Date: **April 26, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00090A
	Site Name:	CT-CCI-T-876340
Crown Castle Designation:	**BU Number:**	876340
	Site Name:	COE HILL
	JDE Job Number:	645181
	Work Order Number:	1945894
	Order Number:	553291 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1945894
Site Data:	**238 Meriden Rd., MIDDLEFIELD, MIDDLESEX County, CT**	
	Latitude *41° 32' 45.6"*, Longitude *-72° 42' 53.9"*	
	133.5 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**

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

Structural analysis prepared by: Mishka Stueber

Respectfully submitted by:

Jamal A. Huwel, P.E.
Director Engineering

STATE OF CONNECTICUT
JAMAL A. HUWEL
28893
LICENSED
PROFESSIONAL ENGINEER

Digitally signed by
Jamal A Huwel
Date: 2021.04.26
17:45:25 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 133.5 ft Monopole tower designed by SUMMIT. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
95.0	95.0	1	tower mounts	Commscope MC-PK8-DSH	1	1-1/2
	91.0	3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		

Table 2 - Non-Carrier Equipment To Be Removed

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	APXV18-206517S-ACU	-	-
		1	tower mounts	Pipe Mount [PM 602-3]		
		2	tower mounts	Side Arm Mount [SO 102-3]		

Table 3 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
131.0	132.0	1	cci antennas	DMP65R-BU4D w/ Mount Pipe	2 4 1 6	3/8 3/4 Conduit 1-1/4
		2	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		1	cci antennas	OPA65R-BU4D w/ Mount Pipe		
		2	cci antennas	OPA65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 8843 B2/B66A		
		6	kathrein	860 10025		
		6	powerwave technologies	CM1007-DBPXBC-003		
		3	powerwave technologies	P65-15-XLH-RR w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	131.0	1		HRK12-3HD		
		3	powerwave technologies	TT19-08BP111-001		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 601-1]		
119.0	121.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	1 3	7/8 1-5/8
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMOV1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	119.0	1	tower mounts	Platform Mount [LP 403-1]		
117.0	117.0	3	alcatel lucent	TME-800MHz 2X50W RRH W/FILTER	-	-
		3	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz		
		1	tower mounts	Side Arm Mount [SO 102-3]		
111.0	111.0	1	tower mounts	Platform Mount [LP 403-1]	-	-
101.0	104.0	3	commscope	SDX1926Q-43	6 4	1-1/4 1-5/8
		3	ericsson	AIR 32 B2A B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	101.0	1	tower mounts	Platform Mount [LP 715-1_KCKR]		
95.0	95.0	-	-	-	6	1-5/8
60.0	61.0	1	symmetricom	58532A	1	1/2
	60.0	1	tower mounts	Side Arm Mount [SO 304-1]		
50.0	51.0	1	lucent	KS24019-L112A	1	1/2
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1613531	CCISITES
4-POST-MODIFICATION INSPECTION	2427628	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1613597	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1533009	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2331830	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2642501	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133.5 - 128.5	Pole	TP10.75x10.75x0.188	Pole	19.5%	Pass
128.5 - 123.5	Pole	TP10.75x10.75x0.188	Pole	49.8%	Pass
123.5 - 121.5	Pole	TP10.75x10.75x0.188	Pole	62.1%	Pass
121.5 - 119	Pole	TP22x10.75x0.188	Pole	20.0%	Pass
119 - 114	Pole	TP22.95x22x0.25	Pole	22.2%	Pass
114 - 109	Pole	TP23.9x22.95x0.25	Pole	30.2%	Pass
109 - 104	Pole	TP24.85x23.9x0.25	Pole	37.9%	Pass
104 - 99	Pole	TP25.8x24.85x0.25	Pole	47.9%	Pass
99 - 94	Pole	TP26.75x25.8x0.25	Pole	58.1%	Pass
94 - 89	Pole	TP27.7x26.75x0.25	Pole	69.3%	Pass
89 - 85.25	Pole	TP28.413x27.7x0.25	Pole	77.1%	Pass
85.25 - 85	Pole + Reinf.	TP28.46x28.413x0.5125	Reinf. 2 Tension Rupture	65.7%	Pass

85 - 80	Pole + Reinf.	TP29.41x28.46x0.5	Reinf. 2 Tension Rupture	74.1%	Pass
80 - 78.75	Pole + Reinf.	TP30.36x29.41x0.5	Reinf. 2 Tension Rupture	76.1%	Pass
78.75 - 74	Pole	TP30.05x29.148x0.3125	Pole	73.8%	Pass
74 - 69	Pole	TP31.001x30.05x0.3125	Pole	79.6%	Pass
69 - 68.25	Pole	TP31.143x31.001x0.3125	Pole	80.4%	Pass
68.25 - 68	Pole + Reinf.	TP31.191x31.143x0.575	Reinf. 1 Tension Rupture	60.4%	Pass
68 - 63	Pole + Reinf.	TP32.141x31.191x0.575	Reinf. 1 Tension Rupture	64.6%	Pass
63 - 58	Pole + Reinf.	TP33.091x32.141x0.5625	Reinf. 1 Tension Rupture	68.5%	Pass
58 - 53	Pole + Reinf.	TP34.042x33.091x0.55	Reinf. 1 Tension Rupture	72.1%	Pass
53 - 48	Pole + Reinf.	TP34.992x34.042x0.5438	Reinf. 1 Tension Rupture	75.5%	Pass
48 - 43	Pole + Reinf.	TP35.942x34.992x0.5375	Reinf. 1 Tension Rupture	78.7%	Pass
43 - 42.5	Pole + Reinf.	TP36.94x35.942x0.5375	Reinf. 1 Tension Rupture	79.0%	Pass
42.5 - 37.5	Pole + Reinf.	TP36.363x35.412x0.6	Reinf. 1 Tension Rupture	75.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP37.313x36.363x0.5875	Reinf. 1 Tension Rupture	77.9%	Pass
32.5 - 27.5	Pole + Reinf.	TP38.263x37.313x0.5875	Reinf. 1 Tension Rupture	80.1%	Pass
27.5 - 22.5	Pole + Reinf.	TP39.214x38.263x0.575	Reinf. 1 Tension Rupture	82.2%	Pass
22.5 - 17.5	Pole + Reinf.	TP40.164x39.214x0.575	Reinf. 1 Tension Rupture	84.1%	Pass
17.5 - 12.5	Pole + Reinf.	TP41.114x40.164x0.5688	Reinf. 1 Tension Rupture	85.8%	Pass
12.5 - 7.5	Pole + Reinf.	TP42.065x41.114x0.5625	Reinf. 1 Tension Rupture	87.5%	Pass
7.5 - 2.5	Pole + Reinf.	TP43.015x42.065x0.5625	Reinf. 1 Tension Rupture	89.0%	Pass
2.5 - 0	Pole + Reinf.	TP43.49x43.015x0.5563	Reinf. 1 Tension Rupture	89.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	89.7%	Pass
			Overall	89.7%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1, 2	Flange Connection	119.0	34.8	Pass
1	Anchor Rods	0	66.9	Pass
1	Base Plate	0	63.2	Pass
1	Base Foundation (Structure)	0	77.5	Pass
1	Base Foundation (Soil Interaction)	0	66.0	Pass

Structure Rating (max from all components) =	89.7%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Flange connection capacity determined by comparing analysis reactions with last analysis on file.

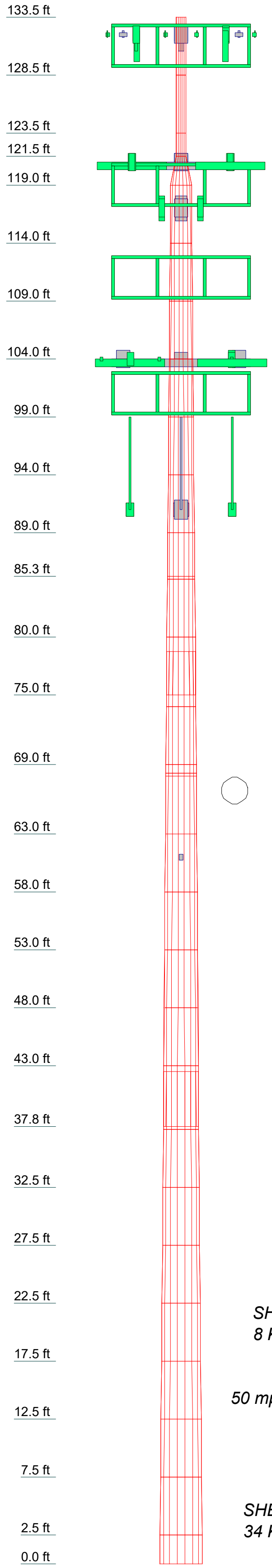
4.1) Recommendations

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	5.000	0	0.1880		10.7500	10.7500	A572-65	0.1
2	5.000	0	0.1880		10.7500	10.7500		0.1
3	[illegible]	0	[illegible]		[illegible]	[illegible]		0.0
4	[illegible]	0	[illegible]		[illegible]	[illegible]		0.1
5	5.000	12	0.2500		22.0000	22.9500		0.3
6	5.000	12	0.2500		22.9500	23.9000		0.3
7	5.000	12	0.2500		23.9000	24.8500		0.3
8	5.000	12	0.2500		24.8500	25.8000		0.3
9	5.000	12	0.2500		25.8000	26.7500		0.4
10	5.000	12	0.2500		26.7500	27.7000		0.4
11	[illegible]	12	[illegible]		[illegible]	[illegible]		0.3
12	[illegible]	12	[illegible]		[illegible]	[illegible]		0.0
13	[illegible]	12	[illegible]		[illegible]	[illegible]		0.7
14	[illegible]	12	[illegible]	3.750	[illegible]	[illegible]		0.7
15	[illegible]	12	[illegible]		[illegible]	[illegible]		0.5
16	[illegible]	12	[illegible]		[illegible]	[illegible]		0.5
17	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
18	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
19	[illegible]	12	[illegible]		[illegible]	[illegible]		0.9
20	5.000	12	0.5625		32.1410	33.0913		0.9
21	5.000	12	0.5500		33.0913	34.0416		0.9
22	5.000	12	0.5437		34.0416	34.9919		1.0
23	5.000	12	0.5375		34.9919	35.9422		1.0
24	[illegible]	12	[illegible]	4.750	[illegible]	[illegible]		1.1
25	[illegible]	12	[illegible]		[illegible]	[illegible]		1.1
26	5.000	12	[illegible]		[illegible]	37.3129		1.1
27	5.000	12	0.5875		37.3129	38.2632		1.1
28	5.000	12	0.5750		38.2632	39.2135		1.2
29	5.000	12	0.5750		39.2135	40.1639		1.2
30	5.000	12	0.5687		40.1639	41.1142		1.2
31	5.000	12	0.5625		41.1142	42.0645		1.2
32	5.000	12	0.5625		42.0645	43.0148		1.2
33	2.500	12	0.5563		43.0148	43.4900		0.6
								21.1



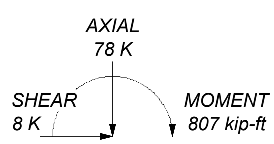
MATERIAL STRENGTH

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

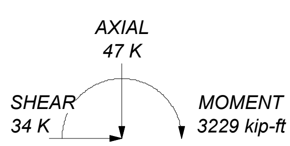
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 89.7%

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE



TORQUE 2 kip-ft
REACTIONS - 125 mph WIND

Crown Castle The Pathway to Possible	2000 Corporate Drive Canonsburg, PA Phone: (724) 416-2000 FAX:	Job: **876340**		
		Project:		
		Client: CCI	Drawn by: Mishka Stueber	App'd:
		Code: TIA-222-H	Date: 04/26/21	Scale: NTS
		Path: C:\Users\MStueber\OneDrive - Crown Castle USA Inc\Desktop\Working\876340\WO 1945894 - SA\Prod\876340-R.eri		Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Middlesex County, Connecticut.
- Tower base elevation above sea level: 444.000 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	133.500-128.500	5.000	0.00	Round	10.7500	10.7500	0.1880		A572-65 (65 ksi)
L2	128.500-123.500	5.000	0.00	Round	10.7500	10.7500	0.1880		A572-65 (65 ksi)
L3	123.500-121.500	2.000	0.00	Round	10.7500	10.7500	0.1880		A572-65 (65 ksi)
L4	121.500-119.000	2.500	0.00	Round	10.7500	22.0000	0.1880		A572-65 (65 ksi)
L5	119.000-114.000	5.000	0.00	12	22.0000	22.9500	0.2500	1.0000	A572-65 (65 ksi)
L6	114.000-109.000	5.000	0.00	12	22.9500	23.9000	0.2500	1.0000	A572-65 (65 ksi)
L7	109.000-104.000	5.000	0.00	12	23.9000	24.8500	0.2500	1.0000	A572-65 (65 ksi)
L8	104.000-99.000	5.000	0.00	12	24.8500	25.8000	0.2500	1.0000	A572-65 (65 ksi)
L9	99.000-94.000	5.000	0.00	12	25.8000	26.7500	0.2500	1.0000	A572-65 (65 ksi)
L10	94.000-89.000	5.000	0.00	12	26.7500	27.7000	0.2500	1.0000	A572-65 (65 ksi)
L11	89.000-85.250	3.750	0.00	12	27.7000	28.4125	0.2500	1.0000	A572-65 (65 ksi)
L12	85.250-85.000	0.250	0.00	12	28.4125	28.4600	0.5125	2.0500	A572-65 (65 ksi)
L13	85.000-80.000	5.000	0.00	12	28.4600	29.4100	0.5000	2.0000	A572-65 (65 ksi)
L14	80.000-75.000	5.000	3.75	12	29.4100	30.3600	0.5000	2.0000	A572-65 (65 ksi)
L15	75.000-74.000	4.750	0.00	12	29.1475	30.0503	0.3125	1.2500	A572-65 (65 ksi)
L16	74.000-69.000	5.000	0.00	12	30.0503	31.0006	0.3125	1.2500	A572-65 (65 ksi)
L17	69.000-68.250	0.750	0.00	12	31.0006	31.1431	0.3125	1.2500	A572-65 (65 ksi)
L18	68.250-68.000	0.250	0.00	12	31.1431	31.1907	0.5750	2.3000	A572-65 (65 ksi)
L19	68.000-63.000	5.000	0.00	12	31.1907	32.1410	0.5750	2.3000	A572-65 (65 ksi)
L20	63.000-58.000	5.000	0.00	12	32.1410	33.0913	0.5625	2.2500	A572-65 (65 ksi)
L21	58.000-53.000	5.000	0.00	12	33.0913	34.0416	0.5500	2.2000	A572-65 (65 ksi)
L22	53.000-48.000	5.000	0.00	12	34.0416	34.9919	0.5437	2.1750	A572-65 (65 ksi)
L23	48.000-43.000	5.000	0.00	12	34.9919	35.9422	0.5375	2.1500	A572-65 (65 ksi)
L24	43.000-37.750	5.250	4.75	12	35.9422	36.9400	0.5375	2.1500	A572-65 (65 ksi)
L25	37.750-37.500	5.000	0.00	12	35.4122	36.3625	0.6000	2.4000	A572-65 (65 ksi)
L26	37.500-32.500	5.000	0.00	12	36.3625	37.3129	0.5875	2.3500	A572-65 (65 ksi)
L27	32.500-27.500	5.000	0.00	12	37.3129	38.2632	0.5875	2.3500	A572-65 (65 ksi)
L28	27.500-22.500	5.000	0.00	12	38.2632	39.2135	0.5750	2.3000	A572-65 (65 ksi)
L29	22.500-17.500	5.000	0.00	12	39.2135	40.1639	0.5750	2.3000	A572-65 (65 ksi)
L30	17.500-12.500	5.000	0.00	12	40.1639	41.1142	0.5687	2.2750	A572-65 (65 ksi)
L31	12.500-7.500	5.000	0.00	12	41.1142	42.0645	0.5625	2.2500	A572-65 (65 ksi)
L32	7.500-2.500	5.000	0.00	12	42.0645	43.0148	0.5625	2.2500	A572-65 (65 ksi)
L33	2.500-0.000	2.500		12	43.0148	43.4900	0.5563	2.2250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
L2	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
L3	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
L4	10.7500	6.2381	87.0149	3.7348	5.3750	16.1888	174.0299	3.1172	0.0000	0
	22.0000	12.8826	766.1900	7.7120	11.0000	69.6536	1532.3799	6.4375	0.0000	0
L5	22.6879	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.6714	18.2735	1201.8753	8.1266	11.8881	101.0990	2435.3252	8.9937	5.4806	21.922
L6	23.6714	18.2735	1201.8753	8.1266	11.8881	101.0990	2435.3252	8.9937	5.4806	21.922
	24.6549	19.0383	1359.1746	8.4667	12.3802	109.7862	2754.0563	9.3700	5.7352	22.941
L7	24.6549	19.0383	1359.1746	8.4667	12.3802	109.7862	2754.0563	9.3700	5.7352	22.941
	25.6384	19.8030	1529.6327	8.8068	12.8723	118.8313	3099.4505	9.7464	5.9898	23.959
L8	25.6384	19.8030	1529.6327	8.8068	12.8723	118.8313	3099.4505	9.7464	5.9898	23.959
	26.6219	20.5678	1713.7779	9.1469	13.3644	128.2346	3472.5787	10.1228	6.2444	24.978
L9	26.6219	20.5678	1713.7779	9.1469	13.3644	128.2346	3472.5787	10.1228	6.2444	24.978
	27.6054	21.3325	1912.1390	9.4870	13.8565	137.9958	3874.5120	10.4992	6.4990	25.996
L10	27.6054	21.3325	1912.1390	9.4870	13.8565	137.9958	3874.5120	10.4992	6.4990	25.996
	28.5890	22.0972	2125.2444	9.8271	14.3486	148.1151	4306.3213	10.8756	6.7536	27.014
L11	28.5890	22.0972	2125.2444	9.8271	14.3486	148.1151	4306.3213	10.8756	6.7536	27.014
	29.3266	22.6708	2295.0674	10.0822	14.7177	155.9395	4650.4288	11.1579	6.9446	27.778
L12	29.2340	46.0420	4574.5492	9.9882	14.7177	310.8201	9269.2769	22.6605	6.2411	12.178
	29.2832	46.1204	4597.9536	10.0052	14.7423	311.8889	9316.7006	22.6990	6.2538	12.202
L13	29.2876	45.0156	4491.8302	10.0097	14.7423	304.6903	9101.6657	22.1553	6.2873	12.575
	30.2711	46.5451	4965.4213	10.3498	15.2344	325.9352	10061.289 7	22.9081	6.5419	13.084
L14	30.2711	46.5451	4965.4213	10.3498	15.2344	325.9352	10061.289 7	22.9081	6.5419	13.084
	31.2546	48.0746	5471.1829	10.6899	15.7265	347.8962	11086.099 9	23.6609	6.7965	13.593
L15	30.8033	29.0152	3079.2979	10.3229	15.0984	203.9486	6239.4925	14.2804	6.9740	22.317
	31.0001	29.9237	3377.6754	10.6461	15.5661	216.9899	6844.0861	14.7275	7.2160	23.091
L16	31.0001	29.9237	3377.6754	10.6461	15.5661	216.9899	6844.0861	14.7275	7.2160	23.091
	31.9839	30.8799	3711.9459	10.9863	16.0583	231.1542	7521.4087	15.1981	7.4707	23.906
L17	31.9839	30.8799	3711.9459	10.9863	16.0583	231.1542	7521.4087	15.1981	7.4707	23.906
	32.1315	31.0233	3763.9120	11.0374	16.1321	233.3175	7626.7062	15.2687	7.5089	24.028
L18	32.0389	56.5969	6750.2010	10.9434	16.1321	418.4317	13677.737 4	27.8553	6.8054	11.835
	32.0881	56.6849	6781.7275	10.9604	16.1568	419.7455	13741.618 4	27.8986	6.8181	11.858
L19	32.0881	56.6849	6781.7275	10.9604	16.1568	419.7455	13741.618 4	27.8986	6.8181	11.858
	33.0719	58.4444	7433.0435	11.3006	16.6490	446.4554	15061.361 2	28.7645	7.0728	12.3
L20	33.0763	57.1965	7280.0974	11.3051	16.6490	437.2689	14751.451 0	28.1504	7.1063	12.633
	34.0602	58.9177	7957.3246	11.6453	17.1413	464.2201	16123.696 9	28.9975	7.3610	13.086
L21	34.0646	57.6306	7789.4682	11.6498	17.1413	454.4276	15783.574 3	28.3640	7.3945	13.444
	35.0484	59.3136	8492.0204	11.9900	17.6335	481.5836	17207.135 7	29.1923	7.6491	13.908
L22	35.0506	58.6505	8400.2213	11.9922	17.6335	476.3777	17021.125 7	28.8660	7.6659	14.098
	36.0344	60.3144	9135.6164	12.3324	18.1258	504.0120	18511.235 7	29.6849	7.9206	14.567
L23	36.0366	59.6319	9035.5256	12.3347	18.1258	498.4900	18308.424 5	29.3490	7.9373	14.767
	37.0205	61.2766	9803.9776	12.6749	18.6180	526.5846	19865.516 6	30.1585	8.1920	15.241
L24	37.0205	61.2766	9803.9776	12.6749	18.6180	526.5846	19865.516 6	30.1585	8.1920	15.241
	38.0535	63.0036	10656.483 6	13.0321	19.1349	556.9129	21592.924 9	31.0085	8.4594	15.738
L25	37.3844	67.2572	10403.700	12.4628	18.3435	567.1593	21080.718	33.1019	7.8825	13.137

