

Date: **September 10, 2021**



GPD Engineering and Architecture
Professional Corporation
520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Site Number: CTL02083
Site Name: MILFORD WHEELERS FARM

Crown Castle Designation: **BU Number:** 876320
Site Name: 528 WHEELERS FARM RD
JDE Job Number: 649408
Work Order Number: 2009527
Order Number: 556503 Rev. 0

Engineering Firm Designation: **GPD Project Number:** 2021777.876320.09

Site Data: **528 Wheelers Farm Road, Milford, New Haven County, CT 06460**
Latitude 41° 14' 54.35", Longitude -73° 4' 44.67"
120 Foot – Modified Monopole Tower

We are 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 – 81.0%**

This analysis utilizes an ultimate 3-second gust wind speed of 119 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Matt Steward

Respectfully submitted by:



Christopher J. Scheks

9/10/2021

Christopher J. Scheks, P.E.
Connecticut #: 0030026

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1) INTRODUCTION

This tower is a 120 ft monopole tower designed by Semaan Engineering Solutions, Inc. in November of 2003.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.0 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)
97.0	98.0	3	Ericsson	AIR 6419 B77G	2	7/8
		3	Ericsson	AIR 6449 B77D		
		3	Quintel Technology	QD6616-7		
		2	Commscope	WCS-IMFQ-AMT		
	97.0	2	Ericsson	RRUS E2 B29		
		3	Ericsson	RRUS 32 B30		
		2	Raycap	DC6-48-60-18-8F		
96.0	99.0	1		Side Arm Mount [SO 102-3]	3 4 6	3/8 3/4 1-1/4
	98.0	1		Handrail Kit [NA 507-1]		
		3	Kathrein	80010965		
		1	Commscope	WCS-IMFQ-AMT		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRU 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
	96.0	1	Ericsson	RRUS E2 B29		
1		Raycap	DC6-48-60-18-8F			
	96.0	1		Platform Mount [LP 712-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
122.0	122.0	1		Platform Mount [LP 1201 HR-1]	3	1-5/8
	121.0	3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO		
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4480_TMOV2		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
113.0	116.0	3	Samsung Telecommunications	CBRS	8	1-5/8
	114.0	2	Commscope	JAHH-65B-R3B		
		2	Andrew	DB846F65ZAXY		
		4	Commscope	JAHH-45B-R3B		
		4	Antel	LPA-80063/4CF		
		3	Samsung Telecommunications	RFV01U-D2A		
		2	RFS/Celwave	DB-T1-6Z-8AB-0Z		
		3	Commscope	CBC78T-DS-43-2X		
		3	Samsung Telecommunications	RFV01U-D1A		
	113.0	1		Platform Mount [LP 305-1 KCKR HR-1]		
105.0	107.0	3	Ericsson	AIR 3246 B66	3 1	1-3/8 1-5/8
		3	RFS/Celwave	APXVARR24_43-U-NA20		
		3	Ericsson	AIR 32 B2A/B66AA		
		3	Ericsson	AIR6449 B41		
		3	Ericsson	RADIO 4449 B71/B85A		
		3	Ericsson	RRIS 4415 B25_CCIV2		
	105.0	1	Site Pro 1	RMQP-4096-HK		
86.0	86.0	3	JMA Wireless	MX08FRO665-21	1	1-3/8
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	RA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MC-PK8-DSH		
75.0	76.0	1	Trimble	ACUTIME 2000	1	1/2
	75.0	1		Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1613534	CCIsites
Tower Foundation Drawings	1614583	CCIsites
Tower Manufacturer Drawings	1613579	CCIsites
Modification Design Drawings	1613579	CCIsites
Post Modification Inspection	3753892	CCIsites
Modification Design Drawings	2460630	CCIsites
Post Modification Inspection	2460628	CCIsites
Modification Design Drawings	3349207	CCIsites
Post Modification Inspection	3349204	CCIsites
Modification Design Drawings	3338935	CCIsites
Post Modification Inspection	3753892	CCIsites
Modification Design Drawings	4961357	CCIsites
Post Modification Inspection	5760332	CCIsites
Modification Design Drawings	5873963	CCIsites
Post Modification Inspection	6112300	CCIsites
Modification Design Drawings	8550831	CCIsites
Post Modification Inspection	8820087	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 Caste has calculated and provided the effective area for panel antennas using approved methods following the intent of the of the TIA-222 standard.

3.1) Assumptions

- 1) The 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 or items in Table 3 are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP23.01x22x0.25	Pole	5.3%	Pass
115 - 110	Pole	TP24.02x23.01x0.25	Pole	12.3%	Pass
110 - 105	Pole	TP25.031x24.02x0.25	Pole	19.3%	Pass
105 - 100	Pole	TP26.041x25.031x0.25	Pole	30.1%	Pass
100 - 99.25	Pole	TP26.192x26.041x0.25	Pole	31.5%	Pass
99.25 - 99	Pole + Reinf.	TP26.243x26.192x0.3563	Reinf. 14 Tension Rupture	28.7%	Pass
99 - 94	Pole + Reinf.	TP27.253x26.243x0.3563	Reinf. 14 Tension Rupture	38.9%	Pass
94 - 90.08	Pole + Reinf.	TP28.045x27.253x0.3125	Pole	46.9%	Pass
90.08 - 89.83	Pole + Reinf.	TP28.096x28.045x0.5125	Reinf. 11 Tension Rupture	39.1%	Pass
89.83 - 89.5	Pole + Reinf.	TP28.162x28.096x0.5125	Reinf. 11 Tension Rupture	39.6%	Pass
89.5 - 89.25	Pole + Reinf.	TP28.213x28.162x0.725	Reinf. 15 Tension Rupture	30.7%	Pass
89.25 - 84.25	Pole + Reinf.	TP29.223x28.213x0.7	Reinf. 15 Tension Rupture	37.4%	Pass
84.25 - 81.75	Pole + Reinf.	TP30.486x29.223x0.7	Reinf. 15 Tension Rupture	40.9%	Pass
81.75 - 77	Pole + Reinf.	TP30.188x29.228x0.8625	Reinf. 17 Tension Rupture	37.5%	Pass
77 - 76.75	Pole + Reinf.	TP30.239x30.188x0.8625	Reinf. 17 Tension Rupture	37.8%	Pass
76.75 - 76.5	Pole + Reinf.	TP30.289x30.239x0.9625	Reinf. 14 Tension Rupture	35.5%	Pass
76.5 - 75.5	Pole + Reinf.	TP30.491x30.289x0.9625	Reinf. 14 Tension Rupture	36.5%	Pass
75.5 - 75.25	Pole + Reinf.	TP30.542x30.491x0.7625	Reinf. 17 Tension Rupture	42.0%	Pass
75.25 - 74.5	Pole + Reinf.	TP30.693x30.542x0.7625	Reinf. 17 Tension Rupture	42.8%	Pass
74.5 - 74.25	Pole + Reinf.	TP30.744x30.693x0.8375	Reinf. 17 Tension Rupture	45.2%	Pass
74.25 - 72	Pole + Reinf.	TP31.198x30.744x0.825	Reinf. 17 Tension Rupture	47.6%	Pass
72 - 71.75	Pole + Reinf.	TP31.249x31.198x0.7625	Reinf. 17 Tension Rupture	45.7%	Pass
71.75 - 70.5	Pole + Reinf.	TP31.501x31.249x0.7625	Reinf. 17 Tension Rupture	46.9%	Pass
70.5 - 70.25	Pole + Reinf.	TP31.552x31.501x0.7875	Reinf. 17 Tension Rupture	47.0%	Pass
70.25 - 70	Pole + Reinf.	TP31.602x31.552x0.7875	Reinf. 17 Tension Rupture	47.2%	Pass
70 - 69.75	Pole + Reinf.	TP31.653x31.602x0.725	Reinf. 17 Tension Rupture	49.0%	Pass
69.75 - 69.5	Pole + Reinf.	TP31.703x31.653x0.875	Reinf. 4 Tension Rupture	41.6%	Pass
69.5 - 69.25	Pole + Reinf.	TP31.754x31.703x0.75	Reinf. 4 Tension Rupture	46.6%	Pass
69.25 - 64.25	Pole + Reinf.	TP32.764x31.754x0.7375	Reinf. 4 Tension Rupture	51.2%	Pass
64.25 - 59.25	Pole + Reinf.	TP33.774x32.764x0.7125	Reinf. 4 Tension Rupture	55.5%	Pass
59.25 - 56	Pole + Reinf.	TP34.431x33.774x0.7125	Reinf. 4 Tension Rupture	58.2%	Pass
56 - 55.75	Pole + Reinf.	TP34.481x34.431x0.8125	Reinf. 7 Tension Rupture	56.0%	Pass
55.75 - 55.5	Pole + Reinf.	TP34.532x34.481x0.8125	Reinf. 7 Tension Rupture	56.2%	Pass
55.5 - 55.25	Pole + Reinf.	TP34.582x34.532x0.8875	Reinf. 7 Tension Rupture	50.6%	Pass
55.25 - 54	Pole + Reinf.	TP34.835x34.582x0.875	Reinf. 7 Tension Rupture	51.5%	Pass
54 - 53.75	Pole + Reinf.	TP34.885x34.835x0.75	Reinf. 7 Tension Rupture	59.1%	Pass
53.75 - 53.5	Pole + Reinf.	TP34.936x34.885x0.7375	Reinf. 7 Tension Rupture	59.3%	Pass
53.5 - 53.25	Pole + Reinf.	TP34.986x34.936x0.6625	Reinf. 4 Tension Rupture	63.7%	Pass
53.25 - 53	Pole + Reinf.	TP35.037x34.986x0.6	Reinf. 12 Tension Rupture	65.8%	Pass
53 - 48	Pole + Reinf.	TP36.047x35.037x0.5875	Reinf. 12 Tension Rupture	70.0%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
48 - 44.5	Pole + Reinf.	TP37.714x36.047x0.5875	Reinf. 12 Tension Rupture	72.8%	Pass
44.5 - 38.75	Pole + Reinf.	TP37.291x36.129x0.6625	Reinf. 4 Tension Rupture	71.1%	Pass
38.75 - 34.75	Pole + Reinf.	TP38.099x37.291x0.6625	Reinf. 4 Tension Rupture	73.5%	Pass
34.75 - 34.5	Pole + Reinf.	TP38.15x38.099x0.825	Reinf. 3 Tension Rupture	58.9%	Pass
34.5 - 33.75	Pole + Reinf.	TP38.301x38.15x0.825	Reinf. 3 Tension Rupture	59.3%	Pass
33.75 - 33.5	Pole + Reinf.	TP38.352x38.301x0.625	Reinf. 6 Tension Rupture	73.0%	Pass
33.5 - 28.5	Pole + Reinf.	TP39.362x38.352x0.6125	Reinf. 6 Tension Rupture	75.5%	Pass
28.5 - 24	Pole + Reinf.	TP40.271x39.362x0.6625	Reinf. 3 Tension Rupture	77.8%	Pass
24 - 23.75	Pole + Reinf.	TP40.322x40.271x0.7	Reinf. 3 Tension Rupture	74.3%	Pass
23.75 - 18.75	Pole + Reinf.	TP41.332x40.322x0.6875	Reinf. 3 Tension Rupture	76.6%	Pass
18.75 - 14.25	Pole + Reinf.	TP42.241x41.332x0.675	Reinf. 3 Tension Rupture	78.6%	Pass
14.25 - 14	Pole + Reinf.	TP42.291x42.241x0.775	Reinf. 3 Tension Rupture	68.4%	Pass
14 - 9	Pole + Reinf.	TP43.302x42.291x0.7625	Reinf. 3 Tension Rupture	70.2%	Pass
9 - 5	Pole + Reinf.	TP44.11x43.302x0.75	Reinf. 3 Tension Rupture	71.6%	Pass
5 - 4.75	Pole + Reinf.	TP44.16x44.11x0.9	Reinf. 3 Tension Rupture	65.2%	Pass
4.75 - 4.5	Pole + Reinf.	TP44.211x44.16x0.75	Reinf. 5 Tension Rupture	68.0%	Pass
4.5 - 0	Pole + Reinf.	TP45.12x44.211x0.75	Reinf. 5 Tension Rupture	69.5%	Pass
				Summary	
			Pole	58.4%	Pass
			Reinforcement	78.6%	Pass
			Overall	78.6%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	0	63.9	Pass
1,2	Baseplate	0	48.0	Pass
1,2	Base Foundation Structural	0	81.0	Pass
1,2	Base Foundation Soil Interaction	0	50.6	Pass

