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

January 3, 2023

Theresa Ranciato-Viele
Tectonic Engineering
63-3 North Branford Road
Branford, CT 06405
tranciato@tectonicengineering.com

RE: **TS-DISH-057-221110 –** Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 395 Round Hill Road, Greenwich, Connecticut.

Dear Theresa Ranciato-Viele:

The Connecticut Siting Council (Council) is in receipt of correspondence of January 3, 2023 submitted in response to the Council's November 29, 2022 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,

Melanie Bachman
Executive Director

MAB/ANM/laf

From: Ray Lemley <rlemley@csofb.com>
Sent: Tuesday, January 3, 2023 6:43 AM
To: CSC-DL Siting Council <Siting.Council@ct.gov>
Cc: Bartley, Danielle <DBartley@tectonicengineering.com>; Ranciato, Theresa <TRanciato@tectonicengineering.com>
Subject: TS-Dish-057-221110/395 Round Hill Rd., Greenwich/Revised Structural

Good morning:

Attached please find a Revised Structural analysis for the above Tower Share Application. A hard copy is also being mailed. Please advise if anything else is needed to complete the filing.

Thank you,
Ray Lemley

RAY LEMLEY

Construction Services of Branford

63-3 N. Branford Road, Branford CT 06405

Main: (203) 488-0712 **Direct:** (203) 433-7533

Fax: (203) 481-1135 **Mobile:** (203) 499-8631

Structural Analysis Report

Prepared for:

KGI
805 Las Cimas Parkway, Building Three, Suite 370
Austin, TX 78746

ATTN: Ms. Jacquie Cossey

Structure	:	**114 ft Monopole**
Site ID	:	**27741_B**
Proposed Carrier	:	**Dish Wireless**
Site Name	:	**Round Hill CT**
Site Location	:	**395 Round Hill Road** **Greenwich, CT** **41.095117, -73.664219**
County	:	**Fairfield**
Date	:	**December 29, 2022**
Max Structure Usage	:	**81%**
Max Foundation Usage	:	**59%**
Result	:	**Pass**

Prepared By:
Trevor Kuper, E.I.T.
Structural Engineer

STATE OF CONNECTICUT
THOMAS L TAYLOR
No. 28130
LICENSED
PROFESSIONAL ENGINEER
12.29.22

EXP. 01/31/2023
COA: PEC.0001536
EXP. 08/04/2023

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 114 ft Monopole to reflect the change in loading by Dish Wireless.

Supporting Documents

Tower Drawing	EEI Drawing # GS56652-2, dated September 28, 2007
Foundation Drawing	EEI Drawing # 14679S-115.0, dated February 12, 2007
Geotechnical Report	Clarence Welti Associates Project Name Verion Wireless Site, dated February 6, 2007
Tower Loadings	KGI/Dish Wireless TLF, dated January 30, 2022
Proposed Loading	Tectonic Construction Drawings Project # 10710.NJJER01125A, dated August 3, 2021

Analysis

The tower was analyzed using TNX tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed *	120 mph (3-Second Gust) Vult
Basic Wind Speed w/Ice	47 mph (3-Second Gust) w/ 1" radial ice concurrent
Code	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Risk Category	II
Exposure Category	C
Topographic Category	1
Crest Height	0 ft
Spectral Response	Ss = 0.27 , S1 = 0.05
Site Class	B - Competent Rock
Ground Elevation	378.96 ft

* Tower is located in a Hurricane Prone Region per 2022 Connecticut State Building Code.

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.

Existing and Reserved Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
110.0	110.0	3	782 11066	(2) Flush Canister Mounts	(12) 1 5/8"	T-Mobile
		3	DBXNH-6565A-A2M			
		3	TMAT1921XB6811A			
100.0	100.0	9	IBC1900HG-SA	(2) Flush Canister Mounts	(2) 1 1/4" (6) 1 5/8"	Sprint
		6	KIT-FD9R6004/1C-DL			
		3	APXVSPP18-C-A20			
90.0	90.0	-	-	(2) Flush Canister Mounts	-	-
82.0	83.0	1	GPS	(1) 3' Sidearm	(1) 1/2"	Sprint

Equipment to be Removed

This loading **is not** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
90.0	90.0	1	10' 30" Dia. Canister	-	-	-

Proposed Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
90.0	90.0	6	CDX623T-DS-T	(2) Flush Canister Mounts	(12) 7/8"	Dish Wireless
		1	10' 40" Dia. Canister			
		3	FVV-65B-R3			

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Shaft	41%	Pass
Anchor Bolts	58%	Pass
Baseplate	42%	Pass
Flange	81%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	592.2	59%
Axial (Kips)	17.9	28%
Shear (Kips)	9.3	10%
Reinf. Conc. Fnd. Capacity	N/A	25%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

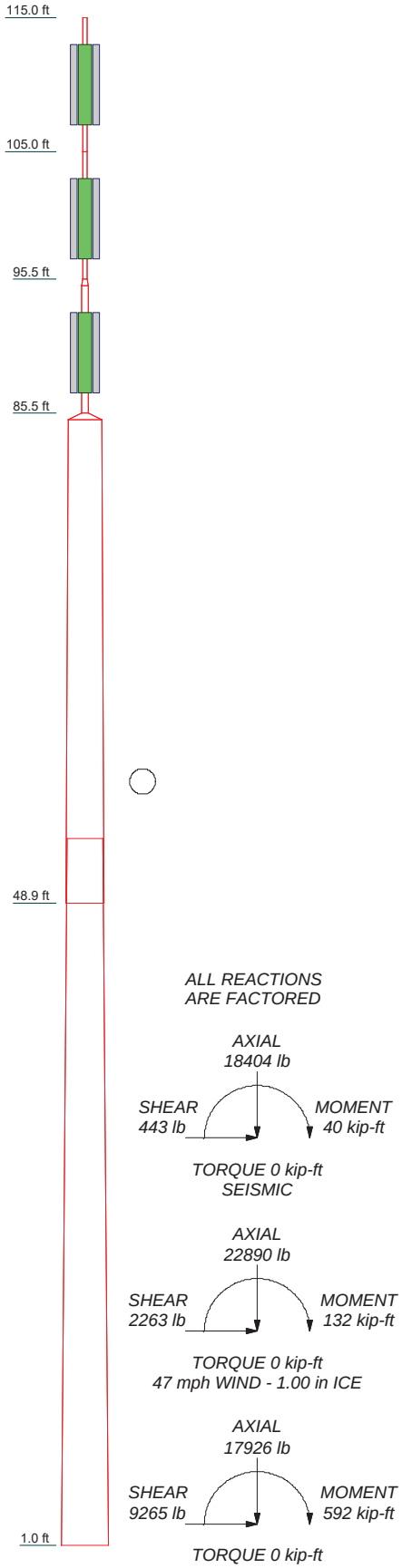
It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Semaan Engineering Solutions Holdings is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Section	1	2	3	4	5	6	7
Length (ft)	10.00	9.50	0.50	9.50	0.50	36.05	52.76
Number of Sides	1	1	1	1	1	18	18
Thickness (in)	2.25	2.25	2.25	2.88	2.88	0.19	0.25
Socket Length (ft)						4.82	
Top Dia (in)	4.50	4.50	4.50	5.75	5.75	29.25	32.40
Bot Dia (in)	4.50	4.50	5.75	5.75	29.25	33.32	41.00
Grade				A572-50			A572-65
Weight (lb)	541.2	514.1	34.6	839.4	224.7	2270.6	5192.8

Total Weight (lb): 9617.4



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 47 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. CCISeismic Note: Seismic loads generated by CCISeismic 3.3.6
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1
10. TOWER RATING: 41.3%

ALL REACTIONS ARE FACTORED

TORQUE 0 kip-ft
SEISMIC

TORQUE 0 kip-ft
47 mph WIND - 1.00 in ICE

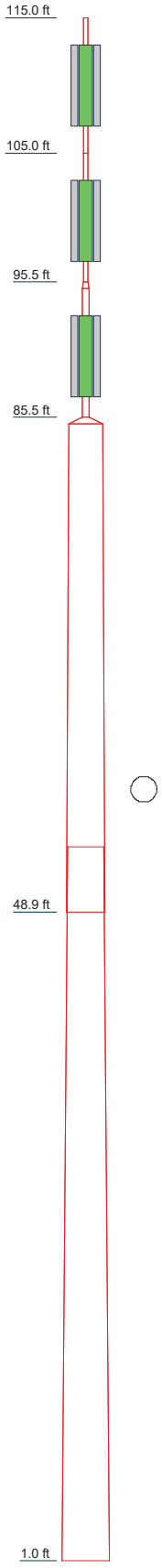
TORQUE 0 kip-ft
REACTIONS - 120 mph WIND

Semaan Engineering Solutions, LLC
1047 S. 205th St.
Elkhorn, NE, 68022
Phone: (402)-289-1888
FAX: (402)-289-1861

Job: ***27741_B_Round Hill CT***			
Project: ***REV02B***			
Client: KGI	Drawn by: TrevorK	App'd:	
Code: TIA-222-H	Date: 12/29/22	Scale: NTS	
Path: \\DMZSESSERVER01\Common\TNX files\27741_B\REV02B\27741_B_REV02B.eri		Dwg No. E-1	

Section	1	2	3	4	5	6	7
Length (ft)	10.00	9.50	0.50	9.50	0.50	36.05	52.76
Number of Sides	1	1	1	1	1	18	18
Thickness (in)	2.25	2.25	2.25	2.88	2.88	0.19	0.25
Socket Length (ft)						4.82	
Top Dia (in)	4.50	4.50	4.50	5.75	5.75	29.25	32.40
Bot Dia (in)	4.50	4.50	5.75	5.75	29.25	33.32	41.00
Grade	A572-50						A572-65
Weight (lb)	541.2	514.1	34.6	839.4	224.7	2270.6	5192.8

Total Weight (lb): 9617.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' 30" Dia. Canister	115 - 105	(2) KIT-FD9R6004/1C-DL (Sprint)	100
Top Flange	115	(2) KIT-FD9R6004/1C-DL (Sprint)	100
(2) Canister Mount (T-Mobile)	110	(3) IBC1900HG-SA (Sprint)	100
DBXNH-6565A-A2M (T-Mobile)	110	(3) IBC1900HG-SA (Sprint)	100
DBXNH-6565A-A2M (T-Mobile)	110	(3) IBC1900HG-SA (Sprint)	100
DBXNH-6565A-A2M (T-Mobile)	110	(2) Canister Mount (Sprint)	100
TMAT1921XB6811A (T-Mobile)	110	Spoke Flanges	95
TMAT1921XB6811A (T-Mobile)	110	10' 40" Dia. Canister	95 - 85
TMAT1921XB6811A (T-Mobile)	110	FVV-65B-R3 (Dish Wireless)	90
782 11066 (T-Mobile)	110	(2) CDX623T-DS-T (Dish Wireless)	90
782 11066 (T-Mobile)	110	(2) CDX623T-DS-T (Dish Wireless)	90
782 11066 (T-Mobile)	110	(2) CDX623T-DS-T (Dish Wireless)	90
Spoke Flanges	105	FVV-65B-R3 (Dish Wireless)	90
10' 30" Dia. Canister	105 - 95	FVV-65B-R3 (Dish Wireless)	90
APXVSPP18-C-A20 (Sprint)	100	(2) Canister Mount (Dish Wireless)	90
APXVSPP18-C-A20 (Sprint)	100	Spoke Flanges	85
APXVSPP18-C-A20 (Sprint)	100	GPS (Sprint)	82
(2) KIT-FD9R6004/1C-DL (Sprint)	100	3' Sidearm (Sprint)	82

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Project: ***REV02B***			
Client: KGI	Drawn by: TrevorK	App'd:	
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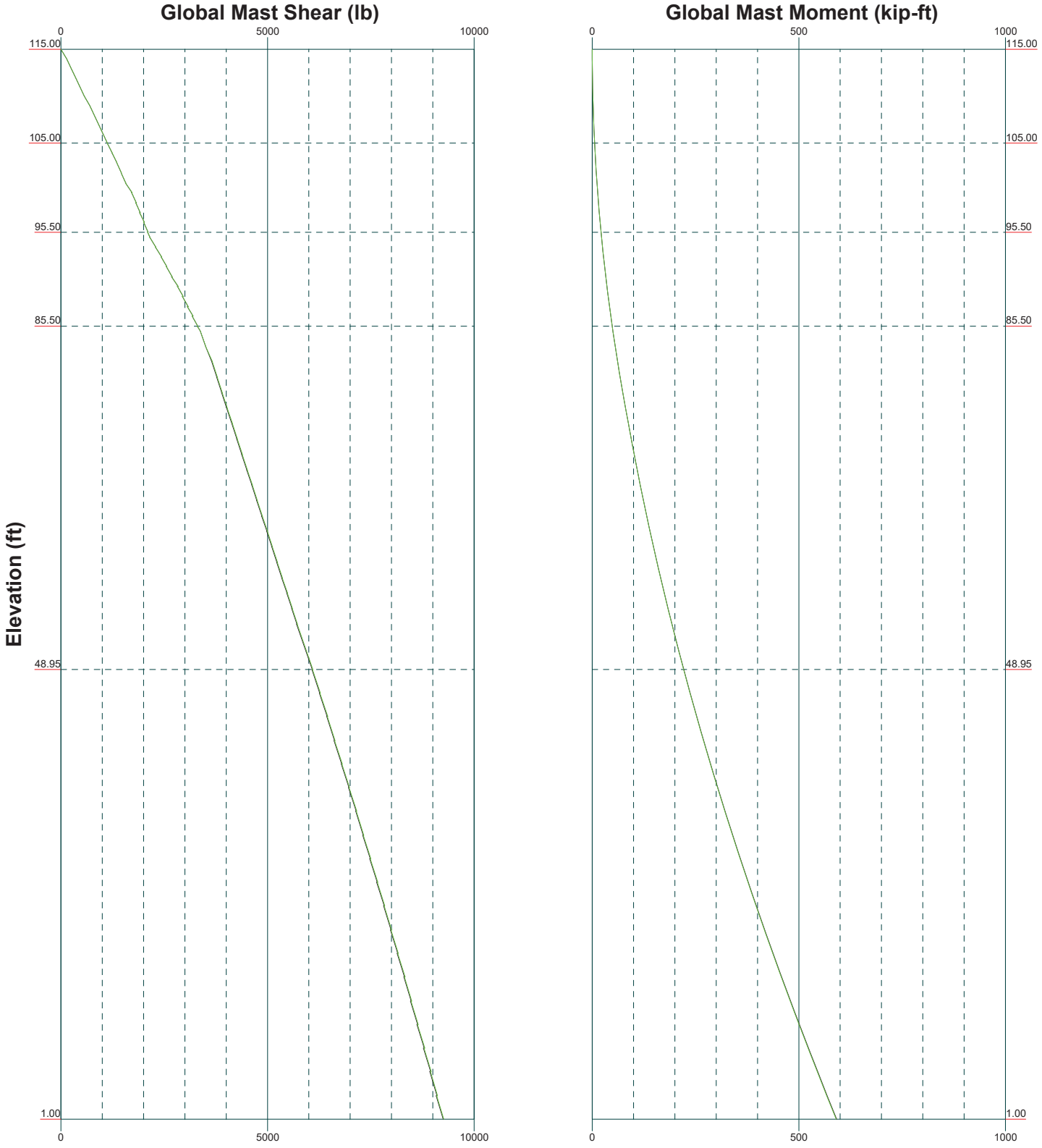
Path: \\DMZSESSERVER01\Common\TNX files\27741_B\REV02B\27741_B_REV02B.eri		Dwg No. E-1	