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
			9				5			
	37.4336	69.0932	11279.1950	12.8030	18.8358	598.8170	22854.7070	34.0056	8.1372	13.562
L26	37.4380	67.6774	11055.7966	12.8075	18.8358	586.9567	22402.0413	33.3088	8.1707	13.908
	38.4219	69.4752	11960.4667	13.1477	19.3281	618.8135	24235.1482	34.1936	8.4253	14.341
L27	38.4219	69.4752	11960.4667	13.1477	19.3281	618.8135	24235.1482	34.1936	8.4253	14.341
	39.4057	71.2730	12913.1891	13.4879	19.8203	651.5122	26165.6220	35.0784	8.6800	14.775
L28	39.4101	69.7797	12651.0241	13.4924	19.8203	638.2851	25634.4046	34.3434	8.7135	15.154
	40.3940	71.5392	13632.3653	13.8326	20.3126	671.1284	27622.8681	35.2094	8.9682	15.597
L29	40.3940	71.5392	13632.3653	13.8326	20.3126	671.1284	27622.8681	35.2094	8.9682	15.597
	41.3778	73.2988	14663.1865	14.1728	20.8049	704.7957	29711.5912	36.0754	9.2229	16.04
L30	41.3800	72.5135	14510.6744	14.1750	20.8049	697.4651	29402.5603	35.6889	9.2397	16.246
	42.3639	74.2539	15580.7717	14.5153	21.2971	731.5897	31570.8676	36.5455	9.4944	16.693
L31	42.3661	73.4492	15416.6816	14.5175	21.2971	723.8849	31238.3765	36.1495	9.5111	16.909
	43.3500	75.1705	16526.1495	14.8577	21.7894	758.4485	33486.4594	36.9966	9.7658	17.361
L32	43.3500	75.1705	16526.1495	14.8577	21.7894	758.4485	33486.4594	36.9966	9.7658	17.361
	44.3338	76.8918	17687.6089	15.1979	22.2817	793.8183	35839.8910	37.8438	10.0205	17.814
L33	44.3360	76.0486	17498.8064	15.2002	22.2817	785.3448	35457.3259	37.4288	10.0372	18.044
	44.8279	76.8997	18092.9055	15.3703	22.5278	803.1361	36661.1318	37.8477	10.1646	18.273

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 133.500-128.500				1	1	1			
L2 128.500-123.500				1	1	1			
L3 123.500-121.500				1	1	1			
L4 121.500-119.000				1	1	1			
L5 119.000-114.000				1	1	1			
L6 114.000-109.000				1	1	1			
L7 109.000-104.000				1	1	1			
L8 104.000-99.000				1	1	1			
L9 99.000-94.000				1	1	1			
L10 94.000-89.000				1	1	1			
L11 89.000-85.250				1	1	1			
L12 85.250-85.000				1	1	0.925525			
L13 85.000-80.000				1	1	0.93351			
L14 80.000-75.000				1	1	0.929978			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L15 75.000-74.000				1	1	1			
L16 74.000-69.000				1	1	1			
L17 69.000-68.250				1	1	1			
L18 68.250-68.000				1	1	0.947405			
L19 68.000-63.000				1	1	0.935245			
L20 63.000-58.000				1	1	0.943961			
L21 58.000-53.000				1	1	0.953783			
L22 53.000-48.000				1	1	0.953811			
L23 48.000-43.000				1	1	0.954438			
L24 43.000-37.750				1	1	0.953439			
L25 37.750-37.500				1	1	0.956495			
L26 37.500-32.500				1	1	0.967753			
L27 32.500-27.500				1	1	0.959443			
L28 27.500-22.500				1	1	0.971913			
L29 22.500-17.500				1	1	0.964238			
L30 17.500-12.500				1	1	0.967289			
L31 12.500-7.500				1	1	0.970759			
L32 7.500-2.500				1	1	0.963952			
L33 2.500-0.000				1	1	0.971314			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
**********										
MP3-05 Reinforcement	A	No	Surface Af (CaAa)	70.500 - 0.500	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05 Reinforcement	C	No	Surface Af (CaAa)	70.500 - 0.500	1	1	0.250 0.250	5.3300	14.8400	0.00
MP3-05 Reinforcement	C	No	Surface Af (CaAa)	70.500 - 0.500	1	1	-0.500 -0.500	5.3300	14.8400	0.00
MP3-05 Reinforcement	B	No	Surface Af (CaAa)	70.500 - 0.500	1	1	-0.250 -0.250	5.3300	14.8400	0.00
MP3-08.5 Reinforcement	A	No	Surface Af (CaAa)	87.000 - 77.000	1	1	0.000 0.000	3.8420	13.2900	0.00
MP3-08.5 Reinforcement	C	No	Surface Af (CaAa)	87.000 - 77.000	1	1	0.250 0.250	3.8420	13.2900	0.00
MP3-08.5 Reinforcement	C	No	Surface Af (CaAa)	87.000 - 77.000	1	1	-0.500 -0.500	3.8420	13.2900	0.00
MP3-08.5 Reinforcement	B	No	Surface Af (CaAa)	87.000 - 77.000	1	1	-0.250 -0.250	3.8420	13.2900	0.00

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LCF114-50J(1-1/4)	B	No	No	Inside Pole	131.000 - 0.000	6	No Ice	0.000	0.70
							1/2" Ice	0.000	0.70
							1" Ice	0.000	0.70
							2" Ice	0.000	0.70
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	131.000 - 0.000	2	No Ice	0.000	0.58
							1/2" Ice	0.000	0.58
							1" Ice	0.000	0.58
							2" Ice	0.000	0.58
FB-L98B-002-50000(3/8)	B	No	No	Inside Pole	131.000 - 0.000	1	No Ice	0.000	0.06
							1/2" Ice	0.000	0.06
							1" Ice	0.000	0.06
							2" Ice	0.000	0.06
FB-L98B-002-50000(3/8)	B	No	No	Inside Pole	131.000 - 0.000	1	No Ice	0.000	0.06
							1/2" Ice	0.000	0.06
							1" Ice	0.000	0.06
							2" Ice	0.000	0.06
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	131.000 - 0.000	2	No Ice	0.000	0.58
							1/2" Ice	0.000	0.58
							1" Ice	0.000	0.58
							2" Ice	0.000	0.58
2" (Nominal) Conduit	B	No	No	Inside Pole	131.000 - 0.000	1	No Ice	0.000	0.72
							1/2" Ice	0.000	0.72
							1" Ice	0.000	0.72
							2" Ice	0.000	0.72
**********									
HB158-1-08U8-S8F18(1-5/8)	C	No	No	Inside Pole	119.000 - 0.000	3	No Ice	0.000	1.70
							1/2" Ice	0.000	1.70
							1" Ice	0.000	1.70
							2" Ice	0.000	1.70
LDF5-50A(7/8)	C	No	No	Inside Pole	119.000 - 0.000	1	No Ice	0.000	0.33
							1/2" Ice	0.000	0.33
							1" Ice	0.000	0.33
							2" Ice	0.000	0.33
*** 101 P ***									
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	101.000 - 0.000	1	No Ice	0.000	1.07
							1/2" Ice	0.000	1.07
							1" Ice	0.000	1.07
							2" Ice	0.000	1.07
LDF6-50A(1-1/4)	C	No	No	Inside Pole	101.000 - 0.000	6	No Ice	0.000	0.60
							1/2" Ice	0.000	0.60
							1" Ice	0.000	0.60
							2" Ice	0.000	0.60
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	101.000 - 0.000	3	No Ice	0.000	2.40
							1/2" Ice	0.000	2.40
							1" Ice	0.000	2.40
							2" Ice	0.000	2.40
**********									
CU12PSM9P6XXX (1-1/2)	A	No	No	Inside Pole	95.000 - 0.000	1	No Ice	0.000	2.35
							1/2" Ice	0.000	2.35
							1" Ice	0.000	2.35
							2" Ice	0.000	2.35
**********									
LDF4-50A(1/2)	C	No	No	Inside Pole	60.000 - 0.000	1	No Ice	0.000	0.15

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1/2" Ice	0.000	0.15
							1" Ice	0.000	0.15
							2" Ice	0.000	0.15
**********									
**									
LDF4-50A(1/2)	B	No	No	Inside Pole	50.000 - 0.000	1	No Ice	0.000	0.15
							1/2" Ice	0.000	0.15
							1" Ice	0.000	0.15
							2" Ice	0.000	0.15
**********									
**********									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	133.500-128.500	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	0.00
L2	128.500-123.500	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	0.00
L3	123.500-121.500	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	121.500-119.000	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	0.00
L5	119.000-114.000	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	0.03
L6	114.000-109.000	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	0.03
L7	109.000-104.000	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	0.03
L8	104.000-99.000	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	0.05
L9	99.000-94.000	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	0.09
L10	94.000-89.000	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.09
L11	89.000-85.250	A	0.000	0.000	1.121	0.000	0.01
		B	0.000	0.000	1.121	0.000	0.03
		C	0.000	0.000	2.241	0.000	0.06
L12	85.250-85.000	A	0.000	0.000	0.160	0.000	0.00
		B	0.000	0.000	0.160	0.000	0.00
		C	0.000	0.000	0.320	0.000	0.00
L13	85.000-80.000	A	0.000	0.000	3.202	0.000	0.01
		B	0.000	0.000	3.202	0.000	0.04
		C	0.000	0.000	6.403	0.000	0.09
L14	80.000-75.000	A	0.000	0.000	1.921	0.000	0.01
		B	0.000	0.000	1.921	0.000	0.04
		C	0.000	0.000	3.842	0.000	0.09
L15	75.000-74.000	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	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L16	74.000-69.000	A	0.000	0.000	1.333	0.000	0.01
		B	0.000	0.000	1.333	0.000	0.04
		C	0.000	0.000	2.665	0.000	0.09
L17	69.000-68.250	A	0.000	0.000	0.666	0.000	0.00
		B	0.000	0.000	0.666	0.000	0.01
		C	0.000	0.000	1.333	0.000	0.01
L18	68.250-68.000	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	0.444	0.000	0.00
L19	68.000-63.000	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L20	63.000-58.000	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L21	58.000-53.000	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L22	53.000-48.000	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L23	48.000-43.000	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L24	43.000-37.750	A	0.000	0.000	4.664	0.000	0.01
		B	0.000	0.000	4.664	0.000	0.04
		C	0.000	0.000	9.328	0.000	0.09
L25	37.750-37.500	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	0.444	0.000	0.00
L26	37.500-32.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L27	32.500-27.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L28	27.500-22.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L29	22.500-17.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L30	17.500-12.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L31	12.500-7.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L32	7.500-2.500	A	0.000	0.000	4.442	0.000	0.01
		B	0.000	0.000	4.442	0.000	0.04
		C	0.000	0.000	8.883	0.000	0.09
L33	2.500-0.000	A	0.000	0.000	1.777	0.000	0.01
		B	0.000	0.000	1.777	0.000	0.02
		C	0.000	0.000	3.553	0.000	0.04