Structure Rating (max from all components) =	81.0%
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Notes:

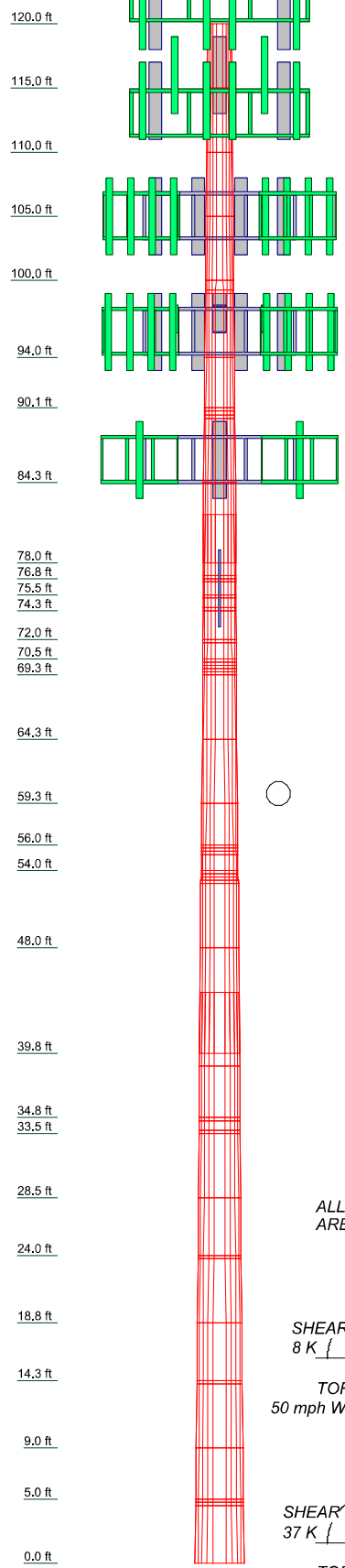
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Ratings per TIA-222-H, Section 15.5.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

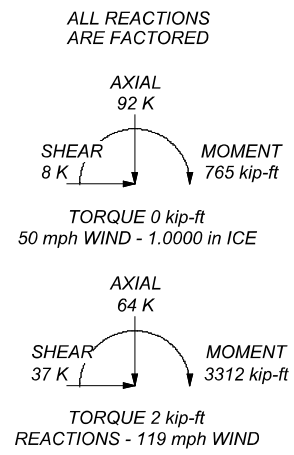
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.2500					0.3
2	5.00	12	0.2500					0.3
3	5.00	12	0.2500					0.3
4	5.00	12	0.2500					0.3
5	5.00	12	0.2500					0.3
6	5.00	12	0.2500					0.3
7	5.00	12	0.2500					0.3
8	3.92	12	0.2500					0.4
9	1.00	12	0.2500					1.0
10	1.25	12	0.2500					1.3
11	1.25	12	0.2500					1.3
12	1.25	12	0.2500					1.2
13	1.25	12	0.2500					1.2
14	1.25	12	0.2500					1.2
15	1.25	12	0.2500					1.2
16	1.25	12	0.2500					1.2
17	1.25	12	0.2500					1.2
18	1.25	12	0.2500					1.2
19	1.25	12	0.2500					1.2
20	1.25	12	0.2500					1.2
21	1.25	12	0.2500					1.2
22	1.25	12	0.2500					1.2
23	1.25	12	0.2500					1.2
24	1.25	12	0.2500					1.2
25	1.25	12	0.2500					1.2
26	1.25	12	0.2500					1.2
27	1.25	12	0.2500					1.2
28	1.25	12	0.2500					1.2
29	1.25	12	0.2500					1.2
30	1.25	12	0.2500					1.3
31	1.25	12	0.2500					1.3
32	1.25	12	0.2500					1.3
33	1.25	12	0.2500					1.3
34	1.25	12	0.2500					1.3
35	1.25	12	0.2500					1.3
36	1.25	12	0.2500					1.3
37	1.25	12	0.2500					1.3
38	1.25	12	0.2500					1.3
39	1.25	12	0.2500					1.3
40	1.25	12	0.2500					1.3
41	1.25	12	0.2500					1.3
42	1.25	12	0.2500					1.3
43	1.25	12	0.2500					1.3
44	1.25	12	0.2500					1.3
45	1.25	12	0.2500					1.3
46	1.25	12	0.2500					1.3
47	1.25	12	0.2500					1.3
48	1.25	12	0.2500					1.2
49	1.25	12	0.2500					1.4
50	1.25	12	0.2500					1.4
51	1.25	12	0.2500					1.3
52	1.25	12	0.2500					1.7
53	1.25	12	0.2500					1.7
54	1.25	12	0.2500					1.4
55	1.25	12	0.2500					1.7
56	1.25	12	0.2500					1.7
57	1.25	12	0.2500					1.7




MATERIAL STRENGTH					
GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

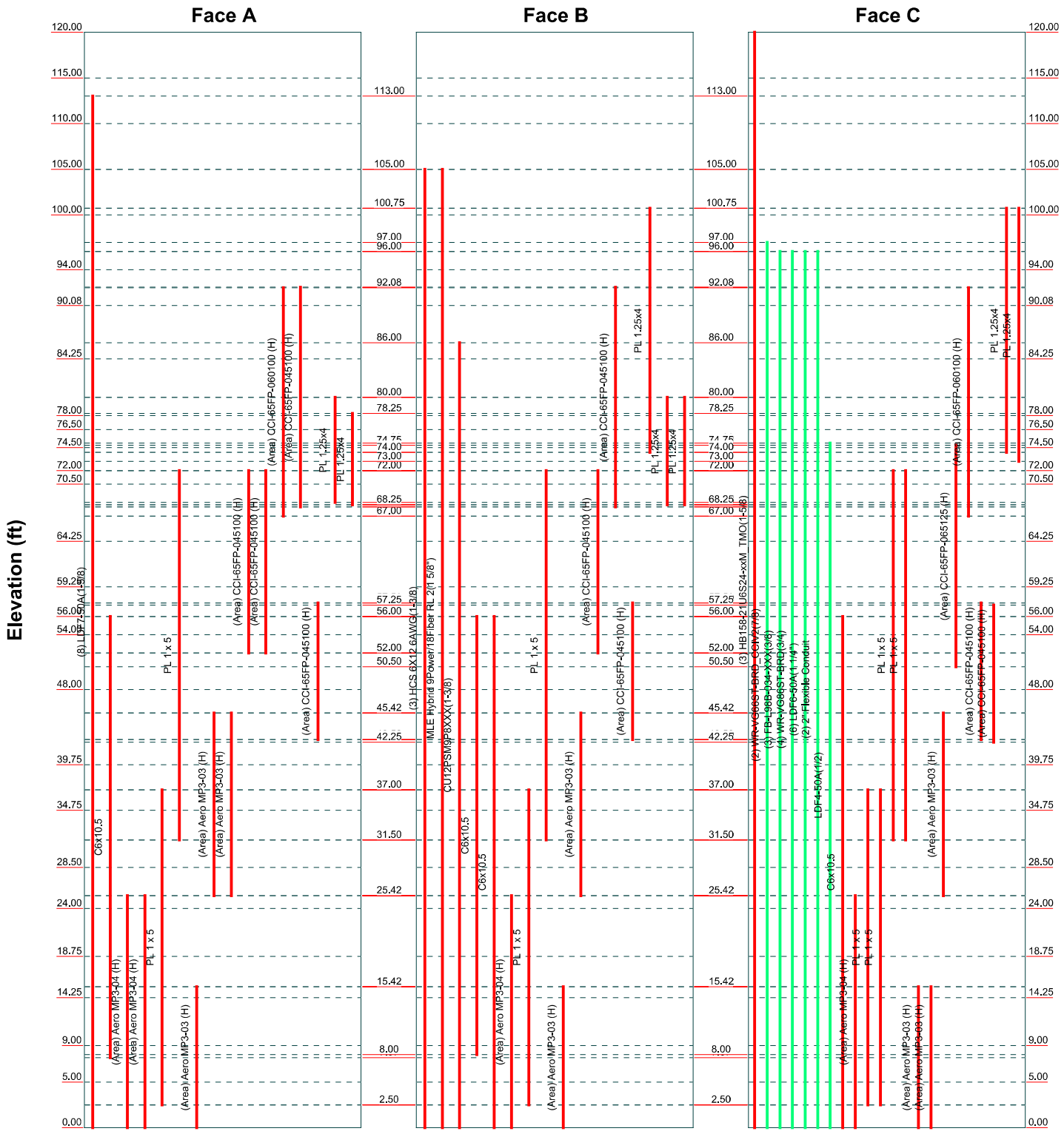
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 54.6%



 GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job: 528 WHEELERS FARM RD BU #: 876320 Project: 2021777.876320.09	
	Client: Crown Castle Code: TIA-222-H Path: T:\Crown\876320\095_Structural\00_Structure\00_Rev 0/03_Modeling\876320.MXD	Drawn by: msteward Date: 09/10/21

Feed Line Distribution Chart 0' - 120'

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



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	Client: Crown Castle	Drawn by: msteward	App'd:
	Code: TIA-222-H	Date: 09/10/21	Scale: NTS
	Path: T:\Crown\876320\095_Structural\00_Structure\00_Rev 0/03_Model\0876320.MXD		Dwg No. E-7

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	Project 2021777.876320.09	Date 08:57:23 09/10/21
	Client Crown Castle	Designed by msteward

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 New Haven County, Connecticut.

