



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

VIA ELECTRONIC MAIL

May 1, 2019

Kristen White
Site Acquisition Specialist
Empire Telecom USA, LLC
Billerica, MA 01862

RE: **EM-AT&T-135-190304** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 69 Guinea Road, Stamford, Connecticut.

Dear Ms. White:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 3, 2019 and April 29, 2019 submitted in response to the Council's March 6, 2019 and April 4, 2019 notifications of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr



Robidoux, Evan

From: Kristen White <kwhite@empiretelecomm.com>
Sent: Monday, April 29, 2019 5:53 PM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; Michelle Scharath; Lauren Groppi
Subject: Response to: Council 2nd Incomplete Letter for EM-AT&T-135-190304-GuineaRd-Stamford - CT2208
Attachments: 2nd Supplemental Letter w Documents for AT&T Notice Package - 69 Guinea Road - Stamford.pdf; UPDATED SA - 4.29.19 - CSBC 2018-3.pdf

Good afternoon Evan,

Attached is a letter with the following revised document to supplement AT&T's Notice of Exempt Modification at 69 Guinea Road; Stamford, CT 0690 (EM-AT&T-135-190304-GuineaRd-Stamford CT2208).

Attached is an updated Structural Engineering report, revised with the cover page Signed & Stamped by a CT Engineer and also updated to reference the 2018 Connecticut State Building Code and 2015 IBC, by Jacobs Engineering Group, Inc. and dated March 7, 2019.

A physical copy of the attached will be sent via UPS to the Council as well, to arrive Tuesday, April 30, 2019.

Best,
Kristen White

Kristen White
Site Acquisition Supervisor

EMPIRE
telecom

16 Esquire Road | Billerica, MA 01862

Mobile: 978-284-3801

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From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Monday, April 08, 2019 9:37 AM
To: Kristen White <kwhite@empiretelecomm.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council 2nd Incomplete Letter for EM-AT&T-135-190304-GuineaRd-Stamford



April 29, 2019

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Also delivered via email to Evan.Robidoux@ct.gov & Siting.Council@ct.gov

Regarding:	EM-AT&T-135-190304 - Notice of Exempt Modification – Equipment Modification
Property Address:	69 Guinea Road; Stamford, CT 06903
Applicant:	AT&T Mobility (“AT&T”, Site # CT2208)

Dear Ms. Bachman:

I am in receipt of the Council’s letter dated April 4, 2019, noting a deficiency in the Structural Analysis submitted to support the above-referenced application for Exempt Modification for AT&T at 69 Guinea Road in Stamford, CT 06903.

We have received the corrected version of the SA, stamped, signed, and revised to reference the 2018 Connecticut State Building Code and 2015 IBC; stamped by Jacobs Engineering Group, Inc. and dated March 7, 2019.

Please accept this letter and attachments as an addendum to the notification dated February 9, 2019 and received by your office on March 4, 2019 pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2).

Should you have any further requests or concerns, please don’t hesitate to let me know.

Sincerely,

Kristen White

Kristen White
Site Acquisition Specialist
Empire Telecom USA, LLC
kwhite@empiretelecomm.com

Enclosures:

Revised Structural Analysis dated March 7, 2019

Date: **March 07, 2019**

Heather Simeone
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
770-701-2500

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: 10035238
Carrier Site Name: STAMFORD GIRL SCOUTS

Crown Castle Designation: **Crown Castle BU Number:** 806953
Crown Castle Site Name: BRG 2044 (A) 943097
Crown Castle JDE Job Number: 527802
Crown Castle Work Order Number: 1624992
Crown Castle Application Number: 457269 Rev. 0

Engineering Firm Designation: **Jacobs Engineering Group, Inc. Project Number:** 1624992

Site Data: **69 GUINEA RD(CAMP ROCKY CRAIG), STAMFORD, Fairfield County, CT**
Latitude 41° 6' 6.35", Longitude -73° 35' 41.45"
160 Foot - Monopole Tower

Dear Heather Simeone,

Jacobs Engineering Group, Inc. is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration

Sufficient Capacity

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

Structural analysis prepared by:



Vhenniell Jhon Paul Co
Structural Engineer

Respectfully submitted by:

Craig A. Thomas, P.E.
Project Manager
CT PE No. 29052



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1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by Valmont Microflex in August of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC & 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	93 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
149.0	151.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	2 4 12 1	3/8 5/8 1-5/8 2 [Conduit]
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 4478 B5		
		3	ericsson	RRUS12/RRUS A2		
		3	kmw communications	EPBQ-654L8H6-L2 w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
	149.0	3	ericsson	RRUS 11		
		6	powerwave technologies	LGP21401		
		6	powerwave technologies	LGP21901		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 713-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
157.0	158.0	3	alcatel lucent	TD-RRH8x20-25	1 4 1 1 1 3	1/8 17/64 1/2 5/8 7/8 1-1/4
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe		
		1	box enclosures and assembly	BEN-92P		
		3	nokia	FWHR		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
	157.0	9	rfs celwave	ACU-A20-N		
		1	tower mounts	Platform Mount [LP 713-1]		
154.0	155.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	-	-
		3	alcatel lucent	800MHZ RRH		
	154.0	1	tower mounts	Pipe Mount [PM 601-3]		
	153.0	3	alcatel lucent	1900MHz RRH (65MHz)		
139.0	142.0	3	alcatel lucent	B13 RRH 4X30	13	1-5/8
		3	alcatel lucent	B66A RRH4X45		
		6	andrew	DB846F65ZAXY w/ Mount Pipe		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
	139.0	1	tower mounts	Platform Mount [LP 713-1]		
116.0	118.0	3	commscope	LNK-6515DS-VTM w/ Mount Pipe	1 12	1-1/4 1-5/8
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	ericsson	RRUS 11 B12		
		3	ericsson	KRY 112 144/1		
	116.0	1	tower mounts	Platform Mount [LP 712-1]		
84.0	84.0	1	gps	GPS_A	-	-
		1	tower mounts	Side Arm Mount [SO 701-1]		
40.0	40.0	1	andrew	GPS-QBW-20N	-	-

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Velocitel	1104116	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont Industries, Inc.	1104113	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont Microflect	823122	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Aero Solutions LLC	1251715	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford & Company	3332716	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals	4015064	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford & Company	4837035	CCISITES
4-POST-MODIFICATION INSPECTION	Sinnott Gering and Schmitt Towers, Inc.	5577141	CCISITES
4-EXPOSURE CATEGORY / TOPOGRAPHIC FACTOR	Crown Castle	6124352	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

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. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.6%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	6.9%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	15.4%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	22.5%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	33.4%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	42.2%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	50.1%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	57.2%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 116	Pole	TP31.29x29.208x0.25	Pole	62.4%	Pass
116 - 111	Pole	TP30.867x29.669x0.3438	Pole	46.9%	Pass
111 - 106	Pole	TP32.065x30.867x0.3438	Pole	51.2%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	55.2%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	58.8%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	62.0%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	65.1%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 5 Tension Rupture	63.4%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 5 Tension Rupture	65.8%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	68.1%	Pass
80.75 - 80.5	Pole	TP38.175x38.115x0.3438	Pole	68.2%	Pass
80.5 - 79	Pole	TP39.912x38.175x0.3438	Pole	69.1%	Pass
79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	59.3%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	61.0%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	62.7%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	64.2%	Pass
57.25 - 52.25	Pole	TP44.268x43.067x0.4063	Pole	65.7%	Pass
52.25 - 49.33	Pole	TP44.968x44.268x0.4063	Pole	66.5%	Pass
49.33 - 49.08	Pole	TP45.028x44.968x0.4063	Pole	66.6%	Pass
49.08 - 44.08	Pole	TP46.229x45.028x0.4063	Pole	67.9%	Pass
44.08 - 43	Pole	TP48.088x46.229x0.4063	Pole	68.2%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	64.9%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	65.6%	Pass
32.25 - 32	Pole	TP48.317x48.256x0.4375	Pole	65.6%	Pass
32 - 27	Pole	TP49.517x48.317x0.4375	Pole	66.6%	Pass
27 - 22	Pole	TP50.718x49.517x0.4375	Pole	67.5%	Pass
22 - 17	Pole	TP51.918x50.718x0.4375	Pole	68.5%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	68.7%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	68.8%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	68.9%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	68.9%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	69.8%	Pass
9.5 - 4.5	Pole	TP54.92x53.719x0.4375	Pole	70.6%	Pass
4.5 - 0	Pole	TP56x54.92x0.4375	Pole	71.4%	Pass
				Summary	
			Pole	71.4%	Pass
			Reinforcement	65.8%	Pass
			Overall	71.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.9	Pass
1	Base Plate	0	32.0	Pass
1	Base Foundation Structural	0	53.7	Pass
1	Base Foundation Soil Interaction	0	65.2	Pass

Structure Rating (max from all components) =	71.4%
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Notes:

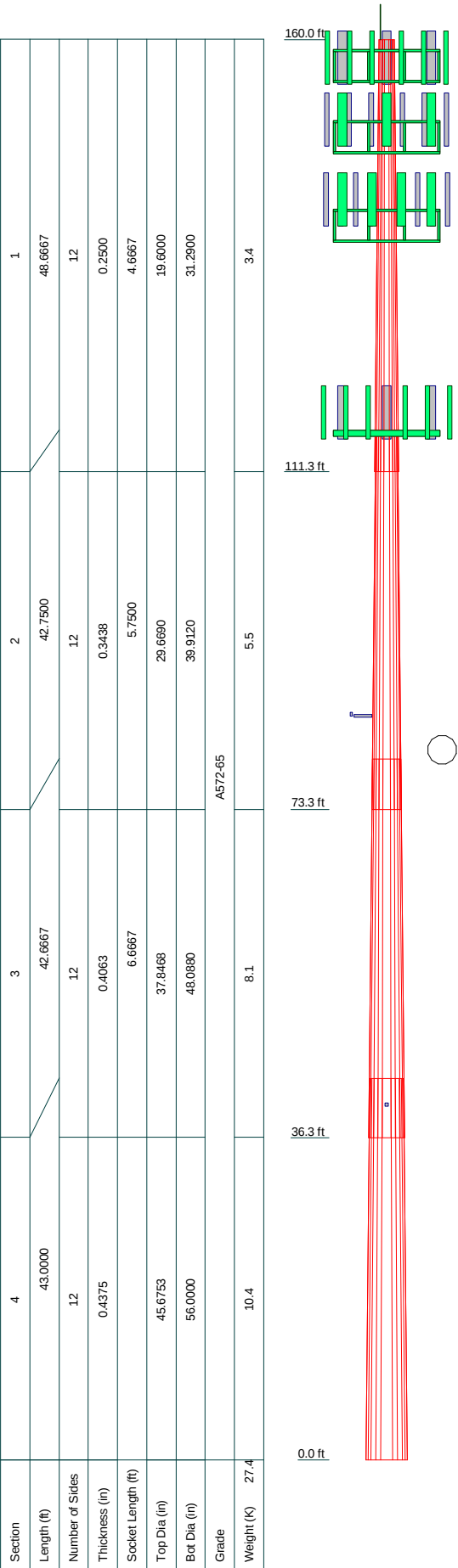
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/4"x4'	160	DC6-48-60-18-8F	149
APXVSPP18-C-A20 w/ Mount Pipe	157	RRUS12/RRUS A2	149
APXVSPP18-C-A20 w/ Mount Pipe	157	RRUS12/RRUS A2	149
APXVSPP18-C-A20 w/ Mount Pipe	157	RRUS12/RRUS A2	149
(3) ACU-A20-N	157	RRUS 32	149
(3) ACU-A20-N	157	RRUS 32	149
(3) ACU-A20-N	157	RRUS 32	149
Platform Mount [LP 713-1]	157	(2) DB846F65ZAXY w/ Mount Pipe	139
APXVTM14-ALU-I20 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
APXVTM14-ALU-I20 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
APXVTM14-ALU-I20 w/ Mount Pipe	157	DB-T1-6Z-8AB-OZ	139
LLPX310R-V1 w/ Mount Pipe	157	(3) 6' x 2" Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	6' x 2" Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	6' x 2" Mount Pipe	139
(2) TD-RRH8x20-25	157	Platform Mount [LP 713-1]	139
TD-RRH8x20-25	157	(2) JAHH-65B-R3B w/ Mount Pipe	139
BEN-92P	157	(2) JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	(2) JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	B66A RRH4X45	139
FWHR	157	B66A RRH4X45	139
Pipe Mount [PM 601-3]	154	B66A RRH4X45	139
800 EXTERNAL NOTCH FILTER	154	B13 RRH 4X30	139
800 EXTERNAL NOTCH FILTER	154	B13 RRH 4X30	139
800 EXTERNAL NOTCH FILTER	154	B13 RRH 4X30	139
1900MHz RRH (65MHz)	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
1900MHz RRH (65MHz)	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHz RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHz RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHz RRH	154	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
RRUS 11	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
RRUS 11	149	RRUS 11 B12	116
RRUS 11	149	RRUS 11 B12	116
DC6-48-60-18-8F	149	RRUS 11 B12	116
(2) LGP21901	149	KRY 112 144/1	116
(2) LGP21901	149	KRY 112 144/1	116
(2) LGP21901	149	KRY 112 144/1	116
Platform Mount [LP 713-1]	149	6' x 2" Mount Pipe	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	6' x 2" Mount Pipe	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	6' x 2" Mount Pipe	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	Platform Mount [LP 712-1]	116
HPA-65R-BUU-H6 w/ Mount Pipe	149	Side Arm Mount [SO 701-1]	84
HPA-65R-BUU-H6 w/ Mount Pipe	149	GPS_A	84
HPA-65R-BUU-H6 w/ Mount Pipe	149	GPS-QBW-20N	40
RRUS 4478 B5	149		
RRUS 4478 B5	149		
RRUS 4478 B5	149		

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-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

Jacobs Engineering Group, Inc.

5449 Bells Ferry Road
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

Job: **BRG 2044 (A) 943097**

Project: **BU#806953 WO#1624992**

Client: Crown Castle

Drawn by: Donitha F. Chiu

App'd:

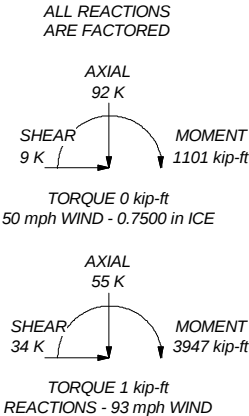
Code: TIA-222-G

Date: 09/05/18

Scale: NTS

Path:

Dwg No. E-1

[illegible]

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/4"x4'	160	RRUS 4478 B5	149
APXVSP18-C-A20 w/ Mount Pipe	157	RRUS 4478 B5	149
APXVSP18-C-A20 w/ Mount Pipe	157	RRUS 4478 B5	149
APXVSP18-C-A20 w/ Mount Pipe	157	DC6-48-60-18-8F	149
(3) ACU-A20-N	157	RRUS12/RRUS A2	149
(3) ACU-A20-N	157	RRUS12/RRUS A2	149
(3) ACU-A20-N	157	RRUS12/RRUS A2	149
Platform Mount [LP 713-1]	157	RRUS 32	149
APXVTM14-ALU420 w/ Mount Pipe	157	RRUS 32	149
APXVTM14-ALU420 w/ Mount Pipe	157	RRUS 32	149
APXVTM14-ALU420 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	(2) DB846F65ZAXY w/ Mount Pipe	139
LLPX310R-V1 w/ Mount Pipe	157	DB-T1-6Z-8AB-0Z	139
(2) TD-RRH8x20-25	157	(3) 6' x 2" Mount Pipe	139
TD-RRH8x20-25	157	6' x 2" Mount Pipe	139
BEN-92P	157	6' x 2" Mount Pipe	139
FWHR	157	Platform Mount [LP 713-1]	139
FWHR	157	(2) JAHH-65B-R3B w/ Mount Pipe	139
FWHR	157	(2) JAHH-65B-R3B w/ Mount Pipe	139
Pipe Mount [PM 601-3]	154	(2) JAHH-65B-R3B w/ Mount Pipe	139
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800 EXTERNAL NOTCH FILTER	154	B66A RRH4X45	139
800 EXTERNAL NOTCH FILTER	154	B66A RRH4X45	139
1900MHz RRH (65MHz)	154	B13 RRH 4X30	139
1900MHz RRH (65MHz)	154	B13 RRH 4X30	139
1900MHz RRH (65MHz)	154	B13 RRH 4X30	139
800MHz RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHz RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
800MHz RRH	154	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNx-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNx-6515DS-VTM w/ Mount Pipe	116
7770.00 w/ Mount Pipe	149	LNx-6515DS-VTM w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
(2) LGP21401	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
RRUS 11	149	RRUS 11 B12	116
RRUS 11	149	RRUS 11 B12	116
RRUS 11	149	RRUS 11 B12	116
DC6-48-60-18-8F	149	KRY 112 144/1	116
(2) LGP21901	149	KRY 112 144/1	116
(2) LGP21901	149	KRY 112 144/1	116
(2) LGP21901	149	6' x 2" Mount Pipe	116
Platform Mount [LP 713-1]	149	6' x 2" Mount Pipe	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	6' x 2" Mount Pipe	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	Platform Mount [LP 712-1]	116
EPBQ-654L8H6-L2 w/ Mount Pipe	149	Side Arm Mount [SO 701-1]	84
HPA-65R-BUU-H6 w/ Mount Pipe	149	GPS_A	84
HPA-65R-BUU-H6 w/ Mount Pipe	149	GPS-QBW-20N	40
HPA-65R-BUU-H6 w/ Mount Pipe	149		