TIA-222-H - 120 mph/47 mph 1.00 in Ice Exposure C

Maximum Values

Vx Vz Mx Mz



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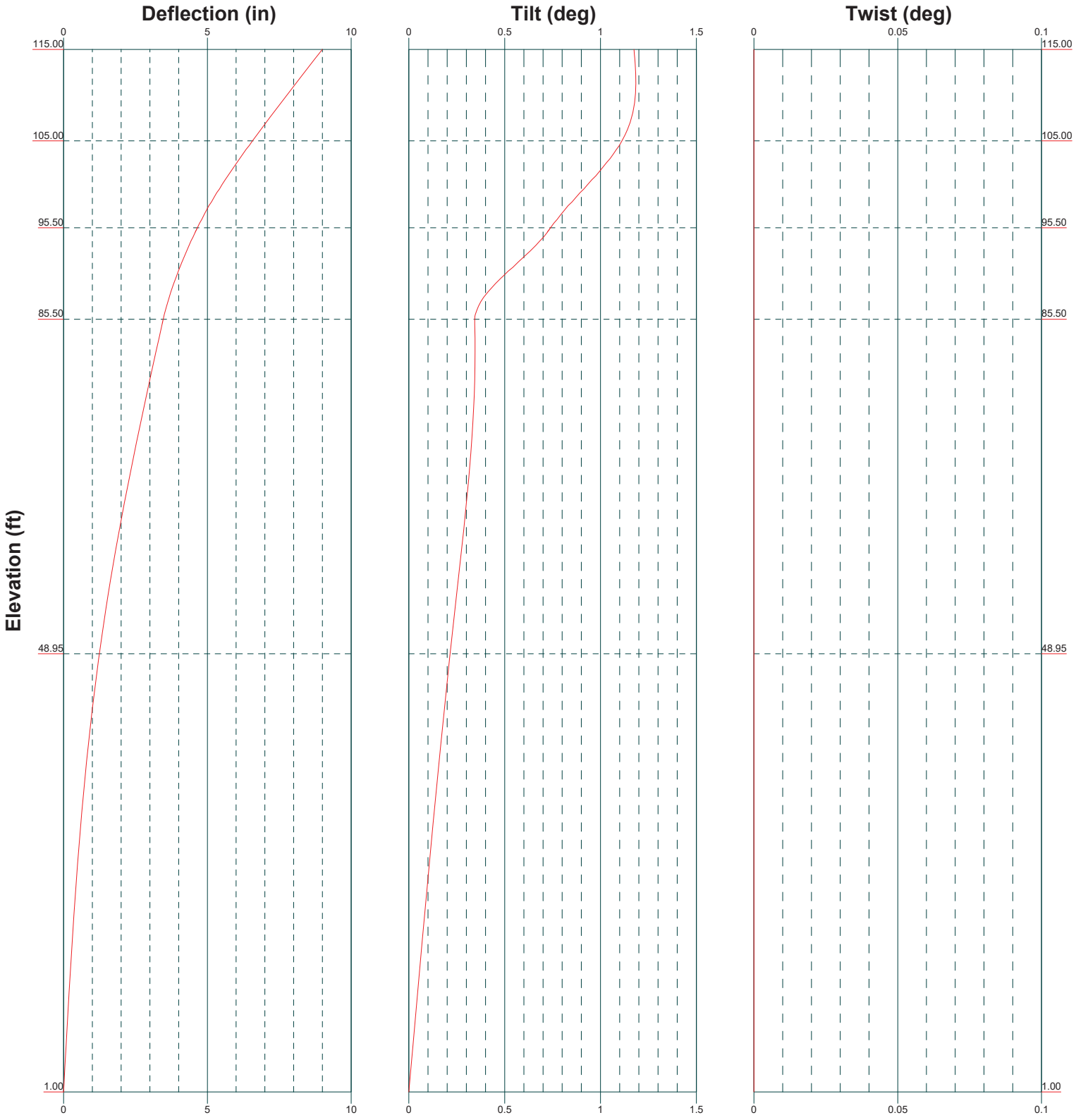
Code: TIA-222-H	Date: 12/29/22	Scale: NTS
Path: \\DMZSESSERVER01\Common\TNX files\27741_B\REV02B\27741_B_REV02B.eri		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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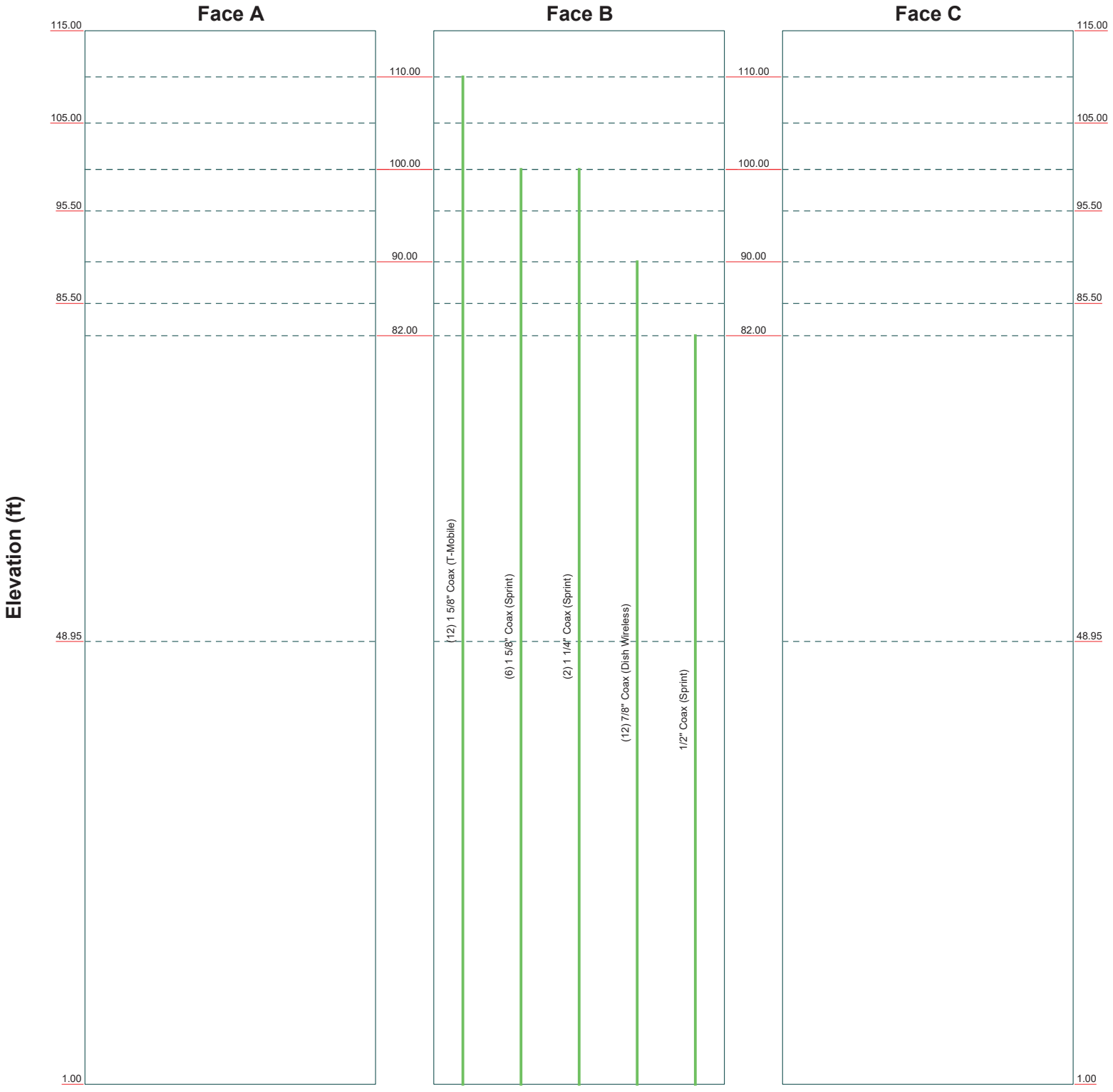
Job: *27741_B_Round Hill CT*		
Project: ***REV02B***		
Client: KGI	Drawn by: TrevorK	App'd:
Code: TIA-222-H	Date: 12/29/22	Scale: NTS
Path: \\DMZSESSERVER01\Common\TNX files\27741_B\REV02B\27741_B_REV02B.eri		Dwg No. E-5

Feed Line Distribution Chart
1' - 115'

Round | Flat | App In Face | App Out Face | Truss Leg



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Project: ***REV02B***		
Client: KGI	Drawn by: TrevorK	App'd:
Code: TIA-222-H	Date: 12/29/22	Scale: NTS
Path: \\DMZSESSERVER01\Common\TNX files\27741_B\REV02B\27741_B_REV02B.eri		Dwg No. E-7

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 Fairfield County, Connecticut.
Tower base elevation above sea level: 379.96 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.00 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 47 mph is used in combination with ice.
Deflections calculated using a wind speed of 60 mph.
CCISeismic Note: Seismic loads generated by CCISeismic 3.3.6.
CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	115.00-105.00	10.00	0.00	Round	4.50	4.50	2.25		A572-50 (50 ksi)
L2	105.00-95.50	9.50	0.00	Round	4.50	4.50	2.25		A572-50 (50 ksi)
L3	95.50-95.00	0.50	0.00	Round	4.50	5.75	2.25		A572-50 (50 ksi)
L4	95.00-85.50	9.50	0.00	Round	5.75	5.75	2.88		A572-50 (50 ksi)
L5	85.50-85.00	0.50	0.00	Round	5.75	29.25	2.88		A572-50 (50 ksi)
L6	85.00-48.95	36.05	4.82	18	29.25	33.32	0.19	0.75	A572-65 (65 ksi)
L7	48.95-1.00	52.76		18	32.40	41.00	0.25	1.00	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	4.50	15.90	20.13	1.13	2.25	8.95	40.26	7.95	0.00	0
	4.50	15.90	20.13	1.13	2.25	8.95	40.26	7.95	0.00	0
L2	4.50	15.90	20.13	1.13	2.25	8.95	40.26	7.95	0.00	0
	4.50	15.90	20.13	1.13	2.25	8.95	40.26	7.95	0.00	0
L3	4.50	15.90	20.13	1.13	2.25	8.95	40.26	7.95	0.00	0
	5.75	24.74	53.54	1.47	2.88	18.62	107.08	12.36	0.00	0
L4	5.75	25.97	53.66	1.44	2.88	18.66	107.32	12.98	0.00	0
	5.75	25.97	53.66	1.44	2.88	18.66	107.32	12.98	0.00	0
L5	5.75	25.97	53.66	1.44	2.88	18.66	107.32	12.98	0.00	0
	29.25	238.22	20960.66	9.38	14.63	1433.21	41921.33	119.04	0.00	0
L6	29.67	17.30	1845.63	10.32	14.86	124.21	3693.69	8.65	4.82	25.696
	33.81	19.72	2734.77	11.76	16.93	161.57	5473.13	9.86	5.53	29.517
L7	33.66	25.51	3331.94	11.41	16.46	202.43	6668.26	12.76	5.26	21.051
	41.59	32.34	6783.71	14.47	20.83	325.70	13576.34	16.17	6.78	27.104

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 115.00-105.00				1	0	1			
L2 105.00-95.50				1	0	1			
L3 95.50-95.00				1	0	1			
L4 95.00-85.50				1	0	1			
L5 85.50-85.00				1	0	1			
L6 85.00-48.95				1	1	1			
L7 48.95-1.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 5/8" Coax (T-Mobile)	B	No	No	Inside Pole	110.00 - 1.00	12	No Ice	0.00	1.040
							1/2" Ice	0.00	1.040
							1" Ice	0.00	1.040
1 5/8" Coax (Sprint)	B	No	No	Inside Pole	100.00 - 1.00	6	No Ice	0.00	1.040
							1/2" Ice	0.00	1.040
							1" Ice	0.00	1.040
1 1/4" Coax (Sprint)	B	No	No	Inside Pole	100.00 - 1.00	2	No Ice	0.00	0.660
							1/2" Ice	0.00	0.660
							1" Ice	0.00	0.660
7/8" Coax (Dish Wireless)	B	No	No	Inside Pole	90.00 - 1.00	12	No Ice	0.00	0.520
							1/2" Ice	0.00	0.520
							1" Ice	0.00	0.520
1/2" Coax (Sprint)	B	No	No	Inside Pole	82.00 - 1.00	1	No Ice	0.00	0.160
							1/2" Ice	0.00	0.160
							1" Ice	0.00	0.160

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	115.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	62.40
		C	0.000	0.000	0.000	0.000	0.00
L2	105.00-95.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	152.58
		C	0.000	0.000	0.000	0.000	0.00
L3	95.50-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	10.02
		C	0.000	0.000	0.000	0.000	0.00
L4	95.00-85.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	218.46
		C	0.000	0.000	0.000	0.000	0.00
L5	85.50-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	13.14
		C	0.000	0.000	0.000	0.000	0.00
L6	85.00-48.95	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	952.81
		C	0.000	0.000	0.000	0.000	0.00
L7	48.95-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	1267.67
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	115.00-105.00	A	1.128	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	62.40
		C		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L2	105.00-95.50	A	1.118	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	152.58
		C		0.000	0.000	0.000	0.000	0.00
L3	95.50-95.00	A	1.112	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	10.02
		C		0.000	0.000	0.000	0.000	0.00
L4	95.00-85.50	A	1.106	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	218.46
		C		0.000	0.000	0.000	0.000	0.00
L5	85.50-85.00	A	1.099	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	13.14
		C		0.000	0.000	0.000	0.000	0.00
L6	85.00-48.95	A	1.073	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	952.81
		C		0.000	0.000	0.000	0.000	0.00
L7	48.95-1.00	A	0.974	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	1267.67
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	115.00-105.00	0.00	0.00	0.00	0.00
L2	105.00-95.50	0.00	0.00	0.00	0.00
L3	95.50-95.00	0.00	0.00	0.00	0.00
L4	95.00-85.50	0.00	0.00	0.00	0.00
L5	85.50-85.00	0.00	0.00	0.00	0.00
L6	85.00-48.95	0.00	0.00	0.00	0.00
L7	48.95-1.00	0.00	0.00	0.00	0.00

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

User Defined Loads - Seismic

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	E_v lb	E_{hx} lb	E_{hz} lb	E_h lb
CCISeismic Tower Section 1 - 1	110.00	0.000	0.000	17.53	0.00	0.00	41.39
CCISeismic Tower Section 2 - 1	100.25	0.000	0.000	16.66	0.00	0.00	32.79
CCISeismic Tower Section 3 - 1	95.25	0.000	0.000	0.88	0.00	0.00	1.56
CCISeismic Tower Section 4 - 1	90.25	0.000	0.000	27.20	0.00	0.00	43.57
CCISeismic Tower Section 5 - 1	85.25	0.000	0.000	1.43	0.00	0.00	2.05
CCISeismic Tower Section 6 - 1	81.97	0.000	0.000	11.68	0.00	0.00	15.49
CCISeismic Tower Section 6 - 2	73.95	0.000	0.000	19.89	0.00	0.00	21.55
CCISeismic Tower Section 6 - 3	63.95	0.000	0.000	20.63	0.00	0.00	16.79
CCISeismic Tower Section 6 - 4	53.95	0.000	0.000	21.37	0.00	0.00	12.44
CCISeismic Tower Section 7 - 1	52.38	0.000	0.000	7.82	0.00	0.00	4.29
CCISeismic Tower Section 7 - 2	46.00	0.000	0.000	29.23	0.00	0.00	12.42

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
CCISeismic Tower Section 7 - 3	36.00	0.000	0.000	30.66	0.00	0.00	8.00
CCISeismic Tower Section 7 - 4	26.00	0.000	0.000	32.08	0.00	0.00	4.36
CCISeismic Tower Section 7 - 5	16.00	0.000	0.000	33.51	0.00	0.00	1.69
CCISeismic Tower Section 7 - 6	6.00	0.000	0.000	34.94	0.00	0.00	0.21
CCISeismic miscl 10' 30" Dia. Canister	110.00	0.000	0.000	9.62	0.00	0.00	22.71
CCISeismic miscl 10' 30" Dia. Canister	100.00	0.000	0.000	9.62	0.00	0.00	18.85
CCISeismic miscl 10' 40" Dia. Canister	90.00	0.000	0.000	12.83	0.00	0.00	20.44
CCISeismic (2) Canister Mount	110.00	0.000	0.000	1.81	0.00	0.00	4.28
CCISeismic DBXNH-6565A-A2M	110.00	0.000	0.000	1.11	0.00	0.00	2.62
CCISeismic DBXNH-6565A-A2M	110.00	0.000	0.000	1.11	0.00	0.00	2.62
CCISeismic DBXNH-6565A-A2M	110.00	0.000	0.000	1.11	0.00	0.00	2.62
CCISeismic TMAT1921XB6811A	110.00	0.000	0.000	0.57	0.00	0.00	1.35
CCISeismic TMAT1921XB6811A	110.00	0.000	0.000	0.57	0.00	0.00	1.35
CCISeismic TMAT1921XB6811A	110.00	0.000	0.000	0.57	0.00	0.00	1.35
CCISeismic 782 11066	110.00	0.000	0.000	0.06	0.00	0.00	0.13
CCISeismic 782 11066	110.00	0.000	0.000	0.06	0.00	0.00	0.13
CCISeismic 782 11066	110.00	0.000	0.000	0.06	0.00	0.00	0.13
CCISeismic (2) Canister Mount	100.00	0.000	0.000	1.81	0.00	0.00	3.55
CCISeismic APXVSPP18-C-A20	100.00	0.000	0.000	2.01	0.00	0.00	3.93
CCISeismic APXVSPP18-C-A20	100.00	0.000	0.000	2.01	0.00	0.00	3.93
CCISeismic APXVSPP18-C-A20	100.00	0.000	0.000	2.01	0.00	0.00	3.93
CCISeismic (2) KIT-FD9R6004/1C-DL	100.00	0.000	0.000	0.41	0.00	0.00	0.81
CCISeismic (2) KIT-FD9R6004/1C-DL	100.00	0.000	0.000	0.41	0.00	0.00	0.81
CCISeismic (2) KIT-FD9R6004/1C-DL	100.00	0.000	0.000	0.41	0.00	0.00	0.81
CCISeismic (3) IBC1900HG-SA	100.00	0.000	0.000	2.14	0.00	0.00	4.19
CCISeismic (3) IBC1900HG-SA	100.00	0.000	0.000	2.14	0.00	0.00	4.19
CCISeismic (3) IBC1900HG-SA	100.00	0.000	0.000	2.14	0.00	0.00	4.19
CCISeismic (2) Canister Mount	90.00	0.000	0.000	1.81	0.00	0.00	2.89
CCISeismic FVV-65B-R3	90.00	0.000	0.000	1.42	0.00	0.00	2.26
CCISeismic FVV-65B-R3	90.00	0.000	0.000	1.42	0.00	0.00	2.26
CCISeismic FVV-65B-R3	90.00	0.000	0.000	1.42	0.00	0.00	2.26
CCISeismic (2) CDX623T-DS-T	90.00	0.000	0.000	0.66	0.00	0.00	1.05
CCISeismic (2) CDX623T-DS-T	90.00	0.000	0.000	0.66	0.00	0.00	1.05
CCISeismic (2) CDX623T-DS-T	90.00	0.000	0.000	0.66	0.00	0.00	1.05
CCISeismic 3' Sidearm	82.00	0.000	0.000	0.68	0.00	0.00	0.90
CCISeismic GPS	82.00	0.000	0.000	0.02	0.00	0.00	0.03
CCISeismic Spoke Flanges	85.00	0.000	0.000	10.94	0.00	0.00	15.58
CCISeismic Spoke Flanges	95.00	0.000	0.000	4.49	0.00	0.00	7.95
CCISeismic Spoke Flanges	105.00	0.000	0.000	3.45	0.00	0.00	7.44

