC  
 GROUP 2: (3) 2-1/4"  $\phi$  bolts (A193 Gr. B7 Derated N;  $F_y=99.19$  ksi,  $F_u=125$  ksi) on 47.25  
 pos. (deg): 74, 180, 308

### Base Plate Data

48" OD x 1.5" Plate (A572-60;  $F_y=60$  ksi,  $F_u=75$  ksi)

### Stiffener Data

N/A

### Pole Data

34.25" x 0.25" 18-sided pole (A572-65;  $F_y=65$  ksi,  $F_u=80$  ksi)

### Anchor Rod Summary

(units of kips, kip-in)

GROUP 1:			Stress Rating
$P_{u,t} = 150.4$	$\phi P_{n,t} = 243.75$		<b>58.8%</b>
$V_u = 2.35$	$\phi V_n = 149.1$		<b>Pass</b>
$M_u = n/a$	$\phi M_n = n/a$		
GROUP 2:			
$P_{u,t} = 167.24$	$\phi P_{n,t} = 304.69$		<b>52.3%</b>
$V_u = 0$	$\phi V_n = 186.38$		<b>Pass</b>
$M_u = n/a$	$\phi M_n = n/a$		

### Base Plate Summary

Max Stress (ksi):	48.71	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	<b>85.9%</b>	<b>Pass</b>

# CCiplate

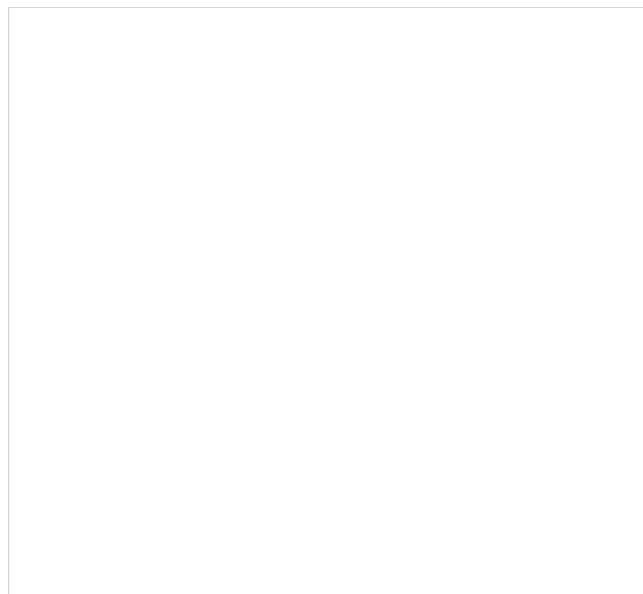
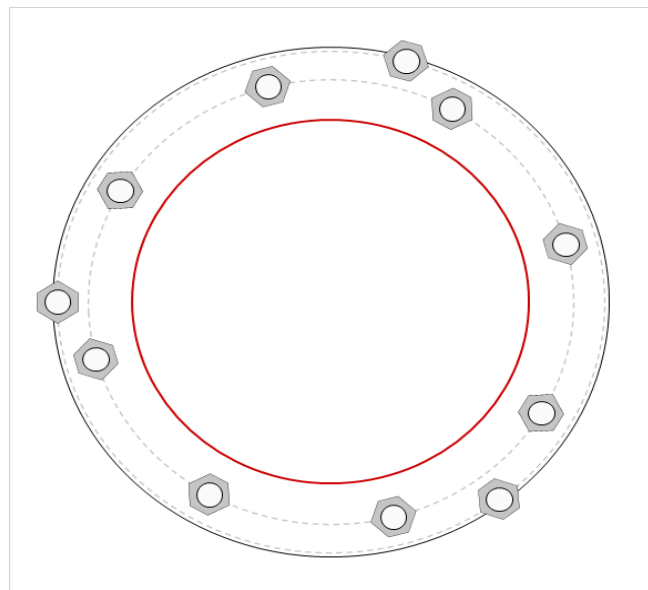
Elevation (ft) 0 (Base)