Tower base elevation above sea level: 213.00 ft.

Basic wind speed of 119 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 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.

Maximum demand-capacity ratio is: 1.05.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retention Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-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

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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	120.00-115.00	5.00	0.00	12	22.0000	23.0102	0.2500	1.0000	A607-60 (60 ksi)
L2	115.00-110.00	5.00	0.00	12	23.0102	24.0205	0.2500	1.0000	A607-60 (60 ksi)
L3	110.00-105.00	5.00	0.00	12	24.0205	25.0307	0.2500	1.0000	A607-60 (60 ksi)
L4	105.00-100.00	5.00	0.00	12	25.0307	26.0410	0.2500	1.0000	A607-60 (60 ksi)
L5	100.00-99.25	0.75	0.00	12	26.0410	26.1925	0.2500	1.0000	A607-60 (60 ksi)
L6	99.25-99.00	0.25	0.00	12	26.1925	26.2430	0.3563	1.4250	A607-60 (60 ksi)
L7	99.00-94.00	5.00	0.00	12	26.2430	27.2532	0.3563	1.4250	A607-60 (60 ksi)
L8	94.00-90.08	3.92	0.00	12	27.2532	28.0453	0.3125	1.2500	A607-60 (60 ksi)
L9	90.08-89.83	0.25	0.00	12	28.0453	28.0958	0.5125	2.0500	A607-60 (60 ksi)
L10	89.83-89.50	0.33	0.00	12	28.0958	28.1625	0.5125	2.0500	A607-60 (60 ksi)
L11	89.50-89.25	0.25	0.00	12	28.1625	28.2130	0.7250	2.9000	A607-60 (60 ksi)
L12	89.25-84.25	5.00	0.00	12	28.2130	29.2232	0.7000	2.8000	A607-60 (60 ksi)
L13	84.25-78.00	6.25	3.75	12	29.2232	30.4860	0.7000	2.8000	A607-60 (60 ksi)
L14	78.00-77.00	4.75	0.00	12	29.2283	30.1880	0.8625	3.4500	A607-60 (60 ksi)
L15	77.00-76.75	0.25	0.00	12	30.1880	30.2385	0.8625	3.4500	A607-60 (60 ksi)
L16	76.75-76.50	0.25	0.00	12	30.2385	30.2890	0.9625	3.8500	A607-60 (60 ksi)
L17	76.50-75.50	1.00	0.00	12	30.2890	30.4911	0.9625	3.8500	A607-60 (60 ksi)
L18	75.50-75.25	0.25	0.00	12	30.4911	30.5416	0.7625	3.0500	A607-60 (60 ksi)
L19	75.25-74.50	0.75	0.00	12	30.5416	30.6931	0.7625	3.0500	A607-60 (60 ksi)
L20	74.50-74.25	0.25	0.00	12	30.6931	30.7436	0.8375	3.3500	A607-60 (60 ksi)
L21	74.25-72.00	2.25	0.00	12	30.7436	31.1982	0.8250	3.3000	A607-60 (60 ksi)
L22	72.00-71.75	0.25	0.00	12	31.1982	31.2487	0.7625	3.0500	A607-60 (60 ksi)
L23	71.75-70.50	1.25	0.00	12	31.2487	31.5013	0.7625	3.0500	A607-60 (60 ksi)
L24	70.50-70.25	0.25	0.00	12	31.5013	31.5518	0.7875	3.1500	A607-60 (60 ksi)
L25	70.25-70.00	0.25	0.00	12	31.5518	31.6023	0.7875	3.1500	A607-60 (60 ksi)
L26	70.00-69.75	0.25	0.00	12	31.6023	31.6528	0.7250	2.9000	A607-60 (60 ksi)
L27	69.75-69.50	0.25	0.00	12	31.6528	31.7033	0.8750	3.5000	A607-60 (60 ksi)
L28	69.50-69.25	0.25	0.00	12	31.7033	31.7538	0.7500	3.0000	A607-60 (60 ksi)
L29	69.25-64.25	5.00	0.00	12	31.7538	32.7640	0.7375	2.9500	A607-60 (60 ksi)

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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
L30	64.25-59.25	5.00	0.00	12	32.7640	33.7742	0.7125	2.8500	A607-60 (60 ksi)
L31	59.25-56.00	3.25	0.00	12	33.7742	34.4309	0.7125	2.8500	A607-60 (60 ksi)
L32	56.00-55.75	0.25	0.00	12	34.4309	34.4814	0.8125	3.2500	A607-60 (60 ksi)
L33	55.75-55.50	0.25	0.00	12	34.4814	34.5319	0.8125	3.2500	A607-60 (60 ksi)
L34	55.50-55.25	0.25	0.00	12	34.5319	34.5824	0.8875	3.5500	A607-60 (60 ksi)
L35	55.25-54.00	1.25	0.00	12	34.5824	34.8349	0.8750	3.5000	A607-60 (60 ksi)
L36	54.00-53.75	0.25	0.00	12	34.8349	34.8854	0.7500	3.0000	A607-60 (60 ksi)
L37	53.75-53.50	0.25	0.00	12	34.8854	34.9360	0.7375	2.9500	A607-60 (60 ksi)
L38	53.50-53.25	0.25	0.00	12	34.9360	34.9865	0.6625	2.6500	A607-60 (60 ksi)
L39	53.25-53.00	0.25	0.00	12	34.9865	35.0370	0.6000	2.4000	A607-60 (60 ksi)
L40	53.00-48.00	5.00	0.00	12	35.0370	36.0472	0.5875	2.3500	A607-60 (60 ksi)
L41	48.00-39.75	8.25	4.75	12	36.0472	37.7140	0.5875	2.3500	A607-60 (60 ksi)
L42	39.75-38.75	5.75	0.00	12	36.1293	37.2910	0.6625	2.6500	A607-60 (60 ksi)
L43	38.75-34.75	4.00	0.00	12	37.2910	38.0992	0.6625	2.6500	A607-60 (60 ksi)
L44	34.75-34.50	0.25	0.00	12	38.0992	38.1497	0.8250	3.3000	A607-60 (60 ksi)
L45	34.50-33.75	0.75	0.00	12	38.1497	38.3012	0.8250	3.3000	A607-60 (60 ksi)
L46	33.75-33.50	0.25	0.00	12	38.3012	38.3517	0.6250	2.5000	A607-60 (60 ksi)
L47	33.50-28.50	5.00	0.00	12	38.3517	39.3619	0.6125	2.4500	A607-60 (60 ksi)
L48	28.50-24.00	4.50	0.00	12	39.3619	40.2711	0.6625	2.6500	A607-60 (60 ksi)
L49	24.00-23.75	0.25	0.00	12	40.2711	40.3216	0.7000	2.8000	A607-60 (60 ksi)
L50	23.75-18.75	5.00	0.00	12	40.3216	41.3318	0.6875	2.7500	A607-60 (60 ksi)
L51	18.75-14.25	4.50	0.00	12	41.3318	42.2410	0.6750	2.7000	A607-60 (60 ksi)
L52	14.25-14.00	0.25	0.00	12	42.2410	42.2915	0.7750	3.1000	A607-60 (60 ksi)
L53	14.00-9.00	5.00	0.00	12	42.2915	43.3017	0.7625	3.0500	A607-60 (60 ksi)
L54	9.00-5.00	4.00	0.00	12	43.3017	44.1098	0.7500	3.0000	A607-60 (60 ksi)
L55	5.00-4.75	0.25	0.00	12	44.1098	44.1603	0.9000	3.6000	A607-60 (60 ksi)
L56	4.75-4.50	0.25	0.00	12	44.1603	44.2108	0.7500	3.0000	A607-60 (60 ksi)
L57	4.50-0.00	4.50		12	44.2108	45.1200	0.7500	3.0000	A607-60 (60 ksi)

