

Date: **May 24, 2021**



Crown Castle
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Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00086A
Site Name: CT-CCI-T-876334

Crown Castle Designation: **BU Number:** 876334
Site Name: SOUTHTON, SMORON
JDE Job Number: 650076
Work Order Number: 1962706
Order Number: 556607 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1962706

Site Data: **625 Spring Street, SOUTHTON, HARTFORD County, CT**
Latitude 41° 37' 56.9", Longitude -72° 53' 39.3"
160.333 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 – 92.8%

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: Hayes Lei

Respectfully submitted by:

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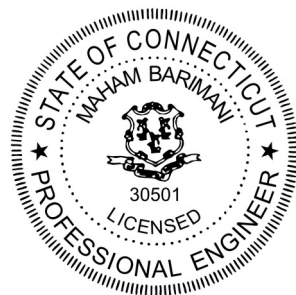


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1) INTRODUCTION

This tower is a 160.333 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:	2 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)
114.0	114.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
156.0	157.0	2	andrew	SBNH-1D6565C w/ Mount Pipe	2 6 8	3/8 3/4 1-5/8
		3	cci antennas	DTMABP7819VG12A		
		2	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 12		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4478 B14		
		1	kathrein	80010798 w/ Mount Pipe		
		1	kathrein	80010965 w/ Mount Pipe		
		2	kathrein	80010966 w/ Mount Pipe		
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		1	raycap	DC6-48-60-0-8F		
		2	raycap	DC6-48-60-18-8F		
	156.0	1	tower mounts	Sector Mount [SM 502-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
146.0	147.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	4	1-5/8
		3	ericsson	RADIO 4415 B66A		
		3	ericsson	RADIO 4424 B25_TMO		
		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		
	146.0	1	tower mounts	Platform Mount [LP 1201-1]		
	145.0	1	tower mounts	Miscellaneous [NA 510-1]		
139.0	139.0	3	rfs celwave	APXV18-206517S-C	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
132.0	134.0	6	antel	BXA-80080-6CF-EDIN-X w/ Mount Pipe	6	1-1/4 1-5/8
	133.0	6	andrew	SBNHH-1D65B w/ Mount Pipe		
		1	rfs celwave	DB-C1-12C-24AB-0Z		
		3	samsung telecommunications	20W CBRS		
		3	samsung telecommunications	CBRS w/ Mount Pipe		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
132.0	1	tower mounts	Platform Mount [LP 1201-1]			
101.0	102.0	1	symmetricom	58532A	1	1/2
	101.0	1	tower mounts	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	1614569	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1999756	CCISITES
4-GEOTECHNICAL REPORTS	1530919	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2588177	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3363885	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5288062	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5755362	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6249238	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6962729	CCISITES
4-POST-MODIFICATION INSPECTION	2588175	CCISITES

Document	Reference	Source
4-POST-MODIFICATION INSPECTION	3794196	CCISITES
4-POST-MODIFICATION INSPECTION	5570676	CCISITES
4-POST-MODIFICATION INSPECTION	5888770	CCISITES
4-POST-MODIFICATION INSPECTION	6544953	CCISITES
4-POST-MODIFICATION INSPECTION	7104038	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. These calculations are included in Appendix C.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160.33 - 155.33	Pole	TP16x16x0.375	Pole	5.7%	Pass
155.33 - 150.33	Pole	TP16x16x0.375	Pole	22.8%	Pass
150.33 - 146.83	Pole	TP16x16x0.375	Pole	35.5%	Pass
146.83 - 146.33	Pole	TP22x22x0.375	Pole	19.7%	Pass
146.33 - 141.33	Pole	TP22.924x22x0.25	Pole	29.5%	Pass
141.33 - 136.33	Pole	TP23.848x22.924x0.25	Pole	40.2%	Pass
136.33 - 131.33	Pole	TP24.772x23.848x0.25	Pole	52.0%	Pass
131.33 - 126.33	Pole	TP25.696x24.772x0.25	Pole	64.8%	Pass
126.33 - 121.33	Pole	TP26.62x25.696x0.25	Pole	76.5%	Pass
121.33 - 120.08	Pole	TP26.851x26.62x0.25	Pole	79.3%	Pass
120.08 - 119.83	Pole + Reinf.	TP26.897x26.851x0.4875	Reinf. 18 Tension Rupture	55.1%	Pass
119.83 - 117.5	Pole + Reinf.	TP27.328x26.897x0.4875	Reinf. 18 Tension Rupture	58.8%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.375x27.328x0.5	Reinf. 19 Tension Rupture	54.7%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.698x27.375x0.5	Reinf. 19 Tension Rupture	57.2%	Pass

115.5 - 115.25	Pole + Reinf.	TP27.744x27.698x0.6625	Reinf. 11 Tension Rupture	50.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.668x27.744x0.65	Reinf. 11 Tension Rupture	57.7%	Pass
110.25 - 107.82	Pole + Reinf.	TP29.808x28.668x0.6375	Reinf. 11 Tension Rupture	61.1%	Pass
107.82 - 102.82	Pole + Reinf.	TP29.541x28.617x0.7	Reinf. 11 Tension Rupture	63.3%	Pass
102.82 - 100.5	Pole + Reinf.	TP29.969x29.541x0.6875	Reinf. 11 Tension Rupture	66.2%	Pass
100.5 - 100.25	Pole + Reinf.	TP30.015x29.969x0.6375	Reinf. 18 Tension Rupture	67.6%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.338x30.015x0.625	Reinf. 18 Tension Rupture	69.7%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.385x30.338x0.6625	Reinf. 10 Tension Rupture	66.7%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.308x30.385x0.65	Reinf. 10 Tension Rupture	72.1%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.816x31.308x0.6375	Reinf. 10 Tension Rupture	74.9%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.862x31.816x0.6875	Reinf. 10 Tension Rupture	73.9%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.785x31.862x0.675	Reinf. 10 Tension Rupture	78.7%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.108x32.785x0.6625	Reinf. 10 Tension Rupture	80.4%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.154x33.108x0.9125	Reinf. 22 Tension Rupture	60.9%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.616x33.154x0.8875	Reinf. 22 Tension Rupture	62.8%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.662x33.616x1.0625	Reinf. 22 Tension Rupture	51.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP33.708x33.662x0.975	Reinf. 8 Tension Rupture	55.6%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.216x33.708x0.9625	Reinf. 8 Tension Rupture	57.3%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.262x34.216x0.6875	Reinf. 8 Tension Rupture	80.2%	Pass
77.25 - 73.29	Pole + Reinf.	TP35.819x34.262x0.6875	Reinf. 8 Tension Rupture	83.4%	Pass
73.29 - 68.29	Pole + Reinf.	TP35.291x34.368x0.75	Reinf. 8 Tension Rupture	81.7%	Pass
68.29 - 64.25	Pole + Reinf.	TP36.037x35.291x0.7375	Reinf. 8 Tension Rupture	84.4%	Pass
64.25 - 64	Pole + Reinf.	TP36.084x36.037x0.875	Reinf. 21 Tension Rupture	74.4%	Pass
64 - 60.5	Pole + Reinf.	TP36.73x36.084x0.8625	Reinf. 21 Tension Rupture	76.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.776x36.73x0.925	Reinf. 21 Tension Rupture	72.2%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.807x36.776x0.925	Reinf. 21 Tension Rupture	72.3%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.853x36.807x0.975	Reinf. 21 Tension Rupture	69.9%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.991x36.853x0.975	Reinf. 21 Tension Rupture	70.3%	Pass
59.08 - 58.83	Pole + Reinf.	TP37.037x36.991x1.05	Reinf. 21 Tension Rupture	64.0%	Pass
58.83 - 55.42	Pole + Reinf.	TP37.668x37.037x1.025	Reinf. 21 Tension Rupture	65.7%	Pass
55.42 - 55.17	Pole + Reinf.	TP37.714x37.668x1.025	Reinf. 21 Tension Rupture	65.8%	Pass
55.17 - 54.75	Pole + Reinf.	TP37.791x37.714x1.025	Reinf. 21 Tension Rupture	66.0%	Pass
54.75 - 54.5	Pole + Reinf.	TP37.837x37.791x0.825	Reinf. 7 Tension Rupture	80.2%	Pass
54.5 - 49.5	Pole + Reinf.	TP38.76x37.837x0.8125	Reinf. 7 Tension Rupture	82.7%	Pass
49.5 - 44.5	Pole + Reinf.	TP39.683x38.76x0.8	Reinf. 7 Tension Rupture	85.2%	Pass
44.5 - 41.25	Pole + Reinf.	TP40.283x39.683x0.7875	Reinf. 7 Tension Rupture	86.7%	Pass
41.25 - 41	Pole + Reinf.	TP40.329x40.283x0.875	Reinf. 7 Tension Rupture	76.1%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.329x0.875	Reinf. 7 Tension Rupture	76.9%	Pass
39 - 33.29	Pole + Reinf.	TP40.996x39.949x1.175	Reinf. 7 Tension Rupture	60.1%	Pass

33.29 - 31.5	Pole + Reinf.	TP41.324x40.996x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.37x41.324x1.175	Reinf. 7 Tension Rupture	60.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.507x41.37x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.553x41.507x1.125	Reinf. 6 Tension Rupture	63.7%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.378x41.553x1.1	Reinf. 6 Tension Rupture	65.2%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.424x42.378x1.025	Reinf. 6 Tension Rupture	71.4%	Pass
25.5 - 24.67	Pole + Reinf.	TP42.577x42.424x1.025	Reinf. 6 Tension Rupture	71.7%	Pass
24.67 - 24.42	Pole + Reinf.	TP42.623x42.577x0.925	Reinf. 6 Tension Rupture	78.9%	Pass
24.42 - 24	Pole + Reinf.	TP42.699x42.623x0.9125	Reinf. 6 Tension Rupture	79.0%	Pass
24 - 23.75	Pole + Reinf.	TP42.745x42.699x1.025	Reinf. 6 Tension Rupture	74.8%	Pass
23.75 - 18.75	Pole + Reinf.	TP43.662x42.745x1	Reinf. 6 Tension Rupture	76.6%	Pass
18.75 - 14.08	Pole + Reinf.	TP44.518x43.662x0.9875	Reinf. 6 Tension Rupture	78.3%	Pass
14.08 - 13.82	Pole + Reinf.	TP44.566x44.518x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.82 - 13.67	Pole + Reinf.	TP44.594x44.566x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.67 - 10.5	Pole + Reinf.	TP45.175x44.594x0.95	Reinf. 1 Tension Rupture	77.6%	Pass
10.5 - 10.25	Pole + Reinf.	TP45.22x45.175x0.9	Reinf. 13 Tension Rupture	80.1%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.137x45.22x0.875	Reinf. 13 Tension Rupture	81.8%	Pass
5.25 - 2.9	Pole + Reinf.	TP46.568x46.137x0.75	Reinf. 23 Compression	92.7%	Pass
2.9 - 2.65	Pole + Reinf.	TP46.614x46.568x0.75	Reinf. 23 Compression	92.7%	Pass
2.65 - 2.5	Pole + Reinf.	TP46.642x46.614x0.75	Reinf. 23 Compression	92.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP46.687x46.642x0.875	Reinf. 23 Compression	79.3%	Pass
2.25 - 1.92	Pole + Reinf.	TP46.748x46.687x0.875	Reinf. 23 Compression	79.4%	Pass
1.92 - 1.67	Pole + Reinf.	TP46.794x46.748x0.775	Reinf. 23 Compression	85.2%	Pass
1.67 - 0	Pole + Reinf.	TP47.1x46.794x0.7625	Reinf. 23 Compression	85.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	92.8%	Pass
			Overall	92.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	146	56.5	Pass
1	Flange Plate	146	60.3	Pass
1	Anchor Rod Brackets	0	81.7	Pass
1	Anchor Rods	0	70.2	Pass
1	Base Plate	0	63.3	Pass
1	Base Foundation (Structure)	0	62.6	Pass
1	Base Foundation (Soil Interaction)	0	89.9	Pass

Structure Rating (max from all components) =	92.8%
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Notes:

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

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

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

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 296.000 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 2.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING: 92.8%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	160.333-155.333	5.000	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L2	155.333-150.333	5.000	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L3	150.333-146.833	3.500	0.000	Round	16.000	16.000	0.375		A53-B-35 (35 ksi)
L4	146.833-146.333	0.500	0.000	Round	22.000	22.000	0.375		A53-B-35 (35 ksi)
L5	146.333-141.333	5.000	0.000	12	22.000	22.924	0.250	1.000	A607-60 (60 ksi)
L6	141.333-136.333	5.000	0.000	12	22.924	23.848	0.250	1.000	A607-60 (60 ksi)
L7	136.333-131.333	5.000	0.000	12	23.848	24.772	0.250	1.000	A607-60 (60 ksi)
L8	131.333-126.333	5.000	0.000	12	24.772	25.696	0.250	1.000	A607-60 (60 ksi)
L9	126.333-121.333	5.000	0.000	12	25.696	26.620	0.250	1.000	A607-60 (60 ksi)
L10	121.333-120.083	1.250	0.000	12	26.620	26.851	0.250	1.000	A607-60 (60 ksi)
L11	120.083-119.833	0.250	0.000	12	26.851	26.897	0.487	1.950	A607-60 (60 ksi)
L12	119.833-117.500	2.333	0.000	12	26.897	27.328	0.487	1.950	A607-60 (60 ksi)
L13	117.500-117.250	0.250	0.000	12	27.328	27.375	0.500	2.000	A607-60 (60 ksi)
L14	117.250-115.500	1.750	0.000	12	27.375	27.698	0.500	2.000	A607-60 (60 ksi)
L15	115.500-115.250	0.250	0.000	12	27.698	27.744	0.662	2.650	A607-60 (60 ksi)
L16	115.250-110.250	5.000	0.000	12	27.744	28.668	0.650	2.600	A607-60 (60 ksi)
L17	110.250-104.083	6.167	3.737	12	28.668	29.808	0.637	2.550	A607-60 (60 ksi)
L18	104.083-102.820	5.000	0.000	12	28.617	29.541	0.700	2.800	A607-60 (60 ksi)
L19	102.820-100.500	2.320	0.000	12	29.541	29.969	0.688	2.750	A607-60 (60 ksi)
L20	100.500-100.250	0.250	0.000	12	29.969	30.015	0.637	2.550	A607-60 (60 ksi)
L21	100.250-98.500	1.750	0.000	12	30.015	30.338	0.625	2.500	A607-60 (60 ksi)
L22	98.500-98.250	0.250	0.000	12	30.338	30.385	0.662	2.650	A607-60 (60 ksi)
L23	98.250-93.250	5.000	0.000	12	30.385	31.308	0.650	2.600	A607-60 (60 ksi)
L24	93.250-90.500	2.750	0.000	12	31.308	31.816	0.637	2.550	A607-60 (60 ksi)
L25	90.500-90.250	0.250	0.000	12	31.816	31.862	0.688	2.750	A607-60 (60 ksi)
L26	90.250-85.250	5.000	0.000	12	31.862	32.785	0.675	2.700	A607-60 (60 ksi)
L27	85.250-83.500	1.750	0.000	12	32.785	33.108	0.662	2.650	A607-60 (60 ksi)
L28	83.500-83.250	0.250	0.000	12	33.108	33.154	0.912	3.650	A607-60 (60 ksi)
L29	83.250-80.750	2.500	0.000	12	33.154	33.616	0.887	3.550	A607-60 (60 ksi)
L30	80.750-80.500	0.250	0.000	12	33.616	33.662	1.063	4.250	A607-60 (60 ksi)
L31	80.500-80.250	0.250	0.000	12	33.662	33.708	0.975	3.900	A607-60 (60 ksi)
L32	80.250-77.500	2.750	0.000	12	33.708	34.216	0.963	3.850	A607-60 (60 ksi)
L33	77.500-77.250	0.250	0.000	12	34.216	34.262	0.688	2.750	A607-60 (60 ksi)
L34	77.250-68.820	8.430	4.471	12	34.262	35.819	0.688	2.750	A607-60 (60 ksi)
L35	68.820-68.291	5.000	0.000	12	34.368	35.291	0.750	3.000	A607-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L36	68.291-64.250	4.041	0.000	12	35.291	36.037	0.738	2.950	(60 ksi) A607-60
L37	64.250-64.000	0.250	0.000	12	36.037	36.084	0.875	3.500	(60 ksi) A607-60
L38	64.000-60.500	3.500	0.000	12	36.084	36.730	0.863	3.450	(60 ksi) A607-60
L39	60.500-60.250	0.250	0.000	12	36.730	36.776	0.925	3.700	(60 ksi) A607-60
L40	60.250-60.083	0.167	0.000	12	36.776	36.807	0.925	3.700	(60 ksi) A607-60
L41	60.083-59.833	0.250	0.000	12	36.807	36.853	0.975	3.900	(60 ksi) A607-60
L42	59.833-59.083	0.750	0.000	12	36.853	36.991	0.975	3.900	(60 ksi) A607-60
L43	59.083-58.833	0.250	0.000	12	36.991	37.037	1.050	4.200	(60 ksi) A607-60
L44	58.833-55.417	3.416	0.000	12	37.037	37.668	1.025	4.100	(60 ksi) A607-60
L45	55.417-55.167	0.250	0.000	12	37.668	37.714	1.025	4.100	(60 ksi) A607-60
L46	55.167-54.750	0.417	0.000	12	37.714	37.791	1.025	4.100	(60 ksi) A607-60
L47	54.750-54.500	0.250	0.000	12	37.791	37.837	0.825	3.300	(60 ksi) A607-60
L48	54.500-49.500	5.000	0.000	12	37.837	38.760	0.813	3.250	(60 ksi) A607-60
L49	49.500-44.500	5.000	0.000	12	38.760	39.683	0.800	3.200	(60 ksi) A607-60
L50	44.500-41.250	3.250	0.000	12	39.683	40.283	0.787	3.150	(60 ksi) A607-60
L51	41.250-41.000	0.250	0.000	12	40.283	40.329	0.875	3.500	(60 ksi) A607-60
L52	41.000-34.291	6.709	4.709	12	40.329	41.568	0.875	3.500	(60 ksi) A607-60
L53	34.291-33.291	5.709	0.000	12	39.949	40.996	1.175	4.700	(65 ksi) A607-65
L54	33.291-31.500	1.791	0.000	12	40.996	41.324	1.175	4.700	(65 ksi) A607-65
L55	31.500-31.250	0.250	0.000	12	41.324	41.370	1.175	4.700	(65 ksi) A607-65
L56	31.250-30.500	0.750	0.000	12	41.370	41.507	1.175	4.700	(65 ksi) A607-65
L57	30.500-30.250	0.250	0.000	12	41.507	41.553	1.125	4.500	(65 ksi) A607-65
L58	30.250-25.750	4.500	0.000	12	41.553	42.378	1.100	4.400	(65 ksi) A607-65
L59	25.750-25.500	0.250	0.000	12	42.378	42.424	1.025	4.100	(65 ksi) A607-65
L60	25.500-24.667	0.833	0.000	12	42.424	42.577	1.025	4.100	(65 ksi) A607-65
L61	24.667-24.417	0.250	0.000	12	42.577	42.623	0.925	3.700	(65 ksi) A607-65
L62	24.417-24.000	0.417	0.000	12	42.623	42.699	0.912	3.650	(65 ksi) A607-65
L63	24.000-23.750	0.250	0.000	12	42.699	42.745	1.025	4.100	(65 ksi) A607-65
L64	23.750-18.750	5.000	0.000	12	42.745	43.662	1.000	4.000	(65 ksi) A607-65
L65	18.750-14.083	4.667	0.000	12	43.662	44.518	0.988	3.950	(65 ksi) A607-65
L66	14.083-13.817	0.266	0.000	12	44.518	44.566	0.963	3.850	(65 ksi) A607-65
L67	13.817-13.667	0.150	0.000	12	44.566	44.594	0.963	3.850	(65 ksi) A607-65
L68	13.667-10.500	3.167	0.000	12	44.594	45.175	0.950	3.800	(65 ksi) A607-65
L69	10.500-10.250	0.250	0.000	12	45.175	45.220	0.900	3.600	(65 ksi) A607-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L70	10.250-5.250	5.000	0.000	12	45.220	46.137	0.875	3.500	A607-65 (65 ksi)
L71	5.250-2.900	2.350	0.000	12	46.137	46.568	0.750	3.000	A607-65 (65 ksi)
L72	2.900-2.650	0.250	0.000	12	46.568	46.614	0.750	3.000	A607-65 (65 ksi)
L73	2.650-2.500	0.150	0.000	12	46.614	46.642	0.750	3.000	A607-65 (65 ksi)
L74	2.500-2.250	0.250	0.000	12	46.642	46.687	0.875	3.500	A607-65 (65 ksi)
L75	2.250-1.917	0.333	0.000	12	46.687	46.748	0.875	3.500	A607-65 (65 ksi)
L76	1.917-1.667	0.250	0.000	12	46.748	46.794	0.775	3.100	A607-65 (65 ksi)
L77	1.667-0.000	1.667		12	46.794	47.100	0.762	3.050	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L2	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L3	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
	16.000	18.408	562.084	5.526	8.000	70.261	1124.168	9.198	0.000	0
L4	22.000	25.476	1489.670	7.647	11.000	135.425	2979.340	12.731	0.000	0
	22.000	25.476	1489.670	7.647	11.000	135.425	2979.340	12.731	0.000	0
L5	22.688	17.509	1057.206	7.786	11.396	92.770	2142.186	8.617	5.226	20.904
	23.645	18.253	1197.754	8.117	11.875	100.867	2426.974	8.983	5.474	21.895
L6	23.645	18.253	1197.754	8.117	11.875	100.867	2426.974	8.983	5.474	21.895
	24.601	18.996	1350.237	8.448	12.353	109.302	2735.946	9.349	5.721	22.885
L7	24.601	18.996	1350.237	8.448	12.353	109.302	2735.946	9.349	5.721	22.885
	25.558	19.740	1515.142	8.779	12.832	118.076	3070.088	9.716	5.969	23.876
L8	25.558	19.740	1515.142	8.779	12.832	118.076	3070.088	9.716	5.969	23.876
	26.514	20.484	1692.954	9.110	13.311	127.189	3430.384	10.082	6.217	24.866
L9	26.514	20.484	1692.954	9.110	13.311	127.189	3430.384	10.082	6.217	24.866
	27.471	21.228	1884.161	9.441	13.789	136.640	3817.822	10.448	6.464	25.857
L10	27.471	21.228	1884.161	9.441	13.789	136.640	3817.822	10.448	6.464	25.857
	27.710	21.414	1934.113	9.523	13.909	139.056	3919.037	10.539	6.526	26.104
L11	27.626	41.384	3671.401	9.438	13.909	263.961	7439.253	20.368	5.890	12.081
	27.674	41.457	3690.736	9.455	13.933	264.895	7478.433	20.404	5.902	12.107
L12	27.674	41.457	3690.736	9.455	13.933	264.895	7478.433	20.404	5.902	12.107
	28.121	42.134	3874.461	9.609	14.156	273.695	7850.709	20.737	6.018	12.344
L13	28.116	43.194	3968.257	9.605	14.156	280.320	8040.764	21.259	5.984	11.968
	28.164	43.268	3988.793	9.621	14.180	281.296	8082.377	21.295	5.996	11.993
L14	28.164	43.268	3988.793	9.621	14.180	281.296	8082.377	21.295	5.996	11.993
	28.499	43.789	4134.536	9.737	14.348	288.169	8377.691	21.552	6.083	12.166
L15	28.441	57.674	5380.653	9.679	14.348	375.021	10902.662	28.385	5.648	8.525
	28.489	57.772	5408.285	9.695	14.372	376.319	10958.652	28.434	5.660	8.543
L16	28.494	56.708	5313.593	9.700	14.372	369.730	10766.780	27.910	5.693	8.759
	29.450	58.642	5875.989	10.031	14.850	395.685	11906.346	28.862	5.941	9.14
L17	29.455	57.540	5770.706	10.035	14.850	388.595	11693.014	28.320	5.975	9.372
	30.635	59.880	6503.597	10.443	15.441	421.203	13178.051	29.471	6.280	9.851
L18	30.094	62.926	6259.852	9.994	14.824	422.284	12684.157	30.970	5.793	8.276
	30.336	65.007	6901.696	10.325	15.302	451.030	13984.708	31.994	6.041	8.63
L19	30.340	63.874	6787.269	10.329	15.302	443.552	13752.847	31.437	6.074	8.835
	30.784	64.822	7094.107	10.483	15.524	456.977	14374.583	31.903	6.189	9.002
L20	30.801	60.210	6611.927	10.501	15.524	425.917	13397.557	29.634	6.323	9.919
	30.849	60.305	6643.195	10.517	15.548	427.273	13460.915	29.680	6.336	9.938
L21	30.854	59.148	6521.254	10.522	15.548	419.430	13213.828	29.111	6.369	10.191
	31.188	59.798	6738.733	10.637	15.715	428.801	13654.501	29.431	6.456	10.329
L22	31.175	63.306	7116.047	10.624	15.715	452.811	14419.040	31.157	6.355	9.593
	31.223	63.405	7149.308	10.640	15.739	454.236	14486.436	31.206	6.368	9.611

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L23	31.227	62.234	7023.269	10.645	15.739	446.228	14231.047	30.630	6.401	9.848
	32.183	64.167	7698.030	10.976	16.217	474.675	15598.296	31.581	6.648	10.228
L24	32.187	62.959	7559.230	10.980	16.217	466.117	15317.049	30.986	6.682	10.482
	32.713	64.001	7940.953	11.162	16.481	481.839	16090.524	31.499	6.818	10.695
L25	32.695	68.910	8522.638	11.144	16.481	517.135	17269.176	33.915	6.684	9.722
	32.743	69.012	8560.613	11.160	16.504	518.686	17346.122	33.966	6.696	9.74
L26	32.748	67.785	8415.080	11.165	16.504	509.868	17051.233	33.361	6.730	9.97
	33.704	69.791	9184.809	11.495	16.983	540.834	18610.912	34.349	6.977	10.337
L27	33.708	68.526	9025.252	11.500	16.983	531.439	18287.607	33.726	7.011	10.582
	34.042	69.215	9300.380	11.616	17.150	542.294	18845.091	34.065	7.098	10.713
L28	33.954	94.599	12516.124	11.526	17.150	729.800	25361.060	46.559	6.428	7.044
	34.002	94.735	12570.040	11.543	17.174	731.924	25470.310	46.626	6.440	7.057
L29	34.011	92.211	12254.117	11.552	17.174	713.528	24830.162	45.383	6.507	7.332
	34.489	93.530	12787.636	11.717	17.413	734.368	25911.217	46.033	6.631	7.471
L30	34.427	111.374	15064.877	11.654	17.413	865.146	30525.526	54.815	6.162	5.799
	34.475	111.532	15129.059	11.671	17.437	867.640	30655.575	54.893	6.174	5.811
L31	34.506	102.621	13995.227	11.702	17.437	802.616	28358.124	50.507	6.408	6.573
	34.554	102.766	14054.607	11.719	17.461	804.917	28478.444	50.579	6.421	6.585
L32	34.558	101.488	13890.321	11.723	17.461	795.508	28145.555	49.949	6.454	6.706
	35.084	103.061	14546.605	11.905	17.724	820.730	29475.366	50.724	6.590	6.847
L33	35.181	74.224	10650.349	12.003	17.724	600.901	21580.495	36.531	7.327	10.658
	35.228	74.326	10694.402	12.020	17.748	602.573	21669.758	36.581	7.340	10.676
L34	35.228	74.326	10694.402	12.020	17.748	602.573	21669.758	36.581	7.340	10.676
	36.840	77.772	12251.933	12.577	18.554	660.331	24825.737	38.277	7.757	11.283
L35	36.171	81.188	11712.084	12.035	17.803	657.878	23731.858	39.958	7.201	9.601
	36.272	83.418	12703.513	12.366	18.281	694.904	25740.762	41.056	7.448	9.931
L36	36.276	82.057	12505.355	12.370	18.281	684.065	25339.239	40.386	7.482	10.145
	37.049	83.828	13332.906	12.637	18.667	714.235	27016.082	41.258	7.682	10.416
L37	37.000	99.070	15634.570	12.588	18.667	837.534	31679.878	48.759	7.313	8.358
	37.048	99.200	15696.213	12.605	18.691	839.761	31804.783	48.823	7.325	8.372
L38	37.052	97.818	15488.466	12.609	18.691	828.646	31383.831	48.143	7.359	8.532
	37.721	99.612	16356.590	12.840	19.026	859.698	33142.885	49.026	7.532	8.733
L39	37.699	106.644	17450.307	12.818	19.026	917.183	35359.054	52.487	7.365	7.962
	37.747	106.782	17517.873	12.835	19.050	919.579	35495.961	52.555	7.377	7.975
L40	37.747	106.782	17517.873	12.835	19.050	919.579	35495.961	52.555	7.377	7.975
	37.779	106.874	17563.105	12.846	19.066	921.181	35587.611	52.600	7.385	7.984
L41	37.761	112.494	18435.180	12.828	19.066	966.921	37354.672	55.366	7.251	7.437
	37.809	112.638	18506.505	12.844	19.090	969.447	37499.197	55.437	7.264	7.45
L42	37.809	112.638	18506.505	12.844	19.090	969.447	37499.197	55.437	7.264	7.45
	37.952	113.073	18721.585	12.894	19.161	977.043	37935.007	55.651	7.301	7.488
L43	37.926	121.517	20036.015	12.867	19.161	1045.640	40598.399	59.807	7.100	6.762
	37.974	121.673	20113.298	12.883	19.185	1048.366	40754.994	59.884	7.112	6.773
L44	37.982	118.859	19675.357	12.892	19.185	1025.539	39867.608	58.499	7.179	7.004
	38.635	120.941	20727.267	13.118	19.512	1062.279	41999.063	59.523	7.348	7.169
L45	38.635	120.941	20727.267	13.118	19.512	1062.279	41999.063	59.523	7.348	7.169
	38.683	121.093	20805.683	13.135	19.536	1064.993	42157.954	59.598	7.360	7.181
L46	38.683	121.093	20805.683	13.135	19.536	1064.993	42157.954	59.598	7.360	7.181
	38.763	121.347	20936.815	13.162	19.576	1069.524	42423.664	59.723	7.381	7.201
L47	38.833	98.201	17128.089	13.234	19.576	874.961	34706.152	48.331	7.917	9.596
	38.881	98.323	17192.321	13.250	19.600	877.171	34836.303	48.392	7.929	9.611
L48	38.885	96.866	16948.992	13.255	19.600	864.756	34343.253	47.675	7.963	9.8
	39.841	99.281	18248.467	13.585	20.078	908.885	36976.342	48.863	8.210	10.105
L49	39.845	97.786	17985.483	13.590	20.078	895.787	36443.464	48.127	8.244	10.305
	40.801	100.164	19329.622	13.920	20.556	940.340	39167.056	49.297	8.491	10.614
L50	40.805	98.630	19045.954	13.925	20.556	926.541	38592.266	48.543	8.525	10.825
	41.427	100.152	19940.967	14.140	20.867	955.633	40405.805	49.292	8.685	11.029
L51	41.396	111.033	22009.697	14.108	20.867	1054.773	44597.613	54.647	8.451	9.658
	41.443	111.163	22087.114	14.125	20.891	1057.272	44754.482	54.711	8.463	9.672
L52	41.443	111.163	22087.114	14.125	20.891	1057.272	44754.482	54.711	8.463	9.672
	42.726	114.653	24233.101	14.568	21.532	1125.434	49102.833	56.428	8.795	10.052
L53	41.837	146.700	28150.832	13.881	20.693	1360.376	57041.218	72.201	7.557	6.432
	42.027	150.661	30493.058	14.256	21.236	1435.935	61787.202	74.151	7.838	6.67
L54	42.027	150.661	30493.058	14.256	21.236	1435.935	61787.202	74.151	7.838	6.67
	42.367	151.904	31253.749	14.373	21.406	1460.060	63328.568	74.762	7.926	6.745
L55	42.367	151.904	31253.749	14.373	21.406	1460.060	63328.568	74.762	7.926	6.745
	42.415	152.077	31360.927	14.390	21.430	1463.443	63545.740	74.848	7.938	6.756
L56	42.415	152.077	31360.927	14.390	21.430	1463.443	63545.740	74.848	7.938	6.756
	42.557	152.597	31683.930	14.439	21.501	1473.617	64200.233	75.104	7.975	6.787
L57	42.575	146.285	30448.640	14.457	21.501	1416.164	61697.199	71.997	8.109	7.208
	42.622	146.451	30552.453	14.473	21.525	1419.425	61907.552	72.079	8.121	7.219

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L58	42.631	143.285	29928.963	14.482	21.525	1390.458	60644.193	70.521	8.188	7.444
	43.485	146.208	31798.019	14.778	21.952	1448.527	64431.407	71.959	8.409	7.645
L59	43.512	136.487	29791.773	14.804	21.952	1357.135	60366.209	67.175	8.610	8.4
	43.559	136.638	29890.959	14.821	21.976	1360.182	60567.186	67.249	8.623	8.412
L60	43.559	136.638	29890.959	14.821	21.976	1360.182	60567.186	67.249	8.623	8.412
	43.717	137.142	30223.154	14.876	22.055	1370.363	61240.304	67.497	8.664	8.452
L61	43.753	124.060	27471.947	14.911	22.055	1245.619	55665.613	61.059	8.932	9.656
	43.800	124.197	27562.753	14.928	22.079	1248.392	55849.610	61.126	8.944	9.669
L62	43.804	122.555	27214.744	14.932	22.079	1232.630	55144.449	60.318	8.977	9.838
	43.884	122.780	27364.582	14.960	22.118	1237.198	55448.061	60.428	8.998	9.861
L63	43.844	137.546	30490.700	14.919	22.118	1378.535	61782.425	67.696	8.696	8.484
	43.891	137.697	30591.430	14.936	22.142	1381.606	61986.531	67.770	8.709	8.496
L64	43.900	134.419	29898.983	14.945	22.142	1350.333	60583.445	66.157	8.776	8.776
	44.849	137.371	31912.554	15.273	22.617	1411.008	64663.485	67.610	9.021	9.021
L65	44.854	135.694	31541.355	15.277	22.617	1394.595	63911.337	66.784	9.055	9.17
	45.740	138.415	33477.211	15.584	23.060	1451.735	67833.906	68.124	9.284	9.402
L66	45.749	134.988	32685.938	15.593	23.060	1417.421	66230.573	66.437	9.351	9.716
	45.799	135.139	32795.872	15.610	23.085	1420.632	66453.329	66.512	9.364	9.729
L67	45.799	135.139	32795.872	15.610	23.085	1420.632	66453.329	66.512	9.364	9.729
	45.827	135.225	32857.974	15.620	23.100	1422.444	66579.163	66.553	9.372	9.737
L68	45.832	133.507	32459.128	15.625	23.100	1405.178	65770.994	65.708	9.405	9.9
	46.433	135.283	33772.141	15.832	23.400	1443.225	68431.514	66.582	9.561	10.064
L69	46.451	128.308	32103.301	15.850	23.400	1371.909	65049.992	63.149	9.695	10.772
	46.498	128.441	32203.123	15.867	23.424	1374.779	65252.259	63.215	9.707	10.786
L70	46.507	124.943	31361.603	15.876	23.424	1338.854	63547.110	61.493	9.774	11.17
	47.456	127.527	33347.281	16.204	23.899	1395.334	67570.632	62.765	10.020	11.451
L71	47.500	109.610	28820.853	16.249	23.899	1205.937	58398.861	53.947	10.355	13.806
	47.946	110.651	29649.556	16.403	24.122	1229.132	60078.038	54.459	10.470	13.96
L72	47.946	110.651	29649.556	16.403	24.122	1229.132	60078.038	54.459	10.470	13.96
	47.994	110.762	29738.639	16.419	24.146	1231.613	60258.545	54.514	10.483	13.977
L73	47.994	110.762	29738.639	16.419	24.146	1231.613	60258.545	54.514	10.483	13.977
	48.022	110.828	29792.174	16.429	24.160	1233.102	60367.022	54.546	10.490	13.987
L74	47.978	128.947	34474.291	16.384	24.160	1426.896	69854.259	63.464	10.155	11.606
	48.026	129.077	34577.987	16.401	24.184	1429.783	70064.377	63.528	10.167	11.62
L75	48.026	129.077	34577.987	16.401	24.184	1429.783	70064.377	63.528	10.167	11.62
	48.089	129.249	34716.433	16.423	24.216	1433.632	70344.906	63.612	10.184	11.638
L76	48.124	114.727	30950.369	16.459	24.216	1278.111	62713.838	56.465	10.452	13.486
	48.172	114.841	31043.046	16.475	24.239	1280.682	62901.627	56.521	10.464	13.502
L77	48.176	113.020	30567.247	16.479	24.239	1261.053	61937.529	55.625	10.497	13.767
	48.493	113.770	31180.241	16.589	24.398	1277.994	63179.622	55.994	10.579	13.874

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 160.333-155.333				1	1	1			
L2 155.333-150.333				1	1	1			
L3 150.333-146.833				1	1	1			
L4 146.833-146.333				1	1	1			
L5 146.333-141.333				1	1	1			
L6 141.333-136.333				1	1	1			
L7 136.333-131.333				1	1	1			
L8 131.333-126.333				1	1	1			
L9 126.333-121.333				1	1	1			
L10 121.333-120.083				1	1	1			
L11 120.083-119.833				1	1	0.952241			
L12 119.833-				1	1	0.945183			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L13 117.500-117.250				1	1	1.02541			
L14 117.250-115.500				1	1	1.01916			
L15 115.500-115.250				1	1	0.929133			
L16 115.250-110.250				1	1	0.928031			
L17 110.250-104.083				1	1	0.937076			
L18 104.083-102.820				1	1	0.937686			
L19 102.820-100.500				1	1	0.947009			
L20 100.500-100.250				1	1	0.979272			
L21 100.250-98.500				1	1	0.993012			
L22 98.500-98.250				1	1	0.984646			
L23 98.250-93.250				1	1	0.987428			
L24 93.250-90.500				1	1	0.997971			
L25 90.500-90.250				1	1	1.06041			
L26 90.250-85.250				1	1	1.06188			
L27 85.250-83.500				1	1	1.07542			
L28 83.500-83.250				1	1	0.976487			
L29 83.250-80.750				1	1	0.994032			
L30 80.750-80.500				1	1	0.929408			
L31 80.500-80.250				1	1	0.988425			
L32 80.250-77.500				1	1	0.990553			
L33 77.500-77.250				1	1	1.13161			
L34 77.250-68.820				1	1	1.11718			
L35 68.820-68.291				1	1	1.10418			
L36 68.291-64.250				1	1	1.10951			
L37 64.250-64.000				1	1	1.0126			
L38 64.000-60.500				1	1	1.01625			
L39 60.500-60.250				1	1	1.00832			
L40 60.250-60.083				1	1	1.0078			
L41 60.083-59.833				1	1	0.993436			
L42 59.833-59.083				1	1	0.991096			
L43 59.083-58.833				1	1	0.989483			
L44 58.833-55.417				1	1	1.00178			
L45 55.417-55.167				1	1	1.00098			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L46 55.167-54.750				1	1	0.999648			
L47 54.750-54.500				1	1	1.05096			
L48 54.500-49.500				1	1	1.05205			
L49 49.500-44.500				1	1	1.05391			
L50 44.500-41.250				1	1	1.06127			
L51 41.250-41.000				1	1	1.05236			
L52 41.000-34.291				1	1	1.04658			
L53 34.291-33.291				1	1	0.943825			
L54 33.291-31.500				1	1	0.938715			
L55 31.500-31.250				1	1	0.948018			
L56 31.250-30.500				1	1	0.945874			
L57 30.500-30.250				1	1	0.963144			
L58 30.250-25.750				1	1	0.971561			
L59 25.750-25.500				1	1	1.00222			
L60 25.500-24.667				1	1	0.999882			
L61 24.667-24.417				1	1	0.933203			
L62 24.417-24.000				1	1	0.944725			
L63 24.000-23.750				1	1	0.889372			
L64 23.750-18.750				1	1	0.89954			
L65 18.750-14.083				1	1	0.900223			
L66 14.083-13.817				1	1	0.941819			
L67 13.817-13.667				1	1	0.941471			
L68 13.667-10.500				1	1	0.946248			
L69 10.500-10.250				1	1	0.961027			
L70 10.250-5.250				1	1	0.976598			
L71 5.250-2.900				1	1	0.973671			
L72 2.900-2.650				1	1	0.973198			
L73 2.650-2.500				1	1	0.972914			
L74 2.500-2.250				1	1	0.894954			
L75 2.250-1.917				1	1	0.894333			
L76 1.917-1.667				1	1	0.934985			
L77 1.667-0.000				1	1	0.947031			

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
LDF7-50A(1-5/8")	B	No	Surface Ar (CaAa)	156.000 - 0.000	8	8	-0.360 -0.170	1.980		0.820
2" Rigid Conduit	B	No	Surface Ar (CaAa)	156.000 - 0.000	3	3	-0.160 -0.100	2.000		2.800
*										
HB158-21U6M48-30F(1-5/8)	B	No	Surface Ar (CaAa)	146.000 - 0.000	4	4	-0.100 0.000	1.660		2.390
561(1-5/8")	A	No	Surface Ar (CaAa)	132.000 - 0.000	4	4	-0.080 0.000	1.625		1.350
*										
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	114.000 - 0.000	1	1	0.000 0.000	1.600		2.350
*										
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MP3-05	A	No	Surface Af (CaAa)	31.500 - 11.500	1	1	0.500 0.500	5.330	14.840	0.000
MP3-05	B	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.500 0.500	5.330	14.840	0.000
MP3-05	C	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.500 0.500	5.330	14.840	0.000
MP3-04	A	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	B	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	C	No	Surface Af (CaAa)	61.500 - 31.000	1	1	0.500 0.500	4.780	12.780	0.000
MP3-04	A	No	Surface Af (CaAa)	15.500 - 0.000	1	1	-0.250 -0.250	4.780	12.780	0.000
MP3-04	B	No	Surface Af (CaAa)	15.500 - 0.000	1	1	0.250 0.250	4.780	12.780	0.000
*										
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	30.500 - 0.000	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	30.500 - 0.000	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	60.500 - 30.500	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	60.500 - 30.500	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	100.500 - 60.500	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	100.500 - 60.500	1	1	0.000 0.000	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	100.500 - 60.500	1	1	-0.250 -0.250	6.000	14.000	0.000
*										
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	38.000 - 23.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.250 0.250	6.500	15.500	0.000

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
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	67.000 - 52.000	1	1	0.000 0.000	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.250 0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	85.500 - 72.500	1	1	0.000 0.000	6.500	15.500	0.000
* CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	117.000 - 97.000	1	1	0.250 0.250	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	117.000 - 97.000	1	1	0.250 0.250	4.500	11.000	0.000
CCI 4.5" x 1" Plate	C	No	Surface Af (CaAa)	119.000 - 99.000	1	1	0.250 0.250	4.500	11.000	0.000
* CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	10.500 - 0.000	1	1	0.250 0.250	6.000	14.000	0.000
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	45.500 - 10.500	1	1	0.250 0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	85.000 - 60.000	1	1	0.250 0.250	8.500	19.500	0.000
* CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	55.400 - 20.400	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	55.400 - 20.400	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	90.500 - 55.500	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	90.500 - 55.500	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	122.600 - 90.600	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	122.600 - 90.600	1	1	-0.250 -0.250	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	122.600 - 100.600	1	1	-0.250 -0.250	6.000	14.000	0.000
* CCI 1.25" x 5.875" Plate	A	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	B	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	C	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	C	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	1.250	14.250	0.000
* CCI 1.25" x 5.875" Plate	A	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	B	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000
CCI 1.25" x 5.875" Plate	C	No	Surface Af (CaAa)	28.500 - 25.500	1	1	0.000 0.000	1.250	14.250	0.000
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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CAAA	Weight plf
FB-L98B-002-75000(3/8")	B	No	No	Inside Pole	156.000 - 0.000	2	No Ice 1/2" Ice	0.059 0.059

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
WR-VG86ST-BRD(3/4")	B	No	No	Inside Pole	156.000 - 0.000	6	1" Ice	0.000	0.059
							2" Ice	0.000	0.059
							No Ice	0.000	0.584
							1/2" Ice	0.000	0.584
							1" Ice	0.000	0.584
							2" Ice	0.000	0.584
*									
AVA7-50(1-5/8")	B	No	No	Inside Pole	139.000 - 0.000	6	No Ice	0.000	0.700
							1/2" Ice	0.000	0.700
							1" Ice	0.000	0.700
							2" Ice	0.000	0.700
LDF4-50A(1/2")	B	No	No	Inside Pole	101.000 - 0.000	1	No Ice	0.000	0.150
							1/2" Ice	0.000	0.150
							1" Ice	0.000	0.150
							2" Ice	0.000	0.150
*									
561(1-5/8")	A	No	No	Inside Pole	132.000 - 0.000	2	No Ice	0.000	1.350
							1/2" Ice	0.000	1.350
							1" Ice	0.000	1.350
							2" Ice	0.000	1.350
HB114-U6S12-xxx-LI(1-1/4")	A	No	No	Inside Pole	132.000 - 0.000	1	No Ice	0.000	1.700
							1/2" Ice	0.000	1.700
							1" Ice	0.000	1.700
							2" Ice	0.000	1.700
*									

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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.333-155.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	1.457	0.000	0.012
		C	0.000	0.000	0.000	0.000	0.000
L2	155.333-150.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	10.920	0.000	0.093
		C	0.000	0.000	0.000	0.000	0.000
L3	150.333-146.833	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	7.644	0.000	0.065
		C	0.000	0.000	0.000	0.000	0.000
L4	146.833-146.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	1.092	0.000	0.009
		C	0.000	0.000	0.000	0.000	0.000
L5	146.333-141.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	14.019	0.000	0.138
		C	0.000	0.000	0.000	0.000	0.000
L6	141.333-136.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	14.240	0.000	0.152
		C	0.000	0.000	0.000	0.000	0.000
L7	136.333-131.333	A	0.000	0.000	0.434	0.000	0.007
		B	0.000	0.000	14.240	0.000	0.162
		C	0.000	0.000	0.000	0.000	0.000
L8	131.333-126.333	A	0.000	0.000	3.250	0.000	0.049
		B	0.000	0.000	14.240	0.000	0.162
		C	0.000	0.000	0.000	0.000	0.000
L9	126.333-121.333	A	0.000	0.000	4.517	0.000	0.049
		B	0.000	0.000	15.507	0.000	0.162
		C	0.000	0.000	1.267	0.000	0.000
L10	121.333-120.083	A	0.000	0.000	2.063	0.000	0.012

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	4.810	0.000	0.040
		C	0.000	0.000	1.250	0.000	0.000
L11	120.083-119.833	A	0.000	0.000	0.412	0.000	0.002
		B	0.000	0.000	0.962	0.000	0.008
		C	0.000	0.000	0.250	0.000	0.000
L12	119.833-117.500	A	0.000	0.000	3.849	0.000	0.023
		B	0.000	0.000	8.977	0.000	0.075
		C	0.000	0.000	3.458	0.000	0.000
L13	117.500-117.250	A	0.000	0.000	0.412	0.000	0.002
		B	0.000	0.000	0.962	0.000	0.008
		C	0.000	0.000	0.438	0.000	0.000
L14	117.250-115.500	A	0.000	0.000	4.013	0.000	0.017
		B	0.000	0.000	7.859	0.000	0.057
		C	0.000	0.000	3.063	0.000	0.000
L15	115.500-115.250	A	0.000	0.000	0.600	0.000	0.002
		B	0.000	0.000	1.150	0.000	0.008
		C	0.000	0.000	0.438	0.000	0.000
L16	115.250-110.250	A	0.000	0.000	12.000	0.000	0.049
		B	0.000	0.000	23.590	0.000	0.171
		C	0.000	0.000	8.750	0.000	0.000
L17	110.250-104.083	A	0.000	0.000	14.801	0.000	0.060
		B	0.000	0.000	29.343	0.000	0.214
		C	0.000	0.000	10.792	0.000	0.000
L18	104.083-102.820	A	0.000	0.000	3.031	0.000	0.012
		B	0.000	0.000	6.009	0.000	0.044
		C	0.000	0.000	2.210	0.000	0.000
L19	102.820-100.500	A	0.000	0.000	5.568	0.000	0.023
		B	0.000	0.000	11.039	0.000	0.081
		C	0.000	0.000	3.960	0.000	0.000
L20	100.500-100.250	A	0.000	0.000	0.850	0.000	0.002
		B	0.000	0.000	1.440	0.000	0.009
		C	0.000	0.000	0.438	0.000	0.000
L21	100.250-98.500	A	0.000	0.000	5.950	0.000	0.017
		B	0.000	0.000	10.076	0.000	0.061
		C	0.000	0.000	2.688	0.000	0.000
L22	98.500-98.250	A	0.000	0.000	0.850	0.000	0.002
		B	0.000	0.000	1.440	0.000	0.009
		C	0.000	0.000	0.250	0.000	0.000
L23	98.250-93.250	A	0.000	0.000	14.188	0.000	0.049
		B	0.000	0.000	25.977	0.000	0.174
		C	0.000	0.000	5.000	0.000	0.000
L24	93.250-90.500	A	0.000	0.000	7.188	0.000	0.027
		B	0.000	0.000	13.672	0.000	0.096
		C	0.000	0.000	2.750	0.000	0.000
L25	90.500-90.250	A	0.000	0.000	0.767	0.000	0.002
		B	0.000	0.000	1.356	0.000	0.009
		C	0.000	0.000	0.250	0.000	0.000
L26	90.250-85.250	A	0.000	0.000	15.598	0.000	0.049
		B	0.000	0.000	27.388	0.000	0.174
		C	0.000	0.000	5.264	0.000	0.000
L27	85.250-83.500	A	0.000	0.000	7.217	0.000	0.017
		B	0.000	0.000	11.344	0.000	0.061
		C	0.000	0.000	5.726	0.000	0.000
L28	83.500-83.250	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L29	83.250-80.750	A	0.000	0.000	10.310	0.000	0.025
		B	0.000	0.000	16.205	0.000	0.087
		C	0.000	0.000	8.685	0.000	0.000
L30	80.750-80.500	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L31	80.500-80.250	A	0.000	0.000	1.031	0.000	0.002
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L32	80.250-77.500	A	0.000	0.000	11.341	0.000	0.027
		B	0.000	0.000	17.826	0.000	0.096
		C	0.000	0.000	9.554	0.000	0.000
L33	77.500-77.250	A	0.000	0.000	1.031	0.000	0.002

