



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

April 18, 2023

Domenica Tatasciore
Site Acquisition Specialist
Crown Castle
1800 W. Park Drive
Westborough, MA 01581
Domenica.Tasciore@Crowncastle.com

RE: **EM-ATT-109-230406** - AT&T notice of intent to modify an existing telecommunications facility located at 954 Norwich Road, Plainfield, Connecticut.

Dear Domenica Tatasciore:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 18, 2023 submitted in response to the Council's April 17, 2023 notification 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 Bachman
Executive Director

MAB/ANM/laf

From: Tatasciore, Domenica <Domenica.Tatasciore@crowncastle.com>
Sent: Tuesday, April 18, 2023 7:16 AM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>; Chapman, Veronica <Veronica.Chapman@crowncastle.com>
Subject: RE: EM-ATT-109-230406 (Norwich Rd)-Plainfield - Council Incomplete Letter

Good morning Lisa,

I received your email with the incomplete notice that the SA does not contain the PE stamp. Please note that the SA does include the stamp, as shown in the clip below and per the attachment. Please advise if you need anything else on my end to render this application complete.

Date: February 13, 2023



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

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Site Number: CT5458
Site Name: PLAINFIELD SOUTH
FA Number: 10062031

Crown Castle Designation: **BU Number:** 876359
Site Name: NORWICH
JDE Job Number: 726267
Work Order Number: 2203149
Order Number: 627245 Rev. 1

Engineering Firm Designation: Crown Castle Project Number: 2203149

Site Data: 954 Norwich Road, Plainfield, Windham County, CT
Latitude 41° 39' 31.46", Longitude -71° 55' 29.75"
130 Foot - Monopole Tower

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

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

LC7: Proposed Equipment Configuration

Sufficient Capacity - 80.7%

This analysis has been performed in accordance with the 2022 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 124 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Emma McCarty

Respectfully submitted by:

 Digitally signed by Maham Barmani
Date: 2023.02.14 15:51:51

Maham Barmani, P.E.
Senior Project Engineer



tnxTower Report - version 8.1.1.0

Take care,

DOMENICA TATASCIORE
Site Acquisition Specialist
T: 508-621-9161

CROWN CASTLE
1800 West Park Drive, Westborough, MA 01581
CrownCastle.com

Date: **February 13, 2023**



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

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Structural analysis prepared by: Emma McCarty

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

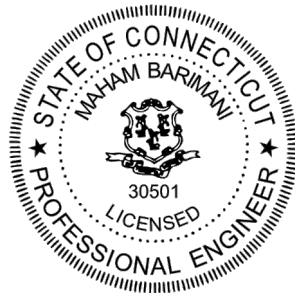


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1) INTRODUCTION

This tower is a 130 ft Monopole tower designed by Summit.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	124 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
114.0	115.0	6	cci antennas	OPA65R-BU8D w/ Mount Pipe	2 4 6	3/8 3/4 1-1/4
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	ericsson	RADIO 8843 B2/B66A_CCIV3		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS-32 B30		
		1	raycap	DC6-48-60-18-8F		
	1	raycap	DC6-48-60-18-8F_CCIV2			
	114.0	1	Sitepro1	RMQLP-4126-HK		

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)
130.0	130.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 1201-1_KCKR-HR-1]		
116.0	116.0	3	ericsson	RRUS-11	-	-
		3	ericsson	RRUS12/RRUS A2		
		1	tower mounts	Side Arm Mount [SO 102-3]		
104.0	104.0	6	commscope	NHH-65B-R2B	1	1-5/8
		1	raycap	RVZDC-6627-PF-48_CCIV2		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		1	Site Pro 1	Hand Rail Kit[#F3P-HRK12]		
		3	commscope	Side by Side Mounting Kit [BSAMNT-SBS-1-2]		
		1	Site Pro 1	12' Tri-Cornered Telescoping Platform[#F3P-12]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1616503	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1616546	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1446983	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	130 - 83	Pole	TP26.06x16x0.25	1	-17.04	1241.83	71.7	Pass
L2	83 - 43.25	Pole	TP34.068x24.8644x0.3125	2	-23.44	2030.16	80.7	Pass
L3	43.25 - 0	Pole	TP42.7x32.5333x0.375	3	-34.66	3139.28	75.1	Pass
							Summary	
						Pole (L2)	80.7	Pass
						Rating =	80.7	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	68.9	Pass
1	Base Plate	0	63.6	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	70.0	Pass

Structure Rating (max from all components) =	80.7%
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Notes:

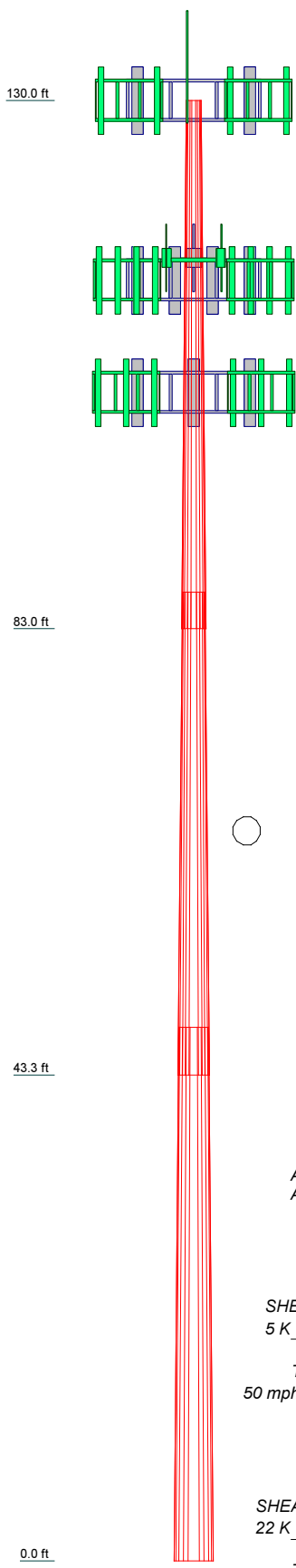
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Foundation capacity determined by comparing analysis reactions to original design reactions.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	14.2
Length (ft)	47.00	43.00	47.50	14.2
Number of Sides	12	12	12	14.2
Thickness (in)	0.2500	0.3125	0.3750	14.2
Socket Length (ft)	3.25	4.25	32.5333	14.2
Top Dia (in)	16.0000	24.8644	42.7000	14.2
Bot Dia (in)	26.0600	34.0680	42.7000	14.2
Grade	A607-65	A607-65	A607-65	14.2
Weight (K)	2.7	4.3	7.3	14.2