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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
L31	34.7143	75.8519	10582.8599	11.8361	17.4950	604.9061	21443.7433	37.3320	7.1420	10.024
	34.7143	75.8519	10582.8599	11.8361	17.4950	604.9061	21443.7433	37.3320	7.1420	10.024
	35.3941	77.3583	11226.0160	12.0712	17.8352	629.4310	22746.9518	38.0734	7.3180	10.271
L32	35.3588	87.9540	12688.0358	12.0354	17.8352	711.4050	25709.4005	43.2883	7.0500	8.677
	35.4111	88.0862	12745.3113	12.0535	17.8613	713.5695	25825.4561	43.3533	7.0635	8.694
L33	35.4111	88.0862	12745.3113	12.0535	17.8613	713.5695	25825.4561	43.3533	7.0635	8.694
	35.4634	88.2183	12802.7589	12.0715	17.8875	715.7374	25941.8606	43.4184	7.0770	8.71
L34	35.4369	96.1472	13891.4444	12.0447	17.8875	776.6003	28147.8326	47.3207	6.8760	7.748
	35.4892	96.2915	13954.1037	12.0628	17.9137	778.9638	28274.7972	47.3918	6.8896	7.763
L35	35.4936	94.9705	13772.8839	12.0672	17.9137	768.8476	27907.5968	46.7416	6.9231	7.912
	35.7551	95.6821	14084.7860	12.1577	18.0445	780.5587	28539.5950	47.0918	6.9908	7.989
L36	35.7992	82.3151	12206.4766	12.2024	18.0445	676.4654	24733.6309	40.5130	7.3258	9.768
	35.8515	82.4371	12260.8229	12.2205	18.0707	678.4934	24843.7513	40.5730	7.3393	9.786
L37	35.8559	81.0928	12069.7255	12.2250	18.0707	667.9184	24456.5362	39.9114	7.3728	9.997
	35.9082	81.2128	12123.3636	12.2430	18.0968	669.9167	24565.2216	39.9705	7.3863	10.015
L38	35.9347	73.1138	10962.2876	12.2699	18.0968	605.7576	22212.5667	35.9844	7.5873	11.453
	35.9869	73.2216	11010.8256	12.2880	18.1230	607.5613	22310.9178	36.0374	7.6009	11.473
L39	36.0090	66.4346	10026.6417	12.3104	18.1230	553.2555	20316.6944	32.6971	7.7684	12.947
	36.0613	66.5322	10070.8908	12.3284	18.1492	554.8960	20406.3551	32.7451	7.7819	12.97
L40	36.0657	65.1698	9871.8226	12.3329	18.1492	543.9275	20002.9891	32.0746	7.8154	13.303
	37.1115	67.0808	10765.9850	12.6946	18.6724	576.5711	21814.8045	33.0151	8.0861	13.764
L41	37.1115	67.0808	10765.9850	12.6946	18.6724	576.5711	21814.8045	33.0151	8.0861	13.764
	38.8372	70.2341	12356.6777	13.2913	19.5359	632.5129	25037.9792	34.5671	8.5329	14.524
L42	38.1636	75.6596	12147.7010	12.6971	18.7150	649.0896	24614.5357	37.2373	7.9072	11.935
	38.3728	78.1378	13380.9245	13.1130	19.3168	692.7109	27113.3808	38.4571	8.2185	12.405
L43	38.3728	78.1378	13380.9245	13.1130	19.3168	692.7109	27113.3808	38.4571	8.2185	12.405
	39.2095	79.8618	14286.2978	13.4023	19.7354	723.8929	28947.9126	39.3055	8.4351	12.732
L44	39.1521	99.0189	17559.8208	13.3442	19.7354	889.7637	35580.9576	48.7341	7.9996	9.696
	39.2044	99.1530	17631.3024	13.3622	19.7615	892.2029	35725.7988	48.8001	8.0131	9.713
L45	39.2044	99.1530	17631.3024	13.3622	19.7615	892.2029	35725.7988	48.8001	8.0131	9.713
	39.3613	99.5556	17846.9108	13.4165	19.8400	899.5405	36162.6799	48.9982	8.0537	9.762
L46	39.4319	75.8234	13738.0077	13.4881	19.8400	692.4388	27836.9282	37.3180	8.5897	13.744
	39.4842	75.9250	13793.3342	13.5062	19.8662	694.3118	27949.0346	37.3680	8.6033	13.765
L47	39.4886	74.4312	13530.9082	13.5106	19.8662	681.1022	27417.2883	36.6328	8.6368	14.101
	40.5344	76.4235	14646.8238	13.8723	20.3895	718.3522	29678.4360	37.6133	8.9075	14.543
L48	40.5168	82.5555	15781.2354	13.8544	20.3895	773.9894	31977.0614	40.6313	8.7735	13.243
	41.4580	84.4950	16919.8227	14.1799	20.8604	811.0968	34284.1479	41.5859	9.0172	13.611
L49	41.4448	89.1932	17826.8191	14.1664	20.8604	854.5761	36121.9685	43.8982	8.9167	12.738
	41.4971	89.3071	17895.1700	14.1845	20.8866	856.7780	36260.4660	43.9542	8.9302	12.757
L50	41.5015	87.7400	17592.2531	14.1890	20.8866	842.2751	35646.6743	43.1830	8.9637	13.038
	42.5473	89.9763	18971.9986	14.5507	21.4099	886.1335	38442.4128	44.2836	9.2344	13.432
L51	42.5517	88.3675	18644.2445	14.5551	21.4099	870.8249	37778.2941	43.4918	9.2679	13.73
	43.4929	90.3436	19923.1959	14.8806	21.8808	910.5326	40369.7963	44.4644	9.5116	14.091
L52	43.4577	103.4783	22710.0799	14.8448	21.8808	1037.8991	46016.7789	50.9289	9.2436	11.927
	43.5100	103.6043	22793.1702	14.8629	21.9070	1040.4524	46185.1423	50.9909	9.2571	11.945
L53	43.5144	101.9640	22445.8005	14.8674	21.9070	1024.5958	45481.2771	50.1836	9.2906	12.184
	44.5602	104.4443	24123.9459	15.2290	22.4303	1075.5090	48881.6547	51.4043	9.5613	12.539
L54	44.5646	102.7623	23749.3951	15.2335	22.4303	1058.8106	48122.7133	50.5765	9.5948	12.793
	45.4013	104.7139	25128.4211	15.5228	22.8489	1099.7659	50916.9937	51.5370	9.8114	13.082
L55	45.3484	125.2220	29842.2391	15.4691	22.8489	1306.0700	60468.4670	61.6305	9.4094	10.455
	45.4006	125.3684	29947.0124	15.4872	22.8750	1309.1564	60680.7662	61.7025	9.4230	10.47
L56	45.4536	104.8359	25216.3391	15.5409	22.8750	1102.3514	51095.1395	51.5971	9.8250	13.1
	45.5058	104.9579	25304.4619	15.5590	22.9012	1104.9400	51273.7003	51.6571	9.8385	13.118
L57	45.5058	104.9579	25304.4619	15.5590	22.9012	1104.9400	51273.7003	51.6571	9.8385	13.118
	46.4471	107.1536	26925.9709	15.8845	23.3722	1152.0532	54559.3170	52.7377	10.0822	13.443

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
L1				1	1	1			
120.00-115.00									
L2				1	1	1			
115.00-110.00									
L3				1	1	1			
110.00-105.00									
L4				1	1	1			
105.00-100.00									
L5				1	1	1			
100.00-99.25									
L6 99.25-99.00				1	1	1.04187			
L7 99.00-94.00				1	1	1.0291			
L8 94.00-90.08				1	1	1.16066			
L9 90.08-89.83				1	1	1.02045			
L10				1	1	1.01917			
89.83-89.50									
L11				1	1	0.912595			
89.50-89.25									
L12				1	1	0.923531			
89.25-84.25									
L13				1	1	0.913676			
84.25-78.00									
L14				1	1	0.996207			
78.00-77.00									
L15				1	1	0.995117			
77.00-76.75									
L16				1	1	0.948882			
76.75-76.50									
L17				1	1	0.944612			
76.50-75.50									
L18				1	1	1.04608			
75.50-75.25									
L19				1	1	1.04286			
75.25-74.50									
L20				1	1	0.888787			
74.50-74.25									
L21				1	1	0.894048			
74.25-72.00									
L22				1	1	1.07313			
72.00-71.75									
L23				1	1	1.06768			
71.75-70.50									
L24				1	1	1.09135			
70.50-70.25									
L25				1	1	1.09021			
70.25-70.00									
L26				1	1	1.11122			
70.00-69.75									
L27				1	1	0.981926			
69.75-69.50									
L28				1	1	0.979276			
69.50-69.25									
L29				1	1	0.977438			
69.25-64.25									
L30				1	1	0.993457			
64.25-59.25									
L31				1	1	0.982651			
59.25-56.00									
L32				1	1	1.01703			

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	Client	Crown Castle	Designed by	msteward

Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
56.00-55.75									
L33				1	1	1.01608			
55.75-55.50									
L34				1	1	0.978222			
55.50-55.25									
L35				1	1	0.987109			
55.25-54.00									
L36				1	1	1.03699			
54.00-53.75									
L37				1	1	1.05325			
53.75-53.50									
L38				1	1	1.10735			
53.50-53.25									
L39				1	1	1.09715			
53.25-53.00									
L40				1	1	1.10333			
53.00-48.00									
L41				1	1	1.09216			
48.00-39.75									
L42				1	1	0.976499			
39.75-38.75									
L43				1	1	0.967639			
38.75-34.75									
L44				1	1	0.981987			
34.75-34.50									
L45				1	1	0.979855			
34.50-33.75									
L46				1	1	1.02183			
33.75-33.50									
L47				1	1	1.03112			
33.50-28.50									
L48				1	1	0.945617			
28.50-24.00									
L49				1	1	0.949621			
24.00-23.75									
L50				1	1	0.956115			
23.75-18.75									
L51				1	1	0.964379			
18.75-14.25									
L52				1	1	0.954431			
14.25-14.00									
L53 14.00-9.00				1	1	0.958435			
L54 9.00-5.00				1	1	0.965286			
L55 5.00-4.75				1	1	0.910959			
L56 4.75-4.50				1	1	1.04098			
L57 4.50-0.00				1	1	1.0299			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB158-21U6S24-xxM_T	C	No	Surface Ar (CaAa)	120.00 - 0.00	3	3	0.000	1.9960		2.50
MO(1-5/8)							0.000			
LDF7-50A(1-5/8)	A	No	Surface Ar	113.00 -	8	6	0.250	1.9800		0.82

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	Client	Crown Castle	Designed by	msteward

