STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

July 15, 2019

Romina Kirchmaier
Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
Billerica, MA 01862

RE: **EM-AT&T-103-190606** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 613 Connecticut Avenue, Norwalk, Connecticut.

Dear Ms. Kirchmaier:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on June 6, 2019. On June 17, 2019, the Council issued a letter (enclosed) stating that the request for exempt modification was incomplete because the Structural Opinion Letter provided with the request did not include enough information for the Council to assess the ability of the existing monopole tower structure to accommodate the proposed modifications and equipment loading. Also the Construction Drawings provided referenced the 2012 International Building Code (IBC) and the 2014 National Electric Code (NEC). The Council recommended that Smartlink, LLC provide a more detailed SA and a CD that references the 2015 IBC and the 2017 NEC, on or before July 15, 2019.

On July 10, 2019, the Council received only a Structural Analysis Report dated June 28, 2019 but no Construction Drawings were provided. Staff also observed that Item no. 4.1) Recommendations, on page 7 of the SA states "The tower and its foundations have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed." No modification drawings have been provided with the response.

Therefore, the exempt modification request remains incomplete at this time. The Council recommends that Smartlink, LLC provide clarification on the proposed modifications referenced above, the modification drawings if applicable, and a CD that references the 2015 IBC and the 2017 NEC, on or before August 5, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to August 5, 2019. **Please provide an electronic version and one hard copy of the response for the incomplete request to be rendered complete and processed.**

This notice of incompletion shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

Enclosure: Incomplete Letter dated June 17, 2019

c: The Honorable Harry W. Rilling, Mayor, City of Norwalk
Steven Kleppin, Director of Planning & Zoning, City of Norwalk

STATE OF CONNECTICUT

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Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
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June 7, 2019

Romina Kirchmaier
Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
Billerica, MA 01862

RE: **EM-AT&T-103-190606** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 613 Connecticut Avenue, Norwalk, Connecticut.

Dear Ms. Kirchmaier:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on June 6, 2019.

According to Section 16-50j-73 of the Regulations of Connecticut State Agencies, "...any modification, as defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, to an existing tower site, except as specified in Sections 16-50j-72 and 16-50j-88 of the Regulations of Connecticut State Agencies, may have a substantial adverse environmental effect."

Staff has reviewed this exempt modification request for completeness and has identified a deficiency in the Structural Opinion Letter (SA) provided with the request. The SA does not include enough information for the Council to assess the ability of the existing monopole tower structure to accommodate the proposed modifications and equipment loading. Some of the required information includes, but is not limited to the following:

- The percentage structural capacity of the monopole tower structure, its foundation and mount, if applicable; and
- The recommendations and conclusions of the structural analysis

Also, the Construction Drawing (CD) prepared by Fullerton Engineering Design and dated March 11, 2019 references the 2012 International Building Code (IBC) and the 2014 National Electric Code (NEC); however, the State of Connecticut has adopted the 2015 IBC and the 2017 NEC as amended in the 2018 CSBC effective October 1, 2018.

Therefore, the exempt modification request is incomplete at this time. The Council recommends that Smartlink, LLC provide a more detailed SA that contains, but is not limited to, all the information referenced above and a CD that references the 2015 IBC and the 2017 NEC, on or before July 15, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to July 15, 2019. **Please provide an electronic version and one hard copy of the revised SA and CD, for the incomplete request to be rendered complete and processed.**

This notice of incompletion shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

c: The Honorable Harry W. Rilling, Mayor, City of Norwalk
Steven Kleppin, Director of Planning & Zoning, City of Norwalk

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Date: **June 28, 2019**

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL02108
	Carrier Site Name:	NORWALK WEST - CT Ave,
Crown Castle Designation:	**Crown Castle BU Number:**	841287
	Crown Castle Site Name:	NORWALK WEST- CT AVE
	Crown Castle JDE Job Number:	482696
	Crown Castle Work Order Number:	1760862
	Crown Castle Order Number:	424185 Rev. 3
Engineering Firm Designation:	**Crown Castle Project Number:**	1760862
Site Data:	**600 Connecticut Ave, NORWALK, Fairfield County, CT** **Latitude *41° 5' 49.45"*, Longitude *-73° 26' 56.61"*** **150 Foot - Monopole Tower**	

Dear Cheryl Schultz,

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

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

LC5: Proposed Equipment Configuration **Sufficient Capacity - 95.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 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: Ryan T. Conway / DLC

Respectfully submitted by:

Terry P. Styran, P.E.
Senior Project Engineer

7/1/2019

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Valmont. 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:	120 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.232
Seismic S1:	0.067
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)
152.0	152.0	6	andrew	SBNHH-1D65A w/ Mount Pipe	12 6 4	1-5/8 3/4 3/8
		3	ericsson	RRUS 11 B12		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4478 B14		
		6	powerwave technologies	7020.00		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		3	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 603-1]		
		1	tower mounts	Side Arm Mount [SO 102-3]		
		1	tower mounts	Side Arm Mount [SO 202-3]		

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	5344374	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH Engineering, Inc.	4710140	CCISITES
4-TOWER MANUFACTURER DRAWINGS	AT&T Technologies	5968178	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group	5344563	CCISITES
4-POST-MODIFICATION INSPECTION	GPD Group	6044141	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

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

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
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 3 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP15.254x14.5x0.25	Pole	13.7	Pass
145 - 140	Pole	TP16.008x15.254x0.25	Pole	22.2	Pass
140 - 139.58	Pole	TP16.071x16.008x0.25	Pole	22.9	Pass
139.58 - 139.33	Pole + Reinf.	TP16.109x16.071x0.55	Reinf. 5 Tension Rupture	17.3	Pass
139.33 - 134.33	Pole + Reinf.	TP16.863x16.109x0.525	Reinf. 5 Tension Rupture	23.7	Pass
134.33 - 129.33	Pole + Reinf.	TP17.617x16.863x0.5125	Reinf. 5 Tension Rupture	29.9	Pass
129.33 - 124.33	Pole + Reinf.	TP18.371x17.617x0.5	Reinf. 5 Tension Rupture	35.9	Pass
124.33 - 119.33	Pole + Reinf.	TP19.125x18.371x0.4875	Reinf. 5 Tension Rupture	41.8	Pass
119.33 - 114.33	Pole + Reinf.	TP19.88x19.125x0.475	Reinf. 5 Tension Rupture	47.5	Pass
114.33 - 110	Pole + Reinf.	TP20.533x19.88x0.4625	Reinf. 5 Tension Rupture	52.3	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 109.75	Pole + Reinf.	TP20.571x20.533x0.5625	Reinf. 4 Tension Rupture	44.0	Pass
109.75 - 104.75	Pole + Reinf.	TP21.325x20.571x0.55	Reinf. 4 Tension Rupture	48.8	Pass
104.75 - 99.75	Pole + Reinf.	TP22.079x21.325x0.5375	Reinf. 4 Tension Rupture	53.5	Pass
99.75 - 94.75	Pole + Reinf.	TP22.833x22.079x0.525	Reinf. 4 Tension Rupture	58.1	Pass
94.75 - 89.75	Pole + Reinf.	TP23.587x22.833x0.5125	Reinf. 4 Tension Rupture	62.5	Pass
89.75 - 84.75	Pole + Reinf.	TP24.341x23.587x0.5	Reinf. 4 Tension Rupture	66.9	Pass
84.75 - 81.5	Pole + Reinf.	TP24.832x24.341x0.5	Reinf. 4 Tension Rupture	69.6	Pass
81.5 - 81.25	Pole + Reinf.	TP24.869x24.832x0.5	Reinf. 3 Tension Rupture	69.8	Pass
81.25 - 76.25	Pole + Reinf.	TP25.624x24.869x0.4875	Reinf. 3 Tension Rupture	74.0	Pass
76.25 - 71.25	Pole + Reinf.	TP26.378x25.624x0.475	Reinf. 3 Tension Rupture	78.0	Pass
71.25 - 70	Pole + Reinf.	TP27.17x26.378x0.475	Reinf. 3 Tension Rupture	78.9	Pass
70 - 65	Pole + Reinf.	TP26.82x26.066x0.5375	Reinf. 3 Tension Rupture	75.3	Pass
65 - 60	Pole + Reinf.	TP27.574x26.82x0.5313	Reinf. 3 Tension Rupture	78.6	Pass
60 - 55	Pole + Reinf.	TP28.329x27.574x0.525	Reinf. 3 Tension Rupture	81.7	Pass
55 - 51.25	Pole + Reinf.	TP28.894x28.329x0.5188	Reinf. 3 Tension Rupture	83.9	Pass
51.25 - 51	Pole + Reinf.	TP28.932x28.894x0.6	Reinf. 2 Tension Rupture	71.2	Pass
51 - 46	Pole + Reinf.	TP29.686x28.932x0.6	Reinf. 2 Tension Rupture	73.8	Pass
46 - 41	Pole + Reinf.	TP30.44x29.686x0.5875	Reinf. 2 Tension Rupture	76.3	Pass
41 - 36	Pole + Reinf.	TP31.194x30.44x0.575	Reinf. 2 Tension Rupture	78.8	Pass
36 - 31	Pole + Reinf.	TP31.948x31.194x0.575	Reinf. 2 Tension Rupture	81.2	Pass
31 - 30	Pole + Reinf.	TP32.552x31.948x0.575	Reinf. 2 Tension Rupture	81.6	Pass
30 - 26.25	Pole + Reinf.	TP32.04x31.474x0.6375	Reinf. 2 Tension Rupture	77.5	Pass
26.25 - 26	Pole + Reinf.	TP32.078x32.04x0.6375	Reinf. 1 Tension Rupture	77.6	Pass
26 - 21	Pole + Reinf.	TP32.832x32.078x0.625	Reinf. 1 Tension Rupture	79.5	Pass
21 - 16	Pole + Reinf.	TP33.586x32.832x0.625	Reinf. 1 Tension Rupture	81.3	Pass
16 - 11	Pole + Reinf.	TP34.341x33.586x0.6125	Reinf. 1 Tension Rupture	83.1	Pass
11 - 6	Pole + Reinf.	TP35.095x34.341x0.6125	Reinf. 1 Tension Rupture	84.7	Pass
6 - 1	Pole + Reinf.	TP35.849x35.095x0.6	Reinf. 1 Tension Rupture	86.3	Pass
1 - 0	Pole + Reinf.	TP36x35.849x0.6	Reinf. 1 Tension Rupture	86.6	Pass
				Summary	
			Pole	60.9	Pass
			Reinforcement	86.6	Pass
			Overall	86.6	Pass

Table 4 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Plate	110	74.7	Pass
1	Flange Bolts	110	95.5	Pass
1	Anchor Rods	0	71.4	Pass
1	Base Plate	0	59.1	Pass
1	Base Foundation Structure	0	58.9	Pass
1	Base Foundation Soil Interaction	0	56.1	Pass

Structure Rating (max from all components) =	95.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

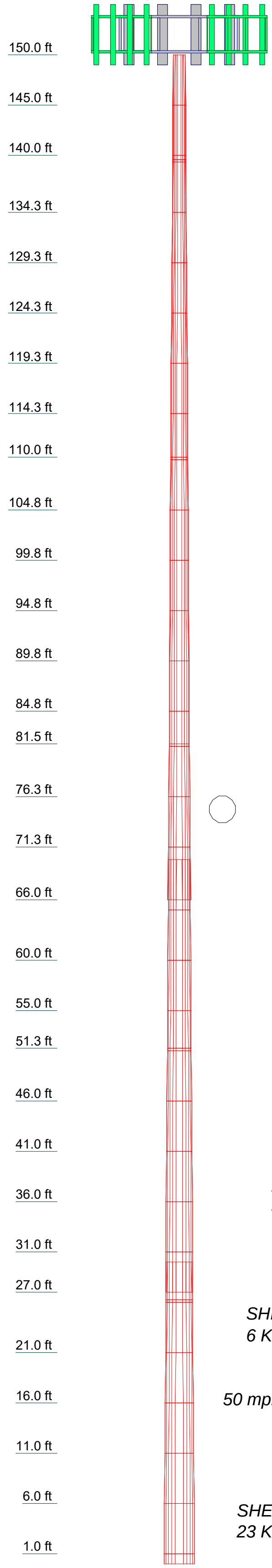
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration once the proposed modifications are installed.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.2500		14.5000	15.2541		0.2
2	5.00	12	0.2500		15.2541	16.0083		0.2
3	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
4	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
5	5.00	12	[illegible]		[illegible]	[illegible]		0.4
6	5.00	12	0.5125		16.8630	17.6172		0.4
7	5.00	12	0.5000		17.6172	18.3713		0.4
8	5.00	12	0.4875		18.3713	19.1254		0.4
9	5.00	12	0.4750		19.1254	19.8796		0.5
10	4.33	12	[illegible]		19.8796	[illegible]		0.4
11	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
12	5.00	12	[illegible]		[illegible]	21.3249		0.6
13	5.00	12	0.5375		21.3249	22.0791		0.6
14	5.00	12	0.5250		22.0791	22.8332		0.6
15	5.00	12	0.5125		22.8332	23.5874		0.6
16	5.00	12	0.5000		23.5874	24.3415		0.6
17	3.25	12	[illegible]		[illegible]	[illegible]		0.4
18	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
19	5.00	12	[illegible]		[illegible]	25.6235		0.6
20	5.00	12	0.4750		25.6235	26.3777	A572-65	0.6
21	[illegible]	12	[illegible]	4.00	26.3777	[illegible]		0.7
22	[illegible]	12	[illegible]		[illegible]	[illegible]		0.7
23	5.00	12	[illegible]		[illegible]	27.5745		0.7
24	5.00	12	0.5250		27.5745	28.3286		0.8
25	3.75	12	[illegible]		[illegible]	[illegible]		0.6
26	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
27	5.00	12	0.6000		[illegible]	29.6861		0.9
28	5.00	12	0.5875		29.6861	30.4402		0.9
29	5.00	12	0.5750		30.4402	31.1943		0.9
30	5.00	12	0.5750		31.1943	31.9485		0.9
31	[illegible]	12	0.5750	3.00	[illegible]	[illegible]		0.7
32	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
33	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
34	5.00	12	[illegible]		[illegible]	32.8320		1.0
35	5.00	12	0.6250		32.8320	33.5863		1.1
36	5.00	12	0.6125		33.5863	34.3406		1.1
37	5.00	12	0.6125		34.3406	35.0949		1.1
38	5.00	12	[illegible]		35.0949	35.8491		1.1
39	1.00	12	[illegible]		[illegible]	[illegible]		[illegible]
								21.9



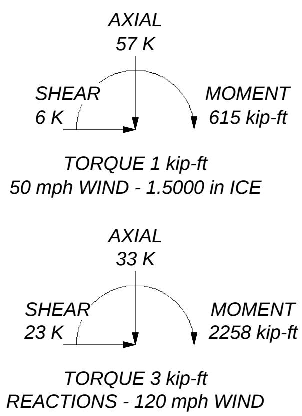
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED



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

Job: **BU# 841287**	
Project:	
Client: Crown Castle	Drawn by: DCampbell / App'd:
Code: TIA-222-H	Date: 06/28/19 / Scale: NTS
Path: C:\Users\dcampbell\Desktop\841287 WO 1760862\QA - DLC\841287_Modified.eri	Dwg No. E-1

Tower Input Data

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

1) Tower is located in Fairfield County, Connecticut.
2) Tower base elevation above sea level: 89.00 ft.
3) Basic wind speed of 120 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.00 ft.
9) Nominal ice thickness of 1.5000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) A non-linear (P-delta) analysis was used.
16) Pressures are calculated at each section.
17) Stress ratio used in pole design is 1.05.
18) Tower analysis based on target reliabilities in accordance with Annex S.
19) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-145.00	5.00	0.00	12	14.5000	15.2541	0.2500	1.0000	A572-65 (65 ksi)
L2	145.00-140.00	5.00	0.00	12	15.2541	16.0083	0.2500	1.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	140.00-139.58	0.42	0.00	12	16.0083	16.0712	0.2500	1.0000	(65 ksi) A572-65 (65 ksi)
L4	139.58-139.33	0.25	0.00	12	16.0712	16.1089	0.5500	2.2000	A572-65 (65 ksi)
L5	139.33-134.33	5.00	0.00	12	16.1089	16.8630	0.5250	2.1000	A572-65 (65 ksi)
L6	134.33-129.33	5.00	0.00	12	16.8630	17.6172	0.5125	2.0500	A572-65 (65 ksi)
L7	129.33-124.33	5.00	0.00	12	17.6172	18.3713	0.5000	2.0000	A572-65 (65 ksi)
L8	124.33-119.33	5.00	0.00	12	18.3713	19.1254	0.4875	1.9500	A572-65 (65 ksi)
L9	119.33-114.33	5.00	0.00	12	19.1254	19.8796	0.4750	1.9000	A572-65 (65 ksi)
L10	114.33-110.00	4.33	0.00	12	19.8796	20.5331	0.4625	1.8500	A572-65 (65 ksi)
L11	110.00-109.75	0.25	0.00	12	20.5331	20.5708	0.5625	2.2500	A572-65 (65 ksi)
L12	109.75-104.75	5.00	0.00	12	20.5708	21.3249	0.5500	2.2000	A572-65 (65 ksi)
L13	104.75-99.75	5.00	0.00	12	21.3249	22.0791	0.5375	2.1500	A572-65 (65 ksi)
L14	99.75-94.75	5.00	0.00	12	22.0791	22.8332	0.5250	2.1000	A572-65 (65 ksi)
L15	94.75-89.75	5.00	0.00	12	22.8332	23.5874	0.5125	2.0500	A572-65 (65 ksi)
L16	89.75-84.75	5.00	0.00	12	23.5874	24.3415	0.5000	2.0000	A572-65 (65 ksi)
L17	84.75-81.50	3.25	0.00	12	24.3415	24.8317	0.5000	2.0000	A572-65 (65 ksi)
L18	81.50-81.25	0.25	0.00	12	24.8317	24.8694	0.5000	2.0000	A572-65 (65 ksi)
L19	81.25-76.25	5.00	0.00	12	24.8694	25.6235	0.4875	1.9500	A572-65 (65 ksi)
L20	76.25-71.25	5.00	0.00	12	25.6235	26.3777	0.4750	1.9000	A572-65 (65 ksi)
L21	71.25-66.00	5.25	4.00	12	26.3777	27.1695	0.4750	1.9000	A572-65 (65 ksi)
L22	66.00-65.00	5.00	0.00	12	26.0662	26.8203	0.5375	2.1500	A572-65 (65 ksi)
L23	65.00-60.00	5.00	0.00	12	26.8203	27.5745	0.5313	2.1250	A572-65 (65 ksi)
L24	60.00-55.00	5.00	0.00	12	27.5745	28.3286	0.5250	2.1000	A572-65 (65 ksi)
L25	55.00-51.25	3.75	0.00	12	28.3286	28.8942	0.5188	2.0750	A572-65 (65 ksi)
L26	51.25-51.00	0.25	0.00	12	28.8942	28.9319	0.6000	2.4000	A572-65 (65 ksi)
L27	51.00-46.00	5.00	0.00	12	28.9319	29.6861	0.6000	2.4000	A572-65 (65 ksi)
L28	46.00-41.00	5.00	0.00	12	29.6861	30.4402	0.5875	2.3500	A572-65 (65 ksi)
L29	41.00-36.00	5.00	0.00	12	30.4402	31.1943	0.5750	2.3000	A572-65 (65 ksi)
L30	36.00-31.00	5.00	0.00	12	31.1943	31.9485	0.5750	2.3000	A572-65 (65 ksi)
L31	31.00-27.00	4.00	3.00	12	31.9485	32.5518	0.5750	2.3000	A572-65 (65 ksi)
L32	27.00-26.25	3.75	0.00	12	31.4743	32.0400	0.6375	2.5500	A572-65 (65 ksi)
L33	26.25-26.00	0.25	0.00	12	32.0400	32.0777	0.6375	2.5500	A572-65 (65 ksi)
L34	26.00-21.00	5.00	0.00	12	32.0777	32.8320	0.6250	2.5000	A572-65 (65 ksi)
L35	21.00-16.00	5.00	0.00	12	32.8320	33.5863	0.6250	2.5000	A572-65 (65 ksi)
L36	16.00-11.00	5.00	0.00	12	33.5863	34.3406	0.6125	2.4500	A572-65 (65 ksi)

