



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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VIA ELECTRONIC MAIL

November 17, 2022

Denise Sabo
Northeast Site Solutions
4 Angela's Way
Burlington, CT 06013
denise@northeastsitesolutions.com

RE: **EM-VER-163-220907** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 10 Northridge Road, Windham, Connecticut.

Dear Denise Sabo:

The Connecticut Siting Council (Council) is in receipt of your correspondence of November 14, 2022 submitted in response to the Council's October 14, 2022 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/MP/emr

From: Deborah Chase <deborah@northeastsitesolutions.com>
Sent: Monday, November 14, 2022 2:39 PM
To: CSC-DL Siting Council <Siting.Council@ct.gov>; Bachman, Melanie <Melanie.Bachman@ct.gov>; Fontaine, Lisa <Lisa.Fontaine@ct.gov>; Robidoux, Evan <Evan.Robidoux@ct.gov>
Cc: Denise <denise@northeastsitesolutions.com>
Subject: RE- Incomplete-EM-VER-163-220907 - 10 Northridge Road, Windham, Connecticut (842423_CROWN VERIZON)
Importance: High

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Siting Council-

Please see attached revised Structural Analysis for the above referenced site per the incomplete letter.

I have also included the mailing label for your hard copy.

Please let us know if this renders the application complete for continued review.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839

🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.



Date: **November 11, 2022**



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

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 467616
Site Name: WINDHAM NORTH CT

Crown Castle Designation: **BU Number:** 842423
Site Name: WINDHAM NORTH RIDGE ROAD
JDE Job Number: 685806
Work Order Number: 2180390
Order Number: 585798 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 2180390

Site Data: **10 NORTH RIDGE DRIVE, WINDHAM, WINDHAM County, CT**
Latitude 41° 44' 23.53", Longitude -72° 10' 22.47"
88.7 Foot - Monopole Tower

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

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

LC7: Proposed Equipment Configuration

Sufficient Capacity – 69.2%

This analysis has been performed in accordance with the 2022 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Didi Rossmiller

Respectfully submitted by:

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

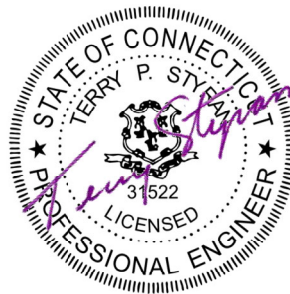


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1) INTRODUCTION

This tower is a 88.7 ft Monopole tower designed by Engineered Endeavors Incorporated.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
74.0	75.0	3	antel	BXA-70063/6CF w/ Mount Pipe	8	1-5/8
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		1	raycap	RRFDC-3315-PF-48		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecom.	MT6407-77A w/ Mount Pipe		
		3	samsung telecom.	RF4439D-25A		
	3	samsung telecom.	RF4440D-13A			
	74.0	1	tower mounts	Platform Mount [LP 303-1]		
	1	tower mounts	Side Arm Mount [SO 102-3]			

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
84.0	84.0	3	cci antennas	DMP65R-BU8D w/ Mount Pipe	3 6 3 12	3/8 7/8 conduit 1-5/8
		3	cci antennas	OPA-65R-LCUU-H8		
		3	cci antennas	OPA65R-BU8D w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS 8843 B2/B66A_CCIV2		
		3	ericsson	RRUS E2 B29		
		3	ericsson	RRUS-32 B30		
		3	powerwave tech.	7770.00 w/ Mount Pipe		
		6	powerwave tech.	LGP21401		
		3	raycap	DC6-48-60-18-8C-EV		
		1	tower mounts	Platform Mount [LP 715-1_KCKR]		
66.0	66.0	1	tower mounts	Commscope MC-PK8-DSH	1	1-3/8
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4290426	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4712164	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4943145	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	88.7 - 47.57	Pole	TP30.46x21.89x0.25	1	-15.513	1428.483	47.8	Pass
L2	47.57 - 0	Pole	TP39.75x29.058x0.313	2	-25.946	2402.767	69.2	Pass
							Summary	
						Pole (L2)	69.2	Pass
						Rating =	69.2	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	50.7	Pass
1	Base Plate	0	67.2	Pass
1	Base Foundation (Structure)	0	52.7	Pass
1	Base Foundation (Soil Interaction)	0	54.2	Pass
Structure Rating (max from all components) =				69.2%

Notes:

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

4.1) Recommendations

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

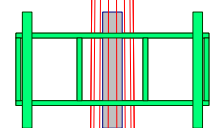
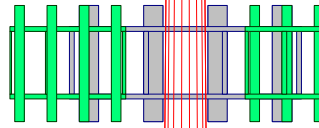
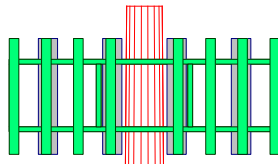
APPENDIX A
TNXTOWER OUTPUT

88.7 ft

Section	1	2
Length (ft)	41.130	51.900
Number of Sides	18	18
Thickness (in)	0.250	0.313
Socket Length (ft)	4.330	29.058
Top Dia (in)	21.890	39.750
Bot Dia (in)	30.460	6.0
Grade	A572-65	
Weight (K)	2.9	8.9

47.6 ft

0.0 ft



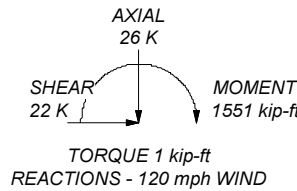
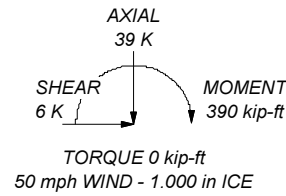
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Windham 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 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 69.2%

ALL REACTIONS ARE FACTORED



CROWN CASTLE
The Pathway to Possible

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

Job: BU 842423		
Project:	Client: Crown Castle	Drawn by: DROssmiller
Code: TIA-222-H	Date: 11/11/22	App'd:
Path:	Scale: NTS	Dwg No. E-1

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Tower Input Data

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

- Tower is located in Windham County, Connecticut.
- Tower base elevation above sea level: 313.000 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: 0.000 ft.
- Nominal ice thickness of 1.000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- TIA-222-H Annex S.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