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	133.500-128.500	A	1.463	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	0.00
L2	128.500-123.500	A	1.458	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	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L3	123.500-121.500	A	1.454	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	121.500-119.000	A	1.451	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	0.00
L5	119.000-114.000	A	1.446	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	0.03
L6	114.000-109.000	A	1.440	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	0.03
L7	109.000-104.000	A	1.433	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	0.03
L8	104.000-99.000	A	1.427	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	0.05
L9	99.000-94.000	A	1.419	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	0.09
L10	94.000-89.000	A	1.412	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.09
L11	89.000-85.250	A	1.405	0.000	0.000	1.409	0.000	0.03
		B		0.000	0.000	1.409	0.000	0.05
		C		0.000	0.000	2.818	0.000	0.10
L12	85.250-85.000	A	1.402	0.000	0.000	0.201	0.000	0.00
		B		0.000	0.000	0.201	0.000	0.00
		C		0.000	0.000	0.402	0.000	0.01
L13	85.000-80.000	A	1.397	0.000	0.000	4.021	0.000	0.06
		B		0.000	0.000	4.021	0.000	0.09
		C		0.000	0.000	8.043	0.000	0.19
L14	80.000-75.000	A	1.389	0.000	0.000	2.410	0.000	0.04
		B		0.000	0.000	2.410	0.000	0.07
		C		0.000	0.000	4.820	0.000	0.15
L15	75.000-74.000	A	1.383	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	0.02
L16	74.000-69.000	A	1.377	0.000	0.000	1.746	0.000	0.03
		B		0.000	0.000	1.746	0.000	0.05
		C		0.000	0.000	3.491	0.000	0.12
L17	69.000-68.250	A	1.372	0.000	0.000	0.872	0.000	0.01
		B		0.000	0.000	0.872	0.000	0.01
		C		0.000	0.000	1.744	0.000	0.03
L18	68.250-68.000	A	1.371	0.000	0.000	0.291	0.000	0.00
		B		0.000	0.000	0.291	0.000	0.00
		C		0.000	0.000	0.581	0.000	0.01
L19	68.000-63.000	A	1.365	0.000	0.000	5.807	0.000	0.06
		B		0.000	0.000	5.807	0.000	0.09
		C		0.000	0.000	11.614	0.000	0.19
L20	63.000-58.000	A	1.355	0.000	0.000	5.796	0.000	0.06
		B		0.000	0.000	5.796	0.000	0.09
		C		0.000	0.000	11.593	0.000	0.19
L21	58.000-53.000	A	1.343	0.000	0.000	5.785	0.000	0.06
		B		0.000	0.000	5.785	0.000	0.09
		C		0.000	0.000	11.569	0.000	0.19
L22	53.000-48.000	A	1.330	0.000	0.000	5.772	0.000	0.06
		B		0.000	0.000	5.772	0.000	0.09
		C		0.000	0.000	11.544	0.000	0.19
L23	48.000-43.000	A	1.317	0.000	0.000	5.758	0.000	0.06
		B		0.000	0.000	5.758	0.000	0.09
		C		0.000	0.000	11.517	0.000	0.19
L24	43.000-37.750	A	1.301	0.000	0.000	6.030	0.000	0.06
		B		0.000	0.000	6.030	0.000	0.09
		C		0.000	0.000	12.059	0.000	0.20
L25	37.750-37.500	A	1.292	0.000	0.000	0.287	0.000	0.00
		B		0.000	0.000	0.287	0.000	0.00
		C		0.000	0.000	0.574	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L26	37.500-32.500	A	1.282	0.000	0.000	5.724	0.000	0.06
		B		0.000	0.000	5.724	0.000	0.09
		C		0.000	0.000	11.448	0.000	0.19
L27	32.500-27.500	A	1.263	0.000	0.000	5.705	0.000	0.06
		B		0.000	0.000	5.705	0.000	0.09
		C		0.000	0.000	11.409	0.000	0.18
L28	27.500-22.500	A	1.240	0.000	0.000	5.682	0.000	0.06
		B		0.000	0.000	5.682	0.000	0.08
		C		0.000	0.000	11.363	0.000	0.18
L29	22.500-17.500	A	1.213	0.000	0.000	5.654	0.000	0.06
		B		0.000	0.000	5.654	0.000	0.08
		C		0.000	0.000	11.309	0.000	0.18
L30	17.500-12.500	A	1.178	0.000	0.000	5.620	0.000	0.06
		B		0.000	0.000	5.620	0.000	0.08
		C		0.000	0.000	11.240	0.000	0.18
L31	12.500-7.500	A	1.131	0.000	0.000	5.573	0.000	0.05
		B		0.000	0.000	5.573	0.000	0.08
		C		0.000	0.000	11.146	0.000	0.17
L32	7.500-2.500	A	1.056	0.000	0.000	5.497	0.000	0.05
		B		0.000	0.000	5.497	0.000	0.08
		C		0.000	0.000	10.994	0.000	0.16
L33	2.500-0.000	A	0.919	0.000	0.000	2.144	0.000	0.02
		B		0.000	0.000	2.144	0.000	0.03
		C		0.000	0.000	4.288	0.000	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.500-128.500	0.0000	0.0000	0.0000	0.0000
L2	128.500-123.500	0.0000	0.0000	0.0000	0.0000
L3	123.500-121.500	0.0000	0.0000	0.0000	0.0000
L4	121.500-119.000	0.0000	0.0000	0.0000	0.0000
L5	119.000-114.000	0.0000	0.0000	0.0000	0.0000
L6	114.000-109.000	0.0000	0.0000	0.0000	0.0000
L7	109.000-104.000	0.0000	0.0000	0.0000	0.0000
L8	104.000-99.000	0.0000	0.0000	0.0000	0.0000
L9	99.000-94.000	0.0000	0.0000	0.0000	0.0000
L10	94.000-89.000	0.0000	0.0000	0.0000	0.0000
L11	89.000-85.250	-0.4429	-1.6529	-0.4150	-1.5489
L12	85.250-85.000	-0.6832	-2.5498	-0.6518	-2.4326
L13	85.000-80.000	-0.6894	-2.5727	-0.6578	-2.4550
L14	80.000-75.000	-0.5256	-1.9617	-0.4959	-1.8508
L15	75.000-74.000	0.0000	0.0000	0.0000	0.0000
L16	74.000-69.000	-0.4229	-1.5782	-0.4090	-1.5263
L17	69.000-68.250	-0.8293	-3.0950	-0.8132	-3.0348
L18	68.250-68.000	-0.8318	-3.1043	-0.8155	-3.0437
L19	68.000-63.000	-0.8395	-3.1329	-0.8232	-3.0720
L20	63.000-58.000	-0.8538	-3.1863	-0.8373	-3.1247
L21	58.000-53.000	-0.8677	-3.2384	-0.8510	-3.1758
L22	53.000-48.000	-0.8813	-3.2892	-0.8642	-3.2254
L23	48.000-43.000	-0.8946	-3.3388	-0.8771	-3.2734
L24	43.000-37.750	-0.9080	-3.3886	-0.8898	-3.3209
L25	37.750-37.500	-0.9068	-3.3843	-0.8888	-3.3172
L26	37.500-32.500	-0.9135	-3.4092	-0.8945	-3.3382
L27	32.500-27.500	-0.9261	-3.4561	-0.9061	-3.3817
L28	27.500-22.500	-0.9383	-3.5017	-0.9172	-3.4230
L29	22.500-17.500	-0.9503	-3.5464	-0.9277	-3.4621
L30	17.500-12.500	-0.9620	-3.5901	-0.9373	-3.4981
L31	12.500-7.500	-0.9734	-3.6328	-0.9457	-3.5295
L32	7.500-2.500	-0.9846	-3.6746	-0.9518	-3.5521
L33	2.500-0.000	-0.8819	-3.2911	-0.8401	-3.1352

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	26	MP3-08.5 Reinforcement	85.25 - 87.00	1.0000	1.0000
L11	27	MP3-08.5 Reinforcement	85.25 - 87.00	1.0000	1.0000
L11	28	MP3-08.5 Reinforcement	85.25 - 87.00	1.0000	1.0000
L11	29	MP3-08.5 Reinforcement	85.25 - 87.00	1.0000	1.0000
L12	26	MP3-08.5 Reinforcement	85.00 - 85.25	1.0000	1.0000
L12	27	MP3-08.5 Reinforcement	85.00 - 85.25	1.0000	1.0000
L12	28	MP3-08.5 Reinforcement	85.00 - 85.25	1.0000	1.0000
L12	29	MP3-08.5 Reinforcement	85.00 - 85.25	1.0000	1.0000
L13	26	MP3-08.5 Reinforcement	80.00 - 85.00	1.0000	1.0000
L13	27	MP3-08.5 Reinforcement	80.00 - 85.00	1.0000	1.0000
L13	28	MP3-08.5 Reinforcement	80.00 - 85.00	1.0000	1.0000
L13	29	MP3-08.5 Reinforcement	80.00 - 85.00	1.0000	1.0000
L14	26	MP3-08.5 Reinforcement	77.00 - 80.00	1.0000	1.0000
L14	27	MP3-08.5 Reinforcement	77.00 - 80.00	1.0000	1.0000
L14	28	MP3-08.5 Reinforcement	77.00 - 80.00	1.0000	1.0000
L14	29	MP3-08.5 Reinforcement	77.00 - 80.00	1.0000	1.0000
L16	22	MP3-05 Reinforcement	69.00 - 70.50	1.0000	1.0000
L16	23	MP3-05 Reinforcement	69.00 - 70.50	1.0000	1.0000
L16	24	MP3-05 Reinforcement	69.00 - 70.50	1.0000	1.0000
L16	25	MP3-05 Reinforcement	69.00 - 70.50	1.0000	1.0000
L17	22	MP3-05 Reinforcement	68.25 - 69.00	1.0000	1.0000
L17	23	MP3-05 Reinforcement	68.25 - 69.00	1.0000	1.0000
L17	24	MP3-05 Reinforcement	68.25 - 69.00	1.0000	1.0000
L17	25	MP3-05 Reinforcement	68.25 - 69.00	1.0000	1.0000
L18	22	MP3-05 Reinforcement	68.00 - 68.25	1.0000	1.0000
L18	23	MP3-05 Reinforcement	68.00 - 68.25	1.0000	1.0000
L18	24	MP3-05 Reinforcement	68.00 - 68.25	1.0000	1.0000
L18	25	MP3-05 Reinforcement	68.00 - 68.25	1.0000	1.0000
L19	22	MP3-05 Reinforcement	63.00 - 68.00	1.0000	1.0000
L19	23	MP3-05 Reinforcement	63.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	24	MP3-05 Reinforcement	68.00 63.00 - 68.00	1.0000	1.0000
L19	25	MP3-05 Reinforcement	63.00 - 68.00	1.0000	1.0000
L20	22	MP3-05 Reinforcement	58.00 - 63.00	1.0000	1.0000
L20	23	MP3-05 Reinforcement	58.00 - 63.00	1.0000	1.0000
L20	24	MP3-05 Reinforcement	58.00 - 63.00	1.0000	1.0000
L20	25	MP3-05 Reinforcement	58.00 - 63.00	1.0000	1.0000
L21	22	MP3-05 Reinforcement	53.00 - 58.00	1.0000	1.0000
L21	23	MP3-05 Reinforcement	53.00 - 58.00	1.0000	1.0000
L21	24	MP3-05 Reinforcement	53.00 - 58.00	1.0000	1.0000
L21	25	MP3-05 Reinforcement	53.00 - 58.00	1.0000	1.0000
L22	22	MP3-05 Reinforcement	48.00 - 53.00	1.0000	1.0000
L22	23	MP3-05 Reinforcement	48.00 - 53.00	1.0000	1.0000
L22	24	MP3-05 Reinforcement	48.00 - 53.00	1.0000	1.0000
L22	25	MP3-05 Reinforcement	48.00 - 53.00	1.0000	1.0000
L23	22	MP3-05 Reinforcement	43.00 - 48.00	1.0000	1.0000
L23	23	MP3-05 Reinforcement	43.00 - 48.00	1.0000	1.0000
L23	24	MP3-05 Reinforcement	43.00 - 48.00	1.0000	1.0000
L23	25	MP3-05 Reinforcement	43.00 - 48.00	1.0000	1.0000
L24	22	MP3-05 Reinforcement	37.75 - 43.00	1.0000	1.0000
L24	23	MP3-05 Reinforcement	37.75 - 43.00	1.0000	1.0000
L24	24	MP3-05 Reinforcement	37.75 - 43.00	1.0000	1.0000
L24	25	MP3-05 Reinforcement	37.75 - 43.00	1.0000	1.0000
L25	22	MP3-05 Reinforcement	37.50 - 37.75	1.0000	1.0000
L25	23	MP3-05 Reinforcement	37.50 - 37.75	1.0000	1.0000
L25	24	MP3-05 Reinforcement	37.50 - 37.75	1.0000	1.0000
L25	25	MP3-05 Reinforcement	37.50 - 37.75	1.0000	1.0000
L26	22	MP3-05 Reinforcement	32.50 - 37.50	1.0000	1.0000
L26	23	MP3-05 Reinforcement	32.50 - 37.50	1.0000	1.0000
L26	24	MP3-05 Reinforcement	32.50 - 37.50	1.0000	1.0000
L26	25	MP3-05 Reinforcement	32.50 - 37.50	1.0000	1.0000
L27	22	MP3-05 Reinforcement	27.50 - 32.50	1.0000	1.0000
L27	23	MP3-05 Reinforcement	27.50 - 32.50	1.0000	1.0000
L27	24	MP3-05 Reinforcement	27.50 - 32.50	1.0000	1.0000
L27	25	MP3-05 Reinforcement	27.50 - 32.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	22	MP3-05 Reinforcement	22.50 - 27.50	1.0000	1.0000
L28	23	MP3-05 Reinforcement	22.50 - 27.50	1.0000	1.0000
L28	24	MP3-05 Reinforcement	22.50 - 27.50	1.0000	1.0000
L28	25	MP3-05 Reinforcement	22.50 - 27.50	1.0000	1.0000
L29	22	MP3-05 Reinforcement	17.50 - 22.50	1.0000	1.0000
L29	23	MP3-05 Reinforcement	17.50 - 22.50	1.0000	1.0000
L29	24	MP3-05 Reinforcement	17.50 - 22.50	1.0000	1.0000
L29	25	MP3-05 Reinforcement	17.50 - 22.50	1.0000	1.0000
L30	22	MP3-05 Reinforcement	12.50 - 17.50	1.0000	1.0000
L30	23	MP3-05 Reinforcement	12.50 - 17.50	1.0000	1.0000
L30	24	MP3-05 Reinforcement	12.50 - 17.50	1.0000	1.0000
L30	25	MP3-05 Reinforcement	12.50 - 17.50	1.0000	1.0000
L31	22	MP3-05 Reinforcement	7.50 - 12.50	1.0000	1.0000
L31	23	MP3-05 Reinforcement	7.50 - 12.50	1.0000	1.0000
L31	24	MP3-05 Reinforcement	7.50 - 12.50	1.0000	1.0000
L31	25	MP3-05 Reinforcement	7.50 - 12.50	1.0000	1.0000
L32	22	MP3-05 Reinforcement	2.50 - 7.50	1.0000	1.0000
L32	23	MP3-05 Reinforcement	2.50 - 7.50	1.0000	1.0000
L32	24	MP3-05 Reinforcement	2.50 - 7.50	1.0000	1.0000
L32	25	MP3-05 Reinforcement	2.50 - 7.50	1.0000	1.0000
L33	22	MP3-05 Reinforcement	0.50 - 2.50	1.0000	1.0000
L33	23	MP3-05 Reinforcement	0.50 - 2.50	1.0000	1.0000
L33	24	MP3-05 Reinforcement	0.50 - 2.50	1.0000	1.0000
L33	25	MP3-05 Reinforcement	0.50 - 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
L11	26	MP3-08.5 Reinforcement	85.25 - 87.00	Auto	0.0000
L11	27	MP3-08.5 Reinforcement	85.25 - 87.00	Auto	0.0000
L11	28	MP3-08.5 Reinforcement	85.25 - 87.00	Auto	0.0000
L11	29	MP3-08.5 Reinforcement	85.25 - 87.00	Auto	0.0000
L12	26	MP3-08.5 Reinforcement	85.00 - 85.25	Auto	0.0000
L12	27	MP3-08.5 Reinforcement	85.00 - 85.25	Auto	0.0000
L12	28	MP3-08.5 Reinforcement	85.00 - 85.25	Auto	0.0000
L12	29	MP3-08.5 Reinforcement	85.00 - 85.25	Auto	0.0000
L13	26	MP3-08.5 Reinforcement	80.00 - 85.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L13	27	MP3-08.5 Reinforcement	80.00 - 85.00	Auto	0.0000
L13	28	MP3-08.5 Reinforcement	80.00 - 85.00	Auto	0.0000
L13	29	MP3-08.5 Reinforcement	80.00 - 85.00	Auto	0.0000
L14	26	MP3-08.5 Reinforcement	77.00 - 80.00	Auto	0.0000
L14	27	MP3-08.5 Reinforcement	77.00 - 80.00	Auto	0.0000
L14	28	MP3-08.5 Reinforcement	77.00 - 80.00	Auto	0.0000
L14	29	MP3-08.5 Reinforcement	77.00 - 80.00	Auto	0.0000
L16	22	MP3-05 Reinforcement	69.00 - 70.50	Auto	0.0000
L16	23	MP3-05 Reinforcement	69.00 - 70.50	Auto	0.0000
L16	24	MP3-05 Reinforcement	69.00 - 70.50	Auto	0.0000
L16	25	MP3-05 Reinforcement	69.00 - 70.50	Auto	0.0000
L17	22	MP3-05 Reinforcement	68.25 - 69.00	Auto	0.0000
L17	23	MP3-05 Reinforcement	68.25 - 69.00	Auto	0.0000
L17	24	MP3-05 Reinforcement	68.25 - 69.00	Auto	0.0000
L17	25	MP3-05 Reinforcement	68.25 - 69.00	Auto	0.0000
L18	22	MP3-05 Reinforcement	68.00 - 68.25	Auto	0.0000
L18	23	MP3-05 Reinforcement	68.00 - 68.25	Auto	0.0000
L18	24	MP3-05 Reinforcement	68.00 - 68.25	Auto	0.0000
L18	25	MP3-05 Reinforcement	68.00 - 68.25	Auto	0.0000
L19	22	MP3-05 Reinforcement	63.00 - 68.00	Auto	0.0000
L19	23	MP3-05 Reinforcement	63.00 - 68.00	Auto	0.0000
L19	24	MP3-05 Reinforcement	63.00 - 68.00	Auto	0.0000
L19	25	MP3-05 Reinforcement	63.00 - 68.00	Auto	0.0000
L20	22	MP3-05 Reinforcement	58.00 - 63.00	Auto	0.0000
L20	23	MP3-05 Reinforcement	58.00 - 63.00	Auto	0.0000
L20	24	MP3-05 Reinforcement	58.00 - 63.00	Auto	0.0000
L20	25	MP3-05 Reinforcement	58.00 - 63.00	Auto	0.0000
L21	22	MP3-05 Reinforcement	53.00 - 58.00	Auto	0.0000
L21	23	MP3-05 Reinforcement	53.00 - 58.00	Auto	0.0000
L21	24	MP3-05 Reinforcement	53.00 - 58.00	Auto	0.0000
L21	25	MP3-05 Reinforcement	53.00 - 58.00	Auto	0.0000
L22	22	MP3-05 Reinforcement	48.00 - 53.00	Auto	0.0000
L22	23	MP3-05 Reinforcement	48.00 - 53.00	Auto	0.0000
L22	24	MP3-05 Reinforcement	48.00 - 53.00	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	25	MP3-05 Reinforcement	48.00 - 53.00	Auto	0.0000
L23	22	MP3-05 Reinforcement	43.00 - 48.00	Auto	0.0000
L23	23	MP3-05 Reinforcement	43.00 - 48.00	Auto	0.0000
L23	24	MP3-05 Reinforcement	43.00 - 48.00	Auto	0.0000
L23	25	MP3-05 Reinforcement	43.00 - 48.00	Auto	0.0000
L24	22	MP3-05 Reinforcement	37.75 - 43.00	Auto	0.0000
L24	23	MP3-05 Reinforcement	37.75 - 43.00	Auto	0.0000
L24	24	MP3-05 Reinforcement	37.75 - 43.00	Auto	0.0000
L24	25	MP3-05 Reinforcement	37.75 - 43.00	Auto	0.0000
L25	22	MP3-05 Reinforcement	37.50 - 37.75	Auto	0.0000
L25	23	MP3-05 Reinforcement	37.50 - 37.75	Auto	0.0000
L25	24	MP3-05 Reinforcement	37.50 - 37.75	Auto	0.0000
L25	25	MP3-05 Reinforcement	37.50 - 37.75	Auto	0.0000
L26	22	MP3-05 Reinforcement	32.50 - 37.50	Auto	0.0000
L26	23	MP3-05 Reinforcement	32.50 - 37.50	Auto	0.0000
L26	24	MP3-05 Reinforcement	32.50 - 37.50	Auto	0.0000
L26	25	MP3-05 Reinforcement	32.50 - 37.50	Auto	0.0000
L27	22	MP3-05 Reinforcement	27.50 - 32.50	Auto	0.0000
L27	23	MP3-05 Reinforcement	27.50 - 32.50	Auto	0.0000
L27	24	MP3-05 Reinforcement	27.50 - 32.50	Auto	0.0000
L27	25	MP3-05 Reinforcement	27.50 - 32.50	Auto	0.0000
L28	22	MP3-05 Reinforcement	22.50 - 27.50	Auto	0.0000
L28	23	MP3-05 Reinforcement	22.50 - 27.50	Auto	0.0000
L28	24	MP3-05 Reinforcement	22.50 - 27.50	Auto	0.0000
L28	25	MP3-05 Reinforcement	22.50 - 27.50	Auto	0.0000
L29	22	MP3-05 Reinforcement	17.50 - 22.50	Auto	0.0000
L29	23	MP3-05 Reinforcement	17.50 - 22.50	Auto	0.0000
L29	24	MP3-05 Reinforcement	17.50 - 22.50	Auto	0.0000
L29	25	MP3-05 Reinforcement	17.50 - 22.50	Auto	0.0000
L30	22	MP3-05 Reinforcement	12.50 - 17.50	Auto	0.0000
L30	23	MP3-05 Reinforcement	12.50 - 17.50	Auto	0.0000
L30	24	MP3-05 Reinforcement	12.50 - 17.50	Auto	0.0000
L30	25	MP3-05 Reinforcement	12.50 - 17.50	Auto	0.0000
L31	22	MP3-05 Reinforcement	7.50 - 12.50	Auto	0.0000
L31	23	MP3-05 Reinforcement	7.50 - 12.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L31	24	MP3-05 Reinforcement	7.50 - 12.50	Auto	0.0000
L31	25	MP3-05 Reinforcement	7.50 - 12.50	Auto	0.0000
L32	22	MP3-05 Reinforcement	2.50 - 7.50	Auto	0.0000
L32	23	MP3-05 Reinforcement	2.50 - 7.50	Auto	0.0000
L32	24	MP3-05 Reinforcement	2.50 - 7.50	Auto	0.0000
L32	25	MP3-05 Reinforcement	2.50 - 7.50	Auto	0.0000
L33	22	MP3-05 Reinforcement	0.50 - 2.50	Auto	0.0000
L33	23	MP3-05 Reinforcement	0.50 - 2.50	Auto	0.0000
L33	24	MP3-05 Reinforcement	0.50 - 2.50	Auto	0.0000
L33	25	MP3-05 Reinforcement	0.50 - 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		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*** 131 ***									
P65-15-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.930 4.330 4.730 5.590	2.800 3.170 3.550 4.360	0.06 0.10 0.15 0.29
P65-15-XLH-RR w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.930 4.330 4.730 5.590	2.800 3.170 3.550 4.360	0.06 0.10 0.15 0.29
P65-15-XLH-RR w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.930 4.330 4.730 5.590	2.800 3.170 3.550 4.360	0.06 0.10 0.15 0.29
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.960 12.700 13.460 15.020	5.970 6.630 7.300 8.690	0.11 0.20 0.30 0.53
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.960 12.700 13.460 15.020	5.970 6.630 7.300 8.690	0.11 0.20 0.30 0.53
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.000 13.760 15.340	6.050 6.710 7.390 8.790	0.09 0.18 0.27 0.51
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.000 13.760 15.340	6.050 6.710 7.390 8.790	0.09 0.18 0.27 0.51
OPA65R-BU4D w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.100 8.650 9.210 10.390	4.030 4.500 4.980 5.980	0.08 0.14 0.21 0.38

