



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

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

August 4, 2021

Richard Zajac
Site Acquisition Specialist
Crown Castle USA
4545 East River Road, Suite 320
West Henrietta, NY 14586

RE: **TS-DISH-061-210621** – DISH Wireless LLC request for an order to approve tower sharing at an existing telecommunications facility located at 65 Maple Avenue West, Haddam, Connecticut.

Dear Mr. Zajac:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 2, 2021 submitted in response to the Council's July 2, 2021 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing 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,

s/Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/emr

Date: **April 18, 2021**



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

Subject: **Structural Analysis Report**

Carrier Designation: **DISH Network Co-Locate**
Site Number: BOBDL00043A
Site Name: CT-CCI-T-806367

Crown Castle Designation: **BU Number:** 806367
Site Name: HRT 046 943209
JDE Job Number: 645110
Work Order Number: 1945836
Order Number: 553284 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1945836

Site Data: **65 MAPLE AVE WEST, HADDAM, Middlesex County, CT**
Latitude 41° 29' 4.54", Longitude -72° 34' 20.81"
115.5 Foot - Monopole Tower

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

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

LC7: Proposed Equipment Configuration

Sufficient Capacity – 59.9%

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Daniel Chen

Respectfully submitted by:

Jamal A. Huwel, P.E.
Director Engineering

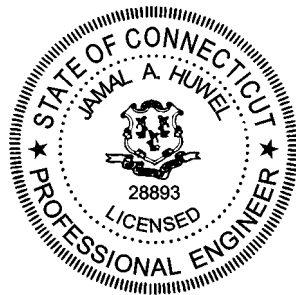


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity - LC7

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 115.5 ft Monopole tower designed by FWT Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.175
Seismic S1:	0.061
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)
69.0	69.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
117.0	119.0	3	antel	BXA-171063-8BF-2 w/ Mount Pipe	15	1-5/8
		3	antel	BXA-70063/6CF w/ Mount Pipe		
		4	antel	LPA-80063/6CF w/ Mount Pipe		
		2	antel	LPA-80080/6CF w/ Mount Pipe		
		6	rfs celwave	FD9R6004/2C-3L		
104.0	117.0	1	tower mounts	Platform Mount [LP 1001-1]	3	7/8
	109.0	2	decibel	DB411-A		
	107.0	1	maxrad	MFB4505		
97.0	98.0	1	tower mounts	Side Arm Mount [SO 702-3]	12	1-1/4 1-5/8
		3	ems wireless	RR90-17-02DP		
		3	ericsson	KRY 112 144/1		
		3	ericsson	KRY 112 489/2		
		3	ericsson	RADIO 4449 B12/B71		
	3	rfs celwave	APXVAARR24_43-U-NA20			
87.0	97.0	1	tower mounts	Platform Mount [LP 301-1]	12	7/8 3/4
		4	cci antennas	HPA65R-BU6A w/ Mount Pipe		
	89.0	2	cci antennas	HPA65R-BU8A w/ Mount Pipe	4	

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	RRUS 4415 B25	2	3/8 7/16 Conduit
		3	ericsson	RRUS 4449 B5/B12	2	
		3	ericsson	RRUS 8843 B2/B66A	1	
		2	kathrein	80010965 w/ Mount Pipe		
		1	kathrein	80010966 w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		2	raycap	DC6-48-60-18-8C-EV		
		1	raycap	DC6-48-60-18-8F		
		87.0	1	tower mounts	Platform Mount [LP 304-1]	
75.0	77.0	3	kathrein	742 213	6	1-5/8
	75.0	1	tower mounts	Pipe Mount [PM 601-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2225355	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2200141	CCISITES
4-TOWER MANUFACTURER DRAWINGS	997499	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2264019	CCISITES

3.1) Analysis Method

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

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	115.5 - 83.92	Pole	TP40.829x32.25x0.25	1	-10.88	1790.03	18.3	Pass
L2	83.92 - 41.25	Pole	TP51.92x38.8811x0.3125	2	-27.90	2808.03	40.0	Pass
L3	41.25 - 0	Pole	TP62.5x49.4614x0.375	3	-44.92	4073.37	48.8	Pass
							Summary	
						Pole (L3)	48.8	Pass
						Rating =	48.8	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	52.6	Pass
1	Base Plate	0	50.5	Pass
1	Base Foundation (Structure)	0	25.1	Pass
1	Base Foundation (Soil Interaction)	0	59.9	Pass

Structure Rating (max from all components) =	59.9%
---	--------------

Notes:

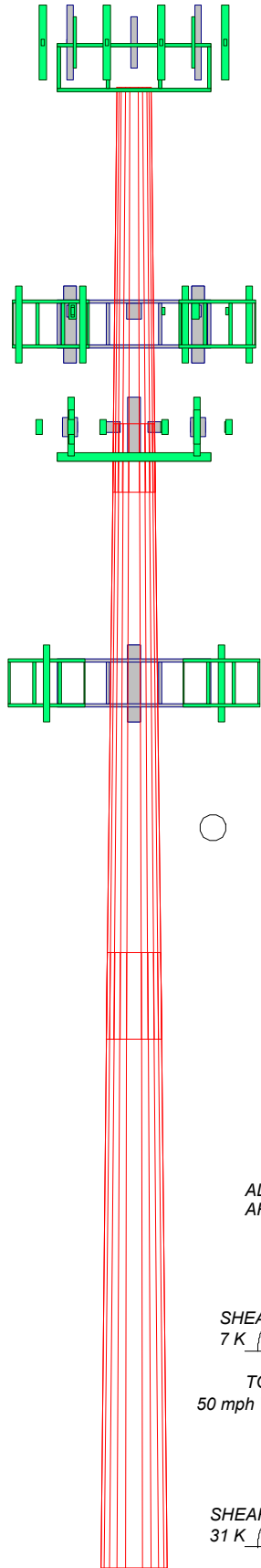
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	11.5 ft
Length (ft)	31.58	48.00	48.00	83.9 ft
Number of Sides	12	12	12	41.3 ft
Thickness (in)	0.2500	0.3125	0.3750	0.0 ft
Socket Length (ft)	5.33	6.75	49.4614	
Top Dia (in)	32.2500	38.8811	62.5000	
Bot Dia (in)	40.8290	51.9200		
Grade		A572-65		
Weight (K)	3.1	7.4	11.0	21.5



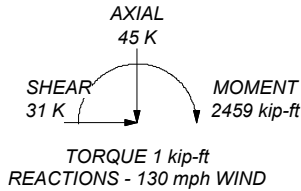
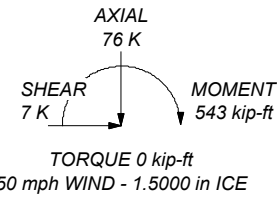
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 48.8%

ALL REACTIONS ARE FACTORED



CROWN CASTLE
The Pathway to Possible

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

Job:	BU# 806367		
Project:			
Client:	Crown Castle	Drawn by:	Daniel Chen
Code:	TIA-222-H	Date:	04/18/21
Path:			Scale: NTS
			Dwg No. E-1

Tower Input Data

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

- Tower is located in Middlesex County, Connecticut.
- Tower base elevation above sea level: 515.00 ft.
- Basic wind speed of 130 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 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs 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
--	---	---

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	115.50-83.92	31.58	5.33	12	32.2500	40.8290	0.2500	1.0000	A572-65 (65 ksi)
L2	83.92-41.25	48.00	6.75	12	38.8811	51.9200	0.3125	1.2500	A572-65 (65 ksi)
L3	41.25-0.00	48.00		12	49.4614	62.5000	0.3750	1.5000	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	33.2995	25.7600	3366.9120	11.4560	16.7055	201.5451	6822.2765	12.6783	7.9730	31.892
	42.1811	32.6661	6865.7163	14.5273	21.1494	324.6290	13911.802	16.0773	10.2722	41.089
L2	41.6413	38.8096	7368.7188	13.8075	20.1404	365.8678	14931.022	19.1009	9.5826	30.664
	53.6413	51.9300	17653.479	18.4755	26.8946	656.3959	35770.734	25.5584	13.0771	41.847
L3	52.9722	59.2718	18228.737	17.5729	25.6210	711.4763	36936.364	29.1718	12.2507	32.668
	64.5725	75.0159	36954.922	22.2407	32.3750	1141.4648	74880.691	36.9206	15.7450	41.987

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 Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 115.50- 83.92				1	1	1			
L2 83.92- 41.25				1	1	1			
L3 41.25-0.00				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 r in	Perimeter r in	Weight plf
LCF78-50J(7/8")	B	No	Surface Ar (CaAa)	104.00 - 0.00	2	2	0.000 0.042	1.1000		0.53
**										
2" (Nominal) Conduit	A	No	Surface Ar (CaAa)	87.00 - 0.00	1	1	-0.125 -0.125	2.3750		0.72
LDF5-50A(7/8)	A	No	Surface Ar (CaAa)	87.00 - 0.00	12	6	0.000 0.108	1.0900		0.33
FB-L98B-034-XXX(3/8)	A	No	Surface Ar (CaAa)	87.00 - 0.00	1	1	-0.108 -0.108	0.3937		0.06
WR-VG86ST-BRD(3/4)	A	No	Surface Ar (CaAa)	87.00 - 0.00	4	4	-0.100 0.000	0.7950		0.58
**										
CU12PSM9P8XXX(1- 3/8)	B	No	Surface Ar (CaAa)	69.00 - 0.00	1	1	-0.210 -0.200	1.4110		1.66

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
LDF7-50A(1-5/8")	C	No	No	Inside Pole	115.50 - 0.00	15	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
**									
LCF78-50J(7/8")	C	No	No	Inside Pole	104.00 - 0.00	1	No Ice	0.00	0.53
							1/2" Ice	0.00	0.53
							1" Ice	0.00	0.53
							2" Ice	0.00	0.53
**									
FLC 114-50J(1-1/4")	C	No	No	Inside Pole	97.00 - 0.00	6	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
							2" Ice	0.00	0.70
AVA6-50(1-1/4)	C	No	No	Inside Pole	97.00 - 0.00	6	No Ice	0.00	0.46
							1/2" Ice	0.00	0.46
							1" Ice	0.00	0.46
							2" Ice	0.00	0.46
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	87.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG122ST-BRDA(7/16)	C	No	No	Inside Pole	87.00 - 0.00	2	No Ice	0.00	0.14
							1/2" Ice	0.00	0.14
							1" Ice	0.00	0.14
							2" Ice	0.00	0.14
**									
AVA7-50(1-5/8)	C	No	No	Inside Pole	75.00 - 0.00	6	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
							2" Ice	0.00	0.70