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	88.700-47.570	41.130	4.330	18	21.890	30.460	0.250	1.000	A572-65 (65 ksi)
L2	47.570-0.000	51.900		18	29.058	39.750	0.313	1.250	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	I/Q in ²	w in	w/t
L1	22.189	17.171	1015.912	7.682	11.120	91.358	2033.161	8.587	3.413	13.651
	30.891	23.972	2763.991	10.725	15.474	178.625	5531.618	11.988	4.921	19.684
L2	30.364	28.512	2976.420	10.205	14.761	201.636	5956.757	14.259	4.564	14.605
	40.315	39.117	7686.392	14.000	20.193	380.646	15382.898	19.562	6.446	20.627

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 88.700- 47.570				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L2 47.570-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_{AA} ft ² /ft	Weight klf
LDF7-50A(1-5/8)	A	No	No	Inside Pole	84.000 - 0.000	12	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.001 0.001 0.001
2" Rigid Conduit	A	No	No	Inside Pole	84.000 - 0.000	3	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.003 0.003 0.003
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	84.000 - 0.000	1	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.000 0.000 0.000
FB-L98B-034-XXXXXX(3/8)	A	No	No	Inside Pole	84.000 - 0.000	2	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.000 0.000 0.000
WR-VG66ST-BRD_CCIV2(7/8)	A	No	No	Inside Pole	84.000 - 0.000	6	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.001 0.001 0.001
*								
LDF7-50A(1-5/8)	B	No	No	Inside Pole	74.000 - 0.000	8	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.001 0.001 0.001
*								
CU12PSM9P8XXX(1-3/8)	A	No	No	Inside Pole	66.000 - 0.000	1	No Ice 0.000 1/2" Ice 0.000 1" Ice 0.000	0.002 0.002 0.002
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	88.700-47.570	A	0.000	0.000	0.000	0.000	0.893
		B	0.000	0.000	0.000	0.000	0.173
		C	0.000	0.000	0.000	0.000	0.000
L2	47.570-0.000	A	0.000	0.000	0.000	0.000	1.205
		B	0.000	0.000	0.000	0.000	0.312
		C	0.000	0.000	0.000	0.000	0.000

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	88.700-47.570	A	0.913	0.000	0.000	0.000	0.000	0.893
		B		0.000	0.000	0.000	0.000	0.173
		C		0.000	0.000	0.000	0.000	0.000
L2	47.570-0.000	A	0.822	0.000	0.000	0.000	0.000	1.205
		B		0.000	0.000	0.000	0.000	0.312
		C		0.000	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	88.700-47.570	0.000	0.000	0.000	0.000
L2	47.570-0.000	0.000	0.000	0.000	0.000

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
** 84 **									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	3.385	2.323	0.055
						1/2" Ice	3.746	2.664	0.098
						1" Ice	4.117	3.016	0.149
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	3.385	2.323	0.055
						1/2" Ice	3.746	2.664	0.098
						1" Ice	4.117	3.016	0.149
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	3.385	2.323	0.055
						1/2" Ice	3.746	2.664	0.098
						1" Ice	4.117	3.016	0.149
OPA65R-BU8D w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	17.455	8.577	0.109
						1/2" Ice	18.461	9.491	0.224
						1" Ice	19.485	10.422	0.353
OPA65R-BU8D w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	17.455	8.577	0.109
						1/2" Ice	18.461	9.491	0.224
						1" Ice	19.485	10.422	0.353
OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	17.455	8.577	0.109
						1/2" Ice	18.461	9.491	0.224
						1" Ice	19.485	10.422	0.353
OPA-65R-LCUU-H8 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	84.000	No Ice	11.934	8.059	0.103
						1/2" Ice	12.880	8.963	0.191
						1" Ice	13.844	9.885	0.292

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
OPA-65R-LCUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.000	84.000	1" Ice	11.934	8.059	0.103
			0.000			No Ice	12.880	8.963	0.191
			0.000			1/2" Ice	13.844	9.885	0.292
OPA-65R-LCUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.000	84.000	1" Ice	11.934	8.059	0.103
			0.000			No Ice	12.880	8.963	0.191
			0.000			1/2" Ice	13.844	9.885	0.292
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.000	0.000	84.000	1" Ice	15.886	7.889	0.139
			0.000			No Ice	16.815	8.735	0.252
			0.000			1/2" Ice	17.760	9.597	0.380
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.000	0.000	84.000	1" Ice	15.886	7.889	0.139
			0.000			No Ice	16.815	8.735	0.252
			0.000			1/2" Ice	17.760	9.597	0.380
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.000	0.000	84.000	1" Ice	15.886	7.889	0.139
			0.000			No Ice	16.815	8.735	0.252
			0.000			1/2" Ice	17.760	9.597	0.380
(2) LGP21401	A	From Leg	4.000	0.000	84.000	1" Ice	1.104	0.207	0.014
			0.000			No Ice	1.239	0.274	0.021
			0.000			1/2" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	84.000	1" Ice	1.104	0.207	0.014
			0.000			No Ice	1.239	0.274	0.021
			0.000			1/2" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	84.000	1" Ice	1.104	0.207	0.014
			0.000			No Ice	1.239	0.274	0.021
			0.000			1/2" Ice	1.381	0.348	0.030
RRUS-32 B30	A	From Leg	4.000	0.000	84.000	1" Ice	3.314	2.424	0.077
			0.000			No Ice	3.558	2.638	0.105
			0.000			1/2" Ice	3.809	2.860	0.136
RRUS-32 B30	B	From Leg	4.000	0.000	84.000	1" Ice	3.314	2.424	0.077
			0.000			No Ice	3.558	2.638	0.105
			0.000			1/2" Ice	3.809	2.860	0.136
RRUS-32 B30	C	From Leg	4.000	0.000	84.000	1" Ice	3.314	2.424	0.077
			0.000			No Ice	3.558	2.638	0.105
			0.000			1/2" Ice	3.809	2.860	0.136
RRUS E2 B29	A	From Leg	4.000	0.000	84.000	1" Ice	3.145	1.285	0.060
			0.000			No Ice	3.365	1.438	0.083
			0.000			1/2" Ice	3.592	1.600	0.110
RRUS E2 B29	B	From Leg	4.000	0.000	84.000	1" Ice	3.145	1.285	0.060
			0.000			No Ice	3.365	1.438	0.083
			0.000			1/2" Ice	3.592	1.600	0.110
RRUS E2 B29	C	From Leg	4.000	0.000	84.000	1" Ice	3.145	1.285	0.060
			0.000			No Ice	3.365	1.438	0.083
			0.000			1/2" Ice	3.592	1.600	0.110
DC6-48-60-18-8C-EV	A	From Leg	2.000	0.000	84.000	1" Ice	1.145	1.145	0.026
			0.000			No Ice	1.792	1.792	0.047
			0.000			1/2" Ice	2.002	2.002	0.070
DC6-48-60-18-8C-EV	B	From Leg	2.000	0.000	84.000	1" Ice	1.145	1.145	0.026
			0.000			No Ice	1.792	1.792	0.047
			0.000			1/2" Ice	2.002	2.002	0.070