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DMP65R-BU4D w/ Mount Pipe	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.530 8.040 8.570 9.680	3.790 4.230 4.680 5.630	0.09 0.16 0.22 0.39
TT19-08BP111-001	A	From Leg	4.000 0.00 0.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.545 0.641 0.743 0.971	0.442 0.530 0.626 0.840	0.02 0.02 0.03 0.05
TT19-08BP111-001	B	From Leg	4.000 0.00 0.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.545 0.641 0.743 0.971	0.442 0.530 0.626 0.840	0.02 0.02 0.03 0.05
TT19-08BP111-001	C	From Leg	4.000 0.00 0.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.545 0.641 0.743 0.971	0.442 0.530 0.626 0.840	0.02 0.02 0.03 0.05
(2) CM1007-DBPXBC-003	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.367 0.448 0.536 0.735	0.134 0.183 0.240 0.375	0.01 0.01 0.01 0.03
(2) CM1007-DBPXBC-003	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.367 0.448 0.536 0.735	0.134 0.183 0.240 0.375	0.01 0.01 0.01 0.03
(2) CM1007-DBPXBC-003	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.367 0.448 0.536 0.735	0.134 0.183 0.240 0.375	0.01 0.01 0.01 0.03
(2) 860 10025	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.142 0.196 0.259 0.408	0.121 0.173 0.231 0.376	0.00 0.00 0.01 0.01
(2) 860 10025	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.142 0.196 0.259 0.408	0.121 0.173 0.231 0.376	0.00 0.00 0.01 0.01
(2) 860 10025	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.142 0.196 0.259 0.408	0.121 0.173 0.231 0.376	0.00 0.00 0.01 0.01
RRUS 4449 B5/B12	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.07 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 8843 B2/B66A	A	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	B	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
RRUS 8843 B2/B66A	C	From Leg	4.000 0.00 1.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.07 0.09 0.11 0.16
DC6-48-60-18-8F	B	From Leg	4.000 0.00 0.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.02 0.04 0.07 0.13
DC6-48-60-18-8F	C	From Leg	4.000 0.00 0.00	0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.02 0.04 0.07 0.13
HRK12-3HD	C	None		0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.560 6.390 8.180 11.660	4.560 6.390 8.180 11.660	0.25 0.31 0.40 0.66
Platform Mount [LP 601-1]	C	None		0.0000	131.000	No Ice 1/2" Ice 1" Ice 2" Ice	28.500 31.690 34.870 41.230	28.500 31.690 34.870 41.230	1.12 1.68 2.28 3.65
*** 119 R ***									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.13 0.17 0.23 0.35
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.18 0.31 0.45 0.78

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.290 6.860 7.450 8.680	2.760 3.270 3.790 4.900	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.290 6.860 7.450 8.680	2.760 3.270 3.790 4.900	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.290 6.860 7.450 8.680	2.760 3.270 3.790 4.900	0.06 0.11 0.16 0.29
RADIO 4415 B66A_CCIV3	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	0.677 0.789 0.911 1.181	0.05 0.06 0.07 0.11
RADIO 4415 B66A_CCIV3	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	0.677 0.789 0.911 1.181	0.05 0.06 0.07 0.11
RADIO 4415 B66A_CCIV3	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	0.677 0.789 0.911 1.181	0.05 0.06 0.07 0.11
RADIO 4424 B25_TMOV1	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.10 0.12 0.14 0.20
RADIO 4424 B25_TMOV1	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.10 0.12 0.14 0.20
RADIO 4424 B25_TMOV1	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.052 2.231 2.417 2.811	1.610 1.772 1.941 2.301	0.10 0.12 0.14 0.20
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.00 2.00	0.0000	119.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.07 0.09 0.12 0.17
Platform Mount [LP 403-1]	C	None		0.0000	119.000	No Ice 1/2" Ice 1" Ice	18.940 23.310 27.740 36.770	18.940 23.310 27.740 36.770	1.50 1.90 2.37 3.53

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
**********									
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.322 2.527 2.739 3.185	2.238 2.441 2.651 3.093	0.06 0.08 0.11 0.17
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.322 2.527 2.739 3.185	2.238 2.441 2.651 3.093	0.06 0.08 0.11 0.17
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.322 2.527 2.739 3.185	2.238 2.441 2.651 3.093	0.06 0.08 0.11 0.17
TME-800MHz 2X50W RRH W/FILTER	A	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.06 0.09 0.11 0.17
TME-800MHz 2X50W RRH W/FILTER	B	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.06 0.09 0.11 0.17
TME-800MHz 2X50W RRH W/FILTER	C	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.06 0.09 0.11 0.17
Side Arm Mount [SO 102-3]	C	None		0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.180 4.750 5.900	3.600 4.180 4.750 5.900	0.07 0.11 0.14 0.20
2.375" OD x 6' Mount Pipe	A	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.03 0.04 0.05 0.09
2.375" OD x 6' Mount Pipe	B	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.03 0.04 0.05 0.09
2.375" OD x 6' Mount Pipe	C	From Leg	1.000 0.00 0.00	0.0000	117.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.03 0.04 0.05 0.09
**********									
Platform Mount [LP 403-1]	C	None		0.0000	111.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.940 23.310 27.740 36.770	18.940 23.310 27.740 36.770	1.50 1.90 2.37 3.53
*** 101 P ***									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE	B	From Leg	4.000	0.0000	101.000	No Ice	5.190	2.710	0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/ Mount Pipe			0.00 3.00			1/2" Ice 1" Ice 2" Ice	5.590 6.020 6.900	3.040 3.380 4.120	0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.190 5.590 6.020 6.900	2.710 3.040 3.380 4.120	0.13 0.17 0.23 0.35
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.19 0.31 0.46 0.79
AIR 32 B2A B66AA w/ Mount Pipe	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.760 4.120 4.480 5.240	3.150 3.490 3.840 4.580	0.19 0.25 0.32 0.48
AIR 32 B2A B66AA w/ Mount Pipe	B	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.760 4.120 4.480 5.240	3.150 3.490 3.840 4.580	0.19 0.25 0.32 0.48
AIR 32 B2A B66AA w/ Mount Pipe	C	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.760 4.120 4.480 5.240	3.150 3.490 3.840 4.580	0.19 0.25 0.32 0.48
(2) KRY 112 144/1	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.350 0.426 0.509 0.698	0.175 0.234 0.301 0.456	0.01 0.01 0.02 0.03
KRY 112 144/1	B	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.350 0.426 0.509 0.698	0.175 0.234 0.301 0.456	0.01 0.01 0.02 0.03
(2) RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.07 0.09 0.12 0.17
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.07 0.09 0.12 0.17
RRUS 4415 B25	A	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.04 0.06 0.07 0.11
RRUS 4415 B25	B	From Leg	4.000	0.0000	101.000	No Ice	1.644	0.679	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 3.00			1/2" Ice 1" Ice 2" Ice	1.804 1.972 2.329	0.791 0.913 1.183	0.06 0.07 0.11
RRUS 4415 B25	C	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.04 0.06 0.07 0.11
SDX1926Q-43	B	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.01 0.01 0.01 0.02
(2) SDX1926Q-43	C	From Leg	4.000 0.00 3.00	0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.241 0.306 0.379 0.547	0.101 0.144 0.195 0.318	0.01 0.01 0.01 0.02
Platform Mount [LP 715-1_KCKR]	C	None		0.0000	101.000	No Ice 1/2" Ice 1" Ice 2" Ice	57.990 64.470 71.360 86.460	57.990 64.470 71.360 86.460	2.05 3.30 4.69 7.90
*** 95 P ***									
MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.10 0.18 0.28 0.51
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.10 0.18 0.28 0.51
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.010 8.520 9.040 10.110	4.230 4.690 5.160 6.120	0.10 0.18 0.28 0.51
TA08025-B604	A	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.06 0.08 0.10 0.15
TA08025-B604	B	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.06 0.08 0.10 0.15
TA08025-B604	C	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	0.981 1.112 1.250 1.548	0.06 0.08 0.10 0.15
TA08025-B605	A	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.08 0.09 0.11 0.16
TA08025-B605	B	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.08 0.09 0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TA08025-B605	C	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.964 2.138 2.320 2.705	1.129 1.267 1.411 1.723	0.08 0.09 0.11 0.16
RDIDC-9181-PF-48	A	From Leg	4.000 0.00 -4.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.312 2.502 2.700 3.118	1.293 1.448 1.610 1.957	0.02 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.00 0.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.00 0.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.00 0.00	0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.03 0.04 0.06 0.12
Commscope MC-PK8-DSH	C	None		0.0000	95.000	No Ice 1/2" Ice 1" Ice 2" Ice	34.240 62.950 91.660 149.080	34.240 62.950 91.660 149.080	1.75 2.10 2.45 3.15
**********									
**********									
58532A	A	From Leg	1.000 0.00 1.00	0.0000	60.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.189 0.248 0.315 0.470	0.189 0.248 0.315 0.470	0.00 0.00 0.01 0.02
Side Arm Mount [SO 304-1]	A	From Leg	0.000 0.00 0.00	0.0000	60.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.310 0.500 0.730 1.290	0.880 1.260 1.670 2.580	0.02 0.03 0.05 0.09
*** 50 ***									
KS24019-L112A	A	From Leg	1.000 0.00 1.00	0.0000	50.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.100 0.180 0.260 0.420	0.100 0.180 0.260 0.420	0.01 0.01 0.01 0.01
Side Arm Mount [SO 701-1]	A	From Leg	0.500 0.00 0.00	0.0000	50.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.850 1.140 1.430 2.010	1.670 2.340 3.010 4.350	0.07 0.08 0.09 0.12
****** ***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	133.5 - 128.5	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-8.34	-0.79	0.02
			Max. Mx	8	-2.71	-17.27	-0.37
			Max. My	14	-2.69	-0.37	-17.54
			Max. Vy	8	5.60	-17.27	-0.37
			Max. Vx	2	-5.70	0.27	17.48
			Max. Torque	25			-0.76
L2	128.5 - 123.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.62	-0.81	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-2.91	-45.60	-0.83
			Max. My	14	-2.89	-0.84	-46.39
			Max. Vy	8	5.73	-45.60	-0.83
			Max. Vx	2	-5.84	0.72	46.33
			Max. Torque	25			-0.76
L3	123.5 - 121.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.73	-0.81	0.02
			Max. Mx	8	-3.00	-57.10	-1.01
			Max. My	14	-2.99	-1.03	-58.11
			Max. Vy	8	5.78	-57.10	-1.01
			Max. Vx	2	-5.89	0.90	58.05
			Max. Torque	25			-0.76
L4	121.5 - 119	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.93	-0.82	0.03
			Max. Mx	8	-3.13	-71.66	-1.24
			Max. My	14	-3.12	-1.26	-72.93
			Max. Vy	8	5.89	-71.66	-1.24
			Max. Vx	2	-5.99	1.13	72.87
			Max. Torque	25			-0.76
L5	119 - 114	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.95	-0.83	0.04
			Max. Mx	8	-7.58	-132.75	-1.70
			Max. My	14	-7.56	-1.74	-134.56
			Max. Vy	8	11.66	-132.75	-1.70
			Max. Vx	2	-11.77	1.59	134.51
			Max. Torque	3			-0.76
L6	114 - 109	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.81	-0.85	0.05
			Max. Mx	8	-9.71	-194.57	-2.16
			Max. My	14	-9.69	-2.23	-196.92
			Max. Vy	8	13.30	-194.57	-2.16
			Max. Vx	2	-13.41	2.06	196.87
			Max. Torque	3			-0.76
L7	109 - 104	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.52	-0.87	0.07
			Max. Mx	8	-10.19	-262.30	-2.63
			Max. My	14	-10.17	-2.72	-265.20
			Max. Vy	8	13.80	-262.30	-2.63
			Max. Vx	2	-13.91	2.52	265.15
			Max. Torque	3			-0.76
L8	104 - 99	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.74	-1.59	1.31
			Max. Mx	8	-14.94	-352.38	-2.51
			Max. My	2	-14.91	2.67	356.20
			Max. Vy	8	20.17	-352.38	-2.51
			Max. Vx	2	-20.31	2.67	356.20
			Max. Torque	24			-1.32
L9	99 - 94	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.33	-1.62	1.79
			Max. Mx	8	-18.48	-453.48	-2.92
			Max. My	2	-18.45	3.18	458.00
			Max. Vy	8	24.17	-453.48	-2.92
			Max. Vx	2	-24.35	3.18	458.00
			Max. Torque	12			1.45
L10	94 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.19	-1.64	1.81
			Max. Mx	8	-19.19	-575.43	-3.44
			Max. My	2	-19.16	3.70	580.84
			Max. Vy	8	24.64	-575.43	-3.44
			Max. Vx	2	-24.82	3.70	580.84
			Max. Torque	12			1.45
L11	89 - 85.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.92	-1.65	1.81
			Max. Mx	8	-19.74	-668.42	-3.82
			Max. My	2	-19.72	4.09	674.51
			Max. Vy	8	24.99	-668.42	-3.82
			Max. Vx	2	-25.17	4.09	674.51
			Max. Torque	12			1.45