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	115.50-83.92	A	0.000	0.000	3.847	0.000	0.02
		B	0.000	0.000	4.418	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.52
L2	83.92-41.25	A	0.000	0.000	53.289	0.000	0.30
		B	0.000	0.000	13.303	0.000	0.09
		C	0.000	0.000	0.000	0.000	1.10
L3	41.25-0.00	A	0.000	0.000	51.516	0.000	0.29
		B	0.000	0.000	14.895	0.000	0.11
		C	0.000	0.000	0.000	0.000	1.10

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	115.50-83.92	A	1.423	0.000	0.000	8.541	0.000	0.11
		B		0.000	0.000	12.668	0.000	0.14
		C		0.000	0.000	0.000	0.000	0.52

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L2	83.92-41.25	A	1.358	0.000	0.000	118.323	0.000	1.54
		B		0.000	0.000	38.734	0.000	0.47
		C		0.000	0.000	0.000	0.000	1.10
L3	41.25-0.00	A	1.213	0.000	0.000	111.973	0.000	1.42
		B		0.000	0.000	42.381	0.000	0.52
		C		0.000	0.000	0.000	0.000	1.10

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	115.50-83.92	0.0624	-0.7647	0.3822	-1.2005
L2	83.92-41.25	-3.7558	-3.4582	-4.0540	-4.1347
L3	41.25-0.00	-3.7914	-3.7798	-4.1958	-4.7566

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

Shielding Factor K_a

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	4	LCF78-50J(7/8")	83.92 - 104.00	1.0000	1.0000
L1	10	2" (Nominal) Conduit	83.92 - 87.00	1.0000	1.0000
L1	11	LDF5-50A(7/8)	83.92 - 87.00	1.0000	1.0000
L1	14	FB-L98B-034-XXX(3/8)	83.92 - 87.00	1.0000	1.0000
L1	15	WR-VG86ST-BRD(3/4)	83.92 - 87.00	1.0000	1.0000
L2	4	LCF78-50J(7/8")	41.25 - 83.92	1.0000	1.0000
L2	10	2" (Nominal) Conduit	41.25 - 83.92	1.0000	1.0000
L2	11	LDF5-50A(7/8)	41.25 - 83.92	1.0000	1.0000
L2	14	FB-L98B-034-XXX(3/8)	41.25 - 83.92	1.0000	1.0000
L2	15	WR-VG86ST-BRD(3/4)	41.25 - 83.92	1.0000	1.0000
L2	19	CU12PSM9P8XXX(1-3/8)	41.25 - 69.00	1.0000	1.0000
L3	4	LCF78-50J(7/8")	0.00 - 41.25	1.0000	1.0000
L3	10	2" (Nominal) Conduit	0.00 - 41.25	1.0000	1.0000
L3	11	LDF5-50A(7/8)	0.00 - 41.25	1.0000	1.0000
L3	14	FB-L98B-034-XXX(3/8)	0.00 - 41.25	1.0000	1.0000
L3	15	WR-VG86ST-BRD(3/4)	0.00 - 41.25	1.0000	1.0000
L3	19	CU12PSM9P8XXX(1-3/8)	0.00 - 41.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K	
BXA-171063-8BF-2 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.93	4.60	0.10
						2" Ice	4.69	5.89	0.19
BXA-171063-8BF-2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.93	4.60	0.10
						2" Ice	4.69	5.89	0.19
BXA-171063-8BF-2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.93	4.60	0.10
						2" Ice	4.69	5.89	0.19
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	7.34	5.51	0.06
						1/2" Ice	8.08	6.22	0.11
						1" Ice	8.83	6.94	0.18
						2" Ice	10.38	8.44	0.35
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	7.34	5.51	0.06
						1/2" Ice	8.08	6.22	0.11
						1" Ice	8.83	6.94	0.18
						2" Ice	10.38	8.44	0.35
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	7.34	5.51	0.06
						1/2" Ice	8.08	6.22	0.11
						1" Ice	8.83	6.94	0.18
						2" Ice	10.38	8.44	0.35
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	4.56	10.26	0.05
						1/2" Ice	5.11	11.43	0.11
						1" Ice	5.61	12.31	0.19
						2" Ice	6.65	14.13	0.36
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	9.83	10.22	0.05
						1/2" Ice	10.40	11.38	0.14
						1" Ice	10.93	12.27	0.25
						2" Ice	12.03	14.09	0.48
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	9.83	10.22	0.05
						1/2" Ice	10.40	11.38	0.14
						1" Ice	10.93	12.27	0.25
						2" Ice	12.03	14.09	0.48
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	0.31	0.08	0.00
						1/2" Ice	0.39	0.12	0.01
						1" Ice	0.47	0.17	0.01
						2" Ice	0.65	0.29	0.02
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	0.31	0.08	0.00
						1/2" Ice	0.39	0.12	0.01
						1" Ice	0.47	0.17	0.01
						2" Ice	0.65	0.29	0.02
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 2.00	0.0000	117.00	No Ice	0.31	0.08	0.00
						1/2" Ice	0.39	0.12	0.01
						1" Ice	0.47	0.17	0.01
						2" Ice	0.65	0.29	0.02
(3) 2.375" OD x 4' Mount Pipe	A	From Leg	4.00 0.00	0.0000	117.00	No Ice	0.87	0.87	0.02
						1/2" Ice	1.11	1.11	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft²	CAAA Side ft²	Weight K
			0.00			Ice 1.36	1.36	0.04
						1" Ice 1.90	1.90	0.06
						2" Ice		
(3) 2.375" OD x 4' Mount Pipe	B	From Leg	4.00	0.0000	117.00	No Ice 0.87	0.87	0.02
			0.00			1/2" 1.11	1.11	0.03
			0.00			Ice 1.36	1.36	0.04
						1" Ice 1.90	1.90	0.06
						2" Ice		
(3) 2.375" OD x 4' Mount Pipe	C	From Leg	4.00	0.0000	117.00	No Ice 0.87	0.87	0.02
			0.00			1/2" 1.11	1.11	0.03
			0.00			Ice 1.36	1.36	0.04
						1" Ice 1.90	1.90	0.06
						2" Ice		
Platform Mount [LP 1001-1]	C	None		0.0000	117.00	No Ice 44.83	44.83	3.02
						1/2" 50.34	50.34	3.95
						Ice 56.62	56.62	5.04
						1" Ice 73.47	73.47	7.68
						2" Ice		
**								
DB411-A	A	From Leg	4.00	0.0000	104.00	No Ice 1.50	1.50	0.03
			0.00			1/2" 2.70	2.70	0.03
			5.00			Ice 3.90	3.90	0.04
						1" Ice 6.30	6.30	0.06
						2" Ice		
DB411-A	C	From Leg	4.00	0.0000	104.00	No Ice 1.50	1.50	0.03
			0.00			1/2" 2.70	2.70	0.03
			5.00			Ice 3.90	3.90	0.04
						1" Ice 6.30	6.30	0.06
						2" Ice		
MFB4505	B	From Leg	4.00	0.0000	104.00	No Ice 0.84	0.84	0.00
			0.00			1/2" 1.50	1.50	0.01
			3.00			Ice 2.13	2.13	0.02
						1" Ice 2.94	2.94	0.06
						2" Ice		
Side Arm Mount [SO 702-3]	C	None		0.0000	104.00	No Ice 2.53	2.53	0.08
						1/2" 3.37	3.37	0.13
						Ice 4.12	4.12	0.19
						1" Ice 5.76	5.76	0.36
						2" Ice		

APXVAARR24_43-U-NA20	A	From Leg	4.00	0.0000	97.00	No Ice 14.67	5.32	0.15
			0.00			1/2" 15.43	5.99	0.27
			1.00			Ice 16.21	6.68	0.39
						1" Ice 17.81	8.08	0.66
						2" Ice		
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	97.00	No Ice 14.67	5.32	0.15
			0.00			1/2" 15.43	5.99	0.27
			1.00			Ice 16.21	6.68	0.39
						1" Ice 17.81	8.08	0.66
						2" Ice		
APXVAARR24_43-U-NA20	C	From Leg	4.00	0.0000	97.00	No Ice 14.67	5.32	0.15
			0.00			1/2" 15.43	5.99	0.27
			1.00			Ice 16.21	6.68	0.39
						1" Ice 17.81	8.08	0.66
						2" Ice		
RR90-17-02DP	A	From Leg	4.00	0.0000	97.00	No Ice 4.52	1.54	0.01
			0.00			1/2" 5.16	2.13	0.04
			1.00			Ice 5.83	2.75	0.06
						1" Ice 7.22	4.03	0.13
						2" Ice		
RR90-17-02DP	B	From Leg	4.00	0.0000	97.00	No Ice 4.52	1.54	0.01
			0.00			1/2" 5.16	2.13	0.04
			1.00			Ice 5.83	2.75	0.06
						1" Ice 7.22	4.03	0.13
						2" Ice		