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
DC6-48-60-18-8C-EV	C	From Leg	2.000	0.000	0.000	84.000	No Ice	1.145	1.145	0.026
			0.000				1/2"	1.792	1.792	0.047
			0.000				Ice	2.002	2.002	0.070
RRUS 4478 B14_CCIV2	A	From Leg	4.000	0.000	0.000	84.000	No Ice	2.021	1.246	0.059
			0.000				1/2"	2.200	1.396	0.077
			0.000				Ice	2.386	1.554	0.097
RRUS 4478 B14_CCIV2	B	From Leg	4.000	0.000	0.000	84.000	No Ice	2.021	1.246	0.059
			0.000				1/2"	2.200	1.396	0.077
			0.000				Ice	2.386	1.554	0.097
RRUS 4478 B14_CCIV2	C	From Leg	4.000	0.000	0.000	84.000	No Ice	2.021	1.246	0.059
			0.000				1/2"	2.200	1.396	0.077
			0.000				Ice	2.386	1.554	0.097
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	0.000	84.000	No Ice	1.968	1.408	0.071
			0.000				1/2"	2.144	1.564	0.090
			0.000				Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	0.000	84.000	No Ice	1.968	1.408	0.071
			0.000				1/2"	2.144	1.564	0.090
			0.000				Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	0.000	84.000	No Ice	1.968	1.408	0.071
			0.000				1/2"	2.144	1.564	0.090
			0.000				Ice	2.328	1.727	0.111
RRUS 8843 B2/B66A_CCIV2	A	From Leg	4.000	0.000	0.000	84.000	No Ice	1.980	1.695	0.075
			0.000				1/2"	2.157	1.861	0.096
			0.000				Ice	2.341	2.035	0.119
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.000	0.000	0.000	84.000	No Ice	1.980	1.695	0.075
			0.000				1/2"	2.157	1.861	0.096
			0.000				Ice	2.341	2.035	0.119
RRUS 8843 B2/B66A_CCIV2	C	From Leg	4.000	0.000	0.000	84.000	No Ice	1.980	1.695	0.075
			0.000				1/2"	2.157	1.861	0.096
			0.000				Ice	2.341	2.035	0.119
6' x 2" Mount Pipe	A	From Leg	2.000	0.000	0.000	84.000	No Ice	1.425	1.425	0.022
			0.000				1/2"	1.925	1.925	0.033
			3.000				Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	2.000	0.000	0.000	84.000	No Ice	1.425	1.425	0.022
			0.000				1/2"	1.925	1.925	0.033
			3.000				Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	2.000	0.000	0.000	84.000	No Ice	1.425	1.425	0.022
			0.000				1/2"	1.925	1.925	0.033
			3.000				Ice	2.294	2.294	0.048
Platform Mount [LP 715-1_KCKR]	C	None			0.000	84.000	No Ice	57.990	57.990	2.050
							1/2"	64.470	64.470	3.301
							Ice	71.360	71.360	4.691
* ** 74 -P ** Mount Reinforcement Specifications	C	None			0.000	74.000	No Ice	28.630	28.630	0.280
							1/2"	37.310	37.370	0.670
							Ice	45.800	45.800	0.940
Platform Mount [LP 303-1]	C	None			0.000	74.000	No Ice	14.690	14.690	1.250
							1/2"	18.010	18.010	1.569
							Ice	21.340	21.340	1.942

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Side Arm Mount [SO 102-3]	C	None		0.000	74.000	1" Ice			
						No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.095	3.295	0.069
						1/2" Ice	4.483	3.672	0.132
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.095	3.295	0.069
						1/2" Ice	4.483	3.672	0.132
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.095	3.295	0.069
						1/2" Ice	4.483	3.672	0.132
MT6407-77A w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.907	2.682	0.096
						1/2" Ice	5.256	3.145	0.136
MT6407-77A w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.907	2.682	0.096
						1/2" Ice	5.256	3.145	0.136
MT6407-77A w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	4.907	2.682	0.096
						1/2" Ice	5.256	3.145	0.136
RF4439D-25A	A	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.252	0.075
						1/2" Ice	2.035	1.394	0.093
RF4439D-25A	B	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.252	0.075
						1/2" Ice	2.035	1.394	0.093
RF4439D-25A	C	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.252	0.075
						1/2" Ice	2.035	1.394	0.093
RF4440D-13A	A	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.129	0.073
						1/2" Ice	2.035	1.267	0.090
RF4440D-13A	B	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.129	0.073
						1/2" Ice	2.035	1.267	0.090
RF4440D-13A	C	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	1.865	1.129	0.073
						1/2" Ice	2.035	1.267	0.090
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	7.344	5.513	0.058
						1/2" Ice	8.076	6.219	0.115
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	7.344	5.513	0.058
						1/2" Ice	8.076	6.219	0.115
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	74.000	1" Ice			
						No Ice	7.344	5.513	0.058
						1/2" Ice	8.076	6.219	0.115
						Ice	8.826	6.943	0.183
						1" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	CA _{AA} Front	CA _{AA} Side	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
RRFDC-3315-PF-48	A	From Leg	4.000	0.000	0.000	0.000	74.000	No Ice	3.364	2.192	0.032
			0.000					1/2"	3.597	2.395	0.061
			1.000					Ice	3.838	2.606	0.093
DB-T1-6Z-8AB-0Z	A	From Leg	4.000	0.000	0.000	0.000	74.000	No Ice	4.800	2.000	0.044
			0.000					1/2"	5.070	2.193	0.080
			1.000					Ice	5.348	2.393	0.120
** 66 - R ** MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	8.010	4.230	0.108
			0.000					1/2"	8.520	4.690	0.194
			0.000					Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	8.010	4.230	0.108
			0.000					1/2"	8.520	4.690	0.194
			0.000					Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	8.010	4.230	0.108
			0.000					1/2"	8.520	4.690	0.194
			0.000					Ice	9.040	5.160	0.292
RDIDC-9181-PF-48	A	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	2.312	1.293	0.022
			0.000					1/2"	2.502	1.448	0.040
			0.000					Ice	2.700	1.610	0.060
TA08025-B605	A	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	1.129	0.075
			0.000					1/2"	2.138	1.267	0.093
			0.000					Ice	2.320	1.411	0.114
TA08025-B605	B	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	1.129	0.075
			0.000					1/2"	2.138	1.267	0.093
			0.000					Ice	2.320	1.411	0.114
TA08025-B605	C	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	1.129	0.075
			0.000					1/2"	2.138	1.267	0.093
			0.000					Ice	2.320	1.411	0.114
TA08025-B604	A	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	0.981	0.064
			0.000					1/2"	2.138	1.112	0.081
			0.000					Ice	2.320	1.250	0.100
TA08025-B604	B	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	0.981	0.064
			0.000					1/2"	2.138	1.112	0.081
			0.000					Ice	2.320	1.250	0.100
TA08025-B604	C	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.964	0.981	0.064
			0.000					1/2"	2.138	1.112	0.081
			0.000					Ice	2.320	1.250	0.100
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.900	1.900	0.029
			0.000					1/2"	2.728	2.728	0.044
			0.000					Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.900	1.900	0.029
			0.000					1/2"	2.728	2.728	0.044
			0.000					Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	0.000	66.000	No Ice	1.900	1.900	0.029
			0.000					1/2"	2.728	2.728	0.044
			0.000					Ice	3.401	3.401	0.063
Commscope MC-PK8-DSH	C	None				0.000	66.000	No Ice	34.240	34.240	1.749
								1/2"	62.950	62.950	2.099
								Ice	91.660	91.660	2.450
							1" Ice				