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L12	85.25 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.00	-1.66	1.82
			Max. Mx	8	-19.82	-674.67	-3.85
			Max. My	2	-19.79	4.11	680.80
			Max. Vy	8	25.01	-674.67	-3.85
			Max. Vx	2	-25.19	4.11	680.80
			Max. Torque	12			1.45
L13	85 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.50	-1.69	1.79
			Max. Mx	8	-20.90	-801.04	-4.36
			Max. My	2	-20.87	4.62	808.06
			Max. Vy	8	25.56	-801.04	-4.36
			Max. Vx	2	-25.74	4.62	808.06
			Max. Torque	12			1.45
L14	80 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.86	-1.69	1.78
			Max. Mx	8	-21.17	-833.07	-4.49
			Max. My	2	-21.15	4.75	840.31
			Max. Vy	8	25.70	-833.07	-4.49
			Max. Vx	2	-25.88	4.75	840.31
			Max. Torque	12			1.45
L15	75 - 74	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.81	-1.70	1.76
			Max. Mx	8	-22.62	-956.51	-4.97
			Max. My	2	-22.59	5.24	964.59
			Max. Vy	8	26.27	-956.51	-4.97
			Max. Vx	2	-26.45	5.24	964.59
			Max. Torque	12			1.45
L16	74 - 69	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.94	-1.70	1.75
			Max. Mx	8	-23.55	-1088.93	-5.49
			Max. My	2	-23.53	5.76	1097.90
			Max. Vy	8	26.73	-1088.93	-5.49
			Max. Vx	2	-26.91	5.76	1097.90
			Max. Torque	12			1.45
L17	69 - 68.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.13	-1.70	1.74
			Max. Mx	8	-23.70	-1108.99	-5.56
			Max. My	2	-23.68	5.83	1118.10
			Max. Vy	8	26.79	-1108.99	-5.56
			Max. Vx	2	-26.97	5.83	1118.10
			Max. Torque	12			1.45
L18	68.25 - 68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.22	-1.71	1.75
			Max. Mx	8	-23.78	-1115.69	-5.59
			Max. My	2	-23.76	5.86	1124.84
			Max. Vy	8	26.82	-1115.69	-5.59
			Max. Vx	2	-27.00	5.86	1124.84
			Max. Torque	12			1.45
L19	68 - 63	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.97	-1.72	1.69
			Max. Mx	8	-25.11	-1251.11	-6.10
			Max. My	2	-25.09	6.37	1261.14
			Max. Vy	8	27.37	-1251.11	-6.10
			Max. Vx	2	-27.55	6.37	1261.14
			Max. Torque	12			1.45
L20	63 - 58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.83	-1.73	1.76
			Max. Mx	8	-26.50	-1389.38	-6.57
			Max. My	2	-26.48	6.88	1400.28
			Max. Vy	8	27.97	-1389.38	-6.57
			Max. Vx	2	-28.12	6.88	1400.28
			Max. Torque	10			1.51
L21	58 - 53	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.63	-1.74	1.71
			Max. Mx	8	-27.90	-1530.49	-7.08
			Max. My	2	-27.88	7.39	1542.16
			Max. Vy	8	28.51	-1530.49	-7.08
			Max. Vx	2	-28.66	7.39	1542.16

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	10			1.51
L22	53 - 48	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.58	-1.76	1.91
			Max. Mx	8	-29.40	-1674.44	-7.43
			Max. My	2	-29.39	7.90	1686.95
			Max. Vy	8	29.11	-1674.44	-7.43
			Max. Vx	2	-29.23	7.90	1686.95
			Max. Torque	10			1.64
L23	48 - 43	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.43	-1.77	1.86
			Max. Mx	8	-30.86	-1821.23	-7.93
			Max. My	2	-30.84	8.41	1834.32
			Max. Vy	8	29.63	-1821.23	-7.93
			Max. Vx	2	-29.75	8.41	1834.32
			Max. Torque	10			1.64
L24	43 - 37.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.62	-1.78	1.85
			Max. Mx	8	-31.01	-1836.05	-7.98
			Max. My	2	-31.00	8.46	1849.20
			Max. Vy	8	29.68	-1836.05	-7.98
			Max. Vx	2	-29.79	8.46	1849.20
			Max. Torque	10			1.64
L25	37.75 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.06	-1.80	1.81
			Max. Mx	8	-33.71	-1985.97	-8.49
			Max. My	2	-33.70	8.96	1999.69
			Max. Vy	8	30.31	-1985.97	-8.49
			Max. Vx	2	-30.42	8.96	1999.69
			Max. Torque	10			1.64
L26	37.5 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.08	-1.81	1.75
			Max. Mx	8	-35.33	-2138.64	-8.99
			Max. My	2	-35.32	9.47	2152.93
			Max. Vy	8	30.80	-2138.64	-8.99
			Max. Vx	2	-30.91	9.47	2152.93
			Max. Torque	10			1.64
L27	32.5 - 27.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.13	-1.82	1.70
			Max. Mx	8	-37.00	-2293.72	-9.49
			Max. My	2	-36.99	9.97	2308.57
			Max. Vy	8	31.27	-2293.72	-9.49
			Max. Vx	2	-31.38	9.97	2308.57
			Max. Torque	10			1.64
L28	27.5 - 22.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.19	-1.84	1.65
			Max. Mx	8	-38.69	-2451.09	-9.99
			Max. My	2	-38.68	10.47	2466.51
			Max. Vy	20	-31.72	2450.03	12.06
			Max. Vx	2	-31.83	10.47	2466.51
			Max. Torque	10			1.64
L29	22.5 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.27	-1.85	1.60
			Max. Mx	8	-40.41	-2610.64	-10.49
			Max. My	2	-40.41	10.97	2626.62
			Max. Vy	20	-32.14	2609.59	12.56
			Max. Vx	2	-32.25	10.97	2626.62
			Max. Torque	10			1.64
L30	17.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.37	-1.87	1.55
			Max. Mx	8	-42.16	-2772.22	-10.99
			Max. My	2	-42.16	11.47	2788.75
			Max. Vy	20	-32.53	2771.17	13.05
			Max. Vx	14	32.64	-12.57	-2786.74
			Max. Torque	10			1.64
L31	12.5 - 7.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.48	-1.88	1.50
			Max. Mx	8	-43.94	-2935.74	-11.48
			Max. My	2	-43.93	11.96	2952.82
			Max. Vy	20	-32.92	2934.69	13.54

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	33.03	-13.06	-2950.81
			Max. Torque	10			1.64
L32	7.5 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.58	-1.89	1.46
			Max. Mx	8	-45.74	-3101.19	-11.97
			Max. My	2	-45.74	12.45	3118.81
			Max. Vy	20	-33.30	3100.14	14.03
			Max. Vx	14	33.41	-13.55	-3116.81
			Max. Torque	10			1.64
L33	2.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.60	-1.90	1.44
			Max. Mx	8	-46.65	-3184.65	-12.21
			Max. My	2	-46.65	12.69	3202.53
			Max. Vy	20	-33.50	3183.60	14.27
			Max. Vx	14	33.61	-13.79	-3200.53
			Max. Torque	10			1.64

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	77.60	0.00	-0.00
	Max. H_x	21	35.00	33.48	0.10
	Max. H_z	3	35.00	0.10	33.58
	Max. M_x	2	3202.53	0.10	33.58
	Max. M_z	8	3184.65	-33.48	-0.10
	Max. Torsion	10	1.64	-29.42	-17.09
	Min. Vert	3	35.00	0.10	33.58
	Min. H_x	9	35.00	-33.48	-0.10
	Min. H_z	15	35.00	-0.10	-33.59
	Min. M_x	14	-3200.53	-0.10	-33.58
	Min. M_z	20	-3183.60	33.48	0.10
	Min. Torsion	22	-1.62	29.42	17.09

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	38.89	-0.00	0.00	-0.81	-0.43	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	46.67	-0.10	-33.58	-3202.53	12.69	1.07
0.9 Dead+1.0 Wind 0 deg - No Ice	35.00	-0.10	-33.58	-3165.64	12.65	1.06
1.2 Dead+1.0 Wind 30 deg - No Ice	46.67	16.87	-29.42	-2791.85	-1595.44	0.30
0.9 Dead+1.0 Wind 30 deg - No Ice	35.00	16.87	-29.42	-2759.72	-1577.13	0.31
1.2 Dead+1.0 Wind 60 deg - No Ice	46.67	28.94	-16.71	-1590.44	-2751.58	-0.56
0.9 Dead+1.0 Wind 60 deg - No Ice	35.00	28.94	-16.71	-1571.98	-2719.97	-0.54
1.2 Dead+1.0 Wind 90 deg - No Ice	46.67	33.48	0.10	12.21	-3184.65	-1.27
0.9 Dead+1.0 Wind 90 deg - No Ice	35.00	33.48	0.10	12.30	-3148.12	-1.25
1.2 Dead+1.0 Wind 120 deg - No Ice	46.67	29.42	17.09	1625.51	-2789.41	-1.64
0.9 Dead+1.0 Wind 120 deg - No Ice	35.00	29.42	17.09	1607.18	-2757.44	-1.62

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 150 deg - No Ice	46.67	16.82	29.13	2778.25	-1604.07	-1.56
0.9 Dead+1.0 Wind 150 deg - No Ice	35.00	16.82	29.13	2746.68	-1585.56	-1.54
1.2 Dead+1.0 Wind 180 deg - No Ice	46.67	0.10	33.58	3200.53	-13.79	-1.06
0.9 Dead+1.0 Wind 180 deg - No Ice	35.00	0.10	33.59	3164.16	-13.46	-1.05
1.2 Dead+1.0 Wind 210 deg - No Ice	46.67	-16.87	29.42	2789.77	1594.33	-0.28
0.9 Dead+1.0 Wind 210 deg - No Ice	35.00	-16.87	29.42	2758.19	1576.32	-0.28
1.2 Dead+1.0 Wind 240 deg - No Ice	46.67	-28.94	16.71	1588.36	2750.46	0.57
0.9 Dead+1.0 Wind 240 deg - No Ice	35.00	-28.94	16.71	1570.46	2719.15	0.55
1.2 Dead+1.0 Wind 270 deg - No Ice	46.67	-33.48	-0.10	-14.27	3183.60	1.26
0.9 Dead+1.0 Wind 270 deg - No Ice	35.00	-33.48	-0.10	-13.82	3147.34	1.24
1.2 Dead+1.0 Wind 300 deg - No Ice	46.67	-29.42	-17.09	-1627.56	2788.30	1.62
0.9 Dead+1.0 Wind 300 deg - No Ice	35.00	-29.42	-17.09	-1608.69	2756.63	1.60
1.2 Dead+1.0 Wind 330 deg - No Ice	46.67	-16.82	-29.13	-2780.32	1602.97	1.55
0.9 Dead+1.0 Wind 330 deg - No Ice	35.00	-16.82	-29.13	-2748.20	1584.75	1.53
1.2 Dead+1.0 Ice+1.0 Temp	77.60	-0.00	0.00	-1.44	-1.90	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	77.60	-0.02	-7.98	-806.79	0.16	0.22
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	77.60	3.97	-6.90	-697.78	-401.47	0.04
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	77.60	6.89	-3.98	-402.24	-696.10	-0.15
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	77.60	7.97	0.02	0.64	-804.77	-0.30
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	77.60	6.91	4.00	402.92	-698.37	-0.38
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	77.60	4.00	6.92	696.79	-405.41	-0.35
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	77.60	0.02	7.98	803.52	-4.39	-0.22
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	77.60	-3.97	6.90	694.51	397.24	-0.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	77.60	-6.89	3.98	398.97	691.87	0.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	77.60	-7.97	-0.02	-3.91	800.54	0.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	77.60	-6.91	-4.00	-406.18	694.14	0.37
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	77.60	-4.00	-6.92	-700.05	401.18	0.34
Dead+Wind 0 deg - Service	38.89	-0.02	-7.31	-694.15	2.39	0.23
Dead+Wind 30 deg - Service	38.89	3.67	-6.40	-605.26	-345.88	0.07
Dead+Wind 60 deg - Service	38.89	6.30	-3.64	-345.08	-596.26	-0.12
Dead+Wind 90 deg - Service	38.89	7.29	0.02	1.99	-689.99	-0.27
Dead+Wind 120 deg - Service	38.89	6.40	3.72	351.39	-604.45	-0.35
Dead+Wind 150 deg - Service	38.89	3.66	6.34	601.05	-347.74	-0.34
Dead+Wind 180 deg - Service	38.89	0.02	7.31	692.43	-3.32	-0.23
Dead+Wind 210 deg - Service	38.89	-3.67	6.40	603.54	344.95	-0.07
Dead+Wind 240 deg - Service	38.89	-6.30	3.64	343.36	595.33	0.12
Dead+Wind 270 deg - Service	38.89	-7.29	-0.02	-3.71	689.06	0.27

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 300 deg - Service	38.89	-6.40	-3.72	-353.10	603.53	0.35
Dead+Wind 330 deg - Service	38.89	-3.66	-6.34	-602.77	346.81	0.34

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-38.89	0.00	0.00	38.89	-0.00	0.000%
2	-0.10	-46.67	-33.59	0.10	46.67	33.58	0.002%
3	-0.10	-35.00	-33.59	0.10	35.00	33.58	0.002%
4	16.87	-46.67	-29.42	-16.87	46.67	29.42	0.000%
5	16.87	-35.00	-29.42	-16.87	35.00	29.42	0.000%
6	28.94	-46.67	-16.71	-28.94	46.67	16.71	0.000%
7	28.94	-35.00	-16.71	-28.94	35.00	16.71	0.000%
8	33.48	-46.67	0.10	-33.48	46.67	-0.10	0.002%
9	33.48	-35.00	0.10	-33.48	35.00	-0.10	0.002%
10	29.42	-46.67	17.09	-29.42	46.67	-17.09	0.000%
11	29.42	-35.00	17.09	-29.42	35.00	-17.09	0.000%
12	16.82	-46.67	29.13	-16.82	46.67	-29.13	0.000%
13	16.82	-35.00	29.13	-16.82	35.00	-29.13	0.000%
14	0.10	-46.67	33.59	-0.10	46.67	-33.58	0.001%
15	0.10	-35.00	33.59	-0.10	35.00	-33.59	0.001%
16	-16.87	-46.67	29.42	16.87	46.67	-29.42	0.000%
17	-16.87	-35.00	29.42	16.87	35.00	-29.42	0.000%
18	-28.94	-46.67	16.71	28.94	46.67	-16.71	0.000%
19	-28.94	-35.00	16.71	28.94	35.00	-16.71	0.000%
20	-33.48	-46.67	-0.10	33.48	46.67	0.10	0.001%
21	-33.48	-35.00	-0.10	33.48	35.00	0.10	0.001%
22	-29.42	-46.67	-17.09	29.42	46.67	17.09	0.000%
23	-29.42	-35.00	-17.09	29.42	35.00	17.09	0.000%
24	-16.82	-46.67	-29.13	16.82	46.67	29.13	0.000%
25	-16.82	-35.00	-29.13	16.82	35.00	29.13	0.000%
26	0.00	-77.60	0.00	0.00	77.60	-0.00	0.001%
27	-0.02	-77.60	-7.98	0.02	77.60	7.98	0.000%
28	3.97	-77.60	-6.90	-3.97	77.60	6.90	0.000%
29	6.89	-77.60	-3.98	-6.89	77.60	3.98	0.000%
30	7.97	-77.60	0.02	-7.97	77.60	-0.02	0.000%
31	6.91	-77.60	4.00	-6.91	77.60	-4.00	0.000%
32	4.00	-77.60	6.92	-4.00	77.60	-6.92	0.000%
33	0.02	-77.60	7.98	-0.02	77.60	-7.98	0.000%
34	-3.97	-77.60	6.90	3.97	77.60	-6.90	0.000%
35	-6.89	-77.60	3.98	6.89	77.60	-3.98	0.000%
36	-7.97	-77.60	-0.02	7.97	77.60	0.02	0.000%
37	-6.91	-77.60	-4.00	6.91	77.60	4.00	0.000%
38	-4.00	-77.60	-6.92	4.00	77.60	6.92	0.000%
39	-0.02	-38.89	-7.31	0.02	38.89	7.31	0.003%
40	3.67	-38.89	-6.40	-3.67	38.89	6.40	0.001%
41	6.30	-38.89	-3.64	-6.30	38.89	3.64	0.001%
42	7.29	-38.89	0.02	-7.29	38.89	-0.02	0.002%
43	6.40	-38.89	3.72	-6.40	38.89	-3.72	0.001%
44	3.66	-38.89	6.34	-3.66	38.89	-6.34	0.001%
45	0.02	-38.89	7.31	-0.02	38.89	-7.31	0.003%
46	-3.67	-38.89	6.40	3.67	38.89	-6.40	0.001%
47	-6.30	-38.89	3.64	6.30	38.89	-3.64	0.001%
48	-7.29	-38.89	-0.02	7.29	38.89	0.02	0.002%
49	-6.40	-38.89	-3.72	6.40	38.89	3.72	0.001%
50	-3.66	-38.89	-6.34	3.66	38.89	6.34	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	17	0.00002347	0.00011213
3	Yes	17	0.00000001	0.00008359
4	Yes	22	0.00000001	0.00011869
5	Yes	22	0.00000001	0.00008098
6	Yes	22	0.00000001	0.00011725
7	Yes	22	0.00000001	0.00008012
8	Yes	17	0.00002349	0.00012589
9	Yes	17	0.00000001	0.00009283
10	Yes	22	0.00000001	0.00011816
11	Yes	22	0.00000001	0.00008052
12	Yes	22	0.00000001	0.00012206
13	Yes	22	0.00000001	0.00008338
14	Yes	18	0.00000001	0.00010705
15	Yes	18	0.00000001	0.00007945
16	Yes	22	0.00000001	0.00011710
17	Yes	22	0.00000001	0.00007992
18	Yes	22	0.00000001	0.00011531
19	Yes	22	0.00000001	0.00007886
20	Yes	18	0.00000001	0.00011347
21	Yes	18	0.00000001	0.00008352
22	Yes	22	0.00000001	0.00012317
23	Yes	22	0.00000001	0.00008402
24	Yes	22	0.00000001	0.00011726
25	Yes	22	0.00000001	0.00007998
26	Yes	9	0.00000001	0.00009568
27	Yes	20	0.00000001	0.00009045
28	Yes	20	0.00000001	0.00011225
29	Yes	20	0.00000001	0.00011215
30	Yes	20	0.00000001	0.00009014
31	Yes	20	0.00000001	0.00011167
32	Yes	20	0.00000001	0.00011269
33	Yes	20	0.00000001	0.00008962
34	Yes	20	0.00000001	0.00010985
35	Yes	20	0.00000001	0.00010960
36	Yes	20	0.00000001	0.00008914
37	Yes	20	0.00000001	0.00011237
38	Yes	20	0.00000001	0.00011170
39	Yes	15	0.00000001	0.00006253
40	Yes	17	0.00000001	0.00008286
41	Yes	17	0.00000001	0.00008165
42	Yes	15	0.00000001	0.00006343
43	Yes	17	0.00000001	0.00007762
44	Yes	17	0.00000001	0.00008852
45	Yes	15	0.00000001	0.00006602
46	Yes	17	0.00000001	0.00007872
47	Yes	17	0.00000001	0.00007704
48	Yes	15	0.00000001	0.00006708
49	Yes	17	0.00000001	0.00008968
50	Yes	17	0.00000001	0.00007688