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
RR90-17-02DP	C	From Leg	4.00	0.0000	97.00	No Ice	4.52	1.54	0.01
			0.00			1/2"	5.16	2.13	0.04
			1.00			Ice	5.83	2.75	0.06
						1" Ice	7.22	4.03	0.13
						2" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00	0.0000	97.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	97.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	97.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			1.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
(2) KRY 112 489/2	A	From Leg	4.00	0.0000	97.00	No Ice	0.56	0.37	0.02
			0.00			1/2"	0.66	0.45	0.02
			1.00			Ice	0.76	0.54	0.03
						1" Ice	1.00	0.75	0.05
						2" Ice			
KRY 112 489/2	C	From Leg	4.00	0.0000	97.00	No Ice	0.56	0.37	0.02
			0.00			1/2"	0.66	0.45	0.02
			1.00			Ice	0.76	0.54	0.03
						1" Ice	1.00	0.75	0.05
						2" Ice			
(2) KRY 112 144/1	B	From Leg	4.00	0.0000	97.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			1.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
KRY 112 144/1	C	From Leg	4.00	0.0000	97.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			1.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
Platform Mount [LP 301-1]	C	None		0.0000	97.00	No Ice	23.81	23.81	1.59
						1/2"	30.24	30.24	2.10
						Ice	36.33	36.33	2.73
						1" Ice	48.05	48.05	4.34
						2" Ice			
**									
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	87.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	87.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	87.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			2.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
(2) HPA65R-BU6A w/ Mount Pipe	A	From Leg	4.00	0.0000	87.00	No Ice	5.83	5.00	0.08
			0.00			1/2"	6.40	5.56	0.14
			2.00			Ice	6.99	6.13	0.22
						1" Ice	8.19	7.32	0.40
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) HPA65R-BU6A w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	87.00	2" Ice			
						No Ice	5.83	5.00	0.08
						1/2"	6.40	5.56	0.14
						Ice	6.99	6.13	0.22
(2) HPA65R-BU8A w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	87.00	1" Ice	8.19	7.32	0.40
						2" Ice			
						No Ice	8.10	6.94	0.09
						1/2"	8.86	7.69	0.17
80010965 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	87.00	Ice	9.64	8.45	0.27
						1" Ice	11.24	10.03	0.50
						2" Ice			
						No Ice	12.26	5.79	0.14
80010965 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	87.00	1/2"	13.03	6.47	0.23
						Ice	13.80	7.17	0.33
						1" Ice	15.41	8.60	0.57
						2" Ice			
80010965 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice	12.26	5.79	0.14
						1/2"	13.03	6.47	0.23
						Ice	13.80	7.17	0.33
						1" Ice	15.41	8.60	0.57
80010966 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	87.00	2" Ice			
						No Ice	14.61	6.84	0.16
						1/2"	15.47	7.63	0.27
						Ice	16.35	8.42	0.39
(4) LGP21401	A	From Leg	4.00 0.00 2.00	0.0000	87.00	1" Ice	18.14	10.06	0.68
						2" Ice			
						No Ice	1.10	0.21	0.01
						1/2"	1.24	0.27	0.02
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	87.00	Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
						No Ice	1.10	0.21	0.01
(2) RRUS 4415 B25	B	From Leg	4.00 0.00 2.00	0.0000	87.00	1/2"	1.24	0.27	0.02
						Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
RRUS 4415 B25	C	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice	1.64	0.68	0.04
						1/2"	1.80	0.79	0.06
						Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
(2) DC6-48-60-18-8C-EV	C	From Leg	4.00 0.00 2.00	0.0000	87.00	2" Ice			
						No Ice	1.14	1.14	0.03
						1/2"	1.79	1.79	0.05
						Ice	2.00	2.00	0.07
(2) RRUS 4449 B5/B12	A	From Leg	4.00 0.00 2.00	0.0000	87.00	1" Ice	2.45	2.45	0.13
						2" Ice			
						No Ice	1.97	1.41	0.07
						1/2"	2.14	1.56	0.09
RRUS 4449 B5/B12	B	From Leg	4.00 0.00 2.00	0.0000	87.00	Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
						No Ice	1.97	1.41	0.07
(3) RRUS 8843 B2/B66A	C	From Leg	4.00 0.00 2.00	0.0000	87.00	1/2"	2.14	1.56	0.09
						Ice	2.33	1.73	0.11
						1" Ice	2.72	2.07	0.16
						2" Ice			
(3) RRUS 8843 B2/B66A	C	From Leg	4.00 0.00 2.00	0.0000	87.00	No Ice	1.64	1.35	0.07
						1/2"	1.80	1.50	0.09
						Ice	1.97	1.65	0.11
						1" Ice	2.32	1.99	0.16

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	87.00		2" Ice			
			0.00				No Ice	1.21	1.21	0.02
			2.00				1/2"	1.89	1.89	0.04
							Ice	2.11	2.11	0.07
							1" Ice	2.57	2.57	0.13
Platform Mount [LP 304-1]	C	None		0.0000	87.00		2" Ice			
							No Ice	17.49	17.49	1.35
							1/2"	21.37	21.37	1.71
							Ice	25.28	25.28	2.13
							1" Ice	33.17	33.17	3.16
				2" Ice						
**										
**										
742 213	A	From Leg	1.00	0.0000	75.00		No Ice	3.57	1.60	0.02
			0.00				1/2"	4.21	2.21	0.05
			2.00				Ice	4.86	2.83	0.08
							1" Ice	6.21	4.13	0.16
							2" Ice			
742 213	B	From Leg	1.00	0.0000	75.00		No Ice	3.57	1.60	0.02
			0.00				1/2"	4.21	2.21	0.05
			2.00				Ice	4.86	2.83	0.08
							1" Ice	6.21	4.13	0.16
							2" Ice			
742 213	C	From Leg	1.00	0.0000	75.00		No Ice	3.57	1.60	0.02
			0.00				1/2"	4.21	2.21	0.05
			2.00				Ice	4.86	2.83	0.08
							1" Ice	6.21	4.13	0.16
							2" Ice			
Pipe Mount [PM 601-3]	C	None		0.0000	75.00		No Ice	3.17	3.17	0.20
							1/2"	3.79	3.79	0.23
							Ice	4.42	4.42	0.28
							1" Ice	5.76	5.76	0.40
							2" Ice			
**										
MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.00	0.0000	69.00		No Ice	8.01	4.23	0.10
			0.00				1/2"	8.52	4.69	0.18
			0.00				Ice	9.04	5.16	0.28
							1" Ice	10.11	6.12	0.51
							2" Ice			
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.00	0.0000	69.00		No Ice	8.01	4.23	0.10
			0.00				1/2"	8.52	4.69	0.18
			0.00				Ice	9.04	5.16	0.28
							1" Ice	10.11	6.12	0.51
							2" Ice			
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.00	0.0000	69.00		No Ice	8.01	4.23	0.10
			0.00				1/2"	8.52	4.69	0.18
			0.00				Ice	9.04	5.16	0.28
							1" Ice	10.11	6.12	0.51
							2" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	69.00		No Ice	2.31	1.29	0.02
			0.00				1/2"	2.50	1.45	0.04
			0.00				Ice	2.70	1.61	0.06
							1" Ice	3.12	1.96	0.12
							2" Ice			
TA08025-B604	A	From Leg	4.00	0.0000	69.00		No Ice	1.96	0.98	0.06
			0.00				1/2"	2.14	1.11	0.08
			0.00				Ice	2.32	1.25	0.10
							1" Ice	2.71	1.55	0.15
							2" Ice			
TA08025-B604	B	From Leg	4.00	0.0000	69.00		No Ice	1.96	0.98	0.06
			0.00				1/2"	2.14	1.11	0.08
			0.00				Ice	2.32	1.25	0.10
							1" Ice	2.71	1.55	0.15
							2" Ice			
TA08025-B604	C	From Leg	4.00	0.0000	69.00		No Ice	1.96	0.98	0.06

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz Lateral	Vert					
				0.00					
				0.00		1/2"	2.14	1.11	0.08
						Ice	2.32	1.25	0.10
						1" Ice	2.71	1.55	0.15
						2" Ice			
TA08025-B605	A	From Leg	4.00	0.0000	69.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	B	From Leg	4.00	0.0000	69.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
TA08025-B605	C	From Leg	4.00	0.0000	69.00	No Ice	1.96	1.13	0.08
			0.00			1/2"	2.14	1.27	0.09
			0.00			Ice	2.32	1.41	0.11
						1" Ice	2.71	1.72	0.16
						2" Ice			
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	69.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	69.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	69.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
Commscope MC-PK8-DSH	C	None		0.0000	69.00	No Ice	34.24	34.24	1.75
						1/2"	62.95	62.95	2.10
						Ice	91.66	91.66	2.45
						1" Ice	149.08	149.08	3.15
						2" Ice			

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	115.5 - 83.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.85	0.10	-0.57
			Max. Mx	20	-10.88	252.76	0.20
			Max. My	2	-10.90	0.19	238.81
			Max. Vy	20	-12.47	252.76	0.20
			Max. Vx	2	-12.00	0.19	238.81
			Max. Torque	25			1.02
L2	83.92 - 41.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.75	3.87	0.19
			Max. Mx	20	-27.90	1110.74	0.43
			Max. My	2	-27.92	1.77	1077.35
			Max. Vy	20	-24.97	1110.74	0.43
			Max. Vx	2	-24.55	1.77	1077.35
			Max. Torque	25			1.51
L3	41.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.99	6.17	2.99
			Max. Mx	20	-44.92	2459.08	1.43
			Max. My	2	-44.92	2.64	2405.76
			Max. Vy	20	-31.21	2459.08	1.43
			Max. Vx	2	-30.80	2.64	2405.76
			Max. Torque	25			1.39

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	75.99	0.00	0.00
	Max. H _x	20	44.93	31.20	0.01
	Max. H _z	2	44.93	0.01	30.79
	Max. M _x	2	2405.76	0.01	30.79
	Max. M _z	8	2455.02	-31.20	-0.01
	Max. Torsion	25	1.39	15.60	26.66
	Min. Vert	13	33.70	-15.60	-26.66
	Min. H _x	8	44.93	-31.20	-0.01
	Min. H _z	14	44.93	-0.01	-30.79
	Min. M _x	14	-2404.12	-0.01	-30.79
	Min. M _z	20	-2459.08	31.20	0.01
	Min. Torsion	13	-1.36	-15.60	-26.66

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	37.44	0.00	0.00	-0.68	1.66	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	44.93	-0.01	-30.79	-2405.76	2.64	-1.32
0.9 Dead+1.0 Wind 0 deg - No Ice	33.70	-0.01	-30.79	-2396.68	2.12	-1.32
1.2 Dead+1.0 Wind 30 deg - No Ice	44.93	15.59	-26.66	-2083.25	-1225.98	-0.90
0.9 Dead+1.0 Wind 30 deg - No Ice	33.70	15.59	-26.66	-2075.36	-1221.94	-0.90
1.2 Dead+1.0 Wind 60 deg - No Ice	44.93	27.01	-15.39	-1202.76	-2125.54	-0.25
0.9 Dead+1.0 Wind 60 deg - No Ice	33.70	27.01	-15.39	-1198.12	-2118.17	-0.25
1.2 Dead+1.0 Wind 90 deg - No Ice	44.93	31.20	0.01	-0.22	-2455.02	0.46
0.9 Dead+1.0 Wind 90 deg - No Ice	33.70	31.20	0.01	-0.01	-2446.43	0.46
1.2 Dead+1.0 Wind 120 deg - No Ice	44.93	27.02	15.40	1202.17	-2126.15	1.05
0.9 Dead+1.0 Wind 120 deg - No Ice	33.70	27.02	15.40	1197.93	-2118.77	1.05
1.2 Dead+1.0 Wind 150 deg - No Ice	44.93	15.60	26.66	2082.21	-1227.03	1.36
0.9 Dead+1.0 Wind 150 deg - No Ice	33.70	15.60	26.66	2074.74	-1222.99	1.36
1.2 Dead+1.0 Wind 180 deg - No Ice	44.93	0.01	30.79	2404.12	1.43	1.32
0.9 Dead+1.0 Wind 180 deg - No Ice	33.70	0.01	30.79	2395.45	0.91	1.32
1.2 Dead+1.0 Wind 210 deg - No Ice	44.93	-15.59	26.66	2081.61	1230.04	0.93
0.9 Dead+1.0 Wind 210 deg - No Ice	33.70	-15.59	26.66	2074.14	1224.97	0.93
1.2 Dead+1.0 Wind 240 deg - No Ice	44.93	-27.01	15.39	1201.12	2129.60	0.28
0.9 Dead+1.0 Wind 240 deg - No Ice	33.70	-27.01	15.39	1196.89	2121.20	0.28
1.2 Dead+1.0 Wind 270 deg - No Ice	44.93	-31.20	-0.01	-1.43	2459.08	-0.46
0.9 Dead+1.0 Wind 270 deg - No Ice	33.70	-31.20	-0.01	-1.22	2449.46	-0.46
1.2 Dead+1.0 Wind 300 deg - No Ice	44.93	-27.02	-15.40	-1203.81	2130.21	-1.08