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
** 64 - TMO **								
*								

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	88.7 - 47.57	Pole	Max Tension	27	0.000	0.000	-0.001
			Max. Compression	26	-27.606	0.000	1.462
			Max. Mx	8	-15.530	-475.548	0.594
			Max. My	2	-15.513	0.000	479.960
			Max. Vy	8	18.869	-475.548	0.594
			Max. Vx	2	-19.047	0.000	479.960
L2	47.57 - 0	Pole	Max. Torque	9			0.937
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.157	0.000	1.462
			Max. Mx	8	-25.946	-1537.496	0.622
			Max. My	2	-25.946	0.000	1551.013
			Max. Vy	8	21.876	-1537.496	0.622
			Max. Vx	2	-22.048	0.000	1551.013
			Max. Torque	9			0.936

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	39.157	0.000	5.614
	Max. H _x	20	25.974	21.844	0.000
	Max. H _z	2	25.974	0.000	22.015
	Max. M _x	2	1551.013	0.000	22.015
	Max. M _z	8	1537.496	-21.844	0.000
	Max. Torsion	9	0.934	-21.844	0.000
	Min. Vert	7	19.480	-18.917	11.007
	Min. H _x	8	25.974	-21.844	0.000
	Min. H _z	14	25.974	0.000	-22.015
	Min. M _x	14	-1549.766	0.000	-22.015
	Min. M _z	20	-1537.496	21.844	0.000
	Min. Torsion	21	-0.934	21.844	0.000

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	21.645	0.000	0.000	-0.495	0.000	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	25.974	0.000	-22.015	-1551.013	0.000	0.000
0.9 Dead+1.0 Wind 0 deg - No Ice	19.480	0.000	-22.015	-1538.556	0.000	0.000
1.2 Dead+1.0 Wind 30 deg - No Ice	25.974	10.922	-19.065	-1343.306	-768.742	-0.464
0.9 Dead+1.0 Wind 30 deg - No Ice	19.480	10.922	-19.065	-1332.495	-762.644	-0.466
1.2 Dead+1.0 Wind 60 deg - No Ice	25.974	18.917	-11.007	-775.826	-1331.509	-0.805
0.9 Dead+1.0 Wind 60 deg - No Ice	19.480	18.917	-11.007	-769.515	-1320.947	-0.808
1.2 Dead+1.0 Wind 90 deg - No Ice	25.974	21.844	-0.000	-0.621	-1537.496	-0.931
0.9 Dead+1.0 Wind 90 deg - No Ice	19.480	21.844	-0.000	-0.460	-1525.302	-0.934
1.2 Dead+1.0 Wind 120 deg - No Ice	25.974	18.917	11.007	774.582	-1331.507	-0.807

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 120 deg - No Ice	19.480	18.917	11.007	768.595	-1320.945	-0.810
1.2 Dead+1.0 Wind 150 deg - No Ice	25.974	10.922	19.065	1342.060	-768.740	-0.466
0.9 Dead+1.0 Wind 150 deg - No Ice	19.480	10.922	19.065	1331.573	-762.643	-0.468
1.2 Dead+1.0 Wind 180 deg - No Ice	25.974	0.000	22.015	1549.766	0.000	0.000
0.9 Dead+1.0 Wind 180 deg - No Ice	19.480	0.000	22.015	1537.633	0.000	0.000
1.2 Dead+1.0 Wind 210 deg - No Ice	25.974	-10.922	19.065	1342.060	768.740	0.466
0.9 Dead+1.0 Wind 210 deg - No Ice	19.480	-10.922	19.065	1331.573	762.643	0.468
1.2 Dead+1.0 Wind 240 deg - No Ice	25.974	-18.917	11.007	774.582	1331.507	0.807
0.9 Dead+1.0 Wind 240 deg - No Ice	19.480	-18.917	11.007	768.595	1320.945	0.810
1.2 Dead+1.0 Wind 270 deg - No Ice	25.974	-21.844	-0.000	-0.621	1537.496	0.931
0.9 Dead+1.0 Wind 270 deg - No Ice	19.480	-21.844	-0.000	-0.460	1525.302	0.934
1.2 Dead+1.0 Wind 300 deg - No Ice	25.974	-18.917	-11.007	-775.826	1331.509	0.805
0.9 Dead+1.0 Wind 300 deg - No Ice	19.480	-18.917	-11.007	-769.515	1320.947	0.808
1.2 Dead+1.0 Wind 330 deg - No Ice	25.974	-10.922	-19.065	-1343.306	768.742	0.464
0.9 Dead+1.0 Wind 330 deg - No Ice	19.480	-10.922	-19.065	-1332.495	762.644	0.466
1.2 Dead+1.0 Ice+1.0 Temp	39.157	0.000	-0.000	-1.462	0.000	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	39.157	0.000	-5.614	-390.437	0.000	0.000
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	39.157	2.791	-4.862	-338.334	-193.242	-0.094
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	39.157	4.834	-2.807	-195.987	-334.705	-0.162
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	39.157	5.582	-0.000	-1.538	-386.484	-0.187
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	39.157	4.834	2.807	192.911	-334.705	-0.162
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	39.157	2.791	4.862	335.258	-193.242	-0.094
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	39.157	0.000	5.614	387.360	0.000	0.000
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	39.157	-2.791	4.862	335.258	193.242	0.094
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	39.157	-4.834	2.807	192.911	334.705	0.162
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	39.157	-5.582	-0.000	-1.538	386.484	0.187
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	39.157	-4.834	-2.807	-195.987	334.705	0.162
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	39.157	-2.791	-4.862	-338.334	193.242	0.094
Dead+Wind 0 deg - Service	21.645	0.000	-5.188	-364.330	0.000	0.000
Dead+Wind 30 deg - Service	21.645	2.574	-4.493	-315.588	-180.392	-0.110
Dead+Wind 60 deg - Service	21.645	4.458	-2.594	-182.424	-312.449	-0.191
Dead+Wind 90 deg - Service	21.645	5.148	0.000	-0.518	-360.785	-0.221
Dead+Wind 120 deg - Service	21.645	4.458	2.594	181.388	-312.449	-0.191
Dead+Wind 150 deg - Service	21.645	2.574	4.493	314.553	-180.392	-0.110
Dead+Wind 180 deg - Service	21.645	0.000	5.188	363.294	0.000	0.000
Dead+Wind 210 deg - Service	21.645	-2.574	4.493	314.553	180.392	0.110
Dead+Wind 240 deg - Service	21.645	-4.458	2.594	181.388	312.449	0.191