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133.5 - 128.5	21.1226	43	1.5750	0.0098
L2	128.5 - 123.5	19.4777	43	1.5554	0.0081
L3	123.5 - 121.5	17.9007	43	1.4407	0.0047
L4	121.5 - 119	17.3128	43	1.3659	0.0033
L5	119 - 114	16.6090	43	1.3318	0.0028
L6	114 - 109	15.2302	43	1.3027	0.0026
L7	109 - 104	13.8877	43	1.2627	0.0023
L8	104 - 99	12.5920	43	1.2131	0.0021
L9	99 - 94	11.3527	43	1.1545	0.0019

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	94 - 89	10.1802	43	1.0849	0.0016
L11	89 - 85.25	9.0854	49	1.0052	0.0013
L12	85.25 - 85	8.3215	49	0.9397	0.0011
L13	85 - 80	8.2724	49	0.9374	0.0011
L14	80 - 75	7.3159	49	0.8890	0.0010
L15	78.75 - 74	7.0849	49	0.8764	0.0010
L16	74 - 69	6.2294	49	0.8346	0.0009
L17	69 - 68.25	5.4021	49	0.7450	0.0008
L18	68.25 - 68	5.2862	49	0.7314	0.0007
L19	68 - 63	5.2479	49	0.7289	0.0007
L20	63 - 58	4.5116	49	0.6772	0.0007
L21	58 - 53	3.8306	49	0.6233	0.0006
L22	53 - 48	3.2070	49	0.5676	0.0005
L23	48 - 43	2.6424	49	0.5107	0.0004
L24	43 - 37.75	2.1378	49	0.4530	0.0004
L25	42.5 - 37.5	2.0906	49	0.4472	0.0004
L26	37.5 - 32.5	1.6369	49	0.4177	0.0003
L27	32.5 - 27.5	1.2287	49	0.3619	0.0003
L28	27.5 - 22.5	0.8788	49	0.3064	0.0002
L29	22.5 - 17.5	0.5875	49	0.2501	0.0002
L30	17.5 - 12.5	0.3548	49	0.1943	0.0001
L31	12.5 - 7.5	0.1807	49	0.1385	0.0001
L32	7.5 - 2.5	0.0649	49	0.0827	0.0001
L33	2.5 - 0	0.0072	49	0.0276	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.000	P65-15-XLH-RR w/ Mount Pipe	43	20.2967	1.5713	0.0091	4412
119.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	43	16.6090	1.3318	0.0028	4643
117.000	TME-PCS 1900MHz 4x45W-65MHz	43	16.0542	1.3204	0.0027	8107
111.000	Platform Mount [LP 403-1]	43	14.4195	1.2802	0.0024	6894
101.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	43	11.8410	1.1794	0.0020	4776
95.000	MX08FRO665-20 w/ Mount Pipe	43	10.4088	1.0992	0.0017	3953
60.000	58532A	49	4.0963	0.6450	0.0006	5290
50.000	KS24019-L112A	49	2.8611	0.5335	0.0005	5042

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133.5 - 128.5	97.3081	10	7.2565	0.0457
L2	128.5 - 123.5	89.7709	10	7.1693	0.0378
L3	123.5 - 121.5	82.5356	10	6.6436	0.0218
L4	121.5 - 119	79.8342	10	6.2995	0.0154
L5	119 - 114	76.5977	10	6.1429	0.0130
L6	114 - 109	70.2538	10	6.0091	0.0118
L7	109 - 104	64.0744	10	5.8252	0.0107
L8	104 - 99	58.1085	10	5.5968	0.0098
L9	99 - 94	52.3989	10	5.3285	0.0087
L10	94 - 89	46.9949	10	5.0099	0.0074
L11	89 - 85.25	41.9463	22	4.6447	0.0061
L12	85.25 - 85	38.4222	22	4.3422	0.0052
L13	85 - 80	38.1955	22	4.3317	0.0052
L14	80 - 75	33.7821	22	4.1081	0.0046

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L15	78.75 - 74	32.7158	22	4.0499	0.0045
L16	74 - 69	28.7676	22	3.8571	0.0041
L17	69 - 68.25	24.9485	22	3.4431	0.0034
L18	68.25 - 68	24.4131	22	3.3802	0.0033
L19	68 - 63	24.2366	22	3.3685	0.0033
L20	63 - 58	20.8370	22	3.1294	0.0030
L21	58 - 53	17.6923	22	2.8806	0.0027
L22	53 - 48	14.8124	22	2.6228	0.0023
L23	48 - 43	12.2047	22	2.3601	0.0020
L24	43 - 37.75	9.8739	22	2.0931	0.0017
L25	42.5 - 37.5	9.6562	22	2.0664	0.0017
L26	37.5 - 32.5	7.5606	22	1.9301	0.0015
L27	32.5 - 27.5	5.6751	22	1.6721	0.0013
L28	27.5 - 22.5	4.0590	22	1.4154	0.0011
L29	22.5 - 17.5	2.7133	22	1.1553	0.0008
L30	17.5 - 12.5	1.6388	22	0.8974	0.0006
L31	12.5 - 7.5	0.8343	22	0.6395	0.0004
L32	7.5 - 2.5	0.2997	22	0.3818	0.0003
L33	2.5 - 0	0.0333	22	0.1273	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.000	P65-15-XLH-RR w/ Mount Pipe	10	93.5244	7.2410	0.0425	1008
119.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	10	76.5977	6.1429	0.0130	1045
117.000	TME-PCS 1900MHz 4x45W-65MHz	10	74.0453	6.0904	0.0125	1820
111.000	Platform Mount [LP 403-1]	10	66.5228	5.9056	0.0113	1539
101.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	10	54.6489	5.4421	0.0095	1059
95.000	MX08FRO665-20 w/ Mount Pipe	10	48.0489	5.0753	0.0080	875
60.000	58532A	22	18.9189	2.9805	0.0029	1152
50.000	KS24019-L112A	22	13.2149	2.4653	0.0022	1095

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.188	5.000	0.000	0.0	6.2381	-2.68	353.12	0.008
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.188	5.000	0.000	0.0	6.2381	-2.88	353.12	0.008
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.188	2.000	0.000	0.0	6.2381	-2.98	353.12	0.008
L4	121.5 - 119 (4)	TP22x10.75x0.188	2.500	0.000	0.0	6.2381	-2.99	353.12	0.008
L5	119 - 114 (5)	TP22.95x22x0.25	5.000	0.000	0.0	18.2735	-7.55	1069.00	0.007
L6	114 - 109 (6)	TP23.9x22.95x0.25	5.000	0.000	0.0	19.0382	-9.68	1113.74	0.009
L7	109 - 104 (7)	TP24.85x23.9x0.25	5.000	0.000	0.0	19.8030	-10.16	1158.48	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L8	104 - 99 (8)	TP25.8x24.85x0.25	5.000	0.000	0.0	20.5678	-14.90	1203.21	0.012
L9	99 - 94 (9)	TP26.75x25.8x0.25	5.000	0.000	0.0	21.3325	-18.44	1247.95	0.015
L10	94 - 89 (10)	TP27.7x26.75x0.25	5.000	0.000	0.0	22.0972	-19.15	1292.69	0.015
L11	89 - 85.25 (11)	TP28.4125x27.7x0.25	3.750	0.000	0.0	22.6708	-19.71	1326.24	0.015
L12	85.25 - 85 (12)	TP28.46x28.4125x0.5125	0.250	0.000	0.0	46.1204	-19.78	2698.04	0.007
L13	85 - 80 (13)	TP29.41x28.46x0.5	5.000	0.000	0.0	46.5451	-20.87	2722.89	0.008
L14	80 - 75 (14)	TP30.36x29.41x0.5	5.000	0.000	0.0	46.9275	-21.14	2745.26	0.008
L15	75 - 74 (15)	TP30.0503x29.1475x0.3125	4.750	0.000	0.0	29.9237	-22.59	1750.53	0.013
L16	74 - 69 (16)	TP31.0006x30.0503x0.3125	5.000	0.000	0.0	30.8799	-23.52	1806.47	0.013
L17	69 - 68.25 (17)	TP31.1431x31.0006x0.3125	0.750	0.000	0.0	31.0233	-23.67	1814.86	0.013
L18	68.25 - 68 (18)	TP31.1907x31.1431x0.575	0.250	0.000	0.0	56.6849	-23.75	3316.07	0.007
L19	68 - 63 (19)	TP32.141x31.1907x0.575	5.000	0.000	0.0	58.4444	-25.08	3419.00	0.007
L20	63 - 58 (20)	TP33.0913x32.141x0.5625	5.000	0.000	0.0	58.9177	-26.48	3446.69	0.008
L21	58 - 53 (21)	TP34.0416x33.0913x0.55	5.000	0.000	0.0	59.3136	-27.86	3469.84	0.008
L22	53 - 48 (22)	TP34.9919x34.0416x0.5438	5.000	0.000	0.0	60.3144	-29.37	3528.39	0.008
L23	48 - 43 (23)	TP35.9422x34.9919x0.5375	5.000	0.000	0.0	61.2766	-30.82	3584.68	0.009
L24	43 - 37.75 (24)	TP36.94x35.9422x0.5375	5.250	0.000	0.0	61.4411	-30.98	3594.31	0.009
L25	37.75 - 37.5 (25)	TP36.3625x35.4122x0.6	5.000	0.000	0.0	69.0932	-33.68	4041.95	0.008
L26	37.5 - 32.5 (26)	TP37.3129x36.3625x0.5875	5.000	0.000	0.0	69.4752	-35.31	4064.30	0.009
L27	32.5 - 27.5 (27)	TP38.2632x37.3129x0.5875	5.000	0.000	0.0	71.2730	-36.97	4169.47	0.009
L28	27.5 - 22.5 (28)	TP39.2135x38.2632x0.575	5.000	0.000	0.0	71.5392	-38.67	4185.04	0.009
L29	22.5 - 17.5 (29)	TP40.1639x39.2135x0.575	5.000	0.000	0.0	73.2988	-40.39	4287.98	0.009
L30	17.5 - 12.5 (30)	TP41.1142x40.1639x0.5688	5.000	0.000	0.0	74.2539	-42.15	4343.85	0.010
L31	12.5 - 7.5 (31)	TP42.0645x41.1142x0.5625	5.000	0.000	0.0	75.1705	-43.93	4397.48	0.010
L32	7.5 - 2.5 (32)	TP43.0148x42.0645x0.5625	5.000	0.000	0.0	76.8918	-45.74	4498.17	0.010
L33	2.5 - 0 (33)	TP43.49x43.0148x0.5563	2.500	0.000	0.0	76.8997	-46.65	4498.63	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.188	17.78	91.67	0.194	0.00	91.67	0.000
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.188	46.90	91.67	0.512	0.00	91.67	0.000
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.188	58.72	91.67	0.641	0.00	91.67	0.000
L4	121.5 - 119	TP22x10.75x0.188	58.72	91.67	0.641	0.00	91.67	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	(4)							
L5	119 - 114 (5)	TP22.95x22x0.25	135.58	601.62	0.225	0.00	601.62	0.000
L6	114 - 109 (6)	TP23.9x22.95x0.25	198.21	644.17	0.308	0.00	644.17	0.000
L7	109 - 104 (7)	TP24.85x23.9x0.25	266.77	687.34	0.388	0.00	687.34	0.000
L8	104 - 99 (8)	TP25.8x24.85x0.25	357.63	731.05	0.489	0.00	731.05	0.000
L9	99 - 94 (9)	TP26.75x25.8x0.25	459.72	775.20	0.593	0.00	775.20	0.000
L10	94 - 89 (10)	TP27.7x26.75x0.25	582.80	819.71	0.711	0.00	819.71	0.000
L11	89 - 85.25 (11)	TP28.4125x27.7x0.25	676.64	853.27	0.793	0.00	853.27	0.000
L12	85.25 - 85 (12)	TP28.46x28.4125x0.5125	682.94	1915.78	0.356	0.00	1915.78	0.000
L13	85 - 80 (13)	TP29.41x28.46x0.5	810.44	2002.06	0.405	0.00	2002.06	0.000
L14	80 - 75 (14)	TP30.36x29.41x0.5	842.74	2035.37	0.414	0.00	2035.37	0.000
L15	75 - 74 (15)	TP30.0503x29.1475x0.3125	967.25	1270.52	0.761	0.00	1270.52	0.000
L16	74 - 69 (16)	TP31.0006x30.0503x0.3125	1100.78	1338.04	0.823	0.00	1338.04	0.000
L17	69 - 68.25 (17)	TP31.1431x31.0006x0.3125	1121.02	1348.22	0.831	0.00	1348.22	0.000
L18	68.25 - 68 (18)	TP31.1907x31.1431x0.575	1127.77	2578.28	0.437	0.00	2578.28	0.000
L19	68 - 63 (19)	TP32.141x31.1907x0.575	1264.30	2742.35	0.461	0.00	2742.35	0.000
L20	63 - 58 (20)	TP33.0913x32.141x0.5625	1403.68	2851.47	0.492	0.00	2851.47	0.000
L21	58 - 53 (21)	TP34.0416x33.0913x0.55	1546.36	2958.13	0.523	0.00	2958.13	0.000
L22	53 - 48 (22)	TP34.9919x34.0416x0.5438	1692.60	3095.89	0.547	0.00	3095.89	0.000
L23	48 - 43 (23)	TP35.9422x34.9919x0.5375	1841.81	3234.54	0.569	0.00	3234.54	0.000
L24	43 - 37.75 (24)	TP36.94x35.9422x0.5375	1856.88	3252.07	0.571	0.00	3252.07	0.000
L25	37.75 - 37.5 (25)	TP36.3625x35.4122x0.6	2009.33	3678.23	0.546	0.00	3678.23	0.000
L26	37.5 - 32.5 (26)	TP37.3129x36.3625x0.5875	2164.64	3801.06	0.569	0.00	3801.06	0.000
L27	32.5 - 27.5 (27)	TP38.2632x37.3129x0.5875	2322.43	4001.92	0.580	0.00	4001.92	0.000
L28	27.5 - 22.5 (28)	TP39.2135x38.2632x0.575	2482.56	4122.41	0.602	0.00	4122.41	0.000
L29	22.5 - 17.5 (29)	TP40.1639x39.2135x0.575	2644.88	4329.21	0.611	0.00	4329.21	0.000
L30	17.5 - 12.5 (30)	TP41.1142x40.1639x0.5688	2809.24	4493.79	0.625	0.00	4493.79	0.000
L31	12.5 - 7.5 (31)	TP42.0645x41.1142x0.5625	2975.53	4658.77	0.639	0.00	4658.77	0.000
L32	7.5 - 2.5 (32)	TP43.0148x42.0645x0.5625	3143.73	4876.02	0.645	0.00	4876.02	0.000
L33	2.5 - 0 (33)	TP43.49x43.0148x0.5563	3228.56	4933.27	0.654	0.00	4933.27	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.188	5.76	109.48	0.053	0.76	101.66	0.007
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.188	5.89	109.48	0.054	0.76	101.66	0.007
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.188	5.94	109.48	0.054	0.76	101.66	0.007
L4	121.5 - 119 (4)	TP22x10.75x0.188	5.98	119.71	0.050	0.75	101.66	0.007
L5	119 - 114 (5)	TP22.95x22x0.25	11.82	320.70	0.037	0.75	640.36	0.001
L6	114 - 109 (6)	TP23.9x22.95x0.25	13.46	334.12	0.040	0.75	695.08	0.001
L7	109 - 104 (7)	TP24.85x23.9x0.25	13.97	347.54	0.040	0.75	752.04	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L8	104 - 99 (8)	TP25.8x24.85x0.25	20.37	360.96	0.056	1.32	811.25	0.002
L9	99 - 94 (9)	TP26.75x25.8x0.25	24.39	374.38	0.065	1.44	872.70	0.002
L10	94 - 89 (10)	TP27.7x26.75x0.25	24.86	387.81	0.064	1.44	936.39	0.002
L11	89 - 85.25 (11)	TP28.4125x27.7x0.25	25.21	397.87	0.063	1.44	985.63	0.001
L12	85.25 - 85 (12)	TP28.46x28.4125x0.5125	25.25	809.41	0.031	1.44	1989.82	0.001
L13	85 - 80 (13)	TP29.41x28.46x0.5	25.79	816.87	0.032	1.44	2077.30	0.001
L14	80 - 75 (14)	TP30.36x29.41x0.5	25.93	823.58	0.031	1.44	2111.57	0.001
L15	75 - 74 (15)	TP30.0503x29.1475x0.3125	26.50	525.16	0.050	1.44	1373.72	0.001
L16	74 - 69 (16)	TP31.0006x30.0503x0.3125	26.95	541.94	0.050	1.44	1462.93	0.001
L17	69 - 68.25 (17)	TP31.1431x31.0006x0.3125	27.02	544.46	0.050	1.44	1476.55	0.001
L18	68.25 - 68 (18)	TP31.1907x31.1431x0.575	27.05	994.82	0.027	1.44	2679.09	0.001
L19	68 - 63 (19)	TP32.141x31.1907x0.575	27.59	1025.70	0.027	1.44	2847.99	0.001
L20	63 - 58 (20)	TP33.0913x32.141x0.5625	28.17	1034.01	0.027	1.48	2958.63	0.000
L21	58 - 53 (21)	TP34.0416x33.0913x0.55	28.95	1040.95	0.028	1.51	3066.67	0.000
L22	53 - 48 (22)	TP34.9919x34.0416x0.5438	29.58	1058.52	0.028	1.62	3207.47	0.001
L23	48 - 43 (23)	TP35.9422x34.9919x0.5375	30.13	1075.41	0.028	1.62	3349.13	0.000
L24	43 - 37.75 (24)	TP36.94x35.9422x0.5375	30.18	1078.29	0.028	1.62	3367.14	0.000
L25	37.75 - 37.5 (25)	TP36.3625x35.4122x0.6	30.82	1212.59	0.025	1.62	3814.53	0.000
L26	37.5 - 32.5 (26)	TP37.3129x36.3625x0.5875	31.33	1219.29	0.026	1.62	3938.88	0.000
L27	32.5 - 27.5 (27)	TP38.2632x37.3129x0.5875	31.82	1250.84	0.025	1.62	4145.37	0.000
L28	27.5 - 22.5 (28)	TP39.2135x38.2632x0.575	32.27	1255.51	0.026	1.62	4267.18	0.000
L29	22.5 - 17.5 (29)	TP40.1639x39.2135x0.575	32.70	1286.39	0.025	1.62	4479.68	0.000
L30	17.5 - 12.5 (30)	TP41.1142x40.1639x0.5688	33.08	1303.16	0.025	1.62	4647.70	0.000
L31	12.5 - 7.5 (31)	TP42.0645x41.1142x0.5625	33.47	1319.24	0.025	1.62	4816.07	0.000
L32	7.5 - 2.5 (32)	TP43.0148x42.0645x0.5625	33.85	1349.45	0.025	1.62	5039.17	0.000
L33	2.5 - 0 (33)	TP43.49x43.0148x0.5563	34.05	1349.59	0.025	1.62	5096.83	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	133.5 - 128.5 (1)	0.008	0.194	0.000	0.053	0.007	0.205	1.050	4.8.2
L2	128.5 - 123.5 (2)	0.008	0.512	0.000	0.054	0.007	0.524	1.050	4.8.2
L3	123.5 - 121.5 (3)	0.008	0.641	0.000	0.054	0.007	0.653	1.050	4.8.2
L4	121.5 - 119 (4)	0.008	0.641	0.000	0.050	0.007	0.652	1.050	4.8.2
L5	119 - 114 (5)	0.007	0.225	0.000	0.037	0.001	0.234	1.050	4.8.2
L6	114 - 109 (6)	0.009	0.308	0.000	0.040	0.001	0.318	1.050	4.8.2
L7	109 - 104 (7)	0.009	0.388	0.000	0.040	0.001	0.399	1.050	4.8.2
L8	104 - 99 (8)	0.012	0.489	0.000	0.056	0.002	0.505	1.050	4.8.2
L9	99 - 94 (9)	0.015	0.593	0.000	0.065	0.002	0.612	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L10	94 - 89 (10)	0.015	0.711	0.000	0.064	0.002	0.730	1.050	4.8.2
L11	89 - 85.25 (11)	0.015	0.793	0.000	0.063	0.001	0.812	1.050	4.8.2
L12	85.25 - 85 (12)	0.007	0.356	0.000	0.031	0.001	0.365	1.050	4.8.2
L13	85 - 80 (13)	0.008	0.405	0.000	0.032	0.001	0.414	1.050	4.8.2
L14	80 - 75 (14)	0.008	0.414	0.000	0.031	0.001	0.423	1.050	4.8.2
L15	75 - 74 (15)	0.013	0.761	0.000	0.050	0.001	0.777	1.050	4.8.2
L16	74 - 69 (16)	0.013	0.823	0.000	0.050	0.001	0.838	1.050	4.8.2
L17	69 - 68.25 (17)	0.013	0.831	0.000	0.050	0.001	0.847	1.050	4.8.2
L18	68.25 - 68 (18)	0.007	0.437	0.000	0.027	0.001	0.445	1.050	4.8.2
L19	68 - 63 (19)	0.007	0.461	0.000	0.027	0.001	0.469	1.050	4.8.2
L20	63 - 58 (20)	0.008	0.492	0.000	0.027	0.000	0.501	1.050	4.8.2
L21	58 - 53 (21)	0.008	0.523	0.000	0.028	0.000	0.532	1.050	4.8.2
L22	53 - 48 (22)	0.008	0.547	0.000	0.028	0.001	0.556	1.050	4.8.2
L23	48 - 43 (23)	0.009	0.569	0.000	0.028	0.000	0.579	1.050	4.8.2
L24	43 - 37.75 (24)	0.009	0.571	0.000	0.028	0.000	0.580	1.050	4.8.2
L25	37.75 - 37.5 (25)	0.008	0.546	0.000	0.025	0.000	0.555	1.050	4.8.2
L26	37.5 - 32.5 (26)	0.009	0.569	0.000	0.026	0.000	0.579	1.050	4.8.2
L27	32.5 - 27.5 (27)	0.009	0.580	0.000	0.025	0.000	0.590	1.050	4.8.2
L28	27.5 - 22.5 (28)	0.009	0.602	0.000	0.026	0.000	0.612	1.050	4.8.2
L29	22.5 - 17.5 (29)	0.009	0.611	0.000	0.025	0.000	0.621	1.050	4.8.2
L30	17.5 - 12.5 (30)	0.010	0.625	0.000	0.025	0.000	0.636	1.050	4.8.2
L31	12.5 - 7.5 (31)	0.010	0.639	0.000	0.025	0.000	0.649	1.050	4.8.2
L32	7.5 - 2.5 (32)	0.010	0.645	0.000	0.025	0.000	0.656	1.050	4.8.2
L33	2.5 - 0 (33)	0.010	0.654	0.000	0.025	0.000	0.665	1.050	4.8.2