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 300 deg - No Ice	33.70	-27.02	-15.40	-1199.16	2121.80	-1.08
1.2 Dead+1.0 Wind 330 deg - No Ice	44.93	-15.60	-26.66	-2083.86	1231.09	-1.39
0.9 Dead+1.0 Wind 330 deg - No Ice	33.70	-15.60	-26.66	-2075.97	1226.02	-1.39
1.2 Dead+1.0 Ice+1.0 Temp	75.99	0.00	0.00	-2.99	6.17	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	75.99	-0.00	-6.65	-532.27	6.57	-0.29
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	75.99	3.35	-5.76	-461.27	-261.96	-0.21
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	75.99	5.81	-3.32	-267.49	-458.59	-0.07
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	75.99	6.71	0.00	-2.84	-530.63	0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	75.99	5.81	3.33	261.76	-458.77	0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	75.99	3.36	5.76	455.42	-262.28	0.30
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	75.99	0.00	6.65	526.23	6.21	0.29
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	75.99	-3.35	5.76	455.23	274.74	0.21
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	75.99	-5.81	3.32	261.45	471.37	0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	75.99	-6.71	-0.00	-3.20	543.41	-0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	75.99	-5.81	-3.33	-267.80	471.55	-0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	75.99	-3.36	-5.76	-461.45	275.05	-0.30
Dead+Wind 0 deg - Service	37.44	-0.00	-6.18	-482.51	1.81	-0.28
Dead+Wind 30 deg - Service	37.44	3.13	-5.35	-417.89	-244.33	-0.18
Dead+Wind 60 deg - Service	37.44	5.42	-3.09	-241.49	-424.55	-0.04
Dead+Wind 90 deg - Service	37.44	6.26	0.00	-0.56	-490.56	0.11
Dead+Wind 120 deg - Service	37.44	5.43	3.09	240.33	-424.68	0.23
Dead+Wind 150 deg - Service	37.44	3.13	5.35	416.65	-244.54	0.29
Dead+Wind 180 deg - Service	37.44	0.00	6.18	481.14	1.57	0.28
Dead+Wind 210 deg - Service	37.44	-3.13	5.35	416.53	247.71	0.19
Dead+Wind 240 deg - Service	37.44	-5.42	3.09	240.12	427.93	0.05
Dead+Wind 270 deg - Service	37.44	-6.26	-0.00	-0.80	493.94	-0.11
Dead+Wind 300 deg - Service	37.44	-5.43	-3.09	-241.70	428.05	-0.23
Dead+Wind 330 deg - Service	37.44	-3.13	-5.35	-418.01	247.92	-0.29

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	-37.44	0.00	0.00	37.44	0.00	0.000%
2	-0.01	-44.93	-30.79	0.01	44.93	30.79	0.000%
3	-0.01	-33.70	-30.79	0.01	33.70	30.79	0.000%
4	15.59	-44.93	-26.66	-15.59	44.93	26.66	0.000%
5	15.59	-33.70	-26.66	-15.59	33.70	26.66	0.000%
6	27.01	-44.93	-15.39	-27.01	44.93	15.39	0.000%
7	27.01	-33.70	-15.39	-27.01	33.70	15.39	0.000%
8	31.20	-44.93	0.01	-31.20	44.93	-0.01	0.000%
9	31.20	-33.70	0.01	-31.20	33.70	-0.01	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
10	27.02	-44.93	15.40	-27.02	44.93	-15.40	0.000%
11	27.02	-33.70	15.40	-27.02	33.70	-15.40	0.000%
12	15.60	-44.93	26.66	-15.60	44.93	-26.66	0.000%
13	15.60	-33.70	26.66	-15.60	33.70	-26.66	0.000%
14	0.01	-44.93	30.79	-0.01	44.93	-30.79	0.000%
15	0.01	-33.70	30.79	-0.01	33.70	-30.79	0.000%
16	-15.59	-44.93	26.66	15.59	44.93	-26.66	0.000%
17	-15.59	-33.70	26.66	15.59	33.70	-26.66	0.000%
18	-27.01	-44.93	15.39	27.01	44.93	-15.39	0.000%
19	-27.01	-33.70	15.39	27.01	33.70	-15.39	0.000%
20	-31.20	-44.93	-0.01	31.20	44.93	0.01	0.000%
21	-31.20	-33.70	-0.01	31.20	33.70	0.01	0.000%
22	-27.02	-44.93	-15.40	27.02	44.93	15.40	0.000%
23	-27.02	-33.70	-15.40	27.02	33.70	15.40	0.000%
24	-15.60	-44.93	-26.66	15.60	44.93	26.66	0.000%
25	-15.60	-33.70	-26.66	15.60	33.70	26.66	0.000%
26	0.00	-75.99	0.00	0.00	75.99	0.00	0.000%
27	-0.00	-75.99	-6.65	0.00	75.99	6.65	0.000%
28	3.35	-75.99	-5.76	-3.35	75.99	5.76	0.000%
29	5.81	-75.99	-3.32	-5.81	75.99	3.32	0.000%
30	6.71	-75.99	0.00	-6.71	75.99	-0.00	0.000%
31	5.81	-75.99	3.33	-5.81	75.99	-3.33	0.000%
32	3.36	-75.99	5.76	-3.36	75.99	-5.76	0.000%
33	0.00	-75.99	6.65	-0.00	75.99	-6.65	0.000%
34	-3.35	-75.99	5.76	3.35	75.99	-5.76	0.000%
35	-5.81	-75.99	3.32	5.81	75.99	-3.32	0.000%
36	-6.71	-75.99	-0.00	6.71	75.99	0.00	0.000%
37	-5.81	-75.99	-3.33	5.81	75.99	3.33	0.000%
38	-3.36	-75.99	-5.76	3.36	75.99	5.76	0.000%
39	-0.00	-37.44	-6.18	0.00	37.44	6.18	0.000%
40	3.13	-37.44	-5.35	-3.13	37.44	5.35	0.000%
41	5.42	-37.44	-3.09	-5.42	37.44	3.09	0.000%
42	6.26	-37.44	0.00	-6.26	37.44	-0.00	0.000%
43	5.43	-37.44	3.09	-5.43	37.44	-3.09	0.000%
44	3.13	-37.44	5.35	-3.13	37.44	-5.35	0.000%
45	0.00	-37.44	6.18	-0.00	37.44	-6.18	0.000%
46	-3.13	-37.44	5.35	3.13	37.44	-5.35	0.000%
47	-5.42	-37.44	3.09	5.42	37.44	-3.09	0.000%
48	-6.26	-37.44	-0.00	6.26	37.44	0.00	0.000%
49	-5.43	-37.44	-3.09	5.43	37.44	3.09	0.000%
50	-3.13	-37.44	-5.35	3.13	37.44	5.35	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	4	0.00000001	0.00005007
3	Yes	4	0.00000001	0.00003213
4	Yes	4	0.00000001	0.00031479
5	Yes	4	0.00000001	0.00020155
6	Yes	4	0.00000001	0.00033731
7	Yes	4	0.00000001	0.00021613
8	Yes	4	0.00000001	0.00002323
9	Yes	4	0.00000001	0.00001373
10	Yes	4	0.00000001	0.00035428
11	Yes	4	0.00000001	0.00022745
12	Yes	4	0.00000001	0.00030895
13	Yes	4	0.00000001	0.00019771
14	Yes	4	0.00000001	0.00004972
15	Yes	4	0.00000001	0.00003190
16	Yes	4	0.00000001	0.00034658
17	Yes	4	0.00000001	0.00022237
18	Yes	4	0.00000001	0.00032971
19	Yes	4	0.00000001	0.00021079

20	Yes	4	0.00000001	0.00002301
21	Yes	4	0.00000001	0.00001355
22	Yes	4	0.00000001	0.00031681
23	Yes	4	0.00000001	0.00020219
24	Yes	4	0.00000001	0.00035670
25	Yes	4	0.00000001	0.00022907
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00026654
28	Yes	4	0.00000001	0.00027232
29	Yes	4	0.00000001	0.00027349
30	Yes	4	0.00000001	0.00026712
31	Yes	4	0.00000001	0.00027348
32	Yes	4	0.00000001	0.00027204
33	Yes	4	0.00000001	0.00026599
34	Yes	4	0.00000001	0.00027702
35	Yes	4	0.00000001	0.00028076
36	Yes	4	0.00000001	0.00027545
37	Yes	4	0.00000001	0.00028116
38	Yes	4	0.00000001	0.00027771
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000482
41	Yes	4	0.00000001	0.00000516
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000583
44	Yes	4	0.00000001	0.00000490
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000562
47	Yes	4	0.00000001	0.00000504
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000492
50	Yes	4	0.00000001	0.00000609

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115.5 - 83.92	4.711	48	0.3292	0.0006
L2	89.25 - 41.25	2.976	48	0.2933	0.0006
L3	48 - 0	0.904	48	0.1678	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.00	BXA-171063-8BF-2 w/ Mount Pipe	48	4.711	0.3292	0.0006	152899
104.00	DB411-A	48	3.934	0.3165	0.0006	66478
97.00	APXVAARR24_43-U-NA20	48	3.471	0.3070	0.0006	41324
87.00	7770.00 w/ Mount Pipe	48	2.836	0.2886	0.0005	27173
75.00	742 213	48	2.133	0.2578	0.0005	19952
69.00	MX08FRO665-20 w/ Mount Pipe	48	1.813	0.2396	0.0004	17616

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115.5 - 83.92	23.437	20	1.6375	0.0027

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	89.25 - 41.25	14.808	20	1.4588	0.0026
L3	48 - 0	4.499	20	0.8355	0.0008