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
L37	11.00-6.00	5.00	0.00	12	34.3406	35.0949	0.6125	2.4500	A572-65 (65 ksi)
L38	6.00-1.00	5.00	0.00	12	35.0949	35.8491	0.6000	2.4000	A572-65 (65 ksi)
L39	1.00-0.00	1.00		12	35.8491	36.0000	0.6000	2.4000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	14.9233	11.4713	297.3216	5.1015	7.5110	39.5848	602.4541	5.6458	3.2160	12.864
	15.7041	12.0783	347.0683	5.3715	7.9016	43.9236	703.2545	5.9446	3.4181	13.672
L2	15.7041	12.0783	347.0683	5.3715	7.9016	43.9236	703.2545	5.9446	3.4181	13.672
	16.4848	12.6854	402.0757	5.6415	8.2923	48.4879	814.7144	6.2434	3.6202	14.481
L3	16.4848	12.6854	402.0757	5.6415	8.2923	48.4879	814.7144	6.2434	3.6202	14.481
	16.5499	12.7360	406.9093	5.6640	8.3249	48.8788	824.5086	6.2683	3.6371	14.548
L4	16.4441	27.4880	845.2358	5.5566	8.3249	101.5315	1712.6769	13.5288	2.8331	5.151
	16.4831	27.5548	851.4110	5.5701	8.3444	102.0338	1725.1895	13.5616	2.8432	5.169
L5	16.4919	26.3445	816.6344	5.5790	8.3444	97.8662	1654.7226	12.9660	2.9102	5.543
	17.2727	27.6194	941.0202	5.8490	8.7350	107.7293	1906.7621	13.5934	3.1123	5.928
L6	17.2771	26.9824	920.7250	5.8535	8.7350	105.4059	1865.6386	13.2799	3.1458	6.138
	18.0578	28.2270	1054.0918	6.1235	9.1257	115.5082	2135.8757	13.8924	3.3479	6.532
L7	18.0622	27.5586	1030.6385	6.1279	9.1257	112.9382	2088.3529	13.5635	3.3814	6.763
	18.8430	28.7728	1172.9500	6.3979	9.5163	123.2566	2376.7147	14.1611	3.5835	7.167
L8	18.8474	28.0731	1146.0276	6.4024	9.5163	120.4275	2322.1627	13.8167	3.6170	7.419
	19.6281	29.2569	1297.2069	6.6724	9.9070	130.9388	2628.4929	14.3993	3.8191	7.834
L9	19.6325	28.5258	1266.4900	6.6769	9.9070	127.8383	2566.2521	14.0395	3.8526	8.111
	20.4133	29.6793	1426.4190	6.9468	10.2976	138.5194	2890.3117	14.6072	4.0547	8.536
L10	20.4177	28.9169	1391.5675	6.9513	10.2976	135.1349	2819.6930	14.2320	4.0882	8.839
	21.0943	29.8901	1536.8611	7.1853	10.6361	144.4942	3114.0973	14.7110	4.2634	9.218
L11	21.0590	36.1717	1841.3557	7.1495	10.6361	173.1225	3731.0858	17.8026	3.9954	7.103
	21.0980	36.2400	1851.8055	7.1630	10.6557	173.7858	3752.2599	17.8362	4.0055	7.121
L12	21.1024	35.4568	1814.0499	7.1674	10.6557	170.2426	3675.7570	17.4508	4.0390	7.344
	21.8832	36.7924	2026.8614	7.4374	11.0463	183.4875	4106.9706	18.1081	4.2411	7.711
L13	21.8876	35.9779	1984.3739	7.4419	11.0463	179.6412	4020.8796	17.7072	4.2746	7.953
	22.6683	37.2831	2208.2738	7.7119	11.4370	193.0822	4474.5615	18.3496	4.4767	8.329
L14	22.6727	36.4372	2160.6756	7.7164	11.4370	188.9204	4378.1146	17.9333	4.5102	8.591
	23.4535	37.7120	2395.4971	7.9863	11.8276	202.5344	4853.9265	18.5607	4.7123	8.976
L15	23.4579	36.8348	2342.3946	7.9908	11.8276	198.0447	4746.3264	18.1289	4.7458	9.26
	24.2386	38.0793	2587.9297	8.2608	12.2182	211.8086	5243.8473	18.7415	4.9479	9.654
L16	24.2430	37.1706	2528.9149	8.2653	12.2182	206.9785	5124.2672	18.2943	4.9814	9.963
	25.0238	38.3848	2784.9149	8.5353	12.6089	220.8691	5642.9927	18.8918	5.1835	10.367
L17	25.0238	38.3848	2784.9149	8.5353	12.6089	220.8691	5642.9927	18.8918	5.1835	10.367
	25.5313	39.1740	2960.2471	8.7107	12.8628	230.1400	5998.2632	19.2803	5.3149	10.63
L18	25.5313	39.1740	2960.2471	8.7107	12.8628	230.1400	5998.2632	19.2803	5.3149	10.63
	25.5703	39.2347	2974.0310	8.7242	12.8823	230.8611	6026.1930	19.3101	5.3250	10.65
L19	25.5747	38.2735	2904.1445	8.7287	12.8823	225.4361	5884.5842	18.8370	5.3585	10.992
	26.3554	39.4573	3182.0427	8.9987	13.2730	239.7383	6447.6812	19.4197	5.5606	11.406
L20	26.3599	38.4647	3105.0797	9.0032	13.2730	233.9398	6291.7333	18.9311	5.5941	11.777
	27.1406	39.6181	3392.8790	9.2732	13.6636	248.3147	6874.8926	19.4988	5.7962	12.203
L21	27.1406	39.6181	3392.8790	9.2732	13.6636	248.3147	6874.8926	19.4988	5.7962	12.203
	27.9604	40.8292	3713.6486	9.5566	14.0738	263.8696	7524.8588	20.0949	6.0084	12.649
L22	27.4207	44.1838	3675.4111	9.1393	13.5023	272.2066	7447.3794	21.7459	5.5452	10.317
	27.5768	45.4890	4010.8530	9.4093	13.8929	288.6974	8127.0755	22.3883	5.7473	10.693
L23	27.5790	44.9708	3967.0439	9.4115	13.8929	285.5440	8038.3064	22.1332	5.7641	10.85
	28.3598	46.2608	4318.3324	9.6815	14.2836	302.3285	8750.1122	22.7682	5.9662	11.231
L24	28.3620	45.7271	4270.4880	9.6837	14.2836	298.9789	8653.1665	22.5055	5.9830	11.396
	29.1427	47.0020	4637.7231	9.9537	14.6742	316.0456	9397.2844	23.1330	6.1851	11.781
L25	29.1449	46.4529	4585.6031	9.9559	14.6742	312.4938	9291.6752	22.8627	6.2018	11.955
	29.7305	47.3977	4871.1223	10.1584	14.9672	325.4530	9870.2145	23.3277	6.3534	12.248
L26	29.7018	54.6644	5585.8101	10.1293	14.9672	373.2033	11318.3656	26.9042	6.1357	10.226
	29.7409	54.7373	5608.1721	10.1428	14.9867	374.2090	11363.6771	26.9400	6.1458	10.243

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
L27	29.7409	54.7373	5608.1721	10.1428	14.9867	374.2090	11363.6771	26.9400	6.1458	10.243
	30.5216	56.1943	6068.0342	10.4128	15.3774	394.6078	12295.4823	27.6571	6.3479	10.58
L28	30.5260	55.0472	5949.2805	10.4173	15.3774	386.8851	12054.8551	27.0926	6.3814	10.862
	31.3068	56.4739	6423.9303	10.6873	15.7680	407.4023	13016.6244	27.7947	6.5835	11.206
L29	31.3112	55.2954	6295.1521	10.6917	15.7680	399.2352	12755.6848	27.2147	6.6170	11.508
	32.0919	56.6917	6784.1812	10.9617	16.1587	419.8477	13746.5903	27.9019	6.8191	11.859
L30	32.0919	56.6917	6784.1812	10.9617	16.1587	419.8477	13746.5903	27.9019	6.8191	11.859
	32.8727	58.0880	7297.9026	11.2317	16.5493	440.9791	14787.5292	28.5892	7.0212	12.211
L31	32.8727	58.0880	7297.9026	11.2317	16.5493	440.9791	14787.5292	28.5892	7.0212	12.211
	33.4973	59.2050	7727.0668	11.4477	16.8618	458.2578	15657.1323	29.1389	7.1829	12.492
L32	32.8283	63.3003	7682.9956	11.0396	16.3037	471.2426	15567.8320	31.1545	6.7266	10.552
	32.9454	64.4615	8113.6407	11.2421	16.5967	488.8697	16440.4357	31.7260	6.8782	10.789
L33	32.9454	64.4615	8113.6407	11.2421	16.5967	488.8697	16440.4357	31.7260	6.8782	10.789
	32.9844	64.5390	8142.9089	11.2556	16.6163	490.0564	16499.7412	31.7641	6.8883	10.805
L34	32.9888	63.2986	7992.7698	11.2601	16.6163	481.0207	16195.5185	31.1537	6.9218	11.075
	33.7697	64.8166	8581.7035	11.5301	17.0070	504.5987	17388.8580	31.9008	7.1240	11.398
L35	33.7697	64.8166	8581.7035	11.5301	17.0070	504.5987	17388.8580	31.9008	7.1240	11.398
	34.5506	66.3346	9198.8789	11.8001	17.3977	528.7410	18639.4226	32.6479	7.3261	11.722
L36	34.5550	65.0326	9025.1614	11.8046	17.3977	518.7559	18287.4239	32.0071	7.3596	12.016
	35.3359	66.5202	9658.7932	12.0747	17.7884	542.9820	19571.3336	32.7392	7.5618	12.346
L37	35.3359	66.5202	9658.7932	12.0747	17.7884	542.9820	19571.3336	32.7392	7.5618	12.346
	36.1168	68.0078	10321.4088	12.3447	18.1791	567.7611	20913.9724	33.4714	7.7639	12.676
L38	36.1212	66.6441	10121.7673	12.3492	18.1791	556.7792	20509.4448	32.8002	7.7974	12.996
	36.9021	68.1013	10800.3739	12.6192	18.5699	581.6078	21884.4857	33.5174	7.9996	13.333
L39	36.9021	68.1013	10800.3739	12.6192	18.5699	581.6078	21884.4857	33.5174	7.9996	13.333
	37.0583	68.3928	10939.6357	12.6732	18.6480	586.6385	22166.6677	33.6609	8.0400	13.4

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-145.00				1	1	1			
L2 145.00-140.00				1	1	1			
L3 140.00-139.58				1	1	1			
L4 139.58-139.33				1	1	0.887801			
L5 139.33-134.33				1	1	0.907703			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L6 134.33-129.33				1	1	0.909673			
L7 129.33-124.33				1	1	0.913516			
L8 124.33-119.33				1	1	0.91915			
L9 119.33-114.33				1	1	0.926523			
L10 114.33-110.00				1	1	0.937588			
L11 110.00-109.75				1	1	0.907889			
L12 109.75-104.75				1	1	0.910758			
L13 104.75-99.75				1	1	0.915055			
L14 99.75-94.75				1	1	0.920745			
L15 94.75-89.75				1	1	0.927808			
L16 89.75-84.75				1	1	0.936239			
L17 84.75-81.50				1	1	0.92745			
L18 81.50-81.25				1	1	0.926789			
L19 81.25-76.25				1	1	0.936947			
L20 76.25-71.25				1	1	0.948466			
L21 71.25-66.00				1	1	0.945416			
L22 66.00-65.00				1	1	0.950058			
L23 65.00-60.00				1	1	0.950611			
L24 60.00-55.00				1	1	0.951766			
L25 55.00-51.25				1	1	0.955828			
L26 51.25-51.00				1	1	0.939592			
L27 51.00-46.00				1	1	0.928734			
L28 46.00-41.00				1	1	0.937574			
L29 41.00-36.00				1	1	0.947356			
L30 36.00-31.00				1	1	0.937648			
L31 31.00-27.00				1	1	0.935762			
L32 27.00-26.25				1	1	0.944252			
L33 26.25-26.00				1	1	0.943825			
L34 26.00-21.00				1	1	0.953833			
L35 21.00-16.00				1	1	0.945736			
L36 16.00-11.00				1	1	0.95679			
L37 11.00-6.00				1	1	0.949253			
L38 6.00-1.00				1	1	0.961324			
L39 1.00-0.00				1	1	0.95989			

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
152										
LDF7-50A(1-5/8)	B	No	Surface Ar (CaAa)	150.00 - 10.00	12	6	-0.500 -0.300	1.9800		0.82
WR-VG86ST-BRD(3/4")	B	No	Surface Ar (CaAa)	150.00 - 10.00	3	1	-0.290 -0.280	0.7950		0.58
FB-L98B-009-XXX(3/8")	B	No	Surface Ar (CaAa)	150.00 - 10.00	2	1	-0.300 -0.290	0.3937		0.06
MODS										
MP3-05	A	No	Surface Af (CaAa)	51.25 - 0.50	1	1	0.100 0.130	5.3300	14.8400	0.00
MP3-05	B	No	Surface Af (CaAa)	51.25 - 0.50	1	1	-0.130 -0.100	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	51.25 - 0.50	1	1	-0.300 -0.280	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	51.25 - 0.50	1	1	0.300 0.320	5.3300	14.8400	0.00
MP3-04	A	No	Surface Af (CaAa)	110.00 - 51.25	1	1	0.100 0.130	4.7800	12.7800	0.00
MP3-04	B	No	Surface Af (CaAa)	110.00 - 51.25	1	1	-0.130 -0.100	4.7800	12.7800	0.00
MP3-04	C	No	Surface Af (CaAa)	110.00 - 51.25	1	1	-0.300 -0.280	4.7800	12.7800	0.00
MP3-04	C	No	Surface Af (CaAa)	110.00 - 51.25	1	1	0.300 0.320	4.7800	12.7800	0.00
MP3-03	A	No	Surface Af (CaAa)	140.75 - 110.75	1	1	0.100 0.130	4.0600	11.2600	0.00
MP3-03	B	No	Surface Af (CaAa)	140.75 - 110.75	1	1	-0.130 -0.100	4.0600	11.2600	0.00
MP3-03	C	No	Surface Af (CaAa)	140.75 - 110.75	1	1	-0.300 -0.280	4.0600	11.2600	0.00
MP3-03	C	No	Surface Af (CaAa)	140.75 - 110.75	1	1	0.300 0.320	4.0600	11.2600	0.00
**										
**										
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
WR-VG86ST-BRD(3/4")	B	No	No	Inside Pole	150.00 - 10.00	3	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
LDF2-50(3/8")	B	No	No	Inside Pole	150.00 - 10.00	2	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
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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_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-145.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.534	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	0.000	0.000	0.507	0.000	0.00
		B	0.000	0.000	7.042	0.000	0.07
		C	0.000	0.000	1.015	0.000	0.00
L3	140.00-139.58	A	0.000	0.000	0.282	0.000	0.00
		B	0.000	0.000	0.827	0.000	0.01
		C	0.000	0.000	0.564	0.000	0.00
L4	139.58-139.33	A	0.000	0.000	0.169	0.000	0.00
		B	0.000	0.000	0.496	0.000	0.00
		C	0.000	0.000	0.338	0.000	0.00
L5	139.33-134.33	A	0.000	0.000	3.383	0.000	0.00
		B	0.000	0.000	9.918	0.000	0.07
		C	0.000	0.000	6.767	0.000	0.00
L6	134.33-129.33	A	0.000	0.000	3.383	0.000	0.00
		B	0.000	0.000	9.918	0.000	0.07
		C	0.000	0.000	6.767	0.000	0.00
L7	129.33-124.33	A	0.000	0.000	3.383	0.000	0.00
		B	0.000	0.000	9.918	0.000	0.07
		C	0.000	0.000	6.767	0.000	0.00
L8	124.33-119.33	A	0.000	0.000	3.383	0.000	0.00
		B	0.000	0.000	9.918	0.000	0.07
		C	0.000	0.000	6.767	0.000	0.00
L9	119.33-114.33	A	0.000	0.000	3.383	0.000	0.00
		B	0.000	0.000	9.918	0.000	0.07
		C	0.000	0.000	6.767	0.000	0.00
L10	114.33-110.00	A	0.000	0.000	2.424	0.000	0.00
		B	0.000	0.000	8.087	0.000	0.06
		C	0.000	0.000	4.849	0.000	0.00
L11	110.00-109.75	A	0.000	0.000	0.199	0.000	0.00
		B	0.000	0.000	0.526	0.000	0.00
		C	0.000	0.000	0.398	0.000	0.00
L12	109.75-104.75	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L13	104.75-99.75	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L14	99.75-94.75	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L15	94.75-89.75	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L16	89.75-84.75	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L17	84.75-81.50	A	0.000	0.000	2.589	0.000	0.00
		B	0.000	0.000	6.836	0.000	0.04
		C	0.000	0.000	5.178	0.000	0.00
L18	81.50-81.25	A	0.000	0.000	0.199	0.000	0.00
		B	0.000	0.000	0.526	0.000	0.00
		C	0.000	0.000	0.398	0.000	0.00
L19	81.25-76.25	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L20	76.25-71.25	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L21	71.25-66.00	A	0.000	0.000	4.183	0.000	0.00
		B	0.000	0.000	11.044	0.000	0.07
		C	0.000	0.000	8.365	0.000	0.00
L22	66.00-65.00	A	0.000	0.000	0.797	0.000	0.00
		B	0.000	0.000	2.104	0.000	0.01
		C	0.000	0.000	1.593	0.000	0.00
L23	65.00-60.00	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	7.967	0.000	0.00
L24	60.00-55.00	A	0.000	0.000	3.983	0.000	0.00
		B	0.000	0.000	10.518	0.000	0.07
		C	0.000	0.000	7.967	0.000	0.00
L25	55.00-51.25	A	0.000	0.000	2.987	0.000	0.00
		B	0.000	0.000	7.888	0.000	0.05
		C	0.000	0.000	5.975	0.000	0.00
L26	51.25-51.00	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.549	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L27	51.00-46.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L28	46.00-41.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L29	41.00-36.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L30	36.00-31.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L31	31.00-27.00	A	0.000	0.000	3.553	0.000	0.00
		B	0.000	0.000	8.781	0.000	0.05
		C	0.000	0.000	7.107	0.000	0.00
L32	27.00-26.25	A	0.000	0.000	0.666	0.000	0.00
		B	0.000	0.000	1.646	0.000	0.01
		C	0.000	0.000	1.333	0.000	0.00
L33	26.25-26.00	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.549	0.000	0.00
		C	0.000	0.000	0.444	0.000	0.00
L34	26.00-21.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L35	21.00-16.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L36	16.00-11.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	10.976	0.000	0.07
		C	0.000	0.000	8.883	0.000	0.00
L37	11.00-6.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	5.749	0.000	0.01
		C	0.000	0.000	8.883	0.000	0.00
L38	6.00-1.00	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	8.883	0.000	0.00
L39	1.00-0.00	A	0.000	0.000	0.444	0.000	0.00
		B	0.000	0.000	0.444	0.000	0.00
		C	0.000	0.000	0.888	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-145.00	A	1.481	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	12.832	0.000	0.28
		C		0.000	0.000	0.000	0.000	0.00
L2	145.00-140.00	A	1.476	0.000	0.000	0.729	0.000	0.01
		B		0.000	0.000	13.545	0.000	0.29
		C		0.000	0.000	1.458	0.000	0.01
L3	140.00-139.58	A	1.473	0.000	0.000	0.405	0.000	0.00
		B		0.000	0.000	1.473	0.000	0.03
		C		0.000	0.000	0.810	0.000	0.01
L4	139.58-139.33	A	1.473	0.000	0.000	0.243	0.000	0.00
		B		0.000	0.000	0.883	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.486	0.000	0.00
L5	139.33-134.33	A	1.470	0.000	0.000	4.853	0.000	0.05
		B		0.000	0.000	17.650	0.000	0.33
		C		0.000	0.000	9.706	0.000	0.10
L6	134.33-129.33	A	1.464	0.000	0.000	4.848	0.000	0.05
		B		0.000	0.000	17.626	0.000	0.33
		C		0.000	0.000	9.695	0.000	0.10
L7	129.33-124.33	A	1.459	0.000	0.000	4.842	0.000	0.05
		B		0.000	0.000	17.602	0.000	0.33
		C		0.000	0.000	9.684	0.000	0.10
L8	124.33-119.33	A	1.453	0.000	0.000	4.836	0.000	0.05
		B		0.000	0.000	17.577	0.000	0.32
		C		0.000	0.000	9.672	0.000	0.09
L9	119.33-114.33	A	1.447	0.000	0.000	4.830	0.000	0.05
		B		0.000	0.000	17.552	0.000	0.32
		C		0.000	0.000	9.660	0.000	0.09
L10	114.33-110.00	A	1.441	0.000	0.000	3.457	0.000	0.03
		B		0.000	0.000	14.465	0.000	0.27
		C		0.000	0.000	6.914	0.000	0.07
L11	110.00-109.75	A	1.438	0.000	0.000	0.271	0.000	0.00
		B		0.000	0.000	0.906	0.000	0.02
		C		0.000	0.000	0.542	0.000	0.01
L12	109.75-104.75	A	1.434	0.000	0.000	5.418	0.000	0.05
		B		0.000	0.000	18.099	0.000	0.32
		C		0.000	0.000	10.836	0.000	0.10
L13	104.75-99.75	A	1.428	0.000	0.000	5.411	0.000	0.05
		B		0.000	0.000	18.070	0.000	0.32
		C		0.000	0.000	10.822	0.000	0.10
L14	99.75-94.75	A	1.421	0.000	0.000	5.404	0.000	0.05
		B		0.000	0.000	18.040	0.000	0.32
		C		0.000	0.000	10.808	0.000	0.10
L15	94.75-89.75	A	1.413	0.000	0.000	5.396	0.000	0.05
		B		0.000	0.000	18.008	0.000	0.32
		C		0.000	0.000	10.793	0.000	0.10
L16	89.75-84.75	A	1.405	0.000	0.000	5.389	0.000	0.05
		B		0.000	0.000	17.975	0.000	0.32
		C		0.000	0.000	10.777	0.000	0.10
L17	84.75-81.50	A	1.398	0.000	0.000	3.498	0.000	0.03
		B		0.000	0.000	11.665	0.000	0.21
		C		0.000	0.000	6.996	0.000	0.06
L18	81.50-81.25	A	1.395	0.000	0.000	0.269	0.000	0.00
		B		0.000	0.000	0.897	0.000	0.02
		C		0.000	0.000	0.538	0.000	0.00
L19	81.25-76.25	A	1.391	0.000	0.000	5.374	0.000	0.05
		B		0.000	0.000	17.914	0.000	0.31
		C		0.000	0.000	10.748	0.000	0.10
L20	76.25-71.25	A	1.382	0.000	0.000	5.365	0.000	0.05
		B		0.000	0.000	17.875	0.000	0.31
		C		0.000	0.000	10.730	0.000	0.10
L21	71.25-66.00	A	1.372	0.000	0.000	5.623	0.000	0.05
		B		0.000	0.000	18.725	0.000	0.33
		C		0.000	0.000	11.246	0.000	0.10
L22	66.00-65.00	A	1.365	0.000	0.000	1.071	0.000	0.01
		B		0.000	0.000	3.567	0.000	0.06
		C		0.000	0.000	2.142	0.000	0.02
L23	65.00-60.00	A	1.359	0.000	0.000	5.342	0.000	0.05
		B		0.000	0.000	17.779	0.000	0.31
		C		0.000	0.000	10.685	0.000	0.09
L24	60.00-55.00	A	1.348	0.000	0.000	5.331	0.000	0.05
		B		0.000	0.000	17.731	0.000	0.30
		C		0.000	0.000	10.662	0.000	0.09
L25	55.00-51.25	A	1.337	0.000	0.000	3.990	0.000	0.03
		B		0.000	0.000	13.264	0.000	0.23
		C		0.000	0.000	7.981	0.000	0.07
L26	51.25-51.00	A	1.332	0.000	0.000	0.289	0.000	0.00
		B		0.000	0.000	0.906	0.000	0.02
		C		0.000	0.000	0.577	0.000	0.01
L27	51.00-46.00	A	1.325	0.000	0.000	5.767	0.000	0.05
		B		0.000	0.000	18.092	0.000	0.30