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

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Basic wind speed of 93 mph.
- 3) Structure Class II.
- 4) Exposure Category B.
- 5) Topographic Category 1.
- 6) Crest Height 0.0000 ft.
- 7) Nominal ice thickness of 0.7500 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56.00 pcf.
- 10) A wind speed of 50 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 60 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.
- 16) 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	Retention 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-G Bracing Resist.
		Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G 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	160.0000- 155.0000	5.0000	0.00	12	19.6000	20.8010	0.2500	1.0000	A572-65 (65 ksi)
L2	155.0000- 150.0000	5.0000	0.00	12	20.8010	22.0021	0.2500	1.0000	A572-65 (65 ksi)
L3	150.0000- 145.0000	5.0000	0.00	12	22.0021	23.2031	0.2500	1.0000	A572-65 (65 ksi)
L4	145.0000- 140.0000	5.0000	0.00	12	23.2031	24.4041	0.2500	1.0000	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
L5	140.0000- 135.0000	5.0000	0.00	12	24.4041	25.6051	0.2500	1.0000	A572-65 (65 ksi)
L6	135.0000- 130.0000	5.0000	0.00	12	25.6051	26.8062	0.2500	1.0000	A572-65 (65 ksi)
L7	130.0000- 125.0000	5.0000	0.00	12	26.8062	28.0072	0.2500	1.0000	A572-65 (65 ksi)
L8	125.0000- 120.0000	5.0000	0.00	12	28.0072	29.2082	0.2500	1.0000	A572-65 (65 ksi)
L9	120.0000- 111.3333	8.6667	4.67	12	29.2082	31.2900	0.2500	1.0000	A572-65 (65 ksi)
L10	111.3333- 111.0000	5.0000	0.00	12	29.6690	30.8670	0.3438	1.3750	A572-65 (65 ksi)
L11	111.0000- 106.0000	5.0000	0.00	12	30.8670	32.0650	0.3438	1.3750	A572-65 (65 ksi)
L12	106.0000- 101.0000	5.0000	0.00	12	32.0650	33.2631	0.3438	1.3750	A572-65 (65 ksi)
L13	101.0000- 96.0000	5.0000	0.00	12	33.2631	34.4611	0.3438	1.3750	A572-65 (65 ksi)
L14	96.0000- 91.0000	5.0000	0.00	12	34.4611	35.6591	0.3438	1.3750	A572-65 (65 ksi)
L15	91.0000- 86.0000	5.0000	0.00	12	35.6591	36.8571	0.3438	1.3750	A572-65 (65 ksi)
L16	86.0000- 85.7500	0.2500	0.00	12	36.8571	36.9170	0.5125	2.0500	A572-65 (65 ksi)
L17	85.7500- 81.0000	4.7500	0.00	12	36.9170	38.0551	0.5062	2.0250	A572-65 (65 ksi)
L18	81.0000- 80.7500	0.2500	0.00	12	38.0551	38.1150	0.3438	1.3750	A572-65 (65 ksi)
L19	80.7500- 80.5000	0.2500	0.00	12	38.1150	38.1749	0.3438	1.3750	A572-65 (65 ksi)
L20	80.5000- 73.2500	7.2500	5.75	12	38.1749	39.9120	0.3438	1.3750	A572-65 (65 ksi)
L21	73.2500- 72.2500	6.7500	0.00	12	37.8468	39.4670	0.4063	1.6250	A572-65 (65 ksi)
L22	72.2500- 67.2500	5.0000	0.00	12	39.4670	40.6671	0.4063	1.6250	A572-65 (65 ksi)
L23	67.2500- 62.2500	5.0000	0.00	12	40.6671	41.8673	0.4063	1.6250	A572-65 (65 ksi)
L24	62.2500- 57.2500	5.0000	0.00	12	41.8673	43.0674	0.4063	1.6250	A572-65 (65 ksi)
L25	57.2500- 52.2500	5.0000	0.00	12	43.0674	44.2675	0.4063	1.6250	A572-65 (65 ksi)
L26	52.2500- 49.3300	2.9200	0.00	12	44.2675	44.9684	0.4063	1.6250	A572-65 (65 ksi)
L27	49.3300- 49.0800	0.2500	0.00	12	44.9684	45.0284	0.4063	1.6250	A572-65 (65 ksi)
L28	49.0800- 44.0800	5.0000	0.00	12	45.0284	46.2286	0.4063	1.6250	A572-65 (65 ksi)
L29	44.0800- 36.3333	7.7467	6.67	12	46.2286	48.0880	0.4063	1.6250	A572-65 (65 ksi)
L30	36.3333- 35.3333	7.6667	0.00	12	45.6753	47.5161	0.4375	1.7500	A572-65 (65 ksi)
L31	35.3333- 32.2500	3.0833	0.00	12	47.5161	48.2565	0.4375	1.7500	A572-65 (65 ksi)
L32	32.2500- 32.0000	0.2500	0.00	12	48.2565	48.3165	0.4375	1.7500	A572-65 (65 ksi)
L33	32.0000- 27.0000	5.0000	0.00	12	48.3165	49.5171	0.4375	1.7500	A572-65 (65 ksi)
L34	27.0000- 22.0000	5.0000	0.00	12	49.5171	50.7176	0.4375	1.7500	A572-65 (65 ksi)
L35	22.0000- 17.0000	5.0000	0.00	12	50.7176	51.9181	0.4375	1.7500	A572-65 (65 ksi)
L36	17.0000- 15.5000	1.5000	0.00	12	51.9181	52.2783	0.4375	1.7500	A572-65 (65 ksi)
L37	15.5000- 15.2500	0.2500	0.00	12	52.2783	52.3383	0.4375	1.7500	A572-65 (65 ksi)
L38	15.2500- 14.7500	0.5000	0.00	12	52.3383	52.4584	0.4375	1.7500	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
L39	14.7500-14.5000	0.2500	0.00	12	52.4584	52.5184	0.4375	1.7500	A572-65 (65 ksi)
L40	14.5000-9.5000	5.0000	0.00	12	52.5184	53.7190	0.4375	1.7500	A572-65 (65 ksi)
L41	9.5000-4.5000	5.0000	0.00	12	53.7190	54.9195	0.4375	1.7500	A572-65 (65 ksi)
L42	4.5000-0.0000	4.5000		12	54.9195	56.0000	0.4375	1.7500	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	20.2032	15.5768	744.4315	6.9273	10.1528	73.3228	1508.4200	7.6664	4.5828	18.331
	21.4466	16.5436	891.8306	7.3573	10.7749	82.7690	1807.0907	8.1422	4.9047	19.619
L2	21.4466	16.5436	891.8306	7.3573	10.7749	82.7690	1807.0907	8.1422	4.9047	19.619
	22.6900	17.5104	1057.5054	7.7872	11.3971	92.7875	2142.7927	8.6181	5.2266	20.906
L3	22.6900	17.5104	1057.5054	7.7872	11.3971	92.7875	2142.7927	8.6181	5.2266	20.906
	23.9334	18.4772	1242.5238	8.2172	12.0192	103.3783	2517.6901	9.0939	5.5484	22.194
L4	23.9334	18.4772	1242.5238	8.2172	12.0192	103.3783	2517.6901	9.0939	5.5484	22.194
	25.1768	19.4441	1447.9540	8.6472	12.6413	114.5413	2933.9473	9.5698	5.8703	23.481
L5	25.1768	19.4441	1447.9540	8.6472	12.6413	114.5413	2933.9473	9.5698	5.8703	23.481
	26.4202	20.4109	1674.8638	9.0771	13.2635	126.2766	3393.7282	10.0456	6.1922	24.769
L6	26.4202	20.4109	1674.8638	9.0771	13.2635	126.2766	3393.7282	10.0456	6.1922	24.769
	27.6636	21.3777	1924.3215	9.5071	13.8856	138.5841	3899.1971	10.5215	6.5141	26.056
L7	27.6636	21.3777	1924.3215	9.5071	13.8856	138.5841	3899.1971	10.5215	6.5141	26.056
	28.9070	22.3445	2197.3950	9.9371	14.5077	151.4638	4452.5181	10.9973	6.8359	27.344
L8	28.9070	22.3445	2197.3950	9.9371	14.5077	151.4638	4452.5181	10.9973	6.8359	27.344
	30.1504	23.3114	2495.1525	10.3670	15.1299	164.9158	5055.8554	11.4731	7.1578	28.631
L9	30.1504	23.3114	2495.1525	10.3670	15.1299	164.9158	5055.8554	11.4731	7.1578	28.631
	32.3056	24.9872	3072.8897	11.1123	16.2082	189.5883	6226.5076	12.2979	7.7157	30.863
L10	31.7520	32.4594	3562.9621	10.4985	15.3686	231.8345	7219.5272	15.9755	7.0301	20.451
	31.8347	33.7855	4017.7104	10.9273	15.9891	251.2776	8140.9705	16.6282	7.3511	21.385
L11	31.8347	33.7855	4017.7104	10.9273	15.9891	251.2776	8140.9705	16.6282	7.3511	21.385
	33.0749	35.1115	4509.5939	11.3562	16.6097	271.5037	9137.6598	17.2808	7.6722	22.319
L12	33.0749	35.1115	4509.5939	11.3562	16.6097	271.5037	9137.6598	17.2808	7.6722	22.319
	34.3152	36.4376	5040.0702	11.7851	17.2303	292.5127	10212.548	17.9335	7.9932	23.253
L13	34.3152	36.4376	5040.0702	11.7851	17.2303	292.5127	10212.548	17.9335	7.9932	23.253
	35.5555	37.7636	5610.5968	12.2140	17.8508	314.3045	11368.590	18.5861	8.3143	24.187
L14	35.5555	37.7636	5610.5968	12.2140	17.8508	314.3045	11368.590	18.5861	8.3143	24.187
	36.7957	39.0896	6222.6312	12.6429	18.4714	336.8792	12608.737	19.2387	8.6354	25.121
L15	36.7957	39.0896	6222.6312	12.6429	18.4714	336.8792	12608.737	19.2387	8.6354	25.121
	38.0360	40.4157	6877.6309	13.0718	19.0920	360.2369	13935.944	19.8914	8.9564	26.055
L16	37.9765	59.9776	10112.409	13.0114	19.0920	529.6683	20490.484	29.5192	8.5042	16.594
	38.0385	60.0765	10162.491	13.0328	19.1230	531.4278	20591.963	29.5678	8.5203	16.625
L17	38.0407	59.3540	10043.730	13.0350	19.1230	525.2174	20351.320	29.2123	8.5370	16.863
	39.2189	61.2093	11015.300	13.4425	19.7125	558.7968	22319.985	30.1254	8.8420	17.466
L18	39.2763	41.7417	7577.0535	13.5007	19.7125	384.3774	15353.164	20.5440	9.2775	26.989
	39.3383	41.8080	7613.2169	13.5221	19.7436	385.6050	15426.441	20.5766	9.2936	27.036
L19	39.3383	41.8080	7613.2169	13.5221	19.7436	385.6050	15426.441	20.5766	9.2936	27.036

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
	39.4003	41.8743	7649.4951	13.5435	19.7746	386.8345	15499.9510	20.6093	9.3096	27.083
L20	39.4003	41.8743	7649.4951	13.5435	19.7746	386.8345	15499.9510	20.6093	9.3096	27.083
	41.1987	43.7971	8752.3577	14.1654	20.6744	423.3424	17734.6495	21.5556	9.7752	28.437
L21	40.4674	48.9769	8763.1762	13.4037	19.6046	446.9951	17756.5709	24.1049	9.0542	22.287
	40.7159	51.0963	9950.7611	13.9837	20.4439	486.7351	20162.9397	25.1481	9.4884	23.356
L22	40.7159	51.0963	9950.7611	13.9837	20.4439	486.7351	20162.9397	25.1481	9.4884	23.356
	41.9584	52.6663	10896.4422	14.4134	21.0656	517.2631	22079.1461	25.9207	9.8100	24.148
L23	41.9584	52.6663	10896.4422	14.4134	21.0656	517.2631	22079.1461	25.9207	9.8100	24.148
	43.2009	54.2362	11900.2177	14.8430	21.6872	548.7197	24113.0675	26.6934	10.1317	24.94
L24	43.2009	54.2362	11900.2177	14.8430	21.6872	548.7197	24113.0675	26.6934	10.1317	24.94
	44.4433	55.8061	12963.8194	15.2727	22.3089	581.1049	26268.2127	27.4661	10.4533	25.731
L25	44.4433	55.8061	12963.8194	15.2727	22.3089	581.1049	26268.2127	27.4661	10.4533	25.731
	45.6858	57.3761	14088.9788	15.7023	22.9306	614.4186	28548.0908	28.2387	10.7750	26.523
L26	45.6858	57.3761	14088.9788	15.7023	22.9306	614.4186	28548.0908	28.2387	10.7750	26.523
	46.4114	58.2929	14775.2341	15.9533	23.2936	634.3032	29938.6300	28.6900	10.9628	26.985
L27	46.4114	58.2929	14775.2341	15.9533	23.2936	634.3032	29938.6300	28.6900	10.9628	26.985
	46.4736	58.3714	14835.0031	15.9747	23.3247	636.0204	30059.7383	28.7286	10.9789	27.025
L28	46.4736	58.3714	14835.0031	15.9747	23.3247	636.0204	30059.7383	28.7286	10.9789	27.025
	47.7160	59.9413	16064.4747	16.4044	23.9464	670.8513	32550.9811	29.5013	11.3005	27.817
L29	47.7160	59.9413	16064.4747	16.4044	23.9464	670.8513	32550.9811	29.5013	11.3005	27.817
	49.6411	62.3737	18100.5493	17.0701	24.9096	726.6500	36676.6202	30.6984	11.7988	29.043
L30	48.7894	63.7288	16646.5574	16.1951	23.6598	703.5796	33730.4385	31.3654	11.0685	25.299
	49.0380	66.3220	18762.5503	16.8542	24.6134	762.2911	38018.0137	32.6417	11.5618	26.427
L31	49.0380	66.3220	18762.5503	16.8542	24.6134	762.2911	38018.0137	32.6417	11.5618	26.427
	49.8044	67.3650	19661.6860	17.1192	24.9969	786.5664	39839.9064	33.1550	11.7602	26.881
L32	49.8044	67.3650	19661.6860	17.1192	24.9969	786.5664	39839.9064	33.1550	11.7602	26.881
	49.8666	67.4495	19735.8231	17.1407	25.0279	788.5513	39990.1283	33.1966	11.7763	26.917
L33	49.8666	67.4495	19735.8231	17.1407	25.0279	788.5513	39990.1283	33.1966	11.7763	26.917
	51.1095	69.1408	21257.9625	17.5705	25.6498	828.7759	43074.3954	34.0290	12.0981	27.653
L34	51.1095	69.1408	21257.9625	17.5705	25.6498	828.7759	43074.3954	34.0290	12.0981	27.653
	52.3524	70.8321	22856.4204	18.0003	26.2717	870.0011	46313.3043	34.8614	12.4198	28.388
L35	52.3524	70.8321	22856.4204	18.0003	26.2717	870.0011	46313.3043	34.8614	12.4198	28.388
	53.5953	72.5234	24533.0634	18.4301	26.8936	912.2269	49710.6378	35.6938	12.7416	29.124
L36	53.5953	72.5234	24533.0634	18.4301	26.8936	912.2269	49710.6378	35.6938	12.7416	29.124
	53.9682	73.0307	25051.5816	18.5590	27.0802	925.0898	50761.2961	35.9435	12.8381	29.344

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
L37	53.9682	73.0307	25051.581 6	18.5590	27.0802	925.0898	50761.296 1	35.9435	12.8381	29.344
	54.0303	73.1153	25138.705 3	18.5805	27.1113	927.2423	50937.832 3	35.9851	12.8542	29.381
L38	54.0303	73.1153	25138.705 3	18.5805	27.1113	927.2423	50937.832 3	35.9851	12.8542	29.381
	54.1546	73.2844	25313.558 2	18.6235	27.1734	931.5550	51292.131 7	36.0684	12.8863	29.455
L39	54.1546	73.2844	25313.558 2	18.6235	27.1734	931.5550	51292.131 7	36.0684	12.8863	29.455
	54.2167	73.3690	25401.287 8	18.6450	27.2045	933.7150	51469.895 8	36.1100	12.9024	29.491
L40	54.2167	73.3690	25401.287 8	18.6450	27.2045	933.7150	51469.895 8	36.1100	12.9024	29.491
	55.4596	75.0603	27198.709 1	19.0748	27.8264	977.4418	55111.958 7	36.9424	13.2242	30.227
L41	55.4596	75.0603	27198.709 1	19.0748	27.8264	977.4418	55111.958 7	36.9424	13.2242	30.227
	56.7025	76.7515	29078.982 8	19.5046	28.4483	1022.1692	58921.902 8	37.7748	13.5459	30.962
L42	56.7025	76.7515	29078.982 8	19.5046	28.4483	1022.1692	58921.902 8	37.7748	13.5459	30.962
	57.8211	78.2737	30843.610 8	19.8914	29.0080	1063.2795	62497.517 6	38.5239	13.8355	31.624

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 160.0000- 155.0000				1	1	1			
L2 155.0000- 150.0000				1	1	1			
L3 150.0000- 145.0000				1	1	1			
L4 145.0000- 140.0000				1	1	1			
L5 140.0000- 135.0000				1	1	1			
L6 135.0000- 130.0000				1	1	1			
L7 130.0000- 125.0000				1	1	1			
L8 125.0000- 120.0000				1	1	1			
L9 120.0000- 111.3333				1	1	1			
L10 111.3333- 111.0000				1	1	1			
L11 111.0000- 106.0000				1	1	1			
L12 106.0000- 101.0000				1	1	1			
L13 101.0000- 96.0000				1	1	1			
L14 96.0000- 91.0000				1	1	1			
L15 91.0000- 86.0000				1	1	1			
L16 86.0000- 85.7500				1	1	0.973888			
L17 85.7500- 81.0000				1	1	0.976445			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L18 81.0000-80.7500				1	1	1			
L19 80.7500-80.5000				1	1	1			
L20 80.5000-73.2500				1	1	1			
L21 73.2500-72.2500				1	1	1			
L22 72.2500-67.2500				1	1	1			
L23 67.2500-62.2500				1	1	1			
L24 62.2500-57.2500				1	1	1			
L25 57.2500-52.2500				1	1	1			
L26 52.2500-49.3300				1	1	1			
L27 49.3300-49.0800				1	1	1			
L28 49.0800-44.0800				1	1	1			
L29 44.0800-36.3333				1	1	1			
L30 36.3333-35.3333				1	1	1			
L31 35.3333-32.2500				1	1	1			
L32 32.2500-32.0000				1	1	1			
L33 32.0000-27.0000				1	1	1			
L34 27.0000-22.0000				1	1	1			
L35 22.0000-17.0000				1	1	1			
L36 17.0000-15.5000				1	1	1			
L37 15.5000-15.2500				1	1	1			
L38 15.2500-14.7500				1	1	1			
L39 14.7500-14.5000				1	1	1			
L40 14.5000-9.5000				1	1	1			
L41 9.5000-4.5000				1	1	1			
L42 4.5000-0.0000				1	1	1			