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
CCISeismic Top Flange	115.00	0.000	0.000	3.44	0.00	0.00	8.86
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (104ft to109ft)	107.50	0.000	0.000	2.02	0.00	0.00	4.56
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (94ft to104ft)	100.00	0.000	0.000	4.04	0.00	0.00	7.92
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (84ft to94ft)	90.00	0.000	0.000	4.04	0.00	0.00	6.44
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (74ft to84ft)	80.00	0.000	0.000	4.04	0.00	0.00	5.11
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (64ft to74ft)	70.00	0.000	0.000	4.04	0.00	0.00	3.93
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (54ft to64ft)	60.00	0.000	0.000	4.04	0.00	0.00	2.90
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (44ft to54ft)	50.00	0.000	0.000	4.04	0.00	0.00	2.03
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (34ft to44ft)	40.00	0.000	0.000	4.04	0.00	0.00	1.30
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (24ft to34ft)	30.00	0.000	0.000	4.04	0.00	0.00	0.73
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (14ft to24ft)	20.00	0.000	0.000	4.04	0.00	0.00	0.32
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (4ft to14ft)	10.00	0.000	0.000	4.04	0.00	0.00	0.08
CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (0ft to4ft)	3.00	0.000	0.000	1.62	0.00	0.00	0.00
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (94ft to99ft)	97.50	0.000	0.000	1.01	0.00	0.00	1.88
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (84ft to94ft)	90.00	0.000	0.000	2.02	0.00	0.00	3.22
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (74ft to84ft)	80.00	0.000	0.000	2.02	0.00	0.00	2.56
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (64ft to74ft)	70.00	0.000	0.000	2.02	0.00	0.00	1.97
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (54ft to64ft)	60.00	0.000	0.000	2.02	0.00	0.00	1.45
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (44ft to54ft)	50.00	0.000	0.000	2.02	0.00	0.00	1.01
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (34ft to44ft)	40.00	0.000	0.000	2.02	0.00	0.00	0.65
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (24ft	30.00	0.000	0.000	2.02	0.00	0.00	0.37

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
to34ft)							
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (14ft to24ft)	20.00	0.000	0.000	2.02	0.00	0.00	0.16
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (4ft to14ft)	10.00	0.000	0.000	2.02	0.00	0.00	0.04
CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (0ft to4ft)	3.00	0.000	0.000	0.81	0.00	0.00	0.00
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (94ft to99ft)	97.50	0.000	0.000	0.21	0.00	0.00	0.40
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (84ft to94ft)	90.00	0.000	0.000	0.43	0.00	0.00	0.68
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (74ft to84ft)	80.00	0.000	0.000	0.43	0.00	0.00	0.54
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (64ft to74ft)	70.00	0.000	0.000	0.43	0.00	0.00	0.42
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (54ft to64ft)	60.00	0.000	0.000	0.43	0.00	0.00	0.31
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (44ft to54ft)	50.00	0.000	0.000	0.43	0.00	0.00	0.21
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (34ft to44ft)	40.00	0.000	0.000	0.43	0.00	0.00	0.14
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (24ft to34ft)	30.00	0.000	0.000	0.43	0.00	0.00	0.08
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (14ft to24ft)	20.00	0.000	0.000	0.43	0.00	0.00	0.03
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (4ft to14ft)	10.00	0.000	0.000	0.43	0.00	0.00	0.01
CCISeismic (2) general cable 1 1/4" Coax From 0 to 99 (0ft to4ft)	3.00	0.000	0.000	0.17	0.00	0.00	0.00
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (84ft to89ft)	87.50	0.000	0.000	1.01	0.00	0.00	1.52
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (74ft to84ft)	80.00	0.000	0.000	2.02	0.00	0.00	2.56
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (64ft to74ft)	70.00	0.000	0.000	2.02	0.00	0.00	1.97
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (54ft to64ft)	60.00	0.000	0.000	2.02	0.00	0.00	1.45
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (44ft to54ft)	50.00	0.000	0.000	2.02	0.00	0.00	1.01
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (34ft	40.00	0.000	0.000	2.02	0.00	0.00	0.65

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	lb	lb	lb	lb
to44ft)							
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (24ft to34ft)	30.00	0.000	0.000	2.02	0.00	0.00	0.37
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (14ft to24ft)	20.00	0.000	0.000	2.02	0.00	0.00	0.16
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (4ft to14ft)	10.00	0.000	0.000	2.02	0.00	0.00	0.04
CCISeismic (12) general cable 7/8" Coax From 0 to 89 (0ft to4ft)	3.00	0.000	0.000	0.81	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 81 (74ft to81ft)	78.50	0.000	0.000	0.04	0.00	0.00	0.04
CCISeismic general cable 1/2" Coax From 0 to 81 (64ft to74ft)	70.00	0.000	0.000	0.05	0.00	0.00	0.05
CCISeismic general cable 1/2" Coax From 0 to 81 (54ft to64ft)	60.00	0.000	0.000	0.05	0.00	0.00	0.04
CCISeismic general cable 1/2" Coax From 0 to 81 (44ft to54ft)	50.00	0.000	0.000	0.05	0.00	0.00	0.03
CCISeismic general cable 1/2" Coax From 0 to 81 (34ft to44ft)	40.00	0.000	0.000	0.05	0.00	0.00	0.02
CCISeismic general cable 1/2" Coax From 0 to 81 (24ft to34ft)	30.00	0.000	0.000	0.05	0.00	0.00	0.01
CCISeismic general cable 1/2" Coax From 0 to 81 (14ft to24ft)	20.00	0.000	0.000	0.05	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 81 (4ft to14ft)	10.00	0.000	0.000	0.05	0.00	0.00	0.00
CCISeismic general cable 1/2" Coax From 0 to 81 (0ft to4ft)	3.00	0.000	0.000	0.02	0.00	0.00	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	lb
10' 30" Dia. Canister	C	None		0.000	115.00 - 105.00	No Ice	20.00	20.00	297.00
						1/2" Ice	20.84	20.84	389.40
						1" Ice	21.69	21.69	481.80
10' 30" Dia. Canister	C	None		0.000	105.00 - 95.00	No Ice	20.00	20.00	297.00
						1/2" Ice	20.84	20.84	389.40
						1" Ice	21.69	21.69	481.80
10' 40" Dia. Canister	C	None		0.000	95.00 - 85.00	No Ice	26.67	26.67	396.00
						1/2" Ice	27.56	27.56	518.91
						1" Ice	28.47	28.47	641.82
*									
(2) Canister Mount (T-Mobile)	C	None		0.000	110.00	No Ice	0.00	0.00	28.00
						1/2" Ice	0.00	0.00	28.00
						1" Ice	0.00	0.00	28.00
DBXNH-6565A-A2M	A	From	1.00	0.000	110.00	No Ice	0.00	0.00	34.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(T-Mobile)		Centroid-Face	0.000	0.000			1/2" Ice	0.00	0.00	34.20
							1" Ice	0.00	0.00	34.20
DBXNH-6565A-A2M (T-Mobile)	B	From Centroid-Face	1.00	0.000	0.000	110.00	No Ice	0.00	0.00	34.20
			0.000	0.000			1/2" Ice	0.00	0.00	34.20
							1" Ice	0.00	0.00	34.20
DBXNH-6565A-A2M (T-Mobile)	C	From Centroid-Face	1.00	0.000	0.000	110.00	No Ice	0.00	0.00	34.20
			0.000	0.000			1/2" Ice	0.00	0.00	34.20
							1" Ice	0.00	0.00	34.20
TMAT1921XB6811A (T-Mobile)	A	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	17.60
			0.000	0.000			1/2" Ice	0.00	0.00	17.60
							1" Ice	0.00	0.00	17.60
TMAT1921XB6811A (T-Mobile)	B	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	17.60
			0.000	0.000			1/2" Ice	0.00	0.00	17.60
							1" Ice	0.00	0.00	17.60
TMAT1921XB6811A (T-Mobile)	C	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	17.60
			0.000	0.000			1/2" Ice	0.00	0.00	17.60
							1" Ice	0.00	0.00	17.60
782 11066 (T-Mobile)	A	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	1.76
			0.000	0.000			1/2" Ice	0.00	0.00	1.76
							1" Ice	0.00	0.00	1.76
782 11066 (T-Mobile)	B	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	1.76
			0.000	0.000			1/2" Ice	0.00	0.00	1.76
							1" Ice	0.00	0.00	1.76
782 11066 (T-Mobile)	C	From Centroid-Face	0.50	0.000	0.000	110.00	No Ice	0.00	0.00	1.76
			0.000	0.000			1/2" Ice	0.00	0.00	1.76
							1" Ice	0.00	0.00	1.76
*										
(2) Canister Mount (Sprint)	C	None			0.000	100.00	No Ice	0.00	0.00	28.00
							1/2" Ice	0.00	0.00	28.00
							1" Ice	0.00	0.00	28.00
APXVSPP18-C-A20 (Sprint)	A	From Centroid-Face	1.00	0.000	0.000	100.00	No Ice	0.00	0.00	62.00
			0.000	0.000			1/2" Ice	0.00	0.00	62.00
							1" Ice	0.00	0.00	62.00
APXVSPP18-C-A20 (Sprint)	B	From Centroid-Face	1.00	0.000	0.000	100.00	No Ice	0.00	0.00	62.00
			0.000	0.000			1/2" Ice	0.00	0.00	62.00
							1" Ice	0.00	0.00	62.00
APXVSPP18-C-A20 (Sprint)	C	From Centroid-Face	1.00	0.000	0.000	100.00	No Ice	0.00	0.00	62.00
			0.000	0.000			1/2" Ice	0.00	0.00	62.00
							1" Ice	0.00	0.00	62.00
(2) KIT-FD9R6004/1C-DL (Sprint)	A	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	6.40
			0.000	0.000			1/2" Ice	0.00	0.00	6.40
							1" Ice	0.00	0.00	6.40
(2) KIT-FD9R6004/1C-DL (Sprint)	B	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	6.40
			0.000	0.000			1/2" Ice	0.00	0.00	6.40
							1" Ice	0.00	0.00	6.40
(2) KIT-FD9R6004/1C-DL (Sprint)	C	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	6.40
			0.000	0.000			1/2" Ice	0.00	0.00	6.40
							1" Ice	0.00	0.00	6.40
(3) IBC1900HG-SA (Sprint)	A	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	22.00
			0.000	0.000			1/2" Ice	0.00	0.00	22.00
							1" Ice	0.00	0.00	22.00
(3) IBC1900HG-SA (Sprint)	B	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	22.00
			0.000	0.000			1/2" Ice	0.00	0.00	22.00
							1" Ice	0.00	0.00	22.00
(3) IBC1900HG-SA (Sprint)	C	From Centroid-Face	0.50	0.000	0.000	100.00	No Ice	0.00	0.00	22.00
			0.000	0.000			1/2" Ice	0.00	0.00	22.00
							1" Ice	0.00	0.00	22.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
*									
(2) Canister Mount (Dish Wireless)	C	None		0.000	90.00	No Ice	0.00	0.00	28.00
						1/2" Ice	0.00	0.00	28.00
						1" Ice	0.00	0.00	28.00
FVV-65B-R3 (Dish Wireless)	A	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.87 43.87 43.87
FVV-65B-R3 (Dish Wireless)	B	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.87 43.87 43.87
FVV-65B-R3 (Dish Wireless)	C	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.87 43.87 43.87
(2) CDX623T-DS-T (Dish Wireless)	A	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	10.14 10.14 10.14
(2) CDX623T-DS-T (Dish Wireless)	B	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	10.14 10.14 10.14
(2) CDX623T-DS-T (Dish Wireless)	C	From Centroid-Face	1.00 0.000 0.000	0.000	90.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	10.14 10.14 10.14
*									
3' Sidearm (Sprint)	C	From Leg	1.50 0.000 0.000	0.000	82.00	No Ice 1/2" Ice 1" Ice	0.27 0.48 0.69	0.90 1.68 2.46	21.00 33.00 45.00
GPS (Sprint)	C	From Leg	3.00 0.000 1.000	0.000	82.00	No Ice 1/2" Ice 1" Ice	0.08 0.12 0.18	0.08 0.12 0.18	0.60 1.99 4.11
*									
Spoke Flanges	C	None		0.000	85.00	No Ice	0.00	0.00	337.70
						1/2" Ice	0.00	0.00	337.70
						1" Ice	0.00	0.00	337.70
Spoke Flanges	C	None		0.000	95.00	No Ice	0.00	0.00	138.50
						1/2" Ice	0.00	0.00	138.50
						1" Ice	0.00	0.00	138.50
Spoke Flanges	C	None		0.000	105.00	No Ice	0.00	0.00	106.60
						1/2" Ice	0.00	0.00	106.60
						1" Ice	0.00	0.00	106.60
Top Flange	C	None		0.000	115.00	No Ice	0.34	0.34	106.17
						1/2" Ice	0.58	0.58	120.67
						1" Ice	0.82	0.82	135.17