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.00	BXA-171063-8BF-2 w/ Mount Pipe	20	23.437	1.6375	0.0027	30840
104.00	DB411-A	20	19.574	1.5743	0.0028	13408
97.00	APXVAARR24_43-U-NA20	20	17.272	1.5267	0.0028	8334
87.00	7770.00 w/ Mount Pipe	20	14.113	1.4352	0.0026	5478
75.00	742 213	20	10.617	1.2822	0.0021	4018
69.00	MX08FRO665-20 w/ Mount Pipe	20	9.024	1.1917	0.0019	3546

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	115.5 - 83.92 (1)	TP40.829x32.25x0.25	31.58	0.00	0.0	31.500 5	-10.88	1704.79	0.006
L2	83.92 - 41.25 (2)	TP51.92x38.8811x0.3125	48.00	0.00	0.0	50.085 0	-27.90	2674.31	0.010
L3	41.25 - 0 (3)	TP62.5x49.4614x0.375	48.00	0.00	0.0	75.015 9	-44.92	3879.40	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	115.5 - 83.92 (1)	TP40.829x32.25x0.25	252.76	1361.13	0.186	0.00	1361.13	0.000
L2	83.92 - 41.25 (2)	TP51.92x38.8811x0.3125	1110.74	2716.25	0.409	0.00	2716.25	0.000
L3	41.25 - 0 (3)	TP62.5x49.4614x0.375	2459.08	4919.18	0.500	0.00	4919.18	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	115.5 - 83.92 (1)	TP40.829x32.25x0.25	12.47	552.83	0.023	0.13	1902.90	0.000
L2	83.92 - 41.25 (2)	TP51.92x38.8811x0.3125	24.97	878.99	0.028	0.46	3848.45	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L3	41.25 - 0 (3)	TP62.5x49.4614x0.375	31.21	1316.53	0.024	0.46	7194.44	0.000

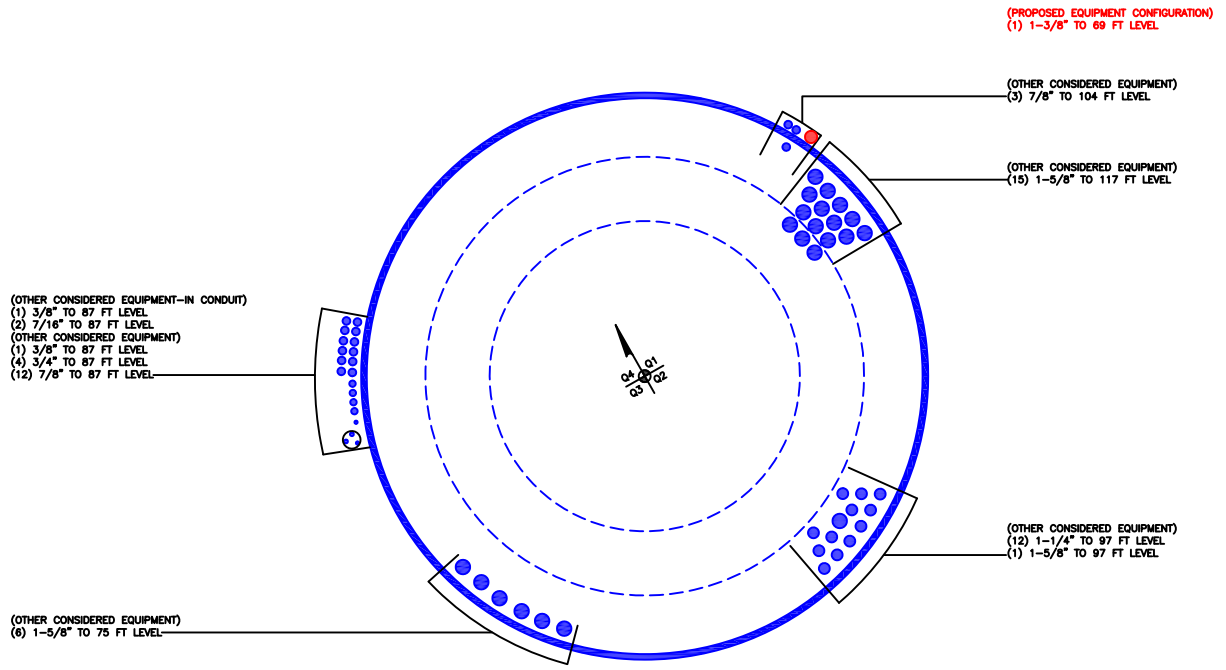
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	115.5 - 83.92 (1)	0.006	0.186	0.000	0.023	0.000	0.193	1.050	4.8.2
L2	83.92 - 41.25 (2)	0.010	0.409	0.000	0.028	0.000	0.420	1.050	4.8.2
L3	41.25 - 0 (3)	0.012	0.500	0.000	0.024	0.000	0.512	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	115.5 - 83.92	Pole	TP40.829x32.25x0.25	1	-10.88	1790.03	18.3	Pass
L2	83.92 - 41.25	Pole	TP51.92x38.8811x0.3125	2	-27.90	2808.03	40.0	Pass
L3	41.25 - 0	Pole	TP62.5x49.4614x0.375	3	-44.92	4073.37	48.8	Pass
Summary								
Pole (L3)							48.8	Pass
RATING =							48.8	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

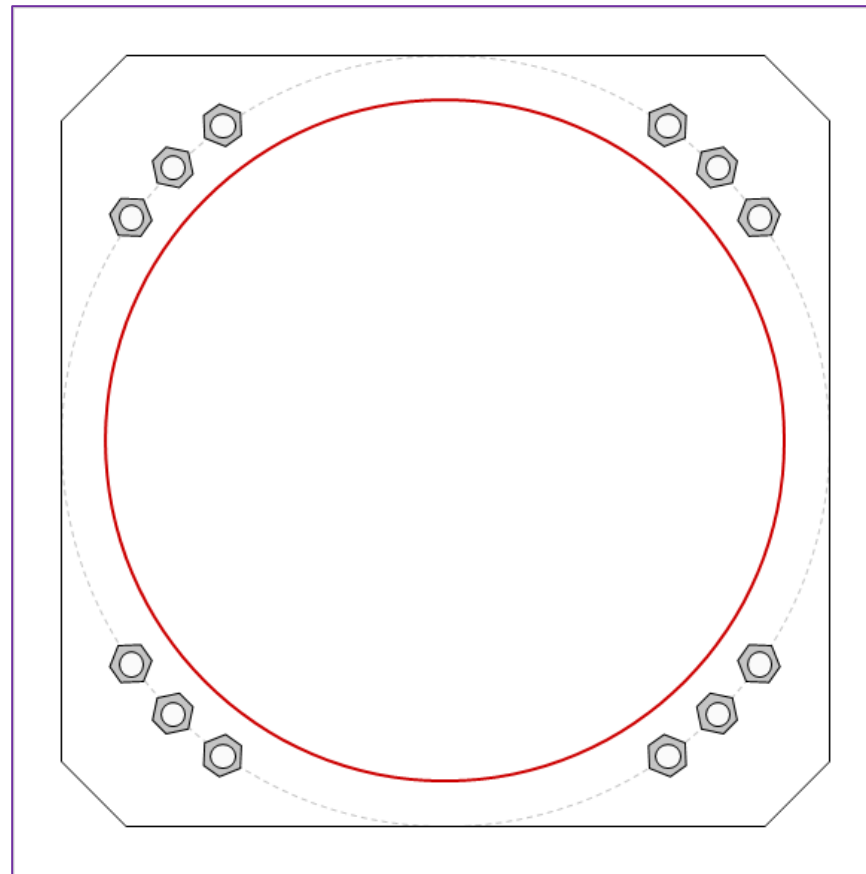


Site Info	
BU #	806367
Site Name	HRT 046 943209
Order #	553284 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.75

Applied Loads	
Moment (kip-ft)	2459.08
Axial Force (kips)	44.92
Shear Force (kips)	31.21

*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 71" BC <i>Anchor Spacing: 6 in</i>
Base Plate Data
71" W x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi); Clip: 6 in
Stiffener Data
N/A
Pole Data
62.5" x 0.375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary			<i>(units of kips, kip-in)</i>
$P_{u_t} = 134.74$	$\phi P_{n_t} = 243.75$	Stress Rating	
$V_u = 2.6$	$\phi V_n = 149.1$	52.6%	
$M_u = n/a$	$\phi M_n = n/a$	Pass	
Base Plate Summary			
Max Stress (ksi):	28.65	(Flexural)	
Allowable Stress (ksi):	54		
Stress Rating:	50.5%	Pass	

Pier and Pad Foundation



BU #: 806367
Site Name: HRT 046 943209
App. Number: 553284 Rev 0

TIA-222 Revision: H
Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	45	kips
Base Shear, Vu_{comp} :	31	kips
Moment, M_u :	2459	ft-kips
Tower Height, H :	115.5	ft
BP Dist. Above Fdn, bp_{dist} :	6	in
Bolt Circle / Bearing Plate Width, BC :	71	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	116.41	31.00	25.4%	Pass
<i>Bearing Pressure (ksf)</i>	9.00	1.63	18.1%	Pass
<i>Overturning (kip*ft)</i>	4334.77	2598.50	59.9%	Pass
<i>Pad Flexure (kip*ft)</i>	3946.25	1038.91	25.1%	Pass
<i>Pad Shear - 1-way (kips)</i>	1072.17	138.62	12.3%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.002	1.4%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	3730.81	0.00	0.0%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	59.9%
Structural Rating*:	25.1%

Pad Properties		
Depth, D :	3.5	ft
Pad Width, W_1 :	25	ft
Pad Thickness, T :	4	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	26	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Gross Bearing, Q_{ult} :	12.000	ksf
Cohesion, C_u :		ksf
Friction Angle, ϕ :	36	degrees
SPT Blow Count, N_{blows} :	33	
Base Friction, μ :	0.4	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	8	ft