Section Capacity Table

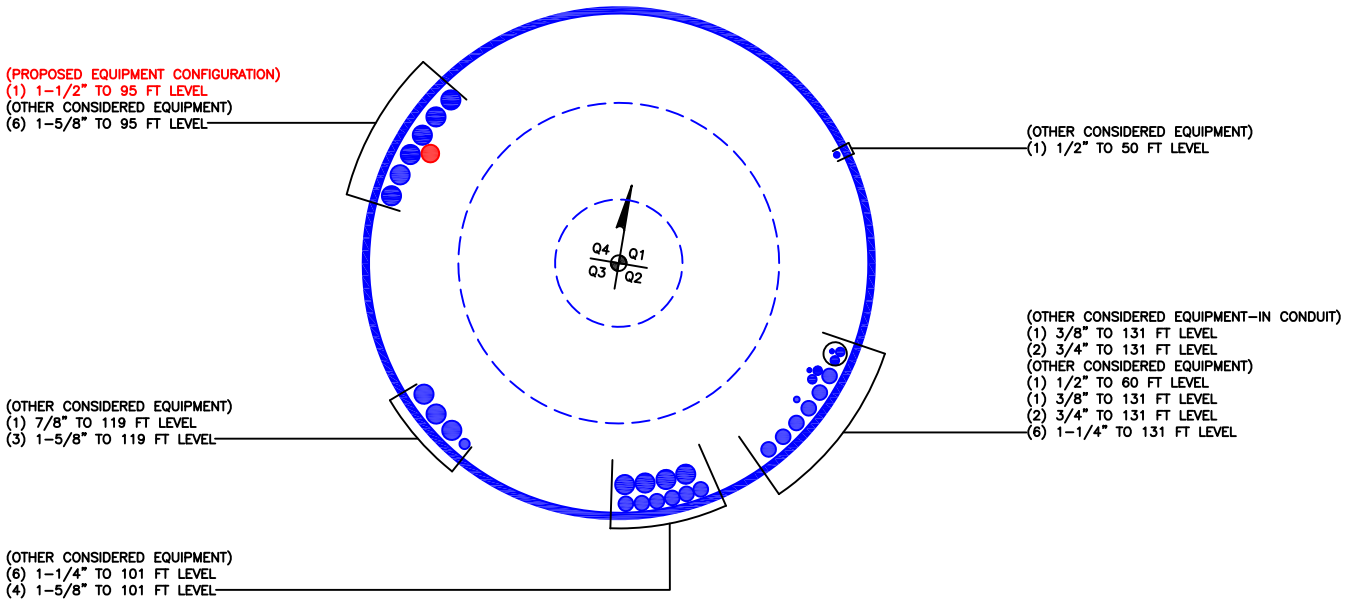
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	133.5 - 128.5	Pole	TP10.75x10.75x0.188	1	-2.68	370.78	19.5	Pass
L2	128.5 - 123.5	Pole	TP10.75x10.75x0.188	2	-2.88	370.78	49.9	Pass
L3	123.5 - 121.5	Pole	TP10.75x10.75x0.188	3	-2.98	370.78	62.2	Pass
L4	121.5 - 119	Pole	TP22x10.75x0.188	4	-2.99	370.78	62.1	Pass
L5	119 - 114	Pole	TP22.95x22x0.25	5	-7.55	1122.45	22.3	Pass
L6	114 - 109	Pole	TP23.9x22.95x0.25	6	-9.68	1169.43	30.3	Pass
L7	109 - 104	Pole	TP24.85x23.9x0.25	7	-10.16	1216.40	38.0	Pass
L8	104 - 99	Pole	TP25.8x24.85x0.25	8	-14.90	1263.37	48.1	Pass
L9	99 - 94	Pole	TP26.75x25.8x0.25	9	-18.44	1310.35	58.3	Pass
L10	94 - 89	Pole	TP27.7x26.75x0.25	10	-19.15	1357.32	69.5	Pass
L11	89 - 85.25	Pole	TP28.4125x27.7x0.25	11	-19.71	1392.55	77.3	Pass
L12	85.25 - 85	Pole	TP28.46x28.4125x0.5125	12	-19.78	2832.94	34.7	Pass
L13	85 - 80	Pole	TP29.41x28.46x0.5	13	-20.87	2859.03	39.4	Pass
L14	80 - 75	Pole	TP30.36x29.41x0.5	14	-21.14	2882.52	40.3	Pass
L15	75 - 74	Pole	TP30.0503x29.1475x0.3125	15	-22.59	1838.06	74.0	Pass
L16	74 - 69	Pole	TP31.0006x30.0503x0.3125	16	-23.52	1896.79	79.8	Pass
L17	69 - 68.25	Pole	TP31.1431x31.0006x0.3125	17	-23.67	1905.60	80.7	Pass
L18	68.25 - 68	Pole	TP31.1907x31.1431x0.575	18	-23.75	3481.87	42.4	Pass
L19	68 - 63	Pole	TP32.141x31.1907x0.575	19	-25.08	3589.95	44.7	Pass
L20	63 - 58	Pole	TP33.0913x32.141x0.5625	20	-26.48	3619.02	47.7	Pass
L21	58 - 53	Pole	TP34.0416x33.0913x0.55	21	-27.86	3643.33	50.6	Pass
L22	53 - 48	Pole	TP34.9919x34.0416x0.5438	22	-29.37	3704.81	52.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L23	48 - 43	Pole	TP35.9422x34.9919x0.5375	23	-30.82	3763.91	55.1	Pass
L24	43 - 37.75	Pole	TP36.94x35.9422x0.5375	24	-30.98	3774.03	55.3	Pass
L25	37.75 - 37.5	Pole	TP36.3625x35.4122x0.6	25	-33.68	4244.05	52.9	Pass
L26	37.5 - 32.5	Pole	TP37.3129x36.3625x0.5875	26	-35.31	4267.51	55.1	Pass
L27	32.5 - 27.5	Pole	TP38.2632x37.3129x0.5875	27	-36.97	4377.94	56.2	Pass
L28	27.5 - 22.5	Pole	TP39.2135x38.2632x0.575	28	-38.67	4394.29	58.3	Pass
L29	22.5 - 17.5	Pole	TP40.1639x39.2135x0.575	29	-40.39	4502.38	59.1	Pass
L30	17.5 - 12.5	Pole	TP41.1142x40.1639x0.5688	30	-42.15	4561.04	60.5	Pass
L31	12.5 - 7.5	Pole	TP42.0645x41.1142x0.5625	31	-43.93	4617.35	61.8	Pass
L32	7.5 - 2.5	Pole	TP43.0148x42.0645x0.5625	32	-45.74	4723.08	62.4	Pass
L33	2.5 - 0	Pole	TP43.49x43.0148x0.5563	33	-46.65	4723.56	63.4	Pass
							Summary	
						Pole (L17)	80.7	Pass
						RATING =	**80.7**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 95 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 95 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 50 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 131 FT LEVEL
(2) 3/4" TO 131 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 60 FT LEVEL
(1) 3/8" TO 131 FT LEVEL
(2) 3/4" TO 131 FT LEVEL
(6) 1-1/4" TO 131 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 119 FT LEVEL
(3) 1-5/8" TO 119 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-1/4" TO 101 FT LEVEL
(4) 1-5/8" TO 101 FT LEVEL
Q4
Q1
Q3
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876340

Work Order: 1945894

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	133.5	12	0	0	10.75	10.75	0.188		A572-65
2	121.5	2.5	0	0	10.75	22	0.188		A572-65
3	119	44	3.75	12	22.00	30.36	0.25	Auto	A572-65
4	78.75	41	4.75	12	29.15	36.94	0.3125	Auto	A572-65
5	42.5	42.5	0	12	35.41	43.49	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	68.25	channel	MP3-05 (1.1875in)	4												
2	78.75	85.25	plate	MP3-08.5 (1.1875")	4												
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
2	3.82714	1.31853	4.98698	0.957	PC 8.8 - M20 (100)	23	PC 8.8 - M20 (100)	23.000	18.000	3.438	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
MP3-08.5 (1.1875")	Top	8	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	2	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	133.5 - 128.5	5		0	10.750	10.750	0.188	A572-65	1.000
2	128.5 - 123.5	5		0	10.750	10.750	0.188	A572-65	1.000
3	123.5 - 121.5	2	0	0	10.750	10.750	0.188	A572-65	1.000
4	121.5 - 119	2.5	0	0	10.750	22.000	0.188	A572-65	1.000
5	119 - 114	5		12	22.000	22.950	0.25	A572-65	1.000
6	114 - 109	5		12	22.950	23.900	0.25	A572-65	1.000
7	109 - 104	5		12	23.900	24.850	0.25	A572-65	1.000
8	104 - 99	5		12	24.850	25.800	0.25	A572-65	1.000
9	99 - 94	5		12	25.800	26.750	0.25	A572-65	1.000
10	94 - 89	5		12	26.750	27.700	0.25	A572-65	1.000
11	89 - 85.25	3.75		12	27.700	28.413	0.25	A572-65	1.000
12	85.25 - 85	0.25		12	28.413	28.460	0.5125	A572-65	0.926
13	85 - 80	5		12	28.460	29.410	0.5	A572-65	0.934
14	80 - 78.75	5	3.75	12	29.410	30.360	0.5	A572-65	0.930
15	78.75 - 74	4.75		12	29.148	30.050	0.3125	A572-65	1.000
16	74 - 69	5		12	30.050	31.001	0.3125	A572-65	1.000
17	69 - 68.25	0.75		12	31.001	31.143	0.3125	A572-65	1.000
18	68.25 - 68	0.25		12	31.143	31.191	0.575	A572-65	0.947
19	68 - 63	5		12	31.191	32.141	0.575	A572-65	0.935
20	63 - 58	5		12	32.141	33.091	0.5625	A572-65	0.944
21	58 - 53	5		12	33.091	34.042	0.55	A572-65	0.954
22	53 - 48	5		12	34.042	34.992	0.54375	A572-65	0.954
23	48 - 43	5		12	34.992	35.942	0.5375	A572-65	0.954
24	43 - 42.5	5.25	4.75	12	35.942	36.940	0.5375	A572-65	0.953
25	42.5 - 37.5	5		12	35.412	36.363	0.6	A572-65	0.956
26	37.5 - 32.5	5		12	36.363	37.313	0.5875	A572-65	0.968
27	32.5 - 27.5	5		12	37.313	38.263	0.5875	A572-65	0.959
28	27.5 - 22.5	5		12	38.263	39.214	0.575	A572-65	0.972
29	22.5 - 17.5	5		12	39.214	40.164	0.575	A572-65	0.964
30	17.5 - 12.5	5		12	40.164	41.114	0.56875	A572-65	0.967
31	12.5 - 7.5	5		12	41.114	42.065	0.5625	A572-65	0.971
32	7.5 - 2.5	5		12	42.065	43.015	0.5625	A572-65	0.964
33	2.5 - 0	2.5		12	43.015	43.490	0.55625	A572-65	0.971