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	11.533	0.000	0.10
L28	46.00-41.00	A	1.311	0.000	0.000	5.752	0.000	0.05
		B		0.000	0.000	18.031	0.000	0.30
		C		0.000	0.000	11.505	0.000	0.10
L29	41.00-36.00	A	1.295	0.000	0.000	5.736	0.000	0.05
		B		0.000	0.000	17.964	0.000	0.30
		C		0.000	0.000	11.473	0.000	0.10
L30	36.00-31.00	A	1.277	0.000	0.000	5.719	0.000	0.05
		B		0.000	0.000	17.888	0.000	0.29
		C		0.000	0.000	11.437	0.000	0.10
L31	31.00-27.00	A	1.259	0.000	0.000	4.560	0.000	0.04
		B		0.000	0.000	14.248	0.000	0.23
		C		0.000	0.000	9.120	0.000	0.08
L32	27.00-26.25	A	1.248	0.000	0.000	0.855	0.000	0.01
		B		0.000	0.000	2.672	0.000	0.04
		C		0.000	0.000	1.710	0.000	0.01
L33	26.25-26.00	A	1.246	0.000	0.000	0.284	0.000	0.00
		B		0.000	0.000	0.888	0.000	0.01
		C		0.000	0.000	0.569	0.000	0.00
L34	26.00-21.00	A	1.232	0.000	0.000	5.674	0.000	0.05
		B		0.000	0.000	17.699	0.000	0.28
		C		0.000	0.000	11.348	0.000	0.09
L35	21.00-16.00	A	1.203	0.000	0.000	5.645	0.000	0.05
		B		0.000	0.000	17.575	0.000	0.28
		C		0.000	0.000	11.290	0.000	0.09
L36	16.00-11.00	A	1.166	0.000	0.000	5.608	0.000	0.04
		B		0.000	0.000	17.416	0.000	0.27
		C		0.000	0.000	11.215	0.000	0.09
L37	11.00-6.00	A	1.113	0.000	0.000	5.555	0.000	0.04
		B		0.000	0.000	7.882	0.000	0.08
		C		0.000	0.000	11.110	0.000	0.08
L38	6.00-1.00	A	1.018	0.000	0.000	5.460	0.000	0.04
		B		0.000	0.000	5.460	0.000	0.04
		C		0.000	0.000	10.920	0.000	0.07
L39	1.00-0.00	A	0.839	0.000	0.000	0.528	0.000	0.00
		B		0.000	0.000	0.528	0.000	0.00
		C		0.000	0.000	1.056	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-145.00	1.0930	-4.7010	1.2248	-4.4696
L2	145.00-140.00	0.9445	-4.3368	1.1159	-4.2715
L3	140.00-139.58	0.4521	-2.8926	0.6636	-3.2521
L4	139.58-139.33	0.4536	-2.9029	0.6657	-3.2627
L5	139.33-134.33	0.4595	-2.9448	0.6764	-3.3184
L6	134.33-129.33	0.4705	-3.0237	0.6966	-3.4236
L7	129.33-124.33	0.4813	-3.1006	0.7164	-3.5270
L8	124.33-119.33	0.4918	-3.1757	0.7359	-3.6286
L9	119.33-114.33	0.5021	-3.2489	0.7549	-3.7285
L10	114.33-110.00	0.5688	-3.4483	0.8459	-3.9791
L11	110.00-109.75	0.4663	-3.2328	0.7332	-3.7579
L12	109.75-104.75	0.4711	-3.2699	0.7423	-3.8080
L13	104.75-99.75	0.4801	-3.3396	0.7594	-3.9023
L14	99.75-94.75	0.4890	-3.4079	0.7761	-3.9950
L15	94.75-89.75	0.4976	-3.4747	0.7925	-4.0862
L16	89.75-84.75	0.5061	-3.5401	0.8086	-4.1758
L17	84.75-81.50	0.5130	-3.5932	0.8216	-4.2487
L18	81.50-81.25	0.5159	-3.6155	0.8270	-4.2793
L19	81.25-76.25	0.5202	-3.6484	0.8351	-4.3247
L20	76.25-71.25	0.5282	-3.7102	0.8501	-4.4101
L21	71.25-66.00	0.5363	-3.7726	0.8652	-4.4963
L22	66.00-65.00	0.5361	-3.7714	0.8648	-4.4939

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L23	65.00-60.00	0.5408	-3.8072	0.8725	-4.5419
L24	60.00-55.00	0.5484	-3.8661	0.8865	-4.6232
L25	55.00-51.25	0.5550	-3.9167	0.8983	-4.6930
L26	51.25-51.00	0.5204	-3.8681	0.8636	-4.6420
L27	51.00-46.00	0.5241	-3.8985	0.8702	-4.6830
L28	46.00-41.00	0.5311	-3.9555	0.8824	-4.7595
L29	41.00-36.00	0.5379	-4.0115	0.8941	-4.8342
L30	36.00-31.00	0.5447	-4.0667	0.9051	-4.9070
L31	31.00-27.00	0.5507	-4.1155	0.9143	-4.9706
L32	27.00-26.25	0.5485	-4.0974	0.9097	-4.9444
L33	26.25-26.00	0.5491	-4.1028	0.9088	-4.9479
L34	26.00-21.00	0.5526	-4.1309	0.9136	-4.9835
L35	21.00-16.00	0.5591	-4.1840	0.9218	-5.0491
L36	16.00-11.00	0.5655	-4.2360	0.9280	-5.1099
L37	11.00-6.00	0.0411	-2.2725	0.1392	-2.6553
L38	6.00-1.00	-0.1152	-1.7044	-0.1243	-1.8377
L39	1.00-0.00	-0.0905	-1.3399	-0.0847	-1.2535