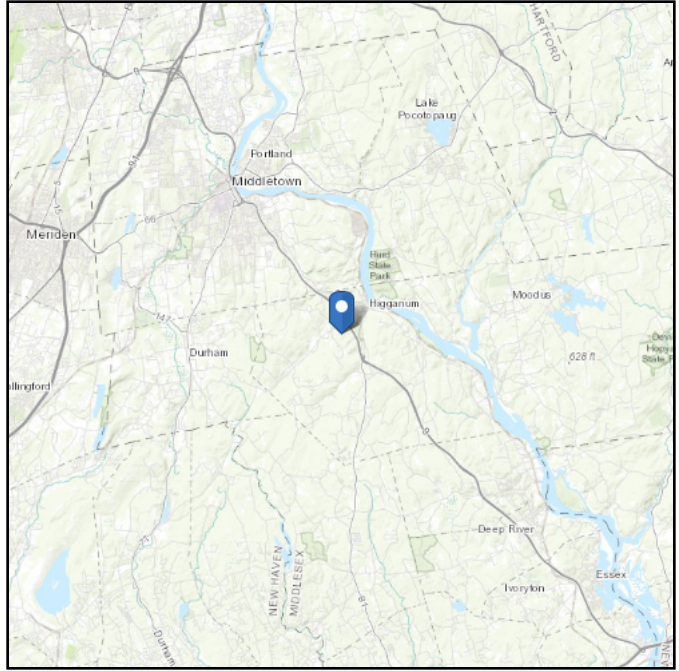
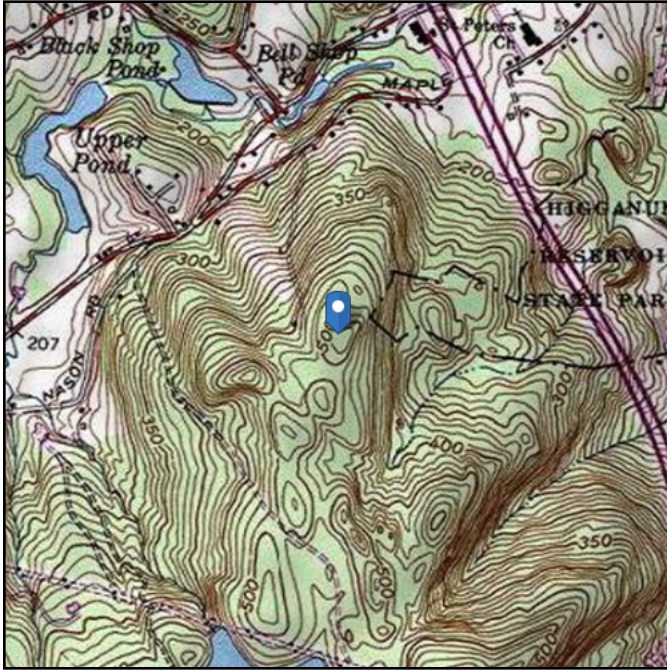
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 514.59 ft (NAVD 88)
Latitude: 41.484594
Longitude: -72.572447

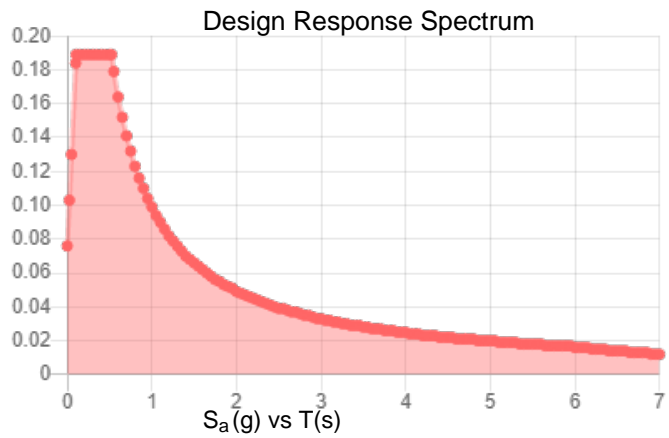
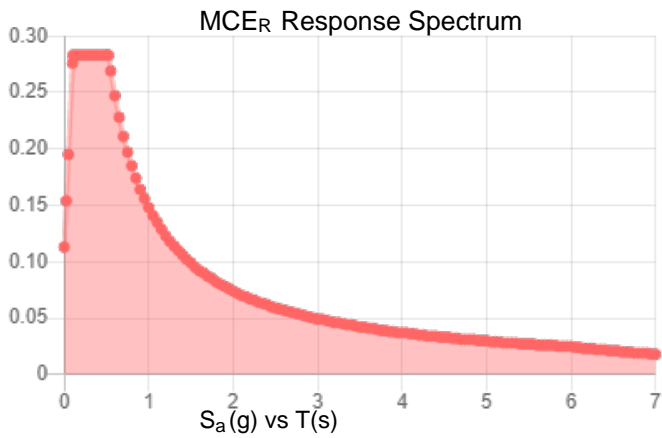


Site Soil Class: D - Stiff Soil

Results:

F_a :	1.6	S_{DS} :	0.189
F_v :	2.4	S_{D1} :	0.099
S_{MS} :	0.283	T_L :	6
S_{M1} :	0.148	PGA :	0.09
		PGA_M :	0.144
		F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Wed Nov 18 2020

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

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

Date Accessed: Wed Nov 18 2020

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Date: **July 20, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589



Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject: **Mount Replacement Analysis Report**

Carrier Designation: **Dish Network Equipment Change Out**
Carrier Site Number: BOBDL00043A
Carrier Site Name: CT-CCI-T-806367

Crown Castle Designation: **Crown Castle BU Number:** 806367
Crown Castle Site Name: HRT 046 943209
Crown Castle JDE Job Number: 645110
Crown Castle Order Number: 553284 Rev. 0

Engineering Firm Designation: **Trylon Report Designation:** 188199

Site Data: **65 Maple Ave West, Haddam, Middlesex County, CT, 06441**
Latitude 41°29'4.54" Longitude -72°34'20.81"

Structure Information: **Tower Height & Type:** **115.5 ft Monopole**
Mount Elevation: **69.0 ft**
Mount Type: **8.0 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this "**Mount Replacement Analysis Report**" to determine the structural integrity of Dish Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform

Sufficient

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Bryan P. Mawhinney

Respectfully Submitted by:
Cliff Abernathy, P.E.



TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

4.1) Recommendations

5) APPENDIX A

Wire Frame and Rendered Models

6) APPENDIX B

Software Input Calculations

7) APPENDIX C

Software Analysis Output

8) APPENDIX D

Additional Calculations

9) APPENDIX E

Supplemental Drawings

1) INTRODUCTION

This is a proposed 3 sector 8.0 ft Platform, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.175
Seismic S₁:	0.061
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
69.0	69.0	3	JMA WIRELESS	MX08FRO665-20	8.0 ft Platform [Commscope MC-PK8-DSH]
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	553284 Rev. 0	CCI Sites
Construction Drawings	Infinigy	Site ID: BOBDL00043A	TSA
Mount Manufacturer Drawings	Commscope	MC-PK8-DSH	TSA

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	69.0	37.9	Pass
	Horizontal(s)	M17		9.0	Pass
	Standoff(s)	M12		57.2	Pass
	Handrail(s)	M24		42.2	Pass
	Mount Connection(s)	--		23.6	Pass

Structure Rating (max from all components) =	57.2%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5

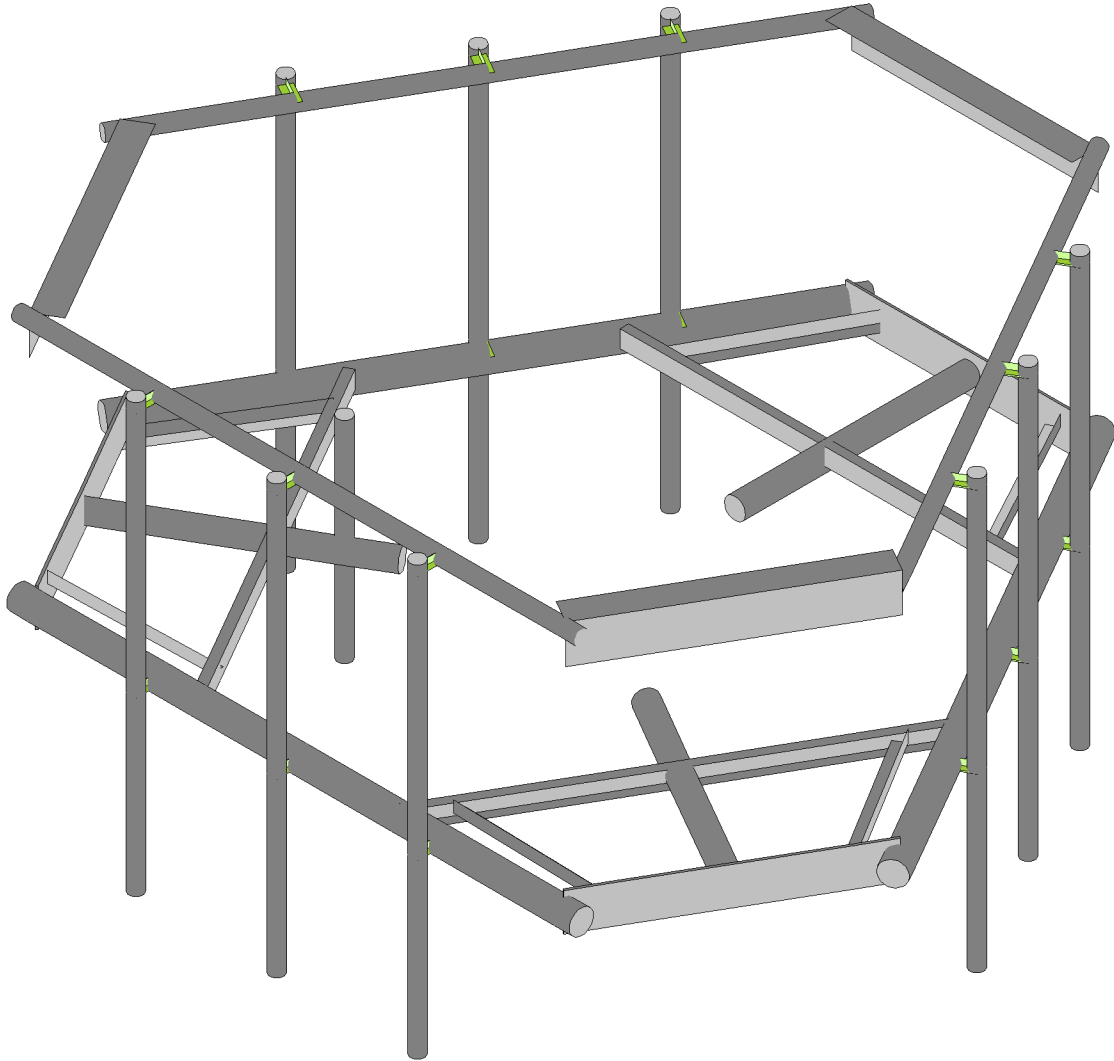
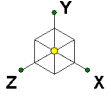
4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Commscope MC-PK8-DSH.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