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 115.00-105.00	110.00	1.291	0.045	3.750	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L2 105.00-95.50	100.25	1.266	0.044	3.563	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L3 95.50-95.00	95.24	1.253	0.043	0.214	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L4 95.00-85.50	90.25	1.239	0.043	4.552	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L5 85.50-85.00	85.19	1.224	0.042	0.729	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L6 85.00-48.95	66.84	1.163	0.040	95.361	A	0.000	95.361	95.361	100.00	0.000	0.000
					B	0.000	95.361		100.00	0.000	0.000
					C	0.000	95.361		100.00	0.000	0.000
L7 48.95-1.00	25.25	0.947	0.032	150.336	A	0.000	150.336	150.336	100.00	0.000	0.000
					B	0.000	150.336		100.00	0.000	0.000
					C	0.000	150.336		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 115.00-105.00	110.00	1.291	0.007	1.13	5.630	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L2 105.00-95.50	100.25	1.266	0.007	1.12	5.332	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L3 95.50-95.00	95.24	1.253	0.007	1.11	0.306	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L4 95.00-85.50	90.25	1.239	0.007	1.11	6.303	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L5 85.50-85.00	85.19	1.224	0.006	1.10	0.821	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000
L6 85.00-48.95	66.84	1.163	0.006	1.07	101.810	A	0.000	101.810	101.810	100.00	0.000	0.000
						B	0.000	101.810		100.00	0.000	0.000
						C	0.000	101.810		100.00	0.000	0.000
L7 48.95-1.00	25.25	0.947	0.005	0.97	158.911	A	0.000	158.911	158.911	100.00	0.000	0.000
						B	0.000	158.911		100.00	0.000	0.000
						C	0.000	158.911		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	110.00	1.291	0.010	3.750	A	0.000	0.000	0.000	0.00	0.000	0.000
115.00-105.00					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L2	100.25	1.266	0.010	3.563	A	0.000	0.000	0.000	0.00	0.000	0.000
105.00-95.50					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L3 95.50-95.00	95.24	1.253	0.010	0.214	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L4 95.00-85.50	90.25	1.239	0.010	4.552	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L5 85.50-85.00	85.19	1.224	0.009	0.729	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000
L6 85.00-48.95	66.84	1.163	0.009	95.361	A	0.000	95.361	95.361	100.00	0.000	0.000
					B	0.000	95.361		100.00	0.000	0.000
					C	0.000	95.361		100.00	0.000	0.000
L7 48.95-1.00	25.25	0.947	0.007	150.336	A	0.000	150.336	150.336	100.00	0.000	0.000
					B	0.000	150.336		100.00	0.000	0.000
					C	0.000	150.336		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	0.782	0.045	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	0.782		1	1	0.000			
			C	0	0.782		1	1	0.000			
L2	152.58	514.13	A	0	0.792	0.044	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	0.792		1	1	0.000			
			C	0	0.792		1	1	0.000			
L3	10.02	34.58	A	0	0.674	0.043	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	0.674		1	1	0.000			
			C	0	0.674		1	1	0.000			
L4	218.46	839.43	A	0	0.585	0.043	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	0.585		1	1	0.000			
			C	0	0.585		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.042	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.040	1	1	95.361	2648.04	73.445	C
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.032	1	1	150.336	3357.41	70.026	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			
Sum Weight:	2677.08	9617.39						OTM	255.76 kip-ft	6005.45		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	0.782	0.045	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	0.782		1	1	0.000			
			C	0	0.782		1	1	0.000			
L2	152.58	514.13	A	0	0.792	0.044	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	0.792		1	1	0.000			
			C	0	0.792		1	1	0.000			
L3	10.02	34.58	A	0	0.674	0.043	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	0.674		1	1	0.000			
			C	0	0.674		1	1	0.000			
L4	218.46	839.43	A	0	0.585	0.043	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	0.585		1	1	0.000			
			C	0	0.585		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.042	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.040	1	1	95.361	2648.04	73.445	C
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.032	1	1	150.336	3357.41	70.026	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			
Sum Weight:	2677.08	9617.39						OTM	255.76 kip-ft	6005.45		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	0.782	0.045	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	0.782		1	1	0.000			
			C	0	0.782		1	1	0.000			
L2	152.58	514.13	A	0	0.792	0.044	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	0.792		1	1	0.000			
			C	0	0.792		1	1	0.000			
L3	10.02	34.58	A	0	0.674	0.043	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	0.674		1	1	0.000			
			C	0	0.674		1	1	0.000			
L4	218.46	839.43	A	0	0.585	0.043	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	0.585		1	1	0.000			
			C	0	0.585		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.042	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.040	1	1	95.361	2648.04	73.445	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.032	1	1	150.336	3357.41	70.026	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			
Sum Weight:	2677.08	9617.39						OTM	255.76 kip-ft	6005.45		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	62.40	618.75	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	586.99	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L3	10.02	38.81	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	927.42	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	237.24	A	0	1.1	0.006	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L6	952.81	3815.92	A	1	1.1	0.006	1	1	101.810	757.23	21.002	C
85.00-48.95			B	1	1.1		1	1	101.810			
			C	1	1.1		1	1	101.810			
L7 48.95-1.00	1267.67	7386.07	A	1	1.1	0.005	1	1	158.116	945.81	19.727	C
			B	1	1.1		1	1	158.116			
			C	1	1.1		1	1	158.116			
Sum Weight:	2677.08	13611.21						OTM	72.79 kip-ft	1703.04		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
L1	62.40	618.75	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	586.99	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0	1.1		1	1	0.000			
L3	10.02	38.81	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	927.42	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	237.24	A	0	1.1	0.006	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L6	952.81	3815.92	A	1	1.1	0.006	1	1	101.810	757.23	21.002	C
85.00-48.95			B	1	1.1		1	1	101.810			
			C	1	1.1		1	1	101.810			
L7 48.95-1.00	1267.67	7386.07	A	1	1.1	0.005	1	1	158.116	945.81	19.727	C
			B	1	1.1		1	1	158.116			
			C	1	1.1		1	1	158.116			
Sum Weight:	2677.08	13611.21						OTM	72.79 kip-ft	1703.04		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	618.75	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	586.99	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L3	10.02	38.81	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	927.42	A	0	1.1	0.007	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	237.24	A	0	1.1	0.006	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L6	952.81	3815.92	A	1	1.1	0.006	1	1	101.810	757.23	21.002	C
85.00-48.95			B	1	1.1		1	1	101.810			
			C	1	1.1		1	1	101.810			
L7 48.95-1.00	1267.67	7386.07	A	1	1.1	0.005	1	1	158.116	945.81	19.727	C
			B	1	1.1		1	1	158.116			
			C	1	1.1		1	1	158.116			
Sum Weight:	2677.08	13611.21						OTM	72.79 kip-ft	1703.04		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	514.13	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L3	10.02	34.58	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	839.43	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.009	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.009	1	1	95.361	592.33	16.429	C
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.007	1	1	150.336	751.00	15.664	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			
Sum Weight:	2677.08	9617.39						OTM	57.21 kip-ft	1343.33		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	514.13	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L3	10.02	34.58	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	839.43	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.009	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.009	1	1	95.361	592.33	16.429	C
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.007	1	1	150.336	751.00	15.664	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	2677.08	9617.39						OTM	57.21 kip-ft	1343.33		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
L1	62.40	541.19	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
115.00-105.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L2	152.58	514.13	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
105.00-95.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L3	10.02	34.58	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.50-95.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L4	218.46	839.43	A	0	1.1	0.010	1	1	0.000	0.00	0.000	C
95.00-85.50			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
L5	13.14	224.74	A	0	0.45	0.009	1	1	0.000	0.00	0.000	C
85.50-85.00			B	0	0.45		1	1	0.000			
			C	0	0.45		1	1	0.000			
L6	952.81	2270.56	A	1	0.63	0.009	1	1	95.361	592.33	16.429	C
85.00-48.95			B	1	0.63		1	1	95.361			
			C	1	0.63		1	1	95.361			
L7 48.95-1.00	1267.67	5192.76	A	1	0.63	0.007	1	1	150.336	751.00	15.664	C
			B	1	0.63		1	1	150.336			
			C	1	0.63		1	1	150.336			
Sum Weight:	2677.08	9617.39						OTM	57.21 kip-ft	1343.33		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	9617.39					
Bracing Weight	0.00					
Total Member Self-Weight	9617.39			0.03	0.05	
Total Weight	14938.57			0.03	0.05	
Wind 0 deg - No Ice		-12.58	-9257.49	-574.53	1.07	-0.11
Wind 30 deg - No Ice		4610.59	-8010.93	-497.04	-285.76	-0.06
Wind 60 deg - No Ice		7998.35	-4617.85	-286.37	-496.00	0.00
Wind 90 deg - No Ice		9242.96	12.58	1.05	-573.33	0.06
Wind 120 deg - No Ice		8010.93	4639.64	288.19	-497.02	0.11
Wind 150 deg - No Ice		4632.38	8023.51	498.12	-287.52	0.13

Load Case	*Vertical Forces* lb	*Sum of Forces X* lb	*Sum of Forces Z* lb	*Sum of Overturning Moments, M_x* kip-ft	*Sum of Overturning Moments, M_z* kip-ft	*Sum of Torques* kip-ft
Wind 180 deg - No Ice		12.58	9257.49	574.59	-0.97	0.11
Wind 210 deg - No Ice		-4610.59	8010.93	497.10	285.86	0.06
Wind 240 deg - No Ice		-7998.35	4617.85	286.43	496.10	0.00
Wind 270 deg - No Ice		-9242.96	-12.58	-0.99	573.43	-0.06
Wind 300 deg - No Ice		-8010.93	-4639.64	-288.13	497.12	-0.11
Wind 330 deg - No Ice		-4632.38	-8023.51	-498.06	287.63	-0.13
Member Ice	3993.82					
Total Weight Ice	19682.40			0.07	0.13	
Wind 0 deg - Ice		-5.76	-2259.50	-127.19	0.60	-0.05
Wind 30 deg - Ice		1121.44	-1953.91	-109.91	-62.83	-0.03
Wind 60 deg - Ice		1948.15	-1124.77	-63.16	-109.39	0.00
Wind 90 deg - Ice		2252.86	5.76	0.54	-126.60	0.03
Wind 120 deg - Ice		1953.91	1134.74	64.11	-109.86	0.05
Wind 150 deg - Ice		1131.41	1959.67	110.53	-63.64	0.06
Wind 180 deg - Ice		5.76	2259.50	127.34	-0.34	0.05
Wind 210 deg - Ice		-1121.44	1953.91	110.06	63.09	0.03
Wind 240 deg - Ice		-1948.15	1124.77	63.31	109.65	0.00
Wind 270 deg - Ice		-2252.86	-5.76	-0.39	126.86	-0.03
Wind 300 deg - Ice		-1953.91	-1134.74	-63.96	110.11	-0.05
Wind 330 deg - Ice		-1131.41	-1959.67	-110.38	63.90	-0.06
Total Weight	14938.57			0.03	0.05	
Wind 0 deg - Service		-2.81	-2070.75	-128.49	0.28	-0.02
Wind 30 deg - Service		1031.32	-1791.92	-111.16	-63.88	-0.01
Wind 60 deg - Service		1789.10	-1032.94	-64.03	-110.91	0.00
Wind 90 deg - Service		2067.50	2.81	0.26	-128.20	0.01
Wind 120 deg - Service		1791.92	1037.81	64.49	-111.14	0.02
Wind 150 deg - Service		1036.19	1794.73	111.45	-64.27	0.03
Wind 180 deg - Service		2.81	2070.75	128.55	-0.18	0.02
Wind 210 deg - Service		-1031.32	1791.92	111.22	63.98	0.01
Wind 240 deg - Service		-1789.10	1032.94	64.09	111.01	0.00
Wind 270 deg - Service		-2067.50	-2.81	-0.20	128.31	-0.01
Wind 300 deg - Service		-1791.92	-1037.81	-64.43	111.24	-0.02
Wind 330 deg - Service		-1036.19	-1794.73	-111.39	64.38	-0.03
Seismic Vertical	477.91					
Seismic Horizontal 0 deg		0.00	-442.50	-38.45	0.00	0.00
Seismic Horizontal 30 deg		221.25	-383.22	-33.30	-19.23	0.00
Seismic Horizontal 60 deg		383.22	-221.25	-19.23	-33.30	0.00
Seismic Horizontal 90 deg		442.50	0.00	0.00	-38.45	0.00
Seismic Horizontal 120 deg		383.22	221.25	19.23	-33.30	0.00
Seismic Horizontal 150 deg		221.25	383.22	33.30	-19.23	0.00
Seismic Horizontal 180 deg		0.00	442.50	38.45	0.00	0.00
Seismic Horizontal 210 deg		-221.25	383.22	33.30	19.23	0.00
Seismic Horizontal 240 deg		-383.22	221.25	19.23	33.30	0.00
Seismic Horizontal 270 deg		-442.50	0.00	0.00	38.45	0.00
Seismic Horizontal 300 deg		-383.22	-221.25	-19.23	33.30	0.00
Seismic Horizontal 330 deg		-221.25	-383.22	-33.30	19.23	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

Comb. No.	*Description*
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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg

Comb. No.	Description
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	115 - 105	Pole	Max Tension	33	0.07	-0.00	0.00
			Max. Compression	26	-1786.98	0.00	0.00
			Max. Mx	20	-1373.96	5.78	0.00
			Max. My	14	-1373.90	-0.00	-5.78
			Max. Vy	20	-1124.19	5.78	0.00
			Max. Vx	14	1124.27	-0.00	-5.78
			Max. Torque	12			0.00
L2	105 - 95.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-3896.62	0.00	0.00
			Max. Mx	20	-3186.41	21.28	0.00
			Max. My	14	-3186.30	-0.00	-21.28
			Max. Vy	20	-2109.43	21.28	0.00
			Max. Vx	14	2109.60	-0.00	-21.28
			Max. Torque	2			-0.00
L3	95.5 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-3982.52	0.00	0.00
			Max. Mx	20	-3261.54	22.34	0.00
			Max. My	14	-3261.43	-0.00	-22.34
			Max. Vy	20	-2151.42	22.34	0.00
			Max. Vx	14	2151.60	-0.00	-22.34
			Max. Torque	2			-0.00
L4	95 - 85.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6513.93	0.00	0.00
			Max. Mx	20	-5471.14	48.44	0.00
			Max. My	14	-5470.97	-0.00	-48.44
			Max. Vy	20	-3312.33	48.44	0.00
			Max. Vx	14	3312.61	-0.00	-48.44
			Max. Torque	12			0.00
L5	85.5 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6849.24	0.00	0.00
			Max. Mx	20	-5786.21	50.11	0.00
			Max. My	14	-5786.04	-0.00	-50.11
			Max. Vy	20	-3370.71	50.11	0.00
			Max. Vx	14	3371.01	-0.00	-50.11
			Max. Torque	12			0.00
L6	85 - 48.9453	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11980.69	0.14	-0.08
			Max. Mx	20	-9528.45	192.47	0.33
			Max. My	14	-9527.93	-0.31	-192.87
			Max. Vy	20	-5709.49	192.47	0.33
			Max. Vx	14	5724.40	-0.31	-192.87
			Max. Torque	24			0.13
L7	48.9453 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22890.39	0.14	-0.08
			Max. Mx	20	-17921.23	590.42	1.01
			Max. My	14	-17921.22	-0.98	-591.60

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-9252.76	590.42	1.01
			Max. Vx	14	9267.30	-0.98	-591.60
			Max. Torque	24			0.13

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	32	22890.39	-1131.41	-1959.67
	Max. H_x	21	13444.71	9242.96	12.58
	Max. H_z	2	17926.29	12.58	9257.49
	Max. M_x	2	591.52	12.58	9257.49
	Max. M_z	8	590.29	-9242.96	-12.58
	Max. Torsion	24	0.13	4632.38	8023.51
	Min. Vert	68	12966.81	383.22	-221.25
	Min. H_x	8	17926.29	-9242.96	-12.58
	Min. H_z	14	17926.29	-12.58	-9257.49
	Min. M_x	14	-591.60	-12.58	-9257.49
	Min. M_z	20	-590.42	9242.96	12.58
	Min. Torsion	12	-0.13	-4632.38	-8023.51

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	14938.57	0.00	0.00	0.03	0.05	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	17926.29	-12.58	-9257.49	-591.52	1.11	-0.11
0.9 Dead+1.0 Wind 0 deg - No Ice	13444.71	-12.58	-9257.49	-587.08	1.09	-0.11
1.2 Dead+1.0 Wind 30 deg - No Ice	17926.29	4610.59	-8010.93	-511.74	-294.20	-0.06
0.9 Dead+1.0 Wind 30 deg - No Ice	13444.71	4610.59	-8010.93	-507.91	-292.01	-0.06
1.2 Dead+1.0 Wind 60 deg - No Ice	17926.29	7998.35	-4617.85	-294.84	-510.67	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	13444.71	7998.35	-4617.85	-292.63	-506.85	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	17926.29	9242.96	12.58	1.08	-590.29	0.06
0.9 Dead+1.0 Wind 90 deg - No Ice	13444.71	9242.96	12.58	1.07	-585.86	0.06
1.2 Dead+1.0 Wind 120 deg - No Ice	17926.29	8010.93	4639.64	296.72	-511.72	0.11
0.9 Dead+1.0 Wind 120 deg - No Ice	13444.71	8010.93	4639.64	294.48	-507.89	0.11
1.2 Dead+1.0 Wind 150 deg - No Ice	17926.29	4632.38	8023.51	512.87	-296.02	0.13
0.9 Dead+1.0 Wind 150 deg - No Ice	13444.71	4632.38	8023.51	509.00	-293.81	0.13
1.2 Dead+1.0 Wind 180 deg -	17926.29	12.58	9257.49	591.60	-0.98	0.11