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 270 deg - Service	21.645	-5.148	0.000	-0.518	360.785	0.221
Dead+Wind 300 deg - Service	21.645	-4.458	-2.594	-182.424	312.449	0.191
Dead+Wind 330 deg - Service	21.645	-2.574	-4.493	-315.588	180.392	0.110

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-21.645	0.000	0.000	21.645	0.000	0.000%
2	0.000	-25.974	-22.015	0.000	25.974	22.015	0.000%
3	0.000	-19.480	-22.015	0.000	19.480	22.015	0.000%
4	10.922	-25.974	-19.065	-10.922	25.974	19.065	0.000%
5	10.922	-19.480	-19.065	-10.922	19.480	19.065	0.000%
6	18.917	-25.974	-11.007	-18.917	25.974	11.007	0.000%
7	18.917	-19.480	-11.007	-18.917	19.480	11.007	0.000%
8	21.844	-25.974	0.000	-21.844	25.974	0.000	0.000%
9	21.844	-19.480	0.000	-21.844	19.480	0.000	0.000%
10	18.917	-25.974	11.007	-18.917	25.974	-11.007	0.000%
11	18.917	-19.480	11.007	-18.917	19.480	-11.007	0.000%
12	10.922	-25.974	19.065	-10.922	25.974	-19.065	0.000%
13	10.922	-19.480	19.065	-10.922	19.480	-19.065	0.000%
14	0.000	-25.974	22.015	0.000	25.974	-22.015	0.000%
15	0.000	-19.480	22.015	0.000	19.480	-22.015	0.000%
16	-10.922	-25.974	19.065	10.922	25.974	-19.065	0.000%
17	-10.922	-19.480	19.065	10.922	19.480	-19.065	0.000%
18	-18.917	-25.974	11.007	18.917	25.974	-11.007	0.000%
19	-18.917	-19.480	11.007	18.917	19.480	-11.007	0.000%
20	-21.844	-25.974	0.000	21.844	25.974	0.000	0.000%
21	-21.844	-19.480	0.000	21.844	19.480	0.000	0.000%
22	-18.917	-25.974	-11.007	18.917	25.974	11.007	0.000%
23	-18.917	-19.480	-11.007	18.917	19.480	11.007	0.000%
24	-10.922	-25.974	-19.065	10.922	25.974	19.065	0.000%
25	-10.922	-19.480	-19.065	10.922	19.480	19.065	0.000%
26	0.000	-39.157	0.000	0.000	39.157	0.000	0.000%
27	0.000	-39.157	-5.614	0.000	39.157	5.614	0.000%
28	2.791	-39.157	-4.862	-2.791	39.157	4.862	0.000%
29	4.834	-39.157	-2.807	-4.834	39.157	2.807	0.000%
30	5.582	-39.157	0.000	-5.582	39.157	0.000	0.000%
31	4.834	-39.157	2.807	-4.834	39.157	-2.807	0.000%
32	2.791	-39.157	4.862	-2.791	39.157	-4.862	0.000%
33	0.000	-39.157	5.614	0.000	39.157	-5.614	0.000%
34	-2.791	-39.157	4.862	2.791	39.157	-4.862	0.000%
35	-4.834	-39.157	2.807	4.834	39.157	-2.807	0.000%
36	-5.582	-39.157	0.000	5.582	39.157	0.000	0.000%
37	-4.834	-39.157	-2.807	4.834	39.157	2.807	0.000%
38	-2.791	-39.157	-4.862	2.791	39.157	4.862	0.000%
39	0.000	-21.645	-5.188	0.000	21.645	5.188	0.000%
40	2.574	-21.645	-4.493	-2.574	21.645	4.493	0.000%
41	4.458	-21.645	-2.594	-4.458	21.645	2.594	0.000%
42	5.148	-21.645	0.000	-5.148	21.645	0.000	0.000%
43	4.458	-21.645	2.594	-4.458	21.645	-2.594	0.000%
44	2.574	-21.645	4.493	-2.574	21.645	-4.493	0.000%
45	0.000	-21.645	5.188	0.000	21.645	-5.188	0.000%
46	-2.574	-21.645	4.493	2.574	21.645	-4.493	0.000%
47	-4.458	-21.645	2.594	4.458	21.645	-2.594	0.000%
48	-5.148	-21.645	0.000	5.148	21.645	0.000	0.000%
49	-4.458	-21.645	-2.594	4.458	21.645	2.594	0.000%
50	-2.574	-21.645	-4.493	2.574	21.645	4.493	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00004483
3	Yes	4	0.00000001	0.00001674
4	Yes	5	0.00000001	0.00013290
5	Yes	5	0.00000001	0.00005844
6	Yes	5	0.00000001	0.00013985
7	Yes	5	0.00000001	0.00006180
8	Yes	4	0.00000001	0.00027064
9	Yes	4	0.00000001	0.00016834
10	Yes	5	0.00000001	0.00013071
11	Yes	5	0.00000001	0.00005752
12	Yes	5	0.00000001	0.00013770
13	Yes	5	0.00000001	0.00006079
14	Yes	4	0.00000001	0.00004481
15	Yes	4	0.00000001	0.00001673
16	Yes	5	0.00000001	0.00013770
17	Yes	5	0.00000001	0.00006079
18	Yes	5	0.00000001	0.00013071
19	Yes	5	0.00000001	0.00005752
20	Yes	4	0.00000001	0.00027064
21	Yes	4	0.00000001	0.00016834
22	Yes	5	0.00000001	0.00013985
23	Yes	5	0.00000001	0.00006180
24	Yes	5	0.00000001	0.00013290
25	Yes	5	0.00000001	0.00005844
26	Yes	4	0.00000001	0.00000520
27	Yes	4	0.00000001	0.00065143
28	Yes	4	0.00000001	0.00077539
29	Yes	4	0.00000001	0.00077838
30	Yes	4	0.00000001	0.00064375
31	Yes	4	0.00000001	0.00076142
32	Yes	4	0.00000001	0.00076706
33	Yes	4	0.00000001	0.00064187
34	Yes	4	0.00000001	0.00076706
35	Yes	4	0.00000001	0.00076142
36	Yes	4	0.00000001	0.00064375
37	Yes	4	0.00000001	0.00077838
38	Yes	4	0.00000001	0.00077539
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00006331
41	Yes	4	0.00000001	0.00007512
42	Yes	4	0.00000001	0.00001941
43	Yes	4	0.00000001	0.00006048
44	Yes	4	0.00000001	0.00007085
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00007085
47	Yes	4	0.00000001	0.00006048
48	Yes	4	0.00000001	0.00001941
49	Yes	4	0.00000001	0.00007512
50	Yes	4	0.00000001	0.00006331