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	1.621	0.000	0.009
		C	0.000	0.000	0.869	0.000	0.000
L34	77.250-68.820	A	0.000	0.000	30.875	0.000	0.083
		B	0.000	0.000	50.753	0.000	0.294
		C	0.000	0.000	25.396	0.000	0.000
L35	68.820-68.291	A	0.000	0.000	1.622	0.000	0.005
		B	0.000	0.000	2.870	0.000	0.018
		C	0.000	0.000	1.278	0.000	0.000
L36	68.291-64.250	A	0.000	0.000	15.372	0.000	0.040
		B	0.000	0.000	24.900	0.000	0.141
		C	0.000	0.000	12.745	0.000	0.000
L37	64.250-64.000	A	0.000	0.000	1.038	0.000	0.002
		B	0.000	0.000	1.627	0.000	0.009
		C	0.000	0.000	0.875	0.000	0.000
L38	64.000-60.500	A	0.000	0.000	14.525	0.000	0.034
		B	0.000	0.000	22.778	0.000	0.122
		C	0.000	0.000	13.047	0.000	0.000
L39	60.500-60.250	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	1.095	0.000	0.000
L40	60.250-60.083	A	0.000	0.000	0.840	0.000	0.002
		B	0.000	0.000	1.234	0.000	0.006
		C	0.000	0.000	0.731	0.000	0.000
L41	60.083-59.833	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.858	0.000	0.000
L42	59.833-59.083	A	0.000	0.000	3.773	0.000	0.007
		B	0.000	0.000	5.541	0.000	0.026
		C	0.000	0.000	2.223	0.000	0.000
L43	59.083-58.833	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L44	58.833-55.417	A	0.000	0.000	17.066	0.000	0.033
		B	0.000	0.000	25.122	0.000	0.119
		C	0.000	0.000	10.124	0.000	0.000
L45	55.417-55.167	A	0.000	0.000	1.234	0.000	0.002
		B	0.000	0.000	1.823	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L46	55.167-54.750	A	0.000	0.000	2.096	0.000	0.004
		B	0.000	0.000	3.078	0.000	0.015
		C	0.000	0.000	1.235	0.000	0.000
L47	54.750-54.500	A	0.000	0.000	1.258	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	0.741	0.000	0.000
L48	54.500-49.500	A	0.000	0.000	22.442	0.000	0.049
		B	0.000	0.000	34.232	0.000	0.174
		C	0.000	0.000	12.108	0.000	0.000
L49	49.500-44.500	A	0.000	0.000	19.733	0.000	0.049
		B	0.000	0.000	31.523	0.000	0.174
		C	0.000	0.000	10.817	0.000	0.000
L50	44.500-41.250	A	0.000	0.000	12.827	0.000	0.032
		B	0.000	0.000	20.490	0.000	0.113
		C	0.000	0.000	10.714	0.000	0.000
L51	41.250-41.000	A	0.000	0.000	0.987	0.000	0.002
		B	0.000	0.000	1.576	0.000	0.009
		C	0.000	0.000	0.824	0.000	0.000
L52	41.000-34.291	A	0.000	0.000	30.496	0.000	0.066
		B	0.000	0.000	46.316	0.000	0.234
		C	0.000	0.000	26.135	0.000	0.000
L53	34.291-33.291	A	0.000	0.000	5.030	0.000	0.010
		B	0.000	0.000	7.388	0.000	0.035
		C	0.000	0.000	4.380	0.000	0.000
L54	33.291-31.500	A	0.000	0.000	9.009	0.000	0.018
		B	0.000	0.000	13.232	0.000	0.062
		C	0.000	0.000	7.845	0.000	0.000
L55	31.500-31.250	A	0.000	0.000	1.480	0.000	0.002
		B	0.000	0.000	1.847	0.000	0.009
		C	0.000	0.000	1.095	0.000	0.000
L56	31.250-30.500	A	0.000	0.000	4.439	0.000	0.007

Tower Sectio n	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
		B	0.000	0.000	5.541	0.000	0.026
		C	0.000	0.000	2.887	0.000	0.000
L57	30.500-30.250	A	0.000	0.000	1.260	0.000	0.002
		B	0.000	0.000	1.849	0.000	0.009
		C	0.000	0.000	1.097	0.000	0.000
L58	30.250-25.750	A	0.000	0.000	23.061	0.000	0.044
		B	0.000	0.000	33.672	0.000	0.157
		C	0.000	0.000	20.136	0.000	0.000
L59	25.750-25.500	A	0.000	0.000	1.295	0.000	0.002
		B	0.000	0.000	1.884	0.000	0.009
		C	0.000	0.000	1.132	0.000	0.000
L60	25.500-24.667	A	0.000	0.000	4.372	0.000	0.008
		B	0.000	0.000	6.337	0.000	0.029
		C	0.000	0.000	4.004	0.000	0.000
L61	24.667-24.417	A	0.000	0.000	1.312	0.000	0.002
		B	0.000	0.000	1.901	0.000	0.009
		C	0.000	0.000	1.201	0.000	0.000
L62	24.417-24.000	A	0.000	0.000	2.186	0.000	0.004
		B	0.000	0.000	3.169	0.000	0.015
		C	0.000	0.000	2.002	0.000	0.000
L63	24.000-23.750	A	0.000	0.000	1.312	0.000	0.002
		B	0.000	0.000	1.901	0.000	0.009
		C	0.000	0.000	1.201	0.000	0.000
L64	23.750-18.750	A	0.000	0.000	19.292	0.000	0.049
		B	0.000	0.000	31.082	0.000	0.174
		C	0.000	0.000	19.421	0.000	0.000
L65	18.750-14.083	A	0.000	0.000	13.948	0.000	0.046
		B	0.000	0.000	24.952	0.000	0.163
		C	0.000	0.000	17.369	0.000	0.000
L66	14.083-13.817	A	0.000	0.000	0.943	0.000	0.003
		B	0.000	0.000	1.570	0.000	0.009
		C	0.000	0.000	0.990	0.000	0.000
L67	13.817-13.667	A	0.000	0.000	0.531	0.000	0.001
		B	0.000	0.000	0.885	0.000	0.005
		C	0.000	0.000	0.558	0.000	0.000
L68	13.667-10.500	A	0.000	0.000	10.333	0.000	0.031
		B	0.000	0.000	18.690	0.000	0.110
		C	0.000	0.000	11.787	0.000	0.000
L69	10.500-10.250	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L70	10.250-5.250	A	0.000	0.000	13.275	0.000	0.049
		B	0.000	0.000	29.507	0.000	0.174
		C	0.000	0.000	16.168	0.000	0.000
L71	5.250-2.900	A	0.000	0.000	6.239	0.000	0.023
		B	0.000	0.000	13.868	0.000	0.082
		C	0.000	0.000	7.599	0.000	0.000
L72	2.900-2.650	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L73	2.650-2.500	A	0.000	0.000	0.398	0.000	0.001
		B	0.000	0.000	0.885	0.000	0.005
		C	0.000	0.000	0.485	0.000	0.000
L74	2.500-2.250	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L75	2.250-1.917	A	0.000	0.000	0.884	0.000	0.003
		B	0.000	0.000	1.965	0.000	0.012
		C	0.000	0.000	1.077	0.000	0.000
L76	1.917-1.667	A	0.000	0.000	0.664	0.000	0.002
		B	0.000	0.000	1.475	0.000	0.009
		C	0.000	0.000	0.808	0.000	0.000
L77	1.667-0.000	A	0.000	0.000	4.426	0.000	0.016
		B	0.000	0.000	9.838	0.000	0.058
		C	0.000	0.000	5.390	0.000	0.000

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	160.333-155.333	A	1.988	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	2.484	0.000	0.046
		C		0.000	0.000	0.000	0.000	0.000
L2	155.333-150.333	A	1.982	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	18.604	0.000	0.341
		C		0.000	0.000	0.000	0.000	0.000
L3	150.333-146.833	A	1.976	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	13.013	0.000	0.238
		C		0.000	0.000	0.000	0.000	0.000
L4	146.833-146.333	A	1.973	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	1.858	0.000	0.034
		C		0.000	0.000	0.000	0.000	0.000
L5	146.333-141.333	A	1.970	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	24.746	0.000	0.464
		C		0.000	0.000	0.000	0.000	0.000
L6	141.333-136.333	A	1.963	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	25.160	0.000	0.483
		C		0.000	0.000	0.000	0.000	0.000
L7	136.333-131.333	A	1.955	0.000	0.000	0.868	0.000	0.018
		B		0.000	0.000	25.133	0.000	0.491
		C		0.000	0.000	0.000	0.000	0.000
L8	131.333-126.333	A	1.948	0.000	0.000	6.498	0.000	0.132
		B		0.000	0.000	25.105	0.000	0.490
		C		0.000	0.000	0.000	0.000	0.000
L9	126.333-121.333	A	1.940	0.000	0.000	8.247	0.000	0.152
		B		0.000	0.000	26.835	0.000	0.509
		C		0.000	0.000	1.759	0.000	0.020
L10	121.333-120.083	A	1.935	0.000	0.000	3.354	0.000	0.053
		B		0.000	0.000	7.998	0.000	0.142
		C		0.000	0.000	1.734	0.000	0.020
L11	120.083-119.833	A	1.934	0.000	0.000	0.671	0.000	0.011
		B		0.000	0.000	1.599	0.000	0.028
		C		0.000	0.000	0.347	0.000	0.004
L12	119.833-117.500	A	1.932	0.000	0.000	6.257	0.000	0.098
		B		0.000	0.000	14.921	0.000	0.264
		C		0.000	0.000	4.939	0.000	0.058
L13	117.500-117.250	A	1.930	0.000	0.000	0.670	0.000	0.011
		B		0.000	0.000	1.598	0.000	0.028
		C		0.000	0.000	0.630	0.000	0.007
L14	117.250-115.500	A	1.928	0.000	0.000	6.394	0.000	0.094
		B		0.000	0.000	12.889	0.000	0.219
		C		0.000	0.000	4.412	0.000	0.052
L15	115.500-115.250	A	1.927	0.000	0.000	0.954	0.000	0.014
		B		0.000	0.000	1.881	0.000	0.032
		C		0.000	0.000	0.630	0.000	0.007
L16	115.250-110.250	A	1.922	0.000	0.000	19.060	0.000	0.278
		B		0.000	0.000	39.644	0.000	0.672
		C		0.000	0.000	12.594	0.000	0.148
L17	110.250-104.083	A	1.912	0.000	0.000	23.469	0.000	0.341
		B		0.000	0.000	49.656	0.000	0.842
		C		0.000	0.000	15.510	0.000	0.181
L18	104.083-102.820	A	1.906	0.000	0.000	4.806	0.000	0.070
		B		0.000	0.000	10.169	0.000	0.172
		C		0.000	0.000	3.176	0.000	0.037
L19	102.820-100.500	A	1.902	0.000	0.000	8.814	0.000	0.128
		B		0.000	0.000	18.649	0.000	0.315
		C		0.000	0.000	5.687	0.000	0.066
L20	100.500-100.250	A	1.900	0.000	0.000	1.294	0.000	0.018
		B		0.000	0.000	2.354	0.000	0.038
		C		0.000	0.000	0.628	0.000	0.007
L21	100.250-98.500	A	1.898	0.000	0.000	9.058	0.000	0.123
		B		0.000	0.000	16.471	0.000	0.265
		C		0.000	0.000	3.826	0.000	0.044
L22	98.500-98.250	A	1.896	0.000	0.000	1.294	0.000	0.018
		B		0.000	0.000	2.352	0.000	0.038
		C		0.000	0.000	0.345	0.000	0.004

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L23	98.250-93.250	A	1.891	0.000	0.000	21.619	0.000	0.301
		B		0.000	0.000	42.775	0.000	0.704
		C		0.000	0.000	6.891	0.000	0.078
L24	93.250-90.500	A	1.883	0.000	0.000	10.963	0.000	0.154
		B		0.000	0.000	22.584	0.000	0.375
		C		0.000	0.000	3.786	0.000	0.043
L25	90.500-90.250	A	1.880	0.000	0.000	1.113	0.000	0.015
		B		0.000	0.000	2.169	0.000	0.035
		C		0.000	0.000	0.344	0.000	0.004
L26	90.250-85.250	A	1.875	0.000	0.000	22.552	0.000	0.306
		B		0.000	0.000	43.651	0.000	0.706
		C		0.000	0.000	7.188	0.000	0.081
L27	85.250-83.500	A	1.867	0.000	0.000	9.969	0.000	0.134
		B		0.000	0.000	17.344	0.000	0.273
		C		0.000	0.000	7.278	0.000	0.084
L28	83.500-83.250	A	1.865	0.000	0.000	1.424	0.000	0.019
		B		0.000	0.000	2.477	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L29	83.250-80.750	A	1.862	0.000	0.000	14.231	0.000	0.191
		B		0.000	0.000	24.758	0.000	0.389
		C		0.000	0.000	11.030	0.000	0.127
L30	80.750-80.500	A	1.859	0.000	0.000	1.422	0.000	0.019
		B		0.000	0.000	2.475	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L31	80.500-80.250	A	1.858	0.000	0.000	1.422	0.000	0.019
		B		0.000	0.000	2.474	0.000	0.039
		C		0.000	0.000	1.103	0.000	0.013
L32	80.250-77.500	A	1.855	0.000	0.000	15.639	0.000	0.209
		B		0.000	0.000	27.205	0.000	0.427
		C		0.000	0.000	12.123	0.000	0.139
L33	77.500-77.250	A	1.851	0.000	0.000	1.421	0.000	0.019
		B		0.000	0.000	2.472	0.000	0.039
		C		0.000	0.000	1.102	0.000	0.013
L34	77.250-68.820	A	1.840	0.000	0.000	43.247	0.000	0.575
		B		0.000	0.000	78.618	0.000	1.239
		C		0.000	0.000	32.504	0.000	0.363
L35	68.820-68.291	A	1.829	0.000	0.000	2.341	0.000	0.031
		B		0.000	0.000	4.561	0.000	0.073
		C		0.000	0.000	1.667	0.000	0.018
L36	68.291-64.250	A	1.823	0.000	0.000	21.446	0.000	0.280
		B		0.000	0.000	38.351	0.000	0.596
		C		0.000	0.000	16.316	0.000	0.179
L37	64.250-64.000	A	1.817	0.000	0.000	1.430	0.000	0.019
		B		0.000	0.000	2.475	0.000	0.038
		C		0.000	0.000	1.114	0.000	0.012
L38	64.000-60.500	A	1.811	0.000	0.000	20.013	0.000	0.259
		B		0.000	0.000	34.627	0.000	0.531
		C		0.000	0.000	16.740	0.000	0.185
L39	60.500-60.250	A	1.806	0.000	0.000	1.739	0.000	0.022
		B		0.000	0.000	2.782	0.000	0.042
		C		0.000	0.000	1.423	0.000	0.016
L40	60.250-60.083	A	1.805	0.000	0.000	1.161	0.000	0.015
		B		0.000	0.000	1.858	0.000	0.028
		C		0.000	0.000	0.950	0.000	0.011
L41	60.083-59.833	A	1.805	0.000	0.000	1.738	0.000	0.022
		B		0.000	0.000	2.781	0.000	0.042
		C		0.000	0.000	1.126	0.000	0.013
L42	59.833-59.083	A	1.803	0.000	0.000	5.214	0.000	0.066
		B		0.000	0.000	8.341	0.000	0.124
		C		0.000	0.000	2.934	0.000	0.034
L43	59.083-58.833	A	1.802	0.000	0.000	1.738	0.000	0.022
		B		0.000	0.000	2.780	0.000	0.041
		C		0.000	0.000	0.978	0.000	0.011
L44	58.833-55.417	A	1.796	0.000	0.000	23.580	0.000	0.299
		B		0.000	0.000	37.808	0.000	0.563
		C		0.000	0.000	13.351	0.000	0.153
L45	55.417-55.167	A	1.790	0.000	0.000	1.705	0.000	0.022
		B		0.000	0.000	2.746	0.000	0.041
		C		0.000	0.000	0.976	0.000	0.011

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L46	55.167-54.750	A	1.789	0.000	0.000	2.891	0.000	0.036
		B		0.000	0.000	4.624	0.000	0.069
		C		0.000	0.000	1.627	0.000	0.019
L47	54.750-54.500	A	1.788	0.000	0.000	1.734	0.000	0.022
		B		0.000	0.000	2.774	0.000	0.041
		C		0.000	0.000	0.976	0.000	0.011
L48	54.500-49.500	A	1.779	0.000	0.000	31.377	0.000	0.397
		B		0.000	0.000	52.141	0.000	0.780
		C		0.000	0.000	16.228	0.000	0.183
L49	49.500-44.500	A	1.761	0.000	0.000	28.031	0.000	0.354
		B		0.000	0.000	48.732	0.000	0.735
		C		0.000	0.000	14.691	0.000	0.160
L50	44.500-41.250	A	1.745	0.000	0.000	18.176	0.000	0.228
		B		0.000	0.000	31.595	0.000	0.473
		C		0.000	0.000	14.117	0.000	0.149
L51	41.250-41.000	A	1.738	0.000	0.000	1.397	0.000	0.017
		B		0.000	0.000	2.428	0.000	0.036
		C		0.000	0.000	1.085	0.000	0.011
L52	41.000-34.291	A	1.722	0.000	0.000	42.222	0.000	0.519
		B		0.000	0.000	69.817	0.000	1.020
		C		0.000	0.000	33.882	0.000	0.357
L53	34.291-33.291	A	1.704	0.000	0.000	6.877	0.000	0.084
		B		0.000	0.000	10.990	0.000	0.159
		C		0.000	0.000	5.634	0.000	0.060
L54	33.291-31.500	A	1.697	0.000	0.000	12.271	0.000	0.148
		B		0.000	0.000	19.605	0.000	0.280
		C		0.000	0.000	10.056	0.000	0.105
L55	31.500-31.250	A	1.691	0.000	0.000	2.018	0.000	0.024
		B		0.000	0.000	2.734	0.000	0.039
		C		0.000	0.000	1.403	0.000	0.015
L56	31.250-30.500	A	1.689	0.000	0.000	6.052	0.000	0.072
		B		0.000	0.000	8.200	0.000	0.117
		C		0.000	0.000	3.639	0.000	0.037
L57	30.500-30.250	A	1.686	0.000	0.000	1.712	0.000	0.021
		B		0.000	0.000	2.734	0.000	0.039
		C		0.000	0.000	1.404	0.000	0.015
L58	30.250-25.750	A	1.672	0.000	0.000	31.700	0.000	0.404
		B		0.000	0.000	50.051	0.000	0.733
		C		0.000	0.000	26.162	0.000	0.298
L59	25.750-25.500	A	1.658	0.000	0.000	1.790	0.000	0.023
		B		0.000	0.000	2.807	0.000	0.042
		C		0.000	0.000	1.484	0.000	0.018
L60	25.500-24.667	A	1.654	0.000	0.000	6.131	0.000	0.078
		B		0.000	0.000	9.519	0.000	0.139
		C		0.000	0.000	5.559	0.000	0.070
L61	24.667-24.417	A	1.650	0.000	0.000	1.838	0.000	0.023
		B		0.000	0.000	2.854	0.000	0.041
		C		0.000	0.000	1.667	0.000	0.021
L62	24.417-24.000	A	1.648	0.000	0.000	3.063	0.000	0.039
		B		0.000	0.000	4.756	0.000	0.069
		C		0.000	0.000	2.777	0.000	0.035
L63	24.000-23.750	A	1.646	0.000	0.000	1.837	0.000	0.023
		B		0.000	0.000	2.852	0.000	0.041
		C		0.000	0.000	1.666	0.000	0.021
L64	23.750-18.750	A	1.627	0.000	0.000	28.265	0.000	0.375
		B		0.000	0.000	48.496	0.000	0.733
		C		0.000	0.000	27.712	0.000	0.351
L65	18.750-14.083	A	1.585	0.000	0.000	21.428	0.000	0.298
		B		0.000	0.000	40.176	0.000	0.626
		C		0.000	0.000	24.768	0.000	0.307
L66	14.083-13.817	A	1.560	0.000	0.000	1.419	0.000	0.019
		B		0.000	0.000	2.482	0.000	0.037
		C		0.000	0.000	1.405	0.000	0.017
L67	13.817-13.667	A	1.557	0.000	0.000	0.800	0.000	0.011
		B		0.000	0.000	1.399	0.000	0.021
		C		0.000	0.000	0.792	0.000	0.010
L68	13.667-10.500	A	1.537	0.000	0.000	15.622	0.000	0.208
		B		0.000	0.000	29.435	0.000	0.438
		C		0.000	0.000	16.656	0.000	0.201

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L69	10.500-10.250	A	1.514	0.000	0.000	1.024	0.000	0.014
		B		0.000	0.000	2.314	0.000	0.034
		C		0.000	0.000	1.151	0.000	0.015
L70	10.250-5.250	A	1.471	0.000	0.000	20.301	0.000	0.273
		B		0.000	0.000	45.898	0.000	0.664
		C		0.000	0.000	22.828	0.000	0.284
L71	5.250-2.900	A	1.379	0.000	0.000	9.366	0.000	0.120
		B		0.000	0.000	21.203	0.000	0.295
		C		0.000	0.000	10.535	0.000	0.123
L72	2.900-2.650	A	1.327	0.000	0.000	0.986	0.000	0.012
		B		0.000	0.000	2.233	0.000	0.030
		C		0.000	0.000	1.109	0.000	0.012
L73	2.650-2.500	A	1.317	0.000	0.000	0.590	0.000	0.007
		B		0.000	0.000	1.337	0.000	0.018
		C		0.000	0.000	0.664	0.000	0.007
L74	2.500-2.250	A	1.307	0.000	0.000	0.982	0.000	0.012
		B		0.000	0.000	2.225	0.000	0.030
		C		0.000	0.000	1.104	0.000	0.012
L75	2.250-1.917	A	1.290	0.000	0.000	1.303	0.000	0.016
		B		0.000	0.000	2.953	0.000	0.040
		C		0.000	0.000	1.466	0.000	0.016
L76	1.917-1.667	A	1.270	0.000	0.000	0.974	0.000	0.012
		B		0.000	0.000	2.209	0.000	0.029
		C		0.000	0.000	1.096	0.000	0.012
L77	1.667-0.000	A	1.177	0.000	0.000	6.364	0.000	0.073
		B		0.000	0.000	14.457	0.000	0.184
		C		0.000	0.000	7.168	0.000	0.071

Feed Line Center of Pressure

Section	Elevation	CP _X	CP _Z	CP _X	CP _Z
	ft	in	in	Ice in	Ice in
L1	160.333-155.333	1.284	-2.006	0.910	-1.369
L2	155.333-150.333	3.521	-5.499	2.548	-3.833
L3	150.333-146.833	3.521	-5.499	2.548	-3.834
L4	146.833-146.333	4.267	-6.663	3.137	-4.720
L5	146.333-141.333	4.385	-5.758	3.774	-4.721
L6	141.333-136.333	4.529	-5.892	3.915	-4.852
L7	136.333-131.333	4.330	-6.005	3.717	-4.949
L8	131.333-126.333	2.739	-6.080	2.152	-4.886
L9	126.333-121.333	2.462	-5.465	2.033	-4.616
L10	121.333-120.083	1.850	-4.108	1.676	-3.805
L11	120.083-119.833	1.858	-4.126	1.683	-3.823
L12	119.833-117.500	1.093	-3.471	1.074	-3.311
L13	117.500-117.250	0.702	-3.144	0.758	-3.055
L14	117.250-115.500	1.403	-3.314	1.337	-3.209
L15	115.500-115.250	1.510	-3.354	1.430	-3.247
L16	115.250-110.250	1.652	-3.440	1.680	-3.376
L17	110.250-104.083	1.737	-3.546	1.804	-3.501
L18	104.083-102.820	1.745	-3.563	1.813	-3.520
L19	102.820-100.500	1.711	-3.642	1.793	-3.589
L20	100.500-100.250	1.504	-4.232	1.623	-4.066
L21	100.250-98.500	1.770	-4.480	1.855	-4.281
L22	98.500-98.250	2.464	-5.106	2.453	-4.812
L23	98.250-93.250	2.021	-5.185	2.085	-4.865
L24	93.250-90.500	1.937	-5.282	2.023	-4.952
L25	90.500-90.250	1.229	-5.314	1.604	-5.002
L26	90.250-85.250	1.294	-5.276	1.654	-4.998
L27	85.250-83.500	0.777	-2.811	1.147	-3.177
L28	83.500-83.250	0.581	-2.662	0.991	-3.058
L29	83.250-80.750	0.585	-2.678	0.996	-3.077
L30	80.750-80.500	0.588	-2.694	1.002	-3.097
L31	80.500-80.250	0.589	-2.697	1.003	-3.100
L32	80.250-77.500	0.592	-2.714	1.010	-3.120

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L33	77.500-77.250	0.595	-2.730	1.015	-3.140
L34	77.250-68.820	0.159	-3.232	0.733	-3.558
L35	68.820-68.291	-0.538	-3.962	0.294	-4.113
L36	68.291-64.250	0.314	-3.125	0.856	-3.474
L37	64.250-64.000	0.642	-2.820	1.087	-3.233
L38	64.000-60.500	0.301	-2.886	0.769	-3.294
L39	60.500-60.250	0.641	-2.511	1.019	-2.903
L40	60.250-60.083	0.641	-2.513	1.020	-2.905
L41	60.083-59.833	1.553	-3.239	1.767	-3.505
L42	59.833-59.083	2.044	-3.633	2.166	-3.827
L43	59.083-58.833	2.049	-3.641	2.170	-3.835
L44	58.833-55.417	2.105	-3.658	2.220	-3.857
L45	55.417-55.167	2.193	-3.668	2.295	-3.874
L46	55.167-54.750	2.081	-3.698	2.205	-3.897
L47	54.750-54.500	2.083	-3.701	2.208	-3.901
L48	54.500-49.500	1.720	-4.338	1.949	-4.411
L49	49.500-44.500	0.919	-4.830	1.373	-4.798
L50	44.500-41.250	-0.407	-3.704	0.320	-3.938
L51	41.250-41.000	-0.410	-3.728	0.320	-3.964
L52	41.000-34.291	0.251	-3.153	0.784	-3.516
L53	34.291-33.291	0.696	-2.735	1.105	-3.164
L54	33.291-31.500	0.699	-2.748	1.107	-3.178
L55	31.500-31.250	1.545	-3.559	1.866	-3.904
L56	31.250-30.500	2.338	-3.471	2.621	-3.831
L57	30.500-30.250	0.619	-2.730	1.057	-3.175
L58	30.250-25.750	0.606	-2.676	1.043	-3.137
L59	25.750-25.500	0.594	-2.625	1.037	-3.122
L60	25.500-24.667	0.587	-2.359	1.003	-2.620
L61	24.667-24.417	0.588	-2.364	1.004	-2.625
L62	24.417-24.000	0.588	-2.367	1.005	-2.628
L63	24.000-23.750	0.589	-2.370	1.006	-2.632
L64	23.750-18.750	0.209	-3.006	0.795	-3.119
L65	18.750-14.083	1.269	-2.333	1.652	-2.593
L66	14.083-13.817	1.160	-1.431	1.570	-1.848
L67	13.817-13.667	1.161	-1.432	1.570	-1.849
L68	13.667-10.500	0.820	-1.081	1.282	-1.555
L69	10.500-10.250	0.683	-0.717	1.170	-1.259
L70	10.250-5.250	0.688	-0.723	1.175	-1.272
L71	5.250-2.900	0.695	-0.731	1.177	-1.292
L72	2.900-2.650	0.698	-0.734	1.176	-1.300
L73	2.650-2.500	0.698	-0.735	1.176	-1.302
L74	2.500-2.250	0.699	-0.735	1.175	-1.303
L75	2.250-1.917	0.699	-0.736	1.174	-1.306
L76	1.917-1.667	0.700	-0.737	1.173	-1.308
L77	1.667-0.000	0.702	-0.739	1.166	-1.320