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 klf
Safety Line 3/8	C	No	Surface Ar (CaAa)	160.0000 - 0.0000	1	1	-0.380 -0.380	0.3750		0.00

****Reinforcement****										
4" x .75" Flat Plate (G)	A	No	Surface Af (CaAa)	16.7500 - 1.7500	1	1	-0.350 -0.350	4.0000	9.5000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
4" x .75" Flat Plate (G)	B	No	Surface Af (CaAa)	16.7500 - 1.7500	1	1	-0.350 -0.350	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	C	No	Surface Af (CaAa)	16.7500 - 1.7500	1	1	-0.350 -0.350	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	A	No	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.150 0.150	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	B	No	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.150 0.150	4.0000	9.5000	0.00
4" x .75" Flat Plate (G)	C	No	Surface Af (CaAa)	82.0000 - 77.0000	1	1	0.150 0.150	4.0000	9.5000	0.00
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	32.2500 - 12.2500	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	32.2500 - 12.2500	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	32.2500 - 12.2500	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	52.3333 - 32.3333	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	52.3333 - 32.3333	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	52.3333 - 32.3333	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	A	No	Surface Af (CaAa)	88.5000 - 78.5000	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	B	No	Surface Af (CaAa)	88.5000 - 78.5000	1	1	-0.100 -0.100	6.0000	14.0000	0.00
6" x 1" Flat Plate (G)	C	No	Surface Af (CaAa)	88.5000 - 78.5000	1	1	-0.100 -0.100	6.0000	14.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CAAA ft ² /ft	Weight klf
Level 157									
004U8X-32125E2G(1/8)	A	No	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
7919A(17/64)	A	No	No	Inside Pole	157.0000 - 0.0000	4	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
LDF4-50A(1/2)	A	No	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
HB058-M12-XXXF(5/8)	A	No	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
TYPE SOOW 12/9(7/8)	A	No	No	Inside Pole	157.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
HB114-1-0813U4-M5J(1-1/4)	A	No	No	Inside Pole	157.0000 - 0.0000	3	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
Level 149									
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	149.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	149.0000 - 0.0000	2	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	149.0000 - 0.0000	1	No Ice	0.0000	0.00
							1/2" Ice	0.0000	0.00
							1" Ice	0.0000	0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	149.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
2" Rigid Conduit	C	No	No	Inside Pole	149.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
LCF158-50JA-A0(1-5/8)	C	No	No	Inside Pole	149.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
Level 139									
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	139.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	139.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
Level 116									
MLE HYBRID 3POWER/6FIBER RL 2(1-1/4)	B	No	No	Inside Pole	116.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00
LDF7-50A(1-5/8)	B	No	No	Inside Pole	116.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.00 0.00 0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.0000- 155.0000	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.00
L2	155.0000- 150.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.00
L3	150.0000- 145.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.06
L4	145.0000- 140.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.07
L5	140.0000- 135.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.14
L6	135.0000- 130.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.15
L7	130.0000- 125.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.15
L8	125.0000- 120.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.15
L9	120.0000- 111.3333	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.325	0.000	0.27
L10	111.3333- 111.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.012	0.000	0.01
L11	111.0000- 106.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L12	106.0000- 101.0000	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L13	101.0000- 96.0000	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L14	96.0000-91.0000	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L15	91.0000-86.0000	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	2.280	0.000	0.02
		B	0.000	0.000	2.280	0.000	0.05
L16	86.0000-85.7500	C	0.000	0.000	2.468	0.000	0.15
		A	0.000	0.000	0.228	0.000	0.00
		B	0.000	0.000	0.228	0.000	0.00
L17	85.7500-81.0000	C	0.000	0.000	0.237	0.000	0.01
		A	0.000	0.000	4.885	0.000	0.02
		B	0.000	0.000	4.885	0.000	0.05
L18	81.0000-80.7500	C	0.000	0.000	5.063	0.000	0.15
		A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.366	0.000	0.00
L19	80.7500-80.5000	C	0.000	0.000	0.376	0.000	0.01
		A	0.000	0.000	0.366	0.000	0.00
		B	0.000	0.000	0.366	0.000	0.00
L20	80.5000-73.2500	C	0.000	0.000	0.376	0.000	0.01
		A	0.000	0.000	3.759	0.000	0.03
		B	0.000	0.000	3.759	0.000	0.08
L21	73.2500-72.2500	C	0.000	0.000	4.031	0.000	0.22
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
L22	72.2500-67.2500	C	0.000	0.000	0.037	0.000	0.03
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L23	67.2500-62.2500	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L24	62.2500-57.2500	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.05
L25	57.2500-52.2500	C	0.000	0.000	0.188	0.000	0.15
		A	0.000	0.000	0.083	0.000	0.02
		B	0.000	0.000	0.083	0.000	0.05
L26	52.2500-49.3300	C	0.000	0.000	0.271	0.000	0.15
		A	0.000	0.000	2.920	0.000	0.01
		B	0.000	0.000	2.920	0.000	0.03
L27	49.3300-49.0800	C	0.000	0.000	3.030	0.000	0.09
		A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
L28	49.0800-44.0800	C	0.000	0.000	0.259	0.000	0.01
		A	0.000	0.000	5.000	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.05
L29	44.0800-36.3333	C	0.000	0.000	5.188	0.000	0.15
		A	0.000	0.000	7.747	0.000	0.04
		B	0.000	0.000	7.747	0.000	0.08
L30	36.3333-35.3333	C	0.000	0.000	8.037	0.000	0.24
		A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.000	0.000	0.01
L31	35.3333-32.2500	C	0.000	0.000	1.038	0.000	0.03
		A	0.000	0.000	3.000	0.000	0.01
		B	0.000	0.000	3.000	0.000	0.03
L32	32.2500-32.0000	C	0.000	0.000	3.116	0.000	0.10
		A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
L33	32.0000-27.0000	C	0.000	0.000	0.259	0.000	0.01
		A	0.000	0.000	5.000	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.05
L34	27.0000-22.0000	C	0.000	0.000	5.188	0.000	0.15
		A	0.000	0.000	5.000	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.05

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L35	22.0000-17.0000	C	0.000	0.000	5.188	0.000	0.15
		A	0.000	0.000	5.000	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.05
L36	17.0000-15.5000	C	0.000	0.000	5.188	0.000	0.15
		A	0.000	0.000	2.333	0.000	0.01
		B	0.000	0.000	2.333	0.000	0.02
L37	15.5000-15.2500	C	0.000	0.000	2.390	0.000	0.05
		A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.417	0.000	0.00
L38	15.2500-14.7500	C	0.000	0.000	0.426	0.000	0.01
		A	0.000	0.000	0.833	0.000	0.00
		B	0.000	0.000	0.833	0.000	0.01
L39	14.7500-14.5000	C	0.000	0.000	0.852	0.000	0.02
		A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.417	0.000	0.00
L40	14.5000-9.5000	C	0.000	0.000	0.426	0.000	0.01
		A	0.000	0.000	5.583	0.000	0.02
		B	0.000	0.000	5.583	0.000	0.05
L41	9.5000-4.5000	C	0.000	0.000	5.771	0.000	0.15
		A	0.000	0.000	3.333	0.000	0.02
		B	0.000	0.000	3.333	0.000	0.05
L42	4.5000-0.0000	C	0.000	0.000	3.521	0.000	0.15
		A	0.000	0.000	1.833	0.000	0.02
		B	0.000	0.000	1.833	0.000	0.05
		C	0.000	0.000	2.002	0.000	0.14

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	160.0000- 155.0000	A	1.754	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.941	0.000	0.02
L2	155.0000- 150.0000	A	1.748	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.936	0.000	0.02
L3	150.0000- 145.0000	A	1.742	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.930	0.000	0.08
L4	145.0000- 140.0000	A	1.736	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.924	0.000	0.09
L5	140.0000- 135.0000	A	1.730	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.918	0.000	0.16
L6	135.0000- 130.0000	A	1.724	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.911	0.000	0.18
L7	130.0000- 125.0000	A	1.717	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.905	0.000	0.18
L8	125.0000- 120.0000	A	1.710	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.898	0.000	0.18
L9	120.0000- 111.3333	A	1.700	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	3.272	0.000	0.30
L10	111.3333- 111.0000	A	1.694	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.126	0.000	0.01
L11	111.0000- 106.0000	A	1.690	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	1.877	0.000	0.18
L12	106.0000- 101.0000	A	1.682	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L13	101.0000- 96.0000	C	1.673	0.000	0.000	1.869	0.000	0.18
		A		0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
L14	96.0000-91.0000	C	1.665	0.000	0.000	1.861	0.000	0.18
		A		0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
L15	91.0000-86.0000	C	1.655	0.000	0.000	1.852	0.000	0.18
		A		0.000	0.000	2.718	0.000	0.06
		B		0.000	0.000	2.718	0.000	0.09
L16	86.0000-85.7500	C	1.651	0.000	0.000	4.561	0.000	0.21
		A		0.000	0.000	0.272	0.000	0.00
		B		0.000	0.000	0.272	0.000	0.01
L17	85.7500-81.0000	C	1.646	0.000	0.000	0.364	0.000	0.01
		A		0.000	0.000	5.888	0.000	0.09
		B		0.000	0.000	5.888	0.000	0.12
L18	81.0000-80.7500	C	1.641	0.000	0.000	7.630	0.000	0.24
		A		0.000	0.000	0.453	0.000	0.01
		B		0.000	0.000	0.453	0.000	0.01
L19	80.7500-80.5000	C	1.640	0.000	0.000	0.545	0.000	0.01
		A		0.000	0.000	0.453	0.000	0.01
		B		0.000	0.000	0.453	0.000	0.01
L20	80.5000-73.2500	C	1.632	0.000	0.000	0.545	0.000	0.01
		A		0.000	0.000	4.714	0.000	0.09
		B		0.000	0.000	4.714	0.000	0.14
L21	73.2500-72.2500	C	1.623	0.000	0.000	7.353	0.000	0.31
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
L22	72.2500-67.2500	C	1.617	0.000	0.000	0.364	0.000	0.03
		A		0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
L23	67.2500-62.2500	C	1.605	0.000	0.000	1.804	0.000	0.17
		A		0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
L24	62.2500-57.2500	C	1.592	0.000	0.000	1.792	0.000	0.17
		A		0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.05
L25	57.2500-52.2500	C	1.578	0.000	0.000	1.779	0.000	0.17
		A		0.000	0.000	0.110	0.000	0.02
		B		0.000	0.000	0.110	0.000	0.05
L26	52.2500-49.3300	C	1.566	0.000	0.000	1.875	0.000	0.17
		A		0.000	0.000	3.835	0.000	0.05
		B		0.000	0.000	3.835	0.000	0.07
L27	49.3300-49.0800	C	1.561	0.000	0.000	4.859	0.000	0.14
		A		0.000	0.000	0.328	0.000	0.00
		B		0.000	0.000	0.328	0.000	0.01
L28	49.0800-44.0800	C	1.553	0.000	0.000	0.415	0.000	0.01
		A		0.000	0.000	6.553	0.000	0.08
		B		0.000	0.000	6.553	0.000	0.11
L29	44.0800-36.3333	C	1.530	0.000	0.000	8.293	0.000	0.23
		A		0.000	0.000	10.117	0.000	0.13
		B		0.000	0.000	10.117	0.000	0.17
L30	36.3333-35.3333	C	1.512	0.000	0.000	12.778	0.000	0.36
		A		0.000	0.000	1.306	0.000	0.02
		B		0.000	0.000	1.306	0.000	0.02
L31	35.3333-32.2500	C	1.504	0.000	0.000	1.649	0.000	0.05
		A		0.000	0.000	3.902	0.000	0.05
		B		0.000	0.000	3.902	0.000	0.07
L32	32.2500-32.0000	C	1.496	0.000	0.000	4.945	0.000	0.14
		A		0.000	0.000	0.325	0.000	0.00
		B		0.000	0.000	0.325	0.000	0.01
L33	32.0000-27.0000	C	1.483	0.000	0.000	0.409	0.000	0.01
		A		0.000	0.000	6.483	0.000	0.08
		B		0.000	0.000	6.483	0.000	0.11
L34	27.0000-22.0000	C	1.456	0.000	0.000	8.154	0.000	0.23
		A		0.000	0.000	6.456	0.000	0.08
		B		0.000	0.000	6.456	0.000	0.11
L35	22.0000-17.0000	C	1.423	0.000	0.000	8.099	0.000	0.23
		A		0.000	0.000	6.423	0.000	0.08
		B		0.000	0.000	6.423	0.000	0.11

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L36	17.0000-15.5000	C		0.000	0.000	8.034	0.000	0.22
		A	1.397	0.000	0.000	3.102	0.000	0.03
		B		0.000	0.000	3.102	0.000	0.04
L37	15.5000-15.2500	C		0.000	0.000	3.577	0.000	0.08
		A	1.390	0.000	0.000	0.556	0.000	0.01
		B		0.000	0.000	0.556	0.000	0.01
L38	15.2500-14.7500	C		0.000	0.000	0.634	0.000	0.01
		A	1.386	0.000	0.000	1.111	0.000	0.01
		B		0.000	0.000	1.111	0.000	0.01
L39	14.7500-14.5000	C		0.000	0.000	1.268	0.000	0.03
		A	1.383	0.000	0.000	0.555	0.000	0.01
		B		0.000	0.000	0.555	0.000	0.01
L40	14.5000-9.5000	C		0.000	0.000	0.633	0.000	0.01
		A	1.356	0.000	0.000	7.549	0.000	0.08
		B		0.000	0.000	7.549	0.000	0.11
L41	9.5000-4.5000	C		0.000	0.000	9.092	0.000	0.23
		A	1.284	0.000	0.000	4.618	0.000	0.06
		B		0.000	0.000	4.618	0.000	0.09
L42	4.5000-0.0000	C		0.000	0.000	6.090	0.000	0.20
		A	1.146	0.000	0.000	2.464	0.000	0.04
		B		0.000	0.000	2.464	0.000	0.06
		C		0.000	0.000	3.664	0.000	0.17

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	160.0000-155.0000	0.1555	0.1522	1.0114	0.9905
L2	155.0000-150.0000	0.1555	0.1522	1.0231	1.0019
L3	150.0000-145.0000	0.1555	0.1522	1.0334	1.0120
L4	145.0000-140.0000	0.1554	0.1522	1.0426	1.0210
L5	140.0000-135.0000	0.1554	0.1522	1.0507	1.0289
L6	135.0000-130.0000	0.1554	0.1522	1.0578	1.0359
L7	130.0000-125.0000	0.1554	0.1522	1.0640	1.0420
L8	125.0000-120.0000	0.1554	0.1522	1.0694	1.0473
L9	120.0000-111.3333	0.1554	0.1522	1.0756	1.0533
L10	111.3333-111.0000	0.1556	0.1523	1.0800	1.0576
L11	111.0000-106.0000	0.1556	0.1523	1.0787	1.0563
L12	106.0000-101.0000	0.1555	0.1523	1.0815	1.0591
L13	101.0000-96.0000	0.1555	0.1523	1.0837	1.0612
L14	96.0000-91.0000	0.1555	0.1523	1.0852	1.0627
L15	91.0000-86.0000	0.1085	0.1062	0.7944	0.7779
L16	86.0000-85.7500	0.0840	0.0823	0.6307	0.6176
L17	85.7500-81.0000	0.0800	0.0783	0.5991	0.5866
L18	81.0000-80.7500	0.0668	0.0655	0.4991	0.4887
L19	80.7500-80.5000	0.0669	0.0655	0.4994	0.4891
L20	80.5000-73.2500	0.1067	0.1044	0.7683	0.7523
L21	73.2500-72.2500	0.1556	0.1524	1.0874	1.0649
L22	72.2500-67.2500	0.1556	0.1524	1.0820	1.0595
L23	67.2500-62.2500	0.1556	0.1523	1.0799	1.0575
L24	62.2500-57.2500	0.1556	0.1523	1.0771	1.0547
L25	57.2500-52.2500	0.1535	0.1504	1.0600	1.0380

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L26	52.2500-49.3300	0.0877	0.0859	0.6122	0.5995
L27	49.3300-49.0800	0.0880	0.0862	0.6133	0.6006
L28	49.0800-44.0800	0.0885	0.0867	0.6150	0.6023
L29	44.0800-36.3333	0.0898	0.0879	0.6181	0.6053
L30	36.3333-35.3333	0.0900	0.0881	0.6197	0.6068
L31	35.3333-32.2500	0.0914	0.0895	0.6218	0.6089
L32	32.2500-32.0000	0.0907	0.0888	0.6150	0.6023
L33	32.0000-27.0000	0.0911	0.0893	0.6149	0.6021
L34	27.0000-22.0000	0.0920	0.0901	0.6133	0.6006
L35	22.0000-17.0000	0.0929	0.0910	0.6096	0.5969
L36	17.0000-15.5000	0.0765	0.0749	0.4879	0.4778
L37	15.5000-15.2500	0.0740	0.0725	0.4689	0.4592
L38	15.2500-14.7500	0.0741	0.0725	0.4685	0.4588
L39	14.7500-14.5000	0.0741	0.0726	0.4682	0.4585
L40	14.5000-9.5000	0.0901	0.0882	0.5568	0.5452
L41	9.5000-4.5000	0.1092	0.1069	0.6441	0.6307
L42	4.5000-0.0000	0.1240	0.1214	0.6766	0.6625