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	LDF7-50A(1-5/8)	145.00 - 150.00	1.0000	1.0000
L1	4	WR-VG86ST-BRD(3/4")	145.00 - 150.00	1.0000	1.0000
L1	6	FB-L98B-009-XXX(3/8")	145.00 - 150.00	1.0000	1.0000
L2	2	LDF7-50A(1-5/8)	140.00 - 145.00	1.0000	1.0000
L2	4	WR-VG86ST-BRD(3/4")	140.00 - 145.00	1.0000	1.0000
L2	6	FB-L98B-009-XXX(3/8")	140.00 - 145.00	1.0000	1.0000
L2	17	MP3-03	140.00 - 140.75	1.0000	1.0000
L2	18	MP3-03	140.00 - 140.75	1.0000	1.0000
L2	19	MP3-03	140.00 - 140.75	1.0000	1.0000
L2	20	MP3-03	140.00 - 140.75	1.0000	1.0000
L3	2	LDF7-50A(1-5/8)	139.58 - 140.00	1.0000	1.0000
L3	4	WR-VG86ST-BRD(3/4")	139.58 - 140.00	1.0000	1.0000
L3	6	FB-L98B-009-XXX(3/8")	139.58 - 140.00	1.0000	1.0000
L3	17	MP3-03	139.58 - 140.00	1.0000	1.0000
L3	18	MP3-03	139.58 - 140.00	1.0000	1.0000
L3	19	MP3-03	139.58 - 140.00	1.0000	1.0000
L3	20	MP3-03	139.58 - 140.00	1.0000	1.0000
L4	2	LDF7-50A(1-5/8)	139.33 - 139.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	4	WR-VG86ST-BRD(3/4")	139.33 - 139.58	1.0000	1.0000
L4	6	FB-L98B-009-XXX(3/8")	139.33 - 139.58	1.0000	1.0000
L4	17	MP3-03	139.33 - 139.58	1.0000	1.0000
L4	18	MP3-03	139.33 - 139.58	1.0000	1.0000
L4	19	MP3-03	139.33 - 139.58	1.0000	1.0000
L4	20	MP3-03	139.33 - 139.58	1.0000	1.0000
L5	2	LDF7-50A(1-5/8)	134.33 - 139.33	1.0000	1.0000
L5	4	WR-VG86ST-BRD(3/4")	134.33 - 139.33	1.0000	1.0000
L5	6	FB-L98B-009-XXX(3/8")	134.33 - 139.33	1.0000	1.0000
L5	17	MP3-03	134.33 - 139.33	1.0000	1.0000
L5	18	MP3-03	134.33 - 139.33	1.0000	1.0000
L5	19	MP3-03	134.33 - 139.33	1.0000	1.0000
L5	20	MP3-03	134.33 - 139.33	1.0000	1.0000
L6	2	LDF7-50A(1-5/8)	129.33 - 134.33	1.0000	1.0000
L6	4	WR-VG86ST-BRD(3/4")	129.33 - 134.33	1.0000	1.0000
L6	6	FB-L98B-009-XXX(3/8")	129.33 - 134.33	1.0000	1.0000
L6	17	MP3-03	129.33 - 134.33	1.0000	1.0000
L6	18	MP3-03	129.33 - 134.33	1.0000	1.0000
L6	19	MP3-03	129.33 - 134.33	1.0000	1.0000
L6	20	MP3-03	129.33 - 134.33	1.0000	1.0000
L7	2	LDF7-50A(1-5/8)	124.33 - 129.33	1.0000	1.0000
L7	4	WR-VG86ST-BRD(3/4")	124.33 - 129.33	1.0000	1.0000
L7	6	FB-L98B-009-XXX(3/8")	124.33 - 129.33	1.0000	1.0000
L7	17	MP3-03	124.33 - 129.33	1.0000	1.0000
L7	18	MP3-03	124.33 - 129.33	1.0000	1.0000
L7	19	MP3-03	124.33 - 129.33	1.0000	1.0000
L7	20	MP3-03	124.33 - 129.33	1.0000	1.0000
L8	2	LDF7-50A(1-5/8)	119.33 - 124.33	1.0000	1.0000
L8	4	WR-VG86ST-BRD(3/4")	119.33 - 124.33	1.0000	1.0000
L8	6	FB-L98B-009-XXX(3/8")	119.33 - 124.33	1.0000	1.0000
L8	17	MP3-03	119.33 - 124.33	1.0000	1.0000
L8	18	MP3-03	119.33 - 124.33	1.0000	1.0000
L8	19	MP3-03	119.33 - 124.33	1.0000	1.0000
L8	20	MP3-03	119.33 - 124.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	2	LDF7-50A(1-5/8)	114.33 - 119.33	1.0000	1.0000
L9	4	WR-VG86ST-BRD(3/4")	114.33 - 119.33	1.0000	1.0000
L9	6	FB-L98B-009-XXX(3/8")	114.33 - 119.33	1.0000	1.0000
L9	17	MP3-03	114.33 - 119.33	1.0000	1.0000
L9	18	MP3-03	114.33 - 119.33	1.0000	1.0000
L9	19	MP3-03	114.33 - 119.33	1.0000	1.0000
L9	20	MP3-03	114.33 - 119.33	1.0000	1.0000
L10	2	LDF7-50A(1-5/8)	110.00 - 114.33	1.0000	1.0000
L10	4	WR-VG86ST-BRD(3/4")	110.00 - 114.33	1.0000	1.0000
L10	6	FB-L98B-009-XXX(3/8")	110.00 - 114.33	1.0000	1.0000
L10	17	MP3-03	110.75 - 114.33	1.0000	1.0000
L10	18	MP3-03	110.75 - 114.33	1.0000	1.0000
L10	19	MP3-03	110.75 - 114.33	1.0000	1.0000
L10	20	MP3-03	110.75 - 114.33	1.0000	1.0000
L11	2	LDF7-50A(1-5/8)	109.75 - 110.00	1.0000	1.0000
L11	4	WR-VG86ST-BRD(3/4")	109.75 - 110.00	1.0000	1.0000
L11	6	FB-L98B-009-XXX(3/8")	109.75 - 110.00	1.0000	1.0000
L11	13	MP3-04	109.75 - 110.00	1.0000	1.0000
L11	14	MP3-04	109.75 - 110.00	1.0000	1.0000
L11	15	MP3-04	109.75 - 110.00	1.0000	1.0000
L11	16	MP3-04	109.75 - 110.00	1.0000	1.0000
L12	2	LDF7-50A(1-5/8)	104.75 - 109.75	1.0000	1.0000
L12	4	WR-VG86ST-BRD(3/4")	104.75 - 109.75	1.0000	1.0000
L12	6	FB-L98B-009-XXX(3/8")	104.75 - 109.75	1.0000	1.0000
L12	13	MP3-04	104.75 - 109.75	1.0000	1.0000
L12	14	MP3-04	104.75 - 109.75	1.0000	1.0000
L12	15	MP3-04	104.75 - 109.75	1.0000	1.0000
L12	16	MP3-04	104.75 - 109.75	1.0000	1.0000
L13	2	LDF7-50A(1-5/8)	99.75 - 104.75	1.0000	1.0000
L13	4	WR-VG86ST-BRD(3/4")	99.75 - 104.75	1.0000	1.0000
L13	6	FB-L98B-009-XXX(3/8")	99.75 - 104.75	1.0000	1.0000
L13	13	MP3-04	99.75 - 104.75	1.0000	1.0000
L13	14	MP3-04	99.75 - 104.75	1.0000	1.0000
L13	15	MP3-04	99.75 - 104.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	16	MP3-04	99.75 - 104.75	1.0000	1.0000
L14	2	LDF7-50A(1-5/8)	94.75 - 99.75	1.0000	1.0000
L14	4	WR-VG86ST-BRD(3/4")	94.75 - 99.75	1.0000	1.0000
L14	6	FB-L98B-009-XXX(3/8")	94.75 - 99.75	1.0000	1.0000
L14	13	MP3-04	94.75 - 99.75	1.0000	1.0000
L14	14	MP3-04	94.75 - 99.75	1.0000	1.0000
L14	15	MP3-04	94.75 - 99.75	1.0000	1.0000
L14	16	MP3-04	94.75 - 99.75	1.0000	1.0000
L15	2	LDF7-50A(1-5/8)	89.75 - 94.75	1.0000	1.0000
L15	4	WR-VG86ST-BRD(3/4")	89.75 - 94.75	1.0000	1.0000
L15	6	FB-L98B-009-XXX(3/8")	89.75 - 94.75	1.0000	1.0000
L15	13	MP3-04	89.75 - 94.75	1.0000	1.0000
L15	14	MP3-04	89.75 - 94.75	1.0000	1.0000
L15	15	MP3-04	89.75 - 94.75	1.0000	1.0000
L15	16	MP3-04	89.75 - 94.75	1.0000	1.0000
L16	2	LDF7-50A(1-5/8)	84.75 - 89.75	1.0000	1.0000
L16	4	WR-VG86ST-BRD(3/4")	84.75 - 89.75	1.0000	1.0000
L16	6	FB-L98B-009-XXX(3/8")	84.75 - 89.75	1.0000	1.0000
L16	13	MP3-04	84.75 - 89.75	1.0000	1.0000
L16	14	MP3-04	84.75 - 89.75	1.0000	1.0000
L16	15	MP3-04	84.75 - 89.75	1.0000	1.0000
L16	16	MP3-04	84.75 - 89.75	1.0000	1.0000
L17	2	LDF7-50A(1-5/8)	81.50 - 84.75	1.0000	1.0000
L17	4	WR-VG86ST-BRD(3/4")	81.50 - 84.75	1.0000	1.0000
L17	6	FB-L98B-009-XXX(3/8")	81.50 - 84.75	1.0000	1.0000
L17	13	MP3-04	81.50 - 84.75	1.0000	1.0000
L17	14	MP3-04	81.50 - 84.75	1.0000	1.0000
L17	15	MP3-04	81.50 - 84.75	1.0000	1.0000
L17	16	MP3-04	81.50 - 84.75	1.0000	1.0000
L18	2	LDF7-50A(1-5/8)	81.25 - 81.50	1.0000	1.0000
L18	4	WR-VG86ST-BRD(3/4")	81.25 - 81.50	1.0000	1.0000
L18	6	FB-L98B-009-XXX(3/8")	81.25 - 81.50	1.0000	1.0000
L18	13	MP3-04	81.25 - 81.50	1.0000	1.0000
L18	14	MP3-04	81.25 - 81.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	15	MP3-04	81.25 - 81.50	1.0000	1.0000
L18	16	MP3-04	81.25 - 81.50	1.0000	1.0000
L19	2	LDF7-50A(1-5/8)	76.25 - 81.25	1.0000	1.0000
L19	4	WR-VG86ST-BRD(3/4")	76.25 - 81.25	1.0000	1.0000
L19	6	FB-L98B-009-XXX(3/8")	76.25 - 81.25	1.0000	1.0000
L19	13	MP3-04	76.25 - 81.25	1.0000	1.0000
L19	14	MP3-04	76.25 - 81.25	1.0000	1.0000
L19	15	MP3-04	76.25 - 81.25	1.0000	1.0000
L19	16	MP3-04	76.25 - 81.25	1.0000	1.0000
L20	2	LDF7-50A(1-5/8)	71.25 - 76.25	1.0000	1.0000
L20	4	WR-VG86ST-BRD(3/4")	71.25 - 76.25	1.0000	1.0000
L20	6	FB-L98B-009-XXX(3/8")	71.25 - 76.25	1.0000	1.0000
L20	13	MP3-04	71.25 - 76.25	1.0000	1.0000
L20	14	MP3-04	71.25 - 76.25	1.0000	1.0000
L20	15	MP3-04	71.25 - 76.25	1.0000	1.0000
L20	16	MP3-04	71.25 - 76.25	1.0000	1.0000
L21	2	LDF7-50A(1-5/8)	66.00 - 71.25	1.0000	1.0000
L21	4	WR-VG86ST-BRD(3/4")	66.00 - 71.25	1.0000	1.0000
L21	6	FB-L98B-009-XXX(3/8")	66.00 - 71.25	1.0000	1.0000
L21	13	MP3-04	66.00 - 71.25	1.0000	1.0000
L21	14	MP3-04	66.00 - 71.25	1.0000	1.0000
L21	15	MP3-04	66.00 - 71.25	1.0000	1.0000
L21	16	MP3-04	66.00 - 71.25	1.0000	1.0000
L23	2	LDF7-50A(1-5/8)	60.00 - 65.00	1.0000	1.0000
L23	4	WR-VG86ST-BRD(3/4")	60.00 - 65.00	1.0000	1.0000
L23	6	FB-L98B-009-XXX(3/8")	60.00 - 65.00	1.0000	1.0000
L23	13	MP3-04	60.00 - 65.00	1.0000	1.0000
L23	14	MP3-04	60.00 - 65.00	1.0000	1.0000
L23	15	MP3-04	60.00 - 65.00	1.0000	1.0000
L23	16	MP3-04	60.00 - 65.00	1.0000	1.0000
L24	2	LDF7-50A(1-5/8)	55.00 - 60.00	1.0000	1.0000
L24	4	WR-VG86ST-BRD(3/4")	55.00 - 60.00	1.0000	1.0000
L24	6	FB-L98B-009-XXX(3/8")	55.00 - 60.00	1.0000	1.0000
L24	13	MP3-04	55.00 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	14	MP3-04	55.00 - 60.00	1.0000	1.0000
L24	15	MP3-04	55.00 - 60.00	1.0000	1.0000
L24	16	MP3-04	55.00 - 60.00	1.0000	1.0000
L25	2	LDF7-50A(1-5/8)	51.25 - 55.00	1.0000	1.0000
L25	4	WR-VG86ST-BRD(3/4")	51.25 - 55.00	1.0000	1.0000
L25	6	FB-L98B-009-XXX(3/8")	51.25 - 55.00	1.0000	1.0000
L25	13	MP3-04	51.25 - 55.00	1.0000	1.0000
L25	14	MP3-04	51.25 - 55.00	1.0000	1.0000
L25	15	MP3-04	51.25 - 55.00	1.0000	1.0000
L25	16	MP3-04	51.25 - 55.00	1.0000	1.0000
L26	2	LDF7-50A(1-5/8)	51.00 - 51.25	1.0000	1.0000
L26	4	WR-VG86ST-BRD(3/4")	51.00 - 51.25	1.0000	1.0000
L26	6	FB-L98B-009-XXX(3/8")	51.00 - 51.25	1.0000	1.0000
L26	9	MP3-05	51.00 - 51.25	1.0000	1.0000
L26	10	MP3-05	51.00 - 51.25	1.0000	1.0000
L26	11	MP3-05	51.00 - 51.25	1.0000	1.0000
L26	12	MP3-05	51.00 - 51.25	1.0000	1.0000
L27	2	LDF7-50A(1-5/8)	46.00 - 51.00	1.0000	1.0000
L27	4	WR-VG86ST-BRD(3/4")	46.00 - 51.00	1.0000	1.0000
L27	6	FB-L98B-009-XXX(3/8")	46.00 - 51.00	1.0000	1.0000
L27	9	MP3-05	46.00 - 51.00	1.0000	1.0000
L27	10	MP3-05	46.00 - 51.00	1.0000	1.0000
L27	11	MP3-05	46.00 - 51.00	1.0000	1.0000
L27	12	MP3-05	46.00 - 51.00	1.0000	1.0000
L28	2	LDF7-50A(1-5/8)	41.00 - 46.00	1.0000	1.0000
L28	4	WR-VG86ST-BRD(3/4")	41.00 - 46.00	1.0000	1.0000
L28	6	FB-L98B-009-XXX(3/8")	41.00 - 46.00	1.0000	1.0000
L28	9	MP3-05	41.00 - 46.00	1.0000	1.0000
L28	10	MP3-05	41.00 - 46.00	1.0000	1.0000
L28	11	MP3-05	41.00 - 46.00	1.0000	1.0000
L28	12	MP3-05	41.00 - 46.00	1.0000	1.0000
L29	2	LDF7-50A(1-5/8)	36.00 - 41.00	1.0000	1.0000
L29	4	WR-VG86ST-BRD(3/4")	36.00 - 41.00	1.0000	1.0000
L29	6	FB-L98B-009-XXX(3/8")	36.00 - 41.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	9	MP3-05	36.00 - 41.00	1.0000	1.0000
L29	10	MP3-05	36.00 - 41.00	1.0000	1.0000
L29	11	MP3-05	36.00 - 41.00	1.0000	1.0000
L29	12	MP3-05	36.00 - 41.00	1.0000	1.0000
L30	2	LDF7-50A(1-5/8)	31.00 - 36.00	1.0000	1.0000
L30	4	WR-VG86ST-BRD(3/4")	31.00 - 36.00	1.0000	1.0000
L30	6	FB-L98B-009-XXX(3/8")	31.00 - 36.00	1.0000	1.0000
L30	9	MP3-05	31.00 - 36.00	1.0000	1.0000
L30	10	MP3-05	31.00 - 36.00	1.0000	1.0000
L30	11	MP3-05	31.00 - 36.00	1.0000	1.0000
L30	12	MP3-05	31.00 - 36.00	1.0000	1.0000
L31	2	LDF7-50A(1-5/8)	27.00 - 31.00	1.0000	1.0000
L31	4	WR-VG86ST-BRD(3/4")	27.00 - 31.00	1.0000	1.0000
L31	6	FB-L98B-009-XXX(3/8")	27.00 - 31.00	1.0000	1.0000
L31	9	MP3-05	27.00 - 31.00	1.0000	1.0000
L31	10	MP3-05	27.00 - 31.00	1.0000	1.0000
L31	11	MP3-05	27.00 - 31.00	1.0000	1.0000
L31	12	MP3-05	27.00 - 31.00	1.0000	1.0000
L33	2	LDF7-50A(1-5/8)	26.00 - 26.25	1.0000	1.0000
L33	4	WR-VG86ST-BRD(3/4")	26.00 - 26.25	1.0000	1.0000
L33	6	FB-L98B-009-XXX(3/8")	26.00 - 26.25	1.0000	1.0000
L33	9	MP3-05	26.00 - 26.25	1.0000	1.0000
L33	10	MP3-05	26.00 - 26.25	1.0000	1.0000
L33	11	MP3-05	26.00 - 26.25	1.0000	1.0000
L33	12	MP3-05	26.00 - 26.25	1.0000	1.0000
L34	2	LDF7-50A(1-5/8)	21.00 - 26.00	1.0000	1.0000
L34	4	WR-VG86ST-BRD(3/4")	21.00 - 26.00	1.0000	1.0000
L34	6	FB-L98B-009-XXX(3/8")	21.00 - 26.00	1.0000	1.0000
L34	9	MP3-05	21.00 - 26.00	1.0000	1.0000
L34	10	MP3-05	21.00 - 26.00	1.0000	1.0000
L34	11	MP3-05	21.00 - 26.00	1.0000	1.0000
L34	12	MP3-05	21.00 - 26.00	1.0000	1.0000
L35	2	LDF7-50A(1-5/8)	16.00 - 21.00	1.0000	1.0000
L35	4	WR-VG86ST-BRD(3/4")	16.00 - 21.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	6	FB-L98B-009-XXX(3/8")	16.00 - 21.00	1.0000	1.0000
L35	9	MP3-05	16.00 - 21.00	1.0000	1.0000
L35	10	MP3-05	16.00 - 21.00	1.0000	1.0000
L35	11	MP3-05	16.00 - 21.00	1.0000	1.0000
L35	12	MP3-05	16.00 - 21.00	1.0000	1.0000
L36	2	LDF7-50A(1-5/8)	11.00 - 16.00	1.0000	1.0000
L36	4	WR-VG86ST-BRD(3/4")	11.00 - 16.00	1.0000	1.0000
L36	6	FB-L98B-009-XXX(3/8")	11.00 - 16.00	1.0000	1.0000
L36	9	MP3-05	11.00 - 16.00	1.0000	1.0000
L36	10	MP3-05	11.00 - 16.00	1.0000	1.0000
L36	11	MP3-05	11.00 - 16.00	1.0000	1.0000
L36	12	MP3-05	11.00 - 16.00	1.0000	1.0000
L37	2	LDF7-50A(1-5/8)	10.00 - 11.00	1.0000	1.0000
L37	4	WR-VG86ST-BRD(3/4")	10.00 - 11.00	1.0000	1.0000
L37	6	FB-L98B-009-XXX(3/8")	10.00 - 11.00	1.0000	1.0000
L37	9	MP3-05	6.00 - 11.00	1.0000	1.0000
L37	10	MP3-05	6.00 - 11.00	1.0000	1.0000
L37	11	MP3-05	6.00 - 11.00	1.0000	1.0000
L37	12	MP3-05	6.00 - 11.00	1.0000	1.0000
L38	9	MP3-05	1.00 - 6.00	1.0000	1.0000
L38	10	MP3-05	1.00 - 6.00	1.0000	1.0000
L38	11	MP3-05	1.00 - 6.00	1.0000	1.0000
L38	12	MP3-05	1.00 - 6.00	1.0000	1.0000
L39	9	MP3-05	0.50 - 1.00	1.0000	1.0000
L39	10	MP3-05	0.50 - 1.00	1.0000	1.0000
L39	11	MP3-05	0.50 - 1.00	1.0000	1.0000
L39	12	MP3-05	0.50 - 1.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
152									
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.04 3.34 3.65 4.31	2.45 2.75 3.05 3.68	0.05 0.10 0.16 0.31
(2) SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.04 3.34 3.65 4.31	2.45 2.75 3.05 3.68	0.05 0.10 0.16 0.31
(2) SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.04 3.34 3.65 4.31	2.45 2.75 3.05 3.68	0.05 0.10 0.16 0.31
QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.60 9.29 9.91 11.18	5.00 9.66 10.62 12.61	0.11 0.21 0.30 0.49
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.60 9.29 9.91 11.18	5.00 9.66 10.62 12.61	0.11 0.21 0.30 0.49
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.60 9.29 9.91 11.18	5.00 9.66 10.62 12.61	0.11 0.21 0.30 0.49
RRUS 11 B12	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
RRUS 11 B12	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
RRUS 11 B12	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
RRUS 32	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16
RRUS 32	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16
RRUS 32	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B66	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.74 2.96 3.19 3.68	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B66	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.74 2.96 3.19 3.68	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B66	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.74 2.96 3.19 3.68	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 4478 B14	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
(2) 7020.00	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.15 0.20 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
(2) 7020.00	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.15 0.20 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
(2) 7020.00	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.10 0.15 0.20 0.33	0.17 0.24 0.31 0.48	0.00 0.01 0.01 0.02
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13
(2) DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13
Platform Mount [LP 603-1]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	30.10 37.80 45.50 60.90	30.10 37.80 45.50 60.90	1.47 1.91 2.36 3.24
Side Arm Mount [SO 102-3]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.00 3.48 3.96 4.92	3.00 3.48 3.96 4.92	0.08 0.11 0.14 0.20
Side Arm Mount [SO 202-3]	C	None		0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.18 8.56 10.94 15.70	6.18 8.56 10.94 15.70	0.33 0.40 0.47 0.61
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	152.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
** bridge stiffener	A	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.82 2.09 2.63	0.54 1.01 1.48 2.42	0.09 0.11 0.13 0.18
bridge stiffener	A	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.82 2.09 2.63	0.54 1.01 1.48 2.42	0.09 0.11 0.13 0.18
bridge stiffener	B	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.55 1.82 2.09 2.63	0.54 1.01 1.48 2.42	0.09 0.11 0.13 0.18

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
bridge stiffener	C	None		0.0000	110.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.82 2.09 2.63	0.54 1.01 1.48 2.42	0.09 0.11 0.13 0.18

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

Comb. No.	Description
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	150 - 145	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-10.87	-1.03	0.13
			Max. Mx	8	-4.08	-37.31	0.02
			Max. My	2	-4.18	-0.21	36.38
			Max. Vy	8	5.75	-37.31	0.02
			Max. Vx	2	-5.51	-0.21	36.38
			Max. Torque	2			-0.37
L2	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.61	-1.28	0.25
			Max. Mx	8	-4.38	-67.28	0.05
			Max. My	2	-4.50	-0.26	64.65
			Max. Vy	8	6.22	-67.28	0.05
			Max. Vx	2	-5.79	-0.26	64.65
			Max. Torque	22			-0.43
L3	140 - 139.583	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.68	-1.30	0.26
			Max. Mx	8	-4.40	-69.88	0.05
			Max. My	2	-4.53	-0.27	67.07
			Max. Vy	8	6.26	-69.88	0.05
			Max. Vx	2	-5.82	-0.27	67.07
			Max. Torque	22			-0.43
L4	139.583 - 139.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.74	-1.32	0.27
			Max. Mx	8	-4.43	-71.45	0.05
			Max. My	2	-4.55	-0.27	68.53
			Max. Vy	8	6.29	-71.45	0.05
			Max. Vx	2	-5.84	-0.27	68.53
			Max. Torque	22			-0.44
L5	139.333 - 134.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.89	-1.57	0.38
			Max. Mx	8	-4.96	-104.28	0.08
			Max. My	2	-5.10	-0.33	98.78
			Max. Vy	8	6.83	-104.28	0.08
			Max. Vx	2	-6.25	-0.33	98.78
			Max. Torque	22			-0.52
L6	134.333 - 129.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.06	-1.84	0.50
			Max. Mx	8	-5.51	-139.83	0.11
			Max. My	2	-5.67	-0.39	131.11
			Max. Vy	8	7.37	-139.83	0.11
			Max. Vx	2	-6.67	-0.39	131.11
			Max. Torque	22			-0.60
L7	129.333 - 124.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.24	-2.12	0.62
			Max. Mx	8	-6.08	-178.11	0.15
			Max. My	2	-6.26	-0.46	165.56
			Max. Vy	8	7.92	-178.11	0.15
			Max. Vx	2	-7.10	-0.46	165.56
			Max. Torque	22			-0.68
L8	124.333 - 119.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.44	-2.40	0.75
			Max. Mx	8	-6.67	-219.14	0.18
			Max. My	2	-6.86	-0.52	202.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	8.47	-219.14	0.18
			Max. Vx	2	-7.53	-0.52	202.13
			Max. Torque	22			-0.77
L9	119.333 - 114.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.66	-2.69	0.88
			Max. Mx	8	-7.28	-262.94	0.22
			Max. My	2	-7.48	-0.59	240.87
			Max. Vy	8	9.03	-262.94	0.22
			Max. Vx	2	-7.96	-0.59	240.87
			Max. Torque	22			-0.86
L10	114.333 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.70	-2.95	1.00
			Max. Mx	8	-7.83	-303.11	0.25
			Max. My	2	-8.04	-0.65	276.17
			Max. Vy	8	9.50	-303.11	0.25
			Max. Vx	2	-8.33	-0.65	276.17
			Max. Torque	22			-0.94
L11	110 - 109.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.44	-2.97	1.01
			Max. Mx	8	-8.27	-305.55	0.25
			Max. My	2	-8.48	-0.65	278.32
			Max. Vy	8	9.75	-305.55	0.25
			Max. Vx	2	-8.57	-0.65	278.32
			Max. Torque	22			-0.94
L12	109.75 - 104.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.81	-3.27	1.14
			Max. Mx	8	-9.01	-355.81	0.29
			Max. My	2	-9.22	-0.73	322.35
			Max. Vy	8	10.33	-355.81	0.29
			Max. Vx	2	-9.03	-0.73	322.35
			Max. Torque	22			-1.03
L13	104.75 - 99.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.19	-3.59	1.28
			Max. Mx	8	-9.76	-408.94	0.33
			Max. My	2	-9.99	-0.80	368.67
			Max. Vy	8	10.91	-408.94	0.33
			Max. Vx	2	-9.49	-0.80	368.67
			Max. Torque	22			-1.11
L14	99.75 - 94.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.58	-3.91	1.42
			Max. Mx	8	-10.54	-464.93	0.37
			Max. My	2	-10.77	-0.88	417.28
			Max. Vy	8	11.48	-464.93	0.37
			Max. Vx	2	-9.95	-0.88	417.28
			Max. Torque	22			-1.20
L15	94.75 - 89.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.99	-4.23	1.56
			Max. Mx	8	-11.34	-523.78	0.41
			Max. My	2	-11.57	-0.95	468.18
			Max. Vy	8	12.05	-523.78	0.41
			Max. Vx	2	-10.41	-0.95	468.18
			Max. Torque	22			-1.29
L16	89.75 - 84.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.41	-4.56	1.71
			Max. Mx	8	-12.17	-585.18	0.46
			Max. My	2	-12.39	-1.03	521.36
			Max. Vy	8	12.50	-585.18	0.46
			Max. Vx	2	-10.86	-1.03	521.36
			Max. Torque	22			-1.38
L17	84.75 - 81.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.35	-4.78	1.81
			Max. Mx	8	-12.71	-626.32	0.49