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HCS 6X12 6AWG(1-3/8)	B	No	(CaAa) Surface Ar	0.00 105.00 -	3	3	0.250 -0.250 -0.250	1.3800		1.70
MLE Hybrid 9Power/18Fiber RL 2(1 5/8")	B	No	(CaAa) Surface Ar	0.00 105.00 -	1	1	-0.220 -0.220	1.6250		1.07
CU12PSM9P8XXX(1-3/8)	B	No	(CaAa) Surface Ar	0.00 86.00 - 0.00	1	1	0.000 0.000	1.4110		1.66
C6x10.5	A	No	(CaAa) Surface Af	0.00 56.00 - 7.67	1	1	0.000 0.000	6.0000	16.0600	10.50
C6x10.5	B	No	(CaAa) Surface Af	0.00 56.00 - 8.00	1	1	-0.250 -0.250	6.0000	16.0600	10.50
C6x10.5	B	No	(CaAa) Surface Af	0.00 56.00 - 0.00	1	1	0.500 0.500	6.0000	16.0600	10.50
C6x10.5	C	No	(CaAa) Surface Af	0.00 56.00 - 0.00	1	1	0.500 0.500	6.0000	16.0600	10.50
(Area) Aero MP3-04 (H)	A	No	(CaAa) Surface Af	0.00 25.42 - 0.00	1	1	-0.250 -0.250	4.7800	12.7800	0.00
(Area) Aero MP3-04 (H)	A	No	(CaAa) Surface Af	0.00 25.42 - 0.00	1	1	0.250 0.250	4.7800	12.7800	0.00
(Area) Aero MP3-04 (H)	B	No	(CaAa) Surface Af	0.00 25.42 - 0.00	1	1	0.250 0.250	4.7800	12.7800	0.00
(Area) Aero MP3-04 (H)	C	No	(CaAa) Surface Af	0.00 25.42 - 0.00	1	1	-0.250 -0.250	4.7800	12.7800	0.00
PL 1 x 5	A	No	(CaAa) Surface Af	0.00 37.00 - 2.50	1	1	0.500 0.500	5.0000	12.0000	0.00
PL 1 x 5	B	No	(CaAa) Surface Af	0.00 37.00 - 2.50	1	1	0.000 0.000	5.0000	12.0000	0.00
PL 1 x 5	C	No	(CaAa) Surface Af	0.00 37.00 - 2.50	1	1	0.000 0.000	5.0000	12.0000	0.00
PL 1 x 5	C	No	(CaAa) Surface Af	0.00 37.00 - 2.50	1	1	0.500 0.500	5.0000	12.0000	0.00
PL 1 x 5	A	No	(CaAa) Surface Af	0.00 72.00 - 31.50	1	1	0.500 0.500	5.0000	12.0000	0.00
PL 1 x 5	B	No	(CaAa) Surface Af	0.00 72.00 - 31.50	1	1	0.000 0.000	5.0000	12.0000	0.00
PL 1 x 5	C	No	(CaAa) Surface Af	0.00 72.00 - 31.50	1	1	0.000 0.000	5.0000	12.0000	0.00
PL 1 x 5	C	No	(CaAa) Surface Af	0.00 72.00 - 31.50	1	1	0.500 0.500	5.0000	12.0000	0.00
(Area) Aero MP3-03 (H)	A	No	(CaAa) Surface Af	0.00 15.42 - 0.00	1	1	0.500 0.500	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	B	No	(CaAa) Surface Af	0.00 15.42 - 0.00	1	1	0.000 0.000	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	C	No	(CaAa) Surface Af	0.00 15.42 - 0.00	1	1	0.000 0.000	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	C	No	(CaAa) Surface Af	0.00 15.42 - 0.00	1	1	0.500 0.500	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	A	No	(CaAa) Surface Af	0.00 45.42 - 25.42	1	1	-0.250 -0.250	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	A	No	(CaAa) Surface Af	0.00 45.42 - 25.42	1	1	0.250 0.250	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	B	No	(CaAa) Surface Af	0.00 45.42 - 25.42	1	1	0.250 0.250	4.0600	11.2600	0.00
(Area) Aero MP3-03 (H)	C	No	(CaAa) Surface Af	0.00 45.42 - 25.42	1	1	-0.250 -0.250	4.0600	11.2600	0.00
(Area) CCI-65FP-045100 (H)	A	No	(CaAa) Surface Af	0.00 72.00 - 52.00	1	1	-0.250 -0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	A	No	(CaAa) Surface Af	0.00 72.00 - 52.00	1	1	0.250 0.250	4.5000	11.0000	0.00

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Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
(Area) CCI-65FP-045100 (H)	B	No	Surface Af (CaAa)	72.00 - 52.00	1	1	0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	74.75 - 50.50	1	1	-0.250 -0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-060100 (H)	A	No	Surface Af (CaAa)	92.00 - 67.00	1	1	0.000 0.000	6.0000	14.0000	0.00
(Area) CCI-65FP-060100 (H)	C	No	Surface Af (CaAa)	92.00 - 67.00	1	1	0.250 0.250	6.0000	14.0000	0.00
(Area) CCI-65FP-045100 (H)	A	No	Surface Af (CaAa)	92.08 - 68.00	1	1	0.250 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	B	No	Surface Af (CaAa)	92.08 - 68.00	1	1	0.250 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	A	No	Surface Af (CaAa)	57.50 - 42.50	1	1	0.500 0.500	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	B	No	Surface Af (CaAa)	57.50 - 42.50	1	1	0.000 0.000	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	C	No	Surface Af (CaAa)	57.50 - 42.50	1	1	-0.250 -0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100 (H)	C	No	Surface Af (CaAa)	57.25 - 42.25	1	1	0.500 0.500	4.5000	11.0000	0.00
PL 1.25x4	B	No	Surface Af (CaAa)	100.75 - 74.00	1	1	0.000 0.000	4.0000	10.5000	0.00
PL 1.25x4	C	No	Surface Af (CaAa)	100.75 - 74.00	1	1	0.500 0.500	4.0000	10.5000	0.00
PL 1.25x4	C	No	Surface Af (CaAa)	100.75 - 73.00	1	1	-0.250 -0.250	4.0000	10.5000	0.00
PL 1.25x4	A	No	Surface Af (CaAa)	80.00 - 68.50	1	1	-0.250 -0.250	4.0000	10.5000	0.00
PL 1.25x4	A	No	Surface Af (CaAa)	78.25 - 68.25	1	1	0.500 0.500	4.0000	10.5000	0.00
PL 1.25x4	B	No	Surface Af (CaAa)	80.00 - 68.25	1	1	-0.250 -0.250	4.0000	10.5000	0.00
PL 1.25x4	B	No	Surface Af (CaAa)	80.00 - 68.25	1	1	0.500 0.500	4.0000	10.5000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
WR-VG66ST-BRD_CCIIV2(7/8)	C	No	No	Inside Pole	97.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.88 0.88 0.88
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	96.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	96.00 - 0.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.58 0.58 0.58
LDF6-50A(1 1/4")	C	No	No	Inside Pole	96.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.66 0.66 0.66
2" Flexible Conduit	C	No	No	Inside Pole	96.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.34 0.34 0.34
LDF4-50A(1/2)	C	No	No	Inside Pole	75.00 - 0.00	1	No Ice	0.00	0.15

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight plf
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 14.69 1/2" Ice 15.46 1" Ice 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 14.69 1/2" Ice 15.46 1" Ice 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 14.69 1/2" Ice 15.46 1" Ice 16.23	6.87 7.55 8.25	0.18 0.31 0.45
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 5.19 1/2" Ice 5.59 1" Ice 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 5.19 1/2" Ice 5.59 1" Ice 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 5.19 1/2" Ice 5.59 1" Ice 6.02	2.71 3.04 3.38	0.13 0.17 0.23
RADIO 4480_TMOV2	A	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.88 1/2" Ice 3.09 1" Ice 3.31	1.40 1.56 1.73	0.08 0.10 0.13
RADIO 4480_TMOV2	B	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.88 1/2" Ice 3.09 1" Ice 3.31	1.40 1.56 1.73	0.08 0.10 0.13
RADIO 4480_TMOV2	C	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.88 1/2" Ice 3.09 1" Ice 3.31	1.40 1.56 1.73	0.08 0.10 0.13
RADIO 4460 B2/B25 B66_TMO	A	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.14 1/2" Ice 2.32 1" Ice 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	B	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.14 1/2" Ice 2.32 1" Ice 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Le g	4.00 0.00 -1.00	0.0000	122.00	No Ice 2.14 1/2" Ice 2.32 1" Ice 2.51	1.69 1.85 2.02	0.11 0.13 0.16
6' x 2" Mount Pipe	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	122.00	No Ice 1.43 1/2" Ice 1.92 1" Ice 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	122.00	No Ice 1.43 1/2" Ice 1.92 1" Ice 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	122.00	No Ice 1.43 1/2" Ice 1.92 1" Ice 2.29	1.43 1.92 2.29	0.02 0.03 0.05

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	Client	Crown Castle	Designed by	msteward

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
Platform Mount [LP 1201-1_HR-1]	C	None			0.0000	122.00	No Ice	26.39	26.39	2.36
							1/2" Ice	31.40	31.40	3.06
							1" Ice	36.20	36.20	3.86
CBRS w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 3.00		0.0000	113.00	No Ice	1.45	0.99	0.03
							1/2" Ice	1.67	1.18	0.05
							1" Ice	1.90	1.39	0.07
CBRS w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 3.00		0.0000	113.00	No Ice	1.45	0.99	0.03
							1/2" Ice	1.67	1.18	0.05
							1" Ice	1.90	1.39	0.07
CBRS w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 3.00		0.0000	113.00	No Ice	1.45	0.99	0.03
							1/2" Ice	1.67	1.18	0.05
							1" Ice	1.90	1.39	0.07
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	5.50	4.38	0.10
							1/2" Ice	5.97	4.84	0.17
							1" Ice	6.45	5.30	0.25
(2) JAHH-45B-R3B w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	8.26	4.39	0.12
							1/2" Ice	8.83	4.91	0.20
							1" Ice	9.41	5.43	0.29
(2) JAHH-45B-R3B w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	8.26	4.39	0.12
							1/2" Ice	8.83	4.91	0.20
							1" Ice	9.41	5.43	0.29
(2) DB846F65ZAXY w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	6.10	6.81	0.06
							1/2" Ice	6.80	7.52	0.12
							1" Ice	7.51	8.24	0.19
(2) LPA-80063/4CF w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	6.38	6.60	0.04
							1/2" Ice	6.78	7.23	0.10
							1" Ice	7.19	7.88	0.18
(2) LPA-80063/4CF w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	6.38	6.60	0.04
							1/2" Ice	6.78	7.23	0.10
							1" Ice	7.19	7.88	0.18
(2) RFV01U-D1A	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.00	1.25	0.08
							1/2" Ice	2.05	1.39	0.10
							1" Ice	2.22	1.54	0.12
RFV01U-D1A	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.00	1.25	0.08
							1/2" Ice	2.05	1.39	0.10
							1" Ice	2.22	1.54	0.12
(2) RFV01U-D2A	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.00	1.01	0.07
							1/2" Ice	2.05	1.14	0.09
							1" Ice	2.22	1.28	0.11
RFV01U-D2A	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.00	1.01	0.07
							1/2" Ice	2.05	1.14	0.09
							1" Ice	2.22	1.28	0.11
DB-T1-6Z-8AB-0Z	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	4.80	2.00	0.04
							1/2" Ice	5.07	2.19	0.08
							1" Ice	5.35	2.39	0.12
DB-T1-6Z-8AB-0Z	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	4.80	2.00	0.04
							1/2" Ice	5.07	2.19	0.08
							1" Ice	5.35	2.39	0.12
CBC78T-DS-43-2X	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.37	0.51	0.02
							1/2" Ice	0.45	0.60	0.03
							1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.37	0.51	0.02
							1/2" Ice	0.45	0.60	0.03
							1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	113.00	No Ice	0.37	0.51	0.02
							1/2" Ice	0.45	0.60	0.03
							1" Ice	0.53	0.70	0.04