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	88.7 - 47.57	10.001	39	0.876	0.002
L2	51.9 - 0	3.767	39	0.652	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
84.000	7770.00 w/ Mount Pipe	39	9.112	0.854	0.002	26981
74.000	Mount Reinforcement Specifications	39	7.263	0.803	0.001	9177
66.000	MX08FRO665-21 w/ Mount Pipe	39	5.873	0.757	0.001	5943

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	88.7 - 47.57	42.556	2	3.728	0.007
L2	51.9 - 0	16.039	2	2.778	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
84.000	7770.00 w/ Mount Pipe	2	38.774	3.633	0.007	6388
74.000	Mount Reinforcement Specifications	2	30.909	3.419	0.006	2172
66.000	MX08FRO665-21 w/ Mount Pipe	2	24.999	3.223	0.005	1405

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	88.7 - 47.57 (1)	TP30.46x21.89x0.25	41.130	0.000	0.0	23.256	-15.513	1360.460	0.011
L2	47.57 - 0 (2)	TP39.75x29.058x0.313	51.900	0.000	0.0	39.117	-25.946	2288.350	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	88.7 - 47.57 (1)	TP30.46x21.89x0.25	479.960	982.733	0.488	0.000	982.733	0.000
L2	47.57 - 0 (2)	TP39.75x29.058x0.313	1551.017	2172.667	0.714	0.000	2172.667	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	88.7 - 47.57 (1)	TP30.46x21.89x0.25	19.047	408.138	0.047	0.000	1047.542	0.000
L2	47.57 - 0 (2)	TP39.75x29.058x0.313	22.047	686.505	0.032	0.000	2371.008	0.000

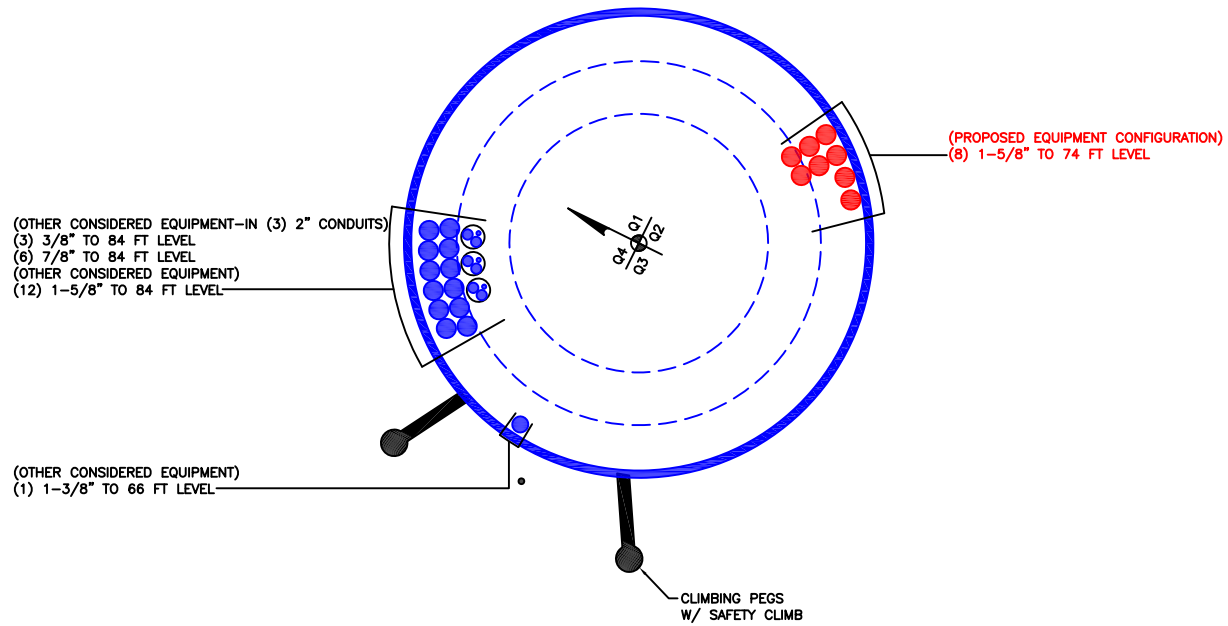
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	88.7 - 47.57 (1)	0.011	0.488	0.000	0.047	0.000	0.502	1.050	4.8.2 ✓
L2	47.57 - 0 (2)	0.011	0.714	0.000	0.032	0.000	0.726 ✓ ✓	1.050	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	88.7 - 47.57	Pole	TP30.46x21.89x0.25	1	-15.513	1428.483	47.8	Pass	
L2	47.57 - 0	Pole	TP39.75x29.058x0.313	2	-25.946	2402.767	69.2	Pass	
							Summary		
							Pole (L2)	69.2	Pass
							RATING =	69.2	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