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-12.93	-1.08	557.15
			Max. Vy	8	12.80	-626.32	0.49
			Max. Vx	2	-11.16	-1.08	557.15
			Max. Torque	22			-1.44
L18	81.5 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.42	-4.80	1.82
			Max. Mx	8	-12.76	-629.52	0.49
			Max. My	2	-12.97	-1.09	559.94
			Max. Vy	8	12.81	-629.52	0.49
			Max. Vx	2	-11.17	-1.09	559.94
			Max. Torque	22			-1.44
L19	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.87	-5.13	1.96
			Max. Mx	8	-13.62	-694.78	0.54
			Max. My	2	-13.82	-1.17	616.97
			Max. Vy	8	13.27	-694.78	0.54
			Max. Vx	2	-11.63	-1.17	616.97
			Max. Torque	22			-1.53
L20	76.25 - 71.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.33	-5.47	2.12
			Max. Mx	8	-14.50	-762.26	0.59
			Max. My	2	-14.68	-1.25	676.22
			Max. Vy	8	13.71	-762.26	0.59
			Max. Vx	2	-12.07	-1.25	676.22
			Max. Torque	22			-1.63
L21	71.25 - 66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.70	-5.56	2.15
			Max. Mx	8	-14.72	-779.47	0.60
			Max. My	2	-14.90	-1.27	691.38
			Max. Vy	10	13.83	-739.04	-425.36
			Max. Vx	2	-12.18	-1.27	691.38
			Max. Torque	22			-1.65
L22	66 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.10	-5.90	2.31
			Max. Mx	8	-16.31	-849.92	0.65
			Max. My	2	-16.49	-1.36	753.59
			Max. Vy	10	14.45	-809.80	-466.11
			Max. Vx	2	-12.69	-1.36	753.59
			Max. Torque	22			-1.74
L23	65 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.69	-6.25	2.46
			Max. Mx	8	-17.32	-922.68	0.70
			Max. My	2	-17.49	-1.45	818.11
			Max. Vy	10	14.98	-883.40	-508.50
			Max. Vx	2	-13.12	-1.45	818.11
			Max. Torque	22			-1.83
L24	60 - 55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.29	-6.59	2.62
			Max. Mx	8	-18.36	-997.55	0.75
			Max. My	2	-18.51	-1.53	884.76
			Max. Vy	10	15.50	-959.63	-552.42
			Max. Vx	2	-13.54	-1.53	884.76
			Max. Torque	22			-1.93
L25	55 - 51.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.51	-6.85	2.73
			Max. Mx	8	-19.15	-1055.05	0.79
			Max. My	2	-19.29	-1.60	936.12
			Max. Vy	10	15.88	-1018.50	-586.32
			Max. Vx	2	-13.85	-1.60	936.12
			Max. Torque	22			-2.00
L26	51.25 - 51	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.60	-6.87	2.74
			Max. Mx	8	-19.22	-1058.92	0.79
			Max. My	2	-19.36	-1.61	939.58
			Max. Vy	10	15.90	-1022.47	-588.62
			Max. Vx	2	-13.86	-1.61	939.58
			Max. Torque	22			-2.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L27	51 - 46	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.38	-7.21	2.89
			Max. Mx	8	-20.40	-1137.51	0.85
			Max. My	2	-20.53	-1.70	1009.99
			Max. Vy	10	16.43	-1103.35	-635.21
			Max. Vx	2	-14.29	-1.70	1009.99
			Max. Torque	22			-2.09
L28	46 - 41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.17	-7.56	3.04
			Max. Mx	8	-21.61	-1218.15	0.90
			Max. My	2	-21.72	-1.79	1082.49
			Max. Vy	10	16.94	-1186.82	-683.29
			Max. Vx	2	-14.70	-1.79	1082.49
			Max. Torque	22			-2.19
L29	41 - 36	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.97	-7.90	3.19
			Max. Mx	8	-22.83	-1300.77	0.95
			Max. My	2	-22.93	-1.88	1156.99
			Max. Vy	10	17.42	-1272.76	-732.81
			Max. Vx	2	-15.10	-1.88	1156.99
			Max. Torque	22			-2.28
L30	36 - 31	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.79	-8.24	3.34
			Max. Mx	8	-24.08	-1385.28	1.01
			Max. My	2	-24.17	-1.97	1233.42
			Max. Vy	10	17.89	-1361.07	-783.68
			Max. Vx	2	-15.47	-1.97	1233.42
			Max. Torque	22			-2.37
L31	31 - 27	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.15	-8.31	3.37
			Max. Mx	8	-24.33	-1402.40	1.02
			Max. My	2	-24.42	-1.99	1248.93
			Max. Vy	10	17.97	-1379.00	-794.02
			Max. Vx	2	-15.55	-1.99	1248.93
			Max. Torque	22			-2.39
L32	27 - 26.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.44	-8.57	3.49
			Max. Mx	8	-26.02	-1467.36	1.06
			Max. My	2	-26.10	-2.07	1307.85
			Max. Vy	10	18.36	-1447.17	-833.29
			Max. Vx	2	-15.86	-2.07	1307.85
			Max. Torque	22			-2.46
L33	26.25 - 26	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.53	-8.59	3.49
			Max. Mx	8	-26.09	-1471.73	1.06
			Max. My	2	-26.17	-2.07	1311.82
			Max. Vy	10	18.37	-1451.77	-835.94
			Max. Vx	2	-15.88	-2.07	1311.82
			Max. Torque	22			-2.46
L34	26 - 21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.48	-8.92	3.64
			Max. Mx	8	-27.49	-1560.07	1.12
			Max. My	2	-27.55	-2.17	1392.14
			Max. Vy	10	18.82	-1544.79	-889.54
			Max. Vx	2	-16.24	-2.17	1392.14
			Max. Torque	22			-2.55
L35	21 - 16	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.43	-9.24	3.78
			Max. Mx	8	-28.91	-1650.15	1.17
			Max. My	2	-28.96	-2.26	1474.25
			Max. Vy	10	19.25	-1639.99	-944.39
			Max. Vx	2	-16.60	-2.26	1474.25
			Max. Torque	22			-2.65
L36	16 - 11	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.39	-9.54	3.92
			Max. Mx	8	-30.35	-1741.96	1.23
			Max. My	2	-30.39	-2.36	1558.15
			Max. Vy	10	19.68	-1737.34	-1000.49
			Max. Vx	2	-16.96	-2.36	1558.15

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	22			-2.74
L37	11 - 6	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.15	-9.60	3.91
			Max. Mx	10	-31.71	-1836.38	-1057.65
			Max. My	2	-31.77	-2.38	1643.79
			Max. Vy	10	19.96	-1836.38	-1057.65
			Max. Vx	2	-17.31	-2.38	1643.79
			Max. Torque	22			-2.74
L38	6 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.86	-9.60	3.88
			Max. Mx	10	-33.15	-1936.79	-1115.62
			Max. My	2	-33.16	-2.38	1731.18
			Max. Vy	10	20.23	-1936.79	-1115.62
			Max. Vx	2	-17.67	-2.38	1731.18
			Max. Torque	22			-2.74
L39	1 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.17	-9.60	3.87
			Max. Mx	10	-33.44	-1957.03	-1127.31
			Max. My	2	-33.44	-2.38	1748.86
			Max. Vy	10	20.27	-1957.03	-1127.31
			Max. Vx	2	-17.72	-2.38	1748.86
			Max. Torque	22			-2.74

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	57.17	-4.79	-2.77
	Max. H_x	23	25.09	20.25	11.69
	Max. H_z	3	25.09	0.00	17.70
	Max. M_x	2	1748.86	0.00	17.70
	Max. M_z	10	1957.03	-20.25	-11.69
	Max. Torsion	10	2.74	-20.25	-11.69
	Min. Vert	13	25.09	-8.85	-15.33
	Min. H_x	10	33.45	-20.25	-11.69
	Min. H_z	15	25.09	0.00	-17.70
	Min. M_x	14	-1746.37	0.00	-17.70
	Min. M_z	22	-1952.31	20.25	11.69
	Min. Torsion	22	-2.74	20.25	11.69

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	27.88	0.00	-0.00	-1.00	-1.91	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	33.45	0.00	-17.70	-1748.86	-2.38	0.37
0.9 Dead+1.0 Wind 0 deg - No Ice	25.09	0.00	-17.70	-1720.88	-1.75	0.36
1.2 Dead+1.0 Wind 30 deg - No Ice	33.45	8.85	-15.33	-1514.72	-876.18	0.32
0.9 Dead+1.0 Wind 30 deg - No Ice	25.09	8.85	-15.33	-1490.45	-861.73	0.31
1.2 Dead+1.0 Wind 60 deg - No Ice	33.45	16.03	-9.26	-927.46	-1606.62	-0.05
0.9 Dead+1.0 Wind 60 deg - No Ice	25.09	16.03	-9.26	-912.46	-1580.59	-0.06
1.2 Dead+1.0 Wind 90 deg - No Ice	33.45	19.24	0.00	-1.24	-1949.75	-0.63
0.9 Dead+1.0 Wind 90 deg - No Ice	25.09	19.24	-0.00	-0.91	-1918.22	-0.63

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 120 deg - No Ice	33.45	20.25	11.69	1127.31	-1957.03	-2.74
0.9 Dead+1.0 Wind 120 deg - No Ice	25.09	20.25	11.69	1110.31	-1926.41	-2.74
1.2 Dead+1.0 Wind 150 deg - No Ice	33.45	8.85	15.33	1512.23	-876.19	-0.32
0.9 Dead+1.0 Wind 150 deg - No Ice	25.09	8.85	15.33	1488.61	-861.73	-0.31
1.2 Dead+1.0 Wind 180 deg - No Ice	33.45	0.00	17.70	1746.37	-2.38	-0.37
0.9 Dead+1.0 Wind 180 deg - No Ice	25.09	0.00	17.70	1719.05	-1.75	-0.36
1.2 Dead+1.0 Wind 210 deg - No Ice	33.45	-8.85	15.33	1512.23	871.43	-0.32
0.9 Dead+1.0 Wind 210 deg - No Ice	25.09	-8.85	15.33	1488.62	858.24	-0.31
1.2 Dead+1.0 Wind 240 deg - No Ice	33.45	-16.03	9.26	924.97	1601.88	0.05
0.9 Dead+1.0 Wind 240 deg - No Ice	25.09	-16.03	9.26	910.63	1577.10	0.06
1.2 Dead+1.0 Wind 270 deg - No Ice	33.45	-19.24	0.00	-1.24	1945.00	0.63
0.9 Dead+1.0 Wind 270 deg - No Ice	25.09	-19.24	-0.00	-0.91	1914.73	0.63
1.2 Dead+1.0 Wind 300 deg - No Ice	33.45	-20.25	-11.69	-1129.75	1952.31	2.74
0.9 Dead+1.0 Wind 300 deg - No Ice	25.09	-20.25	-11.69	-1112.11	1922.94	2.74
1.2 Dead+1.0 Wind 330 deg - No Ice	33.45	-8.85	-15.33	-1514.73	871.42	0.32
0.9 Dead+1.0 Wind 330 deg - No Ice	25.09	-8.85	-15.33	-1490.46	858.23	0.31
1.2 Dead+1.0 Ice+1.0 Temp	57.17	0.00	-0.00	-3.87	-9.60	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	57.17	0.00	-3.91	-457.21	-9.64	0.14
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	57.17	1.95	-3.38	-396.48	-236.30	0.12
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	57.17	3.61	-2.08	-248.30	-432.97	-0.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	57.17	4.39	-0.00	-3.89	-529.32	-0.21
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	57.17	4.79	2.77	300.23	-536.37	-0.86
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	57.17	1.95	3.38	388.70	-236.30	-0.12
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	57.17	0.00	3.91	449.43	-9.64	-0.14
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	57.17	-1.95	3.38	388.70	217.02	-0.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	57.17	-3.61	2.08	240.52	413.70	0.01
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	57.17	-4.39	-0.00	-3.89	510.05	0.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	57.17	-4.79	-2.77	-308.00	517.11	0.86
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	57.17	-1.95	-3.38	-396.48	217.02	0.12
Dead+Wind 0 deg - Service	27.88	0.00	-4.17	-408.85	-1.97	0.09
Dead+Wind 30 deg - Service	27.88	2.08	-3.61	-354.21	-205.87	0.08
Dead+Wind 60 deg - Service	27.88	3.78	-2.18	-217.21	-376.40	-0.01
Dead+Wind 90 deg - Service	27.88	4.53	0.00	-1.03	-456.58	-0.15
Dead+Wind 120 deg - Service	27.88	4.77	2.75	262.61	-458.62	-0.65
Dead+Wind 150 deg - Service	27.88	2.08	3.61	352.14	-205.87	-0.08
Dead+Wind 180 deg - Service	27.88	0.00	4.17	406.78	-1.97	-0.09
Dead+Wind 210 deg - Service	27.88	-2.08	3.61	352.14	201.94	-0.08

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - Service	27.88	-3.78	2.18	215.15	372.47	0.01
Dead+Wind 270 deg - Service	27.88	-4.53	0.00	-1.03	452.65	0.15
Dead+Wind 300 deg - Service	27.88	-4.77	-2.75	-264.68	454.68	0.65
Dead+Wind 330 deg - Service	27.88	-2.08	-3.61	-354.21	201.94	0.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-27.88	0.00	-0.00	27.88	0.00	0.000%
2	0.00	-33.45	-17.70	0.00	33.45	17.70	0.000%
3	0.00	-25.09	-17.70	0.00	25.09	17.70	0.000%
4	8.85	-33.45	-15.33	-8.85	33.45	15.33	0.000%
5	8.85	-25.09	-15.33	-8.85	25.09	15.33	0.000%
6	16.03	-33.45	-9.26	-16.03	33.45	9.26	0.000%
7	16.03	-25.09	-9.26	-16.03	25.09	9.26	0.000%
8	19.24	-33.45	0.00	-19.24	33.45	0.00	0.000%
9	19.24	-25.09	0.00	-19.24	25.09	0.00	0.000%
10	20.25	-33.45	11.69	-20.25	33.45	-11.69	0.000%
11	20.25	-25.09	11.69	-20.25	25.09	-11.69	0.000%
12	8.85	-33.45	15.33	-8.85	33.45	-15.33	0.000%
13	8.85	-25.09	15.33	-8.85	25.09	-15.33	0.000%
14	0.00	-33.45	17.70	0.00	33.45	-17.70	0.000%
15	0.00	-25.09	17.70	0.00	25.09	-17.70	0.000%
16	-8.85	-33.45	15.33	8.85	33.45	-15.33	0.000%
17	-8.85	-25.09	15.33	8.85	25.09	-15.33	0.000%
18	-16.03	-33.45	9.26	16.03	33.45	-9.26	0.000%
19	-16.03	-25.09	9.26	16.03	25.09	-9.26	0.000%
20	-19.24	-33.45	0.00	19.24	33.45	0.00	0.000%
21	-19.24	-25.09	0.00	19.24	25.09	0.00	0.000%
22	-20.25	-33.45	-11.69	20.25	33.45	11.69	0.000%
23	-20.25	-25.09	-11.69	20.25	25.09	11.69	0.000%
24	-8.85	-33.45	-15.33	8.85	33.45	15.33	0.000%
25	-8.85	-25.09	-15.33	8.85	25.09	15.33	0.000%
26	0.00	-57.17	0.00	-0.00	57.17	0.00	0.000%
27	0.00	-57.17	-3.91	-0.00	57.17	3.91	0.000%
28	1.95	-57.17	-3.38	-1.95	57.17	3.38	0.000%
29	3.61	-57.17	-2.08	-3.61	57.17	2.08	0.000%
30	4.39	-57.17	0.00	-4.39	57.17	0.00	0.000%
31	4.79	-57.17	2.77	-4.79	57.17	-2.77	0.000%
32	1.95	-57.17	3.38	-1.95	57.17	-3.38	0.000%
33	0.00	-57.17	3.91	-0.00	57.17	-3.91	0.000%
34	-1.95	-57.17	3.38	1.95	57.17	-3.38	0.000%
35	-3.61	-57.17	2.08	3.61	57.17	-2.08	0.000%
36	-4.39	-57.17	0.00	4.39	57.17	0.00	0.000%
37	-4.79	-57.17	-2.77	4.79	57.17	2.77	0.000%
38	-1.95	-57.17	-3.38	1.95	57.17	3.38	0.000%
39	0.00	-27.88	-4.17	0.00	27.88	4.17	0.000%
40	2.08	-27.88	-3.61	-2.08	27.88	3.61	0.000%
41	3.78	-27.88	-2.18	-3.78	27.88	2.18	0.000%
42	4.53	-27.88	0.00	-4.53	27.88	0.00	0.000%
43	4.77	-27.88	2.75	-4.77	27.88	-2.75	0.000%
44	2.08	-27.88	3.61	-2.08	27.88	-3.61	0.000%
45	0.00	-27.88	4.17	0.00	27.88	-4.17	0.000%
46	-2.08	-27.88	3.61	2.08	27.88	-3.61	0.000%
47	-3.78	-27.88	2.18	3.78	27.88	-2.18	0.000%
48	-4.53	-27.88	0.00	4.53	27.88	0.00	0.000%
49	-4.77	-27.88	-2.75	4.77	27.88	2.75	0.000%
50	-2.08	-27.88	-3.61	2.08	27.88	3.61	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000454
2	Yes	6	0.00000001	0.00010234
3	Yes	5	0.00000001	0.00062336
4	Yes	7	0.00000001	0.00029542
5	Yes	7	0.00000001	0.00007134
6	Yes	7	0.00000001	0.00032362
7	Yes	7	0.00000001	0.00007607
8	Yes	6	0.00000001	0.00013491
9	Yes	5	0.00000001	0.00085266
10	Yes	7	0.00000001	0.00038331
11	Yes	7	0.00000001	0.00008197
12	Yes	7	0.00000001	0.00029472
13	Yes	7	0.00000001	0.00007123
14	Yes	6	0.00000001	0.00010223
15	Yes	5	0.00000001	0.00062285
16	Yes	7	0.00000001	0.00028667
17	Yes	7	0.00000001	0.00006922
18	Yes	7	0.00000001	0.00032097
19	Yes	7	0.00000001	0.00007562
20	Yes	6	0.00000001	0.00013474
21	Yes	5	0.00000001	0.00085177
22	Yes	7	0.00000001	0.00041469
23	Yes	7	0.00000001	0.00009038
24	Yes	7	0.00000001	0.00028735
25	Yes	7	0.00000001	0.00006933
26	Yes	5	0.00000001	0.00036793
27	Yes	7	0.00000001	0.00036113
28	Yes	7	0.00000001	0.00055807
29	Yes	7	0.00000001	0.00062433
30	Yes	7	0.00000001	0.00041472
31	Yes	7	0.00000001	0.00080390
32	Yes	7	0.00000001	0.00054465
33	Yes	7	0.00000001	0.00035387
34	Yes	7	0.00000001	0.00049875
35	Yes	7	0.00000001	0.00057142
36	Yes	7	0.00000001	0.00039591
37	Yes	7	0.00000001	0.00082376
38	Yes	7	0.00000001	0.00051069
39	Yes	5	0.00000001	0.00008406
40	Yes	5	0.00000001	0.00078063
41	Yes	5	0.00000001	0.00089482
42	Yes	5	0.00000001	0.00011635
43	Yes	6	0.00000001	0.00008531
44	Yes	5	0.00000001	0.00077118
45	Yes	5	0.00000001	0.00008350
46	Yes	5	0.00000001	0.00070044
47	Yes	5	0.00000001	0.00085832
48	Yes	5	0.00000001	0.00011502
49	Yes	6	0.00000001	0.00010383
50	Yes	5	0.00000001	0.00070884

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	32.311	43	1.9160	0.0059
L2	145 - 140	30.315	43	1.8916	0.0056
L3	140 - 139.583	28.358	43	1.8446	0.0052
L4	139.583 - 139.333	28.197	43	1.8399	0.0051
L5	139.333 - 134.333	28.101	43	1.8385	0.0051
L6	134.333 - 129.333	26.193	43	1.8046	0.0049