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	LDF7-50A(1-5/8")	155.33 - 156.00	1.0000	1.0000
L1	4	2" Rigid Conduit	155.33 - 156.00	1.0000	1.0000
L2	1	LDF7-50A(1-5/8")	150.33 - 155.33	1.0000	1.0000
L2	4	2" Rigid Conduit	150.33 - 155.33	1.0000	1.0000
L3	1	LDF7-50A(1-5/8")	146.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			150.33		
L3	4	2" Rigid Conduit	146.83 -	1.0000	1.0000
			150.33		
L4	1	LDF7-50A(1-5/8")	146.33 -	1.0000	1.0000
			146.83		
L4	4	2" Rigid Conduit	146.33 -	1.0000	1.0000
			146.83		
L5	1	LDF7-50A(1-5/8")	141.33 -	1.0000	1.0000
			146.33		
L5	4	2" Rigid Conduit	141.33 -	1.0000	1.0000
			146.33		
L5	7	HB158-21U6M48-30F(1-5/8)	141.33 -	1.0000	1.0000
			146.00		
L6	1	LDF7-50A(1-5/8")	136.33 -	1.0000	1.0000
			141.33		
L6	4	2" Rigid Conduit	136.33 -	1.0000	1.0000
			141.33		
L6	7	HB158-21U6M48-30F(1-5/8)	136.33 -	1.0000	1.0000
			141.33		
L7	1	LDF7-50A(1-5/8")	131.33 -	1.0000	1.0000
			136.33		
L7	4	2" Rigid Conduit	131.33 -	1.0000	1.0000
			136.33		
L7	7	HB158-21U6M48-30F(1-5/8)	131.33 -	1.0000	1.0000
			136.33		
L7	13	561(1-5/8")	131.33 -	1.0000	1.0000
			132.00		
L8	1	LDF7-50A(1-5/8")	126.33 -	1.0000	1.0000
			131.33		
L8	4	2" Rigid Conduit	126.33 -	1.0000	1.0000
			131.33		
L8	7	HB158-21U6M48-30F(1-5/8)	126.33 -	1.0000	1.0000
			131.33		
L8	13	561(1-5/8")	126.33 -	1.0000	1.0000
			131.33		
L9	1	LDF7-50A(1-5/8")	121.33 -	1.0000	1.0000
			126.33		
L9	4	2" Rigid Conduit	121.33 -	1.0000	1.0000
			126.33		
L9	7	HB158-21U6M48-30F(1-5/8)	121.33 -	1.0000	1.0000
			126.33		
L9	13	561(1-5/8")	121.33 -	1.0000	1.0000
			126.33		
L9	105	CCI 6" x 1" Plate	121.33 -	1.0000	1.0000
			122.60		
L9	106	CCI 6" x 1" Plate	121.33 -	1.0000	1.0000
			122.60		
L9	107	CCI 6" x 1" Plate	121.33 -	1.0000	1.0000
			122.60		
L10	1	LDF7-50A(1-5/8")	120.08 -	1.0000	1.0000
			121.33		
L10	4	2" Rigid Conduit	120.08 -	1.0000	1.0000
			121.33		
L10	7	HB158-21U6M48-30F(1-5/8)	120.08 -	1.0000	1.0000
			121.33		
L10	13	561(1-5/8")	120.08 -	1.0000	1.0000
			121.33		
L10	105	CCI 6" x 1" Plate	120.08 -	1.0000	1.0000
			121.33		
L10	106	CCI 6" x 1" Plate	120.08 -	1.0000	1.0000
			121.33		
L10	107	CCI 6" x 1" Plate	120.08 -	1.0000	1.0000
			121.33		
L11	1	LDF7-50A(1-5/8")	119.83 -	1.0000	1.0000
			120.08		
L11	4	2" Rigid Conduit	119.83 -	1.0000	1.0000
			120.08		
L11	7	HB158-21U6M48-30F(1-5/8)	119.83 -	1.0000	1.0000
			120.08		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L11	13	561(1-5/8")	119.83 - 120.08	1.0000	1.0000
L11	105	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L11	106	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L11	107	CCI 6" x 1" Plate	119.83 - 120.08	1.0000	1.0000
L12	1	LDF7-50A(1-5/8")	117.50 - 119.83	1.0000	1.0000
L12	4	2" Rigid Conduit	117.50 - 119.83	1.0000	1.0000
L12	7	HB158-21U6M48-30F(1-5/8)	117.50 - 119.83	1.0000	1.0000
L12	13	561(1-5/8")	117.50 - 119.83	1.0000	1.0000
L12	95	CCI 4.5" x 1" Plate	117.50 - 119.00	1.0000	1.0000
L12	105	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L12	106	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L12	107	CCI 6" x 1" Plate	117.50 - 119.83	1.0000	1.0000
L13	1	LDF7-50A(1-5/8")	117.25 - 117.50	1.0000	1.0000
L13	4	2" Rigid Conduit	117.25 - 117.50	1.0000	1.0000
L13	7	HB158-21U6M48-30F(1-5/8)	117.25 - 117.50	1.0000	1.0000
L13	13	561(1-5/8")	117.25 - 117.50	1.0000	1.0000
L13	95	CCI 4.5" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	105	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	106	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L13	107	CCI 6" x 1" Plate	117.25 - 117.50	1.0000	1.0000
L14	1	LDF7-50A(1-5/8")	115.50 - 117.25	1.0000	1.0000
L14	4	2" Rigid Conduit	115.50 - 117.25	1.0000	1.0000
L14	7	HB158-21U6M48-30F(1-5/8)	115.50 - 117.25	1.0000	1.0000
L14	13	561(1-5/8")	115.50 - 117.25	1.0000	1.0000
L14	93	CCI 4.5" x 1" Plate	115.50 - 117.00	1.0000	1.0000
L14	94	CCI 4.5" x 1" Plate	115.50 - 117.00	1.0000	1.0000
L14	95	CCI 4.5" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	105	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	106	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L14	107	CCI 6" x 1" Plate	115.50 - 117.25	1.0000	1.0000
L15	1	LDF7-50A(1-5/8")	115.25 - 115.50	1.0000	1.0000
L15	4	2" Rigid Conduit	115.25 - 115.50	1.0000	1.0000
L15	7	HB158-21U6M48-30F(1-5/8)	115.25 - 115.50	1.0000	1.0000
L15	13	561(1-5/8")	115.25 - 115.50	1.0000	1.0000
L15	93	CCI 4.5" x 1" Plate	115.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L15	94	CCI 4.5" x 1" Plate	115.50 115.25 - 115.50	1.0000	1.0000
L15	95	CCI 4.5" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	105	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	106	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L15	107	CCI 6" x 1" Plate	115.25 - 115.50	1.0000	1.0000
L16	1	LDF7-50A(1-5/8")	110.25 - 115.25	1.0000	1.0000
L16	4	2" Rigid Conduit	110.25 - 115.25	1.0000	1.0000
L16	7	HB158-21U6M48-30F(1-5/8)	110.25 - 115.25	1.0000	1.0000
L16	13	561(1-5/8")	110.25 - 115.25	1.0000	1.0000
L16	17	CU12PSM9P6XXX(1-1/2)	110.25 - 114.00	1.0000	1.0000
L16	93	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	94	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	95	CCI 4.5" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	105	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	106	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L16	107	CCI 6" x 1" Plate	110.25 - 115.25	1.0000	1.0000
L17	1	LDF7-50A(1-5/8")	104.08 - 110.25	1.0000	1.0000
L17	4	2" Rigid Conduit	104.08 - 110.25	1.0000	1.0000
L17	7	HB158-21U6M48-30F(1-5/8)	104.08 - 110.25	1.0000	1.0000
L17	13	561(1-5/8")	104.08 - 110.25	1.0000	1.0000
L17	17	CU12PSM9P6XXX(1-1/2)	104.08 - 110.25	1.0000	1.0000
L17	93	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	94	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	95	CCI 4.5" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	105	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	106	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L17	107	CCI 6" x 1" Plate	104.08 - 110.25	1.0000	1.0000
L18	1	LDF7-50A(1-5/8")	102.82 - 104.08	1.0000	1.0000
L18	4	2" Rigid Conduit	102.82 - 104.08	1.0000	1.0000
L18	7	HB158-21U6M48-30F(1-5/8)	102.82 - 104.08	1.0000	1.0000
L18	13	561(1-5/8")	102.82 - 104.08	1.0000	1.0000
L18	17	CU12PSM9P6XXX(1-1/2)	102.82 - 104.08	1.0000	1.0000
L18	93	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	94	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L18	95	CCI 4.5" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	105	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	106	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L18	107	CCI 6" x 1" Plate	102.82 - 104.08	1.0000	1.0000
L19	1	LDF7-50A(1-5/8")	100.50 - 102.82	1.0000	1.0000
L19	4	2" Rigid Conduit	100.50 - 102.82	1.0000	1.0000
L19	7	HB158-21U6M48-30F(1-5/8)	100.50 - 102.82	1.0000	1.0000
L19	13	561(1-5/8")	100.50 - 102.82	1.0000	1.0000
L19	17	CU12PSM9P6XXX(1-1/2)	100.50 - 102.82	1.0000	1.0000
L19	93	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	94	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	95	CCI 4.5" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	105	CCI 6" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	106	CCI 6" x 1" Plate	100.50 - 102.82	1.0000	1.0000
L19	107	CCI 6" x 1" Plate	100.60 - 102.82	1.0000	1.0000
L20	1	LDF7-50A(1-5/8")	100.25 - 100.50	1.0000	1.0000
L20	4	2" Rigid Conduit	100.25 - 100.50	1.0000	1.0000
L20	7	HB158-21U6M48-30F(1-5/8)	100.25 - 100.50	1.0000	1.0000
L20	13	561(1-5/8")	100.25 - 100.50	1.0000	1.0000
L20	17	CU12PSM9P6XXX(1-1/2)	100.25 - 100.50	1.0000	1.0000
L20	79	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	80	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	81	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	93	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	94	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	95	CCI 4.5" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	105	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L20	106	CCI 6" x 1" Plate	100.25 - 100.50	1.0000	1.0000
L21	1	LDF7-50A(1-5/8")	98.50 - 100.25	1.0000	1.0000
L21	4	2" Rigid Conduit	98.50 - 100.25	1.0000	1.0000
L21	7	HB158-21U6M48-30F(1-5/8)	98.50 - 100.25	1.0000	1.0000
L21	13	561(1-5/8")	98.50 - 100.25	1.0000	1.0000
L21	17	CU12PSM9P6XXX(1-1/2)	98.50 - 100.25	1.0000	1.0000
L21	79	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	80	CCI 6" x 1" Plate	98.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L21	81	CCI 6" x 1" Plate	100.25 98.50 - 100.25	1.0000	1.0000
L21	93	CCI 4.5" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	94	CCI 4.5" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	95	CCI 4.5" x 1" Plate	99.00 - 100.25	1.0000	1.0000
L21	105	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L21	106	CCI 6" x 1" Plate	98.50 - 100.25	1.0000	1.0000
L22	1	LDF7-50A(1-5/8")	98.25 - 98.50	1.0000	1.0000
L22	4	2" Rigid Conduit	98.25 - 98.50	1.0000	1.0000
L22	7	HB158-21U6M48-30F(1-5/8)	98.25 - 98.50	1.0000	1.0000
L22	13	561(1-5/8")	98.25 - 98.50	1.0000	1.0000
L22	17	CU12PSM9P6XXX(1-1/2)	98.25 - 98.50	1.0000	1.0000
L22	79	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	80	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	81	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	93	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	94	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	105	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L22	106	CCI 6" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L23	1	LDF7-50A(1-5/8")	93.25 - 98.25	1.0000	1.0000
L23	4	2" Rigid Conduit	93.25 - 98.25	1.0000	1.0000
L23	7	HB158-21U6M48-30F(1-5/8)	93.25 - 98.25	1.0000	1.0000
L23	13	561(1-5/8")	93.25 - 98.25	1.0000	1.0000
L23	17	CU12PSM9P6XXX(1-1/2)	93.25 - 98.25	1.0000	1.0000
L23	79	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	80	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	81	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	93	CCI 4.5" x 1" Plate	97.00 - 98.25	1.0000	1.0000
L23	94	CCI 4.5" x 1" Plate	97.00 - 98.25	1.0000	1.0000
L23	105	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L23	106	CCI 6" x 1" Plate	93.25 - 98.25	1.0000	1.0000
L24	1	LDF7-50A(1-5/8")	90.50 - 93.25	1.0000	1.0000
L24	4	2" Rigid Conduit	90.50 - 93.25	1.0000	1.0000
L24	7	HB158-21U6M48-30F(1-5/8)	90.50 - 93.25	1.0000	1.0000
L24	13	561(1-5/8")	90.50 - 93.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L24	17	CU12PSM9P6XXX(1-1/2)	90.50 - 93.25	1.0000	1.0000
L24	79	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	80	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	81	CCI 6" x 1" Plate	90.50 - 93.25	1.0000	1.0000
L24	105	CCI 6" x 1" Plate	90.60 - 93.25	1.0000	1.0000
L24	106	CCI 6" x 1" Plate	90.60 - 93.25	1.0000	1.0000
L25	1	LDF7-50A(1-5/8")	90.25 - 90.50	1.0000	1.0000
L25	4	2" Rigid Conduit	90.25 - 90.50	1.0000	1.0000
L25	7	HB158-21U6M48-30F(1-5/8)	90.25 - 90.50	1.0000	1.0000
L25	13	561(1-5/8")	90.25 - 90.50	1.0000	1.0000
L25	17	CU12PSM9P6XXX(1-1/2)	90.25 - 90.50	1.0000	1.0000
L25	79	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	80	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	81	CCI 6" x 1" Plate	90.25 - 90.50	1.0000	1.0000
L25	103	CCI 8.5" x 1.25" Plate	90.25 - 90.50	1.0000	1.0000
L25	104	CCI 8.5" x 1.25" Plate	90.25 - 90.50	1.0000	1.0000
L26	1	LDF7-50A(1-5/8")	85.25 - 90.25	1.0000	1.0000
L26	4	2" Rigid Conduit	85.25 - 90.25	1.0000	1.0000
L26	7	HB158-21U6M48-30F(1-5/8)	85.25 - 90.25	1.0000	1.0000
L26	13	561(1-5/8")	85.25 - 90.25	1.0000	1.0000
L26	17	CU12PSM9P6XXX(1-1/2)	85.25 - 90.25	1.0000	1.0000
L26	79	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	80	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	81	CCI 6" x 1" Plate	85.25 - 90.25	1.0000	1.0000
L26	89	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	90	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	91	CCI 6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L26	103	CCI 8.5" x 1.25" Plate	85.25 - 90.25	1.0000	1.0000
L26	104	CCI 8.5" x 1.25" Plate	85.25 - 90.25	1.0000	1.0000
L27	1	LDF7-50A(1-5/8")	83.50 - 85.25	1.0000	1.0000
L27	4	2" Rigid Conduit	83.50 - 85.25	1.0000	1.0000
L27	7	HB158-21U6M48-30F(1-5/8)	83.50 - 85.25	1.0000	1.0000
L27	13	561(1-5/8")	83.50 - 85.25	1.0000	1.0000
L27	17	CU12PSM9P6XXX(1-1/2)	83.50 - 85.25	1.0000	1.0000
L27	79	CCI 6" x 1" Plate	83.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L27	80	CCI 6" x 1" Plate	85.25 83.50 -	1.0000	1.0000
L27	81	CCI 6" x 1" Plate	85.25 83.50 -	1.0000	1.0000
L27	89	CCI 6.5" x 1.25" Plate	85.25 83.50 -	1.0000	1.0000
L27	90	CCI 6.5" x 1.25" Plate	85.25 83.50 -	1.0000	1.0000
L27	91	CCI 6.5" x 1.25" Plate	85.25 83.50 -	1.0000	1.0000
L27	99	CCI 8.5" x 1.25" Plate	85.00 83.50 -	1.0000	1.0000
L27	103	CCI 8.5" x 1.25" Plate	85.00 83.50 -	1.0000	1.0000
L27	104	CCI 8.5" x 1.25" Plate	85.25 83.50 -	1.0000	1.0000
L28	1	LDF7-50A(1-5/8")	85.25 83.25 -	1.0000	1.0000
L28	4	2" Rigid Conduit	83.50 83.25 -	1.0000	1.0000
L28	7	HB158-21U6M48-30F(1-5/8)	83.50 83.25 -	1.0000	1.0000
L28	13	561(1-5/8")	83.50 83.25 -	1.0000	1.0000
L28	17	CU12PSM9P6XXX(1-1/2)	83.50 83.25 -	1.0000	1.0000
L28	79	CCI 6" x 1" Plate	83.50 83.25 -	1.0000	1.0000
L28	80	CCI 6" x 1" Plate	83.50 83.25 -	1.0000	1.0000
L28	81	CCI 6" x 1" Plate	83.50 83.25 -	1.0000	1.0000
L28	89	CCI 6.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L28	90	CCI 6.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L28	91	CCI 6.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L28	99	CCI 8.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L28	103	CCI 8.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L28	104	CCI 8.5" x 1.25" Plate	83.50 83.25 -	1.0000	1.0000
L29	1	LDF7-50A(1-5/8")	83.50 80.75 -	1.0000	1.0000
L29	4	2" Rigid Conduit	83.25 80.75 -	1.0000	1.0000
L29	7	HB158-21U6M48-30F(1-5/8)	83.25 80.75 -	1.0000	1.0000
L29	13	561(1-5/8")	83.25 80.75 -	1.0000	1.0000
L29	17	CU12PSM9P6XXX(1-1/2)	83.25 80.75 -	1.0000	1.0000
L29	79	CCI 6" x 1" Plate	83.25 80.75 -	1.0000	1.0000
L29	80	CCI 6" x 1" Plate	83.25 80.75 -	1.0000	1.0000
L29	81	CCI 6" x 1" Plate	83.25 80.75 -	1.0000	1.0000
L29	89	CCI 6.5" x 1.25" Plate	83.25 80.75 -	1.0000	1.0000
L29	90	CCI 6.5" x 1.25" Plate	83.25 80.75 -	1.0000	1.0000
L29	91	CCI 6.5" x 1.25" Plate	83.25 80.75 -	1.0000	1.0000
L29	99	CCI 8.5" x 1.25" Plate	83.25 80.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L29	103	CCI 8.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L29	104	CCI 8.5" x 1.25" Plate	80.75 - 83.25	1.0000	1.0000
L30	1	LDF7-50A(1-5/8")	80.50 - 80.75	1.0000	1.0000
L30	4	2" Rigid Conduit	80.50 - 80.75	1.0000	1.0000
L30	7	HB158-21U6M48-30F(1-5/8)	80.50 - 80.75	1.0000	1.0000
L30	13	561(1-5/8")	80.50 - 80.75	1.0000	1.0000
L30	17	CU12PSM9P6XXX(1-1/2)	80.50 - 80.75	1.0000	1.0000
L30	79	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	80	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	81	CCI 6" x 1" Plate	80.50 - 80.75	1.0000	1.0000
L30	89	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	90	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	91	CCI 6.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	99	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	103	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L30	104	CCI 8.5" x 1.25" Plate	80.50 - 80.75	1.0000	1.0000
L31	1	LDF7-50A(1-5/8")	80.25 - 80.50	1.0000	1.0000
L31	4	2" Rigid Conduit	80.25 - 80.50	1.0000	1.0000
L31	7	HB158-21U6M48-30F(1-5/8)	80.25 - 80.50	1.0000	1.0000
L31	13	561(1-5/8")	80.25 - 80.50	1.0000	1.0000
L31	17	CU12PSM9P6XXX(1-1/2)	80.25 - 80.50	1.0000	1.0000
L31	79	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	80	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	81	CCI 6" x 1" Plate	80.25 - 80.50	1.0000	1.0000
L31	89	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	90	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	91	CCI 6.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	99	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	103	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L31	104	CCI 8.5" x 1.25" Plate	80.25 - 80.50	1.0000	1.0000
L32	1	LDF7-50A(1-5/8")	77.50 - 80.25	1.0000	1.0000
L32	4	2" Rigid Conduit	77.50 - 80.25	1.0000	1.0000
L32	7	HB158-21U6M48-30F(1-5/8)	77.50 - 80.25	1.0000	1.0000
L32	13	561(1-5/8")	77.50 - 80.25	1.0000	1.0000
L32	17	CU12PSM9P6XXX(1-1/2)	77.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L32	79	CCI 6" x 1" Plate	80.25 77.50 -	1.0000	1.0000
L32	80	CCI 6" x 1" Plate	80.25 77.50 -	1.0000	1.0000
L32	81	CCI 6" x 1" Plate	80.25 77.50 -	1.0000	1.0000
L32	89	CCI 6.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L32	90	CCI 6.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L32	91	CCI 6.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L32	99	CCI 8.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L32	103	CCI 8.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L32	104	CCI 8.5" x 1.25" Plate	80.25 77.50 -	1.0000	1.0000
L33	1	LDF7-50A(1-5/8")	77.25 - 77.50	1.0000	1.0000
L33	4	2" Rigid Conduit	77.25 - 77.50	1.0000	1.0000
L33	7	HB158-21U6M48-30F(1-5/8)	77.25 - 77.50	1.0000	1.0000
L33	13	561(1-5/8")	77.25 - 77.50	1.0000	1.0000
L33	17	CU12PSM9P6XXX(1-1/2)	77.25 - 77.50	1.0000	1.0000
L33	79	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	80	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	81	CCI 6" x 1" Plate	77.25 - 77.50	1.0000	1.0000
L33	89	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	90	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	91	CCI 6.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	99	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	103	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L33	104	CCI 8.5" x 1.25" Plate	77.25 - 77.50	1.0000	1.0000
L34	1	LDF7-50A(1-5/8")	68.82 - 77.25	1.0000	1.0000
L34	4	2" Rigid Conduit	68.82 - 77.25	1.0000	1.0000
L34	7	HB158-21U6M48-30F(1-5/8)	68.82 - 77.25	1.0000	1.0000
L34	13	561(1-5/8")	68.82 - 77.25	1.0000	1.0000
L34	17	CU12PSM9P6XXX(1-1/2)	68.82 - 77.25	1.0000	1.0000
L34	79	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	80	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	81	CCI 6" x 1" Plate	68.82 - 77.25	1.0000	1.0000
L34	89	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000
L34	90	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000
L34	91	CCI 6.5" x 1.25" Plate	72.50 - 77.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L34	99	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L34	103	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L34	104	CCI 8.5" x 1.25" Plate	68.82 - 77.25	1.0000	1.0000
L35	1	LDF7-50A(1-5/8")	68.29 - 68.82	1.0000	1.0000
L35	4	2" Rigid Conduit	68.29 - 68.82	1.0000	1.0000
L35	7	HB158-21U6M48-30F(1-5/8)	68.29 - 68.82	1.0000	1.0000
L35	13	561(1-5/8")	68.29 - 68.82	1.0000	1.0000
L35	17	CU12PSM9P6XXX(1-1/2)	68.29 - 68.82	1.0000	1.0000
L35	79	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	80	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	81	CCI 6" x 1" Plate	68.29 - 68.82	1.0000	1.0000
L35	99	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L35	103	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L35	104	CCI 8.5" x 1.25" Plate	68.29 - 68.82	1.0000	1.0000
L36	1	LDF7-50A(1-5/8")	64.25 - 68.29	1.0000	1.0000
L36	4	2" Rigid Conduit	64.25 - 68.29	1.0000	1.0000
L36	7	HB158-21U6M48-30F(1-5/8)	64.25 - 68.29	1.0000	1.0000
L36	13	561(1-5/8")	64.25 - 68.29	1.0000	1.0000
L36	17	CU12PSM9P6XXX(1-1/2)	64.25 - 68.29	1.0000	1.0000
L36	79	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	80	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	81	CCI 6" x 1" Plate	64.25 - 68.29	1.0000	1.0000
L36	86	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	87	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	88	CCI 6.5" x 1.25" Plate	64.25 - 67.00	1.0000	1.0000
L36	99	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L36	103	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L36	104	CCI 8.5" x 1.25" Plate	64.25 - 68.29	1.0000	1.0000
L37	1	LDF7-50A(1-5/8")	64.00 - 64.25	1.0000	1.0000
L37	4	2" Rigid Conduit	64.00 - 64.25	1.0000	1.0000
L37	7	HB158-21U6M48-30F(1-5/8)	64.00 - 64.25	1.0000	1.0000
L37	13	561(1-5/8")	64.00 - 64.25	1.0000	1.0000
L37	17	CU12PSM9P6XXX(1-1/2)	64.00 - 64.25	1.0000	1.0000
L37	79	CCI 6" x 1" Plate	64.00 - 64.25	1.0000	1.0000
L37	80	CCI 6" x 1" Plate	64.00 - 64.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L37	81	CCI 6" x 1" Plate	64.25 64.00 -	1.0000	1.0000
L37	86	CCI 6.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L37	87	CCI 6.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L37	88	CCI 6.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L37	99	CCI 8.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L37	103	CCI 8.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L37	104	CCI 8.5" x 1.25" Plate	64.25 64.00 -	1.0000	1.0000
L38	1	LDF7-50A(1-5/8")	64.00 - 60.50 -	1.0000	1.0000
L38	4	2" Rigid Conduit	64.00 - 60.50 -	1.0000	1.0000
L38	7	HB158-21U6M48-30F(1-5/8)	64.00 - 60.50 -	1.0000	1.0000
L38	13	561(1-5/8")	64.00 - 60.50 -	1.0000	1.0000
L38	17	CU12PSM9P6XXX(1-1/2)	64.00 - 60.50 -	1.0000	1.0000
L38	69	MP3-04	64.00 - 60.50 -	1.0000	1.0000
L38	79	CCI 6" x 1" Plate	61.50 - 60.50 -	1.0000	1.0000
L38	80	CCI 6" x 1" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	81	CCI 6" x 1" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	86	CCI 6.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	87	CCI 6.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	88	CCI 6.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	99	CCI 8.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	103	CCI 8.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L38	104	CCI 8.5" x 1.25" Plate	64.00 - 60.50 -	1.0000	1.0000
L39	1	LDF7-50A(1-5/8")	64.00 - 60.25 -	1.0000	1.0000
L39	4	2" Rigid Conduit	60.50 - 60.25 -	1.0000	1.0000
L39	7	HB158-21U6M48-30F(1-5/8)	60.50 - 60.25 -	1.0000	1.0000
L39	13	561(1-5/8")	60.50 - 60.25 -	1.0000	1.0000
L39	17	CU12PSM9P6XXX(1-1/2)	60.50 - 60.25 -	1.0000	1.0000
L39	67	MP3-04	60.50 - 60.25 -	1.0000	1.0000
L39	68	MP3-04	60.50 - 60.25 -	1.0000	1.0000
L39	69	MP3-04	60.50 - 60.25 -	1.0000	1.0000
L39	76	CCI 6.5" x 1.25" Plate	60.50 - 60.25 -	1.0000	1.0000
L39	77	CCI 6.5" x 1.25" Plate	60.50 - 60.25 -	1.0000	1.0000
L39	78	CCI 6.5" x 1.25" Plate	60.50 - 60.25 -	1.0000	1.0000
L39	86	CCI 6.5" x 1.25" Plate	60.50 - 60.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L39	87	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	88	CCI 6.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	99	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	103	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L39	104	CCI 8.5" x 1.25" Plate	60.25 - 60.50	1.0000	1.0000
L40	1	LDF7-50A(1-5/8")	60.08 - 60.25	1.0000	1.0000
L40	4	2" Rigid Conduit	60.08 - 60.25	1.0000	1.0000
L40	7	HB158-21U6M48-30F(1-5/8)	60.08 - 60.25	1.0000	1.0000
L40	13	561(1-5/8")	60.08 - 60.25	1.0000	1.0000
L40	17	CU12PSM9P6XXX(1-1/2)	60.08 - 60.25	1.0000	1.0000
L40	67	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	68	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	69	MP3-04	60.08 - 60.25	1.0000	1.0000
L40	76	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	77	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	78	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	86	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	87	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	88	CCI 6.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	99	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	103	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L40	104	CCI 8.5" x 1.25" Plate	60.08 - 60.25	1.0000	1.0000
L41	1	LDF7-50A(1-5/8")	59.83 - 60.08	1.0000	1.0000
L41	4	2" Rigid Conduit	59.83 - 60.08	1.0000	1.0000
L41	7	HB158-21U6M48-30F(1-5/8)	59.83 - 60.08	1.0000	1.0000
L41	13	561(1-5/8")	59.83 - 60.08	1.0000	1.0000
L41	17	CU12PSM9P6XXX(1-1/2)	59.83 - 60.08	1.0000	1.0000
L41	67	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	68	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	69	MP3-04	59.83 - 60.08	1.0000	1.0000
L41	76	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	77	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	78	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	86	CCI 6.5" x 1.25" Plate	59.83 - 60.08	1.0000	1.0000
L41	87	CCI 6.5" x 1.25" Plate	59.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L41	88	CCI 6.5" x 1.25" Plate	60.08 59.83 -	1.0000	1.0000
L41	99	CCI 8.5" x 1.25" Plate	60.08 60.00 -	1.0000	1.0000
L41	103	CCI 8.5" x 1.25" Plate	60.08 59.83 -	1.0000	1.0000
L41	104	CCI 8.5" x 1.25" Plate	60.08 59.83 -	1.0000	1.0000
L42	1	LDF7-50A(1-5/8")	60.08 59.08 -	1.0000	1.0000
L42	4	2" Rigid Conduit	59.83 59.08 -	1.0000	1.0000
L42	7	HB158-21U6M48-30F(1-5/8)	59.83 59.08 -	1.0000	1.0000
L42	13	561(1-5/8")	59.83 59.08 -	1.0000	1.0000
L42	17	CU12PSM9P6XXX(1-1/2)	59.83 59.08 -	1.0000	1.0000
L42	67	MP3-04	59.83 59.08 -	1.0000	1.0000
L42	68	MP3-04	59.83 59.08 -	1.0000	1.0000
L42	69	MP3-04	59.83 59.08 -	1.0000	1.0000
L42	76	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	77	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	78	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	86	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	87	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	88	CCI 6.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	103	CCI 8.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L42	104	CCI 8.5" x 1.25" Plate	59.83 59.08 -	1.0000	1.0000
L43	1	LDF7-50A(1-5/8")	59.83 58.83 -	1.0000	1.0000
L43	4	2" Rigid Conduit	59.08 58.83 -	1.0000	1.0000
L43	7	HB158-21U6M48-30F(1-5/8)	59.08 58.83 -	1.0000	1.0000
L43	13	561(1-5/8")	59.08 58.83 -	1.0000	1.0000
L43	17	CU12PSM9P6XXX(1-1/2)	59.08 58.83 -	1.0000	1.0000
L43	67	MP3-04	59.08 58.83 -	1.0000	1.0000
L43	68	MP3-04	59.08 58.83 -	1.0000	1.0000
L43	69	MP3-04	59.08 58.83 -	1.0000	1.0000
L43	76	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000
L43	77	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000
L43	78	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000
L43	86	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000
L43	87	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000
L43	88	CCI 6.5" x 1.25" Plate	59.08 58.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L43	103	CCI 8.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L43	104	CCI 8.5" x 1.25" Plate	58.83 - 59.08	1.0000	1.0000
L44	1	LDF7-50A(1-5/8")	55.42 - 58.83	1.0000	1.0000
L44	4	2" Rigid Conduit	55.42 - 58.83	1.0000	1.0000
L44	7	HB158-21U6M48-30F(1-5/8)	55.42 - 58.83	1.0000	1.0000
L44	13	561(1-5/8")	55.42 - 58.83	1.0000	1.0000
L44	17	CU12PSM9P6XXX(1-1/2)	55.42 - 58.83	1.0000	1.0000
L44	67	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	68	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	69	MP3-04	55.42 - 58.83	1.0000	1.0000
L44	76	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	77	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	78	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	86	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	87	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	88	CCI 6.5" x 1.25" Plate	55.42 - 58.83	1.0000	1.0000
L44	103	CCI 8.5" x 1.25" Plate	55.50 - 58.83	1.0000	1.0000
L44	104	CCI 8.5" x 1.25" Plate	55.50 - 58.83	1.0000	1.0000
L45	1	LDF7-50A(1-5/8")	55.17 - 55.42	1.0000	1.0000
L45	4	2" Rigid Conduit	55.17 - 55.42	1.0000	1.0000
L45	7	HB158-21U6M48-30F(1-5/8)	55.17 - 55.42	1.0000	1.0000
L45	13	561(1-5/8")	55.17 - 55.42	1.0000	1.0000
L45	17	CU12PSM9P6XXX(1-1/2)	55.17 - 55.42	1.0000	1.0000
L45	67	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	68	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	69	MP3-04	55.17 - 55.42	1.0000	1.0000
L45	76	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	77	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	78	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	86	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	87	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	88	CCI 6.5" x 1.25" Plate	55.17 - 55.42	1.0000	1.0000
L45	101	CCI 8.5" x 1.25" Plate	55.17 - 55.40	1.0000	1.0000
L45	102	CCI 8.5" x 1.25" Plate	55.17 - 55.40	1.0000	1.0000
L46	1	LDF7-50A(1-5/8")	54.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L46	4	2" Rigid Conduit	55.17 54.75 -	1.0000	1.0000
L46	7	HB158-21U6M48-30F(1-5/8)	55.17 54.75 -	1.0000	1.0000
L46	13	561(1-5/8")	55.17 54.75 -	1.0000	1.0000
L46	17	CU12PSM9P6XXX(1-1/2)	55.17 54.75 -	1.0000	1.0000
L46	67	MP3-04	55.17 54.75 -	1.0000	1.0000
L46	68	MP3-04	55.17 54.75 -	1.0000	1.0000
L46	69	MP3-04	55.17 54.75 -	1.0000	1.0000
L46	76	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	77	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	78	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	86	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	87	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	88	CCI 6.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	101	CCI 8.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L46	102	CCI 8.5" x 1.25" Plate	55.17 54.75 -	1.0000	1.0000
L47	1	LDF7-50A(1-5/8")	54.50 - 54.75	1.0000	1.0000
L47	4	2" Rigid Conduit	54.50 - 54.75	1.0000	1.0000
L47	7	HB158-21U6M48-30F(1-5/8)	54.50 - 54.75	1.0000	1.0000
L47	13	561(1-5/8")	54.50 - 54.75	1.0000	1.0000
L47	17	CU12PSM9P6XXX(1-1/2)	54.50 - 54.75	1.0000	1.0000
L47	67	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	68	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	69	MP3-04	54.50 - 54.75	1.0000	1.0000
L47	76	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	77	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	78	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	86	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	87	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	88	CCI 6.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	101	CCI 8.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L47	102	CCI 8.5" x 1.25" Plate	54.50 - 54.75	1.0000	1.0000
L48	1	LDF7-50A(1-5/8")	49.50 - 54.50	1.0000	1.0000
L48	4	2" Rigid Conduit	49.50 - 54.50	1.0000	1.0000
L48	7	HB158-21U6M48-30F(1-5/8)	49.50 - 54.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L48	13	561(1-5/8")	49.50 - 54.50	1.0000	1.0000
L48	17	CU12PSM9P6XXX(1-1/2)	49.50 - 54.50	1.0000	1.0000
L48	67	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	68	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	69	MP3-04	49.50 - 54.50	1.0000	1.0000
L48	76	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	77	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	78	CCI 6.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	86	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	87	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	88	CCI 6.5" x 1.25" Plate	52.00 - 54.50	1.0000	1.0000
L48	101	CCI 8.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L48	102	CCI 8.5" x 1.25" Plate	49.50 - 54.50	1.0000	1.0000
L49	1	LDF7-50A(1-5/8")	44.50 - 49.50	1.0000	1.0000
L49	4	2" Rigid Conduit	44.50 - 49.50	1.0000	1.0000
L49	7	HB158-21U6M48-30F(1-5/8)	44.50 - 49.50	1.0000	1.0000
L49	13	561(1-5/8")	44.50 - 49.50	1.0000	1.0000
L49	17	CU12PSM9P6XXX(1-1/2)	44.50 - 49.50	1.0000	1.0000
L49	67	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	68	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	69	MP3-04	44.50 - 49.50	1.0000	1.0000
L49	76	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	77	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	78	CCI 6.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	98	CCI 8.5" x 1.25" Plate	44.50 - 45.50	1.0000	1.0000
L49	101	CCI 8.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L49	102	CCI 8.5" x 1.25" Plate	44.50 - 49.50	1.0000	1.0000
L50	1	LDF7-50A(1-5/8")	41.25 - 44.50	1.0000	1.0000
L50	4	2" Rigid Conduit	41.25 - 44.50	1.0000	1.0000
L50	7	HB158-21U6M48-30F(1-5/8)	41.25 - 44.50	1.0000	1.0000
L50	13	561(1-5/8")	41.25 - 44.50	1.0000	1.0000
L50	17	CU12PSM9P6XXX(1-1/2)	41.25 - 44.50	1.0000	1.0000
L50	67	MP3-04	41.25 - 44.50	1.0000	1.0000
L50	68	MP3-04	41.25 - 44.50	1.0000	1.0000
L50	69	MP3-04	41.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L50	76	CCI 6.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L50	77	CCI 6.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L50	78	CCI 6.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L50	98	CCI 8.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L50	101	CCI 8.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L50	102	CCI 8.5" x 1.25" Plate	44.50 41.25 -	1.0000	1.0000
L51	1	LDF7-50A(1-5/8")	41.00 - 41.25	1.0000	1.0000
L51	4	2" Rigid Conduit	41.00 - 41.25	1.0000	1.0000
L51	7	HB158-21U6M48-30F(1-5/8)	41.00 - 41.25	1.0000	1.0000
L51	13	561(1-5/8")	41.00 - 41.25	1.0000	1.0000
L51	17	CU12PSM9P6XXX(1-1/2)	41.00 - 41.25	1.0000	1.0000
L51	67	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	68	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	69	MP3-04	41.00 - 41.25	1.0000	1.0000
L51	76	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	77	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	78	CCI 6.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	98	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	101	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L51	102	CCI 8.5" x 1.25" Plate	41.00 - 41.25	1.0000	1.0000
L52	1	LDF7-50A(1-5/8")	34.29 - 41.00	1.0000	1.0000
L52	4	2" Rigid Conduit	34.29 - 41.00	1.0000	1.0000
L52	7	HB158-21U6M48-30F(1-5/8)	34.29 - 41.00	1.0000	1.0000
L52	13	561(1-5/8")	34.29 - 41.00	1.0000	1.0000
L52	17	CU12PSM9P6XXX(1-1/2)	34.29 - 41.00	1.0000	1.0000
L52	67	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	68	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	69	MP3-04	34.29 - 41.00	1.0000	1.0000
L52	76	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	77	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	78	CCI 6.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	83	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000
L52	84	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000
L52	85	CCI 6.5" x 1.25" Plate	34.29 - 38.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L52	98	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	101	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L52	102	CCI 8.5" x 1.25" Plate	34.29 - 41.00	1.0000	1.0000
L53	1	LDF7-50A(1-5/8")	33.29 - 34.29	1.0000	1.0000
L53	4	2" Rigid Conduit	33.29 - 34.29	1.0000	1.0000
L53	7	HB158-21U6M48-30F(1-5/8)	33.29 - 34.29	1.0000	1.0000
L53	13	561(1-5/8")	33.29 - 34.29	1.0000	1.0000
L53	17	CU12PSM9P6XXX(1-1/2)	33.29 - 34.29	1.0000	1.0000
L53	67	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	68	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	69	MP3-04	33.29 - 34.29	1.0000	1.0000
L53	76	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	77	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	78	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	83	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	84	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	85	CCI 6.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	98	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	101	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L53	102	CCI 8.5" x 1.25" Plate	33.29 - 34.29	1.0000	1.0000
L54	1	LDF7-50A(1-5/8")	31.50 - 33.29	1.0000	1.0000
L54	4	2" Rigid Conduit	31.50 - 33.29	1.0000	1.0000
L54	7	HB158-21U6M48-30F(1-5/8)	31.50 - 33.29	1.0000	1.0000
L54	13	561(1-5/8")	31.50 - 33.29	1.0000	1.0000
L54	17	CU12PSM9P6XXX(1-1/2)	31.50 - 33.29	1.0000	1.0000
L54	67	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	68	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	69	MP3-04	31.50 - 33.29	1.0000	1.0000
L54	76	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	77	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	78	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	83	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	84	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	85	CCI 6.5" x 1.25" Plate	31.50 - 33.29	1.0000	1.0000
L54	98	CCI 8.5" x 1.25" Plate	31.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L54	101	CCI 8.5" x 1.25" Plate	33.29 31.50 -	1.0000	1.0000
L54	102	CCI 8.5" x 1.25" Plate	33.29 31.50 -	1.0000	1.0000
L55	1	LDF7-50A(1-5/8")	33.29 31.25 -	1.0000	1.0000
L55	4	2" Rigid Conduit	31.50 31.25 -	1.0000	1.0000
L55	7	HB158-21U6M48-30F(1-5/8)	31.50 31.25 -	1.0000	1.0000
L55	13	561(1-5/8")	31.50 31.25 -	1.0000	1.0000
L55	17	CU12PSM9P6XXX(1-1/2)	31.50 31.25 -	1.0000	1.0000
L55	64	MP3-05	31.50 31.25 -	1.0000	1.0000
L55	67	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	68	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	69	MP3-04	31.50 31.25 -	1.0000	1.0000
L55	76	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	77	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	78	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	83	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	84	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	85	CCI 6.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	98	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	101	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L55	102	CCI 8.5" x 1.25" Plate	31.50 31.25 -	1.0000	1.0000
L56	1	LDF7-50A(1-5/8")	30.50 - 31.25	1.0000	1.0000
L56	4	2" Rigid Conduit	30.50 - 31.25	1.0000	1.0000
L56	7	HB158-21U6M48-30F(1-5/8)	30.50 - 31.25	1.0000	1.0000
L56	13	561(1-5/8")	30.50 - 31.25	1.0000	1.0000
L56	17	CU12PSM9P6XXX(1-1/2)	30.50 - 31.25	1.0000	1.0000
L56	64	MP3-05	30.50 - 31.25	1.0000	1.0000
L56	67	MP3-04	30.50 - 31.25	1.0000	1.0000
L56	68	MP3-04	30.50 - 31.25	1.0000	1.0000
L56	69	MP3-04	31.00 - 31.25	1.0000	1.0000
L56	76	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	77	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	78	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	83	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	84	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L56	85	CCI 6.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	98	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	101	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L56	102	CCI 8.5" x 1.25" Plate	30.50 - 31.25	1.0000	1.0000
L57	1	LDF7-50A(1-5/8")	30.25 - 30.50	1.0000	1.0000
L57	4	2" Rigid Conduit	30.25 - 30.50	1.0000	1.0000
L57	7	HB158-21U6M48-30F(1-5/8)	30.25 - 30.50	1.0000	1.0000
L57	13	561(1-5/8")	30.25 - 30.50	1.0000	1.0000
L57	17	CU12PSM9P6XXX(1-1/2)	30.25 - 30.50	1.0000	1.0000
L57	64	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	65	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	66	MP3-05	30.25 - 30.50	1.0000	1.0000
L57	73	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	74	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	75	CCI 6" x 1" Plate	30.25 - 30.50	1.0000	1.0000
L57	83	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	84	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	85	CCI 6.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	98	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	101	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L57	102	CCI 8.5" x 1.25" Plate	30.25 - 30.50	1.0000	1.0000
L58	1	LDF7-50A(1-5/8")	25.75 - 30.25	1.0000	1.0000
L58	4	2" Rigid Conduit	25.75 - 30.25	1.0000	1.0000
L58	7	HB158-21U6M48-30F(1-5/8)	25.75 - 30.25	1.0000	1.0000
L58	13	561(1-5/8")	25.75 - 30.25	1.0000	1.0000
L58	17	CU12PSM9P6XXX(1-1/2)	25.75 - 30.25	1.0000	1.0000
L58	64	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	65	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	66	MP3-05	25.75 - 30.25	1.0000	1.0000
L58	73	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	74	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	75	CCI 6" x 1" Plate	25.75 - 30.25	1.0000	1.0000
L58	83	CCI 6.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	84	CCI 6.5" x 1.25" Plate	25.75 - 30.25	1.0000	1.0000
L58	85	CCI 6.5" x 1.25" Plate	25.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L58	98	CCI 8.5" x 1.25" Plate	30.25 25.75 -	1.0000	1.0000
L58	101	CCI 8.5" x 1.25" Plate	30.25 25.75 -	1.0000	1.0000
L58	102	CCI 8.5" x 1.25" Plate	30.25 25.75 -	1.0000	1.0000
L58	114	CCI 1.25" x 5.875" Plate	30.25 25.75 -	1.0000	1.0000
L58	115	CCI 1.25" x 5.875" Plate	28.50 25.75 -	1.0000	1.0000
L58	116	CCI 1.25" x 5.875" Plate	28.50 25.75 -	1.0000	1.0000
L59	1	LDF7-50A(1-5/8")	28.50 25.50 -	1.0000	1.0000
L59	4	2" Rigid Conduit	25.75 25.50 -	1.0000	1.0000
L59	7	HB158-21U6M48-30F(1-5/8)	25.75 25.50 -	1.0000	1.0000
L59	13	561(1-5/8")	25.75 25.50 -	1.0000	1.0000
L59	17	CU12PSM9P6XXX(1-1/2)	25.75 25.50 -	1.0000	1.0000
L59	64	MP3-05	25.75 25.50 -	1.0000	1.0000
L59	65	MP3-05	25.75 25.50 -	1.0000	1.0000
L59	66	MP3-05	25.75 25.50 -	1.0000	1.0000
L59	73	CCI 6" x 1" Plate	25.75 25.50 -	1.0000	1.0000
L59	74	CCI 6" x 1" Plate	25.75 25.50 -	1.0000	1.0000
L59	75	CCI 6" x 1" Plate	25.75 25.50 -	1.0000	1.0000
L59	83	CCI 6.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	84	CCI 6.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	85	CCI 6.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	98	CCI 8.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	101	CCI 8.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	102	CCI 8.5" x 1.25" Plate	25.75 25.50 -	1.0000	1.0000
L59	114	CCI 1.25" x 5.875" Plate	25.75 25.50 -	1.0000	1.0000
L59	115	CCI 1.25" x 5.875" Plate	25.75 25.50 -	1.0000	1.0000
L59	116	CCI 1.25" x 5.875" Plate	25.75 25.50 -	1.0000	1.0000
L60	1	LDF7-50A(1-5/8")	25.50 24.67 -	1.0000	1.0000
L60	4	2" Rigid Conduit	25.50 24.67 -	1.0000	1.0000
L60	7	HB158-21U6M48-30F(1-5/8)	25.50 24.67 -	1.0000	1.0000
L60	13	561(1-5/8")	25.50 24.67 -	1.0000	1.0000
L60	17	CU12PSM9P6XXX(1-1/2)	25.50 24.67 -	1.0000	1.0000
L60	64	MP3-05	25.50 24.67 -	1.0000	1.0000
L60	65	MP3-05	25.50 24.67 -	1.0000	1.0000
L60	66	MP3-05	25.50 24.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L60	73	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	74	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	75	CCI 6" x 1" Plate	24.67 - 25.50	1.0000	1.0000
L60	83	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	84	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	85	CCI 6.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	98	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	101	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	102	CCI 8.5" x 1.25" Plate	24.67 - 25.50	1.0000	1.0000
L60	109	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	110	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	111	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L60	112	CCI 1.25" x 5.875" Plate	24.67 - 25.50	1.0000	1.0000
L61	1	LDF7-50A(1-5/8")	24.42 - 24.67	1.0000	1.0000
L61	4	2" Rigid Conduit	24.42 - 24.67	1.0000	1.0000
L61	7	HB158-21U6M48-30F(1-5/8)	24.42 - 24.67	1.0000	1.0000
L61	13	561(1-5/8")	24.42 - 24.67	1.0000	1.0000
L61	17	CU12PSM9P6XXX(1-1/2)	24.42 - 24.67	1.0000	1.0000
L61	64	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	65	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	66	MP3-05	24.42 - 24.67	1.0000	1.0000
L61	73	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	74	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	75	CCI 6" x 1" Plate	24.42 - 24.67	1.0000	1.0000
L61	83	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	84	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	85	CCI 6.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	98	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	101	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	102	CCI 8.5" x 1.25" Plate	24.42 - 24.67	1.0000	1.0000
L61	109	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	110	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	111	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L61	112	CCI 1.25" x 5.875" Plate	24.42 - 24.67	1.0000	1.0000
L62	1	LDF7-50A(1-5/8")	24.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L62	4	2" Rigid Conduit	24.42 24.00 - 24.42	1.0000	1.0000
L62	7	HB158-21U6M48-30F(1-5/8)	24.00 - 24.42	1.0000	1.0000
L62	13	561(1-5/8")	24.00 - 24.42	1.0000	1.0000
L62	17	CU12PSM9P6XXX(1-1/2)	24.00 - 24.42	1.0000	1.0000
L62	64	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	65	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	66	MP3-05	24.00 - 24.42	1.0000	1.0000
L62	73	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	74	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	75	CCI 6" x 1" Plate	24.00 - 24.42	1.0000	1.0000
L62	83	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	84	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	85	CCI 6.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	98	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	101	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	102	CCI 8.5" x 1.25" Plate	24.00 - 24.42	1.0000	1.0000
L62	109	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	110	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	111	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L62	112	CCI 1.25" x 5.875" Plate	24.00 - 24.42	1.0000	1.0000
L63	1	LDF7-50A(1-5/8")	23.75 - 24.00	1.0000	1.0000
L63	4	2" Rigid Conduit	23.75 - 24.00	1.0000	1.0000
L63	7	HB158-21U6M48-30F(1-5/8)	23.75 - 24.00	1.0000	1.0000
L63	13	561(1-5/8")	23.75 - 24.00	1.0000	1.0000
L63	17	CU12PSM9P6XXX(1-1/2)	23.75 - 24.00	1.0000	1.0000
L63	64	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	65	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	66	MP3-05	23.75 - 24.00	1.0000	1.0000
L63	73	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	74	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	75	CCI 6" x 1" Plate	23.75 - 24.00	1.0000	1.0000
L63	83	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	84	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	85	CCI 6.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L63	98	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	101	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	102	CCI 8.5" x 1.25" Plate	23.75 - 24.00	1.0000	1.0000
L63	109	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	110	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	111	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L63	112	CCI 1.25" x 5.875" Plate	23.75 - 24.00	1.0000	1.0000
L64	1	LDF7-50A(1-5/8")	18.75 - 23.75	1.0000	1.0000
L64	4	2" Rigid Conduit	18.75 - 23.75	1.0000	1.0000
L64	7	HB158-21U6M48-30F(1-5/8)	18.75 - 23.75	1.0000	1.0000
L64	13	561(1-5/8")	18.75 - 23.75	1.0000	1.0000
L64	17	CU12PSM9P6XXX(1-1/2)	18.75 - 23.75	1.0000	1.0000
L64	64	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	65	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	66	MP3-05	18.75 - 23.75	1.0000	1.0000
L64	73	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	74	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	75	CCI 6" x 1" Plate	18.75 - 23.75	1.0000	1.0000
L64	83	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	84	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	85	CCI 6.5" x 1.25" Plate	23.00 - 23.75	1.0000	1.0000
L64	98	CCI 8.5" x 1.25" Plate	18.75 - 23.75	1.0000	1.0000
L64	101	CCI 8.5" x 1.25" Plate	20.40 - 23.75	1.0000	1.0000
L64	102	CCI 8.5" x 1.25" Plate	20.40 - 23.75	1.0000	1.0000
L64	109	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	110	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	111	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L64	112	CCI 1.25" x 5.875" Plate	18.75 - 23.75	1.0000	1.0000
L65	1	LDF7-50A(1-5/8")	14.08 - 18.75	1.0000	1.0000
L65	4	2" Rigid Conduit	14.08 - 18.75	1.0000	1.0000
L65	7	HB158-21U6M48-30F(1-5/8)	14.08 - 18.75	1.0000	1.0000
L65	13	561(1-5/8")	14.08 - 18.75	1.0000	1.0000
L65	17	CU12PSM9P6XXX(1-1/2)	14.08 - 18.75	1.0000	1.0000
L65	64	MP3-05	14.08 - 18.75	1.0000	1.0000
L65	65	MP3-05	14.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L65	66	MP3-05	18.75 14.08 -	1.0000	1.0000
L65	70	MP3-04	18.75 14.08 -	1.0000	1.0000
L65	71	MP3-04	15.50 14.08 -	1.0000	1.0000
L65	73	CCI 6" x 1" Plate	15.50 14.08 -	1.0000	1.0000
L65	74	CCI 6" x 1" Plate	18.75 14.08 -	1.0000	1.0000
L65	75	CCI 6" x 1" Plate	18.75 14.08 -	1.0000	1.0000
L65	98	CCI 8.5" x 1.25" Plate	18.75 14.08 -	1.0000	1.0000
L65	109	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	110	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	111	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L65	112	CCI 1.25" x 5.875" Plate	18.75 14.08 -	1.0000	1.0000
L66	1	LDF7-50A(1-5/8")	13.82 - 14.08	1.0000	1.0000
L66	4	2" Rigid Conduit	13.82 - 14.08	1.0000	1.0000
L66	7	HB158-21U6M48-30F(1-5/8)	13.82 - 14.08	1.0000	1.0000
L66	13	561(1-5/8")	13.82 - 14.08	1.0000	1.0000
L66	17	CU12PSM9P6XXX(1-1/2)	13.82 - 14.08	1.0000	1.0000
L66	64	MP3-05	13.82 - 14.08	1.0000	1.0000
L66	65	MP3-05	13.82 - 14.08	1.0000	1.0000
L66	66	MP3-05	13.82 - 14.08	1.0000	1.0000
L66	70	MP3-04	13.82 - 14.08	1.0000	1.0000
L66	71	MP3-04	13.82 - 14.08	1.0000	1.0000
L66	73	CCI 6" x 1" Plate	13.82 - 14.08	1.0000	1.0000
L66	74	CCI 6" x 1" Plate	13.82 - 14.08	1.0000	1.0000
L66	75	CCI 6" x 1" Plate	13.82 - 14.08	1.0000	1.0000
L66	98	CCI 8.5" x 1.25" Plate	13.82 - 14.08	1.0000	1.0000
L66	109	CCI 1.25" x 5.875" Plate	13.82 - 14.08	1.0000	1.0000
L66	110	CCI 1.25" x 5.875" Plate	13.82 - 14.08	1.0000	1.0000
L66	111	CCI 1.25" x 5.875" Plate	13.82 - 14.08	1.0000	1.0000
L66	112	CCI 1.25" x 5.875" Plate	13.82 - 14.08	1.0000	1.0000
L67	1	LDF7-50A(1-5/8")	13.67 - 13.82	1.0000	1.0000
L67	4	2" Rigid Conduit	13.67 - 13.82	1.0000	1.0000
L67	7	HB158-21U6M48-30F(1-5/8)	13.67 - 13.82	1.0000	1.0000
L67	13	561(1-5/8")	13.67 - 13.82	1.0000	1.0000
L67	17	CU12PSM9P6XXX(1-1/2)	13.67 - 13.82	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L67	64	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	65	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	66	MP3-05	13.67 - 13.82	1.0000	1.0000
L67	70	MP3-04	13.67 - 13.82	1.0000	1.0000
L67	71	MP3-04	13.67 - 13.82	1.0000	1.0000
L67	73	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	74	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	75	CCI 6" x 1" Plate	13.67 - 13.82	1.0000	1.0000
L67	98	CCI 8.5" x 1.25" Plate	13.67 - 13.82	1.0000	1.0000
L67	109	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	110	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	111	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L67	112	CCI 1.25" x 5.875" Plate	13.67 - 13.82	1.0000	1.0000
L68	1	LDF7-50A(1-5/8")	10.50 - 13.67	1.0000	1.0000
L68	4	2" Rigid Conduit	10.50 - 13.67	1.0000	1.0000
L68	7	HB158-21U6M48-30F(1-5/8)	10.50 - 13.67	1.0000	1.0000
L68	13	561(1-5/8")	10.50 - 13.67	1.0000	1.0000
L68	17	CU12PSM9P6XXX(1-1/2)	10.50 - 13.67	1.0000	1.0000
L68	64	MP3-05	11.50 - 13.67	1.0000	1.0000
L68	65	MP3-05	10.50 - 13.67	1.0000	1.0000
L68	66	MP3-05	10.50 - 13.67	1.0000	1.0000
L68	70	MP3-04	10.50 - 13.67	1.0000	1.0000
L68	71	MP3-04	10.50 - 13.67	1.0000	1.0000
L68	73	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	74	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	75	CCI 6" x 1" Plate	10.50 - 13.67	1.0000	1.0000
L68	98	CCI 8.5" x 1.25" Plate	10.50 - 13.67	1.0000	1.0000
L68	109	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	110	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	111	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L68	112	CCI 1.25" x 5.875" Plate	10.50 - 13.67	1.0000	1.0000
L69	1	LDF7-50A(1-5/8")	10.25 - 10.50	1.0000	1.0000
L69	4	2" Rigid Conduit	10.25 - 10.50	1.0000	1.0000
L69	7	HB158-21U6M48-30F(1-5/8)	10.25 - 10.50	1.0000	1.0000
L69	13	561(1-5/8")	10.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L69	17	CU12PSM9P6XXX(1-1/2)	10.50 10.25 -	1.0000	1.0000
L69	65	MP3-05	10.50 10.25 -	1.0000	1.0000
L69	66	MP3-05	10.50 10.25 -	1.0000	1.0000
L69	70	MP3-04	10.50 10.25 -	1.0000	1.0000
L69	71	MP3-04	10.50 10.25 -	1.0000	1.0000
L69	73	CCI 6" x 1" Plate	10.50 10.25 -	1.0000	1.0000
L69	74	CCI 6" x 1" Plate	10.50 10.25 -	1.0000	1.0000
L69	75	CCI 6" x 1" Plate	10.50 10.25 -	1.0000	1.0000
L69	97	CCI 6" x 1" Plate	10.50 10.25 -	1.0000	1.0000
L69	109	CCI 1.25" x 5.875" Plate	10.50 10.25 -	1.0000	1.0000
L69	110	CCI 1.25" x 5.875" Plate	10.50 10.25 -	1.0000	1.0000
L69	111	CCI 1.25" x 5.875" Plate	10.50 10.25 -	1.0000	1.0000
L69	112	CCI 1.25" x 5.875" Plate	10.50 10.25 -	1.0000	1.0000
L70	1	LDF7-50A(1-5/8")	5.25 - 10.25	1.0000	1.0000
L70	4	2" Rigid Conduit	5.25 - 10.25	1.0000	1.0000
L70	7	HB158-21U6M48-30F(1-5/8)	5.25 - 10.25	1.0000	1.0000
L70	13	561(1-5/8")	5.25 - 10.25	1.0000	1.0000
L70	17	CU12PSM9P6XXX(1-1/2)	5.25 - 10.25	1.0000	1.0000
L70	65	MP3-05	5.25 - 10.25	1.0000	1.0000
L70	66	MP3-05	5.25 - 10.25	1.0000	1.0000
L70	70	MP3-04	5.25 - 10.25	1.0000	1.0000
L70	71	MP3-04	5.25 - 10.25	1.0000	1.0000
L70	73	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	74	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	75	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	97	CCI 6" x 1" Plate	5.25 - 10.25	1.0000	1.0000
L70	109	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	110	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	111	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L70	112	CCI 1.25" x 5.875" Plate	5.25 - 10.25	1.0000	1.0000
L71	1	LDF7-50A(1-5/8")	2.90 - 5.25	1.0000	1.0000
L71	4	2" Rigid Conduit	2.90 - 5.25	1.0000	1.0000
L71	7	HB158-21U6M48-30F(1-5/8)	2.90 - 5.25	1.0000	1.0000
L71	13	561(1-5/8")	2.90 - 5.25	1.0000	1.0000
L71	17	CU12PSM9P6XXX(1-1/2)	2.90 - 5.25	1.0000	1.0000
L71	65	MP3-05	2.90 - 5.25	1.0000	1.0000
L71	66	MP3-05	2.90 - 5.25	1.0000	1.0000
L71	70	MP3-04	2.90 - 5.25	1.0000	1.0000
L71	71	MP3-04	2.90 - 5.25	1.0000	1.0000
L71	73	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	74	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	75	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	97	CCI 6" x 1" Plate	2.90 - 5.25	1.0000	1.0000
L71	109	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	110	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	111	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L71	112	CCI 1.25" x 5.875" Plate	2.90 - 5.25	1.0000	1.0000
L72	1	LDF7-50A(1-5/8")	2.65 - 2.90	1.0000	1.0000
L72	4	2" Rigid Conduit	2.65 - 2.90	1.0000	1.0000
L72	7	HB158-21U6M48-30F(1-5/8)	2.65 - 2.90	1.0000	1.0000
L72	13	561(1-5/8")	2.65 - 2.90	1.0000	1.0000
L72	17	CU12PSM9P6XXX(1-1/2)	2.65 - 2.90	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L72	65	MP3-05	2.65 - 2.90	1.0000	1.0000
L72	66	MP3-05	2.65 - 2.90	1.0000	1.0000
L72	70	MP3-04	2.65 - 2.90	1.0000	1.0000
L72	71	MP3-04	2.65 - 2.90	1.0000	1.0000
L72	73	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	74	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	75	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	97	CCI 6" x 1" Plate	2.65 - 2.90	1.0000	1.0000
L72	109	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	110	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	111	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L72	112	CCI 1.25" x 5.875" Plate	2.65 - 2.90	1.0000	1.0000
L73	1	LDF7-50A(1-5/8")	2.50 - 2.65	1.0000	1.0000
L73	4	2" Rigid Conduit	2.50 - 2.65	1.0000	1.0000
L73	7	HB158-21U6M48-30F(1-5/8)	2.50 - 2.65	1.0000	1.0000
L73	13	561(1-5/8")	2.50 - 2.65	1.0000	1.0000
L73	17	CU12PSM9P6XXX(1-1/2)	2.50 - 2.65	1.0000	1.0000
L73	65	MP3-05	2.50 - 2.65	1.0000	1.0000
L73	66	MP3-05	2.50 - 2.65	1.0000	1.0000
L73	70	MP3-04	2.50 - 2.65	1.0000	1.0000
L73	71	MP3-04	2.50 - 2.65	1.0000	1.0000
L73	73	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	74	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	75	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	97	CCI 6" x 1" Plate	2.50 - 2.65	1.0000	1.0000
L73	109	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	110	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	111	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L73	112	CCI 1.25" x 5.875" Plate	2.50 - 2.65	1.0000	1.0000
L74	1	LDF7-50A(1-5/8")	2.25 - 2.50	1.0000	1.0000
L74	4	2" Rigid Conduit	2.25 - 2.50	1.0000	1.0000
L74	7	HB158-21U6M48-30F(1-5/8)	2.25 - 2.50	1.0000	1.0000
L74	13	561(1-5/8")	2.25 - 2.50	1.0000	1.0000
L74	17	CU12PSM9P6XXX(1-1/2)	2.25 - 2.50	1.0000	1.0000
L74	65	MP3-05	2.25 - 2.50	1.0000	1.0000
L74	66	MP3-05	2.25 - 2.50	1.0000	1.0000
L74	70	MP3-04	2.25 - 2.50	1.0000	1.0000
L74	71	MP3-04	2.25 - 2.50	1.0000	1.0000
L74	73	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	74	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	75	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	97	CCI 6" x 1" Plate	2.25 - 2.50	1.0000	1.0000
L74	109	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	110	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	111	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L74	112	CCI 1.25" x 5.875" Plate	2.25 - 2.50	1.0000	1.0000
L75	1	LDF7-50A(1-5/8")	1.92 - 2.25	1.0000	1.0000
L75	4	2" Rigid Conduit	1.92 - 2.25	1.0000	1.0000
L75	7	HB158-21U6M48-30F(1-5/8)	1.92 - 2.25	1.0000	1.0000
L75	13	561(1-5/8")	1.92 - 2.25	1.0000	1.0000
L75	17	CU12PSM9P6XXX(1-1/2)	1.92 - 2.25	1.0000	1.0000
L75	65	MP3-05	1.92 - 2.25	1.0000	1.0000
L75	66	MP3-05	1.92 - 2.25	1.0000	1.0000
L75	70	MP3-04	1.92 - 2.25	1.0000	1.0000
L75	71	MP3-04	1.92 - 2.25	1.0000	1.0000
L75	73	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	74	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	75	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	97	CCI 6" x 1" Plate	1.92 - 2.25	1.0000	1.0000
L75	109	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	110	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	111	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L75	112	CCI 1.25" x 5.875" Plate	1.92 - 2.25	1.0000	1.0000
L76	1	LDF7-50A(1-5/8")	1.67 - 1.92	1.0000	1.0000
L76	4	2" Rigid Conduit	1.67 - 1.92	1.0000	1.0000
L76	7	HB158-21U6M48-30F(1-	1.67 - 1.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
		5/8)			
L76	13	561(1-5/8")	1.67 - 1.92	1.0000	1.0000
L76	17	CU12PSM9P6XXX(1-1/2)	1.67 - 1.92	1.0000	1.0000
L76	65	MP3-05	1.67 - 1.92	1.0000	1.0000
L76	66	MP3-05	1.67 - 1.92	1.0000	1.0000
L76	70	MP3-04	1.67 - 1.92	1.0000	1.0000
L76	71	MP3-04	1.67 - 1.92	1.0000	1.0000
L76	73	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	74	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	75	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	97	CCI 6" x 1" Plate	1.67 - 1.92	1.0000	1.0000
L76	109	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	110	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	111	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L76	112	CCI 1.25" x 5.875" Plate	1.67 - 1.92	1.0000	1.0000
L77	1	LDF7-50A(1-5/8")	0.00 - 1.67	1.0000	1.0000
L77	4	2" Rigid Conduit	0.00 - 1.67	1.0000	1.0000
L77	7	HB158-21U6M48-30F(1-5/8)	0.00 - 1.67	1.0000	1.0000
		5/8)			
L77	13	561(1-5/8")	0.00 - 1.67	1.0000	1.0000
L77	17	CU12PSM9P6XXX(1-1/2)	0.00 - 1.67	1.0000	1.0000
L77	65	MP3-05	0.00 - 1.67	1.0000	1.0000
L77	66	MP3-05	0.00 - 1.67	1.0000	1.0000
L77	70	MP3-04	0.00 - 1.67	1.0000	1.0000
L77	71	MP3-04	0.00 - 1.67	1.0000	1.0000
L77	73	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	74	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	75	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	97	CCI 6" x 1" Plate	0.00 - 1.67	1.0000	1.0000
L77	109	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	110	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	111	CCI 1.25" x 5.875" Plate	0.00 - 1.67	1.0000	1.0000
L77	112	CCI 1.25" x 5.875" Plate	0.00 - 1.67	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
L9	105	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L9	106	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L9	107	CCI 6" x 1" Plate	121.33 - 122.60	Auto	0.0000
L10	105	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L10	106	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L10	107	CCI 6" x 1" Plate	120.08 - 121.33	Auto	0.0000
L11	105	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L11	106	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L11	107	CCI 6" x 1" Plate	119.83 - 120.08	Auto	0.0174
L12	95	CCI 4.5" x 1" Plate	117.50 - 119.00	Auto	0.0000
L12	105	CCI 6" x 1" Plate	117.50 -	Auto	0.0069

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	106	CCI 6" x 1" Plate	119.83 117.50 - 119.83	Auto	0.0069
L12	107	CCI 6" x 1" Plate	117.50 - 119.83	Auto	0.0069
L13	95	CCI 4.5" x 1" Plate	117.25 - 117.50	Auto	0.0000
L13	105	CCI 6" x 1" Plate	117.25 - 117.50	Auto	0.0016
L13	106	CCI 6" x 1" Plate	117.25 - 117.50	Auto	0.0016
L13	107	CCI 6" x 1" Plate	117.25 - 117.50	Auto	0.0016
L14	93	CCI 4.5" x 1" Plate	115.50 - 117.00	Auto	0.0000
L14	94	CCI 4.5" x 1" Plate	115.50 - 117.00	Auto	0.0000
L14	95	CCI 4.5" x 1" Plate	115.50 - 117.25	Auto	0.0000
L14	105	CCI 6" x 1" Plate	115.50 - 117.25	Auto	0.0000
L14	106	CCI 6" x 1" Plate	115.50 - 117.25	Auto	0.0000
L14	107	CCI 6" x 1" Plate	115.50 - 117.25	Auto	0.0000
L15	93	CCI 4.5" x 1" Plate	115.25 - 115.50	Auto	0.0000
L15	94	CCI 4.5" x 1" Plate	115.25 - 115.50	Auto	0.0000
L15	95	CCI 4.5" x 1" Plate	115.25 - 115.50	Auto	0.0000
L15	105	CCI 6" x 1" Plate	115.25 - 115.50	Auto	0.0577
L15	106	CCI 6" x 1" Plate	115.25 - 115.50	Auto	0.0577
L15	107	CCI 6" x 1" Plate	115.25 - 115.50	Auto	0.0577
L16	93	CCI 4.5" x 1" Plate	110.25 - 115.25	Auto	0.0000
L16	94	CCI 4.5" x 1" Plate	110.25 - 115.25	Auto	0.0000
L16	95	CCI 4.5" x 1" Plate	110.25 - 115.25	Auto	0.0000
L16	105	CCI 6" x 1" Plate	110.25 - 115.25	Auto	0.0305
L16	106	CCI 6" x 1" Plate	110.25 - 115.25	Auto	0.0305
L16	107	CCI 6" x 1" Plate	110.25 - 115.25	Auto	0.0305
L17	93	CCI 4.5" x 1" Plate	104.08 - 110.25	Auto	0.0000
L17	94	CCI 4.5" x 1" Plate	104.08 - 110.25	Auto	0.0000
L17	95	CCI 4.5" x 1" Plate	104.08 - 110.25	Auto	0.0000
L17	105	CCI 6" x 1" Plate	104.08 - 110.25	Auto	0.0002
L17	106	CCI 6" x 1" Plate	104.08 - 110.25	Auto	0.0002
L17	107	CCI 6" x 1" Plate	104.08 - 110.25	Auto	0.0002
L18	93	CCI 4.5" x 1" Plate	102.82 - 104.08	Auto	0.0000
L18	94	CCI 4.5" x 1" Plate	102.82 - 104.08	Auto	0.0000
L18	95	CCI 4.5" x 1" Plate	102.82 - 104.08	Auto	0.0000
L18	105	CCI 6" x 1" Plate	102.82 -	Auto	0.0006