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	Client	Crown Castle	Designed by	msteward

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
Platform Mount [LP 305-1_KCKR-HR-1]	C	None			0.0000	113.00	No Ice	30.81	30.81	1.64
							1/2" Ice	38.70	38.70	2.20
							1" Ice	46.63	46.63	2.88
AIR 3246 B66 w/ Mount Pipe	A	From	4.00		0.0000	105.00	No Ice	7.31	5.46	0.20
		Centroid-Le	0.00				1/2" Ice	7.89	6.00	0.27
		g	2.00				1" Ice	8.48	6.57	0.34
AIR 3246 B66 w/ Mount Pipe	B	From	4.00		0.0000	105.00	No Ice	7.31	5.46	0.20
		Centroid-Le	0.00				1/2" Ice	7.89	6.00	0.27
		g	2.00				1" Ice	8.48	6.57	0.34
AIR 3246 B66 w/ Mount Pipe	C	From	4.00		0.0000	105.00	No Ice	7.31	5.46	0.20
		Centroid-Le	0.00				1/2" Ice	7.89	6.00	0.27
		g	2.00				1" Ice	8.48	6.57	0.34
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From	4.00		0.0000	105.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.00				1/2" Ice	15.46	7.55	0.31
		g	2.00				1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From	4.00		0.0000	105.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.00				1/2" Ice	15.46	7.55	0.31
		g	2.00				1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From	4.00		0.0000	105.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.00				1/2" Ice	15.46	7.55	0.31
		g	2.00				1" Ice	16.23	8.25	0.46
AIR 32 B2A/B66AA w/ Mount Pipe	A	From	4.00		0.0000	105.00	No Ice	3.76	3.15	0.19
		Centroid-Le	0.00				1/2" Ice	4.12	3.49	0.25
		g	2.00				1" Ice	4.48	3.84	0.32
AIR 32 B2A/B66AA w/ Mount Pipe	B	From	4.00		0.0000	105.00	No Ice	3.76	3.15	0.19
		Centroid-Le	0.00				1/2" Ice	4.12	3.49	0.25
		g	2.00				1" Ice	4.48	3.84	0.32
AIR 32 B2A/B66AA w/ Mount Pipe	C	From	4.00		0.0000	105.00	No Ice	3.76	3.15	0.19
		Centroid-Le	0.00				1/2" Ice	4.12	3.49	0.25
		g	2.00				1" Ice	4.48	3.84	0.32
AIR6449 B41 w/ Mount Pipe	A	From	4.00		0.0000	105.00	No Ice	5.18	2.72	0.12
		Centroid-Le	0.00				1/2" Ice	5.59	3.05	0.16
		g	2.00				1" Ice	6.01	3.39	0.22
AIR6449 B41 w/ Mount Pipe	B	From	4.00		0.0000	105.00	No Ice	5.18	2.72	0.12
		Centroid-Le	0.00				1/2" Ice	5.59	3.05	0.16
		g	2.00				1" Ice	6.01	3.39	0.22
AIR6449 B41 w/ Mount Pipe	C	From	4.00		0.0000	105.00	No Ice	5.18	2.72	0.12
		Centroid-Le	0.00				1/2" Ice	5.59	3.05	0.16
		g	2.00				1" Ice	6.01	3.39	0.22
RADIO 4449 B71/B85A	A	From	4.00		0.0000	105.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.00				1/2" Ice	1.80	1.46	0.09
		g	2.00				1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	B	From	4.00		0.0000	105.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.00				1/2" Ice	1.80	1.46	0.09
		g	2.00				1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	C	From	4.00		0.0000	105.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.00				1/2" Ice	1.80	1.46	0.09
		g	2.00				1" Ice	1.97	1.61	0.11
RRUS 4415 B25_CCIV2	A	From	4.00		0.0000	105.00	No Ice	1.84	0.82	0.05
		Centroid-Le	0.00				1/2" Ice	2.01	0.94	0.06
		g	2.00				1" Ice	2.19	1.07	0.08
RRUS 4415 B25_CCIV2	B	From	4.00		0.0000	105.00	No Ice	1.84	0.82	0.05
		Centroid-Le	0.00				1/2" Ice	2.01	0.94	0.06
		g	2.00				1" Ice	2.19	1.07	0.08
RRUS 4415 B25_CCIV2	C	From	4.00		0.0000	105.00	No Ice	1.84	0.82	0.05
		Centroid-Le	0.00				1/2" Ice	2.01	0.94	0.06
		g	2.00				1" Ice	2.19	1.07	0.08

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	528 WHEELERS FARM RD BU #: 876320	Page	13 of 15
	Project	2021777.876320.09	Date	08:57:23 09/10/21
	Client	Crown Castle	Designed by	msteward

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
SitePro1 RMQP-4096-HK	C	None			0.0000	105.00	No Ice 1/2" Ice 1" Ice	23.14 28.17 33.23	21.40 26.44 31.60	1.95 2.34 2.85
AIR 6419 B77G w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.87 4.18 4.50	2.32 2.72 3.13	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.87 4.18 4.50	2.32 2.72 3.13	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.87 4.18 4.50	2.32 2.72 3.13	0.08 0.11 0.15
AIR 6449 B77D w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
AIR 6449 B77D w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
AIR 6449 B77D w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
QD4616-7 w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	9.44 9.85 10.27	5.42 6.00 6.59	0.12 0.20 0.28
QD4616-7 w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	9.44 9.85 10.27	5.42 6.00 6.59	0.12 0.20 0.28
QD4616-7 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	9.44 9.85 10.27	5.42 6.00 6.59	0.12 0.20 0.28
WCS-IMFQ-AMT	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	0.99 1.11 1.25	0.64 0.75 0.86	0.03 0.04 0.05
WCS-IMFQ-AMT	B	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	0.99 1.11 1.25	0.64 0.75 0.86	0.03 0.04 0.05
RRUS 32 B30	A	From Centroid-Le g	4.00 0.00 0.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	B	From Centroid-Le g	4.00 0.00 0.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	C	From Centroid-Le g	4.00 0.00 0.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS E2 B29	A	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS E2 B29	C	From Centroid-Le g	4.00 0.00 1.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
DC6-48-60-18-8F	A	From Centroid-Le g	4.00 0.00 0.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	2.20 2.40 2.60	2.20 2.40 2.60	0.02 0.04 0.07
DC6-48-60-18-8F	B	From Centroid-Le g	4.00 0.00 0.00		0.0000	97.00	No Ice 1/2" Ice 1" Ice	2.20 2.40 2.60	2.20 2.40 2.60	0.02 0.04 0.07

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	528 WHEELERS FARM RD BU #: 876320	Page	14 of 15
	Project	2021777.876320.09	Date	08:57:23 09/10/21
	Client	Crown Castle	Designed by	msteward

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
Side Arm Mount [SO 102-3]	C	None			0.0000	97.00	No Ice 1/2" Ice 1" Ice	3.60 4.18 4.75	3.60 4.18 4.75	0.07 0.11 0.14
80010965 w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	12.26 13.03 13.80	5.79 6.47 7.17	0.14 0.23 0.33
80010965 w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	12.26 13.03 13.80	5.79 6.47 7.17	0.14 0.23 0.33
80010965 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	12.26 13.03 13.80	5.79 6.47 7.17	0.14 0.23 0.33
WCS-IMFQ-AMT	C	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	0.99 1.11 1.25	0.64 0.75 0.86	0.03 0.04 0.05
RRUS 4449 B5/B12	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	B	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	C	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4478 B14	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	B	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	C	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 8843 B2/B66A	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	B	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	C	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS E2 B29	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
DC6-48-60-18-8F	A	From Centroid-Le g	4.00 0.00 2.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	2.20 2.40 2.60	2.20 2.40 2.60	0.02 0.04 0.07
(2) L 2-1/2x2-1/2x3/16 (40" Long)	A	From Centroid-Le g	2.00 0.00 0.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	0.83 1.07 1.32	0.05 0.08 0.12	0.01 0.02 0.03
(2) L 2-1/2x2-1/2x3/16 (40" Long)	B	From Centroid-Le g	2.00 0.00 0.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	0.83 1.07 1.32	0.05 0.08 0.12	0.01 0.02 0.03
(2) L 2-1/2x2-1/2x3/16 (40" Long)	C	From Centroid-Le g	2.00 0.00 0.00		0.0000	96.00	No Ice 1/2" Ice 1" Ice	0.83 1.07 1.32	0.05 0.08 0.12	0.01 0.02 0.03

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	528 WHEELERS FARM RD BU #: 876320	Page	15 of 15
	Project	2021777.876320.09	Date	08:57:23 09/10/21
	Client	Crown Castle	Designed by	msteward

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
Platform Mount [LP 712-1]	C	None			0.0000	96.00	No Ice 24.56 1/2" Ice 27.92 1" Ice 31.27	24.56 27.92 31.27	1.34 1.91 2.55
Miscellaneous [NA 507-1]	C	None			0.0000	99.00	No Ice 4.56 1/2" Ice 6.39 1" Ice 8.18	4.56 6.39 8.18	0.25 0.31 0.40
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 2.56 1/2" Ice 2.76 1" Ice 2.97	1.34 1.49 1.66	0.02 0.04 0.07
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00		0.0000	86.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Commscope MC-PK8-DSH	C	None			0.0000	86.00	No Ice 34.24 1/2" Ice 62.95 1" Ice 91.66	34.24 62.95 91.66	1.75 2.10 2.45
ACUTIME 2000	A	From Leg	3.00 0.00 1.00		0.0000	75.00	No Ice 0.26 1/2" Ice 0.32 1" Ice 0.39	0.26 0.32 0.39	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00		0.0000	75.00	No Ice 0.85 1/2" Ice 1.14 1" Ice 1.43	1.67 2.34 3.01	0.07 0.08 0.09