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L2	1	Safety Line 3/8	150.00 - 155.00	1.0000	1.0000
L3	1	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L4	1	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L5	1	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L6	1	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L7	1	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L8	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L9	1	Safety Line 3/8	111.33 - 120.00	1.0000	1.0000
L11	1	Safety Line 3/8	106.00 - 111.00	1.0000	1.0000
L12	1	Safety Line 3/8	101.00 - 106.00	1.0000	1.0000
L13	1	Safety Line 3/8	96.00 - 101.00	1.0000	1.0000
L14	1	Safety Line 3/8	91.00 - 96.00	1.0000	1.0000
L15	1	Safety Line 3/8	86.00 - 91.00	1.0000	1.0000
L15	38	6" x 1" Flat Plate (G)	86.00 - 88.50	1.0000	1.0000
L15	39	6" x 1" Flat Plate (G)	86.00 - 88.50	1.0000	1.0000
L15	40	6" x 1" Flat Plate (G)	86.00 - 88.50	1.0000	1.0000
L16	1	Safety Line 3/8	85.75 - 86.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L16	38	6" x 1" Flat Plate (G)	85.75 - 86.00	1.0000	1.0000
L16	39	6" x 1" Flat Plate (G)	85.75 - 86.00	1.0000	1.0000
L16	40	6" x 1" Flat Plate (G)	85.75 - 86.00	1.0000	1.0000
L17	1	Safety Line 3/8	81.00 - 85.75	1.0000	1.0000
L17	29	4" x .75" Flat Plate (G)	81.00 - 82.00	1.0000	1.0000
L17	30	4" x .75" Flat Plate (G)	81.00 - 82.00	1.0000	1.0000
L17	31	4" x .75" Flat Plate (G)	81.00 - 82.00	1.0000	1.0000
L17	38	6" x 1" Flat Plate (G)	81.00 - 85.75	1.0000	1.0000
L17	39	6" x 1" Flat Plate (G)	81.00 - 85.75	1.0000	1.0000
L17	40	6" x 1" Flat Plate (G)	81.00 - 85.75	1.0000	1.0000
L18	1	Safety Line 3/8	80.75 - 81.00	1.0000	1.0000
L18	29	4" x .75" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L18	30	4" x .75" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L18	31	4" x .75" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L18	38	6" x 1" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L18	39	6" x 1" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L18	40	6" x 1" Flat Plate (G)	80.75 - 81.00	1.0000	1.0000
L19	1	Safety Line 3/8	80.50 - 80.75	1.0000	1.0000
L19	29	4" x .75" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L19	30	4" x .75" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L19	31	4" x .75" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L19	38	6" x 1" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L19	39	6" x 1" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L19	40	6" x 1" Flat Plate (G)	80.50 - 80.75	1.0000	1.0000
L20	1	Safety Line 3/8	73.25 - 80.50	1.0000	1.0000
L20	29	4" x .75" Flat Plate (G)	77.00 - 80.50	1.0000	1.0000
L20	30	4" x .75" Flat Plate (G)	77.00 - 80.50	1.0000	1.0000
L20	31	4" x .75" Flat Plate (G)	77.00 - 80.50	1.0000	1.0000
L20	38	6" x 1" Flat Plate (G)	78.50 - 80.50	1.0000	1.0000
L20	39	6" x 1" Flat Plate (G)	78.50 - 80.50	1.0000	1.0000
L20	40	6" x 1" Flat Plate (G)	78.50 - 80.50	1.0000	1.0000
L22	1	Safety Line 3/8	67.25 - 72.25	1.0000	1.0000
L23	1	Safety Line 3/8	62.25 - 67.25	1.0000	1.0000
L24	1	Safety Line 3/8	57.25 - 62.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L25	1	Safety Line 3/8	52.25 - 57.25	1.0000	1.0000
L25	35	6" x 1" Flat Plate (G)	52.25 - 52.33	1.0000	1.0000
L25	36	6" x 1" Flat Plate (G)	52.25 - 52.33	1.0000	1.0000
L25	37	6" x 1" Flat Plate (G)	52.25 - 52.33	1.0000	1.0000
L26	1	Safety Line 3/8	49.33 - 52.25	1.0000	1.0000
L26	35	6" x 1" Flat Plate (G)	49.33 - 52.25	1.0000	1.0000
L26	36	6" x 1" Flat Plate (G)	49.33 - 52.25	1.0000	1.0000
L26	37	6" x 1" Flat Plate (G)	49.33 - 52.25	1.0000	1.0000
L27	1	Safety Line 3/8	49.08 - 49.33	1.0000	1.0000
L27	35	6" x 1" Flat Plate (G)	49.08 - 49.33	1.0000	1.0000
L27	36	6" x 1" Flat Plate (G)	49.08 - 49.33	1.0000	1.0000
L27	37	6" x 1" Flat Plate (G)	49.08 - 49.33	1.0000	1.0000
L28	1	Safety Line 3/8	44.08 - 49.08	1.0000	1.0000
L28	35	6" x 1" Flat Plate (G)	44.08 - 49.08	1.0000	1.0000
L28	36	6" x 1" Flat Plate (G)	44.08 - 49.08	1.0000	1.0000
L28	37	6" x 1" Flat Plate (G)	44.08 - 49.08	1.0000	1.0000
L29	1	Safety Line 3/8	36.33 - 44.08	1.0000	1.0000
L29	35	6" x 1" Flat Plate (G)	36.33 - 44.08	1.0000	1.0000
L29	36	6" x 1" Flat Plate (G)	36.33 - 44.08	1.0000	1.0000
L29	37	6" x 1" Flat Plate (G)	36.33 - 44.08	1.0000	1.0000
L31	1	Safety Line 3/8	32.25 - 35.33	1.0000	1.0000
L31	35	6" x 1" Flat Plate (G)	32.33 - 35.33	1.0000	1.0000
L31	36	6" x 1" Flat Plate (G)	32.33 - 35.33	1.0000	1.0000
L31	37	6" x 1" Flat Plate (G)	32.33 - 35.33	1.0000	1.0000
L32	1	Safety Line 3/8	32.00 - 32.25	1.0000	1.0000
L32	32	6" x 1" Flat Plate (G)	32.00 - 32.25	1.0000	1.0000
L32	33	6" x 1" Flat Plate (G)	32.00 - 32.25	1.0000	1.0000
L32	34	6" x 1" Flat Plate (G)	32.00 - 32.25	1.0000	1.0000
L33	1	Safety Line 3/8	27.00 - 32.00	1.0000	1.0000
L33	32	6" x 1" Flat Plate (G)	27.00 - 32.00	1.0000	1.0000
L33	33	6" x 1" Flat Plate (G)	27.00 - 32.00	1.0000	1.0000
L33	34	6" x 1" Flat Plate (G)	27.00 - 32.00	1.0000	1.0000
L34	1	Safety Line 3/8	22.00 - 27.00	1.0000	1.0000
L34	32	6" x 1" Flat Plate (G)	22.00 - 27.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L34	33	6" x 1" Flat Plate (G)	22.00 - 27.00	1.0000	1.0000
L34	34	6" x 1" Flat Plate (G)	22.00 - 27.00	1.0000	1.0000
L35	1	Safety Line 3/8	17.00 - 22.00	1.0000	1.0000
L35	32	6" x 1" Flat Plate (G)	17.00 - 22.00	1.0000	1.0000
L35	33	6" x 1" Flat Plate (G)	17.00 - 22.00	1.0000	1.0000
L35	34	6" x 1" Flat Plate (G)	17.00 - 22.00	1.0000	1.0000
L36	1	Safety Line 3/8	15.50 - 17.00	1.0000	1.0000
L36	26	4" x .75" Flat Plate (G)	15.50 - 16.75	1.0000	1.0000
L36	27	4" x .75" Flat Plate (G)	15.50 - 16.75	1.0000	1.0000
L36	28	4" x .75" Flat Plate (G)	15.50 - 16.75	1.0000	1.0000
L36	32	6" x 1" Flat Plate (G)	15.50 - 17.00	1.0000	1.0000
L36	33	6" x 1" Flat Plate (G)	15.50 - 17.00	1.0000	1.0000
L36	34	6" x 1" Flat Plate (G)	15.50 - 17.00	1.0000	1.0000
L37	1	Safety Line 3/8	15.25 - 15.50	1.0000	1.0000
L37	26	4" x .75" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L37	27	4" x .75" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L37	28	4" x .75" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L37	32	6" x 1" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L37	33	6" x 1" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L37	34	6" x 1" Flat Plate (G)	15.25 - 15.50	1.0000	1.0000
L38	1	Safety Line 3/8	14.75 - 15.25	1.0000	1.0000
L38	26	4" x .75" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L38	27	4" x .75" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L38	28	4" x .75" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L38	32	6" x 1" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L38	33	6" x 1" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L38	34	6" x 1" Flat Plate (G)	14.75 - 15.25	1.0000	1.0000
L39	1	Safety Line 3/8	14.50 - 14.75	1.0000	1.0000
L39	26	4" x .75" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L39	27	4" x .75" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L39	28	4" x .75" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L39	32	6" x 1" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L39	33	6" x 1" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L39	34	6" x 1" Flat Plate (G)	14.50 - 14.75	1.0000	1.0000
L40	1	Safety Line 3/8	9.50 - 14.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L40	26	4" x .75" Flat Plate (G)	9.50 - 14.50	1.0000	1.0000
L40	27	4" x .75" Flat Plate (G)	9.50 - 14.50	1.0000	1.0000
L40	28	4" x .75" Flat Plate (G)	9.50 - 14.50	1.0000	1.0000
L40	32	6" x 1" Flat Plate (G)	12.25 - 14.50	1.0000	1.0000
L40	33	6" x 1" Flat Plate (G)	12.25 - 14.50	1.0000	1.0000
L40	34	6" x 1" Flat Plate (G)	12.25 - 14.50	1.0000	1.0000
L41	1	Safety Line 3/8	4.50 - 9.50	1.0000	1.0000
L41	26	4" x .75" Flat Plate (G)	4.50 - 9.50	1.0000	1.0000
L41	27	4" x .75" Flat Plate (G)	4.50 - 9.50	1.0000	1.0000
L41	28	4" x .75" Flat Plate (G)	4.50 - 9.50	1.0000	1.0000
L42	1	Safety Line 3/8	0.00 - 4.50	1.0000	1.0000
L42	26	4" x .75" Flat Plate (G)	1.75 - 4.50	1.0000	1.0000
L42	27	4" x .75" Flat Plate (G)	1.75 - 4.50	1.0000	1.0000
L42	28	4" x .75" Flat Plate (G)	1.75 - 4.50	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 _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Lightning Rod 3/4"x4'	C	From Leg	0.0000 0.00 2.00	0.00	160.0000	No Ice 1/2" Ice 1" Ice	0.3000 0.7146 1.0012	0.3000 0.7146 1.0012	0.02 0.02 0.03
Level 157									
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
(3) ACU-A20-N	A	From Leg	4.0000 0.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
(3) ACU-A20-N	B	From Leg	4.0000 0.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
(3) ACU-A20-N	C	From Leg	4.0000 0.00 0.00	0.00	157.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
Platform Mount [LP 713-1]	C	None		0.00	157.0000	No Ice 1/2" Ice 1" Ice	31.2700 39.6800 48.0900	31.2700 39.6800 48.0900	1.51 1.93 2.35
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	No Ice 1/2" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	4.5378 4.8914 5.2539	2.9834 3.5263 4.0859	0.05 0.08 0.13
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	4.5378 4.8914 5.2539	2.9834 3.5263 4.0859	0.05 0.08 0.13
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	4.5378 4.8914 5.2539	2.9834 3.5263 4.0859	0.05 0.08 0.13
(2) TD-RRH8x20-25	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	4.0455 4.2975 4.5570	1.5326 1.7122 1.8987	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	4.0455 4.2975 4.5570	1.5326 1.7122 1.8987	0.07 0.10 0.13
BEN-92P	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	0.6453 0.7474 0.8569	0.4198 0.5067 0.6009	0.00 0.01 0.02
FWHR	A	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	1.0350 1.1637 1.2999	0.5082 0.6007 0.7006	0.03 0.04 0.05
FWHR	B	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	1.0350 1.1637 1.2999	0.5082 0.6007 0.7006	0.03 0.04 0.05
FWHR	C	From Leg	4.0000 0.00 1.00	0.00	157.0000	1" Ice No Ice 1/2" Ice	1.0350 1.1637 1.2999	0.5082 0.6007 0.7006	0.03 0.04 0.05
Level 154						1" Ice			
Pipe Mount [PM 601-3]	C	None		0.00	154.0000	No Ice 1/2" Ice	4.3900 5.4800 6.5700	4.3900 5.4800 6.5700	0.20 0.24 0.28
800 EXTERNAL NOTCH FILTER	A	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
1900MHz RRH (65MHz)	A	From Leg	1.0000 0.00 -1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.3125 2.5168 2.7284	2.3750 2.5809 2.7943	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
1900MHz RRH (65MHz)	B	From Leg	1.0000 0.00 -1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.3125 2.5168 2.7284	2.3750 2.5809 2.7943	0.06 0.08 0.11
1900MHz RRH (65MHz)	C	From Leg	1.0000 0.00 -1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.3125 2.5168 2.7284	2.3750 2.5809 2.7943	0.06 0.08 0.11
800MHZ RRH	A	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	B	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	C	From Leg	1.0000 0.00 1.00	0.00	154.0000	1" Ice No Ice 1/2" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
Level 149						1" Ice			
7770.00 w/ Mount Pipe	A	From Face	4.0000 0.00 2.00	0.00	149.0000	No Ice 1/2" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
(2) LGP21401	A	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.1040 1.2388 1.3810	0.2070 0.2738 0.3475	0.01 0.02 0.03
(2) LGP21401	B	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.1040 1.2388 1.3810	0.2070 0.2738 0.3475	0.01 0.02 0.03
(2) LGP21401	C	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.1040 1.2388 1.3810	0.2070 0.2738 0.3475	0.01 0.02 0.03
RRUS 11	A	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.10
RRUS 11	B	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.10
RRUS 11	C	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.10
DC6-48-60-18-8F	B	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.03 0.05 0.07
(2) LGP21901	A	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	0.2310 0.2941 0.3647	0.1575 0.2129 0.2756	0.01 0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) LGP21901	B	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	0.2310 0.2941 0.3647	0.1575 0.2129 0.2756	0.01 0.01 0.01
(2) LGP21901	C	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	0.2310 0.2941 0.3647	0.1575 0.2129 0.2756	0.01 0.01 0.01
Platform Mount [LP 713-1]	C	None		0.00	149.0000	1" Ice No Ice 1/2" Ice	31.2700 39.6800 48.0900	31.2700 39.6800 48.0900	1.51 1.93 2.35
EPBQ-654L8H6-L2 w/ Mount Pipe	A	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	13.4744 14.0858 14.6641	6.6419 7.8329 8.7476	0.11 0.20 0.30
EPBQ-654L8H6-L2 w/ Mount Pipe	B	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	13.4744 14.0858 14.6641	6.6419 7.8329 8.7476	0.11 0.20 0.30
EPBQ-654L8H6-L2 w/ Mount Pipe	C	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	13.4744 14.0858 14.6641	6.6419 7.8329 8.7476	0.11 0.20 0.30
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Face	4.0000 6.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	9.8953 10.4700 11.0098	8.1125 9.3041 10.2095	0.08 0.16 0.25
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Face	4.0000 6.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	9.8953 10.4700 11.0098	8.1125 9.3041 10.2095	0.08 0.16 0.25
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Face	4.0000 6.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	9.8953 10.4700 11.0098	8.1125 9.3041 10.2095	0.08 0.16 0.25
RRUS 4478 B5	A	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.8425 2.0123 2.1895	1.0588 1.1969 1.3425	0.06 0.08 0.09
RRUS 4478 B5	B	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.8425 2.0123 2.1895	1.0588 1.1969 1.3425	0.06 0.08 0.09
RRUS 4478 B5	C	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	1.8425 2.0123 2.1895	1.0588 1.1969 1.3425	0.06 0.08 0.09
DC6-48-60-18-8F	B	From Face	4.0000 0.00 0.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.03 0.05 0.07
RRUS12/RRUS A2	A	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13
RRUS12/RRUS A2	B	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13
RRUS12/RRUS A2	C	From Face	4.0000 0.00 2.00	0.00	149.0000	1" Ice No Ice 1/2" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RRUS 32	A	From Leg	4.0000 0.00 2.00	0.00	149.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
RRUS 32	B	From Leg	4.0000 0.00 2.00	0.00	149.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
RRUS 32	C	From Leg	4.0000 0.00 2.00	0.00	149.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
Level 139									
(2) DB846F65ZAXY w/ Mount Pipe	A	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	7.2708 7.8325 8.3480	7.8208 9.0097 9.9124	0.05 0.11 0.19
(2) DB846F65ZAXY w/ Mount Pipe	B	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	7.2708 7.8325 8.3480	7.8208 9.0097 9.9124	0.05 0.11 0.19
(2) DB846F65ZAXY w/ Mount Pipe	C	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	7.2708 7.8325 8.3480	7.8208 9.0097 9.9124	0.05 0.11 0.19
DB-T1-6Z-8AB-0Z	C	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	4.8000 5.0704 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12
(3) 6' x 2" Mount Pipe	A	From Face	4.0000 0.00 0.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Face	4.0000 0.00 0.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Face	4.0000 0.00 0.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
Platform Mount [LP 713-1]	C	None		0.00	139.0000	No Ice 1/2" Ice 1" Ice	31.2700 39.6800 48.0900	31.2700 39.6800 48.0900	1.51 1.93 2.35
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	9.3508 9.9205 10.4552	7.6458 8.8331 9.7341	0.09 0.16 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	9.3508 9.9205 10.4552	7.6458 8.8331 9.7341	0.09 0.16 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	9.3508 9.9205 10.4552	7.6458 8.8331 9.7341	0.09 0.16 0.25
B66A RRH4X45	A	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.5800 2.7937 3.0148	1.6296 1.8106 1.9986	0.07 0.09 0.11
B66A RRH4X45	B	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.5800 2.7937 3.0148	1.6296 1.8106 1.9986	0.07 0.09 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
B66A RRH4X45	C	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.5800 2.7937 3.0148	1.6296 1.8106 1.9986	0.07 0.09 0.11
B13 RRH 4X30	A	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	B	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
B13 RRH 4X30	C	From Face	4.0000 0.00 3.00	0.00	139.0000	No Ice 1/2" Ice 1" Ice	2.0552 2.2405 2.4333	1.3201 1.4754 1.6376	0.06 0.07 0.09
Level 116									
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
RRUS 11 B12	A	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.0000 0.00 2.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	0.3523 0.4284 0.5119	0.1617 0.2195 0.2846	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	0.3523 0.4284 0.5119	0.1617 0.2195 0.2846	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	0.3523 0.4284 0.5119	0.1617 0.2195 0.2846	0.01 0.01 0.02
6' x 2" Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	116.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.02 0.03 0.05
Platform Mount [LP 712-1]	C	None		0.00	116.0000	No Ice 1/2" Ice 1" Ice	24.5300 29.9400 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
Level 84									
Side Arm Mount [SO 701-1]	A	From Face	1.5000 0.00 0.00	0.00	84.0000	No Ice 1/2" Ice 1" Ice	0.8500 1.1400 1.4300	1.6700 2.3400 3.0100	0.07 0.08 0.09
GPS_A	A	From Face	3.0000 0.00 0.00	0.00	84.0000	No Ice 1/2" Ice 1" Ice	0.2550 0.3205 0.3934	0.2550 0.3205 0.3934	0.00 0.00 0.01
Level 40									
GPS-QBW-20N	A	From Leg	1.0000 0.00 0.00	0.00	40.0000	No Ice 1/2" Ice 1" Ice	0.1292 0.1779 0.2340	0.1292 0.1779 0.2340	0.00 0.00 0.00
*** ***** *** *									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice