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	106	CCI 6" x 1" Plate	104.08 102.82 - 104.08	Auto	0.0006
L18	107	CCI 6" x 1" Plate	102.82 - 104.08	Auto	0.0006
L19	93	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	94	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	95	CCI 4.5" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	105	CCI 6" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	106	CCI 6" x 1" Plate	100.50 - 102.82	Auto	0.0000
L19	107	CCI 6" x 1" Plate	100.60 - 102.82	Auto	0.0000
L20	79	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	80	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	81	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	93	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	94	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	95	CCI 4.5" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	105	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L20	106	CCI 6" x 1" Plate	100.25 - 100.50	Auto	0.0000
L21	79	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	80	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	81	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	93	CCI 4.5" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	94	CCI 4.5" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	95	CCI 4.5" x 1" Plate	99.00 - 100.25	Auto	0.0000
L21	105	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L21	106	CCI 6" x 1" Plate	98.50 - 100.25	Auto	0.0000
L22	79	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	80	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	81	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	93	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	94	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	105	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L22	106	CCI 6" x 1" Plate	98.25 - 98.50	Auto	0.0000
L23	79	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	80	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	81	CCI 6" x 1" Plate	93.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L23	93	CCI 4.5" x 1" Plate	98.25 97.00 - 98.25	Auto	0.0000
L23	94	CCI 4.5" x 1" Plate	97.00 - 98.25	Auto	0.0000
L23	105	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L23	106	CCI 6" x 1" Plate	93.25 - 98.25	Auto	0.0000
L24	79	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	80	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	81	CCI 6" x 1" Plate	90.50 - 93.25	Auto	0.0000
L24	105	CCI 6" x 1" Plate	90.60 - 93.25	Auto	0.0000
L24	106	CCI 6" x 1" Plate	90.60 - 93.25	Auto	0.0000
L25	79	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	80	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	81	CCI 6" x 1" Plate	90.25 - 90.50	Auto	0.0000
L25	103	CCI 8.5" x 1.25" Plate	90.25 - 90.50	Auto	0.2129
L25	104	CCI 8.5" x 1.25" Plate	90.25 - 90.50	Auto	0.2129
L26	79	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	80	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	81	CCI 6" x 1" Plate	85.25 - 90.25	Auto	0.0000
L26	89	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	90	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	91	CCI 6.5" x 1.25" Plate	85.25 - 85.50	Auto	0.0000
L26	103	CCI 8.5" x 1.25" Plate	85.25 - 90.25	Auto	0.1937
L26	104	CCI 8.5" x 1.25" Plate	85.25 - 90.25	Auto	0.1937
L27	79	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	80	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	81	CCI 6" x 1" Plate	83.50 - 85.25	Auto	0.0000
L27	89	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	90	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	91	CCI 6.5" x 1.25" Plate	83.50 - 85.25	Auto	0.0000
L27	99	CCI 8.5" x 1.25" Plate	83.50 - 85.00	Auto	0.1694
L27	103	CCI 8.5" x 1.25" Plate	83.50 - 85.25	Auto	0.1701
L27	104	CCI 8.5" x 1.25" Plate	83.50 - 85.25	Auto	0.1701
L28	79	CCI 6" x 1" Plate	83.25 - 83.50	Auto	0.0000
L28	80	CCI 6" x 1" Plate	83.25 - 83.50	Auto	0.0000
L28	81	CCI 6" x 1" Plate	83.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	89	CCI 6.5" x 1.25" Plate	83.50 83.25 - 83.50	Auto	0.0102
L28	90	CCI 6.5" x 1.25" Plate	83.25 - 83.50	Auto	0.0102
L28	91	CCI 6.5" x 1.25" Plate	83.25 - 83.50	Auto	0.0102
L28	99	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L28	103	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L28	104	CCI 8.5" x 1.25" Plate	83.25 - 83.50	Auto	0.2431
L29	79	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	80	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	81	CCI 6" x 1" Plate	80.75 - 83.25	Auto	0.0000
L29	89	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	90	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	91	CCI 6.5" x 1.25" Plate	80.75 - 83.25	Auto	0.0000
L29	99	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L29	103	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L29	104	CCI 8.5" x 1.25" Plate	80.75 - 83.25	Auto	0.2272
L30	79	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	80	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	81	CCI 6" x 1" Plate	80.50 - 80.75	Auto	0.0000
L30	89	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	90	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	91	CCI 6.5" x 1.25" Plate	80.50 - 80.75	Auto	0.0511
L30	99	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L30	103	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L30	104	CCI 8.5" x 1.25" Plate	80.50 - 80.75	Auto	0.2744
L31	79	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	80	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	81	CCI 6" x 1" Plate	80.25 - 80.50	Auto	0.0000
L31	89	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	90	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	91	CCI 6.5" x 1.25" Plate	80.25 - 80.50	Auto	0.0131
L31	99	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L31	103	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L31	104	CCI 8.5" x 1.25" Plate	80.25 - 80.50	Auto	0.2453
L32	79	CCI 6" x 1" Plate	77.50 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	80	CCI 6" x 1" Plate	80.25 77.50 - 80.25	Auto	0.0000
L32	81	CCI 6" x 1" Plate	77.50 - 80.25	Auto	0.0000
L32	89	CCI 6.5" x 1.25" Plate	77.50 - 80.25	Auto	0.0012
L32	90	CCI 6.5" x 1.25" Plate	77.50 - 80.25	Auto	0.0012
L32	91	CCI 6.5" x 1.25" Plate	77.50 - 80.25	Auto	0.0012
L32	99	CCI 8.5" x 1.25" Plate	77.50 - 80.25	Auto	0.2327
L32	103	CCI 8.5" x 1.25" Plate	77.50 - 80.25	Auto	0.2327
L32	104	CCI 8.5" x 1.25" Plate	77.50 - 80.25	Auto	0.2327
L33	79	CCI 6" x 1" Plate	77.25 - 77.50	Auto	0.0000
L33	80	CCI 6" x 1" Plate	77.25 - 77.50	Auto	0.0000
L33	81	CCI 6" x 1" Plate	77.25 - 77.50	Auto	0.0000
L33	89	CCI 6.5" x 1.25" Plate	77.25 - 77.50	Auto	0.0000
L33	90	CCI 6.5" x 1.25" Plate	77.25 - 77.50	Auto	0.0000
L33	91	CCI 6.5" x 1.25" Plate	77.25 - 77.50	Auto	0.0000
L33	99	CCI 8.5" x 1.25" Plate	77.25 - 77.50	Auto	0.1372
L33	103	CCI 8.5" x 1.25" Plate	77.25 - 77.50	Auto	0.1372
L33	104	CCI 8.5" x 1.25" Plate	77.25 - 77.50	Auto	0.1372
L34	79	CCI 6" x 1" Plate	68.82 - 77.25	Auto	0.0000
L34	80	CCI 6" x 1" Plate	68.82 - 77.25	Auto	0.0000
L34	81	CCI 6" x 1" Plate	68.82 - 77.25	Auto	0.0000
L34	89	CCI 6.5" x 1.25" Plate	72.50 - 77.25	Auto	0.0000
L34	90	CCI 6.5" x 1.25" Plate	72.50 - 77.25	Auto	0.0000
L34	91	CCI 6.5" x 1.25" Plate	72.50 - 77.25	Auto	0.0000
L34	99	CCI 8.5" x 1.25" Plate	68.82 - 77.25	Auto	0.1120
L34	103	CCI 8.5" x 1.25" Plate	68.82 - 77.25	Auto	0.1120
L34	104	CCI 8.5" x 1.25" Plate	68.82 - 77.25	Auto	0.1120
L35	79	CCI 6" x 1" Plate	68.29 - 68.82	Auto	0.0000
L35	80	CCI 6" x 1" Plate	68.29 - 68.82	Auto	0.0000
L35	81	CCI 6" x 1" Plate	68.29 - 68.82	Auto	0.0000
L35	99	CCI 8.5" x 1.25" Plate	68.29 - 68.82	Auto	0.1253
L35	103	CCI 8.5" x 1.25" Plate	68.29 - 68.82	Auto	0.1253
L35	104	CCI 8.5" x 1.25" Plate	68.29 - 68.82	Auto	0.1253
L36	79	CCI 6" x 1" Plate	64.25 - 68.29	Auto	0.0000
L36	80	CCI 6" x 1" Plate	64.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L36	81	CCI 6" x 1" Plate	68.29 64.25 - 68.29	Auto	0.0000
L36	86	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	87	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	88	CCI 6.5" x 1.25" Plate	64.25 - 67.00	Auto	0.0000
L36	99	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L36	103	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L36	104	CCI 8.5" x 1.25" Plate	64.25 - 68.29	Auto	0.1081
L37	79	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	80	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	81	CCI 6" x 1" Plate	64.00 - 64.25	Auto	0.0000
L37	86	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	87	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	88	CCI 6.5" x 1.25" Plate	64.00 - 64.25	Auto	0.0000
L37	99	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L37	103	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L37	104	CCI 8.5" x 1.25" Plate	64.00 - 64.25	Auto	0.1389
L38	69	MP3-04	60.50 - 61.50	Auto	0.0000
L38	79	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	80	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	81	CCI 6" x 1" Plate	60.50 - 64.00	Auto	0.0000
L38	86	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	87	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	88	CCI 6.5" x 1.25" Plate	60.50 - 64.00	Auto	0.0000
L38	99	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L38	103	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L38	104	CCI 8.5" x 1.25" Plate	60.50 - 64.00	Auto	0.1241
L39	67	MP3-04	60.25 - 60.50	Auto	0.0000
L39	68	MP3-04	60.25 - 60.50	Auto	0.0000
L39	69	MP3-04	60.25 - 60.50	Auto	0.0000
L39	76	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	77	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	78	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	86	CCI 6.5" x 1.25" Plate	60.25 - 60.50	Auto	0.0000
L39	87	CCI 6.5" x 1.25" Plate	60.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L39	88	CCI 6.5" x 1.25" Plate	60.50 60.25 - 60.50	Auto	0.0000
L39	99	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L39	103	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L39	104	CCI 8.5" x 1.25" Plate	60.25 - 60.50	Auto	0.1329
L40	67	MP3-04	60.08 - 60.25	Auto	0.0000
L40	68	MP3-04	60.08 - 60.25	Auto	0.0000
L40	69	MP3-04	60.08 - 60.25	Auto	0.0000
L40	76	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	77	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	78	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	86	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	87	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	88	CCI 6.5" x 1.25" Plate	60.08 - 60.25	Auto	0.0000
L40	99	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L40	103	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L40	104	CCI 8.5" x 1.25" Plate	60.08 - 60.25	Auto	0.1316
L41	67	MP3-04	59.83 - 60.08	Auto	0.0000
L41	68	MP3-04	59.83 - 60.08	Auto	0.0000
L41	69	MP3-04	59.83 - 60.08	Auto	0.0000
L41	76	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	77	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	78	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	86	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	87	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	88	CCI 6.5" x 1.25" Plate	59.83 - 60.08	Auto	0.0000
L41	99	CCI 8.5" x 1.25" Plate	60.00 - 60.08	Auto	0.1467
L41	103	CCI 8.5" x 1.25" Plate	59.83 - 60.08	Auto	0.1462
L41	104	CCI 8.5" x 1.25" Plate	59.83 - 60.08	Auto	0.1462
L42	67	MP3-04	59.08 - 59.83	Auto	0.0000
L42	68	MP3-04	59.08 - 59.83	Auto	0.0000
L42	69	MP3-04	59.08 - 59.83	Auto	0.0000
L42	76	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	77	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	78	CCI 6.5" x 1.25" Plate	59.08 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L42	86	CCI 6.5" x 1.25" Plate	59.83 59.08 - 59.83	Auto	0.0000
L42	87	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	88	CCI 6.5" x 1.25" Plate	59.08 - 59.83	Auto	0.0000
L42	103	CCI 8.5" x 1.25" Plate	59.08 - 59.83	Auto	0.1433
L42	104	CCI 8.5" x 1.25" Plate	59.08 - 59.83	Auto	0.1433
L43	67	MP3-04	58.83 - 59.08	Auto	0.0000
L43	68	MP3-04	58.83 - 59.08	Auto	0.0000
L43	69	MP3-04	58.83 - 59.08	Auto	0.0000
L43	76	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	77	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	78	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	86	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	87	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	88	CCI 6.5" x 1.25" Plate	58.83 - 59.08	Auto	0.0000
L43	103	CCI 8.5" x 1.25" Plate	58.83 - 59.08	Auto	0.1640
L43	104	CCI 8.5" x 1.25" Plate	58.83 - 59.08	Auto	0.1640
L44	67	MP3-04	55.42 - 58.83	Auto	0.0000
L44	68	MP3-04	55.42 - 58.83	Auto	0.0000
L44	69	MP3-04	55.42 - 58.83	Auto	0.0000
L44	76	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	77	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	78	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	86	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	87	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	88	CCI 6.5" x 1.25" Plate	55.42 - 58.83	Auto	0.0000
L44	103	CCI 8.5" x 1.25" Plate	55.50 - 58.83	Auto	0.1457
L44	104	CCI 8.5" x 1.25" Plate	55.50 - 58.83	Auto	0.1457
L45	67	MP3-04	55.17 - 55.42	Auto	0.0000
L45	68	MP3-04	55.17 - 55.42	Auto	0.0000
L45	69	MP3-04	55.17 - 55.42	Auto	0.0000
L45	76	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	77	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	78	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	86	CCI 6.5" x 1.25" Plate	55.17 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L45	87	CCI 6.5" x 1.25" Plate	55.42 55.17 - 55.42	Auto	0.0000
L45	88	CCI 6.5" x 1.25" Plate	55.17 - 55.42	Auto	0.0000
L45	101	CCI 8.5" x 1.25" Plate	55.17 - 55.40	Auto	0.1347
L45	102	CCI 8.5" x 1.25" Plate	55.17 - 55.40	Auto	0.1347
L46	67	MP3-04	54.75 - 55.17	Auto	0.0000
L46	68	MP3-04	54.75 - 55.17	Auto	0.0000
L46	69	MP3-04	54.75 - 55.17	Auto	0.0000
L46	76	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	77	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	78	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	86	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	87	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	88	CCI 6.5" x 1.25" Plate	54.75 - 55.17	Auto	0.0000
L46	101	CCI 8.5" x 1.25" Plate	54.75 - 55.17	Auto	0.1329
L46	102	CCI 8.5" x 1.25" Plate	54.75 - 55.17	Auto	0.1329
L47	67	MP3-04	54.50 - 54.75	Auto	0.0000
L47	68	MP3-04	54.50 - 54.75	Auto	0.0000
L47	69	MP3-04	54.50 - 54.75	Auto	0.0000
L47	76	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	77	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	78	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	86	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	87	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	88	CCI 6.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0000
L47	101	CCI 8.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0679
L47	102	CCI 8.5" x 1.25" Plate	54.50 - 54.75	Auto	0.0679
L48	67	MP3-04	49.50 - 54.50	Auto	0.0000
L48	68	MP3-04	49.50 - 54.50	Auto	0.0000
L48	69	MP3-04	49.50 - 54.50	Auto	0.0000
L48	76	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	77	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	78	CCI 6.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0000
L48	86	CCI 6.5" x 1.25" Plate	52.00 - 54.50	Auto	0.0000
L48	87	CCI 6.5" x 1.25" Plate	52.00 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L48	88	CCI 6.5" x 1.25" Plate	54.50 52.00 - 54.50	Auto	0.0000
L48	101	CCI 8.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0486
L48	102	CCI 8.5" x 1.25" Plate	49.50 - 54.50	Auto	0.0486
L49	67	MP3-04	44.50 - 49.50	Auto	0.0000
L49	68	MP3-04	44.50 - 49.50	Auto	0.0000
L49	69	MP3-04	44.50 - 49.50	Auto	0.0000
L49	76	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	77	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	78	CCI 6.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0000
L49	98	CCI 8.5" x 1.25" Plate	44.50 - 45.50	Auto	0.0040
L49	101	CCI 8.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0156
L49	102	CCI 8.5" x 1.25" Plate	44.50 - 49.50	Auto	0.0156
L50	67	MP3-04	41.25 - 44.50	Auto	0.0000
L50	68	MP3-04	41.25 - 44.50	Auto	0.0000
L50	69	MP3-04	41.25 - 44.50	Auto	0.0000
L50	76	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	77	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	78	CCI 6.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	98	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	101	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L50	102	CCI 8.5" x 1.25" Plate	41.25 - 44.50	Auto	0.0000
L51	67	MP3-04	41.00 - 41.25	Auto	0.0000
L51	68	MP3-04	41.00 - 41.25	Auto	0.0000
L51	69	MP3-04	41.00 - 41.25	Auto	0.0000
L51	76	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	77	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	78	CCI 6.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0000
L51	98	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L51	101	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L51	102	CCI 8.5" x 1.25" Plate	41.00 - 41.25	Auto	0.0050
L52	67	MP3-04	34.29 - 41.00	Auto	0.0000
L52	68	MP3-04	34.29 - 41.00	Auto	0.0000
L52	69	MP3-04	34.29 - 41.00	Auto	0.0000
L52	76	CCI 6.5" x 1.25" Plate	34.29 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L52	77	CCI 6.5" x 1.25" Plate	41.00 34.29 - 41.00	Auto	0.0000
L52	78	CCI 6.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0000
L52	83	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	84	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	85	CCI 6.5" x 1.25" Plate	34.29 - 38.00	Auto	0.0000
L52	98	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L52	101	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L52	102	CCI 8.5" x 1.25" Plate	34.29 - 41.00	Auto	0.0002
L53	67	MP3-04	33.29 - 34.29	Auto	0.0000
L53	68	MP3-04	33.29 - 34.29	Auto	0.0000
L53	69	MP3-04	33.29 - 34.29	Auto	0.0000
L53	76	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	77	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	78	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	83	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	84	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	85	CCI 6.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0000
L53	98	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L53	101	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L53	102	CCI 8.5" x 1.25" Plate	33.29 - 34.29	Auto	0.0808
L54	67	MP3-04	31.50 - 33.29	Auto	0.0000
L54	68	MP3-04	31.50 - 33.29	Auto	0.0000
L54	69	MP3-04	31.50 - 33.29	Auto	0.0000
L54	76	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	77	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	78	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	83	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	84	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	85	CCI 6.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0000
L54	98	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L54	101	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L54	102	CCI 8.5" x 1.25" Plate	31.50 - 33.29	Auto	0.0727
L55	64	MP3-05	31.25 - 31.50	Auto	0.0000
L55	67	MP3-04	31.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L55	68	MP3-04	31.50 31.25 - 31.50	Auto	0.0000
L55	69	MP3-04	31.25 - 31.50	Auto	0.0000
L55	76	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	77	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	78	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	83	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	84	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	85	CCI 6.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0000
L55	98	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L55	101	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L55	102	CCI 8.5" x 1.25" Plate	31.25 - 31.50	Auto	0.0668
L56	64	MP3-05	30.50 - 31.25	Auto	0.0000
L56	67	MP3-04	30.50 - 31.25	Auto	0.0000
L56	68	MP3-04	30.50 - 31.25	Auto	0.0000
L56	69	MP3-04	31.00 - 31.25	Auto	0.0000
L56	76	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	77	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	78	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	83	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	84	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	85	CCI 6.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0000
L56	98	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L56	101	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L56	102	CCI 8.5" x 1.25" Plate	30.50 - 31.25	Auto	0.0639
L57	64	MP3-05	30.25 - 30.50	Auto	0.0000
L57	65	MP3-05	30.25 - 30.50	Auto	0.0000
L57	66	MP3-05	30.25 - 30.50	Auto	0.0000
L57	73	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	74	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	75	CCI 6" x 1" Plate	30.25 - 30.50	Auto	0.0000
L57	83	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	84	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	85	CCI 6.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0000
L57	98	CCI 8.5" x 1.25" Plate	30.25 -	Auto	0.0453

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L57	101	CCI 8.5" x 1.25" Plate	30.50 30.25 - 30.50	Auto	0.0453
L57	102	CCI 8.5" x 1.25" Plate	30.25 - 30.50	Auto	0.0453
L58	64	MP3-05	25.75 - 30.25	Auto	0.0000
L58	65	MP3-05	25.75 - 30.25	Auto	0.0000
L58	66	MP3-05	25.75 - 30.25	Auto	0.0000
L58	73	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	74	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	75	CCI 6" x 1" Plate	25.75 - 30.25	Auto	0.0000
L58	83	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	84	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	85	CCI 6.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0000
L58	98	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	101	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	102	CCI 8.5" x 1.25" Plate	25.75 - 30.25	Auto	0.0237
L58	114	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L58	115	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L58	116	CCI 1.25" x 5.875" Plate	25.75 - 28.50	Auto	0.0000
L59	64	MP3-05	25.50 - 25.75	Auto	0.0000
L59	65	MP3-05	25.50 - 25.75	Auto	0.0000
L59	66	MP3-05	25.50 - 25.75	Auto	0.0000
L59	73	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	74	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	75	CCI 6" x 1" Plate	25.50 - 25.75	Auto	0.0000
L59	83	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	84	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	85	CCI 6.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	98	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	101	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	102	CCI 8.5" x 1.25" Plate	25.50 - 25.75	Auto	0.0000
L59	114	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L59	115	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L59	116	CCI 1.25" x 5.875" Plate	25.50 - 25.75	Auto	0.0000
L60	64	MP3-05	24.67 - 25.50	Auto	0.0000
L60	65	MP3-05	24.67 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L60	66	MP3-05	25.50 24.67 - 25.50	Auto	0.0000
L60	73	CCI 6" x 1" Plate	24.67 - 25.50	Auto	0.0000
L60	74	CCI 6" x 1" Plate	24.67 - 25.50	Auto	0.0000
L60	75	CCI 6" x 1" Plate	24.67 - 25.50	Auto	0.0000
L60	83	CCI 6.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	84	CCI 6.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	85	CCI 6.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	98	CCI 8.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	101	CCI 8.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	102	CCI 8.5" x 1.25" Plate	24.67 - 25.50	Auto	0.0000
L60	109	CCI 1.25" x 5.875" Plate	24.67 - 25.50	Auto	0.0000
L60	110	CCI 1.25" x 5.875" Plate	24.67 - 25.50	Auto	0.0000
L60	111	CCI 1.25" x 5.875" Plate	24.67 - 25.50	Auto	0.0000
L60	112	CCI 1.25" x 5.875" Plate	24.67 - 25.50	Auto	0.0000
L61	64	MP3-05	24.42 - 24.67	Auto	0.0000
L61	65	MP3-05	24.42 - 24.67	Auto	0.0000
L61	66	MP3-05	24.42 - 24.67	Auto	0.0000
L61	73	CCI 6" x 1" Plate	24.42 - 24.67	Auto	0.0000
L61	74	CCI 6" x 1" Plate	24.42 - 24.67	Auto	0.0000
L61	75	CCI 6" x 1" Plate	24.42 - 24.67	Auto	0.0000
L61	83	CCI 6.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	84	CCI 6.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	85	CCI 6.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	98	CCI 8.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	101	CCI 8.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	102	CCI 8.5" x 1.25" Plate	24.42 - 24.67	Auto	0.0000
L61	109	CCI 1.25" x 5.875" Plate	24.42 - 24.67	Auto	0.0000
L61	110	CCI 1.25" x 5.875" Plate	24.42 - 24.67	Auto	0.0000
L61	111	CCI 1.25" x 5.875" Plate	24.42 - 24.67	Auto	0.0000
L61	112	CCI 1.25" x 5.875" Plate	24.42 - 24.67	Auto	0.0000
L62	64	MP3-05	24.00 - 24.42	Auto	0.0000
L62	65	MP3-05	24.00 - 24.42	Auto	0.0000
L62	66	MP3-05	24.00 - 24.42	Auto	0.0000
L62	73	CCI 6" x 1" Plate	24.00 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L62	74	CCI 6" x 1" Plate	24.42 24.00 - 24.42	Auto	0.0000
L62	75	CCI 6" x 1" Plate	24.00 - 24.42	Auto	0.0000
L62	83	CCI 6.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	84	CCI 6.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	85	CCI 6.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	98	CCI 8.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	101	CCI 8.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	102	CCI 8.5" x 1.25" Plate	24.00 - 24.42	Auto	0.0000
L62	109	CCI 1.25" x 5.875" Plate	24.00 - 24.42	Auto	0.0000
L62	110	CCI 1.25" x 5.875" Plate	24.00 - 24.42	Auto	0.0000
L62	111	CCI 1.25" x 5.875" Plate	24.00 - 24.42	Auto	0.0000
L62	112	CCI 1.25" x 5.875" Plate	24.00 - 24.42	Auto	0.0000
L63	64	MP3-05	23.75 - 24.00	Auto	0.0000
L63	65	MP3-05	23.75 - 24.00	Auto	0.0000
L63	66	MP3-05	23.75 - 24.00	Auto	0.0000
L63	73	CCI 6" x 1" Plate	23.75 - 24.00	Auto	0.0000
L63	74	CCI 6" x 1" Plate	23.75 - 24.00	Auto	0.0000
L63	75	CCI 6" x 1" Plate	23.75 - 24.00	Auto	0.0000
L63	83	CCI 6.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	84	CCI 6.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	85	CCI 6.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	98	CCI 8.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	101	CCI 8.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	102	CCI 8.5" x 1.25" Plate	23.75 - 24.00	Auto	0.0000
L63	109	CCI 1.25" x 5.875" Plate	23.75 - 24.00	Auto	0.0000
L63	110	CCI 1.25" x 5.875" Plate	23.75 - 24.00	Auto	0.0000
L63	111	CCI 1.25" x 5.875" Plate	23.75 - 24.00	Auto	0.0000
L63	112	CCI 1.25" x 5.875" Plate	23.75 - 24.00	Auto	0.0000
L64	64	MP3-05	18.75 - 23.75	Auto	0.0000
L64	65	MP3-05	18.75 - 23.75	Auto	0.0000
L64	66	MP3-05	18.75 - 23.75	Auto	0.0000
L64	73	CCI 6" x 1" Plate	18.75 - 23.75	Auto	0.0000
L64	74	CCI 6" x 1" Plate	18.75 - 23.75	Auto	0.0000
L64	75	CCI 6" x 1" Plate	18.75 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L64	83	CCI 6.5" x 1.25" Plate	23.75 23.00 - 23.75	Auto	0.0000
L64	84	CCI 6.5" x 1.25" Plate	23.00 - 23.75	Auto	0.0000
L64	85	CCI 6.5" x 1.25" Plate	23.00 - 23.75	Auto	0.0000
L64	98	CCI 8.5" x 1.25" Plate	18.75 - 23.75	Auto	0.0000
L64	101	CCI 8.5" x 1.25" Plate	20.40 - 23.75	Auto	0.0000
L64	102	CCI 8.5" x 1.25" Plate	20.40 - 23.75	Auto	0.0000
L64	109	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	110	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	111	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L64	112	CCI 1.25" x 5.875" Plate	18.75 - 23.75	Auto	0.0000
L65	64	MP3-05	14.08 - 18.75	Auto	0.0000
L65	65	MP3-05	14.08 - 18.75	Auto	0.0000
L65	66	MP3-05	14.08 - 18.75	Auto	0.0000
L65	70	MP3-04	14.08 - 15.50	Auto	0.0000
L65	71	MP3-04	14.08 - 15.50	Auto	0.0000
L65	73	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	74	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	75	CCI 6" x 1" Plate	14.08 - 18.75	Auto	0.0000
L65	98	CCI 8.5" x 1.25" Plate	14.08 - 18.75	Auto	0.0000
L65	109	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	110	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	111	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L65	112	CCI 1.25" x 5.875" Plate	14.08 - 18.75	Auto	0.0000
L66	64	MP3-05	13.82 - 14.08	Auto	0.0000
L66	65	MP3-05	13.82 - 14.08	Auto	0.0000
L66	66	MP3-05	13.82 - 14.08	Auto	0.0000
L66	70	MP3-04	13.82 - 14.08	Auto	0.0000
L66	71	MP3-04	13.82 - 14.08	Auto	0.0000
L66	73	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	74	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	75	CCI 6" x 1" Plate	13.82 - 14.08	Auto	0.0000
L66	98	CCI 8.5" x 1.25" Plate	13.82 - 14.08	Auto	0.0000
L66	109	CCI 1.25" x 5.875" Plate	13.82 - 14.08	Auto	0.0000
L66	110	CCI 1.25" x 5.875" Plate	13.82 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L66	111	CCI 1.25" x 5.875" Plate	14.08 13.82 - 14.08	Auto	0.0000
L66	112	CCI 1.25" x 5.875" Plate	13.82 - 14.08	Auto	0.0000
L67	64	MP3-05	13.67 - 13.82	Auto	0.0000
L67	65	MP3-05	13.67 - 13.82	Auto	0.0000
L67	66	MP3-05	13.67 - 13.82	Auto	0.0000
L67	70	MP3-04	13.67 - 13.82	Auto	0.0000
L67	71	MP3-04	13.67 - 13.82	Auto	0.0000
L67	73	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	74	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	75	CCI 6" x 1" Plate	13.67 - 13.82	Auto	0.0000
L67	98	CCI 8.5" x 1.25" Plate	13.67 - 13.82	Auto	0.0000
L67	109	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	110	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	111	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L67	112	CCI 1.25" x 5.875" Plate	13.67 - 13.82	Auto	0.0000
L68	64	MP3-05	11.50 - 13.67	Auto	0.0000
L68	65	MP3-05	10.50 - 13.67	Auto	0.0000
L68	66	MP3-05	10.50 - 13.67	Auto	0.0000
L68	70	MP3-04	10.50 - 13.67	Auto	0.0000
L68	71	MP3-04	10.50 - 13.67	Auto	0.0000
L68	73	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	74	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	75	CCI 6" x 1" Plate	10.50 - 13.67	Auto	0.0000
L68	98	CCI 8.5" x 1.25" Plate	10.50 - 13.67	Auto	0.0000
L68	109	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	110	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	111	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L68	112	CCI 1.25" x 5.875" Plate	10.50 - 13.67	Auto	0.0000
L69	65	MP3-05	10.25 - 10.50	Auto	0.0000
L69	66	MP3-05	10.25 - 10.50	Auto	0.0000
L69	70	MP3-04	10.25 - 10.50	Auto	0.0000
L69	71	MP3-04	10.25 - 10.50	Auto	0.0000
L69	73	CCI 6" x 1" Plate	10.25 - 10.50	Auto	0.0000
L69	74	CCI 6" x 1" Plate	10.25 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L69	75	CCI 6" x 1" Plate	10.50 10.25 - 10.50	Auto	0.0000
L69	97	CCI 6" x 1" Plate	10.25 - 10.50	Auto	0.0000
L69	109	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	110	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	111	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L69	112	CCI 1.25" x 5.875" Plate	10.25 - 10.50	Auto	0.0000
L70	65	MP3-05	5.25 - 10.25	Auto	0.0000
L70	66	MP3-05	5.25 - 10.25	Auto	0.0000
L70	70	MP3-04	5.25 - 10.25	Auto	0.0000
L70	71	MP3-04	5.25 - 10.25	Auto	0.0000
L70	73	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	74	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	75	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	97	CCI 6" x 1" Plate	5.25 - 10.25	Auto	0.0000
L70	109	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	110	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	111	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L70	112	CCI 1.25" x 5.875" Plate	5.25 - 10.25	Auto	0.0000
L71	65	MP3-05	2.90 - 5.25	Auto	0.0000
L71	66	MP3-05	2.90 - 5.25	Auto	0.0000
L71	70	MP3-04	2.90 - 5.25	Auto	0.0000
L71	71	MP3-04	2.90 - 5.25	Auto	0.0000
L71	73	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	74	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	75	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	97	CCI 6" x 1" Plate	2.90 - 5.25	Auto	0.0000
L71	109	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	110	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	111	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L71	112	CCI 1.25" x 5.875" Plate	2.90 - 5.25	Auto	0.0000
L72	65	MP3-05	2.65 - 2.90	Auto	0.0000
L72	66	MP3-05	2.65 - 2.90	Auto	0.0000
L72	70	MP3-04	2.65 - 2.90	Auto	0.0000
L72	71	MP3-04	2.65 - 2.90	Auto	0.0000
L72	73	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	74	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	75	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	97	CCI 6" x 1" Plate	2.65 - 2.90	Auto	0.0000
L72	109	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	110	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	111	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L72	112	CCI 1.25" x 5.875" Plate	2.65 - 2.90	Auto	0.0000
L73	65	MP3-05	2.50 - 2.65	Auto	0.0000
L73	66	MP3-05	2.50 - 2.65	Auto	0.0000
L73	70	MP3-04	2.50 - 2.65	Auto	0.0000
L73	71	MP3-04	2.50 - 2.65	Auto	0.0000
L73	73	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	74	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	75	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	97	CCI 6" x 1" Plate	2.50 - 2.65	Auto	0.0000
L73	109	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	110	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	111	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L73	112	CCI 1.25" x 5.875" Plate	2.50 - 2.65	Auto	0.0000
L74	65	MP3-05	2.25 - 2.50	Auto	0.0000
L74	66	MP3-05	2.25 - 2.50	Auto	0.0000
L74	70	MP3-04	2.25 - 2.50	Auto	0.0000
L74	71	MP3-04	2.25 - 2.50	Auto	0.0000
L74	73	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	74	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	75	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L74	97	CCI 6" x 1" Plate	2.25 - 2.50	Auto	0.0000
L74	109	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	110	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	111	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L74	112	CCI 1.25" x 5.875" Plate	2.25 - 2.50	Auto	0.0000
L75	65	MP3-05	1.92 - 2.25	Auto	0.0000
L75	66	MP3-05	1.92 - 2.25	Auto	0.0000
L75	70	MP3-04	1.92 - 2.25	Auto	0.0000
L75	71	MP3-04	1.92 - 2.25	Auto	0.0000
L75	73	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	74	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	75	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	97	CCI 6" x 1" Plate	1.92 - 2.25	Auto	0.0000
L75	109	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	110	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	111	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L75	112	CCI 1.25" x 5.875" Plate	1.92 - 2.25	Auto	0.0000
L76	65	MP3-05	1.67 - 1.92	Auto	0.0000
L76	66	MP3-05	1.67 - 1.92	Auto	0.0000
L76	70	MP3-04	1.67 - 1.92	Auto	0.0000
L76	71	MP3-04	1.67 - 1.92	Auto	0.0000
L76	73	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	74	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	75	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	97	CCI 6" x 1" Plate	1.67 - 1.92	Auto	0.0000
L76	109	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	110	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	111	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L76	112	CCI 1.25" x 5.875" Plate	1.67 - 1.92	Auto	0.0000
L77	65	MP3-05	0.00 - 1.67	Auto	0.0000
L77	66	MP3-05	0.00 - 1.67	Auto	0.0000
L77	70	MP3-04	0.00 - 1.67	Auto	0.0000
L77	71	MP3-04	0.00 - 1.67	Auto	0.0000
L77	73	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	74	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	75	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	97	CCI 6" x 1" Plate	0.00 - 1.67	Auto	0.0000
L77	109	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	110	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	111	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000
L77	112	CCI 1.25" x 5.875" Plate	0.00 - 1.67	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	156.000	No Ice	5.560	4.470	0.085
			0.000				1/2" Ice	6.070	4.970	0.167
			1.000				Ice	6.590	5.470	0.262
							1" Ice	7.650	6.520	0.495
							2" Ice			
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	156.000	No Ice	5.560	4.470	0.085
			0.000				1/2" Ice	6.070	4.970	0.167
			1.000				Ice	6.590	5.470	0.262
							1" Ice	7.650	6.520	0.495
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						ft
80010798 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	156.000	No Ice	7.790	4.900	0.114
			0.000				1/2"	8.400	5.470	0.188
			1.000				Ice	9.020	6.060	0.275
							1" Ice	10.300	7.260	0.484
							2" Ice			
80010966 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	156.000	No Ice	14.610	6.840	0.159
			0.000				1/2"	15.470	7.630	0.267
			1.000				Ice	16.350	8.420	0.389
							1" Ice	18.140	10.060	0.677
							2" Ice			
80010966 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	156.000	No Ice	14.610	6.840	0.159
			0.000				1/2"	15.470	7.630	0.267
			1.000				Ice	16.350	8.420	0.389
							1" Ice	18.140	10.060	0.677
							2" Ice			
80010965 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	156.000	No Ice	12.260	5.790	0.136
			0.000				1/2"	13.030	6.470	0.226
			1.000				Ice	13.800	7.170	0.328
							1" Ice	15.410	8.600	0.570
							2" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	156.000	No Ice	11.850	8.990	0.115
			0.000				1/2"	12.770	9.880	0.210
			1.000				Ice	13.710	10.790	0.319
							1" Ice	15.640	12.660	0.580
							2" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	156.000	No Ice	11.850	8.990	0.115
			0.000				1/2"	12.770	9.880	0.210
			1.000				Ice	13.710	10.790	0.319
							1" Ice	15.640	12.660	0.580
							2" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	156.000	No Ice	4.630	3.270	0.074
			0.000				1/2"	5.060	3.690	0.133
			1.000				Ice	5.510	4.120	0.203
							1" Ice	6.430	5.000	0.376
							2" Ice			
DTMABP7819VG12A	A	From Leg	4.000	0.000	0.000	156.000	No Ice	0.976	0.339	0.019
			0.000				1/2"	1.100	0.419	0.026
			1.000				Ice	1.232	0.510	0.036
							1" Ice	1.517	0.714	0.060
							2" Ice			
DTMABP7819VG12A	B	From Leg	4.000	0.000	0.000	156.000	No Ice	0.976	0.339	0.019
			0.000				1/2"	1.100	0.419	0.026
			1.000				Ice	1.232	0.510	0.036
							1" Ice	1.517	0.714	0.060
							2" Ice			
DTMABP7819VG12A	C	From Leg	4.000	0.000	0.000	156.000	No Ice	0.976	0.339	0.019
			0.000				1/2"	1.100	0.419	0.026
			1.000				Ice	1.232	0.510	0.036
							1" Ice	1.517	0.714	0.060
							2" Ice			
RRUS 4478 B14	A	From Leg	4.000	0.000	0.000	156.000	No Ice	1.843	1.059	0.060
			0.000				1/2"	2.012	1.197	0.076
			1.000				Ice	2.190	1.342	0.094
							1" Ice	2.566	1.656	0.140
							2" Ice			
RRUS 4478 B14	B	From Leg	4.000	0.000	0.000	156.000	No Ice	1.843	1.059	0.060
			0.000				1/2"	2.012	1.197	0.076
			1.000				Ice	2.190	1.342	0.094
							1" Ice	2.566	1.656	0.140
							2" Ice			
RRUS 4478 B14	C	From Leg	4.000	0.000	0.000	156.000	No Ice	1.843	1.059	0.060
			0.000				1/2"	2.012	1.197	0.076
			1.000				Ice	2.190	1.342	0.094
							1" Ice	2.566	1.656	0.140
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
RRUS 32 B66	A	From Leg	4.000	0.000	0.000	156.000	No Ice	2.743	1.668	0.053
			0.000				1/2"	2.965	1.855	0.074
			1.000				Ice	3.194	2.049	0.098
							1" Ice	3.675	2.458	0.157
							2" Ice			
RRUS 32 B66	B	From Leg	4.000	0.000	0.000	156.000	No Ice	2.743	1.668	0.053
			0.000				1/2"	2.965	1.855	0.074
			1.000				Ice	3.194	2.049	0.098
							1" Ice	3.675	2.458	0.157
							2" Ice			
RRUS 32 B66	C	From Leg	4.000	0.000	0.000	156.000	No Ice	2.743	1.668	0.053
			0.000				1/2"	2.965	1.855	0.074
			1.000				Ice	3.194	2.049	0.098
							1" Ice	3.675	2.458	0.157
							2" Ice			
RRUS 11	A	From Leg	4.000	0.000	0.000	156.000	No Ice	2.784	1.187	0.048
			0.000				1/2"	2.992	1.334	0.068
			1.000				Ice	3.207	1.490	0.092
							1" Ice	3.658	1.833	0.150
							2" Ice			
RRUS 11	B	From Leg	4.000	0.000	0.000	156.000	No Ice	2.784	1.187	0.048
			0.000				1/2"	2.992	1.334	0.068
			1.000				Ice	3.207	1.490	0.092
							1" Ice	3.658	1.833	0.150
							2" Ice			
RRUS 11	C	From Leg	4.000	0.000	0.000	156.000	No Ice	2.784	1.187	0.048
			0.000				1/2"	2.992	1.334	0.068
			1.000				Ice	3.207	1.490	0.092
							1" Ice	3.658	1.833	0.150
							2" Ice			
RRUS 12	A	From Leg	4.000	0.000	0.000	156.000	No Ice	3.145	1.285	0.058
			0.000				1/2"	3.365	1.438	0.081
			1.000				Ice	3.592	1.600	0.108
							1" Ice	4.069	1.954	0.171
							2" Ice			
RRUS 12	B	From Leg	4.000	0.000	0.000	156.000	No Ice	3.145	1.285	0.058
			0.000				1/2"	3.365	1.438	0.081
			1.000				Ice	3.592	1.600	0.108
							1" Ice	4.069	1.954	0.171
							2" Ice			
RRUS 12	C	From Leg	4.000	0.000	0.000	156.000	No Ice	3.145	1.285	0.058
			0.000				1/2"	3.365	1.438	0.081
			1.000				Ice	3.592	1.600	0.108
							1" Ice	4.069	1.954	0.171
							2" Ice			
RRUS 32 B2	A	From Leg	4.000	0.000	0.000	156.000	No Ice	2.731	1.668	0.053
			0.000				1/2"	2.953	1.855	0.074
			1.000				Ice	3.182	2.049	0.098
							1" Ice	3.663	2.458	0.157
							2" Ice			
RRUS 32 B2	B	From Leg	4.000	0.000	0.000	156.000	No Ice	2.731	1.668	0.053
			0.000				1/2"	2.953	1.855	0.074
			1.000				Ice	3.182	2.049	0.098
							1" Ice	3.663	2.458	0.157
							2" Ice			
RRUS 32 B2	C	From Leg	4.000	0.000	0.000	156.000	No Ice	2.731	1.668	0.053
			0.000				1/2"	2.953	1.855	0.074
			1.000				Ice	3.182	2.049	0.098
							1" Ice	3.663	2.458	0.157
							2" Ice			
RRUS 32	A	From Leg	4.000	0.000	0.000	156.000	No Ice	2.857	1.777	0.055
			0.000				1/2"	3.083	1.968	0.077
			1.000				Ice	3.316	2.166	0.103
							1" Ice	3.805	2.583	0.165
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
RRUS 32	B	From Leg	4.000	0.000	156.000		No Ice	2.857	1.777	0.055
			0.000				1/2"	3.083	1.968	0.077
			1.000				Ice	3.316	2.166	0.103
							1" Ice	3.805	2.583	0.165
							2" Ice			
RRUS 32	C	From Leg	4.000	0.000	156.000		No Ice	2.857	1.777	0.055
			0.000				1/2"	3.083	1.968	0.077
			1.000				Ice	3.316	2.166	0.103
							1" Ice	3.805	2.583	0.165
							2" Ice			
DC6-48-60-0-8F	B	From Leg	4.000	0.000	156.000		No Ice	0.917	0.917	0.033
			0.000				1/2"	1.458	1.458	0.051
			1.000				Ice	1.643	1.643	0.071
							1" Ice	2.042	2.042	0.119
							2" Ice			
(2) DC6-48-60-18-8F	B	From Leg	4.000	0.000	156.000		No Ice	1.212	1.212	0.020
			0.000				1/2"	1.892	1.892	0.042
			1.000				Ice	2.105	2.105	0.067
							1" Ice	2.570	2.570	0.126
							2" Ice			
4' x 2" Pipe Mount	A	From Leg	4.000	0.000	156.000		No Ice	0.785	0.785	0.029
			0.000				1/2"	1.028	1.028	0.035
			1.000				Ice	1.281	1.281	0.044
							1" Ice	1.814	1.814	0.072
							2" Ice			
4' x 2" Pipe Mount	B	From Leg	4.000	0.000	156.000		No Ice	0.785	0.785	0.029
			0.000				1/2"	1.028	1.028	0.035
			1.000				Ice	1.281	1.281	0.044
							1" Ice	1.814	1.814	0.072
							2" Ice			
4' x 2" Pipe Mount	C	From Leg	4.000	0.000	156.000		No Ice	0.785	0.785	0.029
			0.000				1/2"	1.028	1.028	0.035
			1.000				Ice	1.281	1.281	0.044
							1" Ice	1.814	1.814	0.072
							2" Ice			
Sector Mount [SM 502-3]	C	None		0.000	156.000		No Ice	29.820	29.820	1.673
							1/2"	42.210	42.210	2.266
							Ice	54.430	54.430	3.052
							1" Ice	78.490	78.490	5.180
							2" Ice			
Pipe Mount [PM 602-3]	C	None		0.000	156.000		No Ice	6.670	6.670	0.279
							1/2"	7.700	7.700	0.344
							Ice	8.740	8.740	0.423
							1" Ice	10.900	10.900	0.628
							2" Ice			
*										
*										
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000	0.000	146.000		No Ice	5.190	2.710	0.128
			0.000				1/2"	5.590	3.040	0.174
			1.000				Ice	6.020	3.380	0.227
							1" Ice	6.900	4.120	0.354
							2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000	0.000	146.000		No Ice	5.190	2.710	0.128
			0.000				1/2"	5.590	3.040	0.174
			1.000				Ice	6.020	3.380	0.227
							1" Ice	6.900	4.120	0.354
							2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000	0.000	146.000		No Ice	5.190	2.710	0.128
			0.000				1/2"	5.590	3.040	0.174
			1.000				Ice	6.020	3.380	0.227
							1" Ice	6.900	4.120	0.354
							2" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	146.000		No Ice	6.290	2.760	0.061
			0.000				1/2"	6.860	3.270	0.105
			1.000				Ice	7.450	3.790	0.157

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral ft						Vert ft
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	8.680	4.900	0.290
							2" Ice			
							No Ice	6.290	2.760	0.061
							1/2" Ice	6.860	3.270	0.105
							Ice	7.450	3.790	0.157
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	8.680	4.900	0.290
							2" Ice			
							No Ice	6.290	2.760	0.061
							1/2" Ice	6.860	3.270	0.105
							Ice	7.450	3.790	0.157
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	146.000	1" Ice	8.680	4.900	0.290
							2" Ice			
							No Ice	14.690	6.870	0.183
							1/2" Ice	15.460	7.550	0.311
							Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	17.820	9.670	0.782
							2" Ice			
							No Ice	14.690	6.870	0.183
							1/2" Ice	15.460	7.550	0.311
							Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	17.820	9.670	0.782
							2" Ice			
							No Ice	14.690	6.870	0.183
							1/2" Ice	15.460	7.550	0.311
							Ice	16.230	8.250	0.453
RADIO 4415 B66A	A	From Leg	4.000	0.000	0.000	146.000	1" Ice	17.820	9.670	0.782
							2" Ice			
							No Ice	1.856	0.870	0.050
							1/2" Ice	2.027	0.997	0.064
							Ice	2.204	1.134	0.081
RADIO 4415 B66A	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.582	1.432	0.124
							2" Ice			
							No Ice	1.856	0.870	0.050
							1/2" Ice	2.027	0.997	0.064
							Ice	2.204	1.134	0.081
RADIO 4415 B66A	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.582	1.432	0.124
							2" Ice			
							No Ice	1.856	0.870	0.050
							1/2" Ice	2.027	0.997	0.064
							Ice	2.204	1.134	0.081
RADIO 4424 B25_TMO	A	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.582	1.432	0.124
							2" Ice			
							No Ice	2.052	1.610	0.086
							1/2" Ice	2.231	1.772	0.107
							Ice	2.417	1.941	0.131
RADIO 4424 B25_TMO	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.811	2.301	0.188
							2" Ice			
							No Ice	2.052	1.610	0.086
							1/2" Ice	2.231	1.772	0.107
							Ice	2.417	1.941	0.131
RADIO 4424 B25_TMO	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.811	2.301	0.188
							2" Ice			
							No Ice	2.052	1.610	0.086
							1/2" Ice	2.231	1.772	0.107
							Ice	2.417	1.941	0.131
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.811	2.301	0.188
							2" Ice			
							No Ice	1.970	1.587	0.073
							1/2" Ice	2.147	1.749	0.093
							Ice	2.331	1.918	0.116
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.721	2.280	0.170
							2" Ice			
							No Ice	1.970	1.587	0.073
							1/2" Ice	2.147	1.749	0.093
							Ice	2.331	1.918	0.116

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral ft						Vert ft
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.721	2.280	0.170
							2" Ice			
							No Ice	1.970	1.587	0.073
							1/2" Ice	2.147	1.749	0.093
							Ice	2.331	1.918	0.116
5' x 2" Pipe Mount	A	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.721	2.280	0.170
							2" Ice			
							No Ice	1.188	1.188	0.018
							1/2" Ice	1.496	1.496	0.027
							Ice	1.807	1.807	0.040
5' x 2" Pipe Mount	B	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.458	2.458	0.076
							2" Ice			
							No Ice	1.188	1.188	0.018
							1/2" Ice	1.496	1.496	0.027
							Ice	1.807	1.807	0.040
5' x 2" Pipe Mount	C	From Leg	4.000	0.000	0.000	146.000	1" Ice	2.458	2.458	0.076
							2" Ice			
							No Ice	1.188	1.188	0.018
							1/2" Ice	1.496	1.496	0.027
							Ice	1.807	1.807	0.040
Platform Mount [LP 1201-1]	C	None			0.000	146.000	1" Ice	2.458	2.458	0.076
							2" Ice			
							No Ice	18.380	18.380	2.100
							1/2" Ice	22.110	22.110	2.652
							Ice	25.870	25.870	3.263
Miscellaneous [NA 510-1]	C	None			0.000	145.000	1" Ice	33.470	33.470	4.662
							2" Ice			
							No Ice	6.360	6.360	0.256
							1/2" Ice	8.520	8.520	0.344
							Ice	10.620	10.620	0.459
* APXV18-206517S-C	A	From Leg	2.000	0.000	0.000	139.000	1" Ice	14.640	14.640	0.769
							2" Ice			
							No Ice	6.360	6.360	0.256
							1/2" Ice	8.520	8.520	0.344
							Ice	10.620	10.620	0.459
APXV18-206517S-C	B	From Leg	2.000	0.000	0.000	139.000	1" Ice	6.440	4.310	0.172
							2" Ice			
							No Ice	3.830	1.810	0.026
							1/2" Ice	4.460	2.410	0.054
							Ice	5.110	3.030	0.087
APXV18-206517S-C	C	From Leg	2.000	0.000	0.000	139.000	1" Ice	6.440	4.310	0.172
							2" Ice			
							No Ice	3.830	1.810	0.026
							1/2" Ice	4.460	2.410	0.054
							Ice	5.110	3.030	0.087
Pipe Mount [PM 601-3]	C	None			0.000	139.000	1" Ice	6.440	4.310	0.172
							2" Ice			
							No Ice	3.170	3.170	0.195
							1/2" Ice	3.790	3.790	0.232
							Ice	4.420	4.420	0.279
* (2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	132.000	1" Ice	5.760	5.760	0.401
							2" Ice			
							No Ice	4.090	3.300	0.066
							1/2" Ice	4.490	3.680	0.130
							Ice	4.890	4.070	0.204
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	132.000	1" Ice	5.720	4.870	0.386
							2" Ice			
							No Ice	4.090	3.300	0.066
							1/2" Ice	4.490	3.680	0.130
							Ice	4.890	4.070	0.204
(2) SBNHH-1D65B w/	C	From Leg	4.000	0.000	0.000	132.000	1" Ice	5.720	4.870	0.386
							2" Ice			
							No Ice	4.090	3.300	0.066

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight				
			Horz	Lateral						ft	ft	ft ²	ft ²
Mount Pipe									0.000				
									1.000	1/2"	4.490	3.680	0.130
										Ice	4.890	4.070	0.204
										1" Ice	5.720	4.870	0.386
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	A	From Leg	4.000	0.000	132.000				2" Ice				
									No Ice	6.006	6.203	0.043	
									1/2"	6.562	7.359	0.098	
									Ice	7.083	8.229	0.160	
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	B	From Leg	4.000	0.000	132.000				1" Ice				
									2" Ice	8.145	10.019	0.310	
									No Ice	6.006	6.203	0.043	
									1/2"	6.562	7.359	0.098	
(2) BXA-80080-6CF-EDIN-X w/ Mount Pipe	C	From Leg	4.000	0.000	132.000				Ice				
									7.083	8.229	0.160		
									1" Ice	8.145	10.019	0.310	
									2" Ice	6.006	6.203	0.043	
DB-C1-12C-24AB-0Z	A	From Leg	4.000	0.000	132.000				1/2"				
									4.316	3.335	0.068		
									Ice	4.582	3.580	0.109	
									1" Ice	5.138	4.092	0.203	
RFV01U-D1A	A	From Leg	4.000	0.000	132.000				2" Ice				
									No Ice	1.875	1.250	0.084	
									1/2"	2.045	1.393	0.103	
									Ice	2.223	1.543	0.124	
(2) RFV01U-D1A	B	From Leg	4.000	0.000	132.000				1" Ice				
									2.601	1.865	0.175		
									2" Ice	No Ice	1.875	1.250	0.084
									1/2"	2.045	1.393	0.103	
(2) RFV01U-D2A	A	From Leg	4.000	0.000	132.000				Ice				
									2.223	1.543	0.124		
									1" Ice	2.601	1.865	0.175	
									2" Ice	No Ice	1.875	1.013	0.070
RFV01U-D2A	B	From Leg	4.000	0.000	132.000				1/2"				
									2.045	1.145	0.087		
									Ice	2.223	1.284	0.106	
									1" Ice	2.601	1.585	0.153	
CBRS w/ Mount Pipe	A	From Leg	4.000	0.000	132.000				2" Ice				
									No Ice	1.450	0.990	0.032	
									1/2"	1.670	1.180	0.048	
									Ice	1.900	1.390	0.068	
CBRS w/ Mount Pipe	B	From Leg	4.000	0.000	132.000				1" Ice				
									2.420	1.850	0.123		
									2" Ice	No Ice	1.450	0.990	0.032
									1/2"	1.670	1.180	0.048	
CBRS w/ Mount Pipe	C	From Leg	4.000	0.000	132.000				Ice				
									1.900	1.390	0.068		
									1" Ice	2.420	1.850	0.123	
									2" Ice	No Ice	1.450	0.990	0.032
20W CBRS	A	From Leg	4.000	0.000	132.000				1/2"				
									0.975	0.510	0.026		
									Ice	1.101	0.608	0.034	
									1" Ice	1.374	0.833	0.058	
20W CBRS	B	From Leg	4.000	0.000	132.000				No Ice	0.857	0.420	0.019	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.000			1/2"	0.975	0.510	0.026
			1.000			Ice	1.101	0.608	0.034
						1" Ice	1.374	0.833	0.058
						2" Ice			
20W CBRS	C	From Leg	4.000	0.000	132.000	No Ice	0.857	0.420	0.019
			0.000			1/2"	0.975	0.510	0.026
			1.000			Ice	1.101	0.608	0.034
						1" Ice	1.374	0.833	0.058
						2" Ice			
6' x 2" Horizontal Mount Pipe	A	From Leg	3.000	0.000	131.000	No Ice	1.140	0.010	0.016
			0.000			1/2"	1.760	0.040	0.025
			-1.000			Ice	2.140	0.090	0.038
						1" Ice	2.900	0.210	0.077
						2" Ice			
6' x 2" Horizontal Mount Pipe	B	From Leg	3.000	0.000	131.000	No Ice	1.140	0.010	0.016
			0.000			1/2"	1.760	0.040	0.025
			-1.000			Ice	2.140	0.090	0.038
						1" Ice	2.900	0.210	0.077
						2" Ice			
6' x 2" Horizontal Mount Pipe	C	From Leg	3.000	0.000	131.000	No Ice	1.140	0.010	0.016
			0.000			1/2"	1.760	0.040	0.025
			-1.000			Ice	2.140	0.090	0.038
						1" Ice	2.900	0.210	0.077
						2" Ice			
Platform Mount [LP 1201-1]	C	None		0.000	132.000	No Ice	18.380	18.380	2.100
						1/2"	22.110	22.110	2.652
						Ice	25.870	25.870	3.263
						1" Ice	33.470	33.470	4.662
						2" Ice			
Miscellaneous [NA 510-1]	C	None		0.000	131.000	No Ice	6.360	6.360	0.256
						1/2"	8.520	8.520	0.344
						Ice	10.620	10.620	0.459
						1" Ice	14.640	14.640	0.769
						2" Ice			
Side Arm Mount [SO 102-3]	C	None		0.000	132.000	No Ice	3.600	3.600	0.075
						1/2"	4.180	4.180	0.105
						Ice	4.750	4.750	0.135
						1" Ice	5.900	5.900	0.195
						2" Ice			
*									
*									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000	0.000	114.000	No Ice	8.010	4.230	0.108
			0.000			1/2"	8.520	4.690	0.194
			0.000			Ice	9.040	5.160	0.292
						1" Ice	10.110	6.120	0.522
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000	0.000	114.000	No Ice	8.010	4.230	0.108
			0.000			1/2"	8.520	4.690	0.194
			0.000			Ice	9.040	5.160	0.292
						1" Ice	10.110	6.120	0.522
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000	0.000	114.000	No Ice	8.010	4.230	0.108
			0.000			1/2"	8.520	4.690	0.194
			0.000			Ice	9.040	5.160	0.292
						1" Ice	10.110	6.120	0.522
						2" Ice			
TA08025-B604	A	From Leg	4.000	0.000	114.000	No Ice	1.964	0.981	0.064
			0.000			1/2"	2.138	1.112	0.081
			0.000			Ice	2.320	1.250	0.100
						1" Ice	2.705	1.548	0.148
						2" Ice			
TA08025-B604	B	From Leg	4.000	0.000	114.000	No Ice	1.964	0.981	0.064
			0.000			1/2"	2.138	1.112	0.081
			0.000			Ice	2.320	1.250	0.100
						1" Ice	2.705	1.548	0.148

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.964	0.981	0.064
						1/2"	2.138	1.112	0.081
						Ice	2.320	1.250	0.100
						1" Ice	2.705	1.548	0.148
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.964	1.129	0.075
						1/2"	2.138	1.267	0.093
						Ice	2.320	1.411	0.114
						1" Ice	2.705	1.723	0.164
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.964	1.129	0.075
						1/2"	2.138	1.267	0.093
						Ice	2.320	1.411	0.114
						1" Ice	2.705	1.723	0.164
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.964	1.129	0.075
						1/2"	2.138	1.267	0.093
						Ice	2.320	1.411	0.114
						1" Ice	2.705	1.723	0.164
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	2.312	1.293	0.022
						1/2"	2.502	1.448	0.041
						Ice	2.700	1.610	0.063
						1" Ice	3.118	1.957	0.117
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.900	1.900	0.029
						1/2"	2.728	2.728	0.044
						Ice	3.401	3.401	0.063
						1" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.900	1.900	0.029
						1/2"	2.728	2.728	0.044
						Ice	3.401	3.401	0.063
						1" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	114.000	2" Ice			
						No Ice	1.900	1.900	0.029
						1/2"	2.728	2.728	0.044
						Ice	3.401	3.401	0.063
						1" Ice	4.396	4.396	0.119
Commscope MC-PK8-DSH	C	None		0.000	114.000	2" Ice			
						No Ice	34.240	34.240	1.749
						1/2"	62.950	62.950	2.099
						Ice	91.660	91.660	2.450
						1" Ice	149.080	149.080	3.151
* * 58532A	A	From Leg	3.000 0.000 1.000	0.000	101.000	2" Ice			
						No Ice	0.189	0.189	0.000
						1/2"	0.248	0.248	0.003
						Ice	0.315	0.315	0.006
						1" Ice	0.470	0.470	0.017
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	101.000	2" Ice			
						No Ice	0.850	1.670	0.065
						1/2"	1.140	2.340	0.079
						Ice	1.430	3.010	0.093
						1" Ice	2.010	4.350	0.121
*** ** *						2" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
*										