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	Yes	No	
2	No	No	No	Yes	No	

Custom Bolt Connection										
Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, $\eta$ :	$I_{ar}$ (in):	Thread Type	Area Override, in <sup>2</sup>	Tension Only
1	1	15	2.25	A615-75	42	0.5	0.75	N-Included		No
2	1	60	2.25	A615-75	42	0.5	0.75	N-Included		No
3	1	105	2.25	A615-75	42	0.5	0.75	N-Included		No
4	1	150	2.25	A615-75	42	0.5	0.75	N-Included		No
5	1	195	2.25	A615-75	42	0.5	0.75	N-Included		No
6	1	240	2.25	A615-75	42	0.5	0.75	N-Included		No
7	1	285	2.25	A615-75	42	0.5	0.75	N-Included		No
8	1	330	2.25	A615-75	42	0.5	0.75	N-Included		No
9	2	74	2.25	193 Gr. B7 Derate	47.25	0.5	1	N-Included		No
10	2	180	2.25	193 Gr. B7 Derate	47.25	0.5	1	N-Included		No
11	2	308	2.25	193 Gr. B7 Derate	47.25	0.5	1	N-Included		No

## Plot Graphic



# Pier and Pad Foundation



BU #: 876405  
 Site Name: Woodbury North  
 App. Number:

TIA-222 Revision: H  
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, $P_{comp}$ :	30.98	kips
Base Shear, $Vu_{comp}$ :	18.8	kips
Moment, $M_u$ :	1521.53	ft-kips
Tower Height, $H$ :	110	ft
BP Dist. Above Fdn, $bp_{dist}$ :	3	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	159.49	18.80	11.2%	Pass
<i>Bearing Pressure (ksf)</i>	9.00	4.03	44.7%	Pass
<i>Overturning (kip*ft)</i>	2054.36	1667.23	81.2%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	2965.01	1606.13	51.6%	Pass
<i>Pier Compression (kip)</i>	19253.52	55.48	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	1867.53	788.20	40.2%	Pass
<i>Pad Shear - 1-way (kips)</i>	591.69	176.70	28.4%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.190	0.000	0.0%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	3203.98	963.68	28.6%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$ :	5.5	ft
Ext. Above Grade, $E$ :	1	ft
Pier Rebar Size, $Sc$ :	8	
Pier Rebar Quantity, $mc$ :	30	
Pier Tie/Spiral Size, $St$ :	4	
Pier Tie/Spiral Quantity, $mt$ :	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, $cc_{pier}$ :	3	in

\*Rating per TIA-222-H Section 15.5

Structural Rating*:	51.6%
Soil Rating*:	81.2%

Pad Properties		
Depth, $D$ :	6.5	ft
Pad Width, $W_1$ :	16.5	ft
Pad Thickness, $T$ :	3	ft
Pad Rebar Size (Bottom dir. 2), $Sp_2$ :	8	
Pad Rebar Quantity (Bottom dir. 2), $mp_2$ :	17	
Pad Clear Cover, $cc_{pad}$ :	3	in

Material Properties		
Rebar Grade, $F_y$ :	60	ksi
Concrete Compressive Strength, $F'_c$ :	4	ksi
Dry Concrete Density, $\delta_c$ :	150	pcf

Soil Properties		
Total Soil Unit Weight, $\gamma$ :	125	pcf
Ultimate Gross Bearing, $Q_{ult}$ :	12.000	ksf
Cohesion, $C_u$ :	0.000	ksf
Friction Angle, $\phi$ :	34	degrees
SPT Blow Count, $N_{blows}$ :	60	
Base Friction, $\mu$ :		
Neglected Depth, $N$ :	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, $gw$ :	N/A	ft