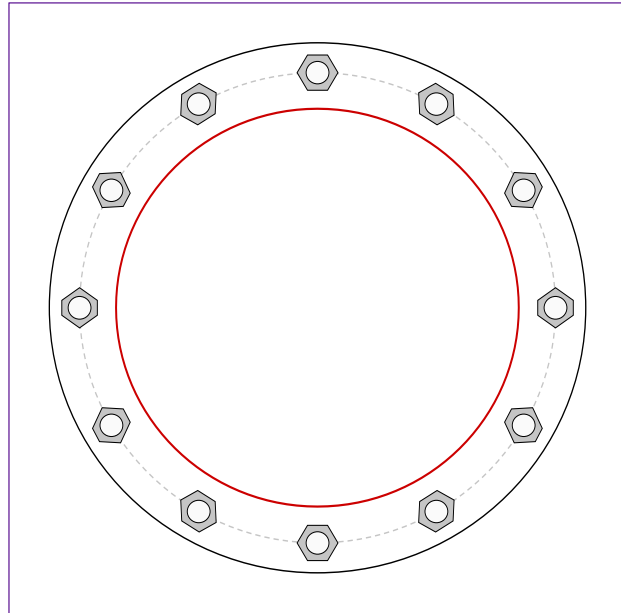


Site Info	
BU #	842423
Site Name	HAM NORTH RIDGE RO
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	3.25

Applied Loads	
Moment (kip-ft)	1551.01
Axial Force (kips)	25.95
Shear Force (kips)	22.05

*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data	
(12) 2-1/4" ϕ bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 47" BC	
Base Plate Data	
53" OD x 1.75" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)	
Stiffener Data	
N/A	
Pole Data	
39.75" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)	

Anchor Rod Summary		(units of kips, kip-in)
$Pu_t = 129.72$	$\phi Pn_t = 243.75$	Stress Rating
$Vu = 1.84$	$\phi Vn = 149.1$	50.7%
$Mu = n/a$	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	38.11	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	67.2%	Pass

Pier and Pad Foundation



BU # : 842423
 Site Name: WINDHAM NORTH
 App. Number:

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	25.97	kips
Base Shear, V_{u_comp} :	22.02	kips
Moment, M_u :	1551.01	ft-kips
Tower Height, H :	88.7	ft
BP Dist. Above Fdn, bp_{dist} :	5.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	186.20	22.02	11.3%	Pass
<i>Bearing Pressure (ksf)</i>	12.54	2.01	16.0%	Pass
<i>Overtuning (kip*ft)</i>	3166.21	1715.24	54.2%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	2963.34	1639.09	52.7%	Pass
<i>Pier Compression (kip)</i>	13497.04	46.33	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	1523.05	579.85	36.3%	Pass
<i>Pad Shear - 1-way (kips)</i>	617.33	105.95	16.3%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.164	0.021	12.3%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	2142.83	983.45	43.7%	Pass

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, d_{pier} :	6	ft
Ext. Above Grade, E :	1	ft
Pier Rebar Size, S_c :	9	
Pier Rebar Quantity, mc :	22	
Pier Tie/Spiral Size, St :	3	
Pier Tie/Spiral Quantity, mt :	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	4	in

*Rating per TIA-222-H Section 15.5

Structural Rating*:	52.7%
Soil Rating*:	54.2%

Pad Properties		
Depth, D :	6	ft
Pad Width, W_1 :	20	ft
Pad Thickness, T :	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2 :	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	11	
Pad Clear Cover, cc_{pad} :	3	in

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

Soil Properties		
Total Soil Unit Weight, γ :	120	pcf
Ultimate Net Bearing, Q_{net} :	16.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	30	degrees
SPT Blow Count, N_{blows} :	99	
Base Friction, μ :	0.5	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	n/a	ft

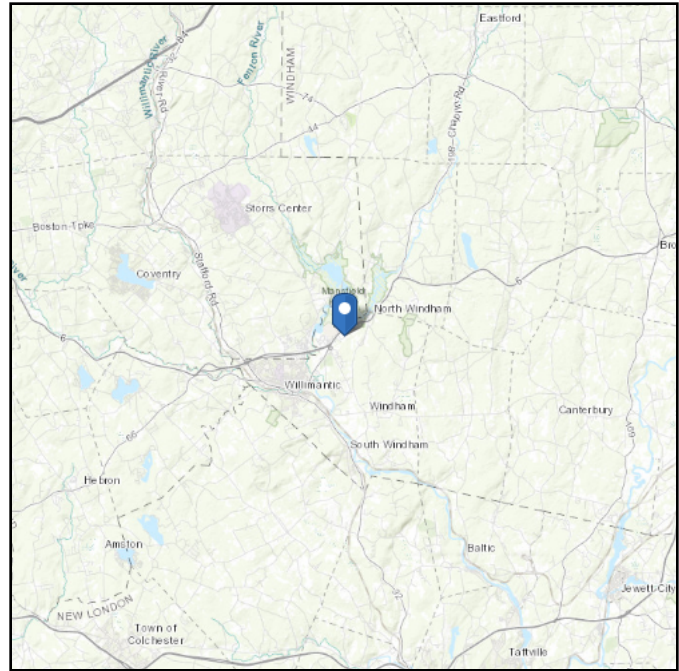
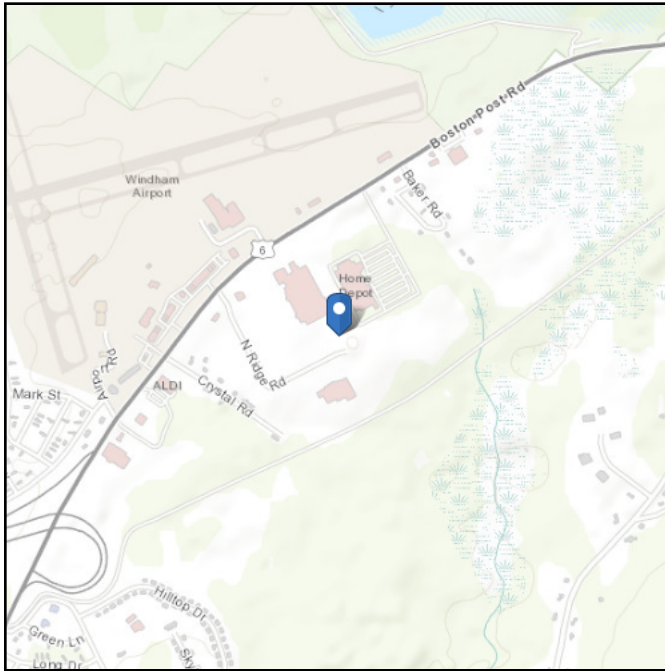
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ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 312.63 ft (NAVD 88)
Latitude: 41.739869
Longitude: -72.172908



Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	93 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Nov 10 2022

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

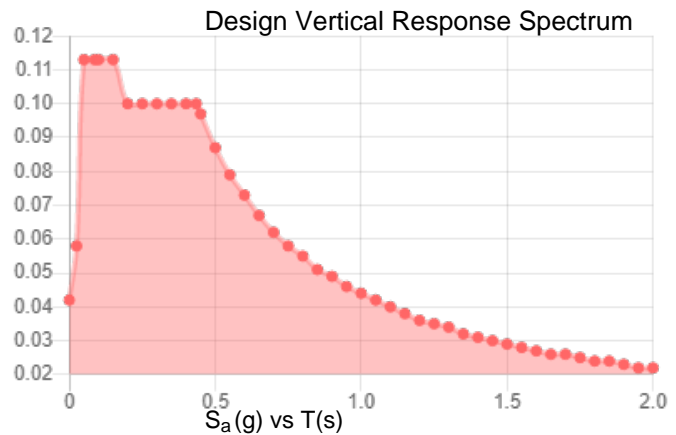
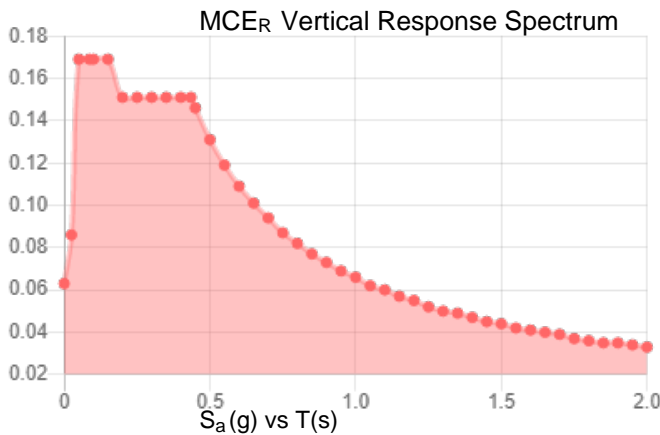
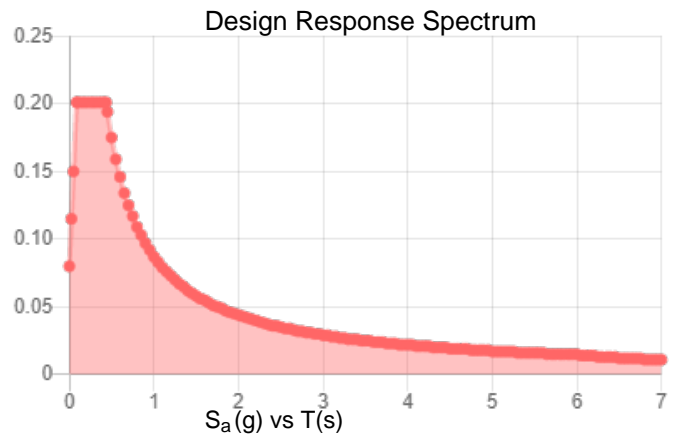
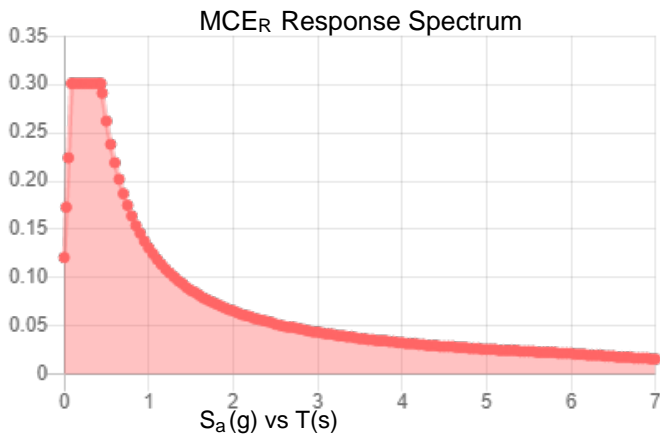
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.188	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.102
F_v :	2.4	PGA _M :	0.163
S_{MS} :	0.301	F_{PGA} :	1.596
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.201	C_v :	0.7

Seismic Design Category B



Data Accessed: Thu Nov 10 2022

Date Source:

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

Ice

Results:

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

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

Date Accessed: Thu Nov 10 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 with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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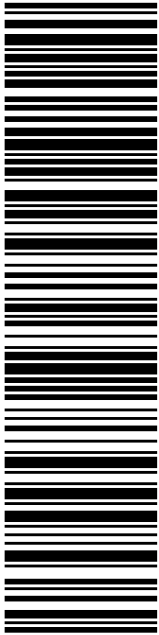
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USPS.com 9405 5036 9930 0394 9484 82 0099 0000 0020 6051
US POSTAGE
 Flat Rate Env
 U.S. POSTAGE PAID
 Click-N-Ship®


11/14/2022 Mailed from 01566 986776805434375

Click-N-Ship®



UNITED STATES POSTAL SERVICE®

Electronic Rate Approved #038555749





Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0394 9484 82

Trans. #:	575725589	Priority Mail® Postage:	\$9.90
Print Date:	11/14/2022	Total:	\$9.90
Ship Date:	11/14/2022		
Expected Delivery Date:	11/16/2022		

From: DEBORAH CHASE
 NORTHEAST SITE SOLUTIONS
 STE 1
 420 MAIN ST
 STURBRIDGE MA 01566-1359

To: EVAN ROBIDOUX
 CT SITING COUNCIL
 10 FRANKLIN SQ
 NEW BRITAIN CT 06051-2655

Ref#: CR-842423

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!
 Check the status of your shipment on the USPS Tracking® page at usps.com