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	133.5 - 128.5	2.68	17.78	5.76
2	128.5 - 123.5	2.88	46.90	5.89
3	123.5 - 121.5	2.98	58.72	5.94
4	121.5 - 119	3.11	73.67	6.04
5	119 - 114	7.55	135.58	11.82
6	114 - 109	9.68	198.21	13.46
7	109 - 104	10.16	266.77	13.97
8	104 - 99	14.90	357.63	20.37
9	99 - 94	18.44	459.72	24.39
10	94 - 89	19.15	582.80	24.86
11	89 - 85.25	19.71	676.64	25.21
12	85.25 - 85	19.78	682.94	25.25
13	85 - 80	20.87	810.44	25.79
14	80 - 78.75	21.14	842.75	25.93
15	78.75 - 74	22.59	967.25	26.50
16	74 - 69	23.52	1100.79	26.95
17	69 - 68.25	23.67	1121.01	27.02
18	68.25 - 68	23.75	1127.77	27.05
19	68 - 63	25.08	1264.30	27.59
20	63 - 58	26.48	1403.68	28.17
21	58 - 53	27.86	1546.36	28.95
22	53 - 48	29.37	1692.60	29.58
23	48 - 43	30.82	1841.81	30.13
24	43 - 42.5	30.98	1856.88	30.18
25	42.5 - 37.5	33.68	2009.34	30.82
26	37.5 - 32.5	35.31	2164.64	31.33
27	32.5 - 27.5	36.97	2322.43	31.82
28	27.5 - 22.5	38.67	2482.56	32.27
29	22.5 - 17.5	40.39	2644.89	32.70
30	17.5 - 12.5	42.15	2809.24	33.08
31	12.5 - 7.5	43.93	2975.53	33.47
32	7.5 - 2.5	45.74	3143.73	33.85
33	2.5 - 0	46.65	3228.56	34.05

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133.5 - 128.5	Pole	TP10.75x10.75x0.188	Pole	19.5%	Pass
128.5 - 123.5	Pole	TP10.75x10.75x0.188	Pole	49.8%	Pass
123.5 - 121.5	Pole	TP10.75x10.75x0.188	Pole	62.1%	Pass
121.5 - 119	Pole	TP22x10.75x0.188	Pole	20.0%	Pass
119 - 114	Pole	TP22.95x22x0.25	Pole	22.2%	Pass
114 - 109	Pole	TP23.9x22.95x0.25	Pole	30.2%	Pass
109 - 104	Pole	TP24.85x23.9x0.25	Pole	37.9%	Pass
104 - 99	Pole	TP25.8x24.85x0.25	Pole	47.9%	Pass
99 - 94	Pole	TP26.75x25.8x0.25	Pole	58.1%	Pass
94 - 89	Pole	TP27.7x26.75x0.25	Pole	69.3%	Pass
89 - 85.25	Pole	TP28.413x27.7x0.25	Pole	77.1%	Pass
85.25 - 85	Pole + Reinf.	TP28.46x28.413x0.5125	Reinf. 2 Tension Rupture	65.7%	Pass
85 - 80	Pole + Reinf.	TP29.41x28.46x0.5	Reinf. 2 Tension Rupture	74.1%	Pass
80 - 78.75	Pole + Reinf.	TP30.36x29.41x0.5	Reinf. 2 Tension Rupture	76.1%	Pass
78.75 - 74	Pole	TP30.05x29.148x0.3125	Pole	73.8%	Pass
74 - 69	Pole	TP31.001x30.05x0.3125	Pole	79.6%	Pass
69 - 68.25	Pole	TP31.143x31.001x0.3125	Pole	80.4%	Pass
68.25 - 68	Pole + Reinf.	TP31.191x31.143x0.575	Reinf. 1 Tension Rupture	60.4%	Pass
68 - 63	Pole + Reinf.	TP32.141x31.191x0.575	Reinf. 1 Tension Rupture	64.6%	Pass
63 - 58	Pole + Reinf.	TP33.091x32.141x0.5625	Reinf. 1 Tension Rupture	68.5%	Pass
58 - 53	Pole + Reinf.	TP34.042x33.091x0.55	Reinf. 1 Tension Rupture	72.1%	Pass
53 - 48	Pole + Reinf.	TP34.992x34.042x0.5438	Reinf. 1 Tension Rupture	75.5%	Pass
48 - 43	Pole + Reinf.	TP35.942x34.992x0.5375	Reinf. 1 Tension Rupture	78.7%	Pass
43 - 42.5	Pole + Reinf.	TP36.94x35.942x0.5375	Reinf. 1 Tension Rupture	79.0%	Pass
42.5 - 37.5	Pole + Reinf.	TP36.363x35.412x0.6	Reinf. 1 Tension Rupture	75.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP37.313x36.363x0.5875	Reinf. 1 Tension Rupture	77.9%	Pass
32.5 - 27.5	Pole + Reinf.	TP38.263x37.313x0.5875	Reinf. 1 Tension Rupture	80.1%	Pass
27.5 - 22.5	Pole + Reinf.	TP39.214x38.263x0.575	Reinf. 1 Tension Rupture	82.2%	Pass
22.5 - 17.5	Pole + Reinf.	TP40.164x39.214x0.575	Reinf. 1 Tension Rupture	84.1%	Pass
17.5 - 12.5	Pole + Reinf.	TP41.114x40.164x0.5688	Reinf. 1 Tension Rupture	85.8%	Pass
12.5 - 7.5	Pole + Reinf.	TP42.065x41.114x0.5625	Reinf. 1 Tension Rupture	87.5%	Pass
7.5 - 2.5	Pole + Reinf.	TP43.015x42.065x0.5625	Reinf. 1 Tension Rupture	89.0%	Pass
2.5 - 0	Pole + Reinf.	TP43.49x43.015x0.5563	Reinf. 1 Tension Rupture	89.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	89.7%	Pass
			Overall	89.7%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
133.5 - 128.5	87	n/a	87	6.24	n/a	6.24	19.5%		
128.5 - 123.5	87	n/a	87	6.24	n/a	6.24	49.8%		
123.5 - 121.5	87	n/a	87	6.24	n/a	6.24	62.1%		
121.5 - 119	766	n/a	766	12.88	n/a	12.88	20.0%		
119 - 114	1204	n/a	1204	18.25	n/a	18.25	22.2%		
114 - 109	1361	n/a	1361	19.01	n/a	19.01	30.2%		
109 - 104	1532	n/a	1532	19.77	n/a	19.77	37.9%		
104 - 99	1716	n/a	1716	20.54	n/a	20.54	47.9%		
99 - 94	1915	n/a	1915	21.30	n/a	21.30	58.1%		
94 - 89	2128	n/a	2128	22.07	n/a	22.07	69.3%		
89 - 85.25	2298	n/a	2298	22.64	n/a	22.64	77.1%		
85.25 - 85	2310	2314	4624	22.68	19.95	42.62	37.5%		66.1%
85 - 80	2551	2460	5011	23.44	19.95	43.39	43.0%		74.6%
80 - 78.75	2614	2498	5112	23.63	19.95	43.58	44.3%		76.6%
78.75 - 74	3382	n/a	3382	29.88	n/a	29.88	73.8%		
74 - 69	3717	n/a	3717	30.84	n/a	30.84	79.6%		
69 - 68.25	3769	n/a	3769	30.98	n/a	30.98	80.4%		
68.25 - 68	3786	3048	6835	31.03	22.60	53.63	43.2%	60.4%	
68 - 63	4147	3227	7374	31.98	22.60	54.58	46.8%	64.6%	
63 - 58	4530	3410	7940	32.94	22.60	55.54	50.2%	68.5%	
58 - 53	4935	3599	8534	33.89	22.60	56.49	53.6%	72.1%	
53 - 48	5364	3793	9157	34.85	22.60	57.45	56.8%	75.5%	
48 - 43	5817	3992	9809	35.80	22.60	58.40	60.0%	78.7%	
43 - 42.5	5864	4012	9876	35.90	22.60	58.50	60.3%	79.0%	
42.5 - 37.5	7193	4081	11274	43.39	22.60	65.99	53.8%	75.5%	
37.5 - 32.5	7778	4288	12066	44.54	22.60	67.14	56.1%	77.9%	
32.5 - 27.5	8394	4499	12893	45.68	22.60	68.28	58.3%	80.1%	
27.5 - 22.5	9042	4716	13757	46.83	22.60	69.43	60.4%	82.2%	
22.5 - 17.5	9722	4937	14659	47.98	22.60	70.58	62.5%	84.1%	
17.5 - 12.5	10435	5164	15599	49.12	22.60	71.72	64.4%	85.8%	
12.5 - 7.5	11182	5396	16578	50.27	22.60	72.87	66.4%	87.5%	
7.5 - 2.5	11965	5632	17597	51.41	22.60	74.01	68.2%	89.0%	
2.5 - 0	12369	5753	18122	51.99	22.60	74.59	69.1%	89.7%	

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

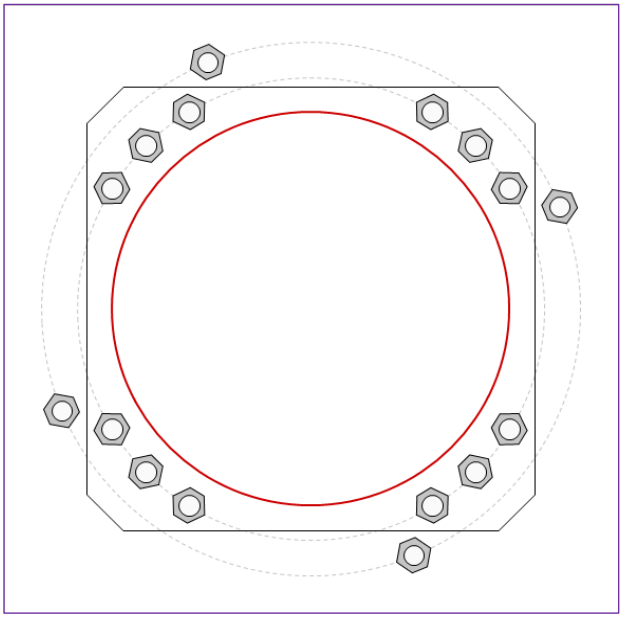
Monopole Base Plate Connection

Site Info	
BU #	876340
Site Name	COE HILL
Order #	553291 Rev. 0

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

Applied Loads	
Moment (kip-ft)	3228.56
Axial Force (kips)	46.65
Shear Force (kips)	34.05

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 51" BC

Anchor Spacing: 6 in

GROUP 2: (4) 2-1/4" ø bolts (Dywidag N; Fy=120 ksi, Fu=125 ksi) on 58.99" BC

Base Plate Data

49" W x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 4 in

Stiffener Data

N/A

Pole Data

43.49" x 0.375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_t = 171.11	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.84	ϕVn = 149.1	**66.9%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 202.22	ϕPn_t = 304.69	**Stress Rating**
Vu = 0	ϕVn = 186.38	**63.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	29.85	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**63.2%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

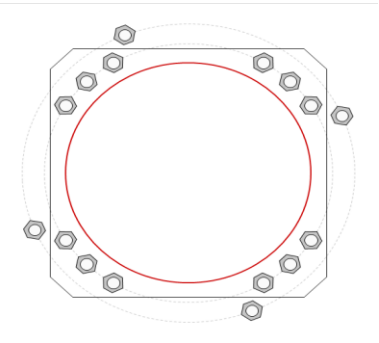
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	31.4873459	2.25	A615-75	51	0.5	0.75	N-Included		No
2	1	45	2.25	A615-75	51	0.5	0.75	N-Included		No
3	1	58.5126541	2.25	A615-75	51	0.5	0.75	N-Included		No
4	1	121.487346	2.25	A615-75	51	0.5	0.75	N-Included		No
5	1	135	2.25	A615-75	51	0.5	0.75	N-Included		No
6	1	148.512654	2.25	A615-75	51	0.5	0.75	N-Included		No
7	1	211.487346	2.25	A615-75	51	0.5	0.75	N-Included		No
8	1	225	2.25	A615-75	51	0.5	0.75	N-Included		No
9	1	238.512654	2.25	A615-75	51	0.5	0.75	N-Included		No
10	1	301.487346	2.25	A615-75	51	0.5	0.75	N-Included		No
11	1	315	2.25	A615-75	51	0.5	0.75	N-Included		No
12	1	328.512654	2.25	A615-75	51	0.5	0.75	N-Included		No
13	2	22.5	2.25	Dywidag	58.99	0.5	0	N-Included		No
14	2	112.5	2.25	Dywidag	58.99	0.5	0	N-Included		No
15	2	202.5	2.25	Dywidag	58.99	0.5	0	N-Included		No
16	2	292.5	2.25	Dywidag	58.99	0.5	0	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	876340
Site Name:	COE HILL
Order Number:	529721 Rev. 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	3228.56	
Axial Force (kips)	46.67	
Shear Force (kips)	34.02	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	60	ksi

Pier Design Data		
Depth	21	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 21' below grade		
Pier Diameter	7	ft
Rebar Quantity	24	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.05	-
Soil Safety Factor	1.92	-
Max Moment (kip-ft)	3475.36	-
Rating*	*66.0%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	428.11	-
End Bearing (kips)	432.95	-
Weight of Concrete (kips)	148.94	-
Total Capacity (kips)	861.06	-
Axial (kips)	195.61	-
Rating*	*21.6%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.88	-
Critical Moment (kip-ft)	3475.04	-
Critical Moment Capacity	5847.86	-
Rating*	*56.6%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	15.95	-
Critical Shear (kip)	494.91	-
Critical Shear Capacity	608.54	-
Rating*	*77.5%*	-

Soil Interaction Rating*	**66.0%**
Structural Foundation Rating*	**77.5%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	4

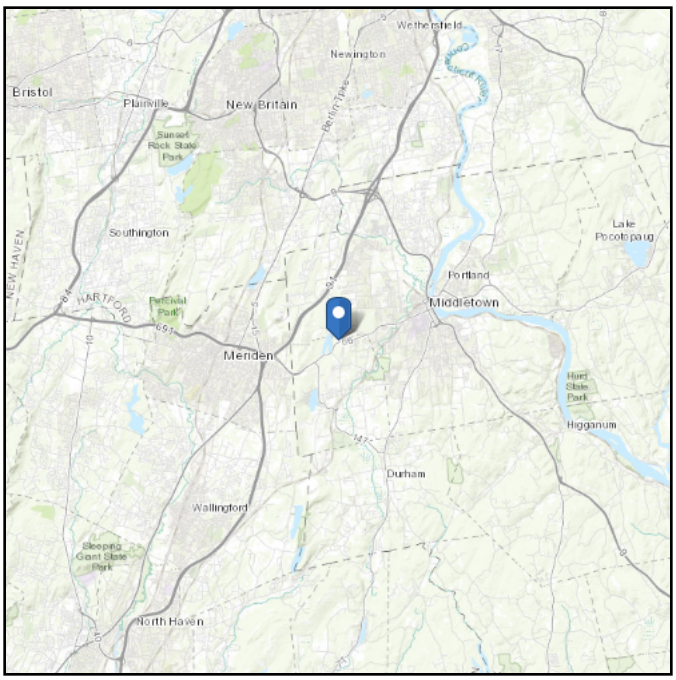
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	100	150	0	0	0.000	0.000					Cohesionless
2	2	3.5	1.5	120	150	0	0	0.000	0.000					Cohesionless
3	3.5	6	2.5	120	150		30	0.639	0.639				47	Cohesionless
4	6	21	15	125	150		35	1.624	1.624			15	41	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 444.26 ft (NAVD 88)
Latitude: 41.546
Longitude: -72.714972



Wind

Results:

Wind Speed:	125 Vmph per jurisdiction requirement
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	102 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Thu Oct 08 2020

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

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

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

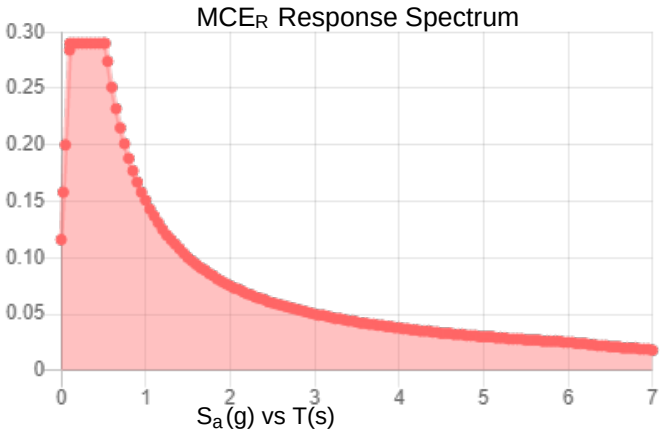
Seismic

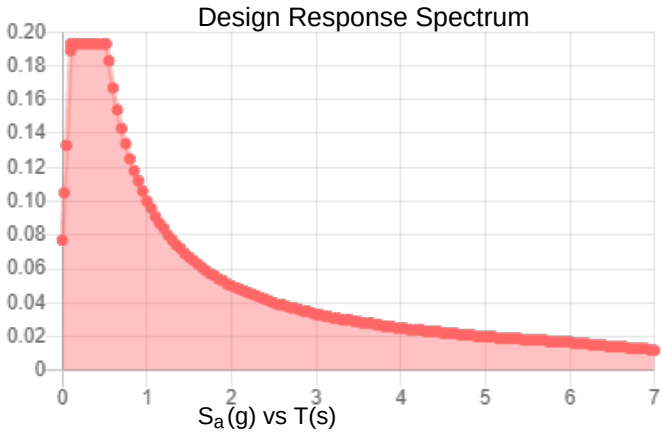
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.063	S_{D1} :	0.1
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.093
S_{MS} :	0.29	PGA_M :	0.148
S_{M1} :	0.151	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Oct 08 2020

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Oct 08 2020

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

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