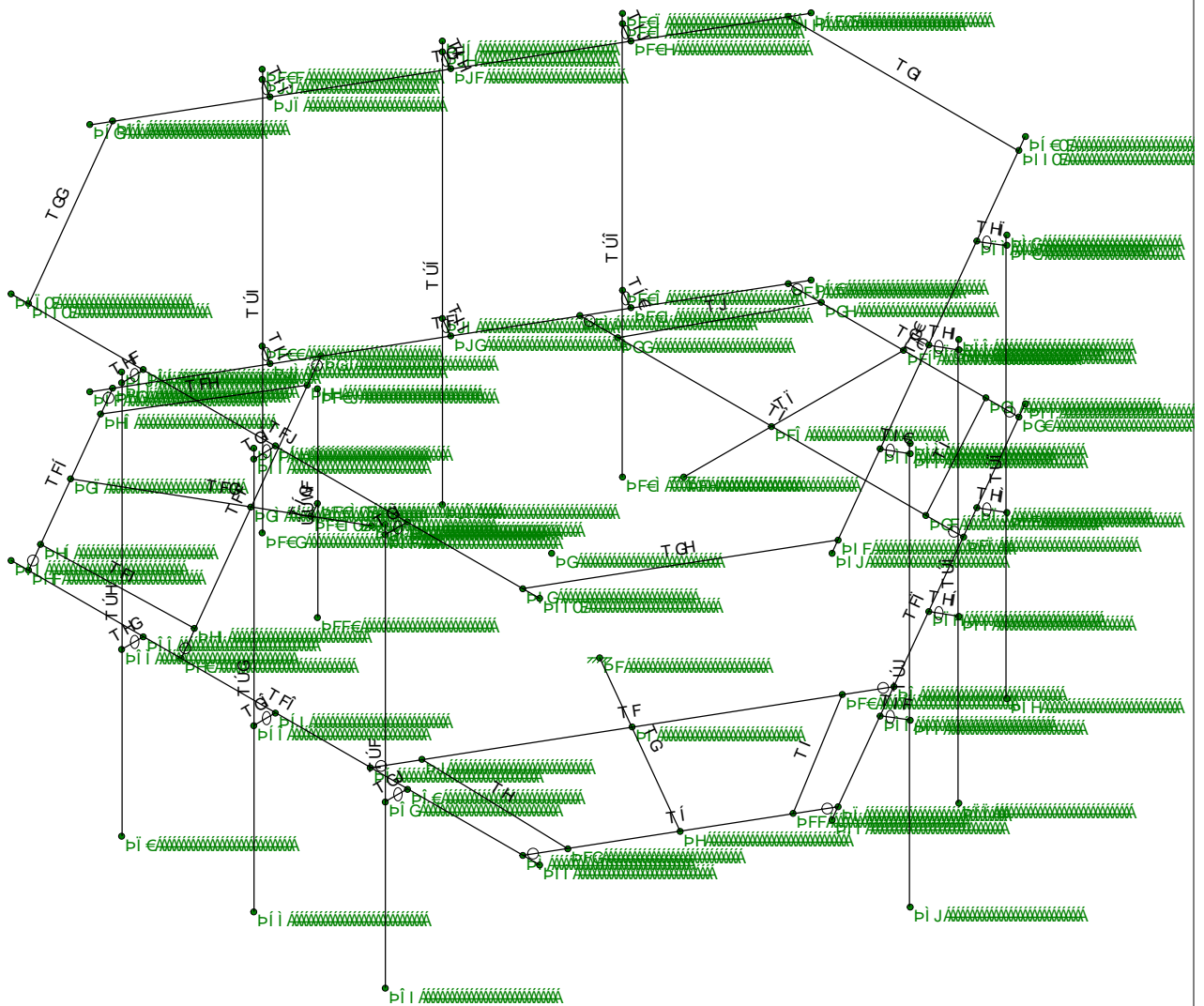
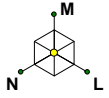
Trylon

MC-PK8-C

SK - 1

July 20, 2021 at 3:16 PM

MC-PK8-C_loaded.r3d



V¹{}

T ÔËSÌ ÈÖ

ÛSÄG

R | ÅËÇÇFÄÖKI ÁÚT

T ÔËSÌ ÈÖ || æræðð

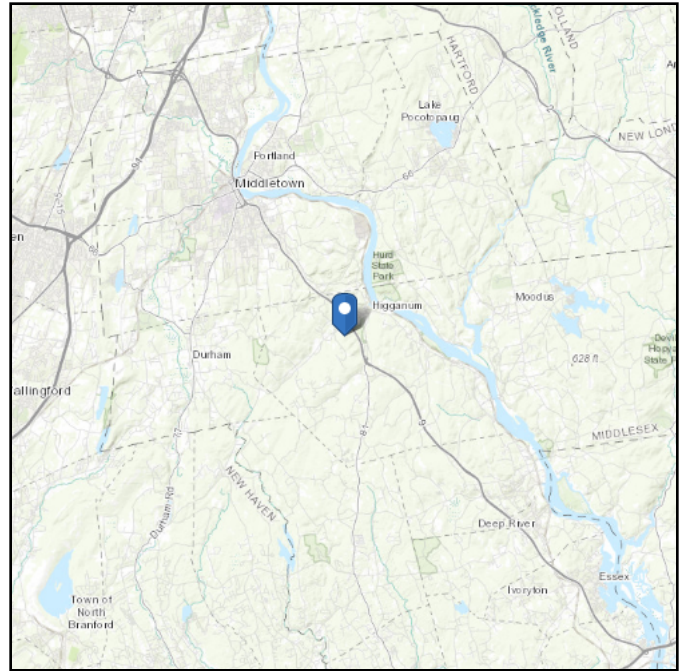
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 514.59 ft (NAVD 88)
Latitude: 41.484594
Longitude: -72.572447



Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

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

Date Accessed: Tue Jul 20 2021

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.



Trylon

1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	188199
Carrier Site ID:	BOBDL00043A
Carrier Site Name:	BOBDL00043A

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	0
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	69.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	115.5	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	514	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	130	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	0.89	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G _h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	35.86	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{iz}):	35.86	psf
Mount Ice Thickness (t_{iz}):	1.61	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	64.54	psf
Round Member Pressure:	38.73	psf
Ice Wind Pressure:	6.94	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.18	g
1 Second Accel. (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

APPENDIX D
ADDITIONAL CALCUATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	188200
Carrier Site ID:	BOBDL00091A
Carrier Site Name:	BOBDL00091A

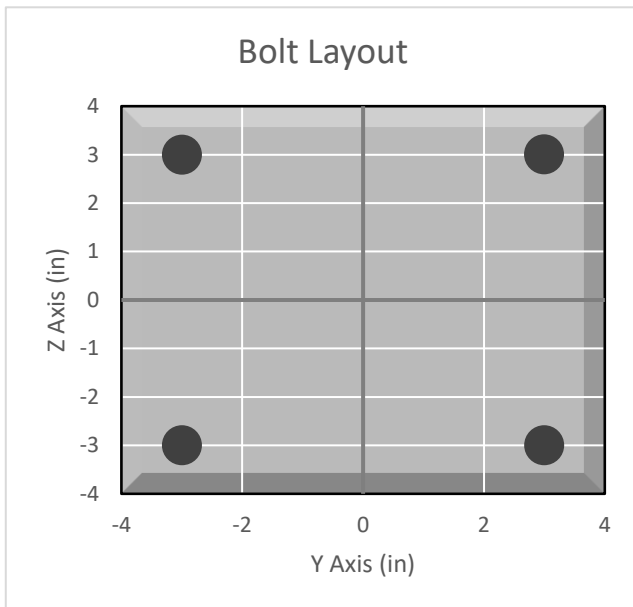
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Mount Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	5033.1	lbs
Shear Force (V_u):	1554.8	lbs
Tension Usage:	23.6%	--
Shear Usage:	10.7%	--
Interaction:	23.6%	Pass
Controlling Member:	M1	--
Controlling LC:	40	--

*Rating per TIA-222-H Section 15.5



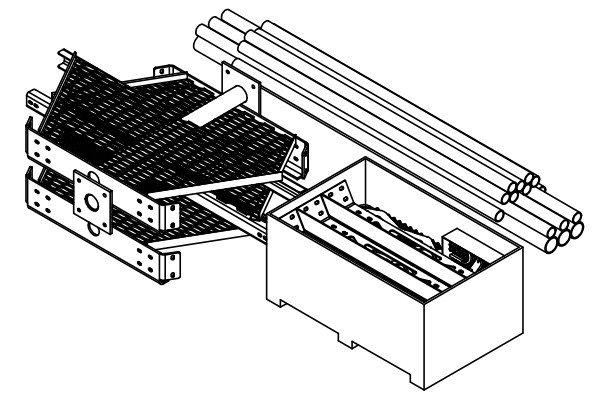
APPENDIX E
SUPPLEMENTAL DRAWINGS

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	MTC3006SB	STEEL BUNDLE FOR SNUB NOSE PLATFORM	1	402.64 LBS	
2	MCPK8CSB	PIPE STEEL BUNDLE FOR MC-PK8-C	1	464.27 LBS	
3	MCPK8CHWK	HARDWARE KIT FOR MC-PK8-C	1	543.22 LBS	