APPENDIX B
BASE LEVEL DRAWING



CROWN REGION ADDRESS
USA

WT
CL
ST
SR
SLW
PL
LN
MM

12/08/19	UPDATED PER WORK ORDER	182888
12/08/19	UPDATED PER WORK ORDER	182812
10/01/20	UPDATED PER WORK ORDER	186205
09/08/20	UPDATED PER WORK ORDER	1872876
09/08/20	UPDATED PER WORK ORDER	186287
09/08/20	UPDATED PER WORK ORDER	186283
09/08/21	UPDATED PER WORK ORDER	1862373
02/08/21	UPDATED PER WORK ORDER	2006020

DRAWN BY: BRK
CHECKED BY: ASK
DRAWING DATE: 01/02/20

SITE NUMBER:
SITE NAME:

SITE NAME

528 WHEELERS FARM RD

BUSINESS UNIT NUMBER

876320

SITE ADDRESS

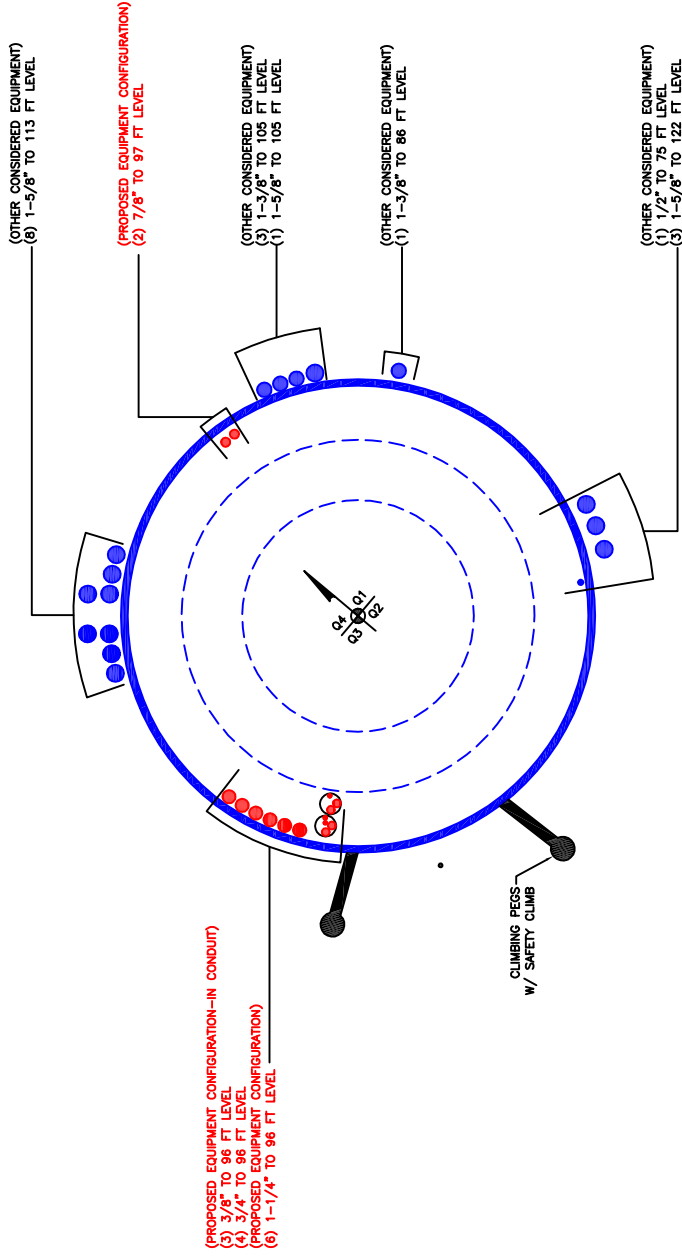
528 WHEELERS FARM ROAD
MILFORD, CT 06460
NEW HAVEN COUNTY
USA

SHEET TITLE

BASE LEVEL DRAWING

SHEET NUMBER

A1-0



N.T.S.

APPENDIX C
ADDITIONAL CALCULATIONS

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	120	42	3.75	12	22	30.486	0.25	Auto	A607-60
2	81.75	42	4.75	12	29.23	37.714	0.3125	Auto	A607-60
3	44.5	44.5	0	12	36.13	45.12	0.375	Auto	A607-60

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number													
						1	2	3	4	5	6	7	8	9	10	11	12	
1	0	4.75	plate	(TS) 1.25x4.00 (65ksi)	3			0									0	
2	0	24	channel	MP3-04 (1.25in)	4			0		0						0		0
3	4.75	34.75	plate	PL 1" X 5"	4			3										
4	33.75	69.75	plate	PL 1" X 5"	4			-2.5					2.5	2.5				2.5
5	0	14.25	channel	MP3-03 (1.25in)	4			-1.8					1.5	1.5				1.75
6	24	44.25	channel	MP3-03 (1.25in)	4			0		0					0			0
7	53.5	70.5	plate	CCI-SFP-045100	1													2.25
8	53.25	72	plate	CCI-SFP-065125	1			0										
9	54	70	plate	CCI-AFP-045100	2					0						0		
10	69.5	89.5	plate	CCI-AFP-060100	2		0										0	
11	70	90.08	plate	CCI-AFP-045100	2					0							0	
12	44	56	plate	CCI-SFP-045100	3			3										
13	43.75	55.5	plate	CCI-SFP-045100	1													-3
14	74.5	99.25	plate	PL 1.25" X 4"	1			0										
15	75.5	99.25	plate	PL 1.25" X 4"	1					0								
16	75.5	99.25	plate	PL 1.25" X 4"	1													0
17	69.75	78.5	plate	PL 1.25" X 4"	2				0				0					
18	70	78.5	plate	PL 1.25" X 4"	1													-2
19	69.75	76.75	plate	PL 1.25" X 4"	1													-3
20	0	5	plate	(TS) 1.25x6.00	1												0	
21	0	5	plate	(TS) 1.25x6.00 (mod)	1												0	
22																		

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	1.25	4	5	2	Welded	n/a	Welded	n/a	6.000	5.000	0.0000	A572-65
2	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.566	1.2500	A572-65
3	5	1	5	0.5	PC 8.8 - M20 (100)	27	PC 8.8 - M20 (100)	27.000	18.000	3.750	1.1875	A572-65
4	5	1	5	0.5	PC 8.8 - M20 (100)	27	PC 8.8 - M20 (100)	27.000	18.000	3.750	1.1875	A572-65
5	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
6	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.526	1.2500	A572-65
7	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
8	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
9	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
10	6	1	6	0.5	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	16.000	4.750	1.1875	A572-65
11	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
13	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
14	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
15	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
16	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
17	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
18	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
19	4	1.25	5	0.625	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	27.000	3.438	1.1875	A572-65
20	1.25	5.25	6.5625	2.625	Welded	n/a	Welded	n/a	1.125	6.563	0.0000	A572-65
21	1.25	5.1875	6.48438	2.59375	Welded	n/a	Welded	n/a	1.250	6.484	0.0000	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
(TS) 1.25x4.00 (65ksi)	Top	-	-	-	-	80	None	-	-	-	-	39	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	8	0.625	45	0.625	-	-	-
PL 1" X 5"	Top	9	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	9	N	3	3	-	-	-	-	-	-	-	-	-
PL 1.25" X 4"	Top	6	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	6	N	3	3	-	-	-	-	-	-	-	-	-
(TS) 1.25x6.00	Top	-	-	-	-	80	None	-	-	-	-	60	0.313	-
	Bottom	-	-	-	-	80	CJP Groove	10.5	0.625	45	0.3125	-	-	-
(TS) 1.25x6.00 (mod)	Top	-	-	-	-	80	None	-	-	-	-	60	0.313	-
	Bottom	-	-	-	-	80	CJP Groove	10.375	0.625	45	0.3125	-	-	-

TNX Geometry Input

Increment (ft): [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	120 - 115	5		12	22.000	23.010	0.25	A607-60	1.000
2	115 - 110	5		12	23.010	24.020	0.25	A607-60	1.000
3	110 - 105	5		12	24.020	25.031	0.25	A607-60	1.000
4	105 - 100	5		12	25.031	26.041	0.25	A607-60	1.000
5	100 - 99.25	0.75		12	26.041	26.192	0.25	A607-60	1.000
6	99.25 - 99	0.25		12	26.192	26.243	0.35625	A607-60	1.042
7	99 - 94	5		12	26.243	27.253	0.35625	A607-60	1.029
8	94 - 90.08	3.92		12	27.253	28.045	0.3125	A607-60	1.161
9	90.08 - 89.83	0.25		12	28.045	28.096	0.5125	A607-60	1.020
10	89.83 - 89.5	0.33		12	28.096	28.162	0.5125	A607-60	1.019
11	89.5 - 89.25	0.25		12	28.162	28.213	0.725	A607-60	0.913
12	89.25 - 84.25	5		12	28.213	29.223	0.7	A607-60	0.924
13	84.25 - 81.75	6.25	3.75	12	29.223	30.486	0.7	A607-60	0.914
14	81.75 - 77	4.75		12	29.228	30.188	0.8625	A607-60	0.996
15	77 - 76.75	0.25		12	30.188	30.239	0.8625	A607-60	0.995
16	76.75 - 76.5	0.25		12	30.239	30.289	0.9625	A607-60	0.949
17	76.5 - 75.5	1		12	30.289	30.491	0.9625	A607-60	0.945
18	75.5 - 75.25	0.25		12	30.491	30.542	0.7625	A607-60	1.046
19	75.25 - 74.5	0.75		12	30.542	30.693	0.7625	A607-60	1.043
20	74.5 - 74.25	0.25		12	30.693	30.744	0.8375	A607-60	0.889
21	74.25 - 72	2.25		12	30.744	31.198	0.825	A607-60	0.894
22	72 - 71.75	0.25		12	31.198	31.249	0.7625	A607-60	1.073
23	71.75 - 70.5	1.25		12	31.249	31.501	0.7625	A607-60	1.068
24	70.5 - 70.25	0.25		12	31.501	31.552	0.7875	A607-60	1.091
25	70.25 - 70	0.25		12	31.552	31.602	0.7875	A607-60	1.090
26	70 - 69.75	0.25		12	31.602	31.653	0.725	A607-60	1.111
27	69.75 - 69.5	0.25		12	31.653	31.703	0.875	A607-60	0.982
28	69.5 - 69.25	0.25		12	31.703	31.754	0.75	A607-60	0.979
29	69.25 - 64.25	5		12	31.754	32.764	0.7375	A607-60	0.977
30	64.25 - 59.25	5		12	32.764	33.774	0.7125	A607-60	0.993
31	59.25 - 56	3.25		12	33.774	34.431	0.7125	A607-60	0.983
32	56 - 55.75	0.25		12	34.431	34.481	0.8125	A607-60	1.017
33	55.75 - 55.5	0.25		12	34.481	34.532	0.8125	A607-60	1.016
34	55.5 - 55.25	0.25		12	34.532	34.582	0.8875	A607-60	0.978
35	55.25 - 54	1.25		12	34.582	34.835	0.875	A607-60	0.987
36	54 - 53.75	0.25		12	34.835	34.885	0.75	A607-60	1.037
37	53.75 - 53.5	0.25		12	34.885	34.936	0.7375	A607-60	1.053
38	53.5 - 53.25	0.25		12	34.936	34.986	0.6625	A607-60	1.107
39	53.25 - 53	0.25		12	34.986	35.037	0.6	A607-60	1.097
40	53 - 48	5		12	35.037	36.047	0.5875	A607-60	1.103
41	48 - 44.5	8.25	4.75	12	36.047	37.714	0.5875	A607-60	1.092
42	44.5 - 38.75	5.75		12	36.129	37.291	0.6625	A607-60	0.976
43	38.75 - 34.75	4		12	37.291	38.099	0.6625	A607-60	0.968
44	34.75 - 34.5	0.25		12	38.099	38.150	0.825	A607-60	0.982
45	34.5 - 33.75	0.75		12	38.150	38.301	0.825	A607-60	0.980
46	33.75 - 33.5	0.25		12	38.301	38.352	0.625	A607-60	1.022
47	33.5 - 28.5	5		12	38.352	39.362	0.6125	A607-60	1.031
48	28.5 - 24	4.5		12	39.362	40.271	0.6625	A607-60	0.946
49	24 - 23.75	0.25		12	40.271	40.322	0.7	A607-60	0.950
50	23.75 - 18.75	5		12	40.322	41.332	0.6875	A607-60	0.956
51	18.75 - 14.25	4.5		12	41.332	42.241	0.675	A607-60	0.964
52	14.25 - 14	0.25		12	42.241	42.291	0.775	A607-60	0.954
53	14 - 9	5		12	42.291	43.302	0.7625	A607-60	0.958
54	9 - 5	4		12	43.302	44.110	0.75	A607-60	0.965
55	5 - 4.75	0.25		12	44.110	44.160	0.9	A607-60	0.911
56	4.75 - 4.5	0.25		12	44.160	44.211	0.75	A607-60	1.041
57	4.5 - 0	4.5		12	44.211	45.120	0.75	A607-60	1.030