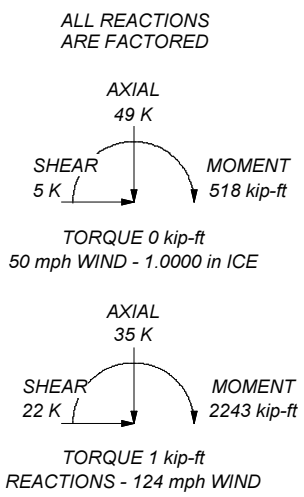


MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 124 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 80.7%



<p>Crown Castle The Pathway to Possible</p>	<p>2000 Corporate Drive Canonsburg, PA 15317</p>		<p>Job: BU# 876359</p>		
	<p>Phone: (724) 416-2000</p>		<p>Project:</p>		
	<p>FAX:</p>		<p>Client: Crown Castle</p>	<p>Drawn by: EMcCarty</p>	<p>App'd:</p>
	<p>Path: C:\WORK AREA\876359\IWO 2203149 - SAIProd\876359.er</p>		<p>Code: TIA-222-H</p>	<p>Date: 02/13/23</p>	<p>Scale: NTS</p>
			<p>Dwg No. E-1</p>		

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in Windham County, Connecticut.
- Tower base elevation above sea level: 182.00 ft.
- Basic wind speed of 124 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	130.00-83.00	47.00	3.25	12	16.0000	26.0600	0.2500	1.0000	A607-65 (65 ksi)
L2	83.00-43.25	43.00	4.25	12	24.8644	34.0680	0.3125	1.2500	A607-65 (65 ksi)
L3	43.25-0.00	47.50		12	32.5333	42.7000	0.3750	1.5000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	16.4762	12.6788	401.4426	5.6385	8.2880	48.4366	813.4316	6.2401	3.6180	14.472
	26.8911	20.7770	1766.6310	9.2400	13.4991	130.8705	3579.6733	10.2258	6.3141	25.256
L2	26.3514	24.7053	1900.8382	8.7896	12.8797	147.5836	3851.6135	12.1592	5.8261	18.644
	35.1596	33.9665	4939.9833	12.0845	17.6472	279.9298	10009.745	16.7173	8.2927	26.537
L3	34.4904	38.8312	5125.7082	11.5127	16.8523	304.1554	10386.074	19.1115	7.7139	20.57
	44.0740	51.1074	11685.949	15.1524	22.1186	528.3313	23678.901	25.1535	10.4386	27.836

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 130.00-83.00				1	1	1			
L2 83.00-43.25				1	1	1			
L3 43.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

Safety Line 3/8"	C	No	No	CaAa (Out Of Face)	130.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
Climbing Rungs	C	No	No	CaAa (Out Of Face)	130.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00

HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	130.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 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 plf

LDF6-50A(1-1/4)	A	No	No	Inside Pole	114.00 - 0.00	6	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
FB-L98B-002-XXX(3/8)	A	No	No	Inside Pole	114.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	114.00 - 0.00	4	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58

HFT1206-24SVL-XXX(1-5/8)	B	No	No	Inside Pole	104.00 - 0.00	1	No Ice	0.00	1.92
							1/2" Ice	0.00	1.92
							1" Ice	0.00	1.92

Feed Line/Linear Appurtenances Section Areas

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
L1	130.00-83.00	A	0.000	0.000	0.000	0.000	0.19
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.45
L2	83.00-43.25	A	0.000	0.000	0.000	0.000	0.24
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.38
L3	43.25-0.00	A	0.000	0.000	0.000	0.000	0.26
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.40

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	130.00-83.00	A	0.954	0.000	0.000	0.000	0.000	0.19
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.35
L2	83.00-43.25	A	0.906	0.000	0.000	0.000	0.000	0.24
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.30
L3	43.25-0.00	A	0.812	0.000	0.000	0.000	0.000	0.26
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.32

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	130.00-83.00	0.0000	0.0000	0.0000	0.0000
L2	83.00-43.25	0.0000	0.0000	0.0000	0.0000
L3	43.25-0.00	0.0000	0.0000	0.0000	0.0000