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	129.333 - 124.333	24.325	43	1.7625	0.0047
L8	124.333 - 119.333	22.506	43	1.7129	0.0044
L9	119.333 - 114.333	20.741	43	1.6567	0.0042
L10	114.333 - 110	19.039	43	1.5945	0.0039
L11	110 - 109.75	17.619	43	1.5359	0.0037
L12	109.75 - 104.75	17.538	43	1.5330	0.0037
L13	104.75 - 99.75	15.965	43	1.4725	0.0034
L14	99.75 - 94.75	14.457	43	1.4081	0.0032
L15	94.75 - 89.75	13.018	43	1.3400	0.0030
L16	89.75 - 84.75	11.652	43	1.2686	0.0028
L17	84.75 - 81.5	10.363	43	1.1940	0.0026
L18	81.5 - 81.25	9.567	43	1.1448	0.0024
L19	81.25 - 76.25	9.507	43	1.1410	0.0024
L20	76.25 - 71.25	8.353	43	1.0626	0.0022
L21	71.25 - 66	7.283	43	0.9815	0.0020
L22	70 - 65	7.028	43	0.9611	0.0020
L23	65 - 60	6.043	43	0.9138	0.0018
L24	60 - 55	5.128	43	0.8355	0.0017
L25	55 - 51.25	4.294	43	0.7563	0.0015
L26	51.25 - 51	3.724	43	0.6961	0.0013
L27	51 - 46	3.687	43	0.6927	0.0013
L28	46 - 41	2.999	43	0.6229	0.0012
L29	41 - 36	2.384	43	0.5519	0.0010
L30	36 - 31	1.843	43	0.4798	0.0009
L31	31 - 27	1.378	43	0.4081	0.0007
L32	30 - 26.25	1.294	43	0.3938	0.0007
L33	26.25 - 26	0.996	43	0.3625	0.0006
L34	26 - 21	0.977	43	0.3591	0.0006
L35	21 - 16	0.637	43	0.2898	0.0005
L36	16 - 11	0.370	43	0.2210	0.0004
L37	11 - 6	0.175	43	0.1516	0.0003
L38	6 - 1	0.052	43	0.0829	0.0001
L39	1 - 0	0.001	43	0.0137	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	7770.00 w/ Mount Pipe	43	32.311	1.9160	0.0059	7961
110.00	bridge stiffener	43	17.619	1.5359	0.0037	4495

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	137.856	10	8.1960	0.0247
L2	145 - 140	129.367	10	8.0938	0.0234
L3	140 - 139.583	121.036	10	7.8944	0.0216
L4	139.583 - 139.333	120.351	10	7.8741	0.0215
L5	139.333 - 134.333	119.941	10	7.8681	0.0214
L6	134.333 - 129.333	111.818	10	7.7239	0.0205
L7	129.333 - 124.333	103.862	10	7.5441	0.0195
L8	124.333 - 119.333	96.108	10	7.3325	0.0184

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L9	119.333 - 114.333	88.588	10	7.0923	0.0174
L10	114.333 - 110	81.330	10	6.8260	0.0163
L11	110 - 109.75	75.272	10	6.5754	0.0153
L12	109.75 - 104.75	74.930	10	6.5631	0.0153
L13	104.75 - 99.75	68.216	10	6.3041	0.0144
L14	99.75 - 94.75	61.780	10	6.0284	0.0135
L15	94.75 - 89.75	55.637	10	5.7371	0.0126
L16	89.75 - 84.75	49.805	10	5.4313	0.0117
L17	84.75 - 81.5	44.298	10	5.1117	0.0108
L18	81.5 - 81.25	40.897	10	4.9010	0.0102
L19	81.25 - 76.25	40.642	10	4.8848	0.0101
L20	76.25 - 71.25	35.712	10	4.5490	0.0093
L21	71.25 - 66	31.137	10	4.2013	0.0084
L22	70 - 65	30.051	10	4.1139	0.0082
L23	65 - 60	25.840	10	3.9115	0.0077
L24	60 - 55	21.925	10	3.5761	0.0069
L25	55 - 51.25	18.361	10	3.2365	0.0061
L26	51.25 - 51	15.922	10	2.9789	0.0056
L27	51 - 46	15.767	10	2.9640	0.0056
L28	46 - 41	12.822	10	2.6651	0.0049
L29	41 - 36	10.191	10	2.3613	0.0043
L30	36 - 31	7.881	10	2.0525	0.0037
L31	31 - 27	5.894	10	1.7455	0.0031
L32	30 - 26.25	5.534	10	1.6843	0.0030
L33	26.25 - 26	4.258	10	1.5505	0.0027
L34	26 - 21	4.177	10	1.5359	0.0027
L35	21 - 16	2.724	10	1.2391	0.0021
L36	16 - 11	1.581	10	0.9450	0.0016
L37	11 - 6	0.747	10	0.6482	0.0011
L38	6 - 1	0.222	10	0.3546	0.0006
L39	1 - 0	0.006	10	0.0584	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	7770.00 w/ Mount Pipe	10	137.856	8.1960	0.0247	1959
110.00	bridge stiffener	10	75.272	6.5754	0.0153	1082

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 145 (1)	TP15.2541x14.5x0.25	5.00	0.00	0.0	12.0783	-4.00	706.58	0.006
L2	145 - 140 (2)	TP16.0083x15.2541x0.25	5.00	0.00	0.0	12.6854	-4.29	742.10	0.006
L3	140 - 139.583 (3)	TP16.0712x16.0083x0.25	0.42	0.00	0.0	12.7360	-4.31	745.06	0.006
L4	139.583 - 139.333 (4)	TP16.1089x16.0712x0.55	0.25	0.00	0.0	27.5548	-4.34	1611.95	0.003
L5	139.333 - 134.333 (5)	TP16.863x16.1089x0.525	5.00	0.00	0.0	27.6194	-4.85	1615.74	0.003
L6	134.333 - 129.333 (6)	TP17.6172x16.863x0.5125	5.00	0.00	0.0	28.2270	-5.38	1651.28	0.003
L7	129.333 - 124.333 (7)	TP18.3713x17.6172x0.5	5.00	0.00	0.0	28.7728	-5.93	1683.21	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L8	124.333 - 119.333 (8)	TP19.1254x18.3713x0.4875	5.00	0.00	0.0	29.2569	-6.50	1711.53	0.004
L9	119.333 - 114.333 (9)	TP19.8796x19.1254x0.475	5.00	0.00	0.0	29.6793	-7.10	1736.24	0.004
L10	114.333 - 110 (10)	TP20.5331x19.8796x0.4625	4.33	0.00	0.0	29.8901	-7.63	1748.57	0.004
L11	110 - 109.75 (11)	TP20.5708x20.5331x0.5625	0.25	0.00	0.0	36.2400	-8.07	2120.04	0.004
L12	109.75 - 104.75 (12)	TP21.3249x20.5708x0.55	5.00	0.00	0.0	36.7924	-8.79	2152.36	0.004
L13	104.75 - 99.75 (13)	TP22.0791x21.3249x0.5375	5.00	0.00	0.0	37.2831	-9.54	2181.06	0.004
L14	99.75 - 94.75 (14)	TP22.8332x22.0791x0.525	5.00	0.00	0.0	37.7120	-10.31	2206.15	0.005
L15	94.75 - 89.75 (15)	TP23.5874x22.8332x0.5125	5.00	0.00	0.0	38.0793	-11.10	2227.64	0.005
L16	89.75 - 84.75 (16)	TP24.3415x23.5874x0.5	5.00	0.00	0.0	38.3848	-11.92	2245.51	0.005
L17	84.75 - 81.5 (17)	TP24.8317x24.3415x0.5	3.25	0.00	0.0	39.1740	-12.46	2291.68	0.005
L18	81.5 - 81.25 (18)	TP24.8694x24.8317x0.5	0.25	0.00	0.0	39.2347	-12.51	2295.23	0.005
L19	81.25 - 76.25 (19)	TP25.6235x24.8694x0.4875	5.00	0.00	0.0	39.4573	-13.36	2308.25	0.006
L20	76.25 - 71.25 (20)	TP26.3777x25.6235x0.475	5.00	0.00	0.0	39.6181	-14.23	2317.66	0.006
L21	71.25 - 66 (21)	TP27.1695x26.3777x0.475	5.25	0.00	0.0	39.9065	-14.46	2334.53	0.006
L22	66 - 65 (22)	TP26.8203x26.0662x0.5375	5.00	0.00	0.0	45.4890	-16.04	2661.11	0.006
L23	65 - 60 (23)	TP27.5745x26.8203x0.5313	5.00	0.00	0.0	46.2608	-17.06	2706.26	0.006
L24	60 - 55 (24)	TP28.3286x27.5745x0.525	5.00	0.00	0.0	47.0020	-18.11	2749.62	0.007
L25	55 - 51.25 (25)	TP28.8942x28.3286x0.5188	3.75	0.00	0.0	47.3977	-18.91	2772.76	0.007
L26	51.25 - 51 (26)	TP28.9319x28.8942x0.6	0.25	0.00	0.0	54.7373	-18.98	3202.13	0.006
L27	51 - 46 (27)	TP29.6861x28.9319x0.6	5.00	0.00	0.0	56.1943	-20.17	3287.37	0.006
L28	46 - 41 (28)	TP30.4402x29.6861x0.5875	5.00	0.00	0.0	56.4739	-21.39	3303.72	0.006
L29	41 - 36 (29)	TP31.1943x30.4402x0.575	5.00	0.00	0.0	56.6917	-22.64	3316.47	0.007
L30	36 - 31 (30)	TP31.9485x31.1943x0.575	5.00	0.00	0.0	58.0880	-23.90	3398.15	0.007
L31	31 - 27 (31)	TP32.5518x31.9485x0.575	4.00	0.00	0.0	58.3673	-24.16	3414.49	0.007
L32	27 - 26.25 (32)	TP32.04x31.4743x0.6375	3.75	0.00	0.0	64.4615	-25.86	3771.00	0.007
L33	26.25 - 26 (33)	TP32.0777x32.04x0.6375	0.25	0.00	0.0	64.5390	-25.93	3775.53	0.007
L34	26 - 21 (34)	TP32.832x32.0777x0.625	5.00	0.00	0.0	64.8166	-27.35	3791.77	0.007
L35	21 - 16 (35)	TP33.5863x32.832x0.625	5.00	0.00	0.0	66.3346	-28.80	3880.58	0.007
L36	16 - 11 (36)	TP34.3406x33.5863x0.6125	5.00	0.00	0.0	66.5202	-30.27	3891.43	0.008
L37	11 - 6 (37)	TP35.0949x34.3406x0.6125	5.00	0.00	0.0	68.0078	-31.71	3978.46	0.008
L38	6 - 1 (38)	TP35.8491x35.0949x0.6	5.00	0.00	0.0	68.1013	-33.15	3983.93	0.008
L39	1 - 0 (39)	TP36x35.8491x0.6	1.00	0.00	0.0	68.3928	-33.44	4000.98	0.008

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	150 - 145 (1)	TP15.2541x14.5x0.25	37.63	269.80	0.139	0.00	269.80	0.000
L2	145 - 140 (2)	TP16.0083x15.2541x0.25	68.23	297.84	0.229	0.00	297.84	0.000
L3	140 - 139.583 (3)	TP16.0712x16.0083x0.25	70.90	300.24	0.236	0.00	300.24	0.000
L4	139.583 - 139.333 (4)	TP16.1089x16.0712x0.55	72.52	626.74	0.116	0.00	626.74	0.000
L5	139.333 - 134.333 (5)	TP16.863x16.1089x0.525	106.53	661.73	0.161	0.00	661.73	0.000
L6	134.333 - 129.333 (6)	TP17.6172x16.863x0.5125	143.87	709.51	0.203	0.00	709.51	0.000
L7	129.333 - 124.333 (7)	TP18.3713x17.6172x0.5	184.55	757.10	0.244	0.00	757.10	0.000
L8	124.333 - 119.333 (8)	TP19.1254x18.3713x0.4875	228.58	804.29	0.284	0.00	804.29	0.000
L9	119.333 - 114.333 (9)	TP19.8796x19.1254x0.475	275.97	850.86	0.324	0.00	850.86	0.000
L10	114.333 - 110 (10)	TP20.5331x19.8796x0.4625	319.72	887.56	0.360	0.00	887.56	0.000
L11	110 - 109.75 (11)	TP20.5708x20.5331x0.5625	322.37	1067.48	0.302	0.00	1067.48	0.000
L12	109.75 - 104.75 (12)	TP21.3249x20.5708x0.55	377.31	1127.08	0.335	0.00	1127.08	0.000
L13	104.75 - 99.75 (13)	TP22.0791x21.3249x0.5375	435.69	1186.01	0.367	0.00	1186.01	0.000
L14	99.75 - 94.75 (14)	TP22.8332x22.0791x0.525	497.50	1244.07	0.400	0.00	1244.07	0.000
L15	94.75 - 89.75 (15)	TP23.5874x22.8332x0.5125	562.70	1301.03	0.432	0.00	1301.03	0.000
L16	89.75 - 84.75 (16)	TP24.3415x23.5874x0.5	631.26	1356.69	0.465	0.00	1356.69	0.000
L17	84.75 - 81.5 (17)	TP24.8317x24.3415x0.5	677.61	1413.63	0.479	0.00	1413.63	0.000
L18	81.5 - 81.25 (18)	TP24.8694x24.8317x0.5	681.24	1418.07	0.480	0.00	1418.07	0.000
L19	81.25 - 76.25 (19)	TP25.6235x24.8694x0.4875	755.42	1472.59	0.513	0.00	1472.59	0.000
L20	76.25 - 71.25 (20)	TP26.3777x25.6235x0.475	832.85	1525.28	0.546	0.00	1525.28	0.000
L21	71.25 - 66 (21)	TP27.1695x26.3777x0.475	852.71	1547.76	0.551	0.00	1547.76	0.000
L22	66 - 65 (22)	TP26.8203x26.0662x0.5375	934.36	1773.33	0.527	0.00	1773.33	0.000
L23	65 - 60 (23)	TP27.5745x26.8203x0.5313	1019.30	1857.05	0.549	0.00	1857.05	0.000
L24	60 - 55 (24)	TP28.3286x27.5745x0.525	1107.28	1941.31	0.570	0.00	1941.31	0.000
L25	55 - 51.25 (25)	TP28.8942x28.3286x0.5188	1175.21	1999.09	0.588	0.00	1999.09	0.000
L26	51.25 - 51 (26)	TP28.9319x28.8942x0.6	1179.79	2298.57	0.513	0.00	2298.57	0.000
L27	51 - 46 (27)	TP29.6861x28.9319x0.6	1273.13	2423.88	0.525	0.00	2423.88	0.000
L28	46 - 41 (28)	TP30.4402x29.6861x0.5875	1369.46	2502.47	0.547	0.00	2502.47	0.000
L29	41 - 36 (29)	TP31.1943x30.4402x0.575	1468.65	2578.92	0.569	0.00	2578.92	0.000
L30	36 - 31 (30)	TP31.9485x31.1943x0.575	1570.56	2708.72	0.580	0.00	2708.72	0.000
L31	31 - 27 (31)	TP32.5518x31.9485x0.575	1591.26	2735.06	0.582	0.00	2735.06	0.000
L32	27 - 26.25 (32)	TP32.04x31.4743x0.6375	1669.93	3002.88	0.556	0.00	3002.88	0.000
L33	26.25 - 26 (33)	TP32.0777x32.04x0.6375	1675.24	3010.18	0.557	0.00	3010.18	0.000
L34	26 - 21 (34)	TP32.832x32.0777x0.625	1782.60	3099.50	0.575	0.00	3099.50	0.000
L35	21 - 16 (35)	TP33.5863x32.832x0.625	1892.47	3247.79	0.583	0.00	3247.79	0.000
L36	16 - 11 (36)	TP34.3406x33.5863x0.6125	2004.83	3335.27	0.601	0.00	3335.27	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 $\frac{M_{uy}}{\phi M_{ny}}$
L37	11 - 6 (37)	TP35.0949x34.3406x0.6125	2119.18	3487.47	0.608	0.00	3487.47	0.000
L38	6 - 1 (38)	TP35.8491x35.0949x0.6	2235.13	3572.53	0.626	0.00	3572.53	0.000
L39	1 - 0 (39)	TP36x35.8491x0.6	2258.49	3603.43	0.627	0.00	3603.43	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	150 - 145 (1)	TP15.2541x14.5x0.25	5.85	211.97	0.028	0.32	279.77	0.001
L2	145 - 140 (2)	TP16.0083x15.2541x0.25	6.38	222.63	0.029	0.43	308.60	0.001
L3	140 - 139.583 (3)	TP16.0712x16.0083x0.25	6.44	223.52	0.029	0.43	311.06	0.001
L4	139.583 - 139.333 (4)	TP16.1089x16.0712x0.55	6.47	483.59	0.013	0.44	661.84	0.001
L5	139.333 - 134.333 (5)	TP16.863x16.1089x0.525	7.13	484.72	0.015	0.52	696.61	0.001
L6	134.333 - 129.333 (6)	TP17.6172x16.863x0.5125	7.80	495.38	0.016	0.60	745.34	0.001
L7	129.333 - 124.333 (7)	TP18.3713x17.6172x0.5	8.47	504.96	0.017	0.68	793.81	0.001
L8	124.333 - 119.333 (8)	TP19.1254x18.3713x0.4875	9.14	513.46	0.018	0.77	841.79	0.001
L9	119.333 - 114.333 (9)	TP19.8796x19.1254x0.475	9.81	520.87	0.019	0.86	889.07	0.001
L10	114.333 - 110 (10)	TP20.5331x19.8796x0.4625	10.38	524.57	0.020	0.94	926.12	0.001
L11	110 - 109.75 (11)	TP20.5708x20.5331x0.5625	10.64	636.01	0.017	0.94	1119.38	0.001
L12	109.75 - 104.75 (12)	TP21.3249x20.5708x0.55	11.33	645.71	0.018	1.03	1179.98	0.001
L13	104.75 - 99.75 (13)	TP22.0791x21.3249x0.5375	12.02	654.32	0.018	1.11	1239.84	0.001
L14	99.75 - 94.75 (14)	TP22.8332x22.0791x0.525	12.70	661.85	0.019	1.20	1298.74	0.001
L15	94.75 - 89.75 (15)	TP23.5874x22.8332x0.5125	13.38	668.29	0.020	1.29	1356.45	0.001
L16	89.75 - 84.75 (16)	TP24.3415x23.5874x0.5	14.05	673.65	0.021	1.38	1412.77	0.001
L17	84.75 - 81.5 (17)	TP24.8317x24.3415x0.5	14.48	687.50	0.021	1.44	1471.46	0.001
L18	81.5 - 81.25 (18)	TP24.8694x24.8317x0.5	14.51	688.57	0.021	1.44	1476.02	0.001
L19	81.25 - 76.25 (19)	TP25.6235x24.8694x0.4875	15.16	692.48	0.022	1.53	1531.09	0.001
L20	76.25 - 71.25 (20)	TP26.3777x25.6235x0.475	15.81	695.30	0.023	1.63	1584.22	0.001
L21	71.25 - 66 (21)	TP27.1695x26.3777x0.475	15.97	700.36	0.023	1.65	1607.37	0.001
L22	66 - 65 (22)	TP26.8203x26.0662x0.5375	16.68	798.33	0.021	1.74	1845.68	0.001
L23	65 - 60 (23)	TP27.5745x26.8203x0.5313	17.30	811.88	0.021	1.83	1931.29	0.001
L24	60 - 55 (24)	TP28.3286x27.5745x0.525	17.90	824.88	0.022	1.93	2017.41	0.001
L25	55 - 51.25 (25)	TP28.8942x28.3286x0.5188	18.34	831.83	0.022	1.99	2076.24	0.001
L26	51.25 - 51 (26)	TP28.9319x28.8942x0.6	18.36	960.64	0.019	2.00	2394.07	0.001
L27	51 - 46 (27)	TP29.6861x28.9319x0.6	18.97	986.21	0.019	2.09	2523.22	0.001
L28	46 - 41 (28)	TP30.4402x29.6861x0.5875	19.56	991.12	0.020	2.19	2602.61	0.001
L29	41 - 36 (29)	TP31.1943x30.4402x0.575	20.12	994.94	0.020	2.28	2679.74	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 $\frac{T_u}{\phi T_n}$
L30	36 - 31 (30)	TP31.9485x31.1943x0.575	20.65	1019.44	0.020	2.37	2813.37	0.001
L31	31 - 27 (31)	TP32.5518x31.9485x0.575	20.75	1024.35	0.020	2.39	2840.48	0.001
L32	27 - 26.25 (32)	TP32.04x31.4743x0.6375	21.19	1131.30	0.019	2.46	3124.94	0.001
L33	26.25 - 26 (33)	TP32.0777x32.04x0.6375	21.21	1132.66	0.019	2.46	3132.46	0.001
L34	26 - 21 (34)	TP32.832x32.0777x0.625	21.73	1137.53	0.019	2.55	3222.66	0.001
L35	21 - 16 (35)	TP33.5863x32.832x0.625	22.23	1164.17	0.019	2.65	3375.38	0.001
L36	16 - 11 (36)	TP34.3406x33.5863x0.6125	22.72	1167.43	0.019	2.74	3463.56	0.001
L37	11 - 6 (37)	TP35.0949x34.3406x0.6125	23.05	1193.54	0.019	2.74	3620.20	0.001
L38	6 - 1 (38)	TP35.8491x35.0949x0.6	23.36	1195.18	0.020	2.74	3705.79	0.001
L39	1 - 0 (39)	TP36x35.8491x0.6	23.40	1200.29	0.019	2.74	3737.58	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 145 (1)	0.006	0.139	0.000	0.028	0.001	0.146	1.050	4.8.2
L2	145 - 140 (2)	0.006	0.229	0.000	0.029	0.001	0.236	1.050	4.8.2
L3	140 - 139.583 (3)	0.006	0.236	0.000	0.029	0.001	0.243	1.050	4.8.2
L4	139.583 - 139.333 (4)	0.003	0.116	0.000	0.013	0.001	0.119	1.050	4.8.2
L5	139.333 - 134.333 (5)	0.003	0.161	0.000	0.015	0.001	0.164	1.050	4.8.2
L6	134.333 - 129.333 (6)	0.003	0.203	0.000	0.016	0.001	0.206	1.050	4.8.2
L7	129.333 - 124.333 (7)	0.004	0.244	0.000	0.017	0.001	0.248	1.050	4.8.2
L8	124.333 - 119.333 (8)	0.004	0.284	0.000	0.018	0.001	0.288	1.050	4.8.2
L9	119.333 - 114.333 (9)	0.004	0.324	0.000	0.019	0.001	0.329	1.050	4.8.2
L10	114.333 - 110 (10)	0.004	0.360	0.000	0.020	0.001	0.365	1.050	4.8.2
L11	110 - 109.75 (11)	0.004	0.302	0.000	0.017	0.001	0.306	1.050	4.8.2
L12	109.75 - 104.75 (12)	0.004	0.335	0.000	0.018	0.001	0.339	1.050	4.8.2
L13	104.75 - 99.75 (13)	0.004	0.367	0.000	0.018	0.001	0.372	1.050	4.8.2
L14	99.75 - 94.75 (14)	0.005	0.400	0.000	0.019	0.001	0.405	1.050	4.8.2
L15	94.75 - 89.75 (15)	0.005	0.432	0.000	0.020	0.001	0.438	1.050	4.8.2
L16	89.75 - 84.75 (16)	0.005	0.465	0.000	0.021	0.001	0.471	1.050	4.8.2
L17	84.75 - 81.5 (17)	0.005	0.479	0.000	0.021	0.001	0.485	1.050	4.8.2
L18	81.5 - 81.25 (18)	0.005	0.480	0.000	0.021	0.001	0.486	1.050	4.8.2
L19	81.25 - 76.25 (19)	0.006	0.513	0.000	0.022	0.001	0.519	1.050	4.8.2
L20	76.25 - 71.25 (20)	0.006	0.546	0.000	0.023	0.001	0.553	1.050	4.8.2
L21	71.25 - 66 (21)	0.006	0.551	0.000	0.023	0.001	0.558	1.050	4.8.2
L22	66 - 65 (22)	0.006	0.527	0.000	0.021	0.001	0.533	1.050	4.8.2
L23	65 - 60 (23)	0.006	0.549	0.000	0.021	0.001	0.556	1.050	4.8.2
L24	60 - 55 (24)	0.007	0.570	0.000	0.022	0.001	0.577	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L25	55 - 51.25 (25)	0.007	0.588	0.000	0.022	0.001	0.595	1.050	4.8.2
L26	51.25 - 51 (26)	0.006	0.513	0.000	0.019	0.001	0.520	1.050	4.8.2
L27	51 - 46 (27)	0.006	0.525	0.000	0.019	0.001	0.532	1.050	4.8.2
L28	46 - 41 (28)	0.006	0.547	0.000	0.020	0.001	0.554	1.050	4.8.2
L29	41 - 36 (29)	0.007	0.569	0.000	0.020	0.001	0.577	1.050	4.8.2
L30	36 - 31 (30)	0.007	0.580	0.000	0.020	0.001	0.587	1.050	4.8.2
L31	31 - 27 (31)	0.007	0.582	0.000	0.020	0.001	0.589	1.050	4.8.2
L32	27 - 26.25 (32)	0.007	0.556	0.000	0.019	0.001	0.563	1.050	4.8.2
L33	26.25 - 26 (33)	0.007	0.557	0.000	0.019	0.001	0.564	1.050	4.8.2
L34	26 - 21 (34)	0.007	0.575	0.000	0.019	0.001	0.583	1.050	4.8.2
L35	21 - 16 (35)	0.007	0.583	0.000	0.019	0.001	0.591	1.050	4.8.2
L36	16 - 11 (36)	0.008	0.601	0.000	0.019	0.001	0.609	1.050	4.8.2
L37	11 - 6 (37)	0.008	0.608	0.000	0.019	0.001	0.616	1.050	4.8.2
L38	6 - 1 (38)	0.008	0.626	0.000	0.020	0.001	0.634	1.050	4.8.2
L39	1 - 0 (39)	0.008	0.627	0.000	0.019	0.001	0.636	1.050	4.8.2