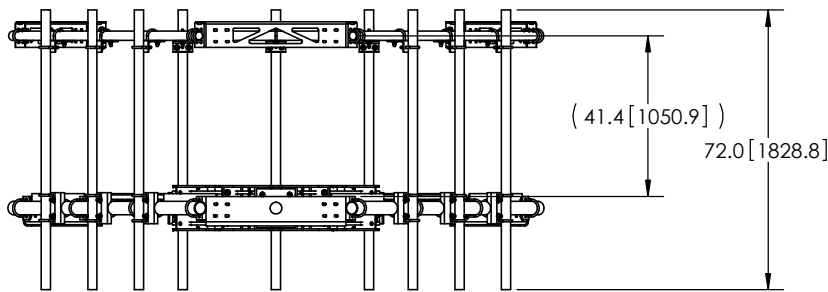
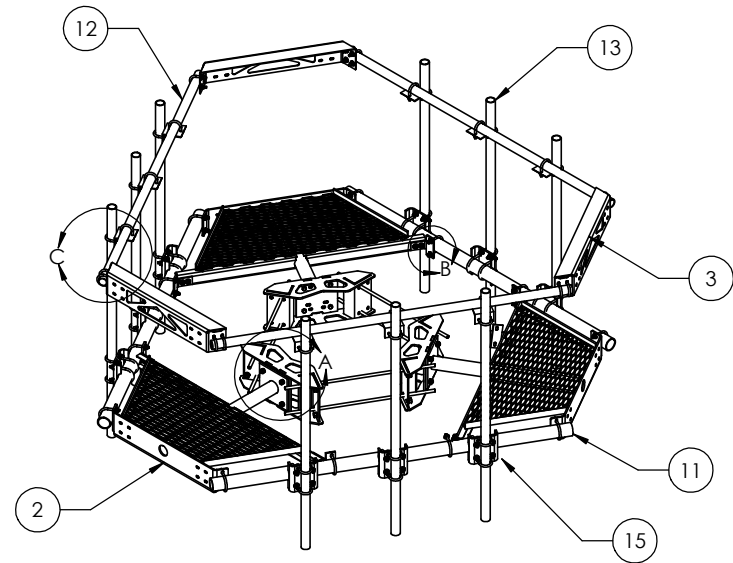
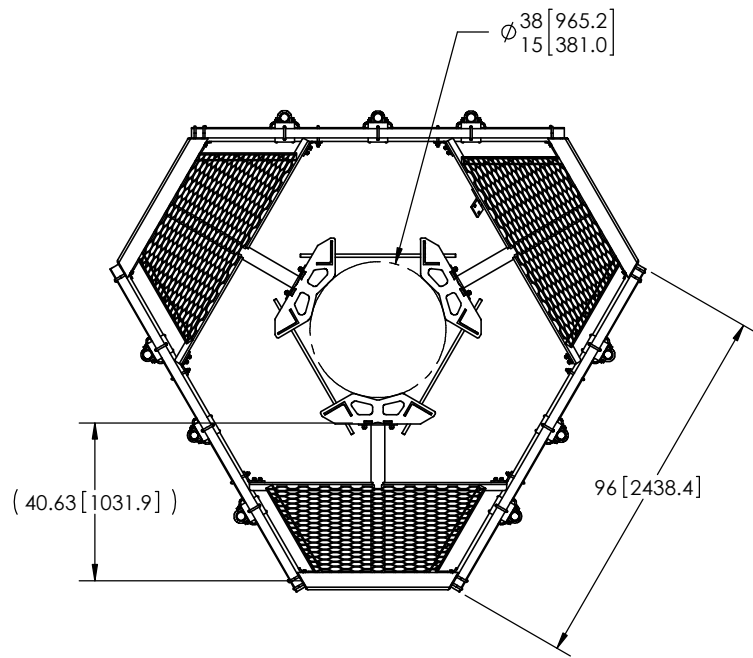
REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	DRR	12/27/11
B	8000005979	CHANGE NOSE CORNER BRKT, ADD GUB-4240	MSM	11/25/14
C	8000007579	NEW RINGMOUNT WELDMENT DESIGN	RJC	04/07/15

FOR BOM ENTRY ONLY



NOTES:
1. CUSTOMER ASSEMBLY SHEETS 2-3.

<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>			<small>DRAWN BY:</small> MSM	<small>SHEET:</small> 1 of 3	<small>PART NUMBER:</small> MC-PK8-C
<small>ALL DIMENSIONS ARE IN INCHES U.O.S. TOLERANCES UNLESS OTHERWISE SPECIFIED:</small> .X = ± .12 ANGLES ±2° .XX = ± .06 FRACTIONS ±1/32 .XXX = ± .03 REMOVE BURRS AND BREAK EDGES .005			<small>CHECKED BY:</small> TP	<small>SCALE:</small> NTS	<small>DESCRIPTION:</small> LOW PROFILE PLATFORM KIT 8' FACE
<small>DO NOT SCALE THIS PRINT</small>			<small>DATE:</small> 10/18/11	<small>MATERIAL:</small> A36, A500	<small>DRAWING TYPE:</small> ASSEMBLY DRAWING
			<small>REVISION:</small> C	<small>FINISH:</small> GALV A123	 WESTCHESTER, IL. 60154 U.S.A.
				<small>WEIGHT:</small> 1410.14 LBS	



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MC-RM1550-3	12" - 50" OD RINGMOUNT	1	230.42 LBS
2	MTC300601	Low Profile Co-Location Platform Snub Nose	3	134.21 LBS
3	MT195801	Corner Weldment Snub Nose Handrail	3	27.10 LBS
4	XA2020.01	CROSS OVER ANGLE	9	2.65 LBS
5	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT	18	0.82 LBS
6	GUB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12	0.71 LBS
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	48	0.56 LBS
8	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	12	0.13 LBS
9	GWF-04	1/2" GALV FLAT WASHER	24	0.03 LBS
10	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12	0.27 LBS
11	MT54796	3.50" OD X 96" GALV PIPE	3	60.28 LBS
12	MT-651-96	Ø2.375" OD X 96" PIPE	3	29.07 LBS
13	MT-651	2.375" OD x 72" PIPE	9	21.80 LBS
14	MT19617	MT196 Pipe Mount Plate	6	2.49 LBS
15	MT21701	PIPE MOUNT PLATE	9	7.93 LBS

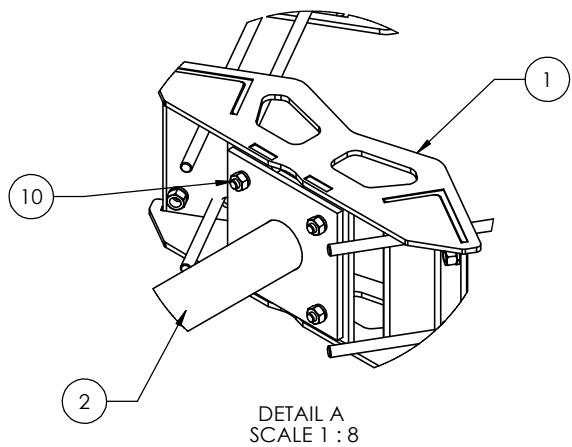
<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>			
<small>ALL DIMENSIONS ARE IN INCHES U.O.S. TOLERANCES UNLESS OTHERWISE SPECIFIED:</small> .X = ± .12 ANGLES ±2° .XX = ± .06 FRACTIONS ±1/32 .XXX = ± .03 REMOVE BURRS AND BREAK EDGES .005 DO NOT SCALE THIS PRINT	<small>DRAWN BY:</small> MSM <small>CHECKED BY:</small> TP <small>DATE:</small> 10/18/11 <small>REVISION:</small> C	<small>SHEET:</small> 2 of 3 <small>SCALE:</small> NTS <small>DATE:</small> 10/18/11 <small>REVISION:</small> C	<small>PART NUMBER:</small> MC-PK8-C <small>DESCRIPTION:</small> 25" OD Snub Nose MT-196 <small>MATERIAL:</small> A36, A53 <small>DRAWING TYPE:</small> ASSEMBLY DRAWING <small>WEIGHT:</small> 1361.27 LBS

NOTES:

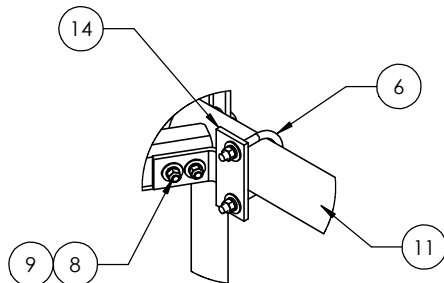
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.
2. WILL FIT MONOPOLES 15"-38" OD.



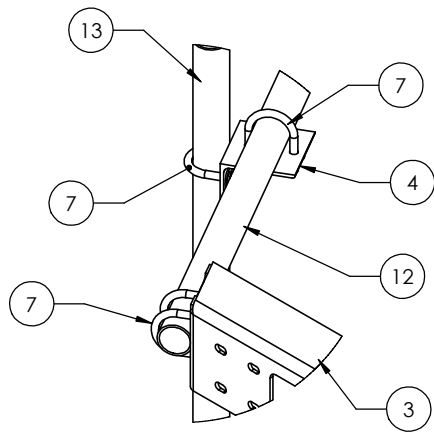
8 7 6 5 4 3 2 1



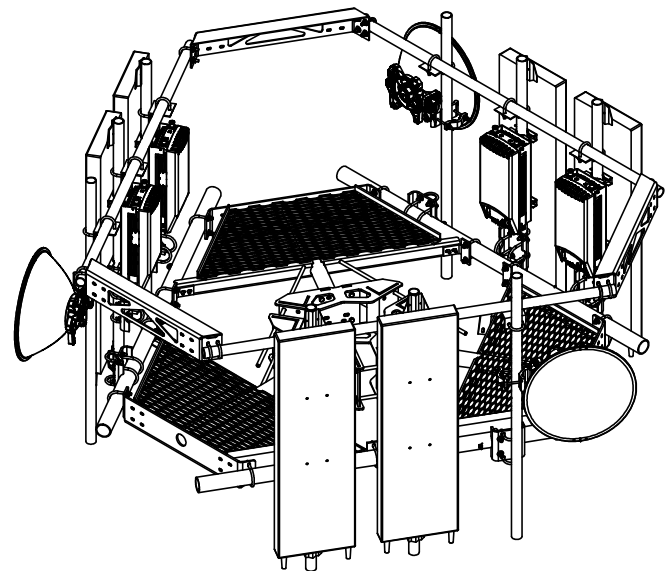
DETAIL A
SCALE 1 : 8



DETAIL B
SCALE 1 : 8




DETAIL C
SCALE 1 : 8



WITH ANTENNAS

NOTES:
1. ALL METRIC DIMENSIONS ARE IN BRACKETS.

<small>These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew Corporation.</small>		<small>DRAWN BY:</small> MSM	<small>SHEET:</small> 3 of 3	<small>PART NUMBER:</small> MC-PK8-C
<small>ALL DIMENSIONS ARE IN INCHES U.O.S. TOLERANCES UNLESS OTHERWISE SPECIFIED:</small>		<small>CHECKED BY:</small> TP	<small>SCALE:</small> NTS	<small>DESCRIPTION:</small> 25" OD Snub Nose MT-196
<small>.X = ± .12 ANGLES ±2° .XX = ± .06 FRACTIONS ±1/32 .XXX = ± .03</small>		<small>DATE:</small> 10/18/11	<small>MATERIAL:</small> A36, A53	<small>DRAWING TYPE:</small> ASSEMBLY DRAWING
<small>REMOVE BURRS AND BREAK EDGES .005</small>		<small>REVISION:</small> C	<small>FINISH:</small> GALV A123	 WESTCHESTER, IL. 60154 U.S.A.
<small>DO NOT SCALE THIS PRINT</small>			<small>WEIGHT:</small> 1.361.27 LBS	

8 7 6 5 4 3 2 1