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice						
0.9 Dead+1.0 Wind 180 deg - No Ice	13444.71	12.58	9257.49	587.14	-0.99	0.11
1.2 Dead+1.0 Wind 210 deg - No Ice	17926.29	-4610.59	8010.93	511.82	294.33	0.06
0.9 Dead+1.0 Wind 210 deg - No Ice	13444.71	-4610.59	8010.93	507.96	292.10	0.06
1.2 Dead+1.0 Wind 240 deg - No Ice	17926.29	-7998.35	4617.85	294.91	510.80	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	13444.71	-7998.35	4617.85	292.68	506.94	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	17926.29	-9242.96	-12.58	-1.01	590.42	-0.06
0.9 Dead+1.0 Wind 270 deg - No Ice	13444.71	-9242.96	-12.58	-1.01	585.96	-0.06
1.2 Dead+1.0 Wind 300 deg - No Ice	17926.29	-8010.93	-4639.64	-296.65	511.85	-0.11
0.9 Dead+1.0 Wind 300 deg - No Ice	13444.71	-8010.93	-4639.64	-294.43	507.98	-0.11
1.2 Dead+1.0 Wind 330 deg - No Ice	17926.29	-4632.38	-8023.51	-512.79	296.15	-0.13
0.9 Dead+1.0 Wind 330 deg - No Ice	13444.71	-4632.38	-8023.51	-508.95	293.90	-0.13
1.2 Dead+1.0 Ice	22890.39	0.00	0.00	0.08	0.14	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	22890.39	-5.76	-2259.50	-131.53	0.63	-0.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	22890.39	1121.44	-1953.91	-113.66	-64.96	-0.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	22890.39	1948.15	-1124.77	-65.31	-113.11	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	22890.39	2252.86	5.76	0.57	-130.91	0.03
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	22890.39	1953.91	1134.74	66.31	-113.59	0.05
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	22890.39	1131.41	1959.67	114.31	-65.80	0.06
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	22890.39	5.76	2259.50	131.70	-0.33	0.05
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	22890.39	-1121.44	1953.91	113.83	65.26	0.03
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	22890.39	-1948.15	1124.77	65.48	113.41	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	22890.39	-2252.86	-5.76	-0.40	131.21	-0.03
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	22890.39	-1953.91	-1134.74	-66.14	113.89	-0.05
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	22890.39	-1131.41	-1959.67	-114.14	66.10	-0.06
Dead+Wind 0 deg - Service	14938.57	-2.81	-2070.75	-131.66	0.29	-0.02
Dead+Wind 30 deg - Service	14938.57	1031.32	-1791.92	-113.90	-65.45	-0.01
Dead+Wind 60 deg - Service	14938.57	1789.10	-1032.94	-65.61	-113.64	-0.00
Dead+Wind 90 deg - Service	14938.57	2067.51	2.81	0.26	-131.37	0.01
Dead+Wind 120 deg - Service	14938.57	1791.92	1037.81	66.08	-113.88	0.02
Dead+Wind 150 deg - Service	14938.57	1036.19	1794.73	114.19	-65.86	0.03
Dead+Wind 180 deg - Service	14938.57	2.81	2070.75	131.72	-0.18	0.02
Dead+Wind 210 deg - Service	14938.57	-1031.32	1791.92	113.96	65.56	0.01
Dead+Wind 240 deg - Service	14938.57	-1789.10	1032.94	65.67	113.75	-0.00
Dead+Wind 270 deg - Service	14938.57	-2067.51	-2.81	-0.20	131.47	-0.01
Dead+Wind 300 deg - Service	14938.57	-1791.92	-1037.81	-66.02	113.98	-0.02
Dead+Wind 330 deg - Service	14938.57	-1036.19	-1794.73	-114.13	65.97	-0.03
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	18404.19	-0.00	-442.51	-39.80	0.07	-0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	12966.81	-0.00	-442.50	-39.38	0.05	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	18404.19	221.25	-383.22	-34.46	-19.85	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	12966.81	221.25	-383.22	-34.10	-19.66	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	18404.19	383.22	-221.25	-19.88	-34.43	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	12966.81	383.22	-221.25	-19.68	-34.08	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	18404.19	442.51	0.00	0.04	-39.77	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	12966.81	442.50	0.00	0.03	-39.36	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	18404.19	383.22	221.25	19.96	-34.43	0.00
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	12966.81	383.22	221.25	19.73	-34.08	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	18404.19	221.25	383.22	34.54	-19.85	0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	12966.81	221.25	383.22	34.16	-19.66	0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	18404.19	-0.00	442.51	39.87	0.07	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	12966.81	-0.00	442.50	39.44	0.05	0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	18404.19	-221.25	383.22	34.54	19.98	0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	12966.81	-221.25	383.22	34.16	19.75	0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	18404.19	-383.22	221.25	19.96	34.56	0.00
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	12966.81	-383.22	221.25	19.73	34.18	0.00
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	18404.19	-442.51	0.00	0.04	39.90	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	12966.81	-442.50	0.00	0.03	39.46	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	18404.19	-383.22	-221.25	-19.88	34.56	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	12966.81	-383.22	-221.25	-19.68	34.18	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	18404.19	-221.25	-383.22	-34.46	19.98	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	12966.81	-221.25	-383.22	-34.10	19.75	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-14938.57	0.00	0.00	14938.57	0.00	0.000%
2	-12.58	-17926.29	-9257.49	12.58	17926.29	9257.49	0.000%
3	-12.58	-13444.71	-9257.49	12.58	13444.71	9257.49	0.000%
4	4610.59	-17926.29	-8010.93	-4610.59	17926.29	8010.93	0.000%
5	4610.59	-13444.71	-8010.93	-4610.59	13444.71	8010.93	0.000%
6	7998.35	-17926.29	-4617.85	-7998.35	17926.29	4617.85	0.000%
7	7998.35	-13444.71	-4617.85	-7998.35	13444.71	4617.85	0.000%
8	9242.96	-17926.29	12.58	-9242.96	17926.29	-12.58	0.000%
9	9242.96	-13444.71	12.58	-9242.96	13444.71	-12.58	0.000%
10	8010.93	-17926.29	4639.64	-8010.93	17926.29	-4639.64	0.000%
11	8010.93	-13444.71	4639.64	-8010.93	13444.71	-4639.64	0.000%
12	4632.38	-17926.29	8023.51	-4632.38	17926.29	-8023.51	0.000%
13	4632.38	-13444.71	8023.51	-4632.38	13444.71	-8023.51	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
14	12.58	-17926.29	9257.49	-12.58	17926.29	-9257.49	0.000%
15	12.58	-13444.71	9257.49	-12.58	13444.71	-9257.49	0.000%
16	-4610.59	-17926.29	8010.93	4610.59	17926.29	-8010.93	0.000%
17	-4610.59	-13444.71	8010.93	4610.59	13444.71	-8010.93	0.000%
18	-7998.35	-17926.29	4617.85	7998.35	17926.29	-4617.85	0.000%
19	-7998.35	-13444.71	4617.85	7998.35	13444.71	-4617.85	0.000%
20	-9242.96	-17926.29	-12.58	9242.96	17926.29	12.58	0.000%
21	-9242.96	-13444.71	-12.58	9242.96	13444.71	12.58	0.000%
22	-8010.93	-17926.29	-4639.64	8010.93	17926.29	4639.64	0.000%
23	-8010.93	-13444.71	-4639.64	8010.93	13444.71	4639.64	0.000%
24	-4632.38	-17926.29	-8023.51	4632.38	17926.29	8023.51	0.000%
25	-4632.38	-13444.71	-8023.51	4632.38	13444.71	8023.51	0.000%
26	0.00	-22890.39	0.00	0.00	22890.39	0.00	0.000%
27	-5.76	-22890.39	-2259.50	5.76	22890.39	2259.50	0.000%
28	1121.44	-22890.39	-1953.91	-1121.44	22890.39	1953.91	0.000%
29	1948.15	-22890.39	-1124.77	-1948.15	22890.39	1124.77	0.000%
30	2252.86	-22890.39	5.76	-2252.86	22890.39	-5.76	0.000%
31	1953.91	-22890.39	1134.74	-1953.91	22890.39	-1134.74	0.000%
32	1131.41	-22890.39	1959.67	-1131.41	22890.39	-1959.67	0.000%
33	5.76	-22890.39	2259.50	-5.76	22890.39	-2259.50	0.000%
34	-1121.44	-22890.39	1953.91	1121.44	22890.39	-1953.91	0.000%
35	-1948.15	-22890.39	1124.77	1948.15	22890.39	-1124.77	0.000%
36	-2252.86	-22890.39	-5.76	2252.86	22890.39	5.76	0.000%
37	-1953.91	-22890.39	-1134.74	1953.91	22890.39	1134.74	0.000%
38	-1131.41	-22890.39	-1959.67	1131.41	22890.39	1959.67	0.000%
39	-2.81	-14938.57	-2070.75	2.81	14938.57	2070.75	0.000%
40	1031.32	-14938.57	-1791.92	-1031.32	14938.57	1791.92	0.000%
41	1789.10	-14938.57	-1032.94	-1789.10	14938.57	1032.94	0.000%
42	2067.50	-14938.57	2.81	-2067.51	14938.57	-2.81	0.000%
43	1791.92	-14938.57	1037.81	-1791.92	14938.57	-1037.81	0.000%
44	1036.19	-14938.57	1794.73	-1036.19	14938.57	-1794.73	0.000%
45	2.81	-14938.57	2070.75	-2.81	14938.57	-2070.75	0.000%
46	-1031.32	-14938.57	1791.92	1031.32	14938.57	-1791.92	0.000%
47	-1789.10	-14938.57	1032.94	1789.10	14938.57	-1032.94	0.000%
48	-2067.50	-14938.57	-2.81	2067.51	14938.57	2.81	0.000%
49	-1791.92	-14938.57	-1037.81	1791.92	14938.57	1037.81	0.000%
50	-1036.19	-14938.57	-1794.73	1036.19	14938.57	1794.73	0.000%
51	0.00	-18404.19	-442.50	0.00	18404.19	442.51	0.000%
52	0.00	-12966.81	-442.50	0.00	12966.81	442.50	0.000%
53	221.25	-18404.19	-383.22	-221.25	18404.19	383.22	0.000%
54	221.25	-12966.81	-383.22	-221.25	12966.81	383.22	0.000%
55	383.22	-18404.19	-221.25	-383.22	18404.19	221.25	0.000%
56	383.22	-12966.81	-221.25	-383.22	12966.81	221.25	0.000%
57	442.50	-18404.19	0.00	-442.51	18404.19	-0.00	0.000%
58	442.50	-12966.81	0.00	-442.50	12966.81	-0.00	0.000%
59	383.22	-18404.19	221.25	-383.22	18404.19	-221.25	0.000%
60	383.22	-12966.81	221.25	-383.22	12966.81	-221.25	0.000%
61	221.25	-18404.19	383.22	-221.25	18404.19	-383.22	0.000%
62	221.25	-12966.81	383.22	-221.25	12966.81	-383.22	0.000%
63	0.00	-18404.19	442.50	0.00	18404.19	-442.51	0.000%
64	0.00	-12966.81	442.50	0.00	12966.81	-442.50	0.000%
65	-221.25	-18404.19	383.22	221.25	18404.19	-383.22	0.000%
66	-221.25	-12966.81	383.22	221.25	12966.81	-383.22	0.000%
67	-383.22	-18404.19	221.25	383.22	18404.19	-221.25	0.000%
68	-383.22	-12966.81	221.25	383.22	12966.81	-221.25	0.000%
69	-442.50	-18404.19	0.00	442.51	18404.19	-0.00	0.000%
70	-442.50	-12966.81	0.00	442.50	12966.81	-0.00	0.000%
71	-383.22	-18404.19	-221.25	383.22	18404.19	221.25	0.000%
72	-383.22	-12966.81	-221.25	383.22	12966.81	221.25	0.000%
73	-221.25	-18404.19	-383.22	221.25	18404.19	383.22	0.000%
74	-221.25	-12966.81	-383.22	221.25	12966.81	383.22	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	0.00017116
3	Yes	5	0.00000001	0.00008759
4	Yes	6	0.00000001	0.00019156
5	Yes	6	0.00000001	0.00007032
6	Yes	6	0.00000001	0.00019469
7	Yes	6	0.00000001	0.00007155
8	Yes	5	0.00000001	0.00010548
9	Yes	5	0.00000001	0.00005339
10	Yes	6	0.00000001	0.00020228
11	Yes	6	0.00000001	0.00007442
12	Yes	6	0.00000001	0.00019036
13	Yes	6	0.00000001	0.00006977
14	Yes	5	0.00000001	0.00014610
15	Yes	5	0.00000001	0.00007482
16	Yes	6	0.00000001	0.00019831
17	Yes	6	0.00000001	0.00007291
18	Yes	6	0.00000001	0.00019498
19	Yes	6	0.00000001	0.00007162
20	Yes	5	0.00000001	0.00008093
21	Yes	5	0.00000001	0.00004070
22	Yes	6	0.00000001	0.00019122
23	Yes	6	0.00000001	0.00007011
24	Yes	6	0.00000001	0.00020334
25	Yes	6	0.00000001	0.00007481
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00039487
28	Yes	4	0.00000001	0.00053069
29	Yes	4	0.00000001	0.00057647
30	Yes	4	0.00000001	0.00032061
31	Yes	4	0.00000001	0.00074607
32	Yes	4	0.00000001	0.00054097
33	Yes	4	0.00000001	0.00038945
34	Yes	4	0.00000001	0.00066787
35	Yes	4	0.00000001	0.00058526
36	Yes	4	0.00000001	0.00031778
37	Yes	4	0.00000001	0.00053983
38	Yes	4	0.00000001	0.00078057
39	Yes	4	0.00000001	0.00018440
40	Yes	4	0.00000001	0.00049712
41	Yes	4	0.00000001	0.00052531
42	Yes	4	0.00000001	0.00015507
43	Yes	4	0.00000001	0.00059615
44	Yes	4	0.00000001	0.00048289
45	Yes	4	0.00000001	0.00018176
46	Yes	4	0.00000001	0.00056402
47	Yes	4	0.00000001	0.00052829
48	Yes	4	0.00000001	0.00015342
49	Yes	4	0.00000001	0.00048822
50	Yes	4	0.00000001	0.00060898
51	Yes	4	0.00000001	0.00004258
52	Yes	4	0.00000001	0.00001580
53	Yes	4	0.00000001	0.00005724
54	Yes	4	0.00000001	0.00002989
55	Yes	4	0.00000001	0.00005724

56	Yes	4	0.00000001	0.00002990
57	Yes	4	0.00000001	0.00004253
58	Yes	4	0.00000001	0.00001578
59	Yes	4	0.00000001	0.00005749
60	Yes	4	0.00000001	0.00003003
61	Yes	4	0.00000001	0.00005746
62	Yes	4	0.00000001	0.00003000
63	Yes	4	0.00000001	0.00004271
64	Yes	4	0.00000001	0.00001583
65	Yes	4	0.00000001	0.00005789
66	Yes	4	0.00000001	0.00003023
67	Yes	4	0.00000001	0.00005788
68	Yes	4	0.00000001	0.00003022
69	Yes	4	0.00000001	0.00004276
70	Yes	4	0.00000001	0.00001585
71	Yes	4	0.00000001	0.00005764
72	Yes	4	0.00000001	0.00003009
73	Yes	4	0.00000001	0.00005766
74	Yes	4	0.00000001	0.00003012

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 105	8.994	44	1.174	0.000
L2	105 - 95.5	6.568	44	1.113	0.000
L3	95.5 - 95	4.651	44	0.737	0.000
L4	95 - 85.5	4.575	44	0.725	0.000
L5	85.5 - 85	3.465	44	0.342	0.000
L6	85 - 48.9453	3.429	44	0.342	0.000
L7	53.7604 - 1	1.467	44	0.242	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.00	10' 30" Dia. Canister	44	8.994	1.174	0.000	7684
110.00	10' 30" Dia. Canister	44	7.762	1.188	0.000	7684
107.50	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (104ft to109ft)	44	7.158	1.167	0.000	4963
105.00	10' 30" Dia. Canister	44	6.568	1.113	0.000	3219
100.25	CCISeismic Tower Section 2 - 1	44	5.519	0.920	0.000	1491
100.00	10' 30" Dia. Canister	44	5.468	0.909	0.000	1447
97.50	CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (94ft to99ft)	44	4.987	0.802	0.000	1247
95.25	CCISeismic Tower Section 3 - 1	44	4.613	0.731	0.000	1357
95.00	10' 30" Dia. Canister	44	4.575	0.725	0.000	1386
90.25	CCISeismic Tower Section 4 - 1	44	3.928	0.505	0.000	1469
90.00	10' 40" Dia. Canister	44	3.898	0.492	0.000	1446
87.50	CCISeismic (12) general cable 7/8" Coax From 0 to 89 (84ft to89ft)	44	3.633	0.381	0.000	1490
85.25	CCISeismic Tower Section 5 - 1	44	3.447	0.342	0.000	2320
85.00	10' 40" Dia. Canister	44	3.429	0.342	0.000	2544

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
82.00	3' Sidearm	44	3.218	0.344	0.000	13159
81.97	CCISeismic Tower Section 6 - 1	44	3.216	0.344	0.000	13438
80.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (74ft to84ft)	44	3.078	0.343	0.000	37129
78.50	CCISeismic general cable 1/2" Coax From 0 to 81 (74ft to81ft)	44	2.974	0.342	0.000	32058
73.95	CCISeismic Tower Section 6 - 2	44	2.664	0.333	0.000	22639
70.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (64ft to74ft)	44	2.405	0.320	0.000	18042
63.95	CCISeismic Tower Section 6 - 3	44	2.027	0.294	0.000	13752
60.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (54ft to64ft)	44	1.797	0.274	0.000	11907
53.95	CCISeismic Tower Section 6 - 4	44	1.476	0.243	0.000	10233
52.38	CCISeismic Tower Section 7 - 1	44	1.400	0.235	0.000	10242
50.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (44ft to54ft)	44	1.290	0.223	0.000	10583
46.00	CCISeismic Tower Section 7 - 2	44	1.120	0.203	0.000	11516
40.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (34ft to44ft)	44	0.895	0.173	0.000	13287
36.00	CCISeismic Tower Section 7 - 3	50	0.763	0.155	0.000	14806
30.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (24ft to34ft)	50	0.589	0.127	0.000	17869
26.00	CCISeismic Tower Section 7 - 4	50	0.487	0.109	0.000	20728
20.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (14ft to24ft)	50	0.351	0.082	0.000	27274
16.00	CCISeismic Tower Section 7 - 5	50	0.269	0.065	0.000	34547
10.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (4ft to14ft)	50	0.156	0.039	0.000	57578
6.00	CCISeismic Tower Section 7 - 6	50	0.086	0.021	0.000	103640
3.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (0ft to4ft)	50	0.034	0.009	0.000	103640