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft

Lightning Rod 3/4" x 6'	C	From Leg	0.00 0.00 3.00	0.0000	130.00
130 AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	130.00
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	130.00
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	130.00
Radio 4480_TMOV2	A	From Leg	4.00 0.00 0.00	0.0000	130.00
Radio 4480_TMOV2	C	From Leg	4.00 0.00 0.00	0.0000	130.00
Radio 4480_TMOV2	B	From Leg	4.00 0.00 0.00	0.0000	130.00
8' Mount Pipe [#P2.0 STD]	A	From Leg	4.00 0.00 0.00	0.0000	130.00
8' Mount Pipe [#P2.0 STD]	B	From Leg	4.00 0.00 0.00	0.0000	130.00
8' Mount Pipe [#P2.0 STD]	C	From Leg	4.00 0.00 0.00	0.0000	130.00
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00
Platform Mount [LP 1201-1_KCKR-HR-1] ****116****	C	None		0.0000	130.00
RRUS-11	A	From Leg	2.00 0.00 0.00	0.0000	116.00
RRUS-11	B	From Leg	2.00 0.00 0.00	0.0000	116.00
RRUS-11	C	From Leg	2.00 0.00 0.00	0.0000	116.00
RRUS12/RRUS A2	A	From Leg	2.00 0.00 0.00	0.0000	116.00
RRUS12/RRUS A2	B	From Leg	2.00 0.00 0.00	0.0000	116.00
RRUS12/RRUS A2	C	From Leg	2.00 0.00 0.00	0.0000	116.00
(2) 4' x 2" Pipe Mount	A	From Leg	2.00 0.00 0.00	0.0000	116.00
(2) 4' x 2" Pipe Mount	B	From Leg	2.00 0.00 0.00	0.0000	116.00
(2) 4' x 2" Pipe Mount	C	From Leg	2.00 0.00 0.00	0.0000	116.00
Side Arm Mount [SO 102-3] ****114****	C	None		0.0000	116.00
(2) OPA65R-BU8D w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	114.00
(2) OPA65R-BU8D w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	114.00
(2) OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	114.00
RADIO 8843 B2/B66A_CCIV3	A	From Leg	4.00 0.00 1.00	0.0000	114.00
RADIO 8843 B2/B66A_CCIV3	B	From Leg	4.00 0.00 1.00	0.0000	114.00
RADIO 8843 B2/B66A_CCIV3	C	From Leg	4.00 0.00 1.00	0.0000	114.00
RRUS 4449 B5/B12	A	From Leg	4.00 0.00 1.00	0.0000	114.00
RRUS 4449 B5/B12	B	From Leg	4.00 0.00 1.00	0.0000	114.00
RRUS 4449 B5/B12	C	From Leg	4.00 0.00 1.00	0.0000	114.00
RRUS 4478 B14_CCIV2	A	From Leg	4.00 0.00 1.00	0.0000	114.00
RRUS 4478 B14_CCIV2	B	From Leg	4.00	0.0000	114.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			1.00		
RRUS 4478 B14_CCIV2	C	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
RRUS-32 B30	A	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
RRUS-32 B30	B	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
RRUS-32 B30	C	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
DC6-48-60-18-8F_CCIV2	A	From Leg	4.00	0.0000	114.00
			0.00		
			1.00		
8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	114.00
			0.00		
			0.00		
8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	114.00
			0.00		
			0.00		
8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	114.00
			0.00		
			0.00		
Sitepro1 RMQLP-4126-HK ***104***	C	None		0.0000	114.00
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
(2) NHH-65B-R2B	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
(2) NHH-65B-R2B	B	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
(2) NHH-65B-R2B	C	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RFV01U-D1A	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RFV01U-D1A	B	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RFV01U-D1A	C	From Leg	4.00	0.0000	104.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			0.00		
RFV01U-D2A	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RFV01U-D2A	B	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RFV01U-D2A	C	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
RVZDC-6627-PF-48_CCIV2	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
12' Tri-Cornered Telescoping Platform[#F3P-12]	C	None		0.0000	104.00
Hand Rail Kit[#F3P-HRK12]	C	None		0.0000	104.00
Mounting Kit [BSAMNT-SBS-1-2]	A	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
Mounting Kit [BSAMNT-SBS-1-2]	B	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
Mounting Kit [BSAMNT-SBS-1-2]	C	From Leg	4.00	0.0000	104.00
			0.00		
			0.00		
			0.00		

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
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	130 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.02	0.05	1.36
			Max. Mx	20	-17.04	522.03	0.31
			Max. My	2	-17.04	0.11	522.89
			Max. Vy	20	-17.56	522.03	0.31
			Max. Vx	2	-17.59	0.11	522.89
			Max. Torque	8			1.05
L2	83 - 43.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.03	0.07	1.38
			Max. Mx	20	-23.44	1244.37	0.30
			Max. My	2	-23.44	0.22	1246.32
			Max. Vy	20	-19.70	1244.37	0.30
			Max. Vx	2	-19.73	0.22	1246.32
			Max. Torque	8			1.04
L3	43.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.25	0.09	1.37
			Max. Mx	20	-34.66	2239.30	0.24
			Max. My	2	-34.66	0.35	2242.50
			Max. Vy	20	-22.17	2239.30	0.24
			Max. Vx	2	-22.20	0.35	2242.50
			Max. Torque	8			1.03

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	49.25	0.00	4.96
	Max. H _x	20	34.68	22.13	0.00
	Max. H _z	2	34.68	0.00	22.16
	Max. M _x	2	2242.50	0.00	22.16
	Max. M _z	8	2238.60	-22.13	0.00
	Max. Torsion	8	1.03	-22.13	0.00
	Min. Vert	7	26.01	-19.17	11.08

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H _x	8	34.68	-22.13	0.00
	Min. H _z	14	34.68	0.00	-22.16
	Min. M _x	14	-2241.98	0.00	-22.16
	Min. M _z	20	-2239.30	22.13	0.00
	Min. Torsion	20	-1.03	22.13	0.00