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160.333 - 155.333	Pole	Max Tension	26	0.000	0.000	-0.000
			Max. Compression	26	-15.729	-2.917	-0.105
			Max. Mx	8	-4.553	-11.911	-0.181
			Max. My	14	-4.551	-0.370	-11.535
			Max. Vy	8	8.226	-11.911	-0.181
			Max. Vx	2	-8.252	-0.297	11.326
			Max. Torque	3			-1.828
L2	155.333 - 150.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-16.683	-3.245	0.073
			Max. Mx	8	-5.024	-53.758	-0.247
			Max. My	14	-5.022	-0.569	-53.410
			Max. Vy	8	8.489	-53.758	-0.247
			Max. Vx	2	-8.515	-0.270	53.276
			Max. Torque	3			-1.828
L3	150.333 - 146.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.349	-3.471	0.200
			Max. Mx	8	-5.364	-83.816	-0.294
			Max. My	14	-5.362	-0.706	-83.487
			Max. Vy	8	8.666	-83.816	-0.294
			Max. Vx	2	-8.691	-0.248	83.406
			Max. Torque	3			-1.827
L4	146.833 - 146.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.466	-3.511	0.223
			Max. Mx	8	-5.428	-88.164	-0.300
			Max. My	14	-5.426	-0.727	-87.835
			Max. Vy	8	8.699	-88.164	-0.300
			Max. Vx	2	-8.725	-0.247	87.764
			Max. Torque	3			-1.827
L5	146.333 - 141.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.728	-4.087	0.553
			Max. Mx	8	-10.412	-159.849	-0.326
			Max. My	2	-10.406	-0.291	159.531
			Max. Vy	8	14.337	-159.849	-0.326
			Max. Vx	2	-14.364	-0.291	159.531
			Max. Torque	3			-1.827
L6	141.333 - 136.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.892	-4.688	0.903
			Max. Mx	8	-11.250	-234.443	-0.347
			Max. My	2	-11.243	-0.341	234.205
			Max. Vy	8	15.419	-234.443	-0.347
			Max. Vx	2	-15.447	-0.341	234.205
			Max. Torque	15			1.827
L7	136.333 - 131.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.424	-7.659	3.548
			Max. Mx	8	-15.611	-322.082	0.309
			Max. My	2	-15.594	-1.511	321.672
			Max. Vy	8	20.684	-322.082	0.309
			Max. Vx	2	-20.807	-1.511	321.672
			Max. Torque	13			2.782
L8	131.333 - 126.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.869	-8.210	4.012
			Max. Mx	8	-16.668	-428.878	0.118
			Max. My	2	-16.652	-1.345	429.074
			Max. Vy	8	21.647	-428.878	0.118
			Max. Vx	2	-21.771	-1.345	429.074
			Max. Torque	13			2.782
L9	126.333 - 121.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	121.333 - 120.083	Pole	Max. Compression	26	-49.359	-8.750	4.477
			Max. Mx	8	-17.442	-538.421	-0.072
			Max. My	2	-17.427	-1.177	539.223
			Max. Vy	8	22.146	-538.421	-0.072
			Max. Vx	2	-22.269	-1.177	539.223
			Max. Torque	13			2.780
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.780	-8.882	4.593
L11	120.083 - 119.833	Pole	Max. Mx	8	-17.637	-566.194	-0.119
			Max. My	2	-17.622	-1.134	567.149
			Max. Vy	8	22.273	-566.194	-0.119
			Max. Vx	2	-22.396	-1.134	567.149
			Max. Torque	13			2.778
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.883	-8.911	4.617
			L12	119.833 - 117.5	Pole	Max. Mx	8
Max. My	2	-17.695				-1.125	572.753
Max. Vy	8	22.288				-571.768	-0.129
Max. Vx	2	-22.411				-1.125	572.753
Max. Torque	13						2.778
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-50.864				-9.145	4.809
L13	117.5 - 117.25	Pole				Max. Mx	8
			Max. My	2	-18.200	-1.047	625.400
			Max. Vy	8	22.565	-624.132	-0.216
			Max. Vx	2	-22.689	-1.047	625.400
			Max. Torque	13			2.777
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.975	-9.171	4.830
			L14	117.25 - 115.5	Pole	Max. Mx	8
Max. My	2	-18.268				-1.039	631.079
Max. Vy	8	22.588				-629.781	-0.226
Max. Vx	2	-22.712				-1.039	631.079
Max. Torque	13						2.777
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-51.796				-9.354	4.989
L15	115.5 - 115.25	Pole				Max. Mx	8
			Max. My	2	-18.674	-0.981	671.041
			Max. Vy	8	22.805	-669.530	-0.291
			Max. Vx	2	-22.929	-0.981	671.041
			Max. Torque	13			2.777
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.924	-9.383	5.014
			L16	115.25 - 110.25	Pole	Max. Mx	8
Max. My	2	-18.757				-0.972	676.779
Max. Vy	8	22.825				-675.238	-0.300
Max. Vx	2	-22.949				-0.972	676.779
Max. Torque	13						2.777
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-61.387				-9.976	6.131
L17	110.25 - 104.083	Pole				Max. Mx	8
			Max. My	2	-23.101	-0.820	807.044
			Max. Vy	8	27.066	-804.606	-0.362
			Max. Vx	2	-27.232	-0.820	807.044
			Max. Torque	11			2.914
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.667	-10.279	6.390
						Max. Mx	8
Max. My	2	-23.792				-0.750	873.618
Max. Vy	8	27.363				-870.785	-0.445
Max. Vx	2	-27.530				-0.750	873.618

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L18	104.083 - 102.82	Pole	Max. Torque	11			2.953
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.540	-10.904	6.926
			Max. Mx	8	-26.161	-1009.528	-0.617
			Max. My	2	-26.143	-0.606	1013.175
			Max. Vy	8	28.073	-1009.528	-0.617
			Max. Vx	2	-28.240	-0.606	1013.175
L19	102.82 - 100.5	Pole	Max. Torque	11			3.036
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.969	-11.195	7.607
			Max. Mx	8	-26.963	-1075.076	-0.496
			Max. My	2	-26.949	-0.539	1079.298
			Max. Vy	8	28.442	-1075.076	-0.496
			Max. Vx	2	-28.572	-0.539	1079.298
L20	100.5 - 100.25	Pole	Max. Torque	11			3.278
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.114	-11.228	7.641
			Max. Mx	8	-27.050	-1082.195	-0.505
			Max. My	2	-27.036	-0.532	1086.448
			Max. Vy	8	28.463	-1082.195	-0.505
			Max. Vx	2	-28.593	-0.532	1086.448
L21	100.25 - 98.5	Pole	Max. Torque	11			3.282
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.117	-11.451	7.874
			Max. Mx	8	-27.574	-1132.234	-0.564
			Max. My	2	-27.560	-0.482	1136.708
			Max. Vy	8	28.688	-1132.234	-0.564
			Max. Vx	2	-28.818	-0.482	1136.708
L22	98.5 - 98.25	Pole	Max. Torque	11			3.282
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.261	-11.487	7.912
			Max. Mx	8	-27.672	-1139.413	-0.573
			Max. My	2	-27.658	-0.474	1143.918
			Max. Vy	8	28.701	-1139.413	-0.573
			Max. Vx	2	-28.831	-0.474	1143.918
L23	98.25 - 93.25	Pole	Max. Torque	11			3.282
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.050	-12.129	8.583
			Max. Mx	8	-29.281	-1284.547	-0.741
			Max. My	2	-29.268	-0.334	1289.681
			Max. Vy	8	29.308	-1284.547	-0.741
			Max. Vx	2	-29.438	-0.334	1289.681
L24	93.25 - 90.5	Pole	Max. Torque	11			3.280
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.575	-12.479	8.941
			Max. Mx	8	-30.182	-1365.644	-0.833
			Max. My	2	-30.169	-0.257	1371.124
			Max. Vy	8	29.640	-1365.644	-0.833
			Max. Vx	2	-29.769	-0.257	1371.124
L25	90.5 - 90.25	Pole	Max. Torque	11			3.280
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.726	-12.513	8.977
			Max. Mx	8	-30.288	-1373.061	-0.841
			Max. My	2	-30.275	-0.250	1378.572
			Max. Vy	8	29.656	-1373.061	-0.841
			Max. Vx	2	-29.785	-0.250	1378.572
L26	90.25 - 85.25	Pole	Max. Torque	11			3.279
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-76.756	-13.138	9.666
			Max. Mx	8	-32.122	-1522.997	-1.005
			Max. My	2	-32.110	-0.114	1529.135
			Max. Vy	8	30.272	-1522.997	-1.005
			Max. Vx	2	-30.402	-0.114	1529.135

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L27	85.25 - 83.5	Pole	Max. Torque	11			3.279
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-77.935	-13.357	9.867
			Max. Mx	8	-32.766	-1576.191	-1.061
			Max. My	2	-32.754	-0.067	1582.549
			Max. Vy	8	30.494	-1576.191	-1.061
L28	83.5 - 83.25	Pole	Max. Vx	2	-30.624	-0.067	1582.549
			Max. Torque	11			3.278
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.123	-13.391	9.898
			Max. Mx	8	-32.896	-1583.821	-1.069
			Max. My	2	-32.885	-0.060	1590.210
L29	83.25 - 80.75	Pole	Max. Vy	8	30.506	-1583.821	-1.069
			Max. Vx	2	-30.635	-0.060	1590.210
			Max. Torque	11			3.280
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.000	-13.697	10.175
			Max. Mx	8	-33.994	-1660.566	-1.149
L30	80.75 - 80.5	Pole	Max. My	2	-33.983	0.006	1667.268
			Max. Vy	8	30.841	-1660.566	-1.149
			Max. Vx	2	-30.971	0.006	1667.268
			Max. Torque	11			3.306
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.199	-13.732	10.206
L31	80.5 - 80.25	Pole	Max. Mx	8	-34.126	-1668.285	-1.157
			Max. My	2	-34.115	0.012	1675.018
			Max. Vy	8	30.864	-1668.285	-1.157
			Max. Vx	2	-30.993	0.012	1675.018
			Max. Torque	11			3.306
			Max Tension	1	0.000	0.000	0.000
L32	80.25 - 77.5	Pole	Max. Compression	26	-80.396	-13.763	10.234
			Max. Mx	8	-34.245	-1676.013	-1.165
			Max. My	2	-34.234	0.019	1682.777
			Max. Vy	8	30.897	-1676.013	-1.165
			Max. Vx	2	-31.027	0.019	1682.777
			Max. Torque	11			3.306
L33	77.5 - 77.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.741	-14.135	10.572
			Max. Mx	8	-35.665	-1769.392	-1.260
			Max. My	2	-35.654	0.097	1776.532
			Max. Vy	8	31.293	-1769.392	-1.260
			Max. Vx	2	-31.423	0.097	1776.532
L34	77.25 - 68.82	Pole	Max. Torque	11			3.305
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.492	-14.611	11.023
			Max. Mx	8	-37.296	-1894.341	-1.381
			Max. My	2	-37.286	0.196	1901.975
			Max. Vy	8	31.784	-1894.341	-1.381
L35	68.82 - 68.291	Pole	Max. Vx	2	-31.913	0.196	1901.975
			Max. Torque	11			3.305
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-91.041	-15.210	11.594
			Max. Mx	8	-41.036	-2055.236	-1.535
			Max. My	2	-41.027	0.322	2063.494
L36	68.291 - 64.25	Pole	Max. Vy	8	32.517	-2055.236	-1.535
			Max. Vx	2	-32.646	0.322	2063.494
			Max. Torque	11			3.303
			Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L37	64.25 - 64	Pole	Max. Compression	26	-93.998	-15.702	12.056
			Max. Mx	8	-42.849	-2187.690	-1.658
			Max. My	2	-42.840	0.422	2196.450
			Max. Vy	8	32.994	-2187.690	-1.658
			Max. Vx	2	-33.123	0.422	2196.450
			Max. Torque	11			3.303
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.193	-15.736	12.086
			Max. Mx	8	-42.980	-2195.946	-1.666
			Max. My	2	-42.971	0.428	2204.738
			Max. Vy	8	33.011	-2195.946	-1.666
L38	64 - 60.5	Pole	Max. Vx	2	-33.140	0.428	2204.738
			Max. Torque	11			3.302
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-96.936	-16.152	12.464
			Max. Mx	8	-44.652	-2312.331	-1.770
			Max. My	2	-44.645	0.513	2321.557
			Max. Vy	8	33.446	-2312.331	-1.770
			Max. Vx	2	-33.575	0.513	2321.557
			Max. Torque	11			3.302
			Max Tension	1	0.000	0.000	0.000
			L39	60.5 - 60.25	Pole	Max. Compression	26
Max. Mx	8	-44.791				-2320.701	-1.778
Max. My	2	-44.783				0.519	2329.958
Max. Vy	8	33.463				-2320.701	-1.778
Max. Vx	2	-33.591				0.519	2329.958
Max. Torque	11						3.302
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-97.150				-16.186	12.494
Max. Mx	8	-44.791				-2320.701	-1.778
Max. My	2	-44.783				0.519	2329.958
L40	60.25 - 60.083	Pole				Max. Vy	8
			Max. Vx	2	-33.591	0.519	2329.958
			Max. Torque	11			3.302
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.292	-16.209	12.515
			Max. Mx	8	-44.877	-2326.297	-1.783
			Max. My	2	-44.869	0.523	2335.574
			Max. Vy	8	33.483	-2326.297	-1.783
			Max. Vx	2	-33.610	0.523	2335.574
			Max. Torque	11			3.302
			L41	60.083 - 59.833	Pole	Max Tension	1
Max. Compression	26	-97.507				-16.242	12.547
Max. Mx	8	-45.008				-2334.680	-1.790
Max. My	2	-45.000				0.529	2343.988
Max. Vy	8	33.515				-2334.680	-1.790
Max. Vx	2	-33.642				0.529	2343.988
Max. Torque	11						3.301
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-98.146				-16.345	12.654
Max. Mx	8	-45.397				-2359.876	-1.812
L42	59.833 - 59.083	Pole				Max. My	2
			Max. Vy	8	33.617	-2359.876	-1.812
			Max. Vx	2	-33.742	0.547	2369.275
			Max. Torque	11			3.301
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-98.146	-16.345	12.654
			Max. Mx	8	-45.397	-2359.876	-1.812
			Max. My	2	-45.389	0.547	2369.275
			Max. Vy	8	33.617	-2359.876	-1.812
			Max. Vx	2	-33.742	0.547	2369.275
			L43	59.083 - 58.833	Pole	Max. Torque	11
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-98.368				-16.383	12.692
Max. Mx	8	-45.542				-2368.291	-1.820
Max. My	2	-45.534				0.553	2377.719
Max. Vy	8	33.642				-2368.291	-1.820
Max. Vx	2	-33.767				0.553	2377.719
Max. Torque	11						3.301
Max Tension	1	0.000				0.000	0.000
Max. Compression	26	-101.390				-16.864	13.183
L44	58.833 - 55.4167	Pole				Max. Mx	8
			Max. My	2	-47.436	0.633	2493.905
			Max. Vy	8	34.091	-2484.081	-1.919
			Max. Vx	2	-34.208	0.633	2493.905
			Max. Torque	11			3.301
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.390	-16.864	13.183
			Max. Mx	8	-47.443	-2484.081	-1.919
			Max. My	2	-47.436	0.633	2493.905
			Max. Vy	8	34.091	-2484.081	-1.919
			Max. Vx	2	-34.208	0.633	2493.905
L45	55.4167 - 55.1667	Pole	Max. Torque	11			3.301
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.390	-16.864	13.183

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L46	55.1667 - 54.75	Pole	Max. Compression	26	-101.611	-16.902	13.221
			Max. Mx	8	-47.593	-2492.612	-1.926
			Max. My	2	-47.586	0.638	2502.465
			Max. Vy	8	34.110	-2492.612	-1.926
			Max. Vx	2	-34.227	0.638	2502.465
			Max. Torque	11			3.301
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.982	-16.960	13.280
			Max. Mx	8	-47.826	-2506.850	-1.938
			Max. My	2	-47.819	0.648	2516.749
L47	54.75 - 54.5	Pole	Max. Vy	8	34.165	-2506.850	-1.938
			Max. Vx	2	-34.281	0.648	2516.749
			Max. Torque	11			3.301
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.186	-16.996	13.317
			Max. Mx	8	-47.951	-2515.402	-1.946
			Max. My	2	-47.944	0.654	2525.329
			Max. Vy	8	34.193	-2515.402	-1.946
			Max. Vx	2	-34.308	0.654	2525.329
			Max. Torque	13			3.301
L48	54.5 - 49.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-106.143	-17.672	14.045
			Max. Mx	8	-50.419	-2687.954	-2.088
			Max. My	2	-50.414	0.767	2698.432
			Max. Vy	8	34.777	-2687.954	-2.088
			Max. Vx	2	-34.892	0.767	2698.432
			Max. Torque	13			3.386
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-110.019	-18.304	14.745
			Max. Mx	8	-52.926	-2863.318	-2.226
L49	49.5 - 44.5	Pole	Max. My	2	-52.921	0.877	2874.345
			Max. Vy	8	35.331	-2863.318	-2.226
			Max. Vx	2	-35.446	0.877	2874.345
			Max. Torque	13			3.461
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-112.594	-18.675	15.121
			Max. Mx	8	-54.573	-2978.775	-2.314
			Max. My	2	-54.568	0.946	2990.157
			Max. Vy	8	35.683	-2978.775	-2.314
			Max. Vx	2	-35.797	0.946	2990.157
L50	44.5 - 41.25	Pole	Max. Torque	13			3.483
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-112.804	-18.705	15.151
			Max. Mx	8	-54.722	-2987.704	-2.321
			Max. My	2	-54.718	0.951	2999.112
			Max. Vy	8	35.694	-2987.704	-2.321
			Max. Vx	2	-35.808	0.951	2999.112
			Max. Torque	13			3.485
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-114.526	-18.946	15.382
L51	41 - 34.291	Pole	Max. Mx	8	-55.816	-3059.379	-2.373
			Max. My	2	-55.812	0.992	3071.004
			Max. Vy	8	35.925	-3059.379	-2.373
			Max. Vx	2	-36.039	0.992	3071.004
			Max. Torque	13			3.500
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-122.717	-19.642	16.042
			Max. Mx	8	-61.730	-3266.900	-2.523
			Max. My	2	-61.727	1.108	3279.145
			Max. Vy	8	36.704	-3266.900	-2.523
L52	34.291 - 33.291	Pole	Max. Vx	2	-36.818	1.108	3279.145
			Max. Torque	13			3.545
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.467	-19.866	16.247
			Max. Mx	8	-62.887	-3332.858	-2.569
			Max. My	2	-62.884	1.144	3345.296

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L55	31.5 - 31.25	Pole	Max. Vy	8	36.916	-3332.858	-2.569
			Max. Vx	2	-37.030	1.144	3345.296
			Max. Torque	13			3.559
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-124.717	-19.897	16.286
			Max. Mx	8	-63.066	-3342.094	-2.576
			Max. My	2	-63.063	1.149	3354.558
			Max. Vy	8	36.923	-3342.094	-2.576
L56	31.25 - 30.5	Pole	Max. Vx	2	-37.032	1.149	3354.558
			Max. Torque	13			3.562
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-125.460	-19.993	16.407
			Max. Mx	8	-63.555	-3369.848	-2.595
			Max. My	2	-63.553	1.164	3382.386
			Max. Vy	8	37.026	-3369.848	-2.595
			Max. Vx	2	-37.122	1.164	3382.386
L57	30.5 - 30.25	Pole	Max. Torque	13			3.562
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-125.703	-20.026	16.437
			Max. Mx	8	-63.722	-3379.115	-2.602
			Max. My	2	-63.719	1.169	3391.675
			Max. Vy	8	37.045	-3379.115	-2.602
			Max. Vx	2	-37.141	1.169	3391.675
			Max. Torque	13			3.564
L58	30.25 - 25.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-130.172	-20.581	16.949
			Max. Mx	8	-66.618	-3547.384	-2.716
			Max. My	2	-66.618	1.256	3560.128
			Max. Vy	8	37.685	-3547.384	-2.716
			Max. Vx	2	-37.682	1.256	3560.128
			Max. Torque	13			3.614
			Max Tension	1	0.000	0.000	0.000
L59	25.75 - 25.5	Pole	Max. Compression	26	-130.420	-20.614	16.978
			Max. Mx	8	-66.785	-3556.816	-2.722
			Max. My	2	-66.785	1.261	3569.556
			Max. Vy	8	37.715	-3556.816	-2.722
			Max. Vx	2	-37.698	1.261	3569.556
			Max. Torque	13			3.617
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.256	-20.715	17.050
L60	25.5 - 24.6667	Pole	Max. Mx	8	-67.304	-3588.346	-2.743
			Max. My	2	-67.305	1.277	3601.038
			Max. Vy	8	37.899	-3588.346	-2.743
			Max. Vx	2	-37.811	1.277	3601.038
			Max. Torque	13			3.627
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.485	-20.747	17.073
			Max. Mx	8	-67.447	-3597.834	-2.749
L61	24.6667 - 24.4167	Pole	Max. My	2	-67.448	1.282	3610.499
			Max. Vy	8	37.939	-3597.834	-2.749
			Max. Vx	2	-37.830	1.282	3610.499
			Max. Torque	13			3.629
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-131.866	-20.798	17.108
			Max. Mx	8	-67.673	-3613.675	-2.760
			Max. My	2	-67.675	1.290	3626.286
L62	24.4167 - 24	Pole	Max. Vy	8	38.026	-3613.675	-2.760
			Max. Vx	2	-37.881	1.290	3626.286
			Max. Torque	13			3.634
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-132.102	-20.829	17.131
			Max. Mx	8	-67.819	-3623.196	-2.766
			Max. My	2	-67.821	1.294	3635.766
			Max. Vy	8	38.073	-3623.196	-2.766
L63	24 - 23.75	Pole	Max. Vx	2	-37.907	1.294	3635.766
			Max. Torque	13			3.637

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L64	23.75 - 18.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-136.557	-21.372	17.481
			Max. Mx	8	-70.673	-3816.162	-2.889
			Max. My	2	-70.681	1.386	3826.734
			Max. Vy	8	39.057	-3816.162	-2.889
			Max. Vx	24	-38.712	2056.354	3583.844
L65	18.75 - 14.083	Pole	Max. Torque	13			3.695
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.605	-21.908	17.716
			Max. Mx	8	-73.371	-4000.508	-3.000
			Max. My	2	-73.381	1.468	4007.191
			Max. Vy	8	39.905	-4000.508	-3.000
L66	14.083 - 13.817	Pole	Max. Vx	24	-39.427	2161.228	3766.250
			Max. Torque	13			3.767
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.842	-21.939	17.731
			Max. Mx	8	-73.539	-4011.134	-3.006
			Max. My	2	-73.550	1.473	4017.538
L67	13.817 - 13.667	Pole	Max. Vy	8	39.932	-4011.134	-3.006
			Max. Vx	24	-39.448	2167.263	3776.746
			Max. Torque	13			3.770
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-140.976	-21.957	17.739
			Max. Mx	8	-73.630	-4017.131	-3.010
L68	13.667 - 10.5	Pole	Max. My	2	-73.640	1.476	4023.377
			Max. Vy	8	39.956	-4017.131	-3.010
			Max. Vx	24	-39.468	2170.669	3782.670
			Max. Torque	13			3.772
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-143.779	-22.326	17.875
L69	10.5 - 10.25	Pole	Max. Mx	8	-75.506	-4144.666	-3.082
			Max. My	2	-75.515	1.529	4147.198
			Max. Vy	8	40.525	-4144.666	-3.082
			Max. Vx	24	-39.956	2243.026	3908.514
			Max. Torque	13			3.798
			Max Tension	1	0.000	0.000	0.000
L70	10.25 - 5.25	Pole	Max. Compression	26	-143.992	-22.359	17.883
			Max. Mx	8	-75.661	-4154.807	-3.088
			Max. My	2	-75.670	1.533	4157.018
			Max. Vy	8	40.548	-4154.807	-3.088
			Max. Vx	24	-39.975	2248.774	3918.511
			Max. Torque	13			3.800
L71	5.25 - 2.9	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-148.209	-22.981	18.028
			Max. Mx	8	-78.563	-4359.779	-3.199
			Max. My	2	-78.570	1.614	4354.748
			Max. Vy	8	41.385	-4359.779	-3.199
			Max. Vx	24	-40.713	2364.827	4120.343
L72	2.9 - 2.65	Pole	Max. Torque	13			3.833
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-149.991	-23.264	18.101
			Max. Mx	8	-79.785	-4457.507	-3.250
			Max. My	2	-79.790	1.650	4448.533
			Max. Vy	8	41.759	-4457.507	-3.250
L73	2.65 - 2.5	Pole	Max. Vx	24	-41.042	2420.079	4216.428
			Max. Torque	13			3.849
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.178	-23.294	18.109
			Max. Mx	8	-79.931	-4467.954	-3.255
			Max. My	2	-79.934	1.654	4458.541

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L74	2.5 - 2.25	Pole	Max. Compression	26	-150.290	-23.312	18.114
			Max. Mx	8	-80.011	-4474.227	-3.259
			Max. My	2	-80.014	1.657	4464.548
			Max. Vy	8	41.791	-4474.227	-3.259
			Max. Vx	24	-41.067	2429.527	4232.857
			Max. Torque	13			3.852
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.484	-23.341	18.121
			Max. Mx	8	-80.148	-4484.690	-3.264
			Max. My	2	-80.151	1.661	4474.564
L75	2.25 - 1.917	Pole	Max. Vy	8	41.834	-4484.690	-3.264
			Max. Vx	24	-41.105	2435.438	4243.137
			Max. Torque	13			3.854
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.741	-23.380	18.132
			Max. Mx	8	-80.330	-4498.643	-3.271
			Max. My	2	-80.333	1.666	4487.916
			Max. Vy	8	41.891	-4498.643	-3.271
			Max. Vx	24	-41.155	2443.320	4256.844
			Max. Torque	13			3.856
L76	1.917 - 1.667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-150.925	-23.408	18.140
			Max. Mx	8	-80.461	-4509.129	-3.276
			Max. My	2	-80.464	1.669	4497.948
			Max. Vy	8	41.929	-4509.129	-3.276
			Max. Vx	24	-41.188	2449.243	4267.144
			Max. Torque	13			3.858
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-152.118	-23.591	18.197
			Max. Mx	8	-81.310	-4579.306	-3.311
L77	1.667 - 0	Pole	Max. My	2	-81.312	1.694	4564.985
			Max. Vy	8	42.232	-4579.306	-3.311
			Max. Vx	24	-41.457	2488.867	4336.050
			Max. Torque	13			3.869

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	152.118	-9.871	-5.711
	Max. H _x	21	61.002	42.183	0.060
	Max. H _z	25	61.002	23.880	41.410
	Max. M _x	2	4564.985	0.060	40.253
	Max. M _z	8	4579.306	-42.183	-0.060
	Max. Torsion	13	3.869	-23.880	-41.410
	Min. Vert	19	61.002	34.785	-20.111
	Min. H _x	9	61.002	-42.183	-0.060
	Min. H _z	13	61.002	-23.880	-41.410
	Min. M _x	14	-4553.738	-0.060	-40.253
	Min. M _z	20	-4564.824	42.183	0.060
	Min. Torsion	25	-3.868	23.880	41.410

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	67.780	0.000	-0.000	-4.571	-5.884	-0.000
1.2 Dead+1.0 Wind 0 deg -	81.336	-0.060	-40.253	-4564.985	1.695	2.409

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
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	61.002	-0.060	-40.253	-4507.264	3.470	2.424
1.2 Dead+1.0 Wind 30 deg - No Ice	81.336	20.893	-36.356	-3976.019	-2285.157	1.145
0.9 Dead+1.0 Wind 30 deg - No Ice	61.002	20.893	-36.356	-3925.817	-2255.316	1.154
1.2 Dead+1.0 Wind 60 deg - No Ice	81.336	34.785	-20.111	-2278.588	-3937.071	-0.382
0.9 Dead+1.0 Wind 60 deg - No Ice	61.002	34.785	-20.111	-2249.095	-3886.723	-0.381
1.2 Dead+1.0 Wind 90 deg - No Ice	81.336	42.183	0.060	3.311	-4579.306	-2.127
0.9 Dead+1.0 Wind 90 deg - No Ice	61.002	42.183	0.060	4.657	-4521.325	-2.135
1.2 Dead+1.0 Wind 120 deg - No Ice	81.336	40.527	23.495	2539.076	-4389.843	-3.599
0.9 Dead+1.0 Wind 120 deg - No Ice	61.002	40.527	23.495	2509.688	-4334.845	-3.615
1.2 Dead+1.0 Wind 150 deg - No Ice	81.336	23.880	41.410	4324.811	-2503.334	-3.851
0.9 Dead+1.0 Wind 150 deg - No Ice	61.002	23.880	41.410	4274.438	-2471.563	-3.869
1.2 Dead+1.0 Wind 180 deg - No Ice	81.336	0.060	40.253	4553.738	-16.173	-2.407
0.9 Dead+1.0 Wind 180 deg - No Ice	61.002	0.060	40.253	4498.949	-14.156	-2.423
1.2 Dead+1.0 Wind 210 deg - No Ice	81.336	-20.893	36.356	3964.771	2270.677	-1.142
0.9 Dead+1.0 Wind 210 deg - No Ice	61.002	-20.893	36.356	3917.501	2244.628	-1.151
1.2 Dead+1.0 Wind 240 deg - No Ice	81.336	-34.785	20.111	2267.340	3922.589	0.383
0.9 Dead+1.0 Wind 240 deg - No Ice	61.002	-34.785	20.111	2240.779	3876.033	0.382
1.2 Dead+1.0 Wind 270 deg - No Ice	81.336	-42.183	-0.060	-14.557	4564.824	2.125
0.9 Dead+1.0 Wind 270 deg - No Ice	61.002	-42.183	-0.060	-12.970	4510.635	2.134
1.2 Dead+1.0 Wind 300 deg - No Ice	81.336	-40.527	-23.495	-2550.304	4375.383	3.595
0.9 Dead+1.0 Wind 300 deg - No Ice	61.002	-40.527	-23.495	-2517.988	4324.171	3.612
1.2 Dead+1.0 Wind 330 deg - No Ice	81.336	-23.880	-41.410	-4336.049	2488.867	3.849
0.9 Dead+1.0 Wind 330 deg - No Ice	61.002	-23.880	-41.410	-4282.745	2460.886	3.868
1.2 Dead+1.0 Ice+1.0 Temp	152.118	0.000	-0.000	-18.197	-23.591	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	152.118	-0.010	-10.497	-1352.688	-22.062	0.570
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	152.118	5.380	-9.340	-1176.536	-690.268	0.298
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	152.118	9.075	-5.239	-684.061	-1176.423	-0.054
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	152.118	10.833	0.010	-16.644	-1360.654	-0.467
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	152.118	9.871	5.711	681.609	-1232.246	-0.916
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	152.118	5.835	10.107	1180.821	-715.773	-1.022
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	152.118	0.010	10.497	1316.104	-25.363	-0.571
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	152.118	-5.380	9.340	1139.954	642.848	-0.299
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	152.118	-9.075	5.239	647.476	1129.007	0.054
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	152.118	-10.833	-0.010	-19.946	1313.238	0.467
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	152.118	-9.871	-5.711	-718.198	1184.828	0.915

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	152.118	-5.835	-10.107	-1217.409	668.349	1.021
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	67.780	-0.013	-8.738	-987.622	-4.085	0.544
Dead+Wind 30 deg - Service	67.780	4.535	-7.892	-860.669	-497.123	0.268
Dead+Wind 60 deg - Service	67.780	7.551	-4.366	-494.692	-853.239	-0.071
Dead+Wind 90 deg - Service	67.780	9.157	0.013	-2.742	-991.733	-0.460
Dead+Wind 120 deg - Service	67.780	8.797	5.100	544.097	-951.125	-0.792
Dead+Wind 150 deg - Service	67.780	5.184	8.989	929.195	-544.295	-0.855
Dead+Wind 180 deg - Service	67.780	0.013	8.738	978.291	-7.933	-0.544
Dead+Wind 210 deg - Service	67.780	-4.535	7.892	851.338	485.106	-0.267
Dead+Wind 240 deg - Service	67.780	-7.551	4.366	485.361	841.222	0.071
Dead+Wind 270 deg - Service	67.780	-9.157	-0.013	-6.590	979.715	0.460
Dead+Wind 300 deg - Service	67.780	-8.797	-5.100	-553.428	939.108	0.792
Dead+Wind 330 deg - Service	67.780	-5.184	-8.989	-938.525	532.278	0.854

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-67.780	0.000	-0.000	67.780	0.000	0.000%
2	-0.060	-81.336	-40.253	0.060	81.336	40.253	0.000%
3	-0.060	-61.002	-40.253	0.060	61.002	40.253	0.000%
4	20.893	-81.336	-36.356	-20.893	81.336	36.356	0.000%
5	20.893	-61.002	-36.356	-20.893	61.002	36.356	0.000%
6	34.785	-81.336	-20.111	-34.785	81.336	20.111	0.000%
7	34.785	-61.002	-20.111	-34.785	61.002	20.111	0.000%
8	42.183	-81.336	0.060	-42.183	81.336	-0.060	0.000%
9	42.183	-61.002	0.060	-42.183	61.002	-0.060	0.000%
10	40.527	-81.336	23.495	-40.527	81.336	-23.495	0.000%
11	40.527	-61.002	23.495	-40.527	61.002	-23.495	0.000%
12	23.880	-81.336	41.410	-23.880	81.336	-41.410	0.000%
13	23.880	-61.002	41.410	-23.880	61.002	-41.410	0.000%
14	0.060	-81.336	40.253	-0.060	81.336	-40.253	0.000%
15	0.060	-61.002	40.253	-0.060	61.002	-40.253	0.000%
16	-20.893	-81.336	36.356	20.893	81.336	-36.356	0.000%
17	-20.893	-61.002	36.356	20.893	61.002	-36.356	0.000%
18	-34.785	-81.336	20.111	34.785	81.336	-20.111	0.000%
19	-34.785	-61.002	20.111	34.785	61.002	-20.111	0.000%
20	-42.183	-81.336	-0.060	42.183	81.336	0.060	0.000%
21	-42.183	-61.002	-0.060	42.183	61.002	0.060	0.000%
22	-40.527	-81.336	-23.495	40.527	81.336	23.495	0.000%
23	-40.527	-61.002	-23.495	40.527	61.002	23.495	0.000%
24	-23.880	-81.336	-41.410	23.880	81.336	41.410	0.000%
25	-23.880	-61.002	-41.410	23.880	61.002	41.410	0.000%
26	0.000	-152.118	0.000	-0.000	152.118	0.000	0.000%
27	-0.010	-152.118	-10.497	0.010	152.118	10.497	0.000%
28	5.380	-152.118	-9.340	-5.380	152.118	9.340	0.000%
29	9.075	-152.118	-5.239	-9.075	152.118	5.239	0.000%
30	10.833	-152.118	0.010	-10.833	152.118	-0.010	0.000%
31	9.871	-152.118	5.711	-9.871	152.118	-5.711	0.000%
32	5.835	-152.118	10.107	-5.835	152.118	-10.107	0.000%
33	0.010	-152.118	10.497	-0.010	152.118	-10.497	0.000%
34	-5.380	-152.118	9.340	5.380	152.118	-9.340	0.000%
35	-9.075	-152.118	5.239	9.075	152.118	-5.239	0.000%
36	-10.833	-152.118	-0.010	10.833	152.118	0.010	0.000%
37	-9.871	-152.118	-5.711	9.871	152.118	5.711	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
38	-5.835	-152.118	-10.107	5.835	152.118	10.107	0.000%
39	-0.013	-67.780	-8.738	0.013	67.780	8.738	0.000%
40	4.535	-67.780	-7.892	-4.535	67.780	7.892	0.000%
41	7.551	-67.780	-4.366	-7.551	67.780	4.366	0.000%
42	9.157	-67.780	0.013	-9.157	67.780	-0.013	0.000%
43	8.797	-67.780	5.100	-8.797	67.780	-5.100	0.000%
44	5.184	-67.780	8.989	-5.184	67.780	-8.989	0.000%
45	0.013	-67.780	8.738	-0.013	67.780	-8.738	0.000%
46	-4.535	-67.780	7.892	4.535	67.780	-7.892	0.000%
47	-7.551	-67.780	4.366	7.551	67.780	-4.366	0.000%
48	-9.157	-67.780	-0.013	9.157	67.780	0.013	0.000%
49	-8.797	-67.780	-5.100	8.797	67.780	5.100	0.000%
50	-5.184	-67.780	-8.989	5.184	67.780	8.989	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00001138
2	Yes	6	0.00000001	0.00008630
3	Yes	5	0.00000001	0.00071752
4	Yes	7	0.00000001	0.0008383
5	Yes	6	0.00000001	0.00050686
6	Yes	7	0.00000001	0.00008274
7	Yes	6	0.00000001	0.00050073
8	Yes	6	0.00000001	0.0006553
9	Yes	5	0.00000001	0.00053724
10	Yes	7	0.00000001	0.00009248
11	Yes	6	0.00000001	0.00055062
12	Yes	7	0.00000001	0.00009521
13	Yes	6	0.00000001	0.00056939
14	Yes	6	0.00000001	0.00010117
15	Yes	5	0.00000001	0.00084273
16	Yes	7	0.00000001	0.00008034
17	Yes	6	0.00000001	0.00048621
18	Yes	7	0.00000001	0.00008120
19	Yes	6	0.00000001	0.00049235
20	Yes	6	0.00000001	0.00007995
21	Yes	5	0.00000001	0.00065956
22	Yes	7	0.00000001	0.00010000
23	Yes	6	0.00000001	0.00059742
24	Yes	7	0.00000001	0.00008746
25	Yes	6	0.00000001	0.00052132
26	Yes	5	0.00000001	0.00076001
27	Yes	7	0.00000001	0.00054409
28	Yes	7	0.00000001	0.00066182
29	Yes	7	0.00000001	0.00066040
30	Yes	7	0.00000001	0.00054696
31	Yes	7	0.00000001	0.00066897
32	Yes	7	0.00000001	0.00065652
33	Yes	7	0.00000001	0.00052516
34	Yes	7	0.00000001	0.00060747
35	Yes	7	0.00000001	0.00060696
36	Yes	7	0.00000001	0.00051931
37	Yes	7	0.00000001	0.00066505
38	Yes	7	0.00000001	0.00064248
39	Yes	5	0.00000001	0.00010264
40	Yes	5	0.00000001	0.00034364
41	Yes	5	0.00000001	0.00032953
42	Yes	5	0.00000001	0.00008983
43	Yes	5	0.00000001	0.00037243
44	Yes	5	0.00000001	0.00042547
45	Yes	5	0.00000001	0.00010331
46	Yes	5	0.00000001	0.00029710
47	Yes	5	0.00000001	0.00030571

48	Yes	5	0.00000001	0.00008980
49	Yes	5	0.00000001	0.00045222
50	Yes	5	0.00000001	0.00033908

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160.333 - 155.333	24.276	43	1.452	0.008
L2	155.333 - 150.333	22.755	43	1.451	0.008
L3	150.333 - 146.833	21.244	43	1.432	0.006
L4	146.833 - 146.333	20.203	43	1.405	0.006
L5	146.333 - 141.333	20.056	43	1.403	0.005
L6	141.333 - 136.333	18.605	43	1.367	0.005
L7	136.333 - 131.333	17.198	43	1.317	0.004
L8	131.333 - 126.333	15.850	43	1.255	0.004
L9	126.333 - 121.333	14.574	43	1.179	0.003
L10	121.333 - 120.083	13.385	43	1.091	0.002
L11	120.083 - 119.833	13.102	43	1.068	0.002
L12	119.833 - 117.5	13.046	43	1.066	0.002
L13	117.5 - 117.25	12.531	43	1.042	0.002
L14	117.25 - 115.5	12.477	43	1.039	0.002
L15	115.5 - 115.25	12.099	43	1.021	0.002
L16	115.25 - 110.25	12.046	43	1.019	0.002
L17	110.25 - 104.083	11.001	43	0.976	0.002
L18	107.82 - 102.82	10.510	43	0.954	0.002
L19	102.82 - 100.5	9.524	43	0.924	0.002
L20	100.5 - 100.25	9.081	43	0.901	0.002
L21	100.25 - 98.5	9.033	43	0.899	0.002
L22	98.5 - 98.25	8.707	43	0.880	0.002
L23	98.25 - 93.25	8.662	43	0.877	0.002
L24	93.25 - 90.5	7.771	43	0.823	0.001
L25	90.5 - 90.25	7.306	43	0.792	0.001
L26	90.25 - 85.25	7.265	43	0.789	0.001
L27	85.25 - 83.5	6.467	43	0.735	0.001
L28	83.5 - 83.25	6.201	43	0.716	0.001
L29	83.25 - 80.75	6.163	43	0.714	0.001
L30	80.75 - 80.5	5.795	43	0.692	0.001
L31	80.5 - 80.25	5.759	43	0.690	0.001
L32	80.25 - 77.5	5.723	43	0.688	0.001
L33	77.5 - 77.25	5.333	43	0.666	0.001
L34	77.25 - 68.82	5.298	43	0.663	0.001
L35	73.291 - 68.291	4.766	43	0.620	0.001
L36	68.291 - 64.25	4.131	43	0.590	0.001
L37	64.25 - 64	3.651	43	0.545	0.001
L38	64 - 60.5	3.623	43	0.543	0.001
L39	60.5 - 60.25	3.237	43	0.510	0.001
L40	60.25 - 60.083	3.210	43	0.508	0.001
L41	60.083 - 59.833	3.192	43	0.506	0.001
L42	59.833 - 59.083	3.166	43	0.504	0.001
L43	59.083 - 58.833	3.087	43	0.498	0.001
L44	58.833 - 55.4167	3.061	43	0.496	0.001
L45	55.4167 - 55.1667	2.716	43	0.468	0.001
L46	55.1667 - 54.75	2.692	43	0.466	0.001
L47	54.75 - 54.5	2.651	43	0.463	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L48	54.5 - 49.5	2.627	43	0.460	0.001
L49	49.5 - 44.5	2.171	43	0.411	0.000
L50	44.5 - 41.25	1.767	43	0.361	0.000
L51	41.25 - 41	1.533	43	0.328	0.000
L52	41 - 34.291	1.516	43	0.325	0.000
L53	39 - 33.291	1.383	43	0.307	0.000
L54	33.291 - 31.5	1.030	43	0.281	0.000
L55	31.5 - 31.25	0.927	43	0.268	0.000
L56	31.25 - 30.5	0.913	43	0.266	0.000
L57	30.5 - 30.25	0.872	43	0.261	0.000
L58	30.25 - 25.75	0.858	43	0.259	0.000
L59	25.75 - 25.5	0.630	43	0.225	0.000
L60	25.5 - 24.6667	0.618	43	0.223	0.000
L61	24.6667 - 24.4167	0.580	43	0.216	0.000
L62	24.4167 - 24	0.569	43	0.214	0.000
L63	24 - 23.75	0.550	43	0.210	0.000
L64	23.75 - 18.75	0.539	43	0.208	0.000
L65	18.75 - 14.083	0.343	43	0.167	0.000
L66	14.083 - 13.817	0.198	43	0.129	0.000
L67	13.817 - 13.667	0.190	43	0.127	0.000
L68	13.667 - 10.5	0.187	43	0.126	0.000
L69	10.5 - 10.25	0.112	43	0.099	0.000
L70	10.25 - 5.25	0.107	43	0.097	0.000
L71	5.25 - 2.9	0.028	43	0.052	0.000
L72	2.9 - 2.65	0.009	43	0.028	0.000
L73	2.65 - 2.5	0.007	43	0.026	0.000
L74	2.5 - 2.25	0.006	43	0.024	0.000
L75	2.25 - 1.917	0.005	43	0.022	0.000
L76	1.917 - 1.667	0.004	43	0.019	0.000
L77	1.667 - 0	0.003	43	0.017	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	SBNH-1D6565C w/ Mount Pipe	43	22.958	1.452	0.008	34373
146.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	43	19.958	1.402	0.005	8257
145.000	Miscellaneous [NA 510-1]	43	19.666	1.396	0.005	8154
139.000	APXV18-206517S-C	43	17.942	1.345	0.005	5797
132.000	(2) SBNHH-1D65B w/ Mount Pipe	43	16.026	1.264	0.004	4267
131.000	6' x 2" Horizontal Mount Pipe	43	15.763	1.251	0.004	4104
114.000	MX08FRO665-21 w/ Mount Pipe	43	11.780	1.009	0.002	6344
101.000	58532A	43	9.175	0.907	0.002	5951

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160.333 - 155.333	112.099	10	6.704	0.036
L2	155.333 - 150.333	105.106	10	6.701	0.035
L3	150.333 - 146.833	98.151	10	6.617	0.029
L4	146.833 - 146.333	93.362	10	6.491	0.025

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	146.333 - 141.333	92.685	10	6.483	0.025
L6	141.333 - 136.333	85.999	10	6.320	0.022
L7	136.333 - 131.333	79.518	10	6.091	0.020
L8	131.333 - 126.333	73.304	10	5.805	0.017
L9	126.333 - 121.333	67.419	10	5.456	0.014
L10	121.333 - 120.083	61.926	10	5.052	0.011
L11	120.083 - 119.833	60.620	10	4.945	0.011
L12	119.833 - 117.5	60.362	10	4.933	0.011
L13	117.5 - 117.25	57.984	10	4.823	0.010
L14	117.25 - 115.5	57.732	10	4.811	0.010
L15	115.5 - 115.25	55.987	10	4.729	0.009
L16	115.25 - 110.25	55.740	10	4.719	0.009
L17	110.25 - 104.083	50.910	10	4.521	0.009
L18	107.82 - 102.82	48.639	10	4.417	0.008
L19	102.82 - 100.5	44.081	10	4.280	0.008
L20	100.5 - 100.25	42.031	10	4.174	0.007
L21	100.25 - 98.5	41.813	10	4.162	0.007
L22	98.5 - 98.25	40.305	10	4.075	0.007
L23	98.25 - 93.25	40.093	10	4.063	0.007
L24	93.25 - 90.5	35.974	10	3.812	0.006
L25	90.5 - 90.25	33.823	10	3.669	0.006
L26	90.25 - 85.25	33.631	10	3.656	0.006
L27	85.25 - 83.5	29.938	10	3.405	0.005
L28	83.5 - 83.25	28.707	10	3.315	0.005
L29	83.25 - 80.75	28.534	10	3.305	0.005
L30	80.75 - 80.5	26.831	10	3.206	0.005
L31	80.5 - 80.25	26.664	10	3.198	0.005
L32	80.25 - 77.5	26.497	10	3.188	0.005
L33	77.5 - 77.25	24.691	10	3.086	0.004
L34	77.25 - 68.82	24.530	10	3.074	0.004
L35	73.291 - 68.291	22.067	10	2.871	0.004
L36	68.291 - 64.25	19.129	10	2.732	0.004
L37	64.25 - 64	16.905	10	2.526	0.003
L38	64 - 60.5	16.773	10	2.515	0.003
L39	60.5 - 60.25	14.987	10	2.362	0.003
L40	60.25 - 60.083	14.863	10	2.351	0.003
L41	60.083 - 59.833	14.781	10	2.344	0.003
L42	59.833 - 59.083	14.659	10	2.335	0.003
L43	59.083 - 58.833	14.295	10	2.305	0.003
L44	58.833 - 55.4167	14.174	10	2.296	0.003
L45	55.4167 - 55.1667	12.577	10	2.169	0.003
L46	55.1667 - 54.75	12.464	10	2.159	0.003
L47	54.75 - 54.5	12.277	10	2.144	0.003
L48	54.5 - 49.5	12.165	10	2.133	0.003
L49	49.5 - 44.5	10.053	10	1.902	0.002
L50	44.5 - 41.25	8.183	10	1.670	0.002
L51	41.25 - 41	7.098	10	1.518	0.002
L52	41 - 34.291	7.019	10	1.507	0.002
L53	39 - 33.291	6.405	10	1.423	0.002
L54	33.291 - 31.5	4.769	10	1.301	0.001
L55	31.5 - 31.25	4.292	10	1.242	0.001
L56	31.25 - 30.5	4.228	10	1.234	0.001
L57	30.5 - 30.25	4.036	10	1.209	0.001
L58	30.25 - 25.75	3.973	10	1.200	0.001
L59	25.75 - 25.5	2.917	10	1.041	0.001
L60	25.5 - 24.6667	2.863	10	1.032	0.001
L61	24.6667 - 24.4167	2.685	10	1.001	0.001
L62	24.4167 - 24	2.633	10	0.991	0.001
L63	24 - 23.75	2.547	10	0.974	0.001
L64	23.75 - 18.75	2.497	10	0.964	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L65	18.75 - 14.083	1.586	10	0.775	0.001
L66	14.083 - 13.817	0.915	10	0.599	0.001
L67	13.817 - 13.667	0.882	10	0.588	0.001
L68	13.667 - 10.5	0.863	10	0.583	0.001
L69	10.5 - 10.25	0.518	10	0.460	0.000
L70	10.25 - 5.25	0.494	10	0.450	0.000
L71	5.25 - 2.9	0.132	10	0.242	0.000
L72	2.9 - 2.65	0.040	10	0.131	0.000
L73	2.65 - 2.5	0.034	10	0.119	0.000
L74	2.5 - 2.25	0.030	10	0.112	0.000
L75	2.25 - 1.917	0.024	10	0.102	0.000
L76	1.917 - 1.667	0.018	10	0.088	0.000
L77	1.667 - 0	0.013	10	0.077	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	SBNH-1D6565C w/ Mount Pipe	10	106.039	6.703	0.035	8175
146.000	AIR6449 B41_T-MOBILE w/ Mount Pipe	10	92.235	6.477	0.025	1868
145.000	Miscellaneous [NA 510-1]	10	90.887	6.453	0.024	1840
139.000	APXV18-206517S-C	10	82.946	6.219	0.021	1296
132.000	(2) SBNHH-1D65B w/ Mount Pipe	10	74.115	5.847	0.017	951
131.000	6' x 2" Horizontal Mount Pipe	10	72.901	5.783	0.017	914
114.000	MX08FRO665-21 w/ Mount Pipe	10	54.513	4.673	0.009	1395
101.000	58532A	10	42.468	4.199	0.007	1302

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	160.333 - 155.333 (1)	TP16x16x0.375	5.000	0.000	0.0	18.408	-4.482	579.845	0.008
L2	155.333 - 150.333 (2)	TP16x16x0.375	5.000	0.000	0.0	18.408	-4.912	579.845	0.008
L3	150.333 - 146.833 (3)	TP16x16x0.375	3.500	0.000	0.0	18.408	-5.225	579.845	0.009
L4	146.833 - 146.333 (4)	TP22x22x0.375	0.500	0.000	0.0	25.476	-5.288	802.505	0.007
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	5.000	0.000	0.0	18.253	-10.215	985.640	0.010
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	5.000	0.000	0.0	18.996	-11.037	1025.810	0.011
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	5.000	0.000	0.0	19.740	-15.348	1065.970	0.014
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	5.000	0.000	0.0	20.484	-16.399	1106.140	0.015
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	5.000	0.000	0.0	21.228	-17.175	1146.310	0.015
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	1.250	0.000	0.0	21.414	-17.370	1156.350	0.015
L11	120.083 -	TP26.897x26.851x0.488	0.250	0.000	0.0	41.457	-17.444	2238.670	0.008