Comb. No.	Description
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	2	0.00	0.00	-0.00
			Max. Compression	26	-7.62	-0.79	1.55
			Max. Mx	8	-2.86	-11.24	0.45
			Max. My	2	-2.84	-0.20	11.93
			Max. Vy	8	4.23	-11.24	0.45
			Max. Vx	2	-4.37	-0.20	11.93
			Max. Torque	22			-0.56
L2	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.75	-0.80	1.54
			Max. Mx	8	-3.79	-36.33	0.27
			Max. My	2	-3.77	-0.02	37.70
			Max. Vy	8	5.37	-36.33	0.27
			Max. Vx	2	-5.51	-0.02	37.70
			Max. Torque	22			-0.56
L3	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.90	-1.78	2.10
			Max. Mx	8	-7.45	-90.89	0.25
			Max. My	2	-7.42	-0.11	92.83
			Max. Vy	8	10.89	-90.89	0.25

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	145 - 140	Pole	Max. Vx	2	-11.03	-0.11	92.83
			Max. Torque	22			-0.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.70	-1.79	2.09
			Max. Mx	8	-7.92	-146.43	0.07
			Max. My	2	-7.89	0.08	149.08
			Max. Vy	8	11.34	-146.43	0.07
			Max. Vx	2	-11.48	0.08	149.08
L5	140 - 135	Pole	Max. Torque	22			-0.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.86	-1.09	1.52
			Max. Mx	8	-11.43	-236.36	-0.23
			Max. My	2	-11.38	0.43	240.47
			Max. Vy	8	17.22	-236.36	-0.23
			Max. Vx	2	-17.46	0.43	240.47
			Max. Torque	22			-0.84
L6	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.82	-1.10	1.51
			Max. Mx	8	-12.08	-323.59	-0.42
			Max. My	2	-12.04	0.62	328.88
			Max. Vy	8	17.68	-323.59	-0.42
			Max. Vx	2	-17.92	0.62	328.88
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
L7	130 - 125	Pole	Max. Compression	26	-32.81	-1.12	1.50
			Max. Mx	8	-12.77	-413.15	-0.61
			Max. My	2	-12.73	0.81	419.62
			Max. Vy	8	18.15	-413.15	-0.61
			Max. Vx	2	-18.39	0.81	419.62
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.84	-1.13	1.49
L8	125 - 120	Pole	Max. Mx	8	-13.49	-505.05	-0.80
			Max. My	2	-13.45	1.00	512.71
			Max. Vy	8	18.63	-505.05	-0.80
			Max. Vx	2	-18.86	1.00	512.71
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.71	-1.13	1.46
			Max. Mx	8	-14.12	-580.29	-0.95
L9	120 - 111.333	Pole	Max. My	2	-14.08	1.16	588.89
			Max. Vy	8	19.01	-580.29	-0.95
			Max. Vx	2	-19.25	1.16	588.89
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.74	-1.13	1.43
			Max. Mx	8	-18.20	-699.50	-1.14
			Max. My	2	-18.16	1.35	709.29
L10	111.333 - 111	Pole	Max. Vy	8	23.22	-699.50	-1.14
			Max. Vx	2	-23.46	1.35	709.29
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.09	-1.13	1.40
			Max. Mx	8	-19.23	-816.82	-1.33
			Max. My	2	-19.19	1.55	827.82
			Max. Vy	8	23.72	-816.82	-1.33
L11	111 - 106	Pole	Max. Vx	2	-23.96	1.55	827.82
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.48	-1.13	1.37
			Max. Mx	8	-20.31	-936.65	-1.52
			Max. My	2	-20.27	1.74	948.85
			Max. Vy	8	24.23	-936.65	-1.52
			Max. Vx	2	-24.47	1.74	948.85
L12	106 - 101	Pole	Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.91	-1.13	1.34
			Max. Mx	8	-24.47	1.74	948.85
L13	101 - 96	Pole	Max. Vy	8	24.23	-936.65	-1.52
			Max. Vx	2	-24.47	1.74	948.85
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
L13	101 - 96	Pole	Max. Compression	26	-47.91	-1.13	1.34
			Max. Mx	8	-24.47	1.74	948.85
			Max. Vy	8	24.23	-936.65	-1.52
			Max. Vx	2	-24.47	1.74	948.85

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L14	96 - 91	Pole	Max. Mx	8	-21.41	-1059.01	-1.71
			Max. My	2	-21.38	1.93	1072.39
			Max. Vy	8	24.73	-1059.01	-1.71
			Max. Vx	2	-24.97	1.93	1072.39
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.37	-1.13	1.31
			Max. Mx	8	-22.55	-1183.89	-1.90
			Max. My	2	-22.52	2.13	1198.47
			Max. Vy	8	25.24	-1183.89	-1.90
L15	91 - 86	Pole	Max. Vx	2	-25.48	2.13	1198.47
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.97	-1.13	1.28
			Max. Mx	8	-23.72	-1311.30	-2.09
			Max. My	2	-23.69	2.32	1327.08
			Max. Vy	8	25.75	-1311.30	-2.09
			Max. Vx	2	-25.99	2.32	1327.08
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
L16	86 - 85.75	Pole	Max. Compression	26	-51.08	-1.13	1.27
			Max. Mx	8	-23.81	-1317.74	-2.10
			Max. My	2	-23.78	2.33	1333.58
			Max. Vy	8	25.77	-1317.74	-2.10
			Max. Vx	2	-26.01	2.33	1333.58
			Max. Torque	8			0.61
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.24	-0.72	1.48
			Max. Mx	8	-25.33	-1441.33	-2.13
			Max. My	2	-25.30	2.68	1458.67
L17	85.75 - 81	Pole	Max. Vy	8	26.36	-1441.33	-2.13
			Max. Vx	2	-26.61	2.68	1458.67
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.34	-0.72	1.47
			Max. Mx	8	-25.40	-1447.92	-2.13
			Max. My	2	-25.37	2.68	1465.33
			Max. Vy	8	26.38	-1447.92	-2.13
			Max. Vx	2	-26.63	2.68	1465.33
			Max. Torque	8			0.71
L18	81 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.43	-0.72	1.47
			Max. Mx	8	-25.46	-1454.52	-2.14
			Max. My	2	-25.43	2.69	1471.99
			Max. Vy	8	26.41	-1454.52	-2.14
			Max. Vx	2	-26.66	2.69	1471.99
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.94	-0.72	1.46
			Max. Mx	8	-25.81	-1494.23	-2.18
L19	80.75 - 80.5	Pole	Max. My	2	-25.78	2.73	1512.08
			Max. Vy	8	26.57	-1494.23	-2.18
			Max. Vx	2	-26.82	2.73	1512.08
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.91	-0.72	1.41
			Max. Mx	8	-28.63	-1676.29	-2.35
			Max. My	2	-28.60	2.91	1695.84
			Max. Vy	8	27.39	-1676.29	-2.35
			Max. Vx	2	-27.64	2.91	1695.84
L20	80.5 - 73.25	Pole	Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	-0.72	1.38
			Max. Mx	8	-30.05	-1814.43	-2.48
			Max. My	2	-30.03	3.04	1835.24
			Max. Vy	8	27.90	-1814.43	-2.48
			Max. Vx	2	-28.15	3.04	1835.24
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	-0.72	1.38
L21	73.25 - 72.25	Pole	Max. Mx	8	-30.05	-1814.43	-2.48
			Max. My	2	-30.03	3.04	1835.24
			Max. Vy	8	27.90	-1814.43	-2.48
			Max. Vx	2	-28.15	3.04	1835.24
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	-0.72	1.38
			Max. Mx	8	-30.05	-1814.43	-2.48
			Max. My	2	-30.03	3.04	1835.24
			Max. Vy	8	27.90	-1814.43	-2.48
L22	72.25 - 67.25	Pole	Max. Vx	2	-28.15	3.04	1835.24
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.69	-0.72	1.38
			Max. Mx	8	-30.05	-1814.43	-2.48
			Max. My	2	-30.03	3.04	1835.24
			Max. Vy	8	27.90	-1814.43	-2.48
			Max. Vx	2	-28.15	3.04	1835.24
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L23	67.25 - 62.25	Pole	Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.51	-0.72	1.34
			Max. Mx	8	-31.51	-1955.11	-2.61
			Max. My	2	-31.48	3.17	1977.18
			Max. Vy	8	28.40	-1955.11	-2.61
			Max. Vx	2	-28.66	3.17	1977.18
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.37	-0.72	1.31
L24	62.25 - 57.25	Pole	Max. Mx	8	-33.00	-2098.32	-2.74
			Max. My	2	-32.98	3.29	2121.64
			Max. Vy	8	28.91	-2098.32	-2.74
			Max. Vx	2	-29.16	3.29	2121.64
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.27	-0.72	1.27
			Max. Mx	8	-34.52	-2244.01	-2.87
			Max. My	2	-34.50	3.42	2268.59
			Max. Vy	8	29.40	-2244.01	-2.87
L25	57.25 - 52.25	Pole	Max. Vx	2	-29.65	3.42	2268.59
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.50	-0.72	1.25
			Max. Mx	8	-35.42	-2330.24	-2.94
			Max. My	2	-35.41	3.50	2355.55
			Max. Vy	8	29.69	-2330.24	-2.94
			Max. Vx	2	-29.94	3.50	2355.55
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
L26	52.25 - 49.33	Pole	Max. Compression	26	-66.61	-0.72	1.25
			Max. Mx	8	-35.52	-2337.67	-2.95
			Max. My	2	-35.50	3.50	2363.03
			Max. Vy	8	29.70	-2337.67	-2.95
			Max. Vx	2	-29.95	3.50	2363.03
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.75	-0.72	1.21
			Max. Mx	8	-37.09	-2487.35	-3.08
			Max. My	2	-37.08	3.63	2513.96
L27	49.33 - 49.08	Pole	Max. Vy	8	30.19	-2487.35	-3.08
			Max. Vx	2	-30.44	3.63	2513.96
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.21	-0.72	1.20
			Max. Mx	8	-37.44	-2520.00	-3.11
			Max. My	2	-37.42	3.66	2546.87
			Max. Vy	8	30.29	-2520.00	-3.11
			Max. Vx	2	-30.54	3.66	2546.87
			Max. Torque	8			0.71
L28	44.08 - 44.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	-0.72	1.17
			Max. Mx	8	-41.64	-2755.51	-3.30
			Max. My	2	-41.63	3.85	2784.28
			Max. Vy	8	31.15	-2755.51	-3.30
			Max. Vx	2	-31.40	3.85	2784.28
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.39	-0.72	1.15
			Max. Mx	8	-42.71	-2851.92	-3.38
L29	36.3333 - 35.3333	Pole	Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	-0.72	1.17
			Max. Mx	8	-41.64	-2755.51	-3.30
			Max. My	2	-41.63	3.85	2784.28
			Max. Vy	8	31.15	-2755.51	-3.30
			Max. Vx	2	-31.40	3.85	2784.28
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.39	-0.72	1.15
L30	35.3333 - 32.25	Pole	Max. Mx	8	-42.71	-2851.92	-3.38
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	-0.72	1.17
			Max. Mx	8	-41.64	-2755.51	-3.30
			Max. My	2	-41.63	3.85	2784.28
			Max. Vy	8	31.15	-2755.51	-3.30
			Max. Vx	2	-31.40	3.85	2784.28
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
L31	35.3333 - 32.25	Pole	Max. Compression	26	-76.39	-0.72	1.15
			Max. Mx	8	-42.71	-2851.92	-3.38
			Max. Torque	8			0.71
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.98	-0.72	1.17
			Max. Mx	8	-41.64	-2755.51	-3.30
			Max. My	2	-41.63	3.85	2784.28
			Max. Vy	8	31.15	-2755.51	-3.30
			Max. Vx	2	-31.40	3.85	2784.28
			Max. Torque	8			0.72

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L32	32.25 - 32	Pole	Max. My	2	-42.70	3.93	2881.46
			Max. Vy	8	31.42	-2851.92	-3.38
			Max. Vx	2	-31.67	3.93	2881.46
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.51	-0.72	1.15
			Max. Mx	8	-42.81	-2859.77	-3.39
			Max. My	2	-42.80	3.94	2889.37
			Max. Vy	8	31.43	-2859.77	-3.39
			Max. Vx	2	-31.68	3.94	2889.37
L33	32 - 27	Pole	Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.83	-0.72	1.11
			Max. Mx	8	-44.57	-3017.96	-3.51
			Max. My	2	-44.56	4.06	3048.79
			Max. Vy	8	31.86	-3017.96	-3.51
			Max. Vx	2	-32.11	4.06	3048.79
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.19	-0.72	1.07
L34	27 - 22	Pole	Max. Mx	8	-46.38	-3178.26	-3.64
			Max. My	2	-46.37	4.19	3210.32
			Max. Vy	8	32.29	-3178.26	-3.64
			Max. Vx	2	-32.54	4.19	3210.32
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.58	-0.72	1.03
			Max. Mx	8	-48.23	-3340.72	-3.77
			Max. My	2	-48.22	4.31	3373.99
			Max. Vy	8	32.72	-3340.72	-3.77
L35	22 - 17	Pole	Max. Vx	2	-32.97	4.31	3373.99
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.33	-0.72	1.02
			Max. Mx	8	-48.78	-3389.88	-3.80
			Max. My	2	-48.77	4.35	3423.52
			Max. Vy	8	32.86	-3389.88	-3.80
			Max. Vx	2	-33.11	4.35	3423.52
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
L36	17 - 15.5	Pole	Max. Compression	26	-84.46	-0.72	1.02
			Max. Mx	8	-48.89	-3398.10	-3.81
			Max. My	2	-48.88	4.35	3431.79
			Max. Vy	8	32.87	-3398.10	-3.81
			Max. Vx	2	-33.11	4.35	3431.79
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.71	-0.72	1.02
			Max. Mx	8	-49.07	-3414.54	-3.82
			Max. My	2	-49.07	4.36	3448.35
L37	15.5 - 15.25	Pole	Max. Vy	8	32.91	-3414.54	-3.82
			Max. Vx	2	-33.16	4.36	3448.35
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.83	-0.72	1.02
			Max. Mx	8	-49.17	-3422.77	-3.83
			Max. My	2	-49.16	4.37	3456.64
			Max. Vy	8	32.93	-3422.77	-3.83
			Max. Vx	2	-33.18	4.37	3456.64
			Max. Torque	8			0.72
L38	15.25 - 14.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
			Max. Mx	8	-51.06	-3588.50	-3.95
			Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95
			Max. Vx	2	-33.63	4.49	3623.58
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
			Max. Mx	8	-51.06	-3588.50	-3.95
L39	14.75 - 14.5	Pole	Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95
			Max. Vx	2	-33.63	4.49	3623.58
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
			Max. Mx	8	-51.06	-3588.50	-3.95
			Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95
			Max. Vx	2	-33.63	4.49	3623.58
L40	14.5 - 9.5	Pole	Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
			Max. Mx	8	-51.06	-3588.50	-3.95
			Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95
			Max. Vx	2	-33.63	4.49	3623.58
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
L41	9.5 - 4.5	Pole	Max. Mx	8	-51.06	-3588.50	-3.95
			Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95
			Max. Vx	2	-33.63	4.49	3623.58
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.29	-0.72	0.98
			Max. Mx	8	-51.06	-3588.50	-3.95
			Max. My	2	-51.05	4.49	3623.58
			Max. Vy	8	33.38	-3588.50	-3.95

Section n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L42	4.5 - 0	Pole	Max. Compression	26	-89.68	-0.72	0.95
			Max. Mx	8	-52.99	-3756.45	-4.08
			Max. My	2	-52.99	4.61	3792.73
			Max. Vy	8	33.83	-3756.45	-4.08
			Max. Vx	2	-34.07	4.61	3792.73
			Max. Torque	8			0.72
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.78	-0.72	0.92
			Max. Mx	8	-54.76	-3909.51	-4.19
			Max. My	2	-54.76	4.72	3946.86
			Max. Vy	8	34.24	-3909.51	-4.19
			Max. Vx	2	-34.47	4.72	3946.86
			Max. Torque	8			0.72

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	91.78	0.00	8.82
	Max. H _x	20	54.77	34.22	0.02
	Max. H _z	2	54.77	0.02	34.46
	Max. M _x	2	3946.86	0.02	34.46
	Max. M _z	8	3909.51	-34.22	-0.02
	Max. Torsion	8	0.72	-34.22	-0.02
	Min. Vert	23	41.08	29.64	17.25
	Min. H _x	8	54.77	-34.22	-0.02
	Min. H _z	14	54.77	-0.02	-34.46
	Min. M _x	14	-3945.28	-0.02	-34.46
	Min. M _z	20	-3909.00	34.22	0.02
	Min. Torsion	20	-0.72	34.22	0.02