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	28.90	0.00	0.00	-0.18	0.27	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	34.68	0.00	-22.16	-2242.50	0.35	-0.01
0.9 Dead+1.0 Wind 0 deg - No Ice	26.01	0.00	-22.16	-2199.50	0.26	-0.01
1.2 Dead+1.0 Wind 30 deg - No Ice	34.68	11.07	-19.20	-1942.11	-1119.13	-0.53
0.9 Dead+1.0 Wind 30 deg - No Ice	26.01	11.07	-19.20	-1904.85	-1097.78	-0.52
1.2 Dead+1.0 Wind 60 deg - No Ice	34.68	19.17	-11.08	-1121.38	-1938.65	-0.90
0.9 Dead+1.0 Wind 60 deg - No Ice	26.01	19.17	-11.08	-1099.84	-1901.61	-0.90
1.2 Dead+1.0 Wind 90 deg - No Ice	34.68	22.13	-0.00	-0.24	-2238.60	-1.03
0.9 Dead+1.0 Wind 90 deg - No Ice	26.01	22.13	-0.00	-0.17	-2195.82	-1.03
1.2 Dead+1.0 Wind 120 deg - No Ice	34.68	19.17	11.08	1120.89	-1938.63	-0.89
0.9 Dead+1.0 Wind 120 deg - No Ice	26.01	19.17	11.08	1099.49	-1901.59	-0.89
1.2 Dead+1.0 Wind 150 deg - No Ice	34.68	11.07	19.20	1941.60	-1119.11	-0.51
0.9 Dead+1.0 Wind 150 deg - No Ice	26.01	11.07	19.20	1904.49	-1097.77	-0.50
1.2 Dead+1.0 Wind 180 deg - No Ice	34.68	0.00	22.16	2241.98	0.35	0.01
0.9 Dead+1.0 Wind 180 deg - No Ice	26.01	0.00	22.16	2199.13	0.26	0.01
1.2 Dead+1.0 Wind 210 deg - No Ice	34.68	-11.07	19.20	1941.60	1119.82	0.53
0.9 Dead+1.0 Wind 210 deg - No Ice	26.01	-11.07	19.20	1904.49	1098.29	0.53
1.2 Dead+1.0 Wind 240 deg - No Ice	34.68	-19.17	11.08	1120.89	1939.33	0.90
0.9 Dead+1.0 Wind 240 deg - No Ice	26.01	-19.17	11.08	1099.49	1902.11	0.90
1.2 Dead+1.0 Wind 270 deg - No Ice	34.68	-22.13	-0.00	-0.24	2239.30	1.03
0.9 Dead+1.0 Wind 270 deg - No Ice	26.01	-22.13	-0.00	-0.17	2196.34	1.03
1.2 Dead+1.0 Wind 300 deg - No Ice	34.68	-19.17	-11.08	-1121.38	1939.35	0.89
0.9 Dead+1.0 Wind 300 deg - No Ice	26.01	-19.17	-11.08	-1099.84	1902.12	0.88
1.2 Dead+1.0 Wind 330 deg - No Ice	34.68	-11.07	-19.20	-1942.11	1119.84	0.50
0.9 Dead+1.0 Wind 330 deg - No Ice	26.01	-11.07	-19.20	-1904.85	1098.30	0.50
1.2 Dead+1.0 Ice+1.0 Temp	49.25	-0.00	-0.00	-1.37	0.09	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	49.25	-0.00	-4.96	-518.47	0.09	-0.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	49.25	2.48	-4.30	-449.21	-258.11	-0.11

Load Combination	Vertical	Shear _x	Shear _z	Overtuning Moment, M _x	Overtuning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	49.25	4.29	-2.48	-259.98	-447.12	-0.19
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	49.25	4.96	-0.00	-1.49	-516.30	-0.22
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	49.25	4.29	2.48	257.01	-447.12	-0.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	49.25	2.48	4.30	446.24	-258.11	-0.10
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	49.25	-0.00	4.96	515.50	0.09	0.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	49.25	-2.48	4.30	446.24	258.29	0.11
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	49.25	-4.29	2.48	257.01	447.31	0.19
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	49.25	-4.96	-0.00	-1.49	516.49	0.22
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	49.25	-4.29	-2.48	-259.98	447.31	0.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	49.25	-2.48	-4.30	-449.21	258.29	0.10
Dead+Wind 0 deg - Service	28.90	0.00	-4.89	-489.74	0.29	-0.00
Dead+Wind 30 deg - Service	28.90	2.44	-4.23	-424.16	-244.11	-0.12
Dead+Wind 60 deg - Service	28.90	4.23	-2.44	-244.99	-423.04	-0.21
Dead+Wind 90 deg - Service	28.90	4.88	-0.00	-0.21	-488.51	-0.24
Dead+Wind 120 deg - Service	28.90	4.23	2.44	244.55	-423.02	-0.20
Dead+Wind 150 deg - Service	28.90	2.44	4.23	423.74	-244.12	-0.12
Dead+Wind 180 deg - Service	28.90	0.00	4.89	489.31	0.29	0.00
Dead+Wind 210 deg - Service	28.90	-2.44	4.23	423.74	244.70	0.12
Dead+Wind 240 deg - Service	28.90	-4.23	2.44	244.55	423.61	0.21
Dead+Wind 270 deg - Service	28.90	-4.88	-0.00	-0.21	489.10	0.24
Dead+Wind 300 deg - Service	28.90	-4.23	-2.44	-244.99	423.62	0.20
Dead+Wind 330 deg - Service	28.90	-2.44	-4.23	-424.16	244.69	0.12