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L12	119.833 (11) 119.833 - 117.5 (12)	TP27.328x26.897x0.488	2.333	0.000	0.0	42.134	-17.937	2275.220	0.008
L13	117.5 (12) 117.25 (13)	TP27.375x27.328x0.5	0.250	0.000	0.0	43.268	-18.005	2336.480	0.008
L14	117.25 (13) 115.5 (14)	TP27.698x27.375x0.5	1.750	0.000	0.0	43.789	-18.402	2364.600	0.008
L15	115.5 (14) 115.25 (15)	TP27.744x27.698x0.663	0.250	0.000	0.0	57.772	-18.485	3119.700	0.006
L16	115.25 (15) 110.25 (16)	TP28.668x27.744x0.65	5.000	0.000	0.0	58.642	-22.785	3166.690	0.007
L17	110.25 (16) 104.083 (17)	TP29.808x28.668x0.638	6.167	0.000	0.0	58.462	-23.466	3156.950	0.007
L18	104.083 (17) 102.82 (18)	TP29.541x28.617x0.7	5.000	0.000	0.0	65.007	-25.795	3510.370	0.007
L19	102.82 (18) 100.5 (19)	TP29.969x29.541x0.688	2.320	0.000	0.0	64.822	-26.592	3500.390	0.008
L20	100.5 (19) 100.25 (20)	TP30.015x29.969x0.638	0.250	0.000	0.0	60.305	-26.679	3256.480	0.008
L21	100.25 (20) 98.5 (21)	TP30.338x30.015x0.625	1.750	0.000	0.0	59.798	-27.202	3229.100	0.008
L22	98.5 (21) 98.25 (22)	TP30.385x30.338x0.663	0.250	0.000	0.0	63.405	-27.303	3423.850	0.008
L23	98.25 (22) 93.25 (23)	TP31.308x30.385x0.65	5.000	0.000	0.0	64.167	-28.919	3465.010	0.008
L24	93.25 (23) 90.5 (24)	TP31.816x31.308x0.638	2.750	0.000	0.0	64.001	-29.825	3456.050	0.009
L25	90.5 (24) 90.25 (25)	TP31.862x31.816x0.688	0.250	0.000	0.0	69.012	-29.934	3726.650	0.008
L26	90.25 (25) 85.25 (26)	TP32.785x31.862x0.675	5.000	0.000	0.0	69.791	-31.777	3768.730	0.008
L27	85.25 (26) 83.5 (27)	TP33.108x32.785x0.663	1.750	0.000	0.0	69.215	-32.423	3737.600	0.009
L28	83.5 (27) 83.25 (28)	TP33.154x33.108x0.913	0.250	0.000	0.0	94.735	-32.557	5115.680	0.006
L29	83.25 (28) 80.75 (29)	TP33.616x33.154x0.888	2.500	0.000	0.0	93.530	-33.650	5050.620	0.007
L30	80.75 (29) 80.5 (30)	TP33.662x33.616x1.063	0.250	0.000	0.0	111.53 2	-33.784	6022.710	0.006
L31	80.5 (30) 80.25 (31)	TP33.708x33.662x0.975	0.250	0.000	0.0	102.76 6	-33.904	5549.390	0.006
L32	80.25 (31) 77.5 (32)	TP34.216x33.708x0.963	2.750	0.000	0.0	103.06 1	-35.211	5565.320	0.006
L33	77.5 (32) 77.25 (33)	TP34.262x34.216x0.688	0.250	0.000	0.0	74.326	-35.327	4013.620	0.009
L34	77.25 (33) 68.82 (34)	TP35.819x34.262x0.688	8.430	0.000	0.0	75.945	-36.968	4101.010	0.009
L35	68.82 (34) 68.291 (35)	TP35.291x34.368x0.75	5.000	0.000	0.0	83.418	-40.713	4504.550	0.009
L36	68.291 (35) 64.25 (36)	TP36.037x35.291x0.738	4.041	0.000	0.0	83.828	-42.539	4526.740	0.009
L37	64.25 (36) 64 (37)	TP36.084x36.037x0.875	0.250	0.000	0.0	99.200	-42.673	5356.810	0.008
L38	64 (37) 60.5 (38)	TP36.73x36.084x0.863	3.500	0.000	0.0	99.612	-44.355	5379.060	0.008
L39	60.5 (38) 60.25 (39)	TP36.776x36.73x0.925	0.250	0.000	0.0	106.78 2	-44.496	5766.210	0.008
L40	60.25 (39) 60.083 (40)	TP36.807x36.776x0.925	0.167	0.000	0.0	106.87 4	-44.583	5771.170	0.008
L41	60.083 (40) 59.833 (41)	TP36.853x36.807x0.975	0.250	0.000	0.0	112.63 8	-44.715	6082.470	0.007
L42	59.833 (41) 59.083 (42)	TP36.991x36.853x0.975	0.750	0.000	0.0	113.07 3	-45.105	6105.950	0.007
L43	59.083 (42) 58.833 (43)	TP37.037x36.991x1.05	0.250	0.000	0.0	121.67 3	-45.252	6570.370	0.007
L44	58.833 (43) 55.4167 (44)	TP37.668x37.037x1.025	3.416	0.000	0.0	120.94 1	-47.163	6530.790	0.007
L45	55.4167 (44) 55.1667 (45)	TP37.714x37.668x1.025	0.250	0.000	0.0	121.09 3	-47.316	6539.010	0.007
L46	55.1667 (45)	TP37.791x37.714x1.025	0.417	0.000	0.0	121.34	-47.550	6552.720	0.007

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
	54.75 (46)					7			
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	0.250	0.000	0.0	98.323	-47.676	5309.450	0.009
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	5.000	0.000	0.0	99.281	-50.167	5361.180	0.009
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	5.000	0.000	0.0	100.16	-52.699	5408.830	0.010
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	3.250	0.000	0.0	100.15	-54.362	5408.180	0.010
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	0.250	0.000	0.0	111.16	-54.515	6002.800	0.009
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	6.709	0.000	0.0	112.20	-55.617	6058.980	0.009
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	5.709	0.000	0.0	150.66	-61.543	8813.670	0.007
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	1.791	0.000	0.0	151.90	-62.705	8886.360	0.007
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	0.250	0.000	0.0	152.07	-62.889	8896.500	0.007
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	0.750	0.000	0.0	152.59	-63.380	8926.940	0.007
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	0.250	0.000	0.0	146.45	-63.549	8567.380	0.007
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	4.500	0.000	0.0	146.20	-66.460	8553.150	0.008
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	0.250	0.000	0.0	136.63	-66.630	7993.320	0.008
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	0.833	0.000	0.0	137.14	-67.153	8022.820	0.008
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	0.250	0.000	0.0	124.19	-67.299	7265.520	0.009
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	0.417	0.000	0.0	122.78	-67.527	7182.620	0.009
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	0.250	0.000	0.0	137.69	-67.674	8055.270	0.008
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	5.000	0.000	0.0	137.37	-70.554	8036.220	0.009
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	4.667	0.000	0.0	138.41	-73.277	8097.280	0.009
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	0.266	0.000	0.0	135.13	-73.450	7905.660	0.009
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	0.150	0.000	0.0	135.22	-73.542	7910.640	0.009
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	3.167	0.000	0.0	135.28	-75.433	7914.070	0.010
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	0.250	0.000	0.0	128.44	-75.592	7513.790	0.010
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	5.000	0.000	0.0	127.52	-78.523	7460.310	0.011
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	2.350	0.000	0.0	110.65	-79.761	6473.090	0.012
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	0.250	0.000	0.0	110.76	-79.912	6479.560	0.012
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	0.150	0.000	0.0	110.82	-79.993	6483.450	0.012
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	0.250	0.000	0.0	129.07	-80.131	7550.980	0.011
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	0.333	0.000	0.0	129.24	-80.316	7561.040	0.011
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	0.250	0.000	0.0	114.84	-80.449	6718.210	0.012
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	1.667	0.000	0.0	113.77	-81.305	6655.550	0.012

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	160.333 - 155.333 (1)	TP16x16x0.375	11.956	240.372	0.050	0.000	240.372	0.000
L2	155.333 - 150.333 (2)	TP16x16x0.375	54.943	240.372	0.229	0.000	240.372	0.000
L3	150.333 - 146.833 (3)	TP16x16x0.375	86.816	240.372	0.361	0.000	240.372	0.000
L4	146.833 - 146.333 (4)	TP22x22x0.375	91.484	460.380	0.199	0.000	460.380	0.000
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	166.846	561.216	0.297	0.000	561.216	0.000
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	245.777	600.296	0.409	0.000	600.296	0.000
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	337.897	639.998	0.528	0.000	639.998	0.000
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	450.646	680.253	0.662	0.000	680.253	0.000
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	566.712	720.983	0.786	0.000	720.983	0.000
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	596.213	731.232	0.815	0.000	731.232	0.000
L11	120.083 - 119.833 (11)	TP26.897x26.851x0.488	602.138	1501.958	0.401	0.000	1501.958	0.000
L12	119.833 - 117.5 (12)	TP27.328x26.897x0.488	657.976	1551.850	0.424	0.000	1551.850	0.000
L13	117.5 - 117.25 (13)	TP27.375x27.328x0.5	664.019	1594.942	0.416	0.000	1594.942	0.000
L14	117.25 - 115.5 (14)	TP27.698x27.375x0.5	706.656	1633.917	0.432	0.000	1633.917	0.000
L15	115.5 - 115.25 (15)	TP27.744x27.698x0.663	712.795	2133.733	0.334	0.000	2133.733	0.000
L16	115.25 - 110.25 (16)	TP28.668x27.744x0.65	851.758	2243.533	0.380	0.000	2243.533	0.000
L17	110.25 - 104.083 (17)	TP29.808x28.668x0.638	923.300	2275.292	0.406	0.000	2275.292	0.000
L18	104.083 - 102.82 (18)	TP29.541x28.617x0.7	1074.442	2557.342	0.420	0.000	2557.342	0.000
L19	102.82 - 100.5 (19)	TP29.969x29.541x0.688	1146.258	2591.058	0.442	0.000	2591.058	0.000
L20	100.5 - 100.25 (20)	TP30.015x29.969x0.638	1154.083	2422.642	0.476	0.000	2422.642	0.000
L21	100.25 - 98.5 (21)	TP30.338x30.015x0.625	1209.142	2431.300	0.497	0.000	2431.300	0.000
L22	98.5 - 98.25 (22)	TP30.385x30.338x0.663	1217.050	2575.517	0.473	0.000	2575.517	0.000
L23	98.25 - 93.25 (23)	TP31.308x30.385x0.65	1377.025	2691.408	0.512	0.000	2691.408	0.000
L24	93.25 - 90.5 (24)	TP31.816x31.308x0.638	1466.558	2732.025	0.537	0.000	2732.025	0.000
L25	90.5 - 90.25 (25)	TP31.862x31.816x0.688	1474.758	2940.950	0.501	0.000	2940.950	0.000
L26	90.25 - 85.25 (26)	TP32.785x31.862x0.675	1640.558	3066.525	0.535	0.000	3066.525	0.000
L27	85.25 - 83.5 (27)	TP33.108x32.785x0.663	1699.475	3074.808	0.553	0.000	3074.808	0.000
L28	83.5 - 83.25 (28)	TP33.154x33.108x0.913	1707.933	4150.008	0.412	0.000	4150.008	0.000
L29	83.25 - 80.75 (29)	TP33.616x33.154x0.888	1793.208	4163.867	0.431	0.000	4163.867	0.000
L30	80.75 - 80.5 (30)	TP33.662x33.616x1.063	1801.800	4919.517	0.366	0.000	4919.517	0.000
L31	80.5 - 80.25 (31)	TP33.708x33.662x0.975	1810.408	4563.883	0.397	0.000	4563.883	0.000
L32	80.25 - 77.5 (32)	TP34.216x33.708x0.963	1905.783	4653.542	0.410	0.000	4653.542	0.000
L33	77.5 - 77.25 (33)	TP34.262x34.216x0.688	1914.517	3416.592	0.560	0.000	3416.592	0.000
L34	77.25 - 68.82 (34)	TP35.819x34.262x0.688	2054.092	3568.517	0.576	0.000	3568.517	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L35	68.82 - 68.291 (35)	TP35.291x34.368x0.75	2234.267	3940.108	0.567	0.000	3940.108	0.000
L36	68.291 - 64.25 (36)	TP36.037x35.291x0.738	2382.950	4049.717	0.588	0.000	4049.717	0.000
L37	64.25 - 64 (37)	TP36.084x36.037x0.875	2392.225	4761.442	0.502	0.000	4761.442	0.000
L38	64 - 60.5 (38)	TP36.73x36.084x0.863	2523.133	4874.483	0.518	0.000	4874.483	0.000
L39	60.5 - 60.25 (39)	TP36.776x36.73x0.925	2532.558	5214.017	0.486	0.000	5214.017	0.000
L40	60.25 - 60.083 (40)	TP36.807x36.776x0.925	2538.850	5223.100	0.486	0.000	5223.100	0.000
L41	60.083 - 59.833 (41)	TP36.853x36.807x0.975	2548.292	5496.767	0.464	0.000	5496.767	0.000
L42	59.833 - 59.083 (42)	TP36.991x36.853x0.975	2576.658	5539.833	0.465	0.000	5539.833	0.000
L43	59.083 - 58.833 (43)	TP37.037x36.991x1.05	2586.133	5944.233	0.435	0.000	5944.233	0.000
L44	58.833 - 55.4167 (44)	TP37.668x37.037x1.025	2716.500	6023.125	0.451	0.000	6023.125	0.000
L45	55.4167 - 55.1667 (45)	TP37.714x37.668x1.025	2726.100	6038.508	0.451	0.000	6038.508	0.000
L46	55.1667 - 54.75 (46)	TP37.791x37.714x1.025	2742.133	6064.200	0.452	0.000	6064.200	0.000
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	2751.758	4973.558	0.553	0.000	4973.558	0.000
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	2946.042	5153.383	0.572	0.000	5153.383	0.000
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	3143.533	5331.733	0.590	0.000	5331.733	0.000
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	3273.625	5418.442	0.604	0.000	5418.442	0.000
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	3283.692	5994.733	0.548	0.000	5994.733	0.000
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	3364.517	6108.683	0.551	0.000	6108.683	0.000
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	3598.717	8820.250	0.408	0.000	8820.250	0.000
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	3673.208	8968.417	0.410	0.000	8968.417	0.000
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	3683.642	8989.167	0.410	0.000	8989.167	0.000
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	3714.983	9051.667	0.410	0.000	9051.667	0.000
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	3725.450	8718.833	0.427	0.000	8718.833	0.000
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	3915.733	8897.583	0.440	0.000	8897.583	0.000
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	3926.417	8354.917	0.470	0.000	8354.917	0.000
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	3962.092	8417.417	0.471	0.000	8417.417	0.000
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	3972.825	7668.250	0.518	0.000	7668.250	0.000
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	3990.733	7599.491	0.525	0.000	7599.491	0.000
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	4001.500	8486.500	0.472	0.000	8486.500	0.000
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	4219.075	8667.083	0.487	0.000	8667.083	0.000
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	4426.042	8917.250	0.496	0.000	8917.250	0.000
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	4437.942	8726.250	0.509	0.000	8726.250	0.000
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	4444.658	8737.333	0.509	0.000	8737.333	0.000
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	4587.317	8865.000	0.517	0.000	8865.000	0.000
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	4598.642	8444.583	0.545	0.000	8444.583	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 $\frac{M_{uy}}{\phi M_{ny}}$
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	4827.233	8570.833	0.563	0.000	8570.833	0.000
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	4935.967	7549.941	0.654	0.000	7549.941	0.000
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	4947.575	7565.183	0.654	0.000	7565.183	0.000
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	4954.550	7574.333	0.654	0.000	7574.333	0.000
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	4966.175	8782.417	0.565	0.000	8782.417	0.000
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	4981.683	8806.083	0.566	0.000	8806.083	0.000
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	4993.333	7866.591	0.635	0.000	7866.591	0.000
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	5071.258	7850.075	0.646	0.000	7850.075	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160.333 - 155.333 (1)	TP16x16x0.375	8.288	173.953	0.048	1.247	238.964	0.005
L2	155.333 - 150.333 (2)	TP16x16x0.375	8.893	173.953	0.051	1.338	238.964	0.006
L3	150.333 - 146.833 (3)	TP16x16x0.375	9.309	173.953	0.054	1.401	238.964	0.006
L4	146.833 - 146.333 (4)	TP22x22x0.375	9.348	240.752	0.039	1.401	457.725	0.003
L5	146.333 - 141.333 (5)	TP22.924x22x0.25	15.152	295.692	0.051	1.400	589.750	0.002
L6	141.333 - 136.333 (6)	TP23.848x22.924x0.25	16.362	307.742	0.053	1.400	638.797	0.002
L7	136.333 - 131.333 (7)	TP24.772x23.848x0.25	21.830	319.792	0.068	2.522	689.803	0.004
L8	131.333 - 126.333 (8)	TP25.696x24.772x0.25	22.907	331.843	0.069	2.520	742.768	0.003
L9	126.333 - 121.333 (9)	TP26.62x25.696x0.25	23.524	343.893	0.068	2.518	797.692	0.003
L10	121.333 - 120.083 (10)	TP26.851x26.62x0.25	23.688	346.905	0.068	2.517	811.728	0.003
L11	120.083 - 119.833 (11)	TP26.897x26.851x0.488	23.711	671.601	0.035	2.517	1560.183	0.002
L12	119.833 - 117.5 (12)	TP27.328x26.897x0.488	24.149	682.565	0.035	2.552	1611.542	0.002
L13	117.5 - 117.25 (13)	TP27.375x27.328x0.5	24.191	700.945	0.035	2.555	1657.017	0.002
L14	117.25 - 115.5 (14)	TP27.698x27.375x0.5	24.534	709.380	0.035	2.581	1697.142	0.002
L15	115.5 - 115.25 (15)	TP27.744x27.698x0.663	24.572	935.910	0.026	2.585	2229.517	0.001
L16	115.25 - 110.25 (16)	TP28.668x27.744x0.65	29.203	950.006	0.031	2.899	2341.358	0.001
L17	110.25 - 104.083 (17)	TP29.808x28.668x0.638	29.675	947.086	0.031	2.939	2372.617	0.001
L18	104.083 - 102.82 (18)	TP29.541x28.617x0.7	30.755	1053.110	0.029	3.022	2671.650	0.001
L19	102.82 - 100.5 (19)	TP29.969x29.541x0.688	31.283	1050.120	0.030	3.262	2704.783	0.001
L20	100.5 - 100.25 (20)	TP30.015x29.969x0.638	31.322	976.943	0.032	3.266	2524.575	0.001
L21	100.25 - 98.5 (21)	TP30.338x30.015x0.625	31.604	968.731	0.033	3.266	2531.950	0.001
L22	98.5 - 98.25 (22)	TP30.385x30.338x0.663	31.624	1027.150	0.031	3.266	2685.433	0.001
L23	98.25 - 93.25 (23)	TP31.308x30.385x0.65	32.361	1039.500	0.031	3.264	2803.283	0.001
L24	93.25 - 90.5 (24)	TP31.816x31.308x0.638	32.760	1036.820	0.032	3.264	2843.492	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 $\frac{T_u}{\phi T_n}$
L25	90.5 - 90.25 (25)	TP31.862x31.816x0.688	32.782	1118.000	0.029	3.263	3065.750	0.001
L26	90.25 - 85.25 (26)	TP32.785x31.862x0.675	33.531	1130.620	0.030	3.262	3193.433	0.001
L27	85.25 - 83.5 (27)	TP33.108x32.785x0.663	33.813	1121.280	0.030	3.261	3200.158	0.001
L28	83.5 - 83.25 (28)	TP33.154x33.108x0.913	33.843	1534.700	0.022	3.264	4352.558	0.001
L29	83.25 - 80.75 (29)	TP33.616x33.154x0.888	34.367	1515.190	0.023	3.290	4362.067	0.001
L30	80.75 - 80.5 (30)	TP33.662x33.616x1.063	34.398	1806.810	0.019	3.290	5181.158	0.001
L31	80.5 - 80.25 (31)	TP33.708x33.662x0.975	34.441	1664.820	0.021	3.290	4793.542	0.001
L32	80.25 - 77.5 (32)	TP34.216x33.708x0.963	34.914	1669.600	0.021	3.289	4883.725	0.001
L33	77.5 - 77.25 (33)	TP34.262x34.216x0.688	34.941	1204.090	0.029	3.289	3556.083	0.001
L34	77.25 - 68.82 (34)	TP35.819x34.262x0.688	35.568	1230.300	0.029	3.288	3712.625	0.001
L35	68.82 - 68.291 (35)	TP35.291x34.368x0.75	36.485	1351.360	0.027	3.287	4105.942	0.001
L36	68.291 - 64.25 (36)	TP36.037x35.291x0.738	37.099	1358.020	0.027	3.286	4216.775	0.001
L37	64.25 - 64 (37)	TP36.084x36.037x0.875	37.123	1607.040	0.023	3.286	4977.092	0.001
L38	64 - 60.5 (38)	TP36.73x36.084x0.863	37.673	1613.720	0.023	3.285	5091.250	0.001
L39	60.5 - 60.25 (39)	TP36.776x36.73x0.925	37.697	1729.860	0.022	3.285	5455.208	0.001
L40	60.25 - 60.083 (40)	TP36.807x36.776x0.925	37.721	1731.350	0.022	3.285	5464.592	0.001
L41	60.083 - 59.833 (41)	TP36.853x36.807x0.975	37.759	1824.740	0.021	3.285	5758.741	0.001
L42	59.833 - 59.083 (42)	TP36.991x36.853x0.975	37.874	1831.780	0.021	3.285	5803.267	0.001
L43	59.083 - 58.833 (43)	TP37.037x36.991x1.05	37.903	1971.110	0.019	3.285	6239.667	0.001
L44	58.833 - 55.4167 (44)	TP37.668x37.037x1.025	38.406	1959.240	0.020	3.284	6315.083	0.001
L45	55.4167 - 55.1667 (45)	TP37.714x37.668x1.025	38.428	1961.700	0.020	3.284	6331.000	0.001
L46	55.1667 - 54.75 (46)	TP37.791x37.714x1.025	38.490	1965.820	0.020	3.284	6357.575	0.001
L47	54.75 - 54.5 (47)	TP37.837x37.791x0.825	38.521	1592.840	0.024	3.284	5185.817	0.001
L48	54.5 - 49.5 (48)	TP38.76x37.837x0.813	39.184	1608.350	0.024	3.283	5368.692	0.001
L49	49.5 - 44.5 (49)	TP39.683x38.76x0.8	39.820	1622.650	0.025	3.282	5549.942	0.001
L50	44.5 - 41.25 (50)	TP40.283x39.683x0.788	40.253	1622.460	0.025	3.282	5636.683	0.001
L51	41.25 - 41 (51)	TP40.329x40.283x0.875	40.268	1800.840	0.022	3.282	6249.875	0.001
L52	41 - 34.291 (52)	TP41.568x40.329x0.875	40.546	1817.690	0.022	3.282	6367.400	0.001
L53	34.291 - 33.291 (53)	TP40.996x39.949x1.175	41.473	2644.100	0.016	3.281	9261.583	0.000
L54	33.291 - 31.5 (54)	TP41.324x40.996x1.175	41.727	2665.910	0.016	3.281	9415.000	0.000
L55	31.5 - 31.25 (55)	TP41.37x41.324x1.175	41.733	2668.950	0.016	3.281	9436.500	0.000
L56	31.25 - 30.5 (56)	TP41.507x41.37x1.175	41.841	2678.080	0.016	3.281	9501.167	0.000
L57	30.5 - 30.25 (57)	TP41.553x41.507x1.125	41.864	2570.210	0.016	3.281	9140.167	0.000
L58	30.25 - 25.75 (58)	TP42.378x41.553x1.1	42.700	2565.950	0.017	3.335	9316.833	0.000
L59	25.75 - 25.5 (59)	TP42.424x42.378x1.025	42.728	2397.990	0.018	3.339	8732.500	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L60	25.5 - 24.6667 (60)	TP42.577x42.424x1.025	42.900	2406.850	0.018	3.351	8797.083	0.000
L61	24.6667 - 24.4167 (61)	TP42.623x42.577x0.925	42.934	2179.660	0.020	3.354	7994.675	0.000
L62	24.4167 - 24 (62)	TP42.699x42.623x0.913	43.014	2154.780	0.020	3.361	7920.300	0.000
L63	24 - 23.75 (63)	TP42.745x42.699x1.025	43.056	2416.580	0.018	3.364	8868.417	0.000
L64	23.75 - 18.75 (64)	TP43.662x42.745x1	43.969	2410.870	0.018	3.446	9047.167	0.000
L65	18.75 - 14.083 (65)	TP44.518x43.662x0.988	44.737	2429.180	0.018	3.514	9301.417	0.000
L66	14.083 - 13.817 (66)	TP44.566x44.518x0.963	44.758	2371.700	0.019	3.517	9096.750	0.000
L67	13.817 - 13.667 (67)	TP44.594x44.566x0.963	44.779	2373.190	0.019	3.518	9108.167	0.000
L68	13.667 - 10.5 (68)	TP45.175x44.594x0.95	45.304	2374.220	0.019	3.542	9236.000	0.000
L69	10.5 - 10.25 (69)	TP45.22x45.175x0.9	45.322	2254.140	0.020	3.543	8787.917	0.000
L70	10.25 - 5.25 (70)	TP46.137x45.22x0.875	46.109	2238.090	0.021	3.570	8910.750	0.000
L71	5.25 - 2.9 (71)	TP46.568x46.137x0.75	46.458	1941.930	0.024	3.583	7826.558	0.000
L72	2.9 - 2.65 (72)	TP46.614x46.568x0.75	46.463	1943.870	0.024	3.584	7842.225	0.000
L73	2.65 - 2.5 (73)	TP46.642x46.614x0.75	46.482	1945.030	0.024	3.585	7851.633	0.000
L74	2.5 - 2.25 (74)	TP46.687x46.642x0.875	46.522	2265.290	0.021	3.586	9128.667	0.000
L75	2.25 - 1.917 (75)	TP46.748x46.687x0.875	46.575	2268.310	0.021	3.588	9153.000	0.000
L76	1.917 - 1.667 (76)	TP46.794x46.748x0.775	46.610	2015.460	0.023	3.589	8158.591	0.000
L77	1.667 - 0 (77)	TP47.1x46.794x0.763	46.899	1996.670	0.023	3.599	8138.375	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160.333 - 155.333 (1)	0.008	0.050	0.000	0.048	0.005	0.060	1.050	4.8.2
L2	155.333 - 150.333 (2)	0.008	0.229	0.000	0.051	0.006	0.240	1.050	4.8.2
L3	150.333 - 146.833 (3)	0.009	0.361	0.000	0.054	0.006	0.374	1.050	4.8.2
L4	146.833 - 146.333 (4)	0.007	0.199	0.000	0.039	0.003	0.207	1.050	4.8.2
L5	146.333 - 141.333 (5)	0.010	0.297	0.000	0.051	0.002	0.311	1.050	4.8.2
L6	141.333 - 136.333 (6)	0.011	0.409	0.000	0.053	0.002	0.423	1.050	4.8.2
L7	136.333 - 131.333 (7)	0.014	0.528	0.000	0.068	0.004	0.548	1.050	4.8.2
L8	131.333 - 126.333 (8)	0.015	0.662	0.000	0.069	0.003	0.683	1.050	4.8.2
L9	126.333 - 121.333 (9)	0.015	0.786	0.000	0.068	0.003	0.806	1.050	4.8.2
L10	121.333 - 120.083 (10)	0.015	0.815	0.000	0.068	0.003	0.835	1.050	4.8.2
L11	120.083 - 119.833 (11)	0.008	0.401	0.000	0.035	0.002	0.410	1.050	4.8.2
L12	119.833 - 117.5 (12)	0.008	0.424	0.000	0.035	0.002	0.433	1.050	4.8.2
L13	117.5 - 117.25 (13)	0.008	0.416	0.000	0.035	0.002	0.425	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L14	117.25 - 115.5 (14)	0.008	0.432	0.000	0.035	0.002	0.442	1.050	4.8.2
L15	115.5 - 115.25 (15)	0.006	0.334	0.000	0.026	0.001	0.341	1.050	4.8.2
L16	115.25 - 110.25 (16)	0.007	0.380	0.000	0.031	0.001	0.388	1.050	4.8.2
L17	110.25 - 104.083 (17)	0.007	0.406	0.000	0.031	0.001	0.414	1.050	4.8.2
L18	104.083 - 102.82 (18)	0.007	0.420	0.000	0.029	0.001	0.428	1.050	4.8.2
L19	102.82 - 100.5 (19)	0.008	0.442	0.000	0.030	0.001	0.451	1.050	4.8.2
L20	100.5 - 100.25 (20)	0.008	0.476	0.000	0.032	0.001	0.486	1.050	4.8.2
L21	100.25 - 98.5 (21)	0.008	0.497	0.000	0.033	0.001	0.507	1.050	4.8.2
L22	98.5 - 98.25 (22)	0.008	0.473	0.000	0.031	0.001	0.482	1.050	4.8.2
L23	98.25 - 93.25 (23)	0.008	0.512	0.000	0.031	0.001	0.521	1.050	4.8.2
L24	93.25 - 90.5 (24)	0.009	0.537	0.000	0.032	0.001	0.547	1.050	4.8.2
L25	90.5 - 90.25 (25)	0.008	0.501	0.000	0.029	0.001	0.510	1.050	4.8.2
L26	90.25 - 85.25 (26)	0.008	0.535	0.000	0.030	0.001	0.544	1.050	4.8.2
L27	85.25 - 83.5 (27)	0.009	0.553	0.000	0.030	0.001	0.562	1.050	4.8.2
L28	83.5 - 83.25 (28)	0.006	0.412	0.000	0.022	0.001	0.418	1.050	4.8.2
L29	83.25 - 80.75 (29)	0.007	0.431	0.000	0.023	0.001	0.438	1.050	4.8.2
L30	80.75 - 80.5 (30)	0.006	0.366	0.000	0.019	0.001	0.372	1.050	4.8.2
L31	80.5 - 80.25 (31)	0.006	0.397	0.000	0.021	0.001	0.403	1.050	4.8.2
L32	80.25 - 77.5 (32)	0.006	0.410	0.000	0.021	0.001	0.416	1.050	4.8.2
L33	77.5 - 77.25 (33)	0.009	0.560	0.000	0.029	0.001	0.570	1.050	4.8.2
L34	77.25 - 68.82 (34)	0.009	0.576	0.000	0.029	0.001	0.586	1.050	4.8.2
L35	68.82 - 68.291 (35)	0.009	0.567	0.000	0.027	0.001	0.577	1.050	4.8.2
L36	68.291 - 64.25 (36)	0.009	0.588	0.000	0.027	0.001	0.599	1.050	4.8.2
L37	64.25 - 64 (37)	0.008	0.502	0.000	0.023	0.001	0.511	1.050	4.8.2
L38	64 - 60.5 (38)	0.008	0.518	0.000	0.023	0.001	0.526	1.050	4.8.2
L39	60.5 - 60.25 (39)	0.008	0.486	0.000	0.022	0.001	0.494	1.050	4.8.2
L40	60.25 - 60.083 (40)	0.008	0.486	0.000	0.022	0.001	0.494	1.050	4.8.2
L41	60.083 - 59.833 (41)	0.007	0.464	0.000	0.021	0.001	0.471	1.050	4.8.2
L42	59.833 - 59.083 (42)	0.007	0.465	0.000	0.021	0.001	0.473	1.050	4.8.2
L43	59.083 - 58.833 (43)	0.007	0.435	0.000	0.019	0.001	0.442	1.050	4.8.2
L44	58.833 - 55.4167 (44)	0.007	0.451	0.000	0.020	0.001	0.459	1.050	4.8.2
L45	55.4167 - 55.1667 (45)	0.007	0.451	0.000	0.020	0.001	0.459	1.050	4.8.2
L46	55.1667 - 54.75 (46)	0.007	0.452	0.000	0.020	0.001	0.460	1.050	4.8.2
L47	54.75 - 54.5 (47)	0.009	0.553	0.000	0.024	0.001	0.563	1.050	4.8.2
L48	54.5 - 49.5 (48)	0.009	0.572	0.000	0.024	0.001	0.582	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L49	49.5 - 44.5 (49)	0.010	0.590	0.000	0.025	0.001	0.600	1.050	4.8.2
L50	44.5 - 41.25 (50)	0.010	0.604	0.000	0.025	0.001	0.615	1.050	4.8.2
L51	41.25 - 41 (51)	0.009	0.548	0.000	0.022	0.001	0.557	1.050	4.8.2
L52	41 - 34.291 (52)	0.009	0.551	0.000	0.022	0.001	0.560	1.050	4.8.2
L53	34.291 - 33.291 (53)	0.007	0.408	0.000	0.016	0.000	0.415	1.050	4.8.2
L54	33.291 - 31.5 (54)	0.007	0.410	0.000	0.016	0.000	0.417	1.050	4.8.2
L55	31.5 - 31.25 (55)	0.007	0.410	0.000	0.016	0.000	0.417	1.050	4.8.2
L56	31.25 - 30.5 (56)	0.007	0.410	0.000	0.016	0.000	0.418	1.050	4.8.2
L57	30.5 - 30.25 (57)	0.007	0.427	0.000	0.016	0.000	0.435	1.050	4.8.2
L58	30.25 - 25.75 (58)	0.008	0.440	0.000	0.017	0.000	0.448	1.050	4.8.2
L59	25.75 - 25.5 (59)	0.008	0.470	0.000	0.018	0.000	0.479	1.050	4.8.2
L60	25.5 - 24.6667 (60)	0.008	0.471	0.000	0.018	0.000	0.479	1.050	4.8.2
L61	24.6667 - 24.4167 (61)	0.009	0.518	0.000	0.020	0.000	0.528	1.050	4.8.2
L62	24.4167 - 24 (62)	0.009	0.525	0.000	0.020	0.000	0.535	1.050	4.8.2
L63	24 - 23.75 (63)	0.008	0.472	0.000	0.018	0.000	0.480	1.050	4.8.2
L64	23.75 - 18.75 (64)	0.009	0.487	0.000	0.018	0.000	0.496	1.050	4.8.2
L65	18.75 - 14.083 (65)	0.009	0.496	0.000	0.018	0.000	0.506	1.050	4.8.2
L66	14.083 - 13.817 (66)	0.009	0.509	0.000	0.019	0.000	0.518	1.050	4.8.2
L67	13.817 - 13.667 (67)	0.009	0.509	0.000	0.019	0.000	0.518	1.050	4.8.2
L68	13.667 - 10.5 (68)	0.010	0.517	0.000	0.019	0.000	0.527	1.050	4.8.2
L69	10.5 - 10.25 (69)	0.010	0.545	0.000	0.020	0.000	0.555	1.050	4.8.2
L70	10.25 - 5.25 (70)	0.011	0.563	0.000	0.021	0.000	0.574	1.050	4.8.2
L71	5.25 - 2.9 (71)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L72	2.9 - 2.65 (72)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L73	2.65 - 2.5 (73)	0.012	0.654	0.000	0.024	0.000	0.667	1.050	4.8.2
L74	2.5 - 2.25 (74)	0.011	0.565	0.000	0.021	0.000	0.577	1.050	4.8.2
L75	2.25 - 1.917 (75)	0.011	0.566	0.000	0.021	0.000	0.577	1.050	4.8.2
L76	1.917 - 1.667 (76)	0.012	0.635	0.000	0.023	0.000	0.647	1.050	4.8.2
L77	1.667 - 0 (77)	0.012	0.646	0.000	0.023	0.000	0.659	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160.333 - 155.333	Pole	TP16x16x0.375	1	-4.482	608.837	5.7	Pass
L2	155.333 - 150.333	Pole	TP16x16x0.375	2	-4.912	608.837	22.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L3	150.333 - 146.833	Pole	TP16x16x0.375	3	-5.225	608.837	35.6	Pass
L4	146.833 - 146.333	Pole	TP22x22x0.375	4	-5.288	842.630	19.7	Pass
L5	146.333 - 141.333	Pole	TP22.924x22x0.25	5	-10.215	1034.922	29.6	Pass
L6	141.333 - 136.333	Pole	TP23.848x22.924x0.25	6	-11.037	1077.100	40.3	Pass
L7	136.333 - 131.333	Pole	TP24.772x23.848x0.25	7	-15.348	1119.268	52.1	Pass
L8	131.333 - 126.333	Pole	TP25.696x24.772x0.25	8	-16.399	1161.447	65.0	Pass
L9	126.333 - 121.333	Pole	TP26.62x25.696x0.25	9	-17.175	1203.625	76.8	Pass
L10	121.333 - 120.083	Pole	TP26.851x26.62x0.25	10	-17.370	1214.167	79.6	Pass
L11	120.083 - 119.833	Pole	TP26.897x26.851x0.488	11	-17.444	2350.603	39.1	Pass
L12	119.833 - 117.5	Pole	TP27.328x26.897x0.488	12	-17.937	2388.981	41.3	Pass
L13	117.5 - 117.25	Pole	TP27.375x27.328x0.5	13	-18.005	2453.304	40.5	Pass
L14	117.25 - 115.5	Pole	TP27.698x27.375x0.5	14	-18.402	2482.830	42.1	Pass
L15	115.5 - 115.25	Pole	TP27.744x27.698x0.663	15	-18.485	3275.685	32.5	Pass
L16	115.25 - 110.25	Pole	TP28.668x27.744x0.65	16	-22.785	3325.024	36.9	Pass
L17	110.25 - 104.083	Pole	TP29.808x28.668x0.638	17	-23.466	3314.797	39.5	Pass
L18	104.083 - 102.82	Pole	TP29.541x28.617x0.7	18	-25.795	3685.888	40.8	Pass
L19	102.82 - 100.5	Pole	TP29.969x29.541x0.688	19	-26.592	3675.409	42.9	Pass
L20	100.5 - 100.25	Pole	TP30.015x29.969x0.638	20	-26.679	3419.304	46.3	Pass
L21	100.25 - 98.5	Pole	TP30.338x30.015x0.625	21	-27.202	3390.555	48.3	Pass
L22	98.5 - 98.25	Pole	TP30.385x30.338x0.663	22	-27.303	3595.042	45.9	Pass
L23	98.25 - 93.25	Pole	TP31.308x30.385x0.65	23	-28.919	3638.260	49.6	Pass
L24	93.25 - 90.5	Pole	TP31.816x31.308x0.638	24	-29.825	3628.852	52.0	Pass
L25	90.5 - 90.25	Pole	TP31.862x31.816x0.688	25	-29.934	3912.982	48.6	Pass
L26	90.25 - 85.25	Pole	TP32.785x31.862x0.675	26	-31.777	3957.166	51.8	Pass
L27	85.25 - 83.5	Pole	TP33.108x32.785x0.663	27	-32.423	3924.480	53.6	Pass
L28	83.5 - 83.25	Pole	TP33.154x33.108x0.913	28	-32.557	5371.464	39.9	Pass
L29	83.25 - 80.75	Pole	TP33.616x33.154x0.888	29	-33.650	5303.151	41.7	Pass
L30	80.75 - 80.5	Pole	TP33.662x33.616x1.063	30	-33.784	6323.845	35.5	Pass
L31	80.5 - 80.25	Pole	TP33.708x33.662x0.975	31	-33.904	5826.859	38.4	Pass
L32	80.25 - 77.5	Pole	TP34.216x33.708x0.963	32	-35.211	5843.586	39.7	Pass
L33	77.5 - 77.25	Pole	TP34.262x34.216x0.688	33	-35.327	4214.301	54.3	Pass
L34	77.25 - 68.82	Pole	TP35.819x34.262x0.688	34	-36.968	4306.060	55.8	Pass
L35	68.82 - 68.291	Pole	TP35.291x34.368x0.75	35	-40.713	4729.777	54.9	Pass
L36	68.291 - 64.25	Pole	TP36.029x35.291x0.738	36	-42.539	4753.077	57.0	Pass
L37	64.25 - 64	Pole	TP36.084x36.037x0.875	37	-42.673	5624.650	48.7	Pass
L38	64 - 60.5	Pole	TP36.73x36.084x0.863	38	-44.355	5648.013	50.1	Pass
L39	60.5 - 60.25	Pole	TP36.776x36.73x0.925	39	-44.496	6054.520	47.0	Pass
L40	60.25 - 60.083	Pole	TP36.807x36.776x0.925	40	-44.583	6059.728	47.1	Pass
L41	60.083 - 59.833	Pole	TP36.853x36.807x0.975	41	-44.715	6386.593	44.9	Pass
L42	59.833 - 59.083	Pole	TP36.991x36.853x0.975	42	-45.105	6411.247	45.0	Pass
L43	59.083 - 58.833	Pole	TP37.037x36.991x1.05	43	-45.252	6898.888	42.1	Pass
L44	58.833 - 55.4167	Pole	TP37.668x37.037x1.025	44	-47.163	6857.329	43.7	Pass
L45	55.4167 - 55.1667	Pole	TP37.714x37.668x1.025	45	-47.316	6865.960	43.7	Pass
L46	55.1667 - 54.75	Pole	TP37.791x37.714x1.025	46	-47.550	6880.356	43.8	Pass
L47	54.75 - 54.5	Pole	TP37.837x37.791x0.825	47	-47.676	5574.922	53.6	Pass
L48	54.5 - 49.5	Pole	TP38.76x37.837x0.813	48	-50.167	5629.239	55.4	Pass
L49	49.5 - 44.5	Pole	TP39.683x38.76x0.8	49	-52.699	5679.271	57.1	Pass
L50	44.5 - 41.25	Pole	TP40.283x39.683x0.788	50	-54.362	5678.589	58.6	Pass
L51	41.25 - 41	Pole	TP40.329x40.283x0.875	51	-54.515	6302.940	53.1	Pass
L52	41 - 34.291	Pole	TP41.568x40.329x0.875	52	-55.617	6361.929	53.4	Pass
L53	34.291 - 33.291	Pole	TP40.996x39.949x1.175	53	-61.543	9254.353	39.5	Pass
L54	33.291 - 31.5	Pole	TP41.324x40.996x1.175	54	-62.705	9330.678	39.7	Pass
L55	31.5 - 31.25	Pole	TP41.37x41.324x1.175	55	-62.889	9341.325	39.7	Pass
L56	31.25 - 30.5	Pole	TP41.507x41.37x1.175	56	-63.380	9373.287	39.8	Pass
L57	30.5 - 30.25	Pole	TP41.553x41.507x1.125	57	-63.549	8995.749	41.4	Pass
L58	30.25 - 25.75	Pole	TP42.378x41.553x1.1	58	-66.460	8980.807	42.7	Pass
L59	25.75 - 25.5	Pole	TP42.424x42.378x1.025	59	-66.630	8392.986	45.6	Pass

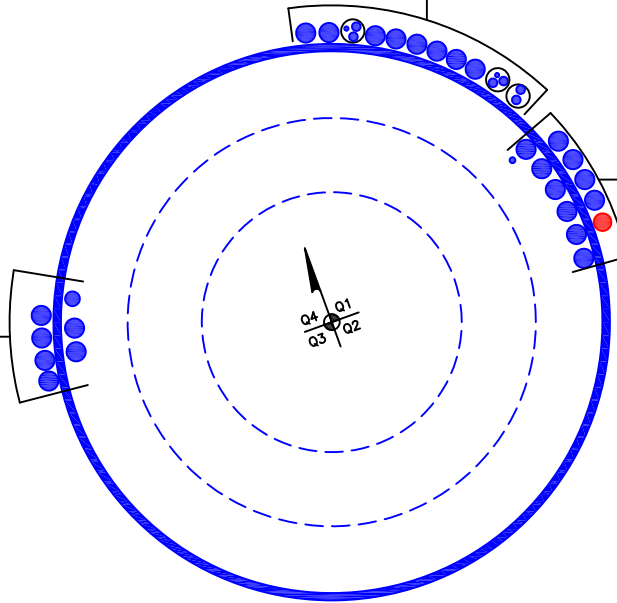
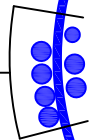
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L60	25.5 - 24.6667	Pole	TP42.577x42.424x1.025	60	-67.153	8423.961	45.7	Pass	
L61	24.6667 - 24.4167	Pole	TP42.623x42.577x0.925	61	-67.299	7628.796	50.3	Pass	
L62	24.4167 - 24	Pole	TP42.699x42.623x0.913	62	-67.527	7541.751	50.9	Pass	
L63	24 - 23.75	Pole	TP42.745x42.699x1.025	63	-67.674	8458.033	45.7	Pass	
L64	23.75 - 18.75	Pole	TP43.662x42.745x1	64	-70.554	8438.031	47.2	Pass	
L65	18.75 - 14.083	Pole	TP44.518x43.662x0.988	65	-73.277	8502.144	48.2	Pass	
L66	14.083 - 13.817	Pole	TP44.566x44.518x0.963	66	-73.450	8300.943	49.4	Pass	
L67	13.817 - 13.667	Pole	TP44.594x44.566x0.963	67	-73.542	8306.172	49.4	Pass	
L68	13.667 - 10.5	Pole	TP45.175x44.594x0.95	68	-75.433	8309.773	50.2	Pass	
L69	10.5 - 10.25	Pole	TP45.22x45.175x0.9	69	-75.592	7889.479	52.9	Pass	
L70	10.25 - 5.25	Pole	TP46.137x45.22x0.875	70	-78.523	7833.325	54.7	Pass	
L71	5.25 - 2.9	Pole	TP46.568x46.137x0.75	71	-79.761	6796.744	63.5	Pass	
L72	2.9 - 2.65	Pole	TP46.614x46.568x0.75	72	-79.912	6803.538	63.5	Pass	
L73	2.65 - 2.5	Pole	TP46.642x46.614x0.75	73	-79.993	6807.622	63.5	Pass	
L74	2.5 - 2.25	Pole	TP46.687x46.642x0.875	74	-80.131	7928.529	54.9	Pass	
L75	2.25 - 1.917	Pole	TP46.748x46.687x0.875	75	-80.316	7939.092	54.9	Pass	
L76	1.917 - 1.667	Pole	TP46.794x46.748x0.775	76	-80.449	7054.120	61.6	Pass	
L77	1.667 - 0	Pole	TP47.1x46.794x0.763	77	-81.305	6988.327	62.7	Pass	
							Summary		
							Pole (L10)	79.6	Pass
							RATING =	79.6	Pass

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

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 132 FT LEVEL
(6) 1-5/8" TO 132 FT LEVEL



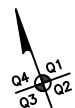
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 3/8" TO 156 FT LEVEL
(6) 3/4" TO 156 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 156 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/2" TO 114 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(4) 1-5/8" TO 146 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 139 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 101 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160.333	13.5	0	0	16	16	0.375		A53-B-35
2	146.833	0.5	0	0	22.00	22	0.375		A53-B-35
3	146.333	42.25	3.737	12	22.00	29.808	0.25	Auto	A607-60
4	107.82	39	4.471	12	28.62	35.819	0.3125	Auto	A607-60
5	73.291	39	4.709	12	34.37	41.568	0.375	Auto	A607-60
6	39	39	0	12	39.95	47.1	0.375	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	1.917	14.083	channel	MP3-04 (1.1875in)	2						E1	E1					
2	2.917	30.5	channel	MP3-05 (1.1875in)	2			E1								E1	
3	30.5	59.083	channel	MP3-04 (1.1875in)	2			E1								E1	
4	13.917	31.5	channel	MP3-05 (1.1875in)	1						E1						
5	31.5	60.083	channel	MP3-04 (1.1875in)	1							E1					
6	2.5	30.5	plate	MS-600 (1.1875")	3		E2			E2				E2			
7	30.5	60.5	plate	MS-650 (1.1875")	3		E2			E2				E2			
8	60.5	80.5	plate	MS-600 (1.1875")	3		E2			E2				E2			
9	80.5	98.5	plate	MS-600 (1.1875")	2					E2				E2			
10	80.5	100.5	plate	MS-650 (1.1875")	1		E2										
11	100.5	117.5	plate	CCI-SFP-045100	1				E3								
12	98.5	115.5	plate	CCI-SFP-045100	2								E3				E3
13	3	10.5	plate	CCI-AFP-060100	1												E4
14	10.5	41.25	plate	CCI-AFP-085125	1												E4
15	64.25	80.75	plate	CCI-AFP-085125	1												E4
16	24.6667	55.41667	plate	CCI-AFP-085125	2						E5				E5		
17	55.41667	90.5	plate	CCI-AFP-085125	2						E5				E5		
18	90.5	120.083	plate	CCI-AFP-060100	2						E5				E5		
19	100.5	120.083	plate	CCI-AFP-060100	1		E5										
20	25.75	35.25	plate	MS-650 (1.1875")	3	E2			E2				E2				
21	54.75	64.25	plate	MS-600 (1.1875")	3	E2			E2				E2				
22	77.5	83.5	plate	MS-600 (1.1875")	3	E2			E2				E2				
23	0	24	plate	TS-5.875x1.25	4		-5.5	-5.5			-5.5					-5.5	
24	0	2.5	plate	ARB-5.875x1.25	4	E4			E4			E4				E4	
25	24	25.75	plate	TS-5.875x1.25	3		-5.5				-5.5					-5.5	
26																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
2	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
3	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
4	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
5	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
7	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
8	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
9	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
10	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
11	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
13	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
14	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
15	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
16	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
17	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
18	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
19	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
20	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
21	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
22	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
23	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	A572-65
24	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	A572-65
25	1.25	5.125	6.40625	2.5625	Welded	n/a	Welded	n/a	0.750	6.406	0.0000	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)
TS-5.875x1.25	Top	-	-	-	-	70	None	-	-	-	-	342	0.250	-
	Bottom	-	-	-	-	70	CJP Groove	10.25	0.625	45	0.5	-	-	-
ARB-5.875x1.25	Top	-	-	-	-	70	None	-	-	-	-	342	0.250	-
	Bottom	-	-	-	-	70	CJP Groove	10.25	0.625	45	0.5	-	-	-