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	45.64	0.00	0.00	-0.61	-0.19	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	54.77	-0.02	-34.46	-3946.86	4.72	-0.17
0.9 Dead+1.6 Wind 0 deg - No Ice	41.08	-0.02	-34.46	-3900.02	4.72	-0.18
1.2 Dead+1.6 Wind 30 deg - No Ice	54.77	17.09	-29.83	-3415.75	-1950.53	-0.51
0.9 Dead+1.6 Wind 30 deg - No Ice	41.08	17.09	-29.83	-3375.19	-1927.46	-0.51
1.2 Dead+1.6 Wind 60 deg - No Ice	54.77	29.62	-17.21	-1969.58	-3383.27	-0.72
0.9 Dead+1.6 Wind 60 deg - No Ice	41.08	29.62	-17.21	-1946.11	-3343.28	-0.71
1.2 Dead+1.6 Wind 90 deg - No Ice	54.77	34.22	0.02	4.19	-3909.51	-0.72
0.9 Dead+1.6 Wind 90 deg - No Ice	41.08	34.22	0.02	4.32	-3863.30	-0.71
1.2 Dead+1.6 Wind 120 deg - No Ice	54.77	29.64	17.25	1976.60	-3388.21	-0.54
0.9 Dead+1.6 Wind 120 deg - No Ice	41.08	29.64	17.25	1953.43	-3348.15	-0.51
1.2 Dead+1.6 Wind 150 deg - No Ice	54.77	17.13	29.85	3419.11	-1959.14	-0.21

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
0.9 Dead+1.6 Wind 150 deg - No Ice	41.08	17.13	29.85	3378.90	-1935.93	-0.19
1.2 Dead+1.6 Wind 180 deg - No Ice	54.77	0.02	34.46	3945.28	-5.24	0.17
0.9 Dead+1.6 Wind 180 deg - No Ice	41.08	0.02	34.46	3898.86	-5.09	0.18
1.2 Dead+1.6 Wind 210 deg - No Ice	54.77	-17.09	29.83	3414.17	1950.02	0.50
0.9 Dead+1.6 Wind 210 deg - No Ice	41.08	-17.09	29.83	3374.03	1927.09	0.50
1.2 Dead+1.6 Wind 240 deg - No Ice	54.77	-29.62	17.21	1968.00	3382.76	0.70
0.9 Dead+1.6 Wind 240 deg - No Ice	41.08	-29.62	17.21	1944.96	3342.91	0.69
1.2 Dead+1.6 Wind 270 deg - No Ice	54.77	-34.22	-0.02	-5.77	3909.00	0.72
0.9 Dead+1.6 Wind 270 deg - No Ice	41.08	-34.22	-0.02	-5.48	3862.93	0.70
1.2 Dead+1.6 Wind 300 deg - No Ice	54.77	-29.64	-17.25	-1978.19	3387.71	0.55
0.9 Dead+1.6 Wind 300 deg - No Ice	41.08	-29.64	-17.25	-1954.59	3347.78	0.53
1.2 Dead+1.6 Wind 330 deg - No Ice	54.77	-17.13	-29.85	-3420.70	1958.62	0.22
0.9 Dead+1.6 Wind 330 deg - No Ice	41.08	-17.13	-29.85	-3380.06	1935.56	0.20
1.2 Dead+1.0 Ice+1.0 Temp	91.78	0.00	-0.00	-0.92	-0.72	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	91.78	-0.00	-8.82	-1100.60	-0.05	-0.07
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	91.78	4.38	-7.64	-952.89	-545.81	-0.21
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	91.78	7.60	-4.41	-550.16	-945.55	-0.29
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	91.78	8.77	0.00	-0.30	-1092.16	-0.29
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	91.78	7.60	4.41	549.34	-946.33	-0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	91.78	4.39	7.64	951.50	-547.17	-0.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	91.78	0.00	8.82	1098.42	-1.61	0.07
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	91.78	-4.38	7.64	950.72	544.16	0.21
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	91.78	-7.60	4.41	547.99	943.90	0.29
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	91.78	-8.77	-0.00	-1.87	1090.50	0.29
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	91.78	-7.60	-4.41	-551.52	944.68	0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	91.78	-4.39	-7.64	-953.68	545.51	0.08
Dead+Wind 0 deg - Service	45.64	-0.01	-8.02	-913.24	0.94	-0.04
Dead+Wind 30 deg - Service	45.64	3.98	-6.94	-790.41	-451.24	-0.12
Dead+Wind 60 deg - Service	45.64	6.89	-4.01	-455.95	-782.56	-0.17
Dead+Wind 90 deg - Service	45.64	7.96	0.01	0.49	-904.26	-0.17
Dead+Wind 120 deg - Service	45.64	6.90	4.01	456.63	-783.71	-0.12
Dead+Wind 150 deg - Service	45.64	3.99	6.95	790.24	-453.23	-0.05
Dead+Wind 180 deg - Service	45.64	0.01	8.02	911.93	-1.36	0.04
Dead+Wind 210 deg - Service	45.64	-3.98	6.94	789.09	450.82	0.12
Dead+Wind 240 deg - Service	45.64	-6.89	4.01	454.64	782.15	0.17
Dead+Wind 270 deg - Service	45.64	-7.96	-0.01	-1.81	903.84	0.17
Dead+Wind 300 deg - Service	45.64	-6.90	-4.01	-457.95	783.30	0.12

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
	K	K	K			
Dead+Wind 330 deg - Service	45.64	-3.99	-6.95	-791.55	452.81	0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-45.64	0.00	0.00	45.64	0.00	0.000%
2	-0.02	-54.77	-34.46	0.02	54.77	34.46	0.000%
3	-0.02	-41.08	-34.46	0.02	41.08	34.46	0.000%
4	17.09	-54.77	-29.83	-17.09	54.77	29.83	0.000%
5	17.09	-41.08	-29.83	-17.09	41.08	29.83	0.000%
6	29.62	-54.77	-17.21	-29.62	54.77	17.21	0.000%
7	29.62	-41.08	-17.21	-29.62	41.08	17.21	0.000%
8	34.22	-54.77	0.02	-34.22	54.77	-0.02	0.000%
9	34.22	-41.08	0.02	-34.22	41.08	-0.02	0.000%
10	29.64	-54.77	17.25	-29.64	54.77	-17.25	0.000%
11	29.64	-41.08	17.25	-29.64	41.08	-17.25	0.000%
12	17.13	-54.77	29.85	-17.13	54.77	-29.85	0.000%
13	17.13	-41.08	29.85	-17.13	41.08	-29.85	0.000%
14	0.02	-54.77	34.46	-0.02	54.77	-34.46	0.000%
15	0.02	-41.08	34.46	-0.02	41.08	-34.46	0.000%
16	-17.09	-54.77	29.83	17.09	54.77	-29.83	0.000%
17	-17.09	-41.08	29.83	17.09	41.08	-29.83	0.000%
18	-29.62	-54.77	17.21	29.62	54.77	-17.21	0.000%
19	-29.62	-41.08	17.21	29.62	41.08	-17.21	0.000%
20	-34.22	-54.77	-0.02	34.22	54.77	0.02	0.000%
21	-34.22	-41.08	-0.02	34.22	41.08	0.02	0.000%
22	-29.64	-54.77	-17.25	29.64	54.77	17.25	0.000%
23	-29.64	-41.08	-17.25	29.64	41.08	17.25	0.000%
24	-17.13	-54.77	-29.85	17.13	54.77	29.85	0.000%
25	-17.13	-41.08	-29.85	17.13	41.08	29.85	0.000%
26	0.00	-91.78	0.00	-0.00	91.78	0.00	0.000%
27	-0.00	-91.78	-8.82	0.00	91.78	8.82	0.000%
28	4.38	-91.78	-7.64	-4.38	91.78	7.64	0.000%
29	7.60	-91.78	-4.41	-7.60	91.78	4.41	0.000%
30	8.77	-91.78	0.00	-8.77	91.78	-0.00	0.000%
31	7.60	-91.78	4.41	-7.60	91.78	-4.41	0.000%
32	4.39	-91.78	7.64	-4.39	91.78	-7.64	0.000%
33	0.00	-91.78	8.82	-0.00	91.78	-8.82	0.000%
34	-4.38	-91.78	7.64	4.38	91.78	-7.64	0.000%
35	-7.60	-91.78	4.41	7.60	91.78	-4.41	0.000%
36	-8.77	-91.78	-0.00	8.77	91.78	0.00	0.000%
37	-7.60	-91.78	-4.41	7.60	91.78	4.41	0.000%
38	-4.39	-91.78	-7.64	4.39	91.78	7.64	0.000%
39	-0.01	-45.64	-8.02	0.01	45.64	8.02	0.000%
40	3.98	-45.64	-6.94	-3.98	45.64	6.94	0.000%
41	6.89	-45.64	-4.01	-6.89	45.64	4.01	0.000%
42	7.96	-45.64	0.01	-7.96	45.64	-0.01	0.000%
43	6.90	-45.64	4.01	-6.90	45.64	-4.01	0.000%
44	3.99	-45.64	6.95	-3.99	45.64	-6.95	0.000%
45	0.01	-45.64	8.02	-0.01	45.64	-8.02	0.000%
46	-3.98	-45.64	6.94	3.98	45.64	-6.94	0.000%
47	-6.89	-45.64	4.01	6.89	45.64	-4.01	0.000%
48	-7.96	-45.64	-0.01	7.96	45.64	0.01	0.000%
49	-6.90	-45.64	-4.01	6.90	45.64	4.01	0.000%
50	-3.99	-45.64	-6.95	3.99	45.64	6.95	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00029694
3	Yes	5	0.00000001	0.00011192
4	Yes	6	0.00000001	0.00094542
5	Yes	6	0.00000001	0.00030303
6	Yes	6	0.00000001	0.00095838
7	Yes	6	0.00000001	0.00030812
8	Yes	5	0.00000001	0.00036307
9	Yes	5	0.00000001	0.00014576
10	Yes	6	0.00000001	0.00094757
11	Yes	6	0.00000001	0.00030383
12	Yes	6	0.00000001	0.00095921
13	Yes	6	0.00000001	0.00030744
14	Yes	5	0.00000001	0.00027358
15	Yes	5	0.00000001	0.00009626
16	Yes	6	0.00000001	0.00095595
17	Yes	6	0.00000001	0.00030714
18	Yes	6	0.00000001	0.00093924
19	Yes	6	0.00000001	0.00030153
20	Yes	5	0.00000001	0.00045695
21	Yes	5	0.00000001	0.00019327
22	Yes	6	0.00000001	0.00096191
23	Yes	6	0.00000001	0.00030872
24	Yes	6	0.00000001	0.00095404
25	Yes	6	0.00000001	0.00030564
26	Yes	4	0.00000001	0.00017048
27	Yes	7	0.00000001	0.00017683
28	Yes	7	0.00000001	0.00021804
29	Yes	7	0.00000001	0.00021823
30	Yes	7	0.00000001	0.00017522
31	Yes	7	0.00000001	0.00021673
32	Yes	7	0.00000001	0.00021779
33	Yes	7	0.00000001	0.00017557
34	Yes	7	0.00000001	0.00021639
35	Yes	7	0.00000001	0.00021499
36	Yes	7	0.00000001	0.00017437
37	Yes	7	0.00000001	0.00021782
38	Yes	7	0.00000001	0.00021798
39	Yes	5	0.00000001	0.00005666
40	Yes	5	0.00000001	0.00027614
41	Yes	5	0.00000001	0.00028661
42	Yes	5	0.00000001	0.00005810
43	Yes	5	0.00000001	0.00027559
44	Yes	5	0.00000001	0.00028407
45	Yes	5	0.00000001	0.00005637
46	Yes	5	0.00000001	0.00028345
47	Yes	5	0.00000001	0.00027101
48	Yes	5	0.00000001	0.00005847
49	Yes	5	0.00000001	0.00028693
50	Yes	5	0.00000001	0.00028049

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	25.69	39	1.47	0.00
L2	155 - 150	24.15	39	1.47	0.00
L3	150 - 145	22.62	39	1.46	0.00
L4	145 - 140	21.10	39	1.44	0.00
L5	140 - 135	19.61	39	1.41	0.00
L6	135 - 130	18.15	39	1.37	0.00
L7	130 - 125	16.74	39	1.32	0.00
L8	125 - 120	15.40	39	1.26	0.00
L9	120 - 111.333	14.12	39	1.19	0.00
L10	116 - 111	13.14	39	1.14	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	111 - 106	11.97	39	1.10	0.00
L12	106 - 101	10.84	39	1.04	0.00
L13	101 - 96	9.79	39	0.98	0.00
L14	96 - 91	8.79	39	0.92	0.00
L15	91 - 86	7.86	39	0.86	0.00
L16	86 - 85.75	7.00	39	0.79	0.00
L17	85.75 - 81	6.96	39	0.79	0.00
L18	81 - 80.75	6.19	39	0.75	0.00
L19	80.75 - 80.5	6.15	39	0.75	0.00
L20	80.5 - 73.25	6.11	39	0.74	0.00
L21	79 - 72.25	5.88	39	0.72	0.00
L22	72.25 - 67.25	4.89	39	0.68	0.00
L23	67.25 - 62.25	4.21	39	0.62	0.00
L24	62.25 - 57.25	3.58	39	0.57	0.00
L25	57.25 - 52.25	3.02	39	0.51	0.00
L26	52.25 - 49.33	2.51	39	0.46	0.00
L27	49.33 - 49.08	2.24	39	0.43	0.00
L28	49.08 - 44.08	2.21	39	0.43	0.00
L29	44.08 - 36.3333	1.79	39	0.37	0.00
L30	43 - 35.3333	1.71	39	0.36	0.00
L31	35.3333 - 32.25	1.16	39	0.32	0.00
L32	32.25 - 32	0.96	39	0.29	0.00
L33	32 - 27	0.94	39	0.29	0.00
L34	27 - 22	0.67	39	0.24	0.00
L35	22 - 17	0.44	39	0.19	0.00
L36	17 - 15.5	0.26	39	0.15	0.00
L37	15.5 - 15.25	0.22	39	0.13	0.00
L38	15.25 - 14.75	0.21	39	0.13	0.00
L39	14.75 - 14.5	0.20	39	0.13	0.00
L40	14.5 - 9.5	0.19	39	0.13	0.00
L41	9.5 - 4.5	0.08	39	0.08	0.00
L42	4.5 - 0	0.02	39	0.04	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.0000	Lightning Rod 3/4"x4'	39	25.69	1.47	0.00	58359
157.0000	APXVSPP18-C-A20 w/ Mount Pipe	39	24.76	1.47	0.00	58359
154.0000	Pipe Mount [PM 601-3]	39	23.84	1.47	0.00	45938
149.0000	7770.00 w/ Mount Pipe	39	22.31	1.46	0.00	18523
139.0000	(2) DB846F65ZAXY w/ Mount Pipe	39	19.31	1.40	0.00	7630
116.0000	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	39	13.14	1.14	0.00	5728
84.0000	Side Arm Mount [SO 701-1]	39	6.67	0.78	0.00	5878
40.0000	GPS-QBW-20N	39	1.48	0.34	0.00	9468

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	110.97	2	6.34	0.01
L2	155 - 150	104.34	2	6.34	0.01
L3	150 - 145	97.74	2	6.30	0.01
L4	145 - 140	91.19	2	6.22	0.01
L5	140 - 135	84.75	2	6.10	0.00
L6	135 - 130	78.46	2	5.92	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L7	130 - 125	72.39	2	5.69	0.00
L8	125 - 120	66.57	2	5.43	0.00
L9	120 - 111.333	61.03	2	5.15	0.00
L10	116 - 111	56.82	2	4.91	0.00
L11	111 - 106	51.75	2	4.77	0.00
L12	106 - 101	46.90	2	4.51	0.00
L13	101 - 96	42.32	2	4.25	0.00
L14	96 - 91	38.01	2	3.98	0.00
L15	91 - 86	34.00	2	3.70	0.00
L16	86 - 85.75	30.26	2	3.43	0.00
L17	85.75 - 81	30.08	2	3.42	0.00
L18	81 - 80.75	26.77	2	3.24	0.00
L19	80.75 - 80.5	26.60	2	3.23	0.00
L20	80.5 - 73.25	26.44	2	3.21	0.00
L21	79 - 72.25	25.44	2	3.13	0.00
L22	72.25 - 67.25	21.14	2	2.93	0.00
L23	67.25 - 62.25	18.19	2	2.69	0.00
L24	62.25 - 57.25	15.50	2	2.46	0.00
L25	57.25 - 52.25	13.05	2	2.22	0.00
L26	52.25 - 49.33	10.84	2	1.99	0.00
L27	49.33 - 49.08	9.67	2	1.86	0.00
L28	49.08 - 44.08	9.57	2	1.85	0.00
L29	44.08 - 36.3333	7.76	2	1.62	0.00
L30	43 - 35.3333	7.39	2	1.57	0.00
L31	35.3333 - 32.25	5.00	2	1.39	0.00
L32	32.25 - 32	4.15	2	1.26	0.00
L33	32 - 27	4.08	2	1.25	0.00
L34	27 - 22	2.89	2	1.04	0.00
L35	22 - 17	1.90	2	0.84	0.00
L36	17 - 15.5	1.13	2	0.64	0.00
L37	15.5 - 15.25	0.94	2	0.58	0.00
L38	15.25 - 14.75	0.91	2	0.57	0.00
L39	14.75 - 14.5	0.85	2	0.55	0.00
L40	14.5 - 9.5	0.82	2	0.54	0.00
L41	9.5 - 4.5	0.35	2	0.35	0.00
L42	4.5 - 0	0.08	2	0.17	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.0000	Lightning Rod 3/4"x4'	2	110.97	6.34	0.01	15318
157.0000	APXVSPP18-C-A20 w/ Mount Pipe	2	106.99	6.34	0.01	15318
154.0000	Pipe Mount [PM 601-3]	2	103.02	6.33	0.01	11847
149.0000	7770.00 w/ Mount Pipe	2	96.42	6.29	0.01	4532
139.0000	(2) DB846F65ZAXY w/ Mount Pipe	2	83.47	6.06	0.01	1819
116.0000	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	2	56.82	4.91	0.00	1345
84.0000	Side Arm Mount [SO 701-1]	2	28.84	3.36	0.00	1367
40.0000	GPS-QBW-20N	2	6.42	1.49	0.00	2191