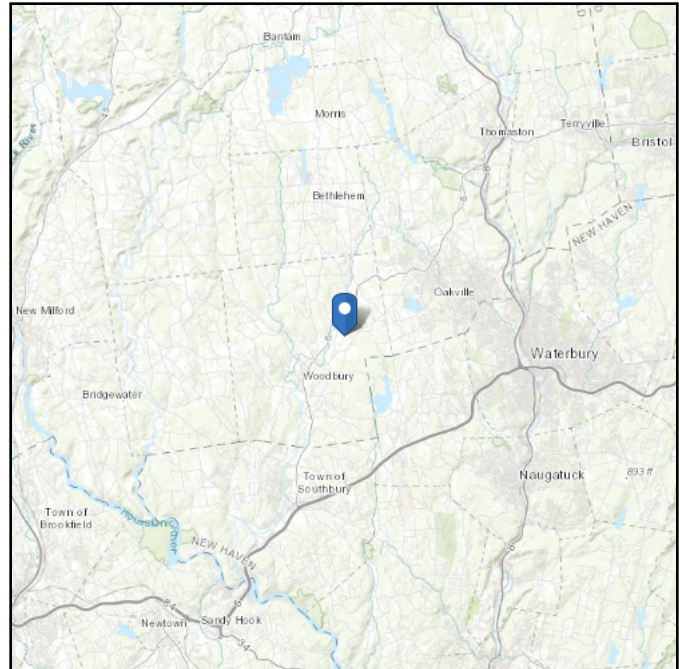
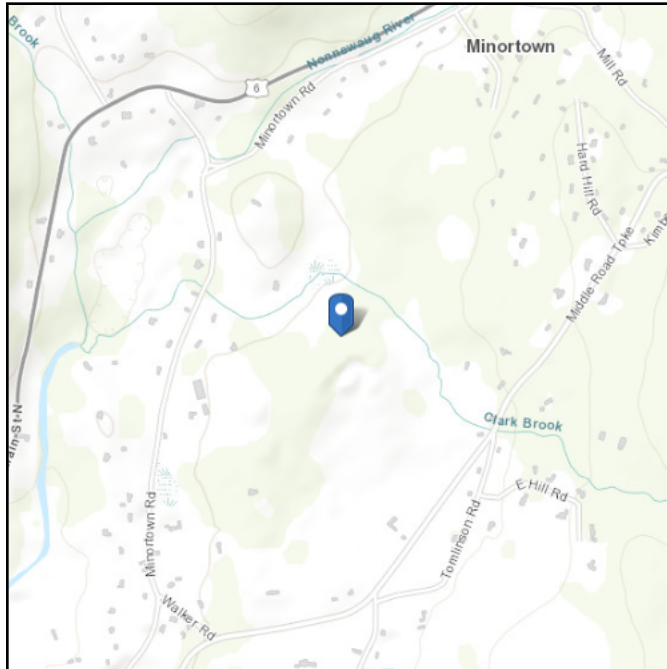
<--Toggle between Gross and Net

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Latitude:** 41.567997  
**Longitude:** -73.179681  
**Elevation:** 459.9551851188279 ft (NAVD 88)



## Wind

### Results:

Wind Speed	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue Oct 17 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