TNX Geometry Input

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

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	160.333 - 155.333	5		0	16.000	16.000	0.375	A53-B-35	1.000
2	155.333 - 150.333	5		0	16.000	16.000	0.375	A53-B-35	1.000
3	150.333 - 146.833	3.5	0	0	16.000	16.000	0.375	A53-B-35	1.000
4	146.833 - 146.333	0.5	0	0	22.000	22.000	0.375	A53-B-35	1.000
5	146.333 - 141.333	5		12	22.000	22.924	0.25	A607-60	1.000
6	141.333 - 136.333	5		12	22.924	23.848	0.25	A607-60	1.000
7	136.333 - 131.333	5		12	23.848	24.772	0.25	A607-60	1.000
8	131.333 - 126.333	5		12	24.772	25.696	0.25	A607-60	1.000
9	126.333 - 121.333	5		12	25.696	26.620	0.25	A607-60	1.000
10	121.333 - 120.083	1.25		12	26.620	26.851	0.25	A607-60	1.000
11	120.083 - 119.833	0.25		12	26.851	26.897	0.4875	A607-60	0.952
12	119.833 - 117.5	2.333		12	26.897	27.328	0.4875	A607-60	0.945
13	117.5 - 117.25	0.25		12	27.328	27.375	0.5	A607-60	1.025
14	117.25 - 115.5	1.75		12	27.375	27.698	0.5	A607-60	1.019
15	115.5 - 115.25	0.25		12	27.698	27.744	0.6625	A607-60	0.929
16	115.25 - 110.25	5		12	27.744	28.668	0.65	A607-60	0.928
17	110.25 - 107.82	6.167	3.737	12	28.668	29.808	0.6375	A607-60	0.937
18	107.82 - 102.82	5		12	28.617	29.541	0.7	A607-60	0.938
19	102.82 - 100.5	2.32		12	29.541	29.969	0.6875	A607-60	0.947
20	100.5 - 100.25	0.25		12	29.969	30.015	0.6375	A607-60	0.979
21	100.25 - 98.5	1.75		12	30.015	30.338	0.625	A607-60	0.993
22	98.5 - 98.25	0.25		12	30.338	30.385	0.6625	A607-60	0.985
23	98.25 - 93.25	5		12	30.385	31.308	0.65	A607-60	0.987
24	93.25 - 90.5	2.75		12	31.308	31.816	0.6375	A607-60	0.998
25	90.5 - 90.25	0.25		12	31.816	31.862	0.6875	A607-60	1.060
26	90.25 - 85.25	5		12	31.862	32.785	0.675	A607-60	1.062
27	85.25 - 83.5	1.75		12	32.785	33.108	0.6625	A607-60	1.075
28	83.5 - 83.25	0.25		12	33.108	33.154	0.9125	A607-60	0.976
29	83.25 - 80.75	2.5		12	33.154	33.616	0.8875	A607-60	0.994
30	80.75 - 80.5	0.25		12	33.616	33.662	1.0625	A607-60	0.929
31	80.5 - 80.25	0.25		12	33.662	33.708	0.975	A607-60	0.988
32	80.25 - 77.5	2.75		12	33.708	34.216	0.9625	A607-60	0.991
33	77.5 - 77.25	0.25		12	34.216	34.262	0.6875	A607-60	1.132
34	77.25 - 73.291	8.43	4.471	12	34.262	35.819	0.6875	A607-60	1.117
35	73.291 - 68.291	5		12	34.368	35.291	0.75	A607-60	1.104
36	68.291 - 64.25	4.041		12	35.291	36.037	0.7375	A607-60	1.110
37	64.25 - 64	0.25		12	36.037	36.084	0.875	A607-60	1.013
38	64 - 60.5	3.5		12	36.084	36.730	0.8625	A607-60	1.016
39	60.5 - 60.25	0.25		12	36.730	36.776	0.925	A607-60	1.008
40	60.25 - 60.083	0.167		12	36.776	36.807	0.925	A607-60	1.008
41	60.083 - 59.833	0.25		12	36.807	36.853	0.975	A607-60	0.993
42	59.833 - 59.083	0.75		12	36.853	36.991	0.975	A607-60	0.991
43	59.083 - 58.833	0.25		12	36.991	37.037	1.05	A607-60	0.989
44	58.833 - 55.41667	3.41633		12	37.037	37.668	1.025	A607-60	1.002
45	55.41667 - 55.16667	0.25		12	37.668	37.714	1.025	A607-60	1.001
46	55.16667 - 54.75	0.41667		12	37.714	37.791	1.025	A607-60	1.000
47	54.75 - 54.5	0.25		12	37.791	37.837	0.825	A607-60	1.051
48	54.5 - 49.5	5		12	37.837	38.760	0.8125	A607-60	1.052
49	49.5 - 44.5	5		12	38.760	39.683	0.8	A607-60	1.054
50	44.5 - 41.25	3.25		12	39.683	40.283	0.7875	A607-60	1.061
51	41.25 - 41	0.25		12	40.283	40.329	0.875	A607-60	1.052
52	41 - 39	6.709	4.709	12	40.329	41.568	0.875	A607-60	1.047
53	39 - 33.291	5.709		12	39.949	40.996	1.175	A607-65	0.944
54	33.291 - 31.5	1.791		12	40.996	41.324	1.175	A607-65	0.939
55	31.5 - 31.25	0.25		12	41.324	41.370	1.175	A607-65	0.948
56	31.25 - 30.5	0.75		12	41.370	41.507	1.175	A607-65	0.946
57	30.5 - 30.25	0.25		12	41.507	41.553	1.125	A607-65	0.963
58	30.25 - 25.75	4.5		12	41.553	42.378	1.1	A607-65	0.972
59	25.75 - 25.5	0.25		12	42.378	42.424	1.025	A607-65	1.002
60	25.5 - 24.6667	0.8333		12	42.424	42.577	1.025	A607-65	1.000
61	24.6667 - 24.4167	0.25		12	42.577	42.623	0.925	A607-65	0.933
62	24.4167 - 24	0.4167		12	42.623	42.699	0.9125	A607-65	0.945
63	24 - 23.75	0.25		12	42.699	42.745	1.025	A607-65	0.889
64	23.75 - 18.75	5		12	42.745	43.662	1	A607-65	0.900
65	18.75 - 14.083	4.667		12	43.662	44.518	0.9875	A607-65	0.900
66	14.083 - 13.817	0.266		12	44.518	44.566	0.9625	A607-65	0.942
67	13.817 - 13.667	0.15		12	44.566	44.594	0.9625	A607-65	0.941
68	13.667 - 10.5	3.167		12	44.594	45.175	0.95	A607-65	0.946
69	10.5 - 10.25	0.25		12	45.175	45.220	0.9	A607-65	0.961
70	10.25 - 5.25	5		12	45.220	46.137	0.875	A607-65	0.977
71	5.25 - 2.9	2.35		12	46.137	46.568	0.75	A607-65	0.974
72	2.9 - 2.65	0.25		12	46.568	46.614	0.75	A607-65	0.973
73	2.65 - 2.5	0.15		12	46.614	46.642	0.75	A607-65	0.973
74	2.5 - 2.25	0.25		12	46.642	46.687	0.875	A607-65	0.895
75	2.25 - 1.917	0.333		12	46.687	46.748	0.875	A607-65	0.894
76	1.917 - 1.667	0.25		12	46.748	46.794	0.775	A607-65	0.935
77	1.667 - 0	1.667		12	46.794	47.100	0.7625	A607-65	0.947

TNX Section Forces

Increment (ft):		TNX Output			
5					
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)	
1	160.333 - 155.333	4.48	11.96	8.29	
2	155.333 - 150.333	4.91	54.94	8.89	
3	150.333 - 146.833	5.22	86.82	9.31	
4	146.833 - 146.333	5.29	91.48	9.35	
5	146.333 - 141.333	10.22	166.85	15.15	
6	141.333 - 136.333	11.04	245.78	16.36	
7	136.333 - 131.333	15.35	337.90	21.83	
8	131.333 - 126.333	16.40	450.65	22.91	
9	126.333 - 121.333	17.17	566.71	23.52	
10	121.333 - 120.083	17.37	596.21	23.69	
11	120.083 - 119.833	17.44	602.14	23.71	
12	119.833 - 117.5	17.94	657.98	24.15	
13	117.5 - 117.25	18.01	664.02	24.19	
14	117.25 - 115.5	18.40	706.66	24.53	
15	115.5 - 115.25	18.48	712.80	24.57	
16	115.25 - 110.25	22.78	851.76	29.20	
17	110.25 - 107.82	23.47	923.30	29.67	
18	107.82 - 102.82	25.79	1074.44	30.76	
19	102.82 - 100.5	26.59	1146.26	31.28	
20	100.5 - 100.25	26.68	1154.08	31.32	
21	100.25 - 98.5	27.20	1209.14	31.60	
22	98.5 - 98.25	27.30	1217.05	31.62	
23	98.25 - 93.25	28.92	1377.03	32.36	
24	93.25 - 90.5	29.82	1466.56	32.76	
25	90.5 - 90.25	29.93	1474.75	32.78	
26	90.25 - 85.25	31.78	1640.56	33.53	
27	85.25 - 83.5	32.42	1699.47	33.81	
28	83.5 - 83.25	32.56	1707.93	33.84	
29	83.25 - 80.75	33.65	1793.20	34.37	
30	80.75 - 80.5	33.78	1801.80	34.40	
31	80.5 - 80.25	33.90	1810.41	34.44	
32	80.25 - 77.5	35.21	1905.78	34.91	
33	77.5 - 77.25	35.33	1914.52	34.94	
34	77.25 - 73.291	36.97	2054.09	35.57	
35	73.291 - 68.291	40.71	2234.27	36.49	
36	68.291 - 64.25	42.54	2382.95	37.10	
37	64.25 - 64	42.67	2392.23	37.12	
38	64 - 60.5	44.35	2523.13	37.67	
39	60.5 - 60.25	44.50	2532.55	37.70	
40	60.25 - 60.083	44.58	2538.85	37.72	
41	60.083 - 59.833	44.71	2548.29	37.76	
42	59.833 - 59.083	45.11	2576.66	37.87	
43	59.083 - 58.833	45.25	2586.13	37.90	
44	58.833 - 55.41667	47.16	2716.50	38.41	
45	55.41667 - 55.16667	47.32	2726.10	38.43	
46	55.16667 - 54.75	47.55	2742.13	38.49	
47	54.75 - 54.5	47.68	2751.76	38.52	
48	54.5 - 49.5	50.17	2946.04	39.18	
49	49.5 - 44.5	52.70	3143.53	39.82	
50	44.5 - 41.25	54.36	3273.63	40.25	
51	41.25 - 41	54.52	3283.69	40.27	
52	41 - 39	55.62	3364.52	40.55	
53	39 - 33.291	61.54	3598.71	41.47	
54	33.291 - 31.5	62.70	3673.21	41.73	
55	31.5 - 31.25	62.89	3683.64	41.73	
56	31.25 - 30.5	63.38	3714.98	41.84	
57	30.5 - 30.25	63.55	3725.45	41.86	
58	30.25 - 25.75	66.46	3915.73	42.70	
59	25.75 - 25.5	66.63	3926.41	42.73	
60	25.5 - 24.6667	67.15	3962.10	42.90	
61	24.6667 - 24.4167	67.30	3972.83	42.93	
62	24.4167 - 24	67.53	3990.74	43.01	
63	24 - 23.75	67.67	4001.50	43.06	
64	23.75 - 18.75	70.55	4219.08	43.97	
65	18.75 - 14.083	73.28	4426.04	44.74	
66	14.083 - 13.817	73.45	4437.94	44.76	
67	13.817 - 13.667	73.54	4444.66	44.78	
68	13.667 - 10.5	75.43	4587.32	45.30	
69	10.5 - 10.25	75.59	4598.64	45.32	
70	10.25 - 5.25	78.52	4827.23	46.11	
71	5.25 - 2.9	79.76	4935.96	46.46	
72	2.9 - 2.65	79.91	4947.58	46.46	
73	2.65 - 2.5	79.99	4954.55	46.48	
74	2.5 - 2.25	80.13	4966.18	46.52	
75	2.25 - 1.917	80.32	4981.68	46.58	
76	1.917 - 1.667	80.45	4993.33	46.61	
77	1.667 - 0	81.30	5071.26	46.90	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160.33 - 155.33	Pole	TP16x16x0.375	Pole	5.7%	Pass
155.33 - 150.33	Pole	TP16x16x0.375	Pole	22.8%	Pass
150.33 - 146.83	Pole	TP16x16x0.375	Pole	35.5%	Pass
146.83 - 146.33	Pole	TP22x22x0.375	Pole	19.7%	Pass
146.33 - 141.33	Pole	TP22.924x22x0.25	Pole	29.5%	Pass
141.33 - 136.33	Pole	TP23.848x22.924x0.25	Pole	40.2%	Pass
136.33 - 131.33	Pole	TP24.772x23.848x0.25	Pole	52.0%	Pass
131.33 - 126.33	Pole	TP25.696x24.772x0.25	Pole	64.8%	Pass
126.33 - 121.33	Pole	TP26.62x25.696x0.25	Pole	76.5%	Pass
121.33 - 120.08	Pole	TP26.851x26.62x0.25	Pole	79.3%	Pass
120.08 - 119.83	Pole + Reinf.	TP26.897x26.851x0.4875	Reinf. 18 Tension Rupture	55.1%	Pass
119.83 - 117.5	Pole + Reinf.	TP27.328x26.897x0.4875	Reinf. 18 Tension Rupture	58.8%	Pass
117.5 - 117.25	Pole + Reinf.	TP27.375x27.328x0.5	Reinf. 19 Tension Rupture	54.7%	Pass
117.25 - 115.5	Pole + Reinf.	TP27.698x27.375x0.5	Reinf. 19 Tension Rupture	57.2%	Pass
115.5 - 115.25	Pole + Reinf.	TP27.744x27.698x0.6625	Reinf. 11 Tension Rupture	50.4%	Pass
115.25 - 110.25	Pole + Reinf.	TP28.668x27.744x0.65	Reinf. 11 Tension Rupture	57.7%	Pass
110.25 - 107.82	Pole + Reinf.	TP29.808x28.668x0.6375	Reinf. 11 Tension Rupture	61.1%	Pass
107.82 - 102.82	Pole + Reinf.	TP29.541x28.617x0.7	Reinf. 11 Tension Rupture	63.3%	Pass
102.82 - 100.5	Pole + Reinf.	TP29.969x29.541x0.6875	Reinf. 11 Tension Rupture	66.2%	Pass
100.5 - 100.25	Pole + Reinf.	TP30.015x29.969x0.6375	Reinf. 18 Tension Rupture	67.6%	Pass
100.25 - 98.5	Pole + Reinf.	TP30.338x30.015x0.625	Reinf. 18 Tension Rupture	69.7%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.385x30.338x0.6625	Reinf. 10 Tension Rupture	66.7%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.308x30.385x0.65	Reinf. 10 Tension Rupture	72.1%	Pass
93.25 - 90.5	Pole + Reinf.	TP31.816x31.308x0.6375	Reinf. 10 Tension Rupture	74.9%	Pass
90.5 - 90.25	Pole + Reinf.	TP31.862x31.816x0.6875	Reinf. 10 Tension Rupture	73.9%	Pass
90.25 - 85.25	Pole + Reinf.	TP32.785x31.862x0.675	Reinf. 10 Tension Rupture	78.7%	Pass
85.25 - 83.5	Pole + Reinf.	TP33.108x32.785x0.6625	Reinf. 10 Tension Rupture	80.4%	Pass
83.5 - 83.25	Pole + Reinf.	TP33.154x33.108x0.9125	Reinf. 22 Tension Rupture	60.9%	Pass
83.25 - 80.75	Pole + Reinf.	TP33.616x33.154x0.8875	Reinf. 22 Tension Rupture	62.8%	Pass
80.75 - 80.5	Pole + Reinf.	TP33.662x33.616x1.0625	Reinf. 22 Tension Rupture	51.6%	Pass
80.5 - 80.25	Pole + Reinf.	TP33.708x33.662x0.975	Reinf. 8 Tension Rupture	55.6%	Pass
80.25 - 77.5	Pole + Reinf.	TP34.216x33.708x0.9625	Reinf. 8 Tension Rupture	57.3%	Pass
77.5 - 77.25	Pole + Reinf.	TP34.262x34.216x0.6875	Reinf. 8 Tension Rupture	80.2%	Pass
77.25 - 73.29	Pole + Reinf.	TP35.819x34.262x0.6875	Reinf. 8 Tension Rupture	83.4%	Pass
73.29 - 68.29	Pole + Reinf.	TP35.291x34.368x0.75	Reinf. 8 Tension Rupture	81.7%	Pass
68.29 - 64.25	Pole + Reinf.	TP36.037x35.291x0.7375	Reinf. 8 Tension Rupture	84.4%	Pass
64.25 - 64	Pole + Reinf.	TP36.084x36.037x0.875	Reinf. 21 Tension Rupture	74.4%	Pass
64 - 60.5	Pole + Reinf.	TP36.73x36.084x0.8625	Reinf. 21 Tension Rupture	76.5%	Pass
60.5 - 60.25	Pole + Reinf.	TP36.776x36.73x0.925	Reinf. 21 Tension Rupture	72.2%	Pass
60.25 - 60.08	Pole + Reinf.	TP36.807x36.776x0.925	Reinf. 21 Tension Rupture	72.3%	Pass
60.08 - 59.83	Pole + Reinf.	TP36.853x36.807x0.975	Reinf. 21 Tension Rupture	69.9%	Pass
59.83 - 59.08	Pole + Reinf.	TP36.991x36.853x0.975	Reinf. 21 Tension Rupture	70.3%	Pass
59.08 - 58.83	Pole + Reinf.	TP37.037x36.991x1.05	Reinf. 21 Tension Rupture	64.0%	Pass
58.83 - 55.42	Pole + Reinf.	TP37.668x37.037x1.025	Reinf. 21 Tension Rupture	65.7%	Pass
55.42 - 55.17	Pole + Reinf.	TP37.714x37.668x1.025	Reinf. 21 Tension Rupture	65.8%	Pass
55.17 - 54.75	Pole + Reinf.	TP37.791x37.714x1.025	Reinf. 21 Tension Rupture	66.0%	Pass
54.75 - 54.5	Pole + Reinf.	TP37.837x37.791x0.825	Reinf. 7 Tension Rupture	80.2%	Pass
54.5 - 49.5	Pole + Reinf.	TP38.76x37.837x0.8125	Reinf. 7 Tension Rupture	82.7%	Pass
49.5 - 44.5	Pole + Reinf.	TP39.683x38.76x0.8	Reinf. 7 Tension Rupture	85.2%	Pass
44.5 - 41.25	Pole + Reinf.	TP40.283x39.683x0.7875	Reinf. 7 Tension Rupture	86.7%	Pass
41.25 - 41	Pole + Reinf.	TP40.329x40.283x0.875	Reinf. 7 Tension Rupture	76.1%	Pass
41 - 39	Pole + Reinf.	TP41.568x40.329x0.875	Reinf. 7 Tension Rupture	76.9%	Pass
39 - 33.29	Pole + Reinf.	TP40.996x39.949x1.175	Reinf. 7 Tension Rupture	60.1%	Pass
33.29 - 31.5	Pole + Reinf.	TP41.324x40.996x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
31.5 - 31.25	Pole + Reinf.	TP41.37x41.324x1.175	Reinf. 7 Tension Rupture	60.4%	Pass
31.25 - 30.5	Pole + Reinf.	TP41.507x41.37x1.175	Reinf. 7 Tension Rupture	60.7%	Pass
30.5 - 30.25	Pole + Reinf.	TP41.553x41.507x1.125	Reinf. 6 Tension Rupture	63.7%	Pass
30.25 - 25.75	Pole + Reinf.	TP42.378x41.553x1.1	Reinf. 6 Tension Rupture	65.2%	Pass
25.75 - 25.5	Pole + Reinf.	TP42.424x42.378x1.025	Reinf. 6 Tension Rupture	71.4%	Pass
25.5 - 24.67	Pole + Reinf.	TP42.577x42.424x1.025	Reinf. 6 Tension Rupture	71.7%	Pass
24.67 - 24.42	Pole + Reinf.	TP42.623x42.577x0.925	Reinf. 6 Tension Rupture	78.9%	Pass
24.42 - 24	Pole + Reinf.	TP42.699x42.623x0.9125	Reinf. 6 Tension Rupture	79.0%	Pass
24 - 23.75	Pole + Reinf.	TP42.745x42.699x1.025	Reinf. 6 Tension Rupture	74.8%	Pass
23.75 - 18.75	Pole + Reinf.	TP43.662x42.745x1	Reinf. 6 Tension Rupture	76.6%	Pass
18.75 - 14.08	Pole + Reinf.	TP44.518x43.662x0.9875	Reinf. 6 Tension Rupture	78.3%	Pass
14.08 - 13.82	Pole + Reinf.	TP44.566x44.518x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.82 - 13.67	Pole + Reinf.	TP44.594x44.566x0.9625	Reinf. 1 Tension Rupture	76.5%	Pass
13.67 - 10.5	Pole + Reinf.	TP45.175x44.594x0.95	Reinf. 1 Tension Rupture	77.6%	Pass
10.5 - 10.25	Pole + Reinf.	TP45.22x45.175x0.9	Reinf. 13 Tension Rupture	80.1%	Pass
10.25 - 5.25	Pole + Reinf.	TP46.137x45.22x0.875	Reinf. 13 Tension Rupture	81.8%	Pass
5.25 - 2.9	Pole + Reinf.	TP46.568x46.137x0.75	Reinf. 23 Compression	92.7%	Pass
2.9 - 2.65	Pole + Reinf.	TP46.614x46.568x0.75	Reinf. 23 Compression	92.7%	Pass
2.65 - 2.5	Pole + Reinf.	TP46.642x46.614x0.75	Reinf. 23 Compression	92.8%	Pass
2.5 - 2.25	Pole + Reinf.	TP46.687x46.642x0.875	Reinf. 23 Compression	79.3%	Pass
2.25 - 1.92	Pole + Reinf.	TP46.748x46.687x0.875	Reinf. 23 Compression	79.4%	Pass
1.92 - 1.67	Pole + Reinf.	TP46.794x46.748x0.775	Reinf. 23 Compression	85.2%	Pass
1.67 - 0	Pole + Reinf.	TP47.1x46.794x0.7625	Reinf. 23 Compression	85.7%	Pass
				Summary	
			Pole	80.4%	Pass
			Reinforcement	92.8%	Pass
			Overall	92.8%	Pass

Monopole Flange Plate Connection

Elevation = 146.833 ft.



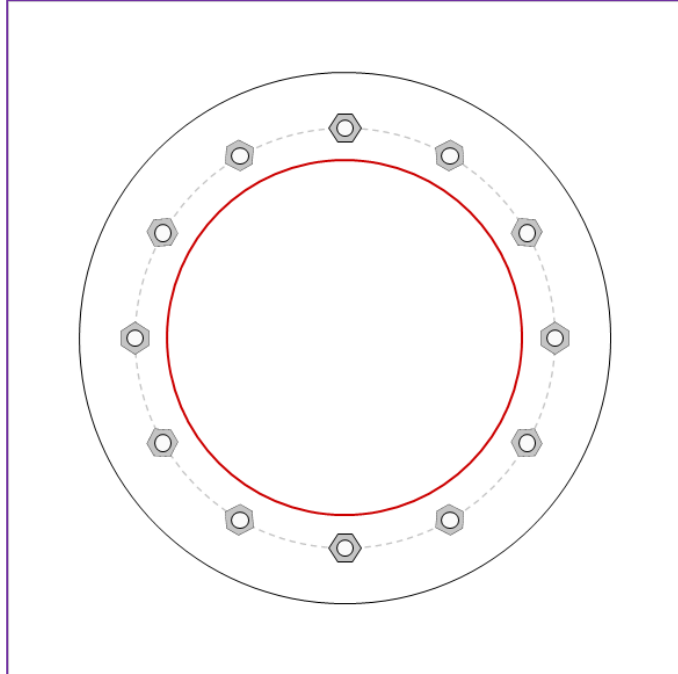
BU #	876334
Site Name	DOUTHINGTON, SMORO
Order #	556607, Rev 0

Applied Loads	
Moment (kip-ft)	86.82
Axial Force (kips)	5.22
Shear Force (kips)	9.31

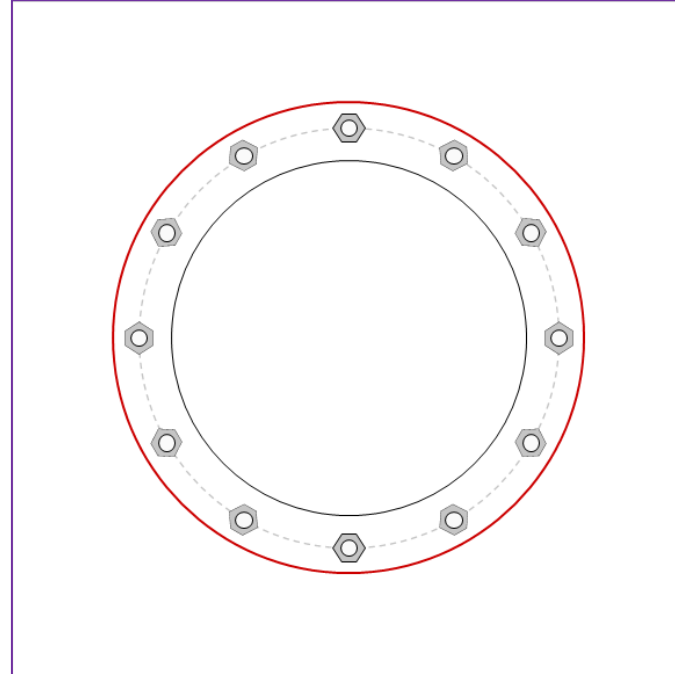
TIA-222 Revision	H
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*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(12) 3/4" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19" BC

Top Plate Data

24" OD x 1.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

16" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

16" ID x 0.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

22" x 0.375" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	17.83
Allowable (kips)	30.04
Stress Rating:	56.5% Pass

Top Plate Capacity

Max Stress (ksi):	7.38	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	15.6%	Pass
Tension Side Stress Rating:	7.7%	Pass

Bottom Plate Capacity

Max Stress (ksi):	28.50	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	60.3%	Pass
Tension Side Stress Rating:	N/A	

Monopole Base Plate Connection

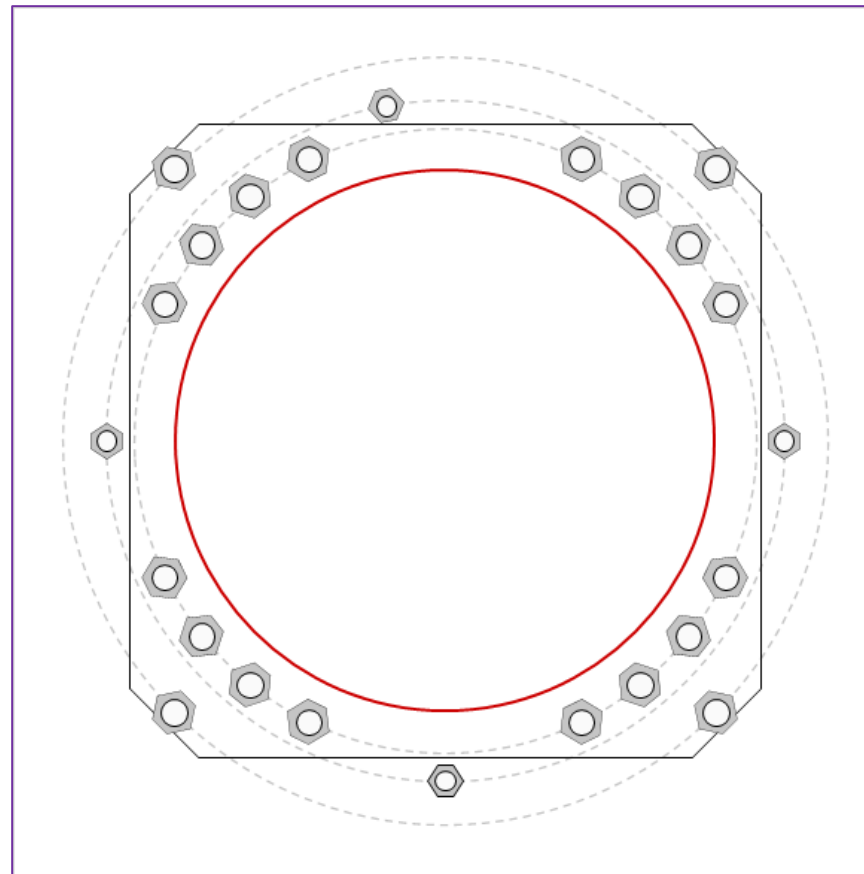


Site Info	
BU #	876334
Site Name	DOUTHINGTON, SMORO
Order #	556607, Rev 0

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

Applied Loads	
Moment (kip-ft)	5071.26
Axial Force (kips)	81.30
Shear Force (kips)	46.90

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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Anchor Rod Data
GROUP 1: (16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 54.375" BC <i>Anchor Spacing: 6 in</i>
GROUP 2: (4) 1-3/4" ϕ bolts (F1554-105 N; $F_y=105$ ksi, $F_u=125$ ksi) on 59.1" BC <i>pos. (deg): 0, 100, 180, 270</i>
GROUP 3: (4) 2-1/4" ϕ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 66.8125" BC
Base Plate Data
55" W x 3" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi); Clip: 6 in
Stiffener Data
N/A
Pole Data
47.1" x 0.7625" 12-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>		
GROUP 1:	$P_{u,t} = 177.66$	$\phi P_{n,t} = 243.75$	Stress Rating
	$V_u = 2.93$	$\phi V_n = 149.1$	69.4%
	$M_u = n/a$	$\phi M_n = n/a$	Pass
GROUP 2:	$P_{u,t} = 114.96$	$\phi P_{n,t} = 178.13$	Stress Rating
	$V_u = 0$	$\phi V_n = 112.75$	61.5%
	$M_u = n/a$	$\phi M_n = n/a$	Pass
GROUP 3:	$P_{u,t} = 224.48$	$\phi P_{n,t} = 304.69$	Stress Rating
	$V_u = 0$	$\phi V_n = 186.38$	70.2%
	$M_u = n/a$	$\phi M_n = n/a$	Pass
Base Plate Summary			
Max Stress (ksi):	29.9		(Flexural)
Allowable Stress (ksi):	45		
Stress Rating:	63.3%		Pass

CCIplate

Elevation (ft) 0 (Base)

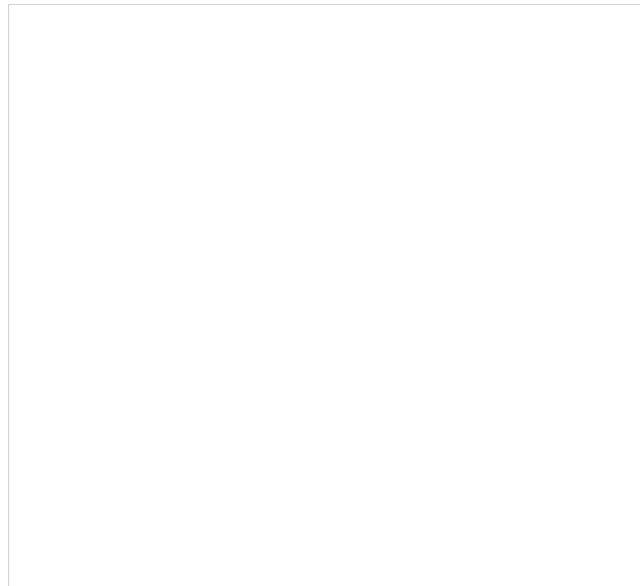
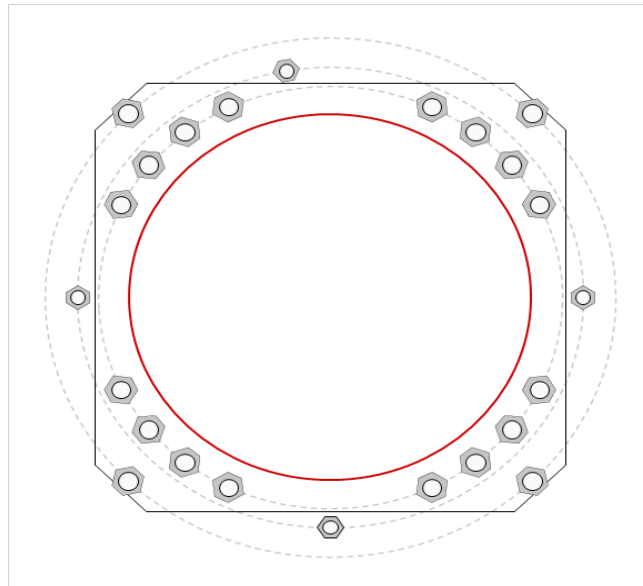
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η :	I_{ar} (in):	Thread Type	Area Override, in ²	Tension Only
1	1	25.994419	2.25	A615-75	54.375	0.5	0	N-Included		No
2	1	38.664806	2.25	A615-75	54.375	0.5	0	N-Included		No
3	1	51.335194	2.25	A615-75	54.375	0.5	0	N-Included		No
4	1	64.005581	2.25	A615-75	54.375	0.5	0	N-Included		No
5	1	115.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
6	1	128.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
7	1	141.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
8	1	154.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
9	1	205.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
10	1	218.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
11	1	231.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
12	1	244.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
13	1	295.99442	2.25	A615-75	54.375	0.5	0	N-Included		No
14	1	308.66481	2.25	A615-75	54.375	0.5	0	N-Included		No
15	1	321.33519	2.25	A615-75	54.375	0.5	0	N-Included		No
16	1	334.00558	2.25	A615-75	54.375	0.5	0	N-Included		No
17	2	0	1.75	F1554-105	59.1	0.5	0	N-Included		No
18	2	100	1.75	F1554-105	59.1	0.5	0	N-Included		No
19	2	180	1.75	F1554-105	59.1	0.5	0	N-Included		No
20	2	270	1.75	F1554-105	59.1	0.5	0	N-Included		No
21	3	45	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
22	3	135	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
23	3	225	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No
24	3	315	2.25	A193 Gr. B7	66.8125	0.5	0	N-Included		No

Plot Graphic



Additional Anchor Rod Calculations

Tower Reactions From tnx:

$$\text{Moment} := 5071 \cdot \text{kip} \cdot \text{ft}$$

$$\text{Axial} := 81 \cdot \text{kip}$$

$$\text{Shear} := 48 \cdot \text{kip}$$

Existing Anchor Rod Group Moment of Inertia:

$$N_{\text{existing}} := 16$$

$$D_{\text{existing}} := 2.25 \cdot \text{in}$$

$$BC_{\text{existing}} := 54.375 \cdot \text{in}$$

$$A_{\text{existing}} := 3.25 \text{in}^2$$

$$I_{\text{existing}} := \left(\frac{N_{\text{existing}}}{8} \right) \cdot (BC_{\text{existing}}^2) \cdot (A_{\text{existing}}) = 1.922 \times 10^4 \cdot \text{in}^4$$

Additional (New) Anchor Rod Group Moment of Inertia:

$$N_{\text{new}} := 4$$

$$D_{\text{new}} := 1.75 \cdot \text{in}$$

$$F_{u_{\text{rod}}} := 125 \text{ksi}$$

$$BC_{\text{new}} := 59.1 \cdot \text{in}$$

$$A_{\text{new}} := 1.9 \cdot \text{in}^2$$

$$F_{y_{\text{rod}}} := 105 \text{ksi}$$

$$I_{\text{new}} := \left(\frac{N_{\text{new}}}{8} \right) \cdot (BC_{\text{new}}^2) \cdot (A_{\text{new}}) = 3.318 \times 10^3 \cdot \text{in}^4$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the full capacity of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity):
(TIA-222-H, Section 4.9.9)

$$\phi P_{nc} := 1.0 \cdot F_{y_{rod}} \cdot A_{new} = 199.5 \cdot \text{kip}$$

$$\phi P_{nt} := 0.75 \cdot F_{u_{rod}} \cdot A_{new} = 178.125 \cdot \text{kip}$$

$$\phi P_n := \max(\phi P_{nt}, \phi P_{nc}) = 199.5 \cdot \text{kip}$$

Tube Design (Pipe)

Member Size: **HSS4x4x1/2**

Member Properties
(AISC 15th Ed., Table 1-13):

Outside Diameter: **$D_{\text{pipe}} := 4 \cdot \text{in}$**

Thickness: **$t_{\text{pipe}} := 0.5 \cdot \text{in}$**

Yield Strength: **$F_{y_{\text{pipe}}} := 46 \cdot \text{ksi}$** **$F_{u_{\text{pipe}}} := 58 \cdot \text{ksi}$**

Length: **$L_{\text{pipe}} := 12 \cdot \text{in}$**

Inside Diameter: $ID_{\text{pipe}} := D_{\text{pipe}} - 2 \cdot t_{\text{pipe}} = 3 \cdot \text{in}$

Area: $A_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^2 - ID_{\text{pipe}}^2)}{4} = 5.498 \cdot \text{in}^2$

Moment of Inertia: $I_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^4 - ID_{\text{pipe}}^4)}{64} = 8.59 \cdot \text{in}^4$

Radius of Gyration: $r_{\text{pipe}} := \sqrt{\frac{I_{\text{pipe}}}{A_{\text{pipe}}}} = 1.25 \cdot \text{in}$

Bearing Check
(AISC 15th Ed., Equation J7-1):

$$\phi_b := 0.75$$

$$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}} \cdot A_{\text{pipe}}$$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}}} = 3.213 \cdot \text{in}^2$$

$$\text{Check}_{\text{bear}} := \begin{cases} \text{"OK"} & \text{if } A_{\text{pipe}} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{bear} = "OK"

Compression Check
 (AISC 15th Ed., Eqs. E3-1 to E3-4):

$$\phi_c := 0.9$$

$$K := 1$$

$$\phi P_{n_comp} = \phi_c \cdot F_{cr} \cdot A_g$$

$$L_c := K \cdot L_{pipe} = 12 \cdot \text{in}$$

$$F_e := \frac{\pi^2 \cdot 29000 \text{ksi}}{\left(\frac{L_c}{r_{pipe}}\right)^2} = 3.106 \times 10^3 \cdot \text{ksi}$$

$$\frac{L_c}{r_{pipe}} = 9.6 < 4.71 \cdot \sqrt{\frac{29000 \cdot \text{ksi}}{F_{ypipe}}} = 118.261$$

$$\therefore F_{cr} := 0.658 \cdot \frac{F_{ypipe}}{F_e} \cdot F_{ypipe} = 45.716 \cdot \text{ksi}$$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n_comp} := \begin{cases} \phi_c \cdot F_{ypipe} \cdot A_{pipe} & \text{if } \frac{L_c}{r_{pipe}} \leq 25 \\ \phi_c \cdot F_{cr} \cdot A_{pipe} & \text{otherwise} \end{cases}$$

$$\phi P_{n_comp} = 227.608 \cdot \text{kip}$$

$$\text{Check}_{comp} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n_comp} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{comp} = \text{"OK"}$$

Gusset Plate Design

Gusset Plate width:

$$w_{plate} := 4 \cdot \text{in}$$

Gusset Plate thickness:

$$t_{plate} := 1.25 \text{in}$$

$$L_{plate1} := 42 \text{in}$$

$$L_{plate2} := 12 \text{in}$$

Gusset Plate Strength:

$$F_{yplate} := 65 \text{ksi}$$

$$F_{uplate} := 80 \text{ksi}$$

Pole thickness:

$$t_{pole} := 0.375 \text{in}$$

Shear Check
(AISC 15th Ed., Eqs. J4-3 and J4-4):

$$A_g := t_{plate} \cdot L_{plate2} = 15 \cdot \text{in}^2$$

$$A_{nv} := A_g = 15 \cdot \text{in}^2$$

Shear Yielding

$$\phi_v := 1$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot F_{yplate} = 585 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

Shear Rupture

$$\phi_v := 0.75$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot F_{uplate} = 540 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

Gusset Plate to Pole and Base Plate
Weld Design (Horizontal and Vertical
Weld):
(AISC 15th Ed., Part 8)

Gusset plate thickness:

$$t_{plate} = 1.25 \cdot \text{in}$$

Pole Grade:

$$F_{ypole} := 65 \text{ksi}$$

$$F_{upole} := 80 \text{ksi}$$

Base Plate Grade:

$$F_{ybase} := 50 \text{ksi}$$

$$F_{ubase} := 65 \text{ksi}$$

Gusset Plate Grade:

$$F_{yplate} = 65 \cdot \text{ksi} \quad F_{uplate} = 80 \cdot \text{ksi}$$

Height of vertical weld from base plate:

$$H := L_{plate1} = 42 \cdot \text{in}$$

$$\text{Notch}_{horiz} := 0.75 \cdot \text{in}$$

$$\text{Notch}_{vert} := 0.75 \cdot \text{in}$$

Gap between Base Plate and HSS:

$$\text{Gap} := 0 \text{in}$$

Vertical fillet weld size to pole:
 (in sixteenths of an inch)

$$D_{vpole} := 6$$

$$\text{weldsize}_{pole} := \frac{D_{vpole}}{16} = \frac{3}{8}$$

Weld Material Grade:

$$F_{EXX} := 80 \text{ksi}$$



Case 1: Vertical Fillet Weld Controls

$$\phi_{wg} := .75$$

Fillet weld (gusset plate to pole) *2 weld groups, so multiply by 2*

$$\text{effective throat } et_{vf} := 2 \frac{D_{vpole}}{16} \cdot \text{in} \cdot \frac{\sqrt{2}}{2} = 0.53 \cdot \text{in}$$

CJP weld (gusset plate to base plate)

$$\text{effective throat } et_{cjp} := t_{plate} = 1.25 \cdot \text{in}$$

$$\text{Length of Vertical Weld to pole } L_v := H - \text{Notch}_{vert} = 41.25 \cdot \text{in}$$

$$\text{Area of Vertical Weld to pole } A_v := et_{vf} \cdot L_v = 21.876 \cdot \text{in}^2$$

$$\text{Length of Horizontal Weld to BP } L_h := w_{plate} - \text{Notch}_{horiz} - \text{Gap} = 3.25 \cdot \text{in}$$

$$\text{Area of Horizontal Weld } A_h := et_{cjp} \cdot L_h = 4.063 \cdot \text{in}^2$$

Group Centroid

Vertical Weld

$$x_v := 0$$
$$y_v := \frac{L_v}{2} + \text{Notch}_{vert} = 21.375 \cdot \text{in}$$

$$A_v := A_v = 21.876 \cdot \text{in}^2$$

$$xA_v := x_v \cdot A_v = 0 \cdot \text{in}^3$$

$$yA_v := y_v \cdot A_v = 467.602 \cdot \text{in}^3$$

Horizontal Weld

$$x_h := \frac{L_h}{2} + \text{Notch}_{horiz} = 2.375 \cdot \text{in}$$

$$y_h := 0 \cdot \text{in}$$

$$A_h := A_h = 4.063 \cdot \text{in}^2$$

$$xA_h := x_h \cdot A_h = 9.648 \cdot \text{in}^3$$

$$yA_h := y_h \cdot A_h = 0$$

$$\text{Sum } A_{\text{sum}} := A_v + A_h = 25.939 \cdot \text{in}^2$$

$$xA_{\text{sum}} := xA_v + xA_h = 9.648 \cdot \text{in}^3$$

$$yA_{\text{sum}} := yA_v + yA_h = 467.602 \cdot \text{in}^3$$

$$x_{\text{prime}} := \frac{xA_{\text{sum}}}{A_{\text{sum}}} = 0.372 \cdot \text{in}$$

$$y_{\text{prime}} := \frac{yA_{\text{sum}}}{A_{\text{sum}}} = 18.027 \cdot \text{in}$$

$$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{\text{prime}})^2 + A_h \cdot y_{\text{prime}}^2 = 4.667 \times 10^3 \cdot \text{in}^4$$

$$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{\text{prime}})^2 + A_v \cdot x_{\text{prime}}^2 = 22.902 \cdot \text{in}^4$$

$$I_p := I_v + I_h = 4.69 \times 10^3 \cdot \text{in}^4$$

Total Area of Weld $A_{w_{\text{total}}} := A_{\text{sum}} = 25.939 \cdot \text{in}^2$

Total Ip $I_{p_{\text{total}}} := I_p = 4.69 \times 10^3 \cdot \text{in}^4$

eccentricity $e := w_{\text{plate}} + \frac{D_{\text{pipe}}}{2} - x_{\text{prime}} = 5.628 \cdot \text{in}$

Design Moment $M_d := \phi P_n \cdot e = 1.123 \times 10^3 \cdot \text{kip} \cdot \text{in}$

Check extreme fiber 1 $c_{x1} := -1 \cdot x_{\text{prime}} = -0.372 \cdot \text{in}$

$$c_{y1} := H - y_{\text{prime}} = 23.973 \cdot \text{in}$$

$$rpx_1 := 0 \text{ksi}$$

$$rpy_1 := \frac{\phi P_n}{A_{w_{\text{total}}}} = 7.691 \cdot \text{ksi}$$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{I_{p_{total}}} = 5.739 \cdot \text{ksi}$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{I_{p_{total}}} = -0.089 \cdot \text{ksi}$$

$$ra_1 := \sqrt{(rpx_1 + rmx_1)^2 + (rpy_1 + rmy_1)^2} = 9.525 \cdot \text{ksi}$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{EXX} = 36 \cdot \text{ksi}$$

$$Cap_1 := \frac{ra_1}{R_{nweld}} = 26.458 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{plate} - Gap - x_{prime} = 3.628 \cdot \text{in}$$

$$c_{y2} := -1 \cdot y_{prime} = -18.027 \cdot \text{in}$$

$$rpx_2 := 0 \cdot \text{ksi}$$

$$rpy_2 := \frac{\phi P_n}{A_{w_{total}}} = 7.691 \cdot \text{ksi}$$

$$rmx_2 := M_d \cdot \frac{c_{y2}}{I_{p_{total}}} = -4.315 \cdot \text{ksi}$$

$$rmy_2 := M_d \cdot \frac{c_{x2}}{I_{p_{total}}} = 0.869 \cdot \text{ksi}$$

$$ra_2 := \sqrt{(rpx_2 + rmx_2)^2 + (rpy_2 + rmy_2)^2} = 9.586 \cdot \text{ksi}$$

$$F_u := \min(F_{u_{plate}}, F_{u_{base}}) = 65 \cdot \text{ksi}$$

$$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot F_u = 29.25 \cdot \text{ksi}$$

$$Cap_2 := \frac{ra_2}{R_{nplate}} = 32.773 \cdot \%$$

Case 2: Vertical Fillet Base Material Controls

$$\phi_{wg} := .75$$

Fillet weld (gusset plate to pole) *2 weld groups, so multiply by 2*

$$\text{effective throat } e_{t,f} := 2 \frac{D_{vpole}}{16} \cdot \text{in} = 0.75 \cdot \text{in}$$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 41.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 30.937 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 3.25 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 4.063 \cdot in^2$

Group Centroid

Vertical Weld

$x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 21.375 \cdot in$

$A_v := A_v = 30.937 \cdot in^2$

$x A_v := x_v \cdot A_v = 0 \cdot in^3$

$y A_v := y_v \cdot A_v = 661.289 \cdot in^3$

Horizontal Weld

$x_h := \frac{L_h}{2} + Notch_{horiz} = 2.375 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 4.063 \cdot in^2$

$x A_h := x_h \cdot A_h = 9.648 \cdot in^3$

$y A_h := y_h \cdot A_h = 0$

Sum $A_{sum} := A_v + A_h = 35 \cdot in^2$

$x A_{sum} := x A_v + x A_h = 9.648 \cdot in^3$

$y A_{sum} := y A_v + y A_h = 661.289 \cdot in^3$

$x_{prime} := \frac{x A_{sum}}{A_{sum}} = 0.276 \cdot in$

$y_{prime} := \frac{y A_{sum}}{A_{sum}} = 18.894 \cdot in$

$$I_{vv} := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{prime})^2 + A_h \cdot y_{prime}^2 = 6.028 \times 10^3 \cdot \text{in}^4$$

$$I_{hh} := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{prime})^2 + A_v \cdot x_{prime}^2 = 23.831 \cdot \text{in}^4$$

$$I_{pp} := I_v + I_h = 6.051 \times 10^3 \cdot \text{in}^4$$

Total Area of Weld

$$A_{w_{total}} := A_{sum} = 35 \cdot \text{in}^2$$

Total Ip

$$I_{p_{total}} := I_p = 6.051 \times 10^3 \cdot \text{in}^4$$

eccentricity

$$e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 5.724 \cdot \text{in}$$

Design Moment

$$M_d := \phi P_n \cdot e = 1.142 \times 10^3 \cdot \text{kip} \cdot \text{in}$$

Check extreme fiber 1

$$c_{x1} := -1 \cdot x_{prime} = -0.276 \cdot \text{in}$$

$$c_{y1} := H - y_{prime} = 23.106 \cdot \text{in}$$

$$r_{px1} := 0 \text{ksi}$$

$$r_{py1} := \frac{\phi P_n}{A_{w_{total}}} = 5.7 \cdot \text{ksi}$$

$$r_{mx1} := M_d \cdot \frac{c_{y1}}{I_{p_{total}}} = 4.361 \cdot \text{ksi}$$

$$r_{my1} := M_d \cdot \frac{c_{x1}}{I_{p_{total}}} = -0.052 \cdot \text{ksi}$$

$$r_{a1} := \sqrt{(r_{px1} + r_{mx1})^2 + (r_{py1} + r_{my1})^2} = 7.135 \cdot \text{ksi}$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{u_{pole}} = 36 \cdot \text{ksi}$$

$$Cap_3 := \frac{r_{a1}}{R_{nweld}} = 19.821 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{\text{plate}} - \text{Gap} - x_{\text{prime}} = 3.724 \cdot \text{in}$$

$$c_{y2} := -1 \cdot y_{\text{prime}} = -18.894 \cdot \text{in}$$

$$r_{px2} := 0 \text{ksi}$$

$$r_{py2} := \frac{\phi P_n}{A_{w_{\text{total}}}} = 5.7 \cdot \text{ksi}$$

$$r_{mx2} := M_d \cdot \frac{c_{y2}}{I_{p_{\text{total}}}} = -3.566 \cdot \text{ksi}$$

$$r_{my2} := M_d \cdot \frac{c_{x2}}{I_{p_{\text{total}}}} = 0.703 \cdot \text{ksi}$$

$$r_{a2} := \sqrt{(r_{px2} + r_{mx2})^2 + (r_{py2} + r_{my2})^2} = 7.329 \cdot \text{ksi}$$

$$F_u := \min(F_{u_{\text{plate}}}, F_{u_{\text{base}}}) = 65 \cdot \text{ksi}$$

$$R_{n_{\text{plate}}} := \phi_{wg} \cdot 0.6 \cdot F_u = 29.25 \cdot \text{ksi}$$

$$\text{Cap}_4 := \frac{r_{a2}}{R_{n_{\text{plate}}}} = 25.056 \cdot \%$$

Check :=

"OK"	if Capacity < 100%
"INSUFFICIENT"	otherwise

Check = "OK"

**Gusset Plate to HSS Weld Design
(AISC 15th Ed., Table 8-4)**

Electrode Strength:

$$F_{EXX} := 80 \text{ ksi}$$

Weld Size (in sixteenths
of an inch):

$$D_1 := 14$$

$$\text{weldsize}_1 := \frac{D_1}{16} = \frac{7}{8}$$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{\text{pipe}} - t_{\text{pipe}} - \frac{D_{\text{new}}}{2} = 2.625 \cdot \text{in}$$

Load not in plane with
weld group:

$$k := 0$$

$$a := \frac{ecc_2}{L_{\text{plate2}}} = 0.219$$

$$C_1 = 1.03$$

$$\text{Coeff}_1 := 3.31$$

$$\phi_w := 0.75$$

$$D_{\text{min1}} := \text{ceil} \left(\frac{\phi P_n \cdot \text{in}}{\phi_w \cdot \text{Coeff}_1 \cdot C_1 \cdot L_{\text{plate2}} \cdot \text{kip}} \right) = 7$$

$$\text{minweldsize} := \frac{D_{\text{min1}}}{16} = \frac{7}{16}$$

$$\text{Check}_{\text{weld}} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{\text{min1}} \wedge D_1 \geq \text{Min}_{\text{weldsize}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld}} = \text{"OK"}$$

$$\phi R_{n_{\text{weld1}}} := \phi_w \cdot \text{Coeff}_1 \cdot \text{ksi} \cdot \text{in} \cdot C_1 \cdot D_1 \cdot L_{\text{plate2}} = 429.572 \cdot \text{kip}$$

$$\text{Check}_{\text{weld1}} := \begin{cases} \text{"OK"} & \text{if } \phi R_{n_{\text{weld1}}} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld1}} = \text{"OK"}$$

Gusset Plate to Pole Punching

Shear Check

(max per unit length):

(AISC 15th Ed., Section J4.2)

$$\phi_{sy} := 1.0$$

$$\phi_{sr} := 0.75$$

$$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 6.625 \cdot in$$

$$M_1 := \phi P_n \cdot ecc_1 = 1.322 \times 10^3 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 367.5 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1 in = 4.496 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{y_{pole}} \cdot 2 \cdot t_{pole} \cdot 1 in = 29.25 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{u_{pole}} \cdot 2 \cdot t_{pole} \cdot 1 in = 27 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$$

$$Check_{PS1} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

$$Check_{PS1} = "OK"$$

Gusset Plate to HSS Punching

Shear Check

(max per unit length):

(AISC 15th Ed., Section J4.2)

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 2.625 \cdot in$$

$$M_2 := \phi P_n \cdot ecc_2 = 523.687 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 30 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1 in = 21.82 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{y_{pipe}} \cdot 2 \cdot t_{pipe} \cdot 1 in = 27.6 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{u_{pipe}} \cdot 2 \cdot t_{pipe} \cdot 1 in = 26.1 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 26.1 \cdot kip$$

$$Check_{PS2} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

Check_{PS2} = "OK"

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 7 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f_c := 3000psi$	
Transverse Reinforcement Index:	$k_{tr} := 0$	Can be taken as 0 for design per ACI 318-14
Epoxy Factor:	$\psi_e := 1$	
Rebar Size Factor:	$\psi_s := 1$	
Casting Position Factor:	$\psi_t := 1$	
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	
Tie Size:	$Tie := 5$	$d_b := vlookup(d_s, Rebar, 2) in = 0.036 m$
Number of Vertical Rebar:	$n := 32$	

Design Load: $\phi P_{nt} := \phi P_{nt} = 178.125 \cdot kip$

Development Length (ACI 318-14 Chapter 25):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} \cdot in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]} \right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2} \cdot S_{\text{rebar}} = 3.6 \cdot \text{in}$$

$$B := \frac{BC_{\text{rebar}}}{2} - \frac{BC_{\text{new}}}{2} = 7.12 \cdot \text{in}$$

$$G := \sqrt{A^2 + B^2} = 7.978 \cdot \text{in}$$

$$l'_d := l_d + \frac{G}{1.5} + 3 \text{in} = 1.388 \text{m}$$

Epoxy Development Length:

Bond Strength:

Epoxy :=

$$\phi_{\text{bond}} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if Epoxy} = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3 \cdot \text{psi}$$

$$L_{be} := \frac{\phi P_n}{\pi \cdot D_{\text{new}} \cdot S_b \cdot \phi_{\text{bond}}} = 29.03 \cdot \text{in}$$

Required Embedment Length:

$$L_{\text{min_CED}} := \begin{cases} (5\text{ft}) & \text{if } D_{\text{new}} \neq 2.25\text{in} \\ (6.5\text{ft}) & \text{if Epoxy} = 0 \wedge D_{\text{new}} = 2.25\text{in} \\ (6\text{ft}) & \text{if Epoxy} = 1 \wedge D_{\text{new}} = 2.25\text{in} \end{cases}$$

$$L_{\text{min}} := \max(L_{be} + 12\text{in}, l'_d + 0.25 \cdot L_{be}, L_{\text{min_CED}}) = 5.159 \cdot \text{ft}$$

$$L_{\text{min}} := \text{ceil}\left(\frac{L_{\text{min}}}{0.5\text{ft}}\right) \cdot 0.5\text{ft}$$

$$L_{\text{min}} = 5.5 \cdot \text{ft}$$

$$\text{Check} := \begin{cases} \text{"OK"} & \text{if } L_{\text{min}} \leq L_{\text{em}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

Is this a CADSA site?