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	-28.90	0.00	0.00	28.90	0.00	0.000%
2	0.00	-34.68	-22.16	0.00	34.68	22.16	0.000%
3	0.00	-26.01	-22.16	0.00	26.01	22.16	0.000%
4	11.07	-34.68	-19.20	-11.07	34.68	19.20	0.000%
5	11.07	-26.01	-19.20	-11.07	26.01	19.20	0.000%
6	19.17	-34.68	-11.08	-19.17	34.68	11.08	0.000%
7	19.17	-26.01	-11.08	-19.17	26.01	11.08	0.000%
8	22.13	-34.68	0.00	-22.13	34.68	0.00	0.000%
9	22.13	-26.01	0.00	-22.13	26.01	0.00	0.000%
10	19.17	-34.68	11.08	-19.17	34.68	-11.08	0.000%
11	19.17	-26.01	11.08	-19.17	26.01	-11.08	0.000%
12	11.07	-34.68	19.20	-11.07	34.68	-19.20	0.000%
13	11.07	-26.01	19.20	-11.07	26.01	-19.20	0.000%
14	0.00	-34.68	22.16	0.00	34.68	-22.16	0.000%
15	0.00	-26.01	22.16	0.00	26.01	-22.16	0.000%
16	-11.07	-34.68	19.20	11.07	34.68	-19.20	0.000%
17	-11.07	-26.01	19.20	11.07	26.01	-19.20	0.000%
18	-19.17	-34.68	11.08	19.17	34.68	-11.08	0.000%
19	-19.17	-26.01	11.08	19.17	26.01	-11.08	0.000%
20	-22.13	-34.68	0.00	22.13	34.68	0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
21	-22.13	-26.01	0.00	22.13	26.01	0.00	0.000%
22	-19.17	-34.68	-11.08	19.17	34.68	11.08	0.000%
23	-19.17	-26.01	-11.08	19.17	26.01	11.08	0.000%
24	-11.07	-34.68	-19.20	11.07	34.68	19.20	0.000%
25	-11.07	-26.01	-19.20	11.07	26.01	19.20	0.000%
26	0.00	-49.25	0.00	0.00	49.25	0.00	0.000%
27	0.00	-49.25	-4.96	0.00	49.25	4.96	0.000%
28	2.48	-49.25	-4.30	-2.48	49.25	4.30	0.000%
29	4.29	-49.25	-2.48	-4.29	49.25	2.48	0.000%
30	4.96	-49.25	0.00	-4.96	49.25	0.00	0.000%
31	4.29	-49.25	2.48	-4.29	49.25	-2.48	0.000%
32	2.48	-49.25	4.30	-2.48	49.25	-4.30	0.000%
33	0.00	-49.25	4.96	0.00	49.25	-4.96	0.000%
34	-2.48	-49.25	4.30	2.48	49.25	-4.30	0.000%
35	-4.29	-49.25	2.48	4.29	49.25	-2.48	0.000%
36	-4.96	-49.25	0.00	4.96	49.25	0.00	0.000%
37	-4.29	-49.25	-2.48	4.29	49.25	2.48	0.000%
38	-2.48	-49.25	-4.30	2.48	49.25	4.30	0.000%
39	0.00	-28.90	-4.89	0.00	28.90	4.89	0.000%
40	2.44	-28.90	-4.23	-2.44	28.90	4.23	0.000%
41	4.23	-28.90	-2.44	-4.23	28.90	2.44	0.000%
42	4.88	-28.90	0.00	-4.88	28.90	0.00	0.000%
43	4.23	-28.90	2.44	-4.23	28.90	-2.44	0.000%
44	2.44	-28.90	4.23	-2.44	28.90	-4.23	0.000%
45	0.00	-28.90	4.89	0.00	28.90	-4.89	0.000%
46	-2.44	-28.90	4.23	2.44	28.90	-4.23	0.000%
47	-4.23	-28.90	2.44	4.23	28.90	-2.44	0.000%
48	-4.88	-28.90	0.00	4.88	28.90	0.00	0.000%
49	-4.23	-28.90	-2.44	4.23	28.90	2.44	0.000%
50	-2.44	-28.90	-4.23	2.44	28.90	4.23	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	0.00004267
3	Yes	5	0.00000001	0.00001203
4	Yes	6	0.00000001	0.00057711
5	Yes	6	0.00000001	0.00018294
6	Yes	6	0.00000001	0.00059276
7	Yes	6	0.00000001	0.00018876
8	Yes	5	0.00000001	0.00021855
9	Yes	5	0.00000001	0.00010307
10	Yes	6	0.00000001	0.00057274
11	Yes	6	0.00000001	0.00018145
12	Yes	6	0.00000001	0.00058779
13	Yes	6	0.00000001	0.00018699
14	Yes	5	0.00000001	0.00004265
15	Yes	5	0.00000001	0.00001203
16	Yes	6	0.00000001	0.00058842
17	Yes	6	0.00000001	0.00018716
18	Yes	6	0.00000001	0.00057290
19	Yes	6	0.00000001	0.00018146
20	Yes	5	0.00000001	0.00021860
21	Yes	5	0.00000001	0.00010309
22	Yes	6	0.00000001	0.00059293
23	Yes	6	0.00000001	0.00018877
24	Yes	6	0.00000001	0.00057774
25	Yes	6	0.00000001	0.00018310
26	Yes	4	0.00000001	0.00002470
27	Yes	5	0.00000001	0.00060434
28	Yes	5	0.00000001	0.00085114
29	Yes	5	0.00000001	0.00086131
30	Yes	5	0.00000001	0.00060113