Section Capacity Table

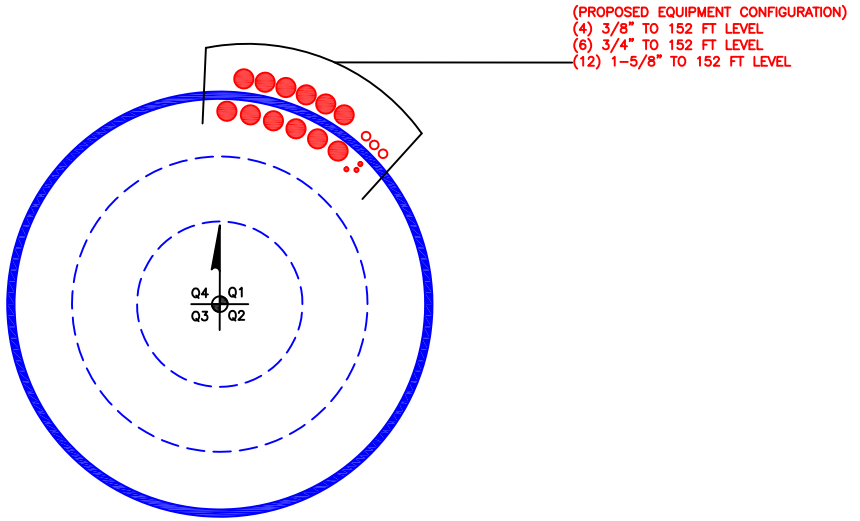
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 145	Pole	TP15.2541x14.5x0.25	1	-4.00	741.91	13.9	Pass
L2	145 - 140	Pole	TP16.0083x15.2541x0.25	2	-4.29	779.20	22.5	Pass
L3	140 - 139.583	Pole	TP16.0712x16.0083x0.25	3	-4.31	782.31	23.1	Pass
L4	139.583 - 139.333	Pole	TP16.1089x16.0712x0.55	4	-4.34	1692.55	11.3	Pass
L5	139.333 - 134.333	Pole	TP16.863x16.1089x0.525	5	-4.85	1696.53	15.6	Pass
L6	134.333 - 129.333	Pole	TP17.6172x16.863x0.5125	6	-5.38	1733.84	19.6	Pass
L7	129.333 - 124.333	Pole	TP18.3713x17.6172x0.5	7	-5.93	1767.37	23.6	Pass
L8	124.333 - 119.333	Pole	TP19.1254x18.3713x0.4875	8	-6.50	1797.11	27.5	Pass
L9	119.333 - 114.333	Pole	TP19.8796x19.1254x0.475	9	-7.10	1823.05	31.3	Pass
L10	114.333 - 110	Pole	TP20.5331x19.8796x0.4625	10	-7.63	1836.00	34.8	Pass
L11	110 - 109.75	Pole	TP20.5708x20.5331x0.5625	11	-8.07	2226.04	29.2	Pass
L12	109.75 - 104.75	Pole	TP21.3249x20.5708x0.55	12	-8.79	2259.98	32.3	Pass
L13	104.75 - 99.75	Pole	TP22.0791x21.3249x0.5375	13	-9.54	2290.11	35.4	Pass
L14	99.75 - 94.75	Pole	TP22.8332x22.0791x0.525	14	-10.31	2316.46	38.6	Pass
L15	94.75 - 89.75	Pole	TP23.5874x22.8332x0.5125	15	-11.10	2339.02	41.7	Pass
L16	89.75 - 84.75	Pole	TP24.3415x23.5874x0.5	16	-11.92	2357.79	44.9	Pass
L17	84.75 - 81.5	Pole	TP24.8317x24.3415x0.5	17	-12.46	2406.26	46.2	Pass
L18	81.5 - 81.25	Pole	TP24.8694x24.8317x0.5	18	-12.51	2409.99	46.3	Pass
L19	81.25 - 76.25	Pole	TP25.6235x24.8694x0.4875	19	-13.36	2423.66	49.5	Pass
L20	76.25 - 71.25	Pole	TP26.3777x25.6235x0.475	20	-14.23	2433.54	52.6	Pass
L21	71.25 - 66	Pole	TP27.1695x26.3777x0.475	21	-14.46	2451.26	53.1	Pass
L22	66 - 65	Pole	TP26.8203x26.0662x0.5375	22	-16.04	2794.17	50.8	Pass
L23	65 - 60	Pole	TP27.5745x26.8203x0.5313	23	-17.06	2841.57	52.9	Pass
L24	60 - 55	Pole	TP28.3286x27.5745x0.525	24	-18.11	2887.10	55.0	Pass
L25	55 - 51.25	Pole	TP28.8942x28.3286x0.5188	25	-18.91	2911.40	56.7	Pass
L26	51.25 - 51	Pole	TP28.9319x28.8942x0.6	26	-18.98	3362.24	49.5	Pass
L27	51 - 46	Pole	TP29.6861x28.9319x0.6	27	-20.17	3451.74	50.6	Pass
L28	46 - 41	Pole	TP30.4402x29.6861x0.5875	28	-21.39	3468.91	52.8	Pass
L29	41 - 36	Pole	TP31.1943x30.4402x0.575	29	-22.64	3482.29	54.9	Pass
L30	36 - 31	Pole	TP31.9485x31.1943x0.575	30	-23.90	3568.06	55.9	Pass
L31	31 - 27	Pole	TP32.5518x31.9485x0.575	31	-24.16	3585.21	56.1	Pass
L32	27 - 26.25	Pole	TP32.04x31.4743x0.6375	32	-25.86	3959.55	53.7	Pass
L33	26.25 - 26	Pole	TP32.0777x32.04x0.6375	33	-25.93	3964.31	53.7	Pass
L34	26 - 21	Pole	TP32.832x32.0777x0.625	34	-27.35	3981.36	55.5	Pass
L35	21 - 16	Pole	TP33.5863x32.832x0.625	35	-28.80	4074.61	56.2	Pass
L36	16 - 11	Pole	TP34.3406x33.5863x0.6125	36	-30.27	4086.00	58.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L37	11 - 6	Pole	TP35.0949x34.3406x0.6125	37	-31.71	4177.38	58.7	Pass
L38	6 - 1	Pole	TP35.8491x35.0949x0.6	38	-33.15	4183.13	60.4	Pass
L39	1 - 0	Pole	TP36x35.8491x0.6	39	-33.44	4201.03	60.5	Pass
							Summary	
						Pole (L39)	60.5	Pass
						RATING =	**60.5**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841287 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 841287

Work Order: 1760862

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	150	40	0	12	14.5	20.5331	0.25	Auto	A572-65
2	110	44	4	12	20.53	27.1695	0.25	Auto	A572-65
3	70	43	3	12	26.07	32.5518	0.3125	Auto	A572-65
4	30	30	0	12	31.47	36	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	26.25	channel	MP3-05 (1.25in)	4		x			x			x			x	
2	26.25	51.25	channel	MP3-05 (1.25in)	4		x			x			x			x	
3	51.25	81.5	channel	MP3-04 (1.25in)	4		x			x			x			x	
4	81.5	110	channel	MP3-04 (1.25in)	4		x			x			x			x	
5	110	139.583	channel	MP3-03 (1.25in)	4		x			x			x			x	
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29.000	29.000	18.000	4.994	1.2500	A572-65
2	5.33	2.09	5.65	0.79	29.000	29.000	18.000	4.994	1.2500	A572-65
3	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
4	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
5	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.526	1.2500	A572-65

TNX Geometry Input

Increment (ft): 5

	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	150 - 145	5		12	14.500	15.254	0.25	A572-65	1.000
2	145 - 140	5		12	15.254	16.008	0.25	A572-65	1.000
3	140 - 139.583	0.417		12	16.008	16.071	0.25	A572-65	1.000
4	139.583 - 139.333	0.25		12	16.071	16.109	0.55	A572-65	0.888
5	139.333 - 134.333	5		12	16.109	16.863	0.525	A572-65	0.908
6	134.333 - 129.333	5		12	16.863	17.617	0.5125	A572-65	0.910
7	129.333 - 124.333	5		12	17.617	18.371	0.5	A572-65	0.914
8	124.333 - 119.333	5		12	18.371	19.125	0.4875	A572-65	0.919
9	119.333 - 114.333	5		12	19.125	19.880	0.475	A572-65	0.927
10	114.333 - 110	4.333	0	12	19.880	20.533	0.4625	A572-65	0.938
11	110 - 109.75	0.25		12	20.533	20.571	0.5625	A572-65	0.908
12	109.75 - 104.75	5		12	20.571	21.325	0.55	A572-65	0.911
13	104.75 - 99.75	5		12	21.325	22.079	0.5375	A572-65	0.915
14	99.75 - 94.75	5		12	22.079	22.833	0.525	A572-65	0.921
15	94.75 - 89.75	5		12	22.833	23.587	0.5125	A572-65	0.928
16	89.75 - 84.75	5		12	23.587	24.341	0.5	A572-65	0.936
17	84.75 - 81.5	3.25		12	24.341	24.832	0.5	A572-65	0.927
18	81.5 - 81.25	0.25		12	24.832	24.869	0.5	A572-65	0.927
19	81.25 - 76.25	5		12	24.869	25.624	0.4875	A572-65	0.937
20	76.25 - 71.25	5		12	25.624	26.378	0.475	A572-65	0.948
21	71.25 - 70	5.25	4	12	26.378	27.170	0.475	A572-65	0.945
22	70 - 65	5		12	26.066	26.820	0.5375	A572-65	0.950
23	65 - 60	5		12	26.820	27.574	0.53125	A572-65	0.951
24	60 - 55	5		12	27.574	28.329	0.525	A572-65	0.952
25	55 - 51.25	3.75		12	28.329	28.894	0.51875	A572-65	0.956
26	51.25 - 51	0.25		12	28.894	28.932	0.6	A572-65	0.940
27	51 - 46	5		12	28.932	29.686	0.6	A572-65	0.929
28	46 - 41	5		12	29.686	30.440	0.5875	A572-65	0.938
29	41 - 36	5		12	30.440	31.194	0.575	A572-65	0.947
30	36 - 31	5		12	31.194	31.948	0.575	A572-65	0.938
31	31 - 30	4	3	12	31.948	32.552	0.575	A572-65	0.936
32	30 - 26.25	3.75		12	31.474	32.040	0.6375	A572-65	0.944
33	26.25 - 26	0.25		12	32.040	32.078	0.6375	A572-65	0.944
34	26 - 21	5		12	32.078	32.832	0.625	A572-65	0.954
35	21 - 16	5		12	32.832	33.586	0.625	A572-65	0.946
36	16 - 11	5		12	33.586	34.341	0.6125	A572-65	0.957
37	11 - 6	5		12	34.341	35.095	0.6125	A572-65	0.949
38	6 - 1	5		12	35.095	35.849	0.6	A572-65	0.961
39	1 - 0	1		12	35.849	36.000	0.6	A572-65	0.960

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	150 - 145	4.00	37.63	5.85
2	145 - 140	4.29	68.23	6.38
3	140 - 139.583	4.31	70.90	6.44
4	139.583 - 139.333	4.34	72.52	6.47
5	139.333 - 134.333	4.85	106.53	7.13
6	134.333 - 129.333	5.38	143.87	7.80
7	129.333 - 124.333	5.93	184.55	8.47
8	124.333 - 119.333	6.50	228.58	9.14
9	119.333 - 114.333	7.10	275.97	9.81
10	114.333 - 110	7.63	319.72	10.38
11	110 - 109.75	8.07	322.37	10.64
12	109.75 - 104.75	8.79	377.31	11.33
13	104.75 - 99.75	9.54	435.69	12.02
14	99.75 - 94.75	10.31	497.49	12.70
15	94.75 - 89.75	11.10	562.69	13.38
16	89.75 - 84.75	11.92	631.26	14.05
17	84.75 - 81.5	12.46	677.61	14.48
18	81.5 - 81.25	12.51	681.24	14.51
19	81.25 - 76.25	13.36	755.42	15.16
20	76.25 - 71.25	14.23	832.85	15.81
21	71.25 - 70	14.46	852.71	15.97
22	70 - 65	16.04	934.36	16.68
23	65 - 60	17.06	1019.30	17.30
24	60 - 55	18.11	1107.28	17.90
25	55 - 51.25	18.91	1175.21	18.34
26	51.25 - 51	18.98	1179.79	18.36
27	51 - 46	20.17	1273.14	18.97
28	46 - 41	21.39	1369.46	19.56
29	41 - 36	22.64	1468.65	20.12
30	36 - 31	23.90	1570.56	20.65
31	31 - 30	24.16	1591.26	20.75
32	30 - 26.25	25.86	1669.94	21.19
33	26.25 - 26	25.94	1675.24	21.21
34	26 - 21	27.35	1782.60	21.73
35	21 - 16	28.80	1892.47	22.23
36	16 - 11	30.27	2004.82	22.72
37	11 - 6	31.71	2119.18	23.05
38	6 - 1	33.15	2235.12	23.36
39	1 - 0	33.44	2258.49	23.40