Yes
 No

$$\text{Pullout} := \begin{cases} \frac{\phi_p \cdot F_{u_{\text{rod}}} \cdot A_{\text{new}}}{1.6} & \text{if } CA = 0 \\ (0.8 \cdot F_{y_{\text{rod}}} \cdot A_{\text{new}}) & \text{otherwise} \end{cases} = 111 \cdot \text{kip}$$

Additional Anchor Rod Calculations

Tower Reactions From tnx:

$$\text{Moment} := 5071 \cdot \text{kip} \cdot \text{ft}$$

$$\text{Axial} := 81 \cdot \text{kip}$$

$$\text{Shear} := 48 \cdot \text{kip}$$

Existing Anchor Rod Group Moment of Inertia:

$$N_{\text{existing}} := 16$$

$$D_{\text{existing}} := 2.25 \cdot \text{in}$$

$$BC_{\text{existing}} := 54.375 \cdot \text{in}$$

$$A_{\text{existing}} := 3.25 \text{in}^2$$

$$I_{\text{existing}} := \left(\frac{N_{\text{existing}}}{8} \right) \cdot (BC_{\text{existing}}^2) \cdot (A_{\text{existing}}) = 1.922 \times 10^4 \cdot \text{in}^4$$

Additional (New) Anchor Rod Group Moment of Inertia:

$$N_{\text{new}} := 2$$

$$D_{\text{new}} := 2.25 \cdot \text{in}$$

$$F_{u_{\text{rod}}} := 125 \text{ksi}$$

$$BC_{\text{new}} := 66.8125 \cdot \text{in}$$

$$A_{\text{new}} := 3.25 \cdot \text{in}^2$$

$$F_{y_{\text{rod}}} := 105 \text{ksi}$$

$$I_{\text{new}} := \left(\frac{N_{\text{new}}}{8} \right) \cdot (BC_{\text{new}}^2) \cdot (A_{\text{new}}) = 3.627 \times 10^3 \cdot \text{in}^4$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the demanding load of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity):
 (TIA-222-H, Section 4.9.9)

$$\phi P_{nc} := 1.0 \cdot F_{y_{rod}} \cdot A_{new} = 341.25 \cdot \text{kip}$$

$$\phi P_{nt} := 0.75 \cdot F_{u_{rod}} \cdot A_{new} = 304.688 \cdot \text{kip}$$

Demanding Load from CClplate:

$$\phi P_n := 224.48 \text{kip}$$

Tube Design (Pipe)

Member Size: **HSS5x5x1/2**

Member Properties
 (AISC 15th Ed., Table 1-13):

Outside Diameter: $D_{\text{pipe}} := 5 \cdot \text{in}$

Thickness: $t_{\text{pipe}} := 0.5 \cdot \text{in}$

Yield Strength: $F_{y_{\text{pipe}}} := 50 \cdot \text{ksi}$ $F_{u_{\text{pipe}}} := 62 \cdot \text{ksi}$

Length: $L_{\text{pipe}} := 33 \cdot \text{in}$

Inside Diameter: $ID_{\text{pipe}} := D_{\text{pipe}} - 2 \cdot t_{\text{pipe}} = 4 \cdot \text{in}$

Area: $A_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^2 - ID_{\text{pipe}}^2)}{4} = 7.069 \cdot \text{in}^2$

Moment of Inertia: $I_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^4 - ID_{\text{pipe}}^4)}{64} = 18.113 \cdot \text{in}^4$

Radius of Gyration: $r_{\text{pipe}} := \sqrt{\frac{I_{\text{pipe}}}{A_{\text{pipe}}}} = 1.601 \cdot \text{in}$

Bearing Check
 (AISC 15th Ed., Equation J7-1):

$$\phi_b := 0.75$$

$$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}} \cdot A_{\text{pipe}}$$

$$A_{pb} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}}} = 3.326 \cdot \text{in}^2$$

$$\text{Check}_{\text{bear}} := \begin{cases} \text{"OK"} & \text{if } A_{\text{pipe}} \geq A_{pb} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{bear}} = \text{"OK"}$$

Compression Check
 (AISC 15th Ed., Eqs. E3-1 to E3-4):

$$\phi_c := 0.9$$

$$K_{\text{eff}} := 1$$

$$\phi P_{n_comp} = \phi_c \cdot F_{cr} \cdot A_g$$

$$L_c := K \cdot L_{\text{pipe}} = 33 \cdot \text{in}$$

$$F_e := \frac{\pi^2 \cdot 29000 \text{ksi}}{\left(\frac{L_c}{r_{\text{pipe}}}\right)^2} = 673.494 \cdot \text{ksi}$$

$$\frac{L_c}{r_{\text{pipe}}} = 20.615 < 4.71 \cdot \sqrt{\frac{29000 \cdot \text{ksi}}{F_{y\text{pipe}}}} = 113.432$$

$$\therefore F_{cr} := 0.658 \cdot \frac{F_{y\text{pipe}}}{F_e} \cdot F_{y\text{pipe}} = 48.47 \cdot \text{ksi}$$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n_comp} := \begin{cases} \phi_c \cdot F_{y\text{pipe}} \cdot A_{\text{pipe}} & \text{if } \frac{L_c}{r_{\text{pipe}}} \leq 25 \\ \phi_c \cdot F_{cr} \cdot A_{\text{pipe}} & \text{otherwise} \end{cases}$$

$$\phi P_{n_comp} = 318.086 \cdot \text{kip}$$

$$\text{Check}_{\text{comp}} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n_comp} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{comp}} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi P_{n_comp}} = 70.572\%$$

Gusset Plate Design

Gusset Plate width:

$$w_{\text{plate}} := 5.875 \cdot \text{in}$$

Gusset Plate thickness:

$$t_{\text{plate}} := 1.25 \cdot \text{in}$$

$$L_{\text{plate1}} := 306 \cdot \text{in}$$

$$L_{\text{plate2}} := 30 \cdot \text{in}$$

Gusset Plate Strength:

$$F_{y\text{plate}} := 65 \text{ksi}$$

$$F_{u\text{plate}} := 80 \text{ksi}$$

Pole thickness:

$$t_{\text{pole}} := 0.375 \cdot \text{in}$$

Shear Check
 (AISC 15th Ed., Eqs. J4-3 and J4-4):

$$A_g := t_{plate} \cdot L_{plate2} = 37.5 \cdot \text{in}^2$$

$$A_{nv} := A_g = 37.5 \cdot \text{in}^2$$

Shear Yielding

$$\phi_v := 1$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot F_{yplate} = 1.462 \times 10^3 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

$$\frac{\phi P_n}{\phi V_{plate}} = 15.349\%$$

Shear Rupture

$$\phi_v := 0.75$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot F_{uplate} = 1.35 \times 10^3 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

$$\frac{\phi P_n}{\phi V_{plate}} = 16.628\%$$

Gusset Plate to Pole and Base Plate
Weld Design (Horizontal and Vertical
Weld):
 (AISC 15th Ed., Part 8)

Gusset plate thickness:

$$t_{plate} = 1.25 \cdot \text{in}$$

Pole Grade:

$$F_{ypole} := 65 \text{ksi}$$

$$F_{upole} := 80 \text{ksi}$$

Base Plate Grade:

$$F_{ybase} := 50 \text{ksi}$$

$$F_{ubase} := 65 \text{ksi}$$

Gusset Plate Grade:

$$F_{yplate} = 65 \cdot \text{ksi} \quad F_{uplate} = 80 \cdot \text{ksi}$$

Height of vertical weld from base plate:

$$H_{vw} := L_{plate1} = 306 \cdot \text{in}$$

$$\text{Notch}_{horiz} := 0.75 \cdot \text{in}$$

$$\text{Notch}_{vert} := 0.75 \cdot \text{in}$$

Gap between Base Plate and HSS:

$$\text{Gap} := 0 \text{in}$$

Vertical fillet weld size to pole:
 (in sixteenths of an inch)

$$D_{vpole} := 4$$

$$\text{weldsize}_{pole} := \frac{D_{vpole}}{16} = \frac{1}{4}$$

Weld Material Grade:

$$F_{EXX} := 80 \text{ksi}$$



Case 1: Vertical Fillet Weld Controls

$$\phi_{wg} := .75$$

Fillet weld (gusset plate to pole) *2 weld groups, so multiply by 2*

$$\text{effective throat } et_{vf} := 2 \frac{D_{vpole}}{16} \cdot \text{in} \cdot \frac{\sqrt{2}}{2} = 0.354 \cdot \text{in}$$

CJP weld (gusset plate to base plate)

$$\text{effective throat } et_{cjp} := t_{plate} = 1.25 \cdot \text{in}$$

$$\text{Length of Vertical Weld to pole } L_v := H - \text{Notch}_{vert} = 305.25 \cdot \text{in}$$

$$\text{Area of Vertical Weld to pole } A_v := et_{vf} \cdot L_v = 107.922 \cdot \text{in}^2$$

$$\text{Length of Horizontal Weld to BP } L_h := w_{plate} - \text{Notch}_{horiz} - \text{Gap} = 5.125 \cdot \text{in}$$

$$\text{Area of Horizontal Weld } A_h := et_{cjp} \cdot L_h = 6.406 \cdot \text{in}^2$$

Group Centroid

Vertical Weld $x_v := 0$
 $y_v := \frac{L_v}{2} + \text{Notch}_{vert} = 153.375 \cdot \text{in}$

$$A_v := A_v = 107.922 \cdot \text{in}^2$$

$$xA_v := x_v \cdot A_v = 0 \cdot \text{in}^3$$

$$yA_v := y_v \cdot A_v = 1.655 \times 10^4 \cdot \text{in}^3$$

Horizontal Weld $x_h := \frac{L_h}{2} + \text{Notch}_{horiz} = 3.312 \cdot \text{in}$

$$y_h := 0 \cdot \text{in}$$

$$A_h := A_h = 6.406 \cdot \text{in}^2$$

$$xA_h := x_h \cdot A_h = 21.221 \cdot \text{in}^3$$

$$yA_h := y_h \cdot A_h = 0$$

$$\text{Sum } A_{\text{sum}} := A_v + A_h = 114.328 \cdot \text{in}^2$$

$$xA_{\text{sum}} := xA_v + xA_h = 21.221 \cdot \text{in}^3$$

$$yA_{\text{sum}} := yA_v + yA_h = 1.655 \times 10^4 \cdot \text{in}^3$$

$$x_{\text{prime}} := \frac{xA_{\text{sum}}}{A_{\text{sum}}} = 0.186 \cdot \text{in}$$

$$y_{\text{prime}} := \frac{yA_{\text{sum}}}{A_{\text{sum}}} = 144.781 \cdot \text{in}$$

$$I_v := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{\text{prime}})^2 + A_h \cdot y_{\text{prime}}^2 = 9.802 \times 10^5 \cdot \text{in}^4$$

$$I_h := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{\text{prime}})^2 + A_v \cdot x_{\text{prime}}^2 = 80.377 \cdot \text{in}^4$$

$$I_p := I_v + I_h = 9.803 \times 10^5 \cdot \text{in}^4$$

Total Area of Weld $A_{w_{\text{total}}} := A_{\text{sum}} = 114.328 \cdot \text{in}^2$

Total Ip $I_{p_{\text{total}}} := I_p = 9.803 \times 10^5 \cdot \text{in}^4$

eccentricity $e := w_{\text{plate}} + \frac{D_{\text{pipe}}}{2} - x_{\text{prime}} = 8.189 \cdot \text{in}$

Design Moment $M_d := \phi P_n \cdot e = 1.838 \times 10^3 \cdot \text{kip} \cdot \text{in}$

Check extreme fiber 1 $c_{x1} := -1 \cdot x_{\text{prime}} = -0.186 \cdot \text{in}$

$$c_{y1} := H - y_{\text{prime}} = 161.219 \cdot \text{in}$$

$$r_{px1} := 0 \text{ksi}$$

$$r_{py1} := \frac{\phi P_n}{A_{w_{\text{total}}}} = 1.963 \cdot \text{ksi}$$

$$rmx_1 := M_d \cdot \frac{c_{y1}}{I_{p_{total}}} = 0.302 \cdot \text{ksi}$$

$$rmy_1 := M_d \cdot \frac{c_{x1}}{I_{p_{total}}} = -0 \cdot \text{ksi}$$

$$ra_1 := \sqrt{(rpx_1 + rmx_1)^2 + (rpy_1 + rmy_1)^2} = 1.986 \cdot \text{ksi}$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{EXX} = 36 \cdot \text{ksi}$$

$$Cap_1 := \frac{ra_1}{R_{nweld}} = 5.517 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{plate} - Gap - x_{prime} = 5.689 \cdot \text{in}$$

$$c_{y2} := -1 \cdot y_{prime} = -144.781 \cdot \text{in}$$

$$rpx_2 := 0 \cdot \text{ksi}$$

$$rpy_2 := \frac{\phi P_n}{A_{w_{total}}} = 1.963 \cdot \text{ksi}$$

$$rmx_2 := M_d \cdot \frac{c_{y2}}{I_{p_{total}}} = -0.271 \cdot \text{ksi}$$

$$rmy_2 := M_d \cdot \frac{c_{x2}}{I_{p_{total}}} = 0.011 \cdot \text{ksi}$$

$$ra_2 := \sqrt{(rpx_2 + rmx_2)^2 + (rpy_2 + rmy_2)^2} = 1.993 \cdot \text{ksi}$$

$$F_u := \min(F_{u_{plate}}, F_{u_{base}}) = 65 \cdot \text{ksi}$$

$$R_{nplate} := \phi_{wg} \cdot 0.6 \cdot F_u = 29.25 \cdot \text{ksi}$$

$$Cap_2 := \frac{ra_2}{R_{nplate}} = 6.813 \cdot \%$$

Case 2: Vertical Fillet Base Material Controls

$$\phi_{wg} := .75$$

Fillet weld (gusset plate to pole) *2 weld groups, so multiply by 2*

$$\text{effective throat } e_{t,f} := 2 \frac{D_{vpole}}{16} \cdot \text{in} = 0.5 \cdot \text{in}$$

CJP weld (gusset plate to base plate)

effective throat $et_{cjp} := t_{plate} = 1.25 \cdot in$

Length of Vertical Weld to pole $L_v := H - Notch_{vert} = 305.25 \cdot in$

Area of Vertical Weld to pole $A_v := et_{vf} \cdot L_v = 152.625 \cdot in^2$

Length of Horizontal Weld to BP $L_h := w_{plate} - Notch_{horiz} - Gap = 5.125 \cdot in$

Area of Horizontal Weld $A_h := et_{cjp} \cdot L_h = 6.406 \cdot in^2$

Group Centroid

Vertical Weld

$x_v := 0$

$y_v := \frac{L_v}{2} + Notch_{vert} = 153.375 \cdot in$

$A_v := A_v = 152.625 \cdot in^2$

$x A_v := x_v \cdot A_v = 0 \cdot in^3$

$y A_v := y_v \cdot A_v = 2.341 \times 10^4 \cdot in^3$

Horizontal Weld $x_h := \frac{L_h}{2} + Notch_{horiz} = 3.312 \cdot in$

$y_h := 0 \cdot in$

$A_h := A_h = 6.406 \cdot in^2$

$x A_h := x_h \cdot A_h = 21.221 \cdot in^3$

$y A_h := y_h \cdot A_h = 0$

Sum $A_{sum} := A_v + A_h = 159.031 \cdot in^2$

$x A_{sum} := x A_v + x A_h = 21.221 \cdot in^3$

$y A_{sum} := y A_v + y A_h = 2.341 \times 10^4 \cdot in^3$

$x_{prime} := \frac{x A_{sum}}{A_{sum}} = 0.133 \cdot in$

$y_{prime} := \frac{y A_{sum}}{A_{sum}} = 147.197 \cdot in$

$$I_{vv} := \frac{L_v^3 \cdot et_{vf}}{12} + (L_v \cdot et_{vf}) \cdot (y_v - y_{prime})^2 + A_h \cdot y_{prime}^2 = 1.33 \times 10^6 \cdot \text{in}^4$$

$$I_{hh} := \frac{L_h^3 \cdot et_{cjp}}{12} + A_h \cdot (x_h - x_{prime})^2 + A_v \cdot x_{prime}^2 = 81.484 \cdot \text{in}^4$$

$$I_{pp} := I_v + I_h = 1.33 \times 10^6 \cdot \text{in}^4$$

Total Area of Weld

$$A_{w_{total}} := A_{sum} = 159.031 \cdot \text{in}^2$$

Total Ip

$$I_{p_{total}} := I_p = 1.33 \times 10^6 \cdot \text{in}^4$$

eccentricity

$$e := w_{plate} + \frac{D_{pipe}}{2} - x_{prime} = 8.242 \cdot \text{in}$$

Design Moment

$$M_d := \phi P_n \cdot e = 1.85 \times 10^3 \cdot \text{kip} \cdot \text{in}$$

Check extreme fiber 1

$$c_{x1} := -1 \cdot x_{prime} = -0.133 \cdot \text{in}$$

$$c_{y1} := H - y_{prime} = 158.803 \cdot \text{in}$$

$$r_{px1} := 0 \text{ksi}$$

$$r_{py1} := \frac{\phi P_n}{A_{w_{total}}} = 1.412 \cdot \text{ksi}$$

$$r_{mx1} := M_d \cdot \frac{c_{y1}}{I_{p_{total}}} = 0.221 \cdot \text{ksi}$$

$$r_{my1} := M_d \cdot \frac{c_{x1}}{I_{p_{total}}} = -0 \cdot \text{ksi}$$

$$r_{a1} := \sqrt{(r_{px1} + r_{mx1})^2 + (r_{py1} + r_{my1})^2} = 1.429 \cdot \text{ksi}$$

$$R_{nweld} := \phi_{wg} \cdot 0.6 F_{u_{pole}} = 36 \cdot \text{ksi}$$

$$Cap_3 := \frac{r_{a1}}{R_{nweld}} = 3.968 \cdot \%$$

Check extreme fiber 2

$$c_{x2} := w_{plate} - Gap - x_{prime} = 5.742 \cdot \text{in}$$

$$c_{y2} := -1 \cdot y_{prime} = -147.197 \cdot \text{in}$$

$$r_{px2} := 0 \text{ksi}$$

$$r_{py2} := \frac{\phi P_n}{A_{w_{total}}} = 1.412 \cdot \text{ksi}$$

$$r_{mx2} := M_d \cdot \frac{c_{y2}}{I_{p_{total}}} = -0.205 \cdot \text{ksi}$$

$$r_{my2} := M_d \cdot \frac{c_{x2}}{I_{p_{total}}} = 0.008 \cdot \text{ksi}$$

$$r_{a2} := \sqrt{(r_{px2} + r_{mx2})^2 + (r_{py2} + r_{my2})^2} = 1.434 \cdot \text{ksi}$$

$$F_u := \min(F_{u_{plate}}, F_{u_{base}}) = 65 \cdot \text{ksi}$$

$$R_{n_{plate}} := \phi_{wg} \cdot 0.6 \cdot F_u = 29.25 \cdot \text{ksi}$$

$$Cap_4 := \frac{r_{a2}}{R_{n_{plate}}} = 4.903 \cdot \%$$

$$Capacity := \max(Cap_1, Cap_2, Cap_3, Cap_4) = 6.8 \cdot \%$$

Check := "OK" if Capacity < 100%
"INSUFFICIENT" otherwise

Check = "OK"

**Gusset Plate to HSS Weld Design
 (AISC 15th Ed., Table 8-4)**

Electrode Strength:

$$F_{EXX} := 80 \text{ ksi}$$

Weld Size (in sixteenths of an inch):

$$D_1 := 6$$

$$\text{weldsize}_1 := \frac{D_1}{16} = \frac{3}{8}$$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{\text{pipe}} - t_{\text{pipe}} - \frac{D_{\text{new}}}{2} = 3.375 \cdot \text{in}$$

Load not in plane with weld group:

$$k := 0$$

$$a := \frac{ecc_2}{L_{\text{plate2}}} = 0.113$$

$$C_1 = 1.03$$

$$\text{Coeff}_1 := 3.67$$

$$\phi_w := 0.75$$

$$D_{\text{min1}} := \text{ceil} \left(\frac{\phi P_n \cdot \text{in}}{\phi_w \cdot \text{Coeff}_1 \cdot C_1 \cdot L_{\text{plate2}} \cdot \text{kip}} \right) = 3$$

$$\text{minweldsize} := \frac{D_{\text{min1}}}{16} = \frac{3}{16}$$

$$\text{Check}_{\text{weld}} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{\text{min1}} \wedge D_1 \geq \text{Min}_{\text{weldsize}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld}} = \text{"OK"}$$

$$\phi R_{n_{\text{weld1}}} := \phi_w \cdot \text{Coeff}_1 \cdot \text{ksi} \cdot \text{in} \cdot C_1 \cdot D_1 \cdot L_{\text{plate2}} = 510.313 \cdot \text{kip}$$

$$\text{Check}_{\text{weld1}} := \begin{cases} \text{"OK"} & \text{if } \phi R_{n_{\text{weld1}}} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld1}} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi R_{n_{\text{weld1}}}} = 43.99\%$$

Gusset Plate to Pole Punching Shear Check
 (max per unit length):
 (AISC 15th Ed., Section J4.2)

$$\phi_{sy} := 1.0$$

$$\phi_{sr} := 0.75$$

$$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.25 \cdot in$$

$$M_1 := \phi P_n \cdot ecc_1 = 2.076 \times 10^3 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 1.951 \times 10^4 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 0.133 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypole} \cdot 2 \cdot t_{pole} \cdot 1in = 29.25 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upole} \cdot 2 \cdot t_{pole} \cdot 1in = 27 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$$

$$Check_{PS1} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

Check_{PS1} = "OK"

$$\frac{f_v}{\phi F_v} = 0.49\%$$

Gusset Plate to HSS Punching Shear Check
 (max per unit length):
 (AISC 15th Ed., Section J4.2)

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$$

$$M_2 := \phi P_n \cdot ecc_2 = 757.62 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 187.5 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 5.051 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 30 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 27.9 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27.9 \cdot kip$$

$$Check_{PS2} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

Check_{PS2} = "OK"

$$\frac{f_v}{\phi F_v} = 18.103\%$$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 6 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f_c := 3000psi$	
Transverse Reinforcement Index:	$k_{tr} := 0$	Can be taken as 0 for design per ACI 318-14
Epoxy Factor:	$\psi_e := 1$	
Rebar Size Factor:	$\psi_s := 1$	
Casting Position Factor:	$\psi_t := 1$	
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	
Tie Size:	$Tie := 5$	$d_b := vlookup(d_s, Rebar, 2) in = 0.036 m$
Number of Vertical Rebar:	$n := 32$	

Design Load: $\phi P_{nt} := \phi P_{nt} = 304.688 \cdot kip$

**Development Length
 (ACI 318-14 Chapter 25):**

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie \cdot in}{8} + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]} \right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2} \cdot S_{\text{rebar}} = 3.6 \cdot \text{in}$$

$$B := \frac{BC_{\text{rebar}}}{2} - \frac{BC_{\text{new}}}{2} = 3.264 \cdot \text{in}$$

$$G := \sqrt{A^2 + B^2} = 4.859 \cdot \text{in}$$

$$l'_d := l_d + \frac{G}{1.5} + 3 \text{in} = 1.335 \text{m}$$

Epoxy Development Length:

Bond Strength:

Epoxy :=

$$\phi_{\text{bond}} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if Epoxy} = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3 \cdot \text{psi}$$

$$L_{be} := \frac{\phi P_n}{\pi \cdot D_{\text{new}} \cdot S_b \cdot \phi_{\text{bond}}} = 38.622 \cdot \text{in}$$

Required Embedment Length:

$$L_{\text{min_CED}} := \begin{cases} (5\text{ft}) & \text{if } D_{\text{new}} \neq 2.25\text{in} \\ (6.5\text{ft}) & \text{if Epoxy} = 0 \wedge D_{\text{new}} = 2.25\text{in} \\ (6\text{ft}) & \text{if Epoxy} = 1 \wedge D_{\text{new}} = 2.25\text{in} \end{cases}$$

$$L_{\text{min}} := \max(L_{be} + 12\text{in}, l'_d + 0.25 \cdot L_{be}, L_{\text{min_CED}}) = 6 \cdot \text{ft}$$

$$L_{\text{min}} := \text{ceil}\left(\frac{L_{\text{min}}}{0.5\text{ft}}\right) \cdot 0.5\text{ft}$$

$$L_{\text{min}} = 6 \cdot \text{ft}$$

$$\text{Check} := \begin{cases} \text{"OK"} & \text{if } L_{\text{min}} \leq L_{\text{em}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

Is this a CADSA site?

Yes
 No

$$\text{Pullout} := \begin{cases} \frac{\phi_p \cdot F_{u_{rod}} \cdot A_{new}}{1.6} & \text{if } CA = 0 \\ (0.8 \cdot F_{y_{rod}} \cdot A_{new}) & \text{otherwise} \end{cases} = 190 \cdot \text{kip}$$

Additional Anchor Rod Calculations

Tower Reactions From tnx:

$$\text{Moment} := 5071 \cdot \text{kip} \cdot \text{ft}$$

$$\text{Axial} := 81 \cdot \text{kip}$$

$$\text{Shear} := 48 \cdot \text{kip}$$

Existing Anchor Rod Group Moment of Inertia:

$$N_{\text{existing}} := 16$$

$$D_{\text{existing}} := 2.25 \cdot \text{in}$$

$$BC_{\text{existing}} := 54.375 \cdot \text{in}$$

$$A_{\text{existing}} := 3.25 \text{in}^2$$

$$I_{\text{existing}} := \left(\frac{N_{\text{existing}}}{8} \right) \cdot (BC_{\text{existing}}^2) \cdot (A_{\text{existing}}) = 1.922 \times 10^4 \cdot \text{in}^4$$

Additional (New) Anchor Rod Group Moment of Inertia:

$$N_{\text{new}} := 2$$

$$D_{\text{new}} := 2.25 \cdot \text{in}$$

$$F_{u_{\text{rod}}} := 125 \text{ksi}$$

$$BC_{\text{new}} := 66.8125 \cdot \text{in}$$

$$A_{\text{new}} := 3.25 \cdot \text{in}^2$$

$$F_{y_{\text{rod}}} := 105 \text{ksi}$$

$$I_{\text{new}} := \left(\frac{N_{\text{new}}}{8} \right) \cdot (BC_{\text{new}}^2) \cdot (A_{\text{new}}) = 3.627 \times 10^3 \cdot \text{in}^4$$

--See attached CCIplate output for additional anchor rod group capacity and structural rating values--

Anchor Rod Bracket Calculations

Design the anchor rod bracket and all components to resist the demanding load of the additional anchors.

Bracket Design Load (Anchor Tensile/Compression Capacity):
 (TIA-222-H, Section 4.9.9)

$$\phi P_{nc} := 1.0 \cdot F_{y_{rod}} \cdot A_{new} = 341.25 \cdot \text{kip}$$

$$\phi P_{nt} := 0.75 \cdot F_{u_{rod}} \cdot A_{new} = 304.688 \cdot \text{kip}$$

Demanding Load from CClplate:

$$\phi P_n := 224.48 \text{kip}$$

Tube Design (Pipe)

Member Size:

HSS5x5x1/2

Member Properties

(AISC 15th Ed., Table 1-13):

Outside Diameter:

$$D_{\text{pipe}} := 5 \cdot \text{in}$$

Thickness:

$$t_{\text{pipe}} := 0.5 \cdot \text{in}$$

Yield Strength:

$$F_{y_{\text{pipe}}} := 50 \cdot \text{ksi}$$

$$F_{u_{\text{pipe}}} := 62 \cdot \text{ksi}$$

Length:

$$L_{\text{pipe}} := 33.5 \cdot \text{in}$$

Inside Diameter:

$$ID_{\text{pipe}} := D_{\text{pipe}} - 2 \cdot t_{\text{pipe}} = 4 \cdot \text{in}$$

Area:

$$A_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^2 - ID_{\text{pipe}}^2)}{4} = 7.069 \cdot \text{in}^2$$

Moment of Inertia:

$$I_{\text{pipe}} := \frac{\pi \cdot (D_{\text{pipe}}^4 - ID_{\text{pipe}}^4)}{64} = 18.113 \cdot \text{in}^4$$

Radius of Gyration:

$$r_{\text{pipe}} := \sqrt{\frac{I_{\text{pipe}}}{A_{\text{pipe}}}} = 1.601 \cdot \text{in}$$

Bearing Check

(AISC 15th Ed., Equation J7-1):

$$\phi_b := 0.75$$

$$\phi P_n = \phi_b \cdot R_n = \phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}} \cdot A_{\text{pipe}}$$

$$A_{\text{pb}} := \frac{\phi P_n}{\phi_b \cdot 1.8 \cdot F_{y_{\text{pipe}}}} = 3.326 \cdot \text{in}^2$$

$$\text{Check}_{\text{bear}} := \begin{cases} \text{"OK"} & \text{if } A_{\text{pipe}} \geq A_{\text{pb}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{bear}} = \text{"OK"}$$

Compression Check
 (AISC 15th Ed., Eqs. E3-1 to E3-4):

$$\phi_c := 0.9$$

$$K_{\text{eff}} := 1$$

$$\phi P_{n_comp} = \phi_c \cdot F_{cr} \cdot A_g$$

$$L_c := K \cdot L_{\text{pipe}} = 33.5 \cdot \text{in}$$

$$F_e := \frac{\pi^2 \cdot 29000 \text{ksi}}{\left(\frac{L_c}{r_{\text{pipe}}}\right)^2} = 653.54 \cdot \text{ksi}$$

$$\frac{L_c}{r_{\text{pipe}}} = 20.927 < 4.71 \cdot \sqrt{\frac{29000 \cdot \text{ksi}}{F_{y\text{pipe}}}} = 113.432$$

$$\therefore F_{cr} := 0.658 \cdot \frac{F_{y\text{pipe}}}{F_e} \cdot F_{y\text{pipe}} = 48.424 \cdot \text{ksi}$$

(AISC 15th Ed., Equation J4-6):

$$\phi P_{n_comp} := \begin{cases} \phi_c \cdot F_{y\text{pipe}} \cdot A_{\text{pipe}} & \text{if } \frac{L_c}{r_{\text{pipe}}} \leq 25 \\ \phi_c \cdot F_{cr} \cdot A_{\text{pipe}} & \text{otherwise} \end{cases}$$

$$\phi P_{n_comp} = 318.086 \cdot \text{kip}$$

$$\text{Check}_{\text{comp}} := \begin{cases} \text{"OK"} & \text{if } \phi P_{n_comp} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{comp}} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi P_{n_comp}} = 70.572\%$$

Gusset Plate Design

Gusset Plate width:	$w_{\text{plate}} := 6.5 \cdot \text{in}$
Gusset Plate thickness:	$t_{\text{plate}} := 1.25 \cdot \text{in}$
	$L_{\text{plate1}} := 30 \cdot \text{in}$
	$L_{\text{plate2}} := 24.5 \cdot \text{in}$
Gusset Plate Strength:	$F_{y\text{plate}} := 65 \cdot \text{ksi}$
	$F_{u\text{plate}} := 80 \cdot \text{ksi}$
Pole thickness:	$t_{\text{pole}} := 0.375 \cdot \text{in}$

Shear Check
 (AISC 15th Ed., Eqs. J4-3 and J4-4):

$$A_g := t_{plate} \cdot L_{plate2} = 30.625 \cdot \text{in}^2$$

$$A_{nv} := A_g = 30.625 \cdot \text{in}^2$$

Shear Yielding

$$\phi_v := 1$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_g \cdot F_{yplate} = 1.194 \times 10^3 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

$$\frac{\phi P_n}{\phi V_{plate}} = 18.795\%$$

Shear Rupture

$$\phi_v := 0.75$$

$$\phi V_{plate} := \phi_v \cdot 0.6 \cdot A_{nv} \cdot F_{uplate} = 1.102 \times 10^3 \cdot \text{kip}$$

$$\text{Check}_{shear} := \begin{cases} \text{"OK"} & \text{if } \phi V_{plate} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check_{shear} = "OK"

$$\frac{\phi P_n}{\phi V_{plate}} = 20.361\%$$

Gusset Plate to Pole and Base Plate
Weld Design (Horizontal and Vertical
Weld):
 (AISC 15th Ed., Part 8)

Gusset plate thickness:

$$t_{plate} = 1.25 \cdot \text{in}$$

Pole Grade:

$$F_{ypole} := 65 \text{ksi}$$

$$F_{upole} := 80 \text{ksi}$$

Base Plate Grade:

$$F_{ybase} := 50 \text{ksi}$$

$$F_{ubase} := 65 \text{ksi}$$

Gusset Plate Grade:

$$F_{yplate} = 65 \cdot \text{ksi}$$

$$F_{uplate} = 80 \cdot \text{ksi}$$

Height of vertical weld from base plate:

$$H_{vw} := L_{plate1} = 30 \cdot \text{in}$$

$$\text{Notch}_{horiz} := 0 \cdot \text{in}$$

$$\text{Notch}_{vert} := 0 \cdot \text{in}$$

Gap between Base Plate and HSS:

$$\text{Gap} := 0 \text{in}$$

Vertical fillet weld size to pole:
 (in sixteenths of an inch)

$$D_{vpole} := 4$$

$$\text{weldsize}_{pole} := \frac{D_{vpole}}{16} = \frac{1}{4}$$

Weld Material Grade:

$$F_{EXX} := 80 \text{ksi}$$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.875 \cdot \text{in}$$

Load not in plane with
 weld group:

$$k := 0$$

$$a := \frac{ecc_1}{L_{plate1}} = 0.329$$

$$C_1 = 1.03$$

$$\text{Coeff}_1 := 2.9653$$

$$\phi_w := 0.75$$

$$D_{min1} := \text{ceil} \left(\frac{\phi P_n \cdot \text{in}}{\phi_w \cdot \text{Coeff}_1 \cdot C_1 \cdot L_{plate1} \cdot \text{kip}} \right) = 4$$

$$\text{minweldsize} := \frac{D_{min1}}{16} = \frac{1}{4}$$

$$\text{Check}_{weld} := \begin{cases} \text{"OK"} & \text{if } D_{vpole} \geq D_{min1} \wedge D_{vpole} \geq \text{Min}_{weldsize} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{weld} = \text{"OK"}$$

$$\phi Rn_{weld1} := \phi_w \cdot \text{Coeff}_1 \cdot \text{ksi} \cdot \text{in} \cdot C_1 \cdot D_{vpole} \cdot L_{plate1} = 274.883 \cdot \text{kip}$$

$$\text{Check}_{weld1} := \begin{cases} \text{"OK"} & \text{if } \phi Rn_{weld1} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{weld1} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi Rn_{weld1}} = 81.66\%$$

Gusset Plate to HSS Weld Design
(AISC 15th Ed., Table 8-4)

Electrode Strength: $F_{EXX} := 80 \text{ ksi}$

Weld Size (in sixteenths of an inch): $D_1 := 6$ $\text{weldsize}_1 := \frac{D_1}{16} = \frac{3}{8}$

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$\text{ecc}_2 := D_{\text{pipe}} - t_{\text{pipe}} - \frac{D_{\text{new}}}{2} = 3.375 \cdot \text{in}$$

Load not in plane with weld group: $k := 0$

$$a := \frac{\text{ecc}_2}{L_{\text{plate2}}} = 0.138$$

$$C_1 = 1.03$$

$$\text{Coeff}_1 := 3.67$$

$$\phi_w := 0.75$$

$$D_{\text{min1}} := \text{ceil} \left(\frac{\phi P_n \cdot \text{in}}{\phi_w \cdot \text{Coeff}_1 \cdot C_1 \cdot L_{\text{plate2}} \cdot \text{kip}} \right) = 4$$

$$\text{minweldsize} := \frac{D_{\text{min1}}}{16} = \frac{1}{4}$$

$$\text{Check}_{\text{weld}} := \begin{cases} \text{"OK"} & \text{if } D_1 \geq D_{\text{min1}} \wedge D_1 \geq \text{Min}_{\text{weldsize}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld}} = \text{"OK"}$$

$$\phi R_{n_{\text{weld1}}} := \phi_w \cdot \text{Coeff}_1 \cdot \text{ksi} \cdot \text{in} \cdot C_1 \cdot D_1 \cdot L_{\text{plate2}} = 416.756 \cdot \text{kip}$$

$$\text{Check}_{\text{weld1}} := \begin{cases} \text{"OK"} & \text{if } \phi R_{n_{\text{weld1}}} \geq \phi P_n \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$$\text{Check}_{\text{weld1}} = \text{"OK"}$$

$$\frac{\phi P_n}{\phi R_{n_{\text{weld1}}}} = 53.86\%$$

**Gusset Plate to Pole Punching
 Shear Check
 (max per unit length):
 (AISC 15th Ed., Section J4.2)**

$$\phi_{sy} := 1.0$$

$$\phi_{sr} := 0.75$$

$$ecc_1 := w_{plate} + D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 9.875 \cdot in$$

$$M_1 := \phi P_n \cdot ecc_1 = 2.217 \times 10^3 \cdot kip \cdot in$$

$$S_1 := \frac{t_{plate} \cdot L_{plate1}^2}{6} = 187.5 \cdot in^3$$

$$f_v := \frac{M_1}{S_1} \cdot t_{plate} \cdot 1in = 14.778 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypole} \cdot 2 \cdot t_{pole} \cdot 1in = 29.25 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upole} \cdot 2 \cdot t_{pole} \cdot 1in = 27 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27 \cdot kip$$

$$Check_{PS1} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

Check_{PS1} = "OK"

$$\frac{f_v}{\phi F_v} = 54.73\%$$

**Gusset Plate to HSS Punching
 Shear Check
 (max per unit length):
 (AISC 15th Ed., Section J4.2)**

Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS.

$$ecc_2 := D_{pipe} - t_{pipe} - \frac{D_{new}}{2} = 3.375 \cdot in$$

$$M_2 := \phi P_n \cdot ecc_2 = 757.62 \cdot kip \cdot in$$

$$S_2 := \frac{t_{plate} \cdot L_{plate2}^2}{6} = 125.052 \cdot in^3$$

$$f_v := \frac{M_2}{S_2} \cdot t_{plate} \cdot 1in = 7.573 \cdot kip$$

AISC 15th Ed., Equation J4-3:

$$\phi F_{sy} := \phi_{sy} \cdot 0.6 \cdot F_{ypipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 30 \cdot kip$$

AISC 15th Ed., Equation J4-4:

$$\phi F_{sr} := \phi_{sr} \cdot 0.6 \cdot F_{upipe} \cdot 2 \cdot t_{pipe} \cdot 1in = 27.9 \cdot kip$$

$$\phi F_v := \min(\phi F_{sy}, \phi F_{sr}) = 27.9 \cdot kip$$

$$Check_{PS2} := \begin{cases} "OK" & \text{if } \phi F_v \geq f_v \\ "N/G" & \text{otherwise} \end{cases}$$

Check_{PS2} = "OK"

$$\frac{f_v}{\phi F_v} = 27.144\%$$

Embedment Depth Calculations

Projected Embedment Depth:	$L_{em} := 6 \cdot ft$	
Yield Strength of Rebar:	$f_y := 60ksi$	
Concrete Strength:	$f_c := 3000psi$	
Transverse Reinforcement Index:	$k_{tr} := 0$	Can be taken as 0 for design per ACI 318-14
Epoxy Factor:	$\psi_e := 1$	
Rebar Size Factor:	$\psi_s := 1$	
Casting Position Factor:	$\psi_t := 1$	
Concrete Weight Factor:	$\lambda := 1 \cdot \sqrt{psi}$	
Pier Diameter:	$D_{pier} := 7ft$	
Cover:	$c_c := 4in$	
Rebar Size:	$d_s := 11$	
Tie Size:	$Tie := 5$	
Number of Vertical Rebar:	$n := 32$	

$d_b := vlookup(d_s, Rebar, 2) \text{ in} = 0.036 \text{ m}$

Design Load: $\phi P_{nt} := \phi P_{nt} = 304.688 \cdot kip$

Development Length (ACI 318-14 Chapter 25):

$$BC_{rebar} := D_{pier} - 2 \cdot c_c - \frac{Tie \cdot in}{4} - d_b = 73.34 \cdot in$$

$$S_{rebar} := \frac{\pi \cdot BC_{rebar}}{n} = 7.2 \cdot in$$

$$c_b := \min\left(c_c + \frac{Tie}{8} \cdot in + \frac{d_b}{2}, S_{rebar} \cdot 0.5\right) = 3.6 \cdot in$$

ACI 318-14, Equation 25.4.2.3a:

$$l_d := \left[\frac{3}{40} \cdot \frac{f_y}{\lambda \cdot \sqrt{f_c}} \cdot \frac{\psi_t \cdot \psi_e \cdot \psi_s}{\min\left[\left(\frac{c_b + k_{tr}}{d_b}\right), 2.5\right]} \right] \cdot d_b = 46.337 \cdot in$$

Calculate Max Distance Between Rebar and New Anchor Rods:

$$A := \frac{1}{2} \cdot S_{\text{rebar}} = 3.6 \cdot \text{in}$$

$$B := \frac{BC_{\text{rebar}}}{2} - \frac{BC_{\text{new}}}{2} = 3.264 \cdot \text{in}$$

$$G := \sqrt{A^2 + B^2} = 4.859 \cdot \text{in}$$

$$l'_d := l_d + \frac{G}{1.5} + 3 \text{in} = 1.335 \text{m}$$

Epoxy Development Length:

Bond Strength:

Epoxy :=

$$\phi_{\text{bond}} := 0.65$$

$$S_b := \begin{cases} S_{bh} & \text{if Epoxy} = 0 \\ S_{bA} & \text{otherwise} \end{cases}$$

$$S_b = 1.717 \times 10^3 \cdot \text{psi}$$

$$L_{be} := \frac{\phi P_n}{\pi \cdot D_{\text{new}} \cdot S_b \cdot \phi_{\text{bond}}} = 38.622 \cdot \text{in}$$

Required Embedment Length:

$$L_{\text{min_CED}} := \begin{cases} (5\text{ft}) & \text{if } D_{\text{new}} \neq 2.25\text{in} \\ (6.5\text{ft}) & \text{if Epoxy} = 0 \wedge D_{\text{new}} = 2.25\text{in} \\ (6\text{ft}) & \text{if Epoxy} = 1 \wedge D_{\text{new}} = 2.25\text{in} \end{cases}$$

$$L_{\text{min}} := \max(L_{be} + 12\text{in}, l'_d + 0.25 \cdot L_{be}, L_{\text{min_CED}}) = 6 \cdot \text{ft}$$

$$L_{\text{min}} := \text{ceil}\left(\frac{L_{\text{min}}}{0.5\text{ft}}\right) \cdot 0.5\text{ft}$$

$$L_{\text{min}} = 6 \cdot \text{ft}$$

$$\text{Check} := \begin{cases} \text{"OK"} & \text{if } L_{\text{min}} \leq L_{\text{em}} \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

Check = "OK"

Anchor Rod Pullout Test:

$$\phi_p := 0.75$$

Is this a CADSA site?

Yes
 No

$$\text{Pullout} := \begin{cases} \frac{\phi_p \cdot F_{u_{rod}} \cdot A_{new}}{1.6} & \text{if } CA = 0 \\ (0.8 \cdot F_{y_{rod}} \cdot A_{new}) & \text{otherwise} \end{cases} = 190 \cdot \text{kip}$$

Drilled Pier Foundation

BU #: 876334
 Site Name: SOUTHLINGTON, SMO
 Order Number: 556607, Rev 0

TIA-222 Revision: H
 Tower Type: Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	5071.26	
Axial Force (kips)	81.34	
Shear Force (kips)	46.84	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	20.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
<i>From 1' above grade to 3' below grade</i>		
Pier Diameter	26.04675	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	100.5	in
Tie Size	5	
Tie Spacing	6	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Pier Section 2		
<i>From 3' below grade to 20.5' below grade</i>		
Pier Diameter	7	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{v=0} (ft from TOC)	6.01	-
Soil Safety Factor	1.41	-
Max Moment (kip-ft)	5322.22	-
Rating*	89.9%	-

Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	277.73	-
End Bearing (kips)	1663.01	-
Weight of Concrete (kips)	504.78	-
Total Capacity (kips)	1940.74	-
Axial (kips)	586.12	-
Rating*	28.8%	-

Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	5.82	-
Critical Moment (kip-ft)	5321.57	-
Critical Moment Capacity	8102.22	-
Rating*	62.6%	-

Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	16.50	-
Critical Shear (kip)	785.44	-
Critical Shear Capacity	2493.80	-
Rating*	30.0%	-

Shear-Friction Methodology is Applied

Soil Interaction Rating*	89.9%
Structural Foundation Rating*	62.6%

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5	<input checked="" type="checkbox"/>
Shear Design Option	<input type="checkbox"/>
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input checked="" type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Profile													
Groundwater Depth	N/A			# of Layers	9								

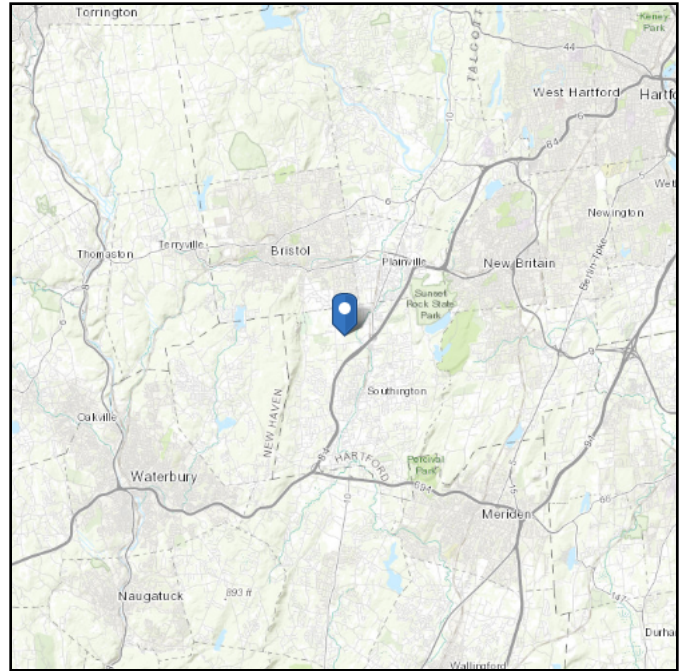
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	1	1	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	1	2	1	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	2	3.3	1.3	130	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
4	3.3	5	1.7	130	150	0	36	0.000	0.000	0.00	0.00			Cohesionless
5	5	6	1	130	150	0	36	0.000	0.000	0.65	0.65			Cohesionless
6	6	8	2	120	150	0	30	0.000	0.000	0.90	0.90			Cohesionless
7	8	12.4	4.4	130	150	0	36	0.00	0.00	1.38	1.38			Cohesionless
8	12.4	14.5	2.1	145	150	0	40	0.00	0.00	3.97	3.97			Cohesionless
9	14.5	20.5	6	145	150	0	40	0.00	0.00	0.00	0.00	54.9		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: 296.07 ft (NAVD 88)
Latitude: 41.632472
Longitude: -72.89425



Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 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: Tue Feb 02 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 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.

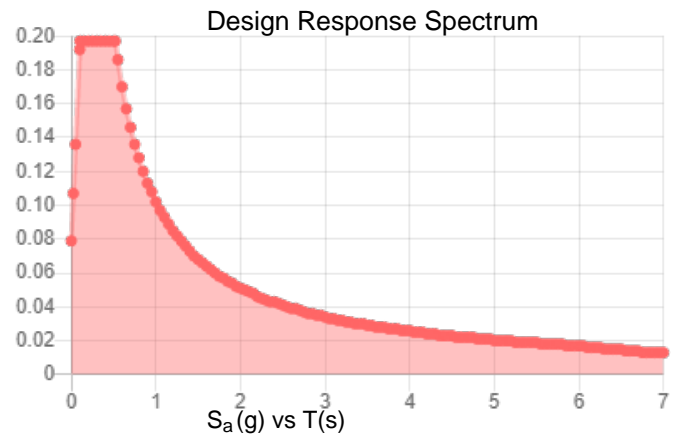
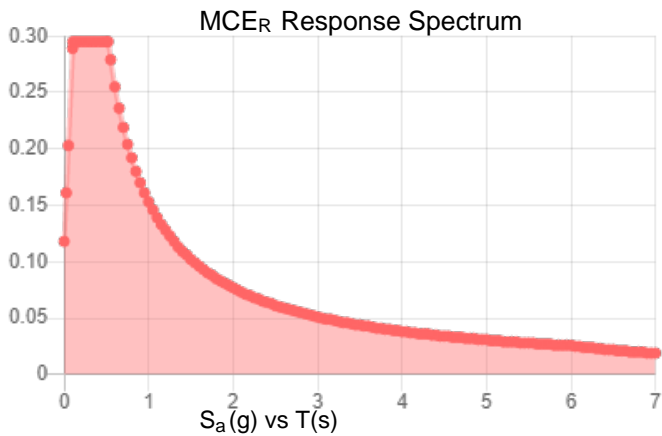
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.185	S_{DS} :	0.197
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.094
S_{MS} :	0.295	PGA _M :	0.151
S_{M1} :	0.153	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Feb 02 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

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

Date Accessed: Tue Feb 02 2021

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

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

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