31	Yes	5	0.00000001	0.00083669
32	Yes	5	0.00000001	0.00084591
33	Yes	5	0.00000001	0.00059685
34	Yes	5	0.00000001	0.00084697
35	Yes	5	0.00000001	0.00083702
36	Yes	5	0.00000001	0.00060147
37	Yes	5	0.00000001	0.00086158
38	Yes	5	0.00000001	0.00085213
39	Yes	4	0.00000001	0.00028977
40	Yes	4	0.00000001	0.00094481
41	Yes	5	0.00000001	0.00008466
42	Yes	4	0.00000001	0.00031709
43	Yes	4	0.00000001	0.00092151
44	Yes	5	0.00000001	0.00008190
45	Yes	4	0.00000001	0.00028825
46	Yes	5	0.00000001	0.00008229
47	Yes	4	0.00000001	0.00092342
48	Yes	4	0.00000001	0.00031790
49	Yes	5	0.00000001	0.00008483
50	Yes	4	0.00000001	0.00094931

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 83	25.272	39	1.7516	0.0033
L2	86.25 - 43.25	10.748	39	1.2651	0.0016
L3	47.5 - 0	3.049	39	0.6106	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	Lightning Rod 3/4" x 6'	39	25.272	1.7516	0.0033	26571
116.00	RRUS-11	39	20.262	1.6194	0.0027	9489
114.00	(2) OPA65R-BU8D w/ Mount Pipe	39	19.560	1.5996	0.0026	8303
104.00	MT6407-77A w/ Mount Pipe	39	16.155	1.4939	0.0022	5109

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 83	115.822	2	8.0472	0.0144
L2	86.25 - 43.25	49.285	2	5.8100	0.0069
L3	47.5 - 0	13.975	2	2.8012	0.0022

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	Lightning Rod 3/4" x 6'	2	115.822	8.0472	0.0144	5971

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
116.00	RRUS-11	2	92.873	7.4394	0.0119	2130
114.00	(2) OPA65R-BU8D w/ Mount Pipe	2	89.661	7.3482	0.0115	1863
104.00	MT6407-77A w/ Mount Pipe	2	74.063	6.8623	0.0098	1143

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	130 - 83 (1)	TP26.06x16x0.25	47.00	0.00	0.0	20.217 1	-17.04	1182.70	0.014
L2	83 - 43.25 (2)	TP34.068x24.8644x0.312 5	43.00	0.00	0.0	33.051 1	-23.44	1933.49	0.012
L3	43.25 - 0 (3)	TP42.7x32.5333x0.375	47.50	0.00	0.0	51.107 4	-34.66	2989.79	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	130 - 83 (1)	TP26.06x16x0.25	522.89	710.94	0.735	0.00	710.94	0.000
L2	83 - 43.25 (2)	TP34.068x24.8644x0.312 5	1246.32	1493.72	0.834	0.00	1493.72	0.000
L3	43.25 - 0 (3)	TP42.7x32.5333x0.375	2242.51	2888.40	0.776	0.00	2888.40	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	130 - 83 (1)	TP26.06x16x0.25	17.59	354.81	0.050	0.01	783.82	0.000
L2	83 - 43.25 (2)	TP34.068x24.8644x0.312 5	19.73	580.05	0.034	0.01	1675.88	0.000
L3	43.25 - 0 (3)	TP42.7x32.5333x0.375	22.20	896.94	0.025	0.01	3339.32	0.000

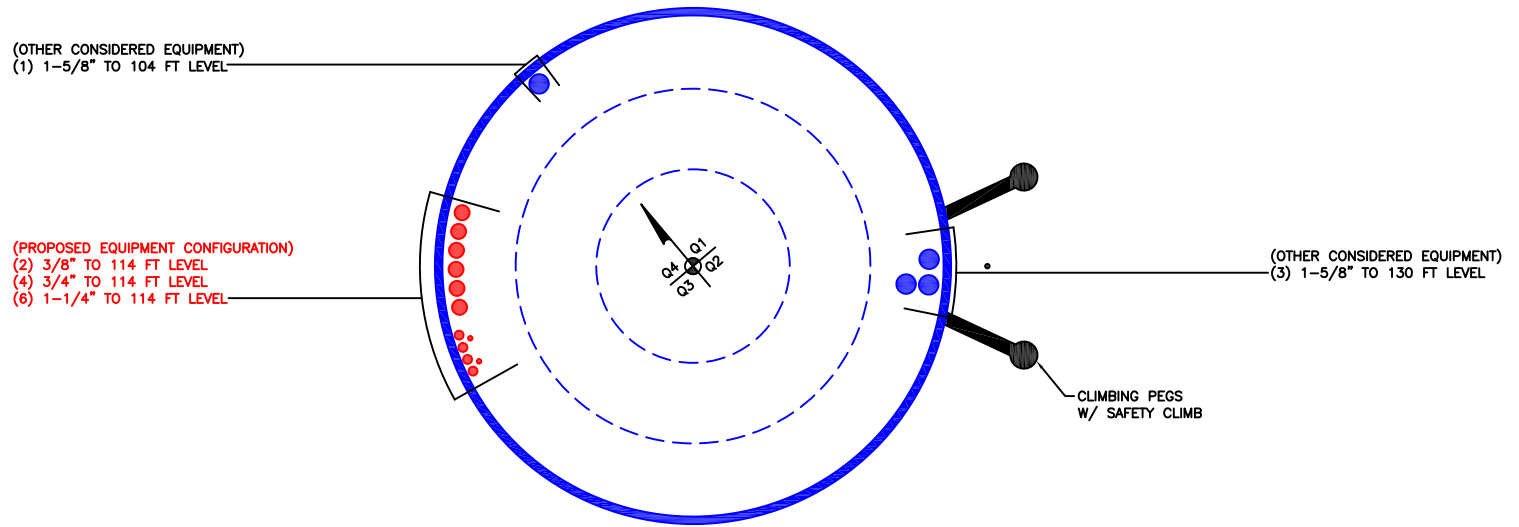
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	130 - 83 (1)	0.014	0.735	0.000	0.050	0.000	0.752	1.050	4.8.2
L2	83 - 43.25 (2)	0.012	0.834	0.000	0.034	0.000	0.848	1.050	4.8.2
L3	43.25 - 0 (3)	0.012	0.776	0.000	0.025	0.000	0.789	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	130 - 83	Pole	TP26.06x16x0.25	1	-17.04	1241.83	71.7	Pass	
L2	83 - 43.25	Pole	TP34.068x24.8644x0.3125	2	-23.44	2030.16	80.7	Pass	
L3	43.25 - 0	Pole	TP42.7x32.5333x0.375	3	-34.66	3139.28	75.1	Pass	
							Summary		
							Pole (L2)	80.7	Pass
							RATING =	80.7	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