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 105	40.601	12	5.326	0.001
L2	105 - 95.5	29.622	12	5.048	0.001
L3	95.5 - 95	20.950	12	3.337	0.001
L4	95 - 85.5	20.604	12	3.279	0.001
L5	85.5 - 85	15.593	12	1.542	0.001
L6	85 - 48.9453	15.432	12	1.542	0.001
L7	53.7604 - 1	6.599	12	1.089	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
115.00	10' 30" Dia. Canister	12	40.601	5.326	0.001	1713
110.00	10' 30" Dia. Canister	12	35.023	5.388	0.001	1713
107.50	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (104ft to109ft)	12	32.289	5.294	0.001	1106
105.00	10' 30" Dia. Canister	12	29.622	5.048	0.001	717
100.25	CCISeismic Tower Section 2 - 1	12	24.874	4.170	0.001	331
100.00	10' 30" Dia. Canister	12	24.643	4.119	0.001	321
97.50	CCISeismic (6) general cable 1 5/8" Coax From 0 to 99 (94ft to99ft)	12	22.470	3.633	0.001	276
95.25	CCISeismic Tower Section 3 - 1	12	20.776	3.308	0.001	300
95.00	10' 30" Dia. Canister	12	20.604	3.279	0.001	307
90.25	CCISeismic Tower Section 4 - 1	12	17.681	2.281	0.001	325
90.00	10' 40" Dia. Canister	12	17.547	2.222	0.001	320
87.50	CCISeismic (12) general cable 7/8" Coax From 0 to 89 (84ft to89ft)	12	16.352	1.718	0.001	329
85.25	CCISeismic Tower Section 5 - 1	12	15.512	1.541	0.001	512
85.00	10' 40" Dia. Canister	12	15.432	1.542	0.001	562
82.00	3' Sidearm	12	14.480	1.551	0.001	2907
81.97	CCISeismic Tower Section 6 - 1	12	14.471	1.551	0.001	2968
80.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (74ft to84ft)	12	13.851	1.547	0.001	8225
78.50	CCISeismic general cable 1/2" Coax From 0 to 81 (74ft to81ft)	12	13.383	1.540	0.001	7102
73.95	CCISeismic Tower Section 6 - 2	12	11.987	1.498	0.001	5020
70.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (64ft to74ft)	12	10.817	1.441	0.001	4003
63.95	CCISeismic Tower Section 6 - 3	12	9.117	1.324	0.001	3053
60.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (54ft to64ft)	12	8.084	1.236	0.001	2644
53.95	CCISeismic Tower Section 6 - 4	12	6.640	1.093	0.001	2273
52.38	CCISeismic Tower Section 7 - 1	12	6.298	1.057	0.000	2275
50.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (44ft to54ft)	12	5.803	1.002	0.000	2351
46.00	CCISeismic Tower Section 7 - 2	12	5.035	0.911	0.000	2558
40.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (34ft to44ft)	12	4.022	0.780	0.000	2951
36.00	CCISeismic Tower Section 7 - 3	24	3.429	0.695	0.000	3288
30.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (24ft to34ft)	24	2.648	0.570	0.000	3968
26.00	CCISeismic Tower Section 7 - 4	24	2.189	0.489	0.000	4603
20.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (14ft to24ft)	24	1.576	0.369	0.000	6056
16.00	CCISeismic Tower Section 7 - 5	24	1.209	0.290	0.000	7671
10.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (4ft to14ft)	24	0.703	0.173	0.000	12784
6.00	CCISeismic Tower Section 7 - 6	24	0.386	0.096	0.000	23012
3.00	CCISeismic (12) general cable 1 5/8" Coax From 0 to 109 (0ft to4ft)	24	0.154	0.038	0.000	23012

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	115 - 105 (1)	TP4.5x4.5x2.25	10.00	0.00	0.0	15.90	-1373.87	715694.00	0.002
L2	105 - 95.5 (2)	TP4.5x4.5x2.25	9.50	0.00	0.0	15.90	-3186.25	715694.00	0.004
L3	95.5 - 95 (3)	TP5.75x4.5x2.25	0.50	0.00	0.0	15.90	-3192.93	715694.00	0.004
L4	95 - 85.5 (4)	TP5.75x5.75x2.88	9.50	0.00	0.0	25.97	-5470.89	1168530.00	0.005
L5	85.5 - 85 (5)	TP29.25x5.75x2.88	0.50	0.00	0.0	25.97	-5632.33	1168530.00	0.005
L6	85 - 48.9453 (6)	TP33.32x29.25x0.19	36.05	0.00	0.0	19.39	-9527.68	1134590.00	0.008
L7	48.9453 - 1 (7)	TP41x32.4x0.25	52.76	0.00	0.0	32.34	-17921.20	1891600.00	0.009

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 - 105 (1)	TP4.5x4.5x2.25	5.78	56.95	0.101	0.00	56.95	0.000
L2	105 - 95.5 (2)	TP4.5x4.5x2.25	21.28	56.95	0.374	0.00	56.95	0.000
L3	95.5 - 95 (3)	TP5.75x4.5x2.25	21.28	56.95	0.374	0.00	56.95	0.000
L4	95 - 85.5 (4)	TP5.75x5.75x2.88	48.45	118.82	0.408	0.00	118.82	0.000
L5	85.5 - 85 (5)	TP29.25x5.75x2.88	48.44	118.82	0.408	0.00	118.82	0.000
L6	85 - 48.9453 (6)	TP33.32x29.25x0.19	193.04	776.57	0.249	0.00	776.57	0.000
L7	48.9453 - 1 (7)	TP41x32.4x0.25	592.16	1672.97	0.354	0.00	1672.97	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	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 - 105 (1)	TP4.5x4.5x2.25	1124.33	214708.00	0.005	0.00	42.47	0.000
L2	105 - 95.5 (2)	TP4.5x4.5x2.25	2109.69	214708.00	0.010	0.00	42.47	0.000
L3	95.5 - 95 (3)	TP5.75x4.5x2.25	2151.74	333991.00	0.006	0.00	42.47	0.000
L4	95 - 85.5 (4)	TP5.75x5.75x2.88	3312.74	350558.00	0.009	0.00	88.61	0.000
L5	85.5 - 85 (5)	TP29.25x5.75x2.88	3371.01	350558.00	0.010	0.00	88.61	0.000
L6	85 - 48.9453 (6)	TP33.32x29.25x0.19	5731.85	340376.00	0.017	0.13	971.43	0.000
L7	48.9453 - 1 (7)	TP41x32.4x0.25	9274.58	567481.00	0.016	0.13	2025.16	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	115 - 105 (1)	0.002	0.101	0.000	0.005	0.000	0.103 ✔	1.000	4.8.2 ✔
L2	105 - 95.5 (2)	0.004	0.374	0.000	0.010	0.000	0.378 ✔	1.000	4.8.2 ✔
L3	95.5 - 95 (3)	0.004	0.374	0.000	0.006	0.000	0.378 ✔	1.000	4.8.2 ✔
L4	95 - 85.5 (4)	0.005	0.408	0.000	0.009	0.000	0.412 ✔	1.000	4.8.2 ✔
L5	85.5 - 85 (5)	0.005	0.408	0.000	0.010	0.000	0.413 ✔	1.000	4.8.2 ✔
L6	85 - 48.9453 (6)	0.008	0.249	0.000	0.017	0.000	0.257 ✔	1.000	4.8.2 ✔
L7	48.9453 - 1 (7)	0.009	0.354	0.000	0.016	0.000	0.364 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	115 - 105	Pole	TP4.5x4.5x2.25	1	-1373.87	715694.00	10.3	Pass
L2	105 - 95.5	Pole	TP4.5x4.5x2.25	2	-3186.25	715694.00	37.8	Pass
L3	95.5 - 95	Pole	TP5.75x4.5x2.25	3	-3192.93	715694.00	37.8	Pass
L4	95 - 85.5	Pole	TP5.75x5.75x2.88	4	-5470.89	1168530.00	41.2	Pass
L5	85.5 - 85	Pole	TP29.25x5.75x2.88	5	-5632.33	1168530.00	41.3	Pass
L6	85 - 48.9453	Pole	TP33.32x29.25x0.19	6	-9527.68	1134590.00	25.7	Pass
L7	48.9453 - 1	Pole	TP41x32.4x0.25	7	-17921.20	1891600.00	36.4	Pass
						Summary		
						Pole (L5)	41.3	Pass
						RATING =	**41.3**	**Pass**

BU:	27741_B	Structure:	
WO:	Round Hill CT		
Order:	REV02B	Rev:	

Location

	Decimal Degrees		Deg	Min	Sec
Lat:	41.095117	+	41	5	42.42
Long:	-73.664219	-	73	39	51.19

Code and Site Parameters

Seismic Design Code:	TIA-222-H-1	
Site Soil:	B	Rock
Risk Category:	II	

USGS Seismic Reference			
	S_S:	0.2700	g
	S_1:	0.0500	g
	T_L:	6	s

Seismic Design Category Determination

Importance Factor, I_e:	1
Acceleration-based site coefficient, F_a:	0.9000
Velocity-based site coefficient, F_v:	0.8000

Design spectral response acceleration short period, S_{DS}:	0.1620	g
Design spectral response acceleration 1 s period, S_{D1}:	0.0267	g
T_s:	0.1646	

Seismic Design Category Based on S_{DS}:	A
Seismic Design Category Based on S_{D1}:	A
Seismic Design Category Based on S_1:	N/A

Controlling Seismic Design Category:	A

BU:	27741_B	Structure:	
WO:	Round Hill CT		
Order:	REV02B	Rev:	

Tower Details

Tower Type:	Tapered Monopole		
Height, h:	114	ft	
Effective Seismic Weight, W:	14.75	kips	
Amplification Factor, A_s:	1.0		2.7.8.1

Seismic Base Shear

Response Modification Factor, R:	1.5		
Discrete Appurtenance Weight in Top 1/3 of Structure, W_u:	2.6441	kips	
W_L:	12.10608359	kips	
E:	29000.0	ksi	
g:	386.088	in/s^2	
Average Moment of Inertia, I_{avg}:	2928.521143	in^4	
F_a:	0.420621788	hz	
Approximate Fundamental Period Monopole, T_a:	2.3774	s	2.7.7.1.3.3
Seismic Response Coefficient, C_s	0.1080		2.7.7.1.1
Seismic Response Coefficient Max 1, C_{smax}	0.0075		2.7.7.1.1
Seismic Response Coefficient Max 2, C_{smax}	N/A		2.7.7.1.1
Seismic Response Coefficient Min 1, C_{smin}	0.0300		2.7.7.1.1
Seismic Response Coefficient Min 2, C_{smin}	N/A		2.7.7.1.1
Controlling Seismic Response Coefficient, C_{sc}	0.0300		
Seismic Base Shear, V	0.443	kips	2.7.7.1.1

Vertical Distribution Factors

Period Related Exponent, k:	1.939
Sum of $w_i h_i^k$	51568.10

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_x	Section Weight, w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
1 - 1	10.00	114.00	109.00	0.5412	4823.26	0.0935	0.0414	0.0175
2 - 1	9.50	104.00	99.25	0.5141	3820.90	0.0741	0.0328	0.0167
3 - 1	0.50	94.50	94.25	0.0271	181.92	0.0035	0.0016	0.0009
4 - 1	9.50	94.00	89.25	0.8394	5077.60	0.0985	0.0436	0.0272
5 - 1	0.50	84.50	84.25	0.0442	238.98	0.0046	0.0021	0.0014
6 - 1	6.05	84.00	80.97	0.3605	1805.74	0.0350	0.0155	0.0117
6 - 2	10.00	77.95	72.95	0.6138	2510.98	0.0487	0.0215	0.0199
6 - 3	10.00	67.95	62.95	0.6366	1956.95	0.0379	0.0168	0.0206
6 - 4	10.00	57.95	52.95	0.6595	1449.55	0.0281	0.0124	0.0214
7 - 1	2.76	52.76	51.38	0.2413	500.40	0.0097	0.0043	0.0078
7 - 2	10.00	50.00	45.00	0.9022	1446.89	0.0281	0.0124	0.0292
7 - 3	10.00	40.00	35.00	0.9462	932.21	0.0181	0.0080	0.0307
7 - 4	10.00	30.00	25.00	0.9902	508.10	0.0099	0.0044	0.0321
7 - 5	10.00	20.00	15.00	1.0343	197.12	0.0038	0.0017	0.0335
7 - 6	10.00	10.00	5.00	1.0783	24.42	0.0005	0.0002	0.0349
			Sum	9.4290	25475.05			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
miscl 10' 30" Dia. Canister	109.00	0.2970	2646.97	0.0513	0.0227	0.0096
miscl 10' 30" Dia. Canister	99.00	0.2970	2196.48	0.0426	0.0188	0.0096
miscl 10' 40" Dia. Canister	89.00	0.3960	2382.37	0.0462	0.0204	0.0128
(2) Canister Mount	109.00	0.0560	499.09	0.0097	0.0043	0.0018
DBXNH-6565A-A2M	109.00	0.0342	304.80	0.0059	0.0026	0.0011
DBXNH-6565A-A2M	109.00	0.0342	304.80	0.0059	0.0026	0.0011
DBXNH-6565A-A2M	109.00	0.0342	304.80	0.0059	0.0026	0.0011
TMAT1921XB6811A	109.00	0.0176	156.86	0.0030	0.0013	0.0006
TMAT1921XB6811A	109.00	0.0176	156.86	0.0030	0.0013	0.0006
TMAT1921XB6811A	109.00	0.0176	156.86	0.0030	0.0013	0.0006
782 11066	109.00	0.0018	15.69	0.0003	0.0001	0.0001
782 11066	109.00	0.0018	15.69	0.0003	0.0001	0.0001
782 11066	109.00	0.0018	15.69	0.0003	0.0001	0.0001
(2) Canister Mount	99.00	0.0560	414.15	0.0080	0.0036	0.0018
APXVSPP18-C-A20	99.00	0.0620	458.52	0.0089	0.0039	0.0020
APXVSPP18-C-A20	99.00	0.0620	458.52	0.0089	0.0039	0.0020
APXVSPP18-C-A20	99.00	0.0620	458.52	0.0089	0.0039	0.0020
(2) KIT-FD9R6004/1C-DL	99.00	0.0128	94.66	0.0018	0.0008	0.0004
(2) KIT-FD9R6004/1C-DL	99.00	0.0128	94.66	0.0018	0.0008	0.0004
(2) KIT-FD9R6004/1C-DL	99.00	0.0128	94.66	0.0018	0.0008	0.0004
(3) IBC1900HG-SA	99.00	0.0660	488.11	0.0095	0.0042	0.0021
(3) IBC1900HG-SA	99.00	0.0660	488.11	0.0095	0.0042	0.0021
(3) IBC1900HG-SA	99.00	0.0660	488.11	0.0095	0.0042	0.0021
(2) Canister Mount	89.00	0.0560	336.90	0.0065	0.0029	0.0018
FVV-65B-R3	89.00	0.0439	263.93	0.0051	0.0023	0.0014
FVV-65B-R3	89.00	0.0439	263.93	0.0051	0.0023	0.0014
FVV-65B-R3	89.00	0.0439	263.93	0.0051	0.0023	0.0014
(2) CDX623T-DS-T	89.00	0.0203	122.01	0.0024	0.0010	0.0007
(2) CDX623T-DS-T	89.00	0.0203	122.01	0.0024	0.0010	0.0007
(2) CDX623T-DS-T	89.00	0.0203	122.01	0.0024	0.0010	0.0007
3' Sidearm	81.00	0.0210	105.25	0.0020	0.0009	0.0007
GPS	81.00	0.0006	3.01	0.0001	0.0000	0.0000
Spoke Flanges	84.00	0.3377	1816.20	0.0352	0.0156	0.0109
Spoke Flanges	94.00	0.1385	926.37	0.0180	0.0079	0.0045
Spoke Flanges	104.00	0.1066	867.39	0.0168	0.0074	0.0035
Top Flange	114.00	0.1062	1032.18	0.0200	0.0089	0.0034
	Sum	2.6441	18940.07			

Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
(12) general cable 1 5/8" Coax From 0 to 109	104.00	109.00	106.50	0.0624	531.67	0.0103	0.0046	0.0020
(12) general cable 1 5/8" Coax From 0 to 109	94.00	104.00	99.00	0.1248	922.96	0.0179	0.0079	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	84.00	94.00	89.00	0.1248	750.81	0.0146	0.0064	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	74.00	84.00	79.00	0.1248	595.90	0.0116	0.0051	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	64.00	74.00	69.00	0.1248	458.38	0.0089	0.0039	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	54.00	64.00	59.00	0.1248	338.37	0.0066	0.0029	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	44.00	54.00	49.00	0.1248	236.06	0.0046	0.0020	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	34.00	44.00	39.00	0.1248	151.65	0.0029	0.0013	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	24.00	34.00	29.00	0.1248	85.39	0.0017	0.0007	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	14.00	24.00	19.00	0.1248	37.61	0.0007	0.0003	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	4.00	14.00	9.00	0.1248	8.84	0.0002	0.0001	0.0040
(12) general cable 1 5/8" Coax From 0 to 109	0.00	4.00	2.00	0.0499	0.19	0.0000	0.0000	0.0016
(6) general cable 1 5/8" Coax From 0 to 99	94.00	99.00	96.50	0.0312	219.58	0.0043	0.0019	0.0010
(6) general cable 1 5/8" Coax From 0 to 99	84.00	94.00	89.00	0.0624	375.40	0.0073	0.0032	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	74.00	84.00	79.00	0.0624	297.95	0.0058	0.0026	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	64.00	74.00	69.00	0.0624	229.19	0.0044	0.0020	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	54.00	64.00	59.00	0.0624	169.19	0.0033	0.0015	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	44.00	54.00	49.00	0.0624	118.03	0.0023	0.0010	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	34.00	44.00	39.00	0.0624	75.82	0.0015	0.0007	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	24.00	34.00	29.00	0.0624	42.69	0.0008	0.0004	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	14.00	24.00	19.00	0.0624	18.81	0.0004	0.0002	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	4.00	14.00	9.00	0.0624	4.42	0.0001	0.0000	0.0020
(6) general cable 1 5/8" Coax From 0 to 99	0.00	4.00	2.00	0.0250	0.10	0.0000	0.0000	0.0008
(2) general cable 1 1/4" Coax From 0 to 99	94.00	99.00	96.50	0.0066	46.45	0.0009	0.0004	0.0002
(2) general cable 1 1/4" Coax From 0 to 99	84.00	94.00	89.00	0.0132	79.41	0.0015	0.0007	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	74.00	84.00	79.00	0.0132	63.03	0.0012	0.0005	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	64.00	74.00	69.00	0.0132	48.48	0.0009	0.0004	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	54.00	64.00	59.00	0.0132	35.79	0.0007	0.0003	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	44.00	54.00	49.00	0.0132	24.97	0.0005	0.0002	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	34.00	44.00	39.00	0.0132	16.04	0.0003	0.0001	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	24.00	34.00	29.00	0.0132	9.03	0.0002	0.0001	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	14.00	24.00	19.00	0.0132	3.98	0.0001	0.0000	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	4.00	14.00	9.00	0.0132	0.93	0.0000	0.0000	0.0004
(2) general cable 1 1/4" Coax From 0 to 99	0.00	4.00	2.00	0.0053	0.02	0.0000	0.0000	0.0002
(12) general cable 7/8" Coax From 0 to 89	84.00	89.00	86.50	0.0312	177.61	0.0034	0.0015	0.0010
(12) general cable 7/8" Coax From 0 to 89	74.00	84.00	79.00	0.0624	297.95	0.0058	0.0026	0.0020
(12) general cable 7/8" Coax From 0 to 89	64.00	74.00	69.00	0.0624	229.19	0.0044	0.0020	0.0020
(12) general cable 7/8" Coax From 0 to 89	54.00	64.00	59.00	0.0624	169.19	0.0033	0.0015	0.0020
(12) general cable 7/8" Coax From 0 to 89	44.00	54.00	49.00	0.0624	118.03	0.0023	0.0010	0.0020
(12) general cable 7/8" Coax From 0 to 89	34.00	44.00	39.00	0.0624	75.82	0.0015	0.0007	0.0020
(12) general cable 7/8" Coax From 0 to 89	24.00	34.00	29.00	0.0624	42.69	0.0008	0.0004	0.0020
(12) general cable 7/8" Coax From 0 to 89	14.00	24.00	19.00	0.0624	18.81	0.0004	0.0002	0.0020
(12) general cable 7/8" Coax From 0 to 89	4.00	14.00	9.00	0.0624	4.42	0.0001	0.0000	0.0020
(12) general cable 7/8" Coax From 0 to 89	0.00	4.00	2.00	0.0250	0.10	0.0000	0.0000	0.0008
general cable 1/2" Coax From 0 to 81	74.00	81.00	77.50	0.0011	5.15	0.0001	0.0000	0.0000
general cable 1/2" Coax From 0 to 81	64.00	74.00	69.00	0.0016	5.88	0.0001	0.0001	0.0001
general cable 1/2" Coax From 0 to 81	54.00	64.00	59.00	0.0016	4.34	0.0001	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	44.00	54.00	49.00	0.0016	3.03	0.0001	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	34.00	44.00	39.00	0.0016	1.94	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	24.00	34.00	29.00	0.0016	1.09	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	14.00	24.00	19.00	0.0016	0.48	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	4.00	14.00	9.00	0.0016	0.11	0.0000	0.0000	0.0001
general cable 1/2" Coax From 0 to 81	0.00	4.00	2.00	0.0006	0.00	0.0000	0.0000	0.0000
			Sum	2.6771	7152.98			

Site Number:	**27741_B**
Site Name:	**Round Hill CT**
Job Number:	**REV02B**
Engineer:	**TMK**
Date:	**12/29/2022**

Flange @ **85.0** EEI DWG # K11669

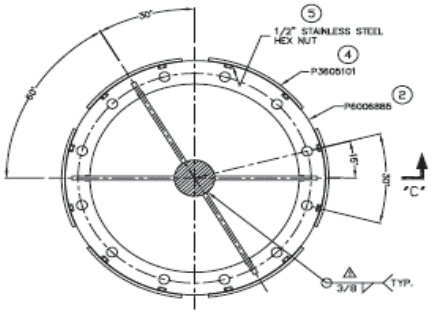
Moment:	48.4	k-ft			
Shear:	3.4	k			
Compression:	5.6	k			
TIA-222 Code Revision:	G				
Mast Diameter (in):	6.00		Ring Flange Outer Diameter / Length:	28.50	in
Upper Stiffener Height:	9.00	in	Ring Flange Inner Diameter / Length:	23.50	in
Upper Stiffener Width:	10.75	in	Ring Flange Width:	2.50	in
Upper Stiffener Thickness:	1.00	in	Ring Flange Thickness:	1.25	in
Upper Stiffener Material:	A572 Gr. 60		Ring Flange Material:	A572 Gr. 60	
Upper Stiffener Yield Strength:	60	ksi	Ring Flange Yield Strength:	60	ksi
Upper Stiffener Ultimate Strength:	75	ksi	Ring Flange Ultimate Strength:	75	ksi
			Flange Detail Type:	B	

Connection Bolts

Connection Bolt Arrangement:	Round				
Connection Bolt Yield Strength:	92	ksi			
Connection Ultimate Strength:	120	ksi	Weld Strength:	70	ksi
Connection Bolt Diameter:	1.00	in	Weld Size at Flange:	0.375	in
Connection Bolt Circle:	26.00	in	# of sides:	2	
# of Connection Bolts:	12		Weld Length at Flange:	2	in.
Minimum Connection Bolt Separation:	2.67	in	Angle of seperation of stiffeners:	60.00	degrees
Additional Connection Bolts Installed:	N		Weld Size at Mast:	0.75	in.
			Weld Height at Mast:	9	in.

Diameter of Flange Welds: 26.50 in

Max Tension at weld connection: 21.9 k



Connection Bolt Capacity

Area of Bolt:	0.61	in^2
Maximum Bolt Tension (stiffener load /2):	11.0	k
Bolt Tensile Capacity:	54.5	k
Interaction Equation:	0.20	Result: OK

Ring Flange Capacity

Length between bolts:	6.81	in
Mu (Fixed Ends PL/8) =	18.66	k-in
Flange Moment Capacity (.9Fy x bt^2/4):	26.37	k-in
Interaction Equation:	**0.71**	Result: OK

Weld Capacity:

Weld Capacity at Ring circumference:

fw =	5.48	
Fw =	8.35	k
Interaction Equation:	**0.66**	Result: OK

Weld capacity at mast:

Mu =	224.83	k-in
f'w =	8.33	k/in
Fw =	16.70	
	0.50	Result:

Site Number:	**27741_B**
Site Name:	**Round Hill CT**
Job Number:	**REV02B**
Engineer:	**TMK**
Date:	**12/29/2022**

Flange @ **95.0** EEI DWG # K11597

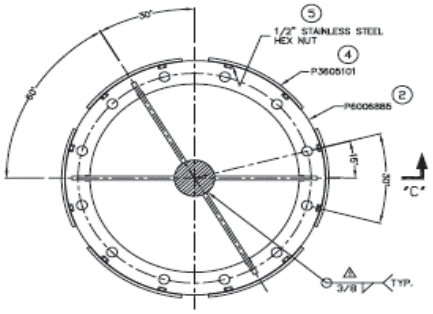
Moment:	21.3	k-ft			
Shear:	2.2	k			
Compression:	3.2	k			
TIA-222 Code Revision:	G				
Mast Diameter (in):	4.50		Ring Flange Outer Diameter / Length:	29.25	in
Upper Stiffener Height:	9.00	in	Ring Flange Inner Diameter / Length:	24.25	in
Upper Stiffener Width:	11.50	in	Ring Flange Width:	2.50	in
Upper Stiffener Thickness:	0.75	in	Ring Flange Thickness:	1.00	in
Upper Stiffener Material:	A36 Gr. 36		Ring Flange Material:	A572 Gr. 60	
Upper Stiffener Yield Strength:	36	ksi	Ring Flange Yield Strength:	60	ksi
Upper Stiffener Ultimate Strength:	58	ksi	Ring Flange Ultimate Strength:	75	ksi
			Flange Detail Type:	B	

Connection Bolts

Connection Bolt Arrangement:	Round				
Connection Bolt Yield Strength:	92	ksi			
Connection Ultimate Strength:	120	ksi	Weld Strength:	70	ksi
Connection Bolt Diameter:	1.00	in	Weld Size at Flange:	0.250	in
Connection Bolt Circle:	26.00	in	# of sides:	2	
# of Connection Bolts:	12		Weld Length at Flange:	2	in.
Minimum Connection Bolt Separation:	2.67	in	Angle of seperation of stiffeners:	60.00	degrees
Additional Connection Bolts Installed:	N		Weld Size at Mast:	0.375	in.
			Weld Height at Mast:	9	in.

Diameter of Flange Welds: 26.50 in

Max Tension at weld connection: 9.6 k



Connection Bolt Capacity

Area of Bolt:	0.61	in^2
Maximum Bolt Tension (stiffener load /2):	4.8	k
Bolt Tensile Capacity:	54.5	k
Interaction Equation:	0.09	Result: OK

Ring Flange Capacity

Length between bolts:	6.81	in
Mu (Fixed Ends PL/8) =	8.20	k-in
Flange Moment Capacity (.9Fy x bt^2/4):	10.13	k-in
Interaction Equation:	**0.81**	Result: OK

Weld Capacity:

Weld Capacity at Ring circumference:

fw =	2.41	
Fw =	5.57	k
Interaction Equation:	**0.43**	Result: OK

Weld capacity at mast:

Mu =	106.00	k-in
f'w =	3.93	k/in
Fw =	8.35	
	0.47	Result:

Site Number:	**27741_B**
Site Name:	**Round Hill CT**
Job Number:	**REV02B**
Engineer:	**TMK**
Date:	**12/29/2022**

Flange @ **105.0** EEI DWG # K11587

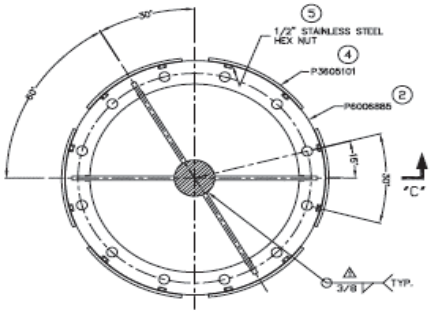
Moment:	5.8	k-ft			
Shear:	1.1	k			
Compression:	1.4	k			
TIA-222 Code Revision:	G				
Mast Diameter (in):	4.50		Ring Flange Outer Diameter / Length:	29.25	in
Upper Stiffener Height:	9.00	in	Ring Flange Inner Diameter / Length:	24.25	in
Upper Stiffener Width:	11.50	in	Ring Flange Width:	2.50	in
Upper Stiffener Thickness:	0.50	in	Ring Flange Thickness:	0.75	in
Upper Stiffener Material:	A36 Gr. 36		Ring Flange Material:	A36 Gr. 36	
Upper Stiffener Yield Strength:	36	ksi	Ring Flange Yield Strength:	36	ksi
Upper Stiffener Ultimate Strength:	58	ksi	Ring Flange Ultimate Strength:	58	ksi
			Flange Detail Type:	B	

Connection Bolts

Connection Bolt Arrangement:	Round				
Connection Bolt Yield Strength:	92	ksi			
Connection Ultimate Strength:	120	ksi	Weld Strength:	70	ksi
Connection Bolt Diameter:	1.00	in	Weld Size at Flange:	0.250	in
Connection Bolt Circle:	26.00	in	# of sides:	2	
# of Connection Bolts:	12		Weld Length at Flange:	2	in.
Minimum Connection Bolt Separation:	2.67	in	Angle of seperation of stiffeners:	60.00	degrees
Additional Connection Bolts Installed:	N		Weld Size at Mast:	0.250	in.
			Weld Height at Mast:	9	in.

Diameter of Flange Welds: 26.50 in

Max Tension at weld connection: 2.6 k



Connection Bolt Capacity

Area of Bolt:	0.61	in^2
Maximum Bolt Tension (stiffener load /2):	1.3	k
Bolt Tensile Capacity:	54.5	k
Interaction Equation:	0.02	Result: OK

Ring Flange Capacity

Length between bolts:	6.81	in
Mu (Fixed Ends PL/8) =	2.23	k-in
Flange Moment Capacity (.9Fy x bt^2/4):	5.70	k-in
Interaction Equation:	**0.39**	Result: OK

Weld Capacity:

Weld Capacity at Ring circumference:

fw =	0.65	
Fw =	5.57	k
Interaction Equation:	**0.12**	Result: OK

Weld capacity at mast:

Mu =	28.79	k-in
f'w =	1.07	k/in
Fw =	5.57	
	0.19	Result:

Pier and Pad Foundation

Site Number:	27741_B
Site Name:	Round Hill CT
	REV02B

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	17.93	kips
Base Shear, Vu_comp:	9.26	kips
Moment, M_u:	592.17	ft-kips
Tower Height, **H**:	115	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	22	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	15	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	16	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties		
Total Soil Unit Weight, **γ**:	100	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	43	degrees
SPT Blow Count, N_{blows}:	90	
Base Friction, **μ**:	0.4	
Neglected Depth, **N**:	3.00	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	None	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Lateral (Sliding) (kips)	93.56	9.26	**9.9%**	**Pass**
Bearing Pressure (ksf)	9.38	2.62	**28.0%**	**Pass**
*Overturning (kip*ft)*	1104.03	650.05	**58.9%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	2469.58	619.95	**25.1%**	**Pass**
Pier Compression (kip)	22913.28	37.37	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	1756.48	179.92	**10.2%**	**Pass**
Pad Shear - 1-way (kips)	537.90	36.71	**6.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.009	**4.8%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3512.95	371.97	**10.6%**	**Pass**

Structural Rating:	**25.1%**
Soil Rating:	**58.9%**

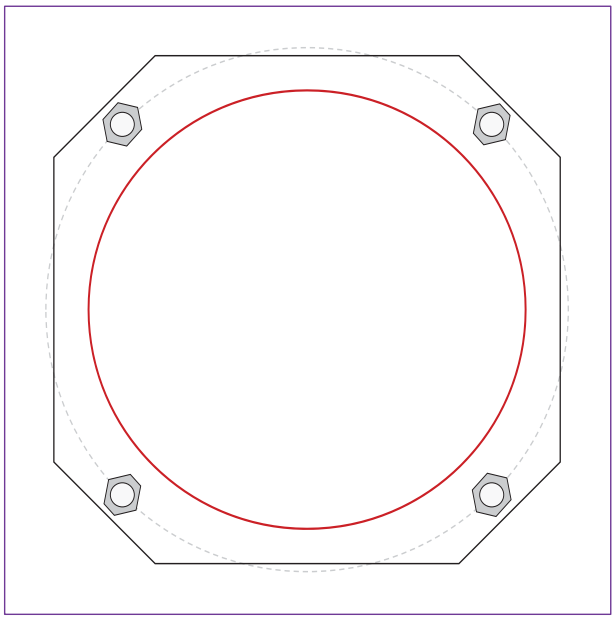
Version 4.1.0

Monopole Base Plate Connection

Site Info	
BU #	27741_B
Site Name	Round Hill CT
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.75

Applied Loads	
Moment (kip-ft)	592.12
Axial Force (kips)	17.93
Shear Force (kips)	9.26



Connection Properties

Anchor Rod Data

(4) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 49" BC

Base Plate Data

47.5" W x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi); Clip: 9.5 in

Stiffener Data

N/A

Pole Data

41" x 0.25" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 140.4	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.32	ϕVn = 149.1	**57.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	22.83	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**42.3%**	**Pass**