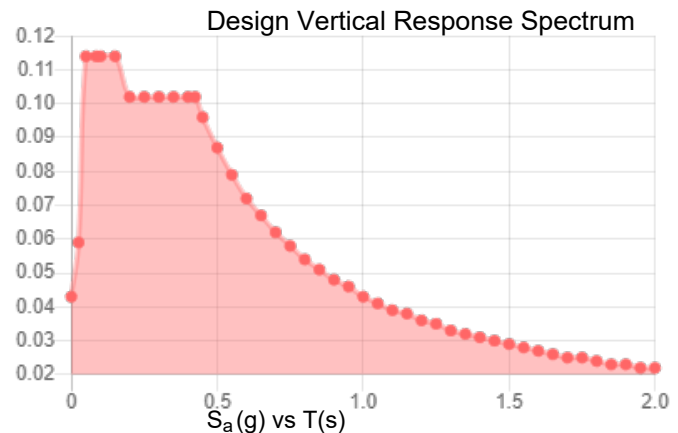
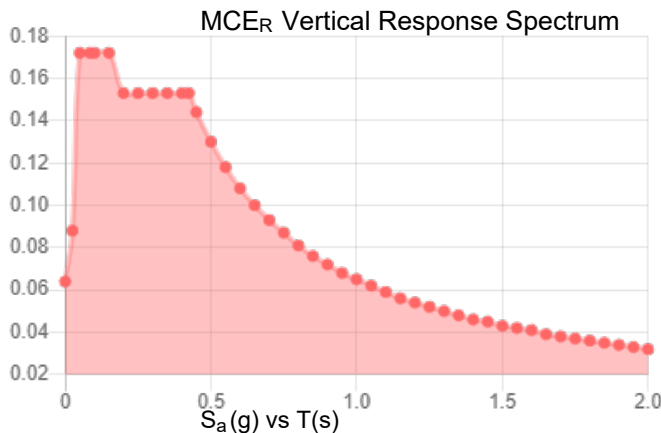
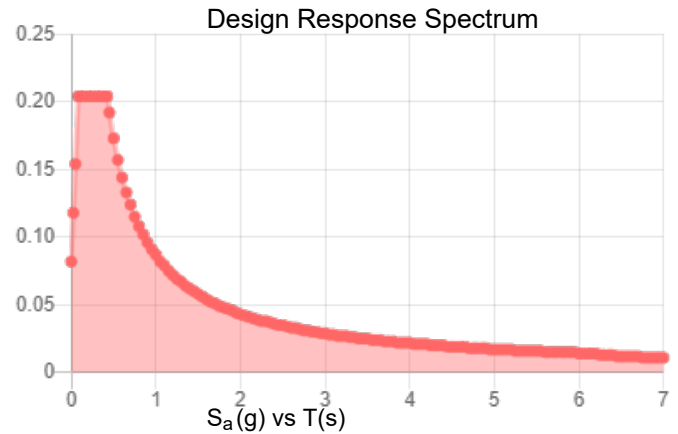
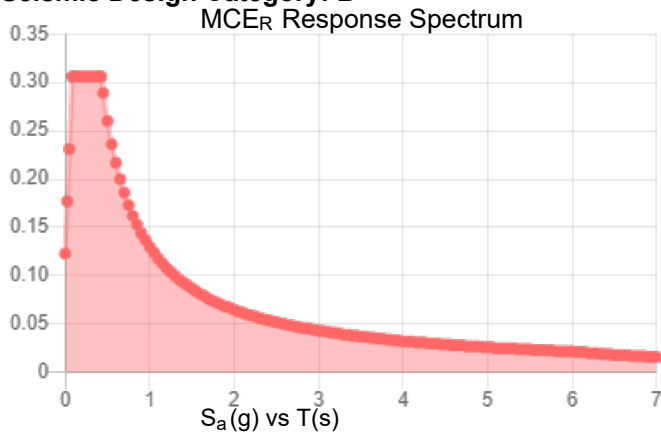
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:**

**Results:**

$S_s$ :	0.192	$S_{D1}$ :	0.087
$S_1$ :	0.054	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.105
$F_v$ :	2.4	PGA <sub>M</sub> :	0.168
$S_{MS}$ :	0.306	$F_{PGA}$ :	1.589
$S_{M1}$ :	0.13	$I_e$ :	1
$S_{DS}$ :	0.204	$C_v$ :	0.7

**Seismic Design Category: B**



**Data Accessed:**

**Tue Oct 17 2023**

**Date Source:**

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



## Ice

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**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

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

**Date Accessed:** Tue Oct 17 2023

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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