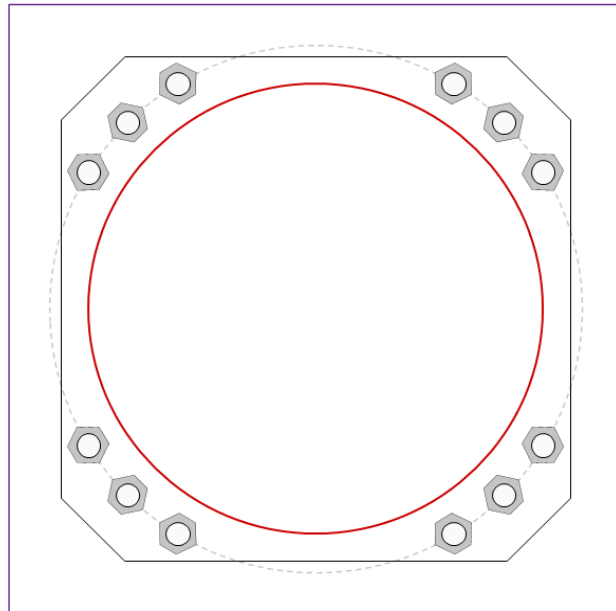


Site Info	
BU #	876359
Site Name	NORWICH
Order #	627245 Rev. 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.5

Applied Loads	
Moment (kip-ft)	2242.50
Axial Force (kips)	34.66
Shear Force (kips)	22.20

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
 (12) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 50" BC
Anchor Spacing: 6 in

Base Plate Data
 48" W x 3" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi); Clip: 6 in

Stiffener Data
 N/A

Pole Data
 42.7" x 0.375" 12-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary		<i>(units of kips, kip-in)</i>	
$Pu_t = 176.36$	$\phi Pn_t = 243.75$		Stress Rating
$Vu = 1.85$	$\phi Vn = 149.1$		68.9%
$Mu = n/a$	$\phi Mn = n/a$		Pass

Base Plate Summary		
Max Stress (ksi):	30.04	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	63.6%	Pass

Monopole Base Reaction Comparison Test



BU # :	876359
Site Name:	NORWICH
Order Number:	627245 Rev. 1
Design TIA:	TIA-222-F
Current TIA:	TIA-222-H
Component:	Monopole Base
Reference Doc ID:	1446983

TIA-222-F Compared To TIA-222-H

MONOPOLE BASE FOUNDATION REACTION COMPARISON

REACTIONS	DESIGN REACTIONS	*MODIFIED DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	2260.0	3051.0	2242.5	70.0%
SHEAR (kips)	26.0	35.1	22.2	60.2%

Design loads from: CClites Doc #1446983

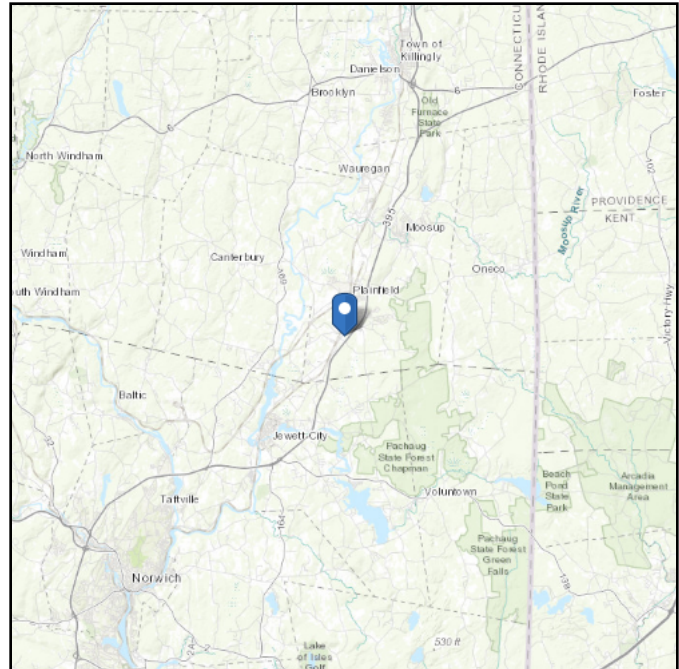
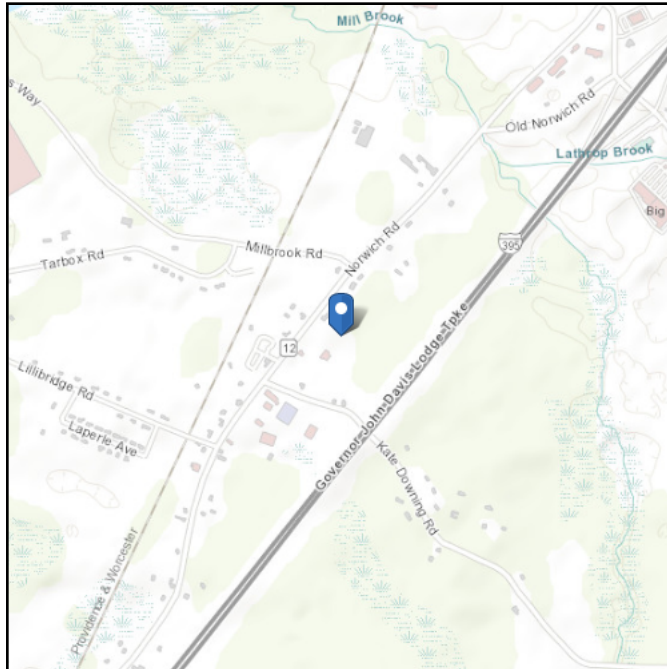
*Design loads were multiplied by 1.35 for comparison as allowed by TIA-222-H, Section 15.6.