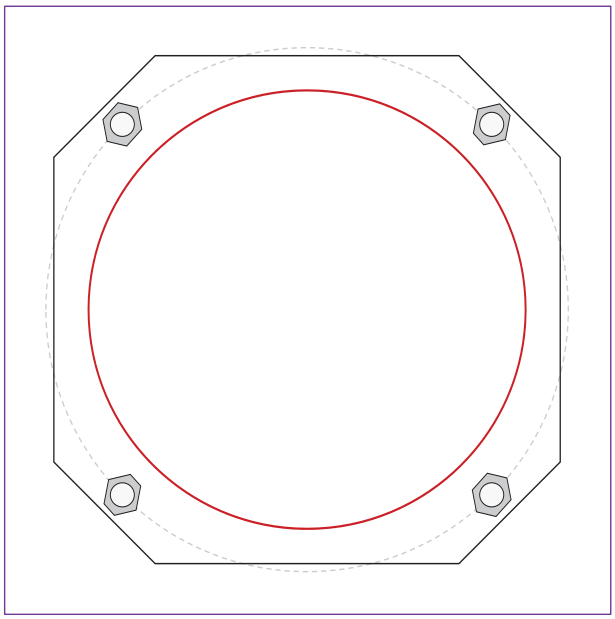
Monopole Base Plate Connection - Seismic

Site Info	
BU #	27741_B
Site Name	Round Hill CT
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.75

Applied Loads	
Moment (kip-ft)	39.91
Axial Force (kips)	18.40
Shear Force (kips)	0.44

**1.5 Overstrength Factor Applied*



Connection Properties

Anchor Rod Data

(4) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 49" BC

Base Plate Data

47.5" W x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi); Clip: 9.5 in

Stiffener Data

N/A

Pole Data

41" x 0.25" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 19.25	ϕPn_c = 268.39	**Stress Rating**
Vu = 0.17	ϕVn = 120.77	**7.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	2.2	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**4.1%**	**Pass**

Site ID:	27741_B
Site Name:	Round Hill CT
Engineer:	TMK
Date:	2/17/2022

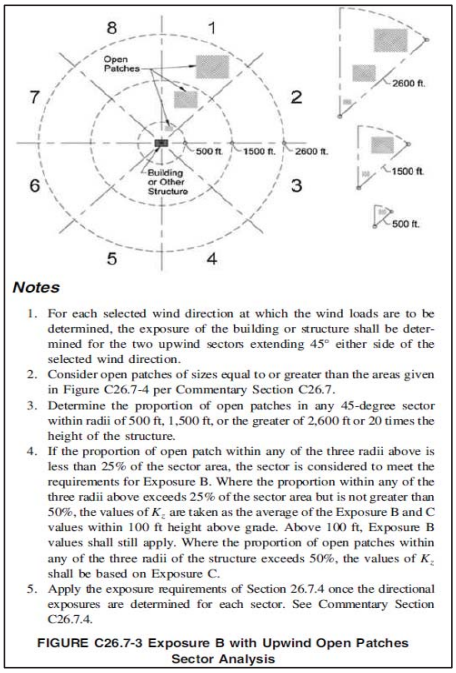
Exposure Determination

per Section C26.7 in ASCE7

Tower Height	115	ft
Radius	2,600	ft

Result:
Use Exposure C
63.0% of the 500ft Radius Sector Area.

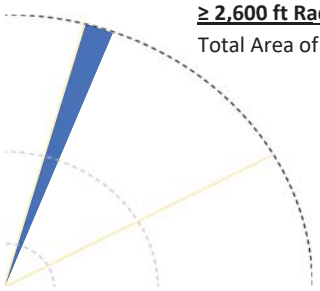
Open Areas (Exp C)	Open Area (x1000 ft^2)	Length (ft)	Distance From Tower (ft)	Width (ft) *(equivalent)*	**Defined as "Open Patch":**
1	**62**	**210**	**290**	**293**	**Yes: Open Patch**
2	115	323	1,200	356	*Not an Open Patch*



Notes

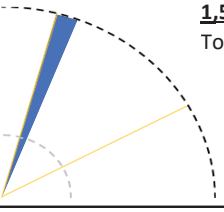
1. For each selected wind direction at which the wind loads are to be determined, the exposure of the building or structure shall be determined for the two upwind sectors extending 45° either side of the selected wind direction.
2. Consider open patches of sizes equal to or greater than the areas given in Figure C26.7-4 per Commentary Section C26.7.
3. Determine the proportion of open patches in any 45-degree sector within radii of 500 ft, 1,500 ft, or the greater of 2,600 ft or 20 times the height of the structure.
4. If the proportion of open patch within any of the three radii above is less than 25% of the sector area, the sector is considered to meet the requirements for Exposure B. Where the proportion within any of the three radii above exceeds 25% of the sector area but is not greater than 50%, the values of K_z are taken as the average of the Exposure B and C values within 100 ft height above grade. Above 100 ft, Exposure B values shall still apply. Where the proportion of open patches within any of the three radii of the structure exceeds 50%, the values of K_z shall be based on Exposure C.
5. Apply the exposure requirements of Section 26.7.4 once the directional exposures are determined for each sector. See Commentary Section C26.7.4.

FIGURE C26.7-3 Exposure B with Upwind Open Patches Sector Analysis



≥ 2,600 ft Radius

Total Area of Open Patches:
61,621 ft^2
3% of Sector



1,500 ft Radius

Total Area of Open Patches:
61,621 ft^2
7% of Sector

500 ft Radius

Total Area of Open Patches:
61,621 ft^2
63% of Sector

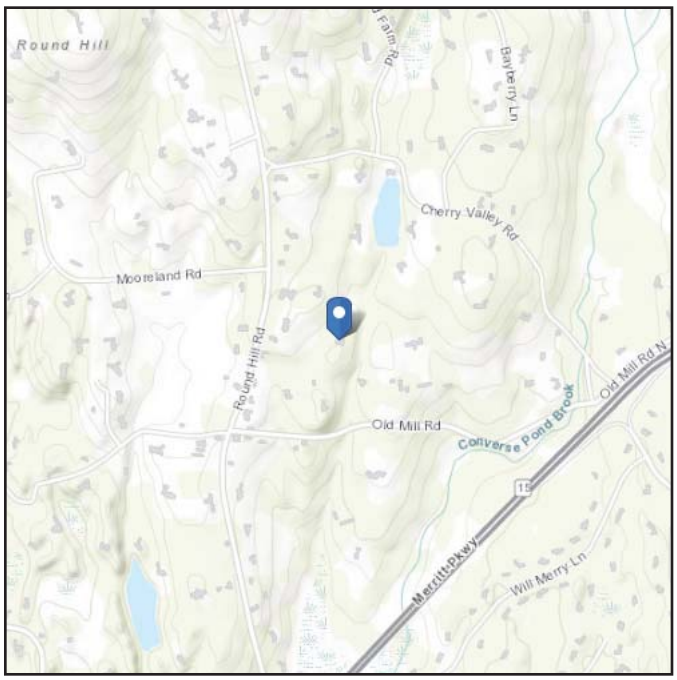
Municipality	Basic Design Wind Speeds, V (mph)				Allowable Stress Design Wind Speeds, V_{asd} (mph)				Ground Snow Load p_g (psf)	MCE Ground Accelerations		Wind-Borne Debris Region[1]		Hurricane-Prone Region
	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV	Risk Cat. I	Risk Cat. II	Risk Cat. III	Risk Cat. IV		S_S (g)	S_1 (g)	Risk Cat. III Occup. I-2	Risk Cat. IV	
Cornwall	105	115	125	130	81	89	97	101	40	0.172	0.054			
Coventry	110	120	130	135	85	93	101	105	30	0.188	0.055			Yes
Cromwell	110	120	130	135	85	93	101	105	30	0.207	0.056			Yes
Danbury	110	120	125	130	85	93	97	101	30	0.225	0.056			Yes
Darien	110	120	130	135	85	93	101	105	30	0.250	0.057		Type B	Yes
Deep River	115	125	135	140	89	97	105	108	30	0.210	0.054			Yes
Derby	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes
Durham	110	120	130	135	85	93	101	105	30	0.211	0.055			Yes
East Granby	110	120	125	130	85	93	97	101	35	0.173	0.054			Yes
East Haddam	115	125	135	135	89	97	105	105	30	0.214	0.056			Yes
East Hampton	110	125	130	135	85	97	101	105	30	0.210	0.056			Yes
East Hartford	110	120	130	135	85	93	101	105	30	0.191	0.055			Yes
East Haven	110	125	135	135	85	97	105	105	30	0.200	0.053	Type B	Type B	Yes
East Lyme	120	130	135	140	93	101	105	108	30	0.198	0.053	Type B	Type B	Yes
East Windsor	110	120	130	135	85	93	101	105	30	0.177	0.055			Yes
Eastford	110	120	130	135	85	93	101	105	40	0.180	0.055			Yes
Easton	110	120	130	135	85	93	101	105	30	0.218	0.055			Yes
Ellington	110	120	130	135	85	93	101	105	35	0.178	0.055			Yes
Enfield	110	120	125	130	85	93	97	101	35	0.172	0.055			Yes
Essex	115	125	135	140	89	97	105	108	30	0.207	0.054			Yes
Fairfield	110	120	130	135	85	93	101	105	30	0.219	0.055		Type B	Yes
Farmington	110	120	130	135	85	93	101	105	35	0.188	0.055			Yes
Franklin	115	125	135	140	89	97	105	108	30	0.195	0.054			Yes
Glastonbury	110	120	130	135	85	93	101	105	30	0.200	0.055			Yes
Goshen	110	115	125	130	85	89	97	101	40	0.172	0.054			
Granby	110	120	125	130	85	93	97	101	35	0.171	0.054			Yes
Greenwich	110	120	130	135	85	93	101	105	30	0.274	0.059		Type B	Yes
Griswold	120	125	135	140	93	97	105	108	30	0.189	0.054			Yes
Groton	120	130	140	140	93	101	108	108	30	0.190	0.052	Type B	Type A	Yes
Guilford	115	125	135	140	89	97	105	108	30	0.204	0.054	Type B	Type B	Yes
Haddam	115	125	135	135	89	97	105	105	30	0.214	0.055			Yes
Hamden	110	120	130	135	85	93	101	105	30	0.202	0.054			Yes

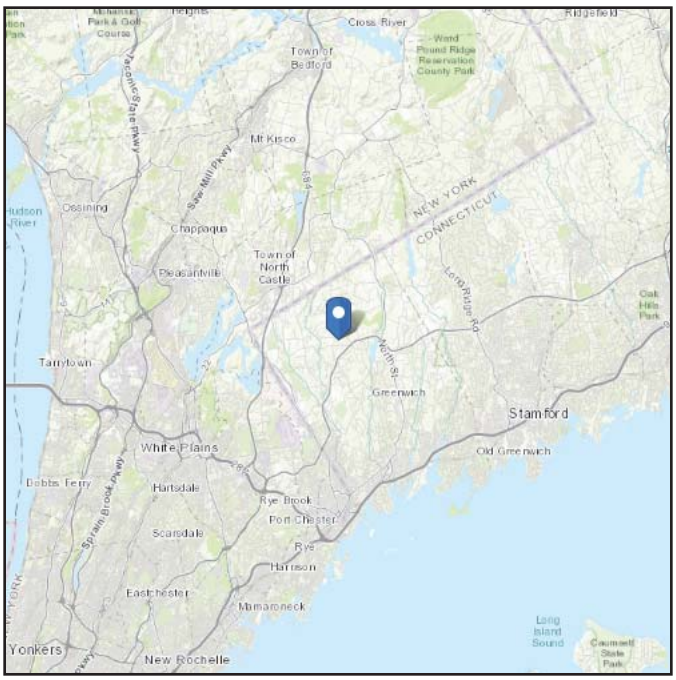
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: B - Rock

Latitude: 41.095117
Longitude: -73.664219
Elevation: 378.96 ft (NAVD 88)





Wind

Results:

Wind Speed:	120 Vmph- per 2022 Connecticut Building Code

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 7-22 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

Site is in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2. Glazed openings need not be protected against wind-borne debris.

B - Rock

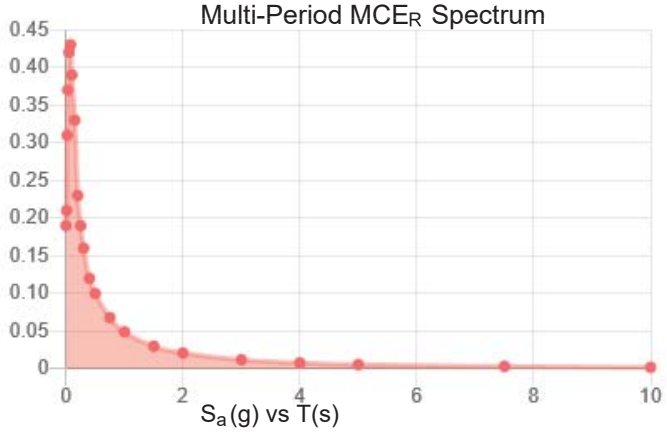
Site Soil Class:

Results:

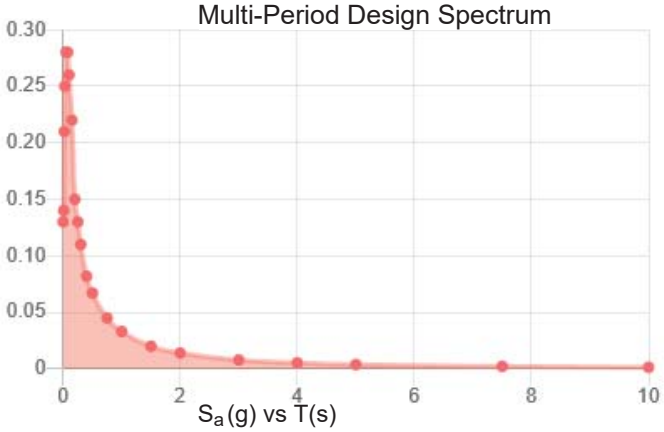
PGA_M :	0.16	T_L :	6
S_{MS} :	0.21	S_S :	0.27
S_{M1} :	0.049	S_1 :	0.05
S_{DS} :	0.14	V_{S30} :	1080
S_{D1} :	0.033		

Seismic Design Category: A

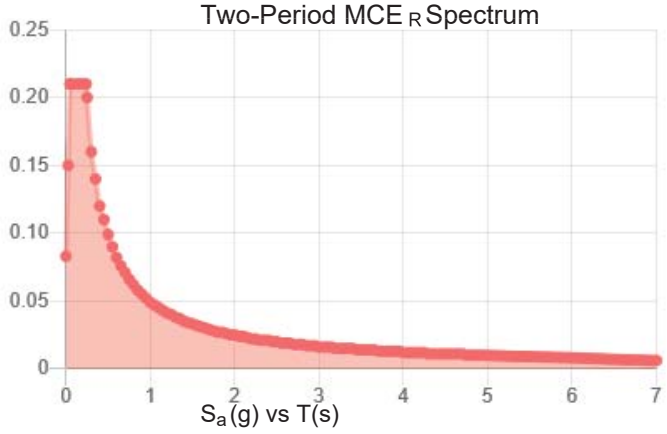
Multi-Period MCE_R Spectrum



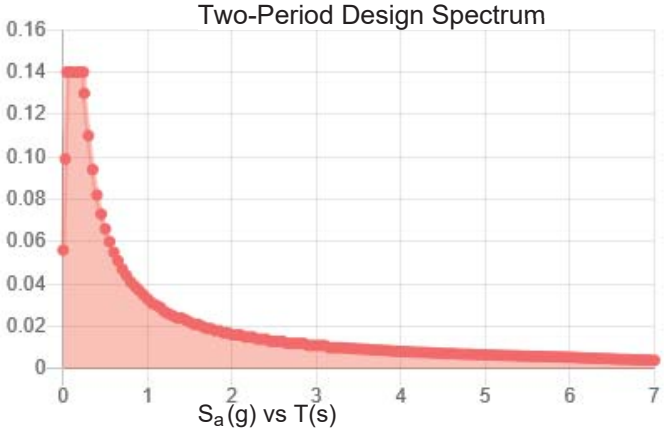
Multi-Period Design Spectrum



Two-Period MCE_R Spectrum



Two-Period Design Spectrum



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Thu Dec 29 2022

Date Source:
USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
3-s Gust Speed	47 mph
Data Source:	Standard ASCE/SEI 7-22, Figs. 10-2 through 10-8
Date Accessed:	Thu Dec 29 2022

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 for 250, 500, 1,000, and 1,400-year mean recurrence intervals along with concurrent 3-s gust speeds and concurrent air temperatures. The shading indicates special icing regions, with elevations above 2,100 ft (640 m) in the east, 6,000 ft (1829 m) in the west, and 1,600 ft (488 m) in Alaska, with sparse weather station data for determining design ice loads. In these regions, as well as in regions with complex terrain causing unusual icing conditions and regions where snow or in-cloud icing results in larger loads, the mapped values should be adjusted based on a combination of local historical records and experience, reanalysis data, and numerical weather prediction systems.