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP15.254x14.5x0.25	Pole	13.7%	Pass
145 - 140	Pole	TP16.008x15.254x0.25	Pole	22.2%	Pass
140 - 139.58	Pole	TP16.071x16.008x0.25	Pole	22.9%	Pass
139.58 - 139.33	Pole + Reinf.	TP16.109x16.071x0.55	Reinf. 5 Tension Rupture	17.3%	Pass
139.33 - 134.33	Pole + Reinf.	TP16.863x16.109x0.525	Reinf. 5 Tension Rupture	23.7%	Pass
134.33 - 129.33	Pole + Reinf.	TP17.617x16.863x0.5125	Reinf. 5 Tension Rupture	29.9%	Pass
129.33 - 124.33	Pole + Reinf.	TP18.371x17.617x0.5	Reinf. 5 Tension Rupture	35.9%	Pass
124.33 - 119.33	Pole + Reinf.	TP19.125x18.371x0.4875	Reinf. 5 Tension Rupture	41.8%	Pass
119.33 - 114.33	Pole + Reinf.	TP19.88x19.125x0.475	Reinf. 5 Tension Rupture	47.5%	Pass
114.33 - 110	Pole + Reinf.	TP20.533x19.88x0.4625	Reinf. 5 Tension Rupture	52.3%	Pass
110 - 109.75	Pole + Reinf.	TP20.571x20.533x0.5625	Reinf. 4 Tension Rupture	44.0%	Pass
109.75 - 104.75	Pole + Reinf.	TP21.325x20.571x0.55	Reinf. 4 Tension Rupture	48.8%	Pass
104.75 - 99.75	Pole + Reinf.	TP22.079x21.325x0.5375	Reinf. 4 Tension Rupture	53.5%	Pass
99.75 - 94.75	Pole + Reinf.	TP22.833x22.079x0.525	Reinf. 4 Tension Rupture	58.1%	Pass
94.75 - 89.75	Pole + Reinf.	TP23.587x22.833x0.5125	Reinf. 4 Tension Rupture	62.5%	Pass
89.75 - 84.75	Pole + Reinf.	TP24.341x23.587x0.5	Reinf. 4 Tension Rupture	66.9%	Pass
84.75 - 81.5	Pole + Reinf.	TP24.832x24.341x0.5	Reinf. 4 Tension Rupture	69.6%	Pass
81.5 - 81.25	Pole + Reinf.	TP24.869x24.832x0.5	Reinf. 3 Tension Rupture	69.8%	Pass
81.25 - 76.25	Pole + Reinf.	TP25.624x24.869x0.4875	Reinf. 3 Tension Rupture	74.0%	Pass
76.25 - 71.25	Pole + Reinf.	TP26.378x25.624x0.475	Reinf. 3 Tension Rupture	78.0%	Pass
71.25 - 70	Pole + Reinf.	TP27.17x26.378x0.475	Reinf. 3 Tension Rupture	78.9%	Pass
70 - 65	Pole + Reinf.	TP26.82x26.066x0.5375	Reinf. 3 Tension Rupture	75.3%	Pass
65 - 60	Pole + Reinf.	TP27.574x26.82x0.5313	Reinf. 3 Tension Rupture	78.6%	Pass
60 - 55	Pole + Reinf.	TP28.329x27.574x0.525	Reinf. 3 Tension Rupture	81.7%	Pass
55 - 51.25	Pole + Reinf.	TP28.894x28.329x0.5188	Reinf. 3 Tension Rupture	83.9%	Pass
51.25 - 51	Pole + Reinf.	TP28.932x28.894x0.6	Reinf. 2 Tension Rupture	71.2%	Pass
51 - 46	Pole + Reinf.	TP29.686x28.932x0.6	Reinf. 2 Tension Rupture	73.8%	Pass
46 - 41	Pole + Reinf.	TP30.44x29.686x0.5875	Reinf. 2 Tension Rupture	76.3%	Pass
41 - 36	Pole + Reinf.	TP31.194x30.44x0.575	Reinf. 2 Tension Rupture	78.8%	Pass
36 - 31	Pole + Reinf.	TP31.948x31.194x0.575	Reinf. 2 Tension Rupture	81.2%	Pass
31 - 30	Pole + Reinf.	TP32.552x31.948x0.575	Reinf. 2 Tension Rupture	81.6%	Pass
30 - 26.25	Pole + Reinf.	TP32.04x31.474x0.6375	Reinf. 2 Tension Rupture	77.5%	Pass
26.25 - 26	Pole + Reinf.	TP32.078x32.04x0.6375	Reinf. 1 Tension Rupture	77.6%	Pass
26 - 21	Pole + Reinf.	TP32.832x32.078x0.625	Reinf. 1 Tension Rupture	79.5%	Pass
21 - 16	Pole + Reinf.	TP33.586x32.832x0.625	Reinf. 1 Tension Rupture	81.3%	Pass
16 - 11	Pole + Reinf.	TP34.341x33.586x0.6125	Reinf. 1 Tension Rupture	83.1%	Pass
11 - 6	Pole + Reinf.	TP35.095x34.341x0.6125	Reinf. 1 Tension Rupture	84.7%	Pass
6 - 1	Pole + Reinf.	TP35.849x35.095x0.6	Reinf. 1 Tension Rupture	86.3%	Pass
1 - 0	Pole + Reinf.	TP36x35.849x0.6	Reinf. 1 Tension Rupture	86.6%	Pass
				Summary	
			Pole	60.9%	Pass
			Reinforcement	86.6%	Pass
			Overall	86.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
150 - 145	348	n/a	348	12.06	n/a	12.06	13.7%					
145 - 140	403	n/a	403	12.67	n/a	12.67	22.2%					
140 - 139.58	407	n/a	407	12.72	n/a	12.72	22.9%					
139.58 - 139.33	410	440	850	12.75	11.68	24.43	10.9%					17.3%
139.33 - 134.33	472	479	951	13.35	11.68	25.03	15.0%					23.7%
134.33 - 129.33	539	520	1059	13.96	11.68	25.64	18.9%					29.9%
129.33 - 124.33	612	562	1174	14.57	11.68	26.25	22.7%					35.9%
124.33 - 119.33	692	606	1298	15.17	11.68	26.85	26.5%					41.8%
119.33 - 114.33	778	651	1429	15.78	11.68	27.46	30.2%					47.5%
114.33 - 110	859	692	1551	16.30	11.68	27.98	33.2%					52.3%
110 - 109.75	863	989	1853	16.33	16.52	32.85	28.1%				44.0%	
109.75 - 104.75	963	1058	2022	16.94	16.52	33.46	31.5%				48.8%	
104.75 - 99.75	1070	1130	2200	17.55	16.52	34.07	35.0%				53.5%	
99.75 - 94.75	1185	1204	2389	18.15	16.52	34.67	38.5%				58.1%	
94.75 - 89.75	1308	1280	2587	18.76	16.52	35.28	41.9%				62.5%	
89.75 - 84.75	1439	1358	2797	19.37	16.52	35.89	45.4%				66.9%	
84.75 - 81.5	1528	1410	2939	19.76	16.52	36.28	47.7%				69.6%	
81.5 - 81.25	1535	1414	2950	19.79	16.52	36.31	47.8%			69.8%		
81.25 - 76.25	1681	1497	3178	20.40	16.52	36.92	51.3%			74.0%		
76.25 - 71.25	1835	1582	3417	21.00	16.52	37.52	54.8%			78.0%		
71.25 - 70	1875	1603	3478	21.15	16.52	37.67	55.7%			78.9%		
70 - 65	2396	1633	4028	26.64	16.52	43.16	49.3%			75.3%		
65 - 60	2606	1721	4327	27.39	16.52	43.91	51.9%			78.6%		
60 - 55	2828	1812	4640	28.15	16.52	44.67	54.5%			81.7%		
55 - 51.25	3003	1882	4885	28.72	16.52	45.24	56.4%			83.9%		
51.25 - 51	3015	2644	5659	28.76	22.60	51.36	49.0%		71.2%			
51 - 46	3259	2776	6036	29.51	22.60	52.11	51.3%		73.8%			
46 - 41	3517	2911	6428	30.27	22.60	52.87	53.6%		76.3%			
41 - 36	3788	3049	6837	31.03	22.60	53.63	55.9%		78.8%			
36 - 31	4072	3190	7262	31.79	22.60	54.39	58.2%		81.2%			
31 - 30	4131	3219	7349	31.94	22.60	54.54	58.6%		81.6%			
30 - 26.25	4900	3208	8108	38.18	22.60	60.78	52.2%		77.5%			
26.25 - 26	4918	3215	8132	38.23	22.60	60.83	52.3%	77.6%				
26 - 21	5277	3360	8637	39.14	22.60	61.74	54.0%	79.5%				
21 - 16	5654	3508	9162	40.05	22.60	62.65	55.7%	81.3%				
16 - 11	6048	3659	9707	40.95	22.60	63.55	57.4%	83.1%				
11 - 6	6459	3814	10274	41.86	22.60	64.46	59.0%	84.7%				
6 - 1	6890	3972	10862	42.77	22.60	65.37	60.6%	86.3%				
1 - 0	6978	4004	10982	42.96	22.60	65.56	60.9%	86.6%				

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

Monopole Flange Plate Connection

Elevation = 110 ft.

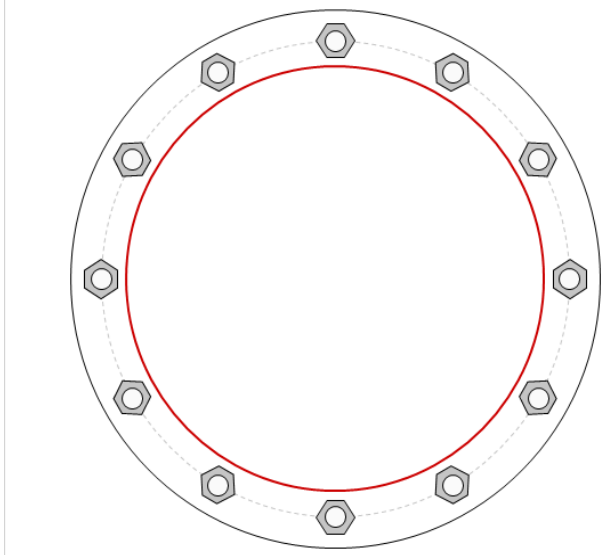
BU #	841287
Site Name	Norwalk West- Ct Ave
Order #	424185 Rev. 3

TIA-222 Revision	H

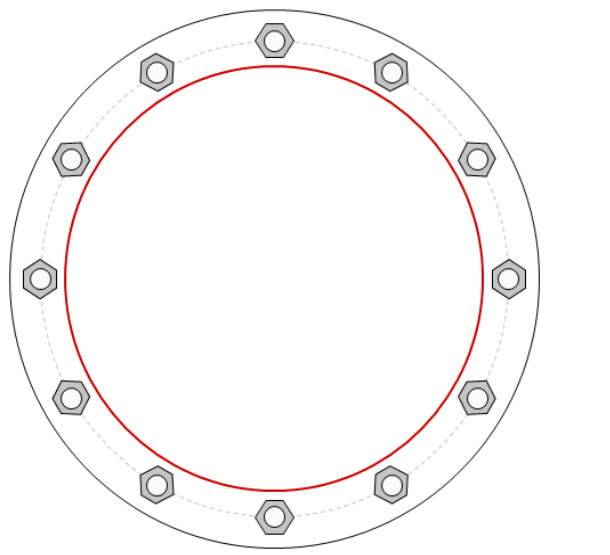
Applied Loads	
Moment (kip-ft)	319.72
Axial Force (kips)	7.63
Shear Force (kips)	10.38

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 23" BC

Top Plate Data

26" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

20.5331" x 0.25" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Plate Data

26" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

20.5331" x 0.25" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	54.93	
Allowable (kips)	54.52	
Stress Rating:	**95.9%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	35.28	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**74.7%**	**Pass**
Tension Side Stress Rating:	**48.8%**	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	35.28	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**74.7%**	**Pass**
Tension Side Stress Rating:	**48.8%**	**Pass**

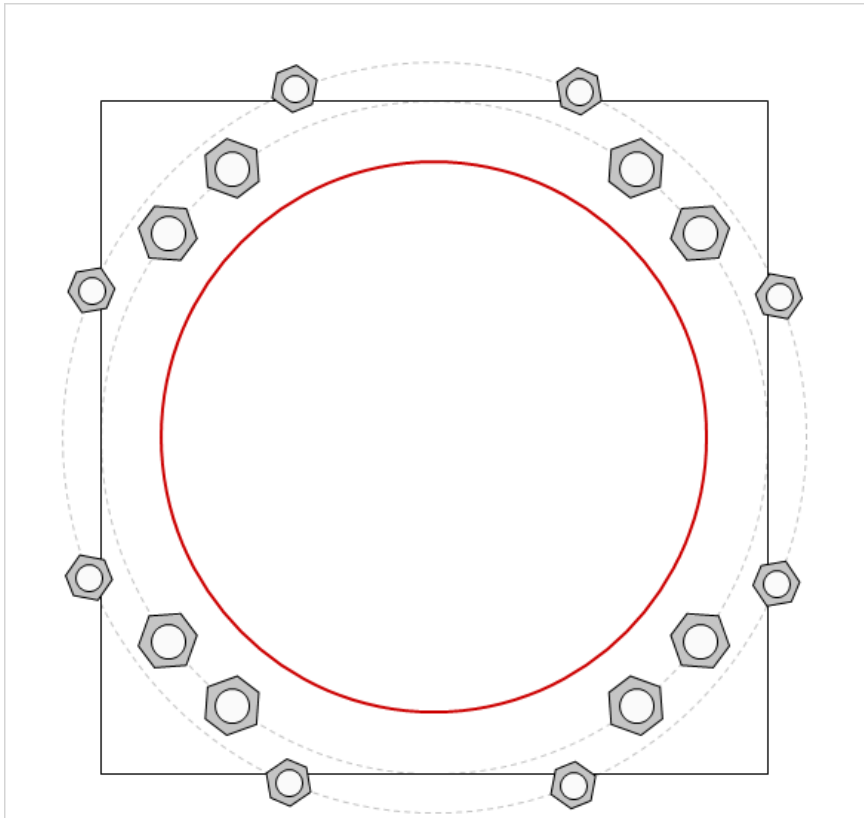
Monopole Base Plate Connection

Site Info	
BU #	841287
Site Name	Norwalk West- Ct Ave
Order #	424185 Rev. 3

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2

Applied Loads	
Moment (kip-ft)	2258.49
Axial Force (kips)	33.44
Shear Force (kips)	23.40

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 44" BC

Anchor Spacing: 6 in

GROUP 2: (8) 1-3/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 49" BC

Base Plate Data

44" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

GROUP 1:		
Pu_c = 182.44	ϕPn_c = 243.75	**Stress Rating**
Vu = 2.93	ϕVn = 73.13	**71.4%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 116.07	ϕPn_c = 199.5	**Stress Rating**
Vu = 0	ϕVn = 59.85	**55.4%**
Mu = 0	ϕMn = 59.26	**Pass**

Base Plate Summary

Max Stress (ksi):	33.5	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**59.1%**	**Pass**

Pier and Pad Foundation

BU # :	841287
Site Name:	Norwalk West- Ct A
App. Number:	424185 Rev. 3

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	33.44	kips
Base Shear, Vu_comp:	23.4	kips
Moment, M_u:	2258.49	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	5	ft
Ext. Above Grade, **E**:	0.4	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	7.1	ft
Pad Width, **W**:	21.25	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size (Bottom), **Sp**:	10	
Pad Rebar Quantity (Bottom), **mp**:	15	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Gross Bearing, Qult:	20.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	28	degrees
SPT Blow Count, N_{blows}:	5	
Base Friction, μ:	0.4	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	12	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	193.35	23.40	**11.5%**	**Pass**
Bearing Pressure (ksf)	15.00	2.30	**15.3%**	**Pass**
*Overturning (kip*ft)*	4345.76	2438.87	**56.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3842.55	2375.49	**58.9%**	**Pass**
Pier Compression (kip)	11934.00	55.94	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	2075.93	1001.94	**46.0%**	**Pass**
Pad Shear - 1-way (kips)	525.75	174.65	**31.6%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.051	**29.3%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	2349.69	1425.29	**57.8%**	**Pass**

**Rating per TIA-222-H Section 15.5*

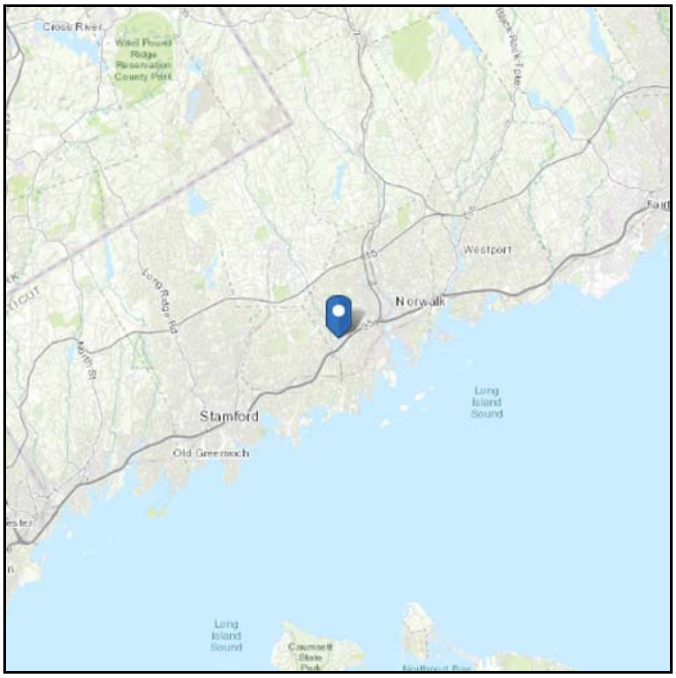
Soil Rating*:	**56.1%**
Structural Rating*:	**58.9%**

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 88.52 ft (NAVD 88)
Latitude: 41.097069
Longitude: -73.449058



Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Thu Jun 27 2019

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

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

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

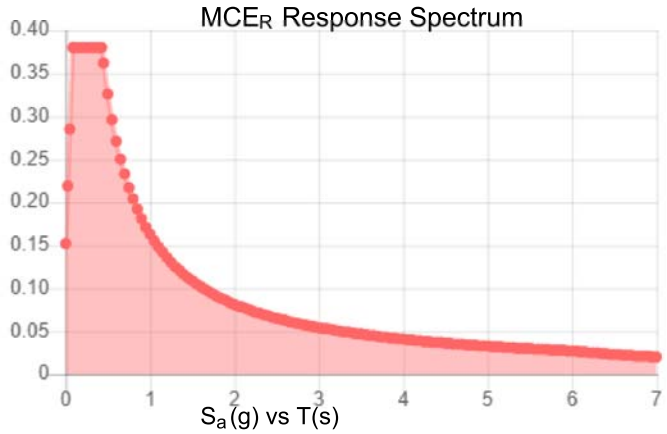
Seismic

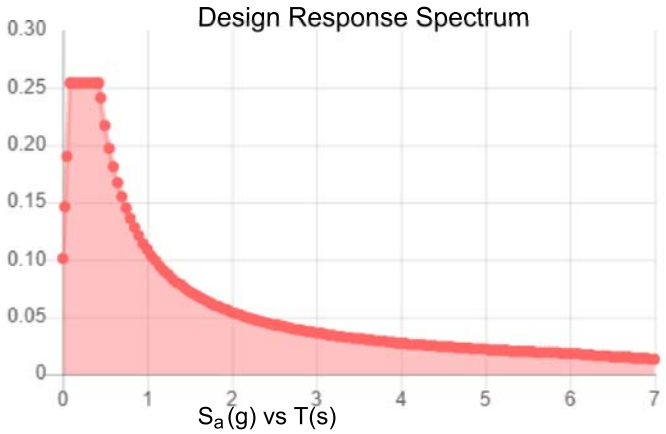
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.238	S_{DS} :	0.254
S_1 :	0.068	S_{D1} :	0.109
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.136
S_{MS} :	0.38	PGA_M :	0.208
S_{M1} :	0.163	F_{PGA} :	1.528
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Jun 27 2019

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Jun 27 2019

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.