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 41.658739
Longitude: -71.924931
Elevation: 181.69 ft (NAVD 88)



Wind

Results:

Wind Speed	124 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	96 Vmph
100-year MRI	101 Vmph

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

Date Accessed: Mon Feb 13 2023

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

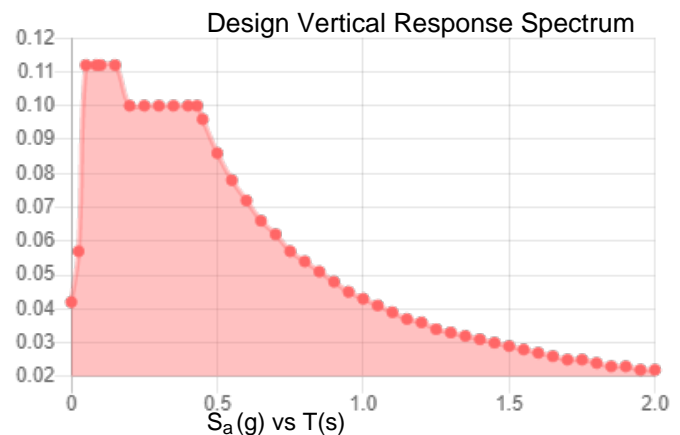
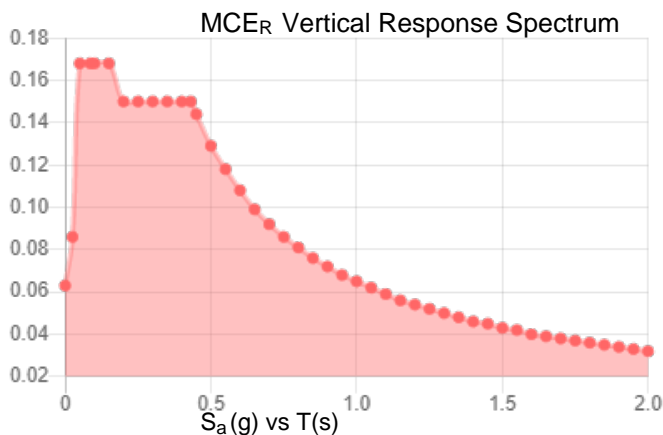
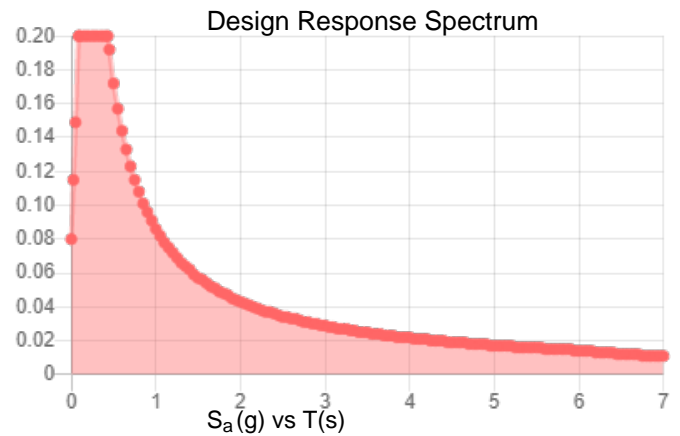
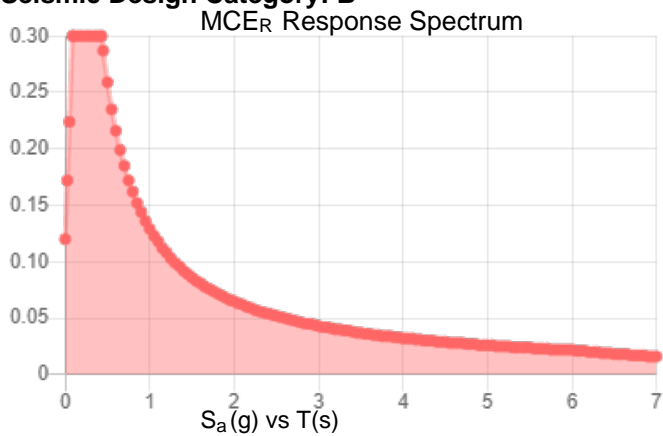
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class:

Results:

S_s :	0.187	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.102
F_v :	2.4	PGA _M :	0.163
S_{MS} :	0.3	F_{PGA} :	1.596
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.2	C_v :	0.7

Seismic Design Category: B



Data Accessed:

Mon Feb 13 2023

Date Source:

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

Ice

Results:

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

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

Date Accessed: Mon Feb 13 2023

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

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

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