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	K/lr	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	160 - 155 (1)	TP20.801x19.6x0.25	5.0000	0.0000	0.0	16.543 6	-2.84	1219.43	0.002
L2	155 - 150 (2)	TP22.0021x20.801x0.25	5.0000	0.0000	0.0	17.510 4	-3.77	1290.69	0.003
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	5.0000	0.0000	0.0	18.477 2	-7.42	1338.83	0.006
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	5.0000	0.0000	0.0	19.444 1	-7.89	1384.31	0.006
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	5.0000	0.0000	0.0	20.410 9	-11.38	1427.35	0.008
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	5.0000	0.0000	0.0	21.377 7	-12.04	1467.94	0.008
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	5.0000	0.0000	0.0	22.344 5	-12.73	1506.09	0.008
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	5.0000	0.0000	0.0	23.311 4	-13.45	1541.80	0.009
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	8.6667	0.0000	0.0	24.084 8	-14.08	1568.60	0.009
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	5.0000	0.0000	0.0	33.785 5	-18.16	2474.86	0.007
L11	111 - 106 (11)	TP32.065x30.867x0.3438	5.0000	0.0000	0.0	35.111 5	-19.19	2539.80	0.008
L12	106 - 101 (12)	TP33.2631x32.065x0.343 8	5.0000	0.0000	0.0	36.437 6	-20.27	2602.31	0.008
L13	101 - 96 (13)	TP34.4611x33.2631x0.34 38	5.0000	0.0000	0.0	37.763 6	-21.38	2662.39	0.008
L14	96 - 91 (14)	TP35.6591x34.4611x0.34 38	5.0000	0.0000	0.0	39.089 6	-22.52	2720.04	0.008
L15	91 - 86 (15)	TP36.8571x35.6591x0.34 38	5.0000	0.0000	0.0	40.415 7	-23.69	2775.26	0.009
L16	86 - 85.75 (16)	TP36.917x36.8571x0.512 5	0.2500	0.0000	0.0	60.076 5	-23.78	4428.24	0.005
L17	85.75 - 81 (17)	TP38.0551x36.917x0.506 3	4.7500	0.0000	0.0	61.209 3	-25.30	4511.74	0.006
L18	81 - 80.75 (18)	TP38.115x38.0551x0.343 8	0.2500	0.0000	0.0	41.808 0	-25.37	2830.63	0.009
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.343 8	0.2500	0.0000	0.0	41.874 3	-25.43	2833.20	0.009
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.343 8	7.2500	0.0000	0.0	42.272 2	-25.78	2848.48	0.009
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.406 3	6.7500	0.0000	0.0	51.096 3	-28.60	3644.05	0.008
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.406 3	5.0000	0.0000	0.0	52.666 3	-30.03	3715.09	0.008
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.40 63	5.0000	0.0000	0.0	54.236 2	-31.48	3783.68	0.008
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.40 63	5.0000	0.0000	0.0	55.806 1	-32.98	3849.83	0.009
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.40 63	5.0000	0.0000	0.0	57.376 1	-34.50	3913.55	0.009
L26	52.25 - 49.33 (26)	TP44.9684x44.2675x0.40 63	2.9200	0.0000	0.0	58.292 9	-35.41	3949.63	0.009
L27	49.33 - 49.08 (27)	TP45.0284x44.9684x0.40 63	0.2500	0.0000	0.0	58.371 4	-35.50	3952.68	0.009
L28	49.08 - 44.08 (28)	TP46.2286x45.0284x0.40 63	5.0000	0.0000	0.0	59.941 3	-37.08	4012.40	0.009
L29	44.08 - 36.3333 (29)	TP48.088x46.2286x0.406 3	7.7467	0.0000	0.0	60.280 4	-37.42	4024.99	0.009
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.43 75	7.6667	0.0000	0.0	66.322 0	-41.63	4529.99	0.009
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.43 75	3.0833	0.0000	0.0	67.365 0	-42.70	4571.24	0.009
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.43 75	0.2500	0.0000	0.0	67.449 5	-42.80	4574.54	0.009
L33	32 - 27 (33)	TP49.5171x48.3165x0.43 75	5.0000	0.0000	0.0	69.140 8	-44.56	4639.33	0.010
L34	27 - 22 (34)	TP50.7176x49.5171x0.43 75	5.0000	0.0000	0.0	70.832 1	-46.37	4701.68	0.010

Section No.	Elevation ft	Size	L ft	L _u ft	K/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L35	22 - 17 (35)	TP51.9181x50.7176x0.4375	5.0000	0.0000	0.0	72.5234	-48.22	4761.59	0.010
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.4375	1.5000	0.0000	0.0	73.0307	-48.77	4779.09	0.010
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.4375	0.2500	0.0000	0.0	73.1153	-48.88	4781.98	0.010
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.4375	0.5000	0.0000	0.0	73.2844	-49.07	4787.76	0.010
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.4375	0.2500	0.0000	0.0	73.3690	-49.16	4790.63	0.010
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.4375	5.0000	0.0000	0.0	75.0603	-51.05	4846.88	0.011
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.4375	5.0000	0.0000	0.0	76.7515	-52.99	4900.68	0.011
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	4.5000	0.0000	0.0	78.2737	-54.76	4947.02	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 155 (1)	TP20.801x19.6x0.25	11.93	508.41	0.023	0.00	508.41	0.000
L2	155 - 150 (2)	TP22.0021x20.801x0.25	37.70	569.95	0.066	0.00	569.95	0.000
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	92.83	624.22	0.149	0.00	624.22	0.000
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	149.08	679.56	0.219	0.00	679.56	0.000
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	240.47	735.88	0.327	0.00	735.88	0.000
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	328.88	793.01	0.415	0.00	793.01	0.000
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	419.62	850.76	0.493	0.00	850.76	0.000
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	512.71	908.95	0.564	0.00	908.95	0.000
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	588.89	955.70	0.616	0.00	955.70	0.000
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	709.29	1533.88	0.462	0.00	1533.88	0.000
L11	111 - 106 (11)	TP32.065x30.867x0.3438	827.82	1636.61	0.506	0.00	1636.61	0.000
L12	106 - 101 (12)	TP33.2631x32.065x0.3438	948.85	1740.90	0.545	0.00	1740.90	0.000
L13	101 - 96 (13)	TP34.4611x33.2631x0.3438	1072.40	1846.58	0.581	0.00	1846.58	0.000
L14	96 - 91 (14)	TP35.6591x34.4611x0.3438	1198.47	1953.47	0.614	0.00	1953.47	0.000
L15	91 - 86 (15)	TP36.8571x35.6591x0.3438	1327.08	2061.39	0.644	0.00	2061.39	0.000
L16	86 - 85.75 (16)	TP36.917x36.8571x0.5125	1333.58	3264.29	0.409	0.00	3264.29	0.000
L17	85.75 - 81 (17)	TP38.0551x36.917x0.5063	1458.68	3432.41	0.425	0.00	3432.41	0.000
L18	81 - 80.75 (18)	TP38.115x38.0551x0.3438	1465.33	2175.63	0.674	0.00	2175.63	0.000
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.3438	1471.99	2181.08	0.675	0.00	2181.08	0.000
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.3438	1512.08	2213.88	0.683	0.00	2213.88	0.000
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.4063	1695.84	2892.72	0.586	0.00	2892.72	0.000
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.4063	1835.24	3040.65	0.604	0.00	3040.65	0.000
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.4063	1977.18	3190.03	0.620	0.00	3190.03	0.000
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.4063	2121.64	3340.67	0.635	0.00	3340.67	0.000
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.4063	2268.59	3492.39	0.650	0.00	3492.39	0.000
L26	52.25 - 49.33 (26)	TP44.9684x44.2675x0.4063	2355.55	3581.43	0.658	0.00	3581.43	0.000

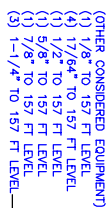
Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L27	49.33 - 49.08 (27)	TP45.0284x44.9684x0.4063	2363.03	3589.07	0.658	0.00	3589.07	0.000
L28	49.08 - 44.08 (28)	TP46.2286x45.0284x0.4063	2513.96	3742.17	0.672	0.00	3742.17	0.000
L29	44.08 - 36.3333 (29)	TP48.088x46.2286x0.4063	2546.88	3775.32	0.675	0.00	3775.32	0.000
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.4375	2784.28	4338.89	0.642	0.00	4338.89	0.000
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.4375	2881.46	4447.88	0.648	0.00	4447.88	0.000
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.4375	2889.38	4456.73	0.648	0.00	4456.73	0.000
L33	32 - 27 (33)	TP49.5171x48.3165x0.4375	3048.79	4634.23	0.658	0.00	4634.23	0.000
L34	27 - 22 (34)	TP50.7176x49.5171x0.4375	3210.32	4812.40	0.667	0.00	4812.40	0.000
L35	22 - 17 (35)	TP51.9181x50.7176x0.4375	3373.99	4991.10	0.676	0.00	4991.10	0.000
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.4375	3423.52	5044.77	0.679	0.00	5044.77	0.000
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.4375	3431.79	5053.73	0.679	0.00	5053.73	0.000
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.4375	3448.36	5071.63	0.680	0.00	5071.63	0.000
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.4375	3456.64	5080.58	0.680	0.00	5080.58	0.000
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.4375	3623.58	5259.71	0.689	0.00	5259.71	0.000
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.4375	3792.73	5438.90	0.697	0.00	5438.90	0.000
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	3946.87	5600.07	0.705	0.00	5600.07	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 155 (1)	TP20.801x19.6x0.25	4.37	609.71	0.007	0.24	1035.13	0.000
L2	155 - 150 (2)	TP22.0021x20.801x0.25	5.51	645.35	0.009	0.24	1160.17	0.000
L3	150 - 145 (3)	TP23.2031x22.0021x0.25	11.03	669.41	0.016	0.53	1270.38	0.000
L4	145 - 140 (4)	TP24.4041x23.2031x0.25	11.48	692.15	0.017	0.53	1382.76	0.000
L5	140 - 135 (5)	TP25.6051x24.4041x0.25	17.46	713.67	0.024	0.01	1497.13	0.000
L6	135 - 130 (6)	TP26.8062x25.6051x0.25	17.92	733.97	0.024	0.01	1613.11	0.000
L7	130 - 125 (7)	TP28.0072x26.8062x0.25	18.39	753.04	0.024	0.01	1730.34	0.000
L8	125 - 120 (8)	TP29.2082x28.0072x0.25	18.86	770.90	0.024	0.01	1848.46	0.000
L9	120 - 111.333 (9)	TP31.29x29.2082x0.25	19.25	784.30	0.025	0.01	1943.35	0.000
L10	111.333 - 111 (10)	TP30.867x29.669x0.3438	23.46	1237.43	0.019	0.01	3122.08	0.000
L11	111 - 106 (11)	TP32.065x30.867x0.3438	23.96	1269.90	0.019	0.01	3330.69	0.000
L12	106 - 101 (12)	TP33.2631x32.065x0.3438	24.47	1301.16	0.019	0.01	3542.47	0.000
L13	101 - 96 (13)	TP34.4611x33.2631x0.3438	24.97	1331.20	0.019	0.01	3757.06	0.000
L14	96 - 91 (14)	TP35.6591x34.4611x0.3438	25.48	1360.02	0.019	0.01	3974.08	0.000
L15	91 - 86 (15)	TP36.8571x35.6591x0.3438	25.99	1387.63	0.019	0.01	4193.19	0.000
L16	86 - 85.75 (16)	TP36.917x36.8571x0.5125	26.01	2214.12	0.012	0.01	6650.43	0.000
L17	85.75 - 81 (17)	TP38.0551x36.917x0.5063	26.61	2255.87	0.012	0.17	6991.55	0.000
L18	81 - 80.75 (18)	TP38.115x38.0551x0.3438	26.63	1415.31	0.019	0.17	4425.08	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L19	80.75 - 80.5 (19)	TP38.1749x38.115x0.343 8	26.66	1416.60	0.019	0.17	4436.17	0.000
L20	80.5 - 73.25 (20)	TP39.912x38.1749x0.343 8	26.82	1424.24	0.019	0.17	4502.73	0.000
L21	73.25 - 72.25 (21)	TP39.467x37.8468x0.406 3	27.64	1822.03	0.015	0.17	5886.18	0.000
L22	72.25 - 67.25 (22)	TP40.6671x39.467x0.406 3	28.15	1857.54	0.015	0.17	6186.55	0.000
L23	67.25 - 62.25 (23)	TP41.8673x40.6671x0.40 63	28.66	1891.84	0.015	0.17	6489.84	0.000
L24	62.25 - 57.25 (24)	TP43.0674x41.8673x0.40 63	29.16	1924.92	0.015	0.17	6795.67	0.000
L25	57.25 - 52.25 (25)	TP44.2675x43.0674x0.40 63	29.65	1956.77	0.015	0.17	7103.69	0.000
L26	52.25 - 49.33 (26)	TP44.9684x44.2675x0.40 63	29.94	1974.81	0.015	0.17	7284.44	0.000
L27	49.33 - 49.08 (27)	TP45.0284x44.9684x0.40 63	29.95	1976.34	0.015	0.17	7299.94	0.000
L28	49.08 - 44.08 (28)	TP46.2286x45.0284x0.40 63	30.44	2006.20	0.015	0.17	7610.74	0.000
L29	44.08 - 36.3333 (29)	TP48.088x46.2286x0.406 3	30.54	2012.49	0.015	0.17	7678.04	0.000
L30	36.3333 - 35.3333 (30)	TP47.5161x45.6753x0.43 75	31.40	2264.99	0.014	0.17	8825.58	0.000
L31	35.3333 - 32.25 (31)	TP48.2565x47.5161x0.43 75	31.67	2285.62	0.014	0.17	9046.83	0.000
L32	32.25 - 32 (32)	TP48.3165x48.2565x0.43 75	31.68	2287.27	0.014	0.17	9064.83	0.000
L33	32 - 27 (33)	TP49.5171x48.3165x0.43 75	32.11	2319.67	0.014	0.17	9425.17	0.000
L34	27 - 22 (34)	TP50.7176x49.5171x0.43 75	32.54	2350.84	0.014	0.17	9786.83	0.000
L35	22 - 17 (35)	TP51.9181x50.7176x0.43 75	32.97	2380.80	0.014	0.17	10149.50	0.000
L36	17 - 15.5 (36)	TP52.2783x51.9181x0.43 75	33.11	2389.54	0.014	0.17	10258.50	0.000
L37	15.5 - 15.25 (37)	TP52.3383x52.2783x0.43 75	33.11	2390.99	0.014	0.17	10276.67	0.000
L38	15.25 - 14.75 (38)	TP52.4584x52.3383x0.43 75	33.16	2393.88	0.014	0.17	10313.00	0.000
L39	14.75 - 14.5 (39)	TP52.5184x52.4584x0.43 75	33.18	2395.32	0.014	0.17	10331.17	0.000
L40	14.5 - 9.5 (40)	TP53.719x52.5184x0.437 5	33.63	2423.44	0.014	0.17	10694.75	0.000
L41	9.5 - 4.5 (41)	TP54.9195x53.719x0.437 5	34.07	2450.34	0.014	0.17	11058.42	0.000
L42	4.5 - 0 (42)	TP56x54.9195x0.4375	34.47	2473.51	0.014	0.17	11385.50	0.000

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 116 FT LEVEL
(12) 1-5/8" TO 116 FT LEVEL

—CLIMBING PEGS
W/ SAFETY CLIMB

(PROPOSED EQUIPMENT CONFIGURATION)
(2) 3/8" TO 149 FT LEVEL
(4) 5/8" TO 149 FT LEVEL
(12) 1-5/8" TO 149 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(13) 1-5/8" TO 139 FT LEVEL

CROWN REGION ADDRESS

USA

MR
BM
EAN
DME
RGM
DM
WJT
SMN
SB

2.7	05/07/16	UPDATED PER WORK ORDER	1284484
2.8	08/12/16	UPDATED PER WORK ORDER	1325448
2.8	11/01/17	UPDATED PER WORK ORDER	1348614
3.0	14/06/17	UPDATED PER WORK ORDER	1418961
3.2	16/06/17	UPDATED PER WORK ORDER	1419961
3.3	15/11/17	UPDATED PER WORK ORDER	1454495
3.3	18/12/17	UPDATED PER WORK ORDER	1503580
3.3	19/03/18	UPDATED PER WORK ORDER	1525361
3.6	29/08/18	UPDATED PER WORK ORDER	1624991

DRAWN BY: CDR
CHECKED BY: SL
DRAWING DATE: 15/07/05

SITE NUMBER:

NAME:

SITE NAME

BRG 2044 (A) 943097

BUSINESS UNIT NUMBER

806953

SITE ADDRESS

69 GUINEA ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY
USA

EST TITLE

BASE LEVEL

SHEET NUMBER

BASE LEVEL DRAWING

BUSINESS UNIT: 806953 TOWER ID: C_BASELEVEL

NOT TO SCALE

A1-0

Xref R:\Standards - JRE\CAO Standards V3.0\Templates\Typical Blocks For Templates\TITLE BLOCK STD-VER 5.1.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	160	48.6667	4.6667	12	19.6	31.29	0.25	Auto	A572-65
2	116	42.75	5.75	12	29.67	39.912	0.34375	Auto	A572-65
3	79	42.6667	6.6667	12	37.85	48.088	0.40625	Auto	A572-65
4	43	43	0	12	45.68	56	0.4375	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	15.5	plate	MK SR1	3			x				x				x	
2	78.25	80.75	plate	MK SR2	3	x				x				x			
3	14.75	32.25	plate	CCI-AFP-060100	3		x				x				x		
4	32.25	49.33	plate	CCI-AFP-060100	3		x				x			x			
5	81	86	plate	CCI-AFP-060100	3		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	4	0.75	3	0.375	15,000	15,000	15,000	2.063	1.1875	A572-65
2	4	0.75	3	0.375	15,000	15,000	15,000	2.063	1.1875	A572-65
3	6	1	6	0.5	30,000	30,000	16,000	4.750	1.1875	A572-65
4	6	1	6	0.5	30,000	30,000	16,000	4.750	1.1875	A572-65
5	6	1	6	0.5	30,000	30,000	16,000	4.750	1.1875	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	160 - 155	5		12	19.600	20.801	0.25	A572-65	1.000
2	155 - 150	5		12	20.801	22.002	0.25	A572-65	1.000
3	150 - 145	5		12	22.002	23.203	0.25	A572-65	1.000
4	145 - 140	5		12	23.203	24.404	0.25	A572-65	1.000
5	140 - 135	5		12	24.404	25.605	0.25	A572-65	1.000
6	135 - 130	5		12	25.605	26.806	0.25	A572-65	1.000
7	130 - 125	5		12	26.806	28.007	0.25	A572-65	1.000
8	125 - 120	5		12	28.007	29.208	0.25	A572-65	1.000
9	120 - 116	8.6667	4.6667	12	29.208	31.290	0.25	A572-65	1.000
10	116 - 111	5		12	29.669	30.867	0.34375	A572-65	1.000
11	111 - 106	5		12	30.867	32.065	0.34375	A572-65	1.000
12	106 - 101	5		12	32.065	33.263	0.34375	A572-65	1.000
13	101 - 96	5		12	33.263	34.461	0.34375	A572-65	1.000
14	96 - 91	5		12	34.461	35.659	0.34375	A572-65	1.000
15	91 - 86	5		12	35.659	36.857	0.34375	A572-65	1.000
16	86 - 85.75	0.25		12	36.857	36.917	0.5125	A572-65	0.974
17	85.75 - 81	4.75		12	36.917	38.055	0.50625	A572-65	0.976
18	81 - 80.75	0.25		12	38.055	38.115	0.34375	A572-65	1.000
19	80.75 - 80.5	0.25		12	38.115	38.175	0.34375	A572-65	1.000
20	80.5 - 79	7.25	5.75	12	38.175	39.912	0.34375	A572-65	1.000
21	79 - 72.25	6.75		12	37.847	39.467	0.40625	A572-65	1.000
22	72.25 - 67.25	5		12	39.467	40.667	0.40625	A572-65	1.000
23	67.25 - 62.25	5		12	40.667	41.867	0.40625	A572-65	1.000
24	62.25 - 57.25	5		12	41.867	43.067	0.40625	A572-65	1.000
25	57.25 - 52.25	5		12	43.067	44.268	0.40625	A572-65	1.000
26	52.25 - 49.33	2.92		12	44.268	44.968	0.40625	A572-65	1.000
27	49.33 - 49.08	0.25		12	44.968	45.028	0.40625	A572-65	1.000
28	49.08 - 44.08	5		12	45.028	46.229	0.40625	A572-65	1.000
29	44.08 - 43	7.7467	6.6667	12	46.229	48.088	0.40625	A572-65	1.000
30	43 - 35.3333	7.6667		12	45.675	47.516	0.4375	A572-65	1.000
31	35.3333 - 32.25	3.0833		12	47.516	48.256	0.4375	A572-65	1.000
32	32.25 - 32	0.25		12	48.256	48.317	0.4375	A572-65	1.000
33	32 - 27	5		12	48.317	49.517	0.4375	A572-65	1.000
34	27 - 22	5		12	49.517	50.718	0.4375	A572-65	1.000
35	22 - 17	5		12	50.718	51.918	0.4375	A572-65	1.000
36	17 - 15.5	1.5		12	51.918	52.278	0.4375	A572-65	1.000
37	15.5 - 15.25	0.25		12	52.278	52.338	0.4375	A572-65	1.000
38	15.25 - 14.75	0.5		12	52.338	52.458	0.4375	A572-65	1.000
39	14.75 - 14.5	0.25		12	52.458	52.518	0.4375	A572-65	1.000
40	14.5 - 9.5	5		12	52.518	53.719	0.4375	A572-65	1.000
41	9.5 - 4.5	5		12	53.719	54.920	0.4375	A572-65	1.000
42	4.5 - 0	4.5		12	54.920	56.000	0.4375	A572-65	1.000

TNX Section Forces

Increment (ft): 5		TNX Output		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	160 - 155	2.84	11.93	4.37
2	155 - 150	3.77	37.70	5.51
3	150 - 145	7.42	92.83	11.03
4	145 - 140	7.89	149.08	11.48
5	140 - 135	11.38	240.47	17.46
6	135 - 130	12.04	328.88	17.92
7	130 - 125	12.73	419.62	18.39
8	125 - 120	13.45	512.71	18.86
9	120 - 116	14.08	588.89	19.25
10	116 - 111	18.16	709.30	23.46
11	111 - 106	19.19	827.82	23.96
12	106 - 101	20.27	948.85	24.47
13	101 - 96	21.38	1072.40	24.97
14	96 - 91	22.52	1198.47	25.48
15	91 - 86	23.69	1327.08	25.99
16	86 - 85.75	23.78	1333.58	26.01
17	85.75 - 81	25.30	1458.68	26.61
18	81 - 80.75	25.37	1465.33	26.63
19	80.75 - 80.5	25.43	1471.99	26.66
20	80.5 - 79	25.78	1512.08	26.82
21	79 - 72.25	28.60	1695.84	27.64
22	72.25 - 67.25	30.03	1835.24	28.15
23	67.25 - 62.25	31.48	1977.18	28.66
24	62.25 - 57.25	32.98	2121.64	29.16
25	57.25 - 52.25	34.50	2268.59	29.65
26	52.25 - 49.33	35.41	2355.55	29.94
27	49.33 - 49.08	35.50	2363.03	29.95
28	49.08 - 44.08	37.08	2513.96	30.44
29	44.08 - 43	37.42	2546.87	30.54
30	43 - 35.3333	41.63	2784.28	31.40
31	35.3333 - 32.25	42.70	2881.46	31.67
32	32.25 - 32	42.80	2889.37	31.68
33	32 - 27	44.56	3048.79	32.11
34	27 - 22	46.37	3210.32	32.54
35	22 - 17	48.22	3374.00	32.97
36	17 - 15.5	48.77	3423.52	33.11
37	15.5 - 15.25	48.88	3431.79	33.11
38	15.25 - 14.75	49.07	3448.36	33.16
39	14.75 - 14.5	49.16	3456.65	33.18
40	14.5 - 9.5	51.05	3623.59	33.63
41	9.5 - 4.5	52.99	3792.73	34.07
42	4.5 - 0	54.76	3946.87	34.47

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20.801x19.6x0.25	Pole	2.6%	Pass
155 - 150	Pole	TP22.002x20.801x0.25	Pole	6.9%	Pass
150 - 145	Pole	TP23.203x22.002x0.25	Pole	15.4%	Pass
145 - 140	Pole	TP24.404x23.203x0.25	Pole	22.5%	Pass
140 - 135	Pole	TP25.605x24.404x0.25	Pole	33.4%	Pass
135 - 130	Pole	TP26.806x25.605x0.25	Pole	42.2%	Pass
130 - 125	Pole	TP28.007x26.806x0.25	Pole	50.1%	Pass
125 - 120	Pole	TP29.208x28.007x0.25	Pole	57.2%	Pass
120 - 116	Pole	TP31.29x29.208x0.25	Pole	62.4%	Pass
116 - 111	Pole	TP30.867x29.669x0.3438	Pole	46.9%	Pass
111 - 106	Pole	TP32.065x30.867x0.3438	Pole	51.2%	Pass
106 - 101	Pole	TP33.263x32.065x0.3438	Pole	55.2%	Pass
101 - 96	Pole	TP34.461x33.263x0.3438	Pole	58.8%	Pass
96 - 91	Pole	TP35.659x34.461x0.3438	Pole	62.0%	Pass
91 - 86	Pole	TP36.857x35.659x0.3438	Pole	65.1%	Pass
86 - 85.75	Pole + Reinf.	TP36.917x36.857x0.5125	Reinf. 5 Tension Rupture	63.4%	Pass
85.75 - 81	Pole + Reinf.	TP38.055x36.917x0.5063	Reinf. 5 Tension Rupture	65.8%	Pass
81 - 80.75	Pole	TP38.115x38.055x0.3438	Pole	68.1%	Pass
80.75 - 80.5	Pole	TP38.175x38.115x0.3438	Pole	68.2%	Pass
80.5 - 79	Pole	TP39.912x38.175x0.3438	Pole	69.1%	Pass
79 - 72.25	Pole	TP39.467x37.847x0.4063	Pole	59.3%	Pass
72.25 - 67.25	Pole	TP40.667x39.467x0.4063	Pole	61.0%	Pass
67.25 - 62.25	Pole	TP41.867x40.667x0.4063	Pole	62.7%	Pass
62.25 - 57.25	Pole	TP43.067x41.867x0.4063	Pole	64.2%	Pass
57.25 - 52.25	Pole	TP44.268x43.067x0.4063	Pole	65.7%	Pass
52.25 - 49.33	Pole	TP44.968x44.268x0.4063	Pole	66.5%	Pass
49.33 - 49.08	Pole	TP45.028x44.968x0.4063	Pole	66.6%	Pass
49.08 - 44.08	Pole	TP46.229x45.028x0.4063	Pole	67.9%	Pass
44.08 - 43	Pole	TP48.088x46.229x0.4063	Pole	68.2%	Pass
43 - 35.33	Pole	TP47.516x45.675x0.4375	Pole	64.9%	Pass
35.33 - 32.25	Pole	TP48.256x47.516x0.4375	Pole	65.6%	Pass
32.25 - 32	Pole	TP48.317x48.256x0.4375	Pole	65.6%	Pass
32 - 27	Pole	TP49.517x48.317x0.4375	Pole	66.6%	Pass
27 - 22	Pole	TP50.718x49.517x0.4375	Pole	67.5%	Pass
22 - 17	Pole	TP51.918x50.718x0.4375	Pole	68.5%	Pass
17 - 15.5	Pole	TP52.278x51.918x0.4375	Pole	68.7%	Pass
15.5 - 15.25	Pole	TP52.338x52.278x0.4375	Pole	68.8%	Pass
15.25 - 14.75	Pole	TP52.458x52.338x0.4375	Pole	68.9%	Pass
14.75 - 14.5	Pole	TP52.518x52.458x0.4375	Pole	68.9%	Pass
14.5 - 9.5	Pole	TP53.719x52.518x0.4375	Pole	69.8%	Pass
9.5 - 4.5	Pole	TP54.92x53.719x0.4375	Pole	70.6%	Pass
4.5 - 0	Pole	TP56x54.92x0.4375	Pole	71.4%	Pass
				Summary	
			Pole	71.4%	Pass
			Reinforcement	65.8%	Pass
			Overall	71.4%	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
160 - 155	893	n/a	893	16.52	n/a	16.52	2.6%					
155 - 150	1059	n/a	1059	17.49	n/a	17.49	6.9%					
150 - 145	1244	n/a	1244	18.45	n/a	18.45	15.4%					
145 - 140	1450	n/a	1450	19.42	n/a	19.42	22.5%					
140 - 135	1677	n/a	1677	20.38	n/a	20.38	33.4%					
135 - 130	1927	n/a	1927	21.35	n/a	21.35	42.2%					
130 - 125	2200	n/a	2200	22.31	n/a	22.31	50.1%					
125 - 120	2499	n/a	2499	23.28	n/a	23.28	57.2%					
120 - 116	2756	n/a	2756	24.05	n/a	24.05	62.4%					
116 - 111	4023	n/a	4023	33.74	n/a	33.74	46.9%					
111 - 106	4516	n/a	4516	35.06	n/a	35.06	51.2%					
106 - 101	5047	n/a	5047	36.39	n/a	36.39	55.2%					
101 - 96	5618	n/a	5618	37.71	n/a	37.71	58.8%					
96 - 91	6231	n/a	6231	39.03	n/a	39.03	62.0%					
91 - 86	6887	n/a	6887	40.36	n/a	40.36	65.1%					
86 - 85.75	6921	3263	10183	40.42	18.00	58.42	42.9%					63.4%
85.75 - 81	7587	3460	11047	41.68	18.00	59.68	45.2%					65.8%
81 - 80.75	7623	n/a	7623	41.75	n/a	41.75	68.1%					
80.75 - 80.5	7660	n/a	7660	41.81	n/a	41.81	68.2%					
80.5 - 79	7880	n/a	7880	42.21	n/a	42.21	69.1%					
79 - 72.25	9964	n/a	9964	51.02	n/a	51.02	59.3%					
72.25 - 67.25	10911	n/a	10911	52.59	n/a	52.59	61.0%					
67.25 - 62.25	11916	n/a	11916	54.16	n/a	54.16	62.7%					
62.25 - 57.25	12981	n/a	12981	55.73	n/a	55.73	64.2%					
57.25 - 52.25	14108	n/a	14108	57.29	n/a	57.29	65.7%					
52.25 - 49.33	14795	n/a	14795	58.21	n/a	58.21	66.5%					
49.33 - 49.08	14855	n/a	14855	58.29	n/a	58.29	66.6%					
49.08 - 44.08	16086	n/a	16086	59.86	n/a	59.86	67.9%					
44.08 - 43	16361	n/a	16361	60.19	n/a	60.19	68.2%					
43 - 35.33	18788	n/a	18788	66.23	n/a	66.23	64.9%					
35.33 - 32.25	19688	n/a	19688	67.27	n/a	67.27	65.6%					
32.25 - 32	19762	n/a	19762	67.35	n/a	67.35	65.6%					
32 - 27	21287	n/a	21287	69.04	n/a	69.04	66.6%					
27 - 22	22887	n/a	22887	70.73	n/a	70.73	67.5%					
22 - 17	24566	n/a	24566	72.42	n/a	72.42	68.5%					
17 - 15.5	25085	n/a	25085	72.93	n/a	72.93	68.7%					
15.5 - 15.25	25172	n/a	25172	73.01	n/a	73.01	68.8%					
15.25 - 14.75	25348	n/a	25348	73.18	n/a	73.18	68.9%					
14.75 - 14.5	25435	n/a	25435	73.26	n/a	73.26	68.9%					
14.5 - 9.5	27235	n/a	27235	74.95	n/a	74.95	69.8%					
9.5 - 4.5	29118	n/a	29118	76.64	n/a	76.64	70.6%					
4.5 - 0	30885	n/a	30885	78.16	n/a	78.16	71.4%					

Note: Section capacity checked in 5 degree increments.

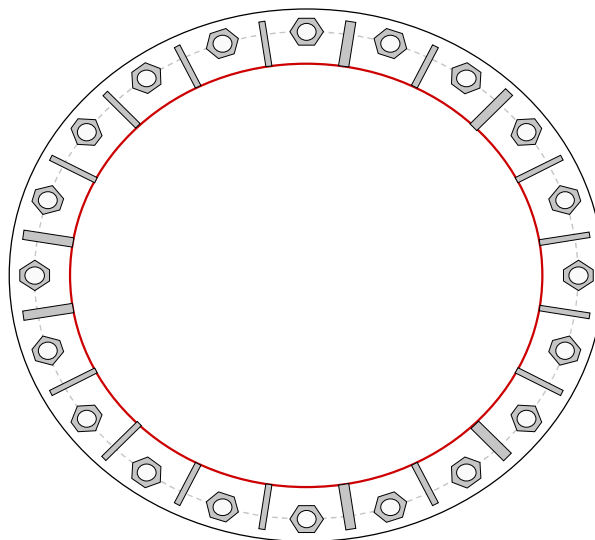
Monopole Base Plate Connection



Site Info	
BU #	806953
Site Name	BRG 2044 (A) 943097
Order #	457269 Rev. 0

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
I_{ar} (in)	1
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	3946.87
Axial Force (kips)	54.76
Shear Force (kips)	34.47



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(20) 2-1/4" $\varnothing$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 64.48" BC		$P_u = 149.57$	$\phi P_n = 260$ Stress Rating
		$V_u = 1.72$	$\phi V_n = n/a$ 58.9%
		$M_u = n/a$	$\phi M_n = n/a$ Pass
Base Plate Data		Base Plate Summary	
70.48" OD x 2.75" Plate (A-633; $F_y=60$ ksi, $F_u=80$ ksi)		Max Stress (ksi):	17.26 (Roark's Flexural)
		Allowable Stress (ksi):	54
		Stress Rating:	32.0% Pass
Stiffener Data		Stiffener Summary	
Group 1: (14) 20"H x 6"W x 0.75"T, Notch: 0.75"		Horizontal Weld:	45.8% Pass
plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi		Vertical Weld:	31.9% Pass
horiz. weld: 0.375" groove, 45° dbl bevel, 0.375" fillet		Plate Flexure+Shear:	9.7% Pass
vert. weld: 0.3125" fillet		Plate Tension+Shear:	46.7% Pass
Group 2: (6) 64"H x 6"W x 1.25"T, Notch: 0.625" horiz. x 0.75" vert.		Plate Compression:	45.3% Pass
plate: $F_y=65$ ksi ; weld: $F_y=80$ ksi		Pole Summary	
horiz. weld: 0.625" groove, 45° dbl bevel, 0.625" fillet		Punching Shear:	6.3% Pass
vert. weld: 0.375" fillet			
Pole Data			
56" x 0.4375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)			

Pier and Pad Foundation



BU # : 806953
 Site Name: BRG 2044 (A) 943097
 App. Number: 457269 Rev. 0

TIA-222 Revision: G
 Tower Type: Monopole

Block Foundation?: ☒

Superstructure Analysis Reactions		
Compression, P_{comp} :	55	kips
Base Shear, V_u_{comp} :	34	kips
Moment, M_u :	3947	ft-kips
Tower Height, H :	160	ft
BP Dist. Above Fdn, bp_{dist} :	0	in
Bolt Circle / Bearing Plate Width, BC :	64.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	193.35	34.00	17.6%	Pass
Bearing Pressure (ksf)	30.34	2.43	8.0%	Pass
Overturning (kip*ft)	6311.82	4117.00	65.2%	Pass
Pad Flexure (kip*ft)	3525.71	1894.24	53.7%	Pass
Pad Shear - 1-way (kips)	1642.74	219.33	13.4%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.190	0.002	1.1%	Pass

Soil Rating:	65.2%
Structural Rating:	53.7%

Pad Properties		
Depth, D :	3.5	ft
Pad Width, W :	26	ft
Pad Thickness, T :	5	ft
Pad Rebar Size, Sp :	8	
Pad Rebar Quantity, mp :	18	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	4000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	130	pcf
Ultimate Net Bearing, Q_{net} :	40.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	40	degrees
SPT Blow Count, N_{blows} :	100	
Base Friction, μ :	0.5	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	None	ft

<--Toggle between Gross and Net