TNX Section Forces

Increment (ft):		TNX Output		
5				
	Section Height (ft)	P _u	M _{ux} (kip-ft)	V _u (K)
1	120 - 115	4.82	28.63	4.84
2	115 - 110	8.89	72.95	10.39
3	110 - 105	9.36	126.12	10.90
4	105 - 100	14.94	209.71	15.77
5	100 - 99.25	15.03	221.56	15.84
6	99.25 - 99	15.07	225.53	15.86
7	99 - 94	20.46	325.16	22.08
8	94 - 90.08	21.13	412.86	22.68
9	90.08 - 89.83	21.20	418.53	22.72
10	89.83 - 89.5	21.27	426.03	22.77
11	89.5 - 89.25	21.34	431.73	22.81
12	89.25 - 84.25	25.79	553.32	26.73
13	84.25 - 81.75	26.49	620.66	27.15
14	81.75 - 77	29.13	751.75	28.04
15	77 - 76.75	29.23	758.77	28.08
16	76.75 - 76.5	29.33	765.79	28.12
17	76.5 - 75.5	29.72	793.98	28.27
18	75.5 - 75.25	29.81	801.05	28.30
19	75.25 - 74.5	30.15	822.48	28.50
20	74.5 - 74.25	30.23	829.61	28.55
21	74.25 - 72	30.98	894.26	28.94
22	72 - 71.75	31.08	901.50	28.98
23	71.75 - 70.5	31.54	937.85	29.20
24	70.5 - 70.25	31.64	945.16	29.24
25	70.25 - 70	31.74	952.47	29.28
26	70 - 69.75	31.83	959.80	29.32
27	69.75 - 69.5	31.93	967.13	29.37
28	69.5 - 69.25	32.02	974.48	29.41
29	69.25 - 64.25	33.74	1123.19	30.09
30	64.25 - 59.25	35.50	1275.21	30.74
31	59.25 - 56	36.66	1375.78	31.17
32	56 - 55.75	36.78	1383.58	31.21
33	55.75 - 55.5	36.90	1391.39	31.25
34	55.5 - 55.25	37.02	1399.21	31.30
35	55.25 - 54	37.61	1438.46	31.52
36	54 - 53.75	37.73	1446.35	31.56
37	53.75 - 53.5	37.85	1454.24	31.60
38	53.5 - 53.25	37.95	1462.15	31.64
39	53.25 - 53	38.05	1470.07	31.68
40	53 - 48	40.07	1629.95	32.28
41	48 - 44.5	41.50	1743.62	32.70
42	44.5 - 38.75	45.29	1933.99	33.51
43	38.75 - 34.75	46.98	2068.93	33.98
44	34.75 - 34.5	47.11	2077.43	34.00
45	34.5 - 33.75	47.48	2102.97	34.10
46	33.75 - 33.5	47.59	2111.49	34.12
47	33.5 - 28.5	49.73	2283.46	34.68
48	28.5 - 24	51.67	2440.53	35.16
49	24 - 23.75	51.80	2449.31	35.17
50	23.75 - 18.75	54.07	2626.41	35.69
51	18.75 - 14.25	56.16	2787.88	36.11
52	14.25 - 14	56.30	2796.90	36.11
53	14 - 9	58.85	2978.64	36.60
54	9 - 5	60.85	3125.67	36.97
55	5 - 4.75	61.00	3134.91	36.97
56	4.75 - 4.5	61.13	3144.15	37.00
57	4.5 - 0	63.51	3311.52	37.43

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP23.01x22x0.25	Pole	5.3%	Pass
115 - 110	Pole	TP24.02x23.01x0.25	Pole	12.3%	Pass
110 - 105	Pole	TP25.031x24.02x0.25	Pole	19.3%	Pass
105 - 100	Pole	TP26.041x25.031x0.25	Pole	30.1%	Pass
100 - 99.25	Pole	TP26.192x26.041x0.25	Pole	31.5%	Pass
99.25 - 99	Pole + Reinf.	TP26.243x26.192x0.3563	Reinf. 14 Tension Rupture	28.7%	Pass
99 - 94	Pole + Reinf.	TP27.253x26.243x0.3563	Reinf. 14 Tension Rupture	38.9%	Pass
94 - 90.08	Pole + Reinf.	TP28.045x27.253x0.3125	Pole	46.9%	Pass
90.08 - 89.83	Pole + Reinf.	TP28.096x28.045x0.5125	Reinf. 11 Tension Rupture	39.1%	Pass
89.83 - 89.5	Pole + Reinf.	TP28.162x28.096x0.5125	Reinf. 11 Tension Rupture	39.6%	Pass
89.5 - 89.25	Pole + Reinf.	TP28.213x28.162x0.725	Reinf. 15 Tension Rupture	30.7%	Pass
89.25 - 84.25	Pole + Reinf.	TP29.223x28.213x0.7	Reinf. 15 Tension Rupture	37.4%	Pass
84.25 - 81.75	Pole + Reinf.	TP30.486x29.223x0.7	Reinf. 15 Tension Rupture	40.9%	Pass
81.75 - 77	Pole + Reinf.	TP30.188x29.228x0.8625	Reinf. 17 Tension Rupture	37.5%	Pass
77 - 76.75	Pole + Reinf.	TP30.239x30.188x0.8625	Reinf. 17 Tension Rupture	37.8%	Pass
76.75 - 76.5	Pole + Reinf.	TP30.289x30.239x0.9625	Reinf. 14 Tension Rupture	35.5%	Pass
76.5 - 75.5	Pole + Reinf.	TP30.491x30.289x0.9625	Reinf. 14 Tension Rupture	36.5%	Pass
75.5 - 75.25	Pole + Reinf.	TP30.542x30.491x0.7625	Reinf. 17 Tension Rupture	42.0%	Pass
75.25 - 74.5	Pole + Reinf.	TP30.693x30.542x0.7625	Reinf. 17 Tension Rupture	42.8%	Pass
74.5 - 74.25	Pole + Reinf.	TP30.744x30.693x0.8375	Reinf. 17 Tension Rupture	45.2%	Pass
74.25 - 72	Pole + Reinf.	TP31.198x30.744x0.825	Reinf. 17 Tension Rupture	47.6%	Pass
72 - 71.75	Pole + Reinf.	TP31.249x31.198x0.7625	Reinf. 17 Tension Rupture	45.7%	Pass
71.75 - 70.5	Pole + Reinf.	TP31.501x31.249x0.7625	Reinf. 17 Tension Rupture	46.9%	Pass
70.5 - 70.25	Pole + Reinf.	TP31.552x31.501x0.7875	Reinf. 17 Tension Rupture	47.0%	Pass
70.25 - 70	Pole + Reinf.	TP31.602x31.552x0.7875	Reinf. 17 Tension Rupture	47.2%	Pass
70 - 69.75	Pole + Reinf.	TP31.653x31.602x0.725	Reinf. 17 Tension Rupture	49.0%	Pass
69.75 - 69.5	Pole + Reinf.	TP31.703x31.653x0.875	Reinf. 4 Tension Rupture	41.6%	Pass
69.5 - 69.25	Pole + Reinf.	TP31.754x31.703x0.75	Reinf. 4 Tension Rupture	46.6%	Pass
69.25 - 64.25	Pole + Reinf.	TP32.764x31.754x0.7375	Reinf. 4 Tension Rupture	51.2%	Pass
64.25 - 59.25	Pole + Reinf.	TP33.774x32.764x0.7125	Reinf. 4 Tension Rupture	55.5%	Pass
59.25 - 56	Pole + Reinf.	TP34.431x33.774x0.7125	Reinf. 4 Tension Rupture	58.2%	Pass
56 - 55.75	Pole + Reinf.	TP34.481x34.431x0.8125	Reinf. 7 Tension Rupture	56.0%	Pass
55.75 - 55.5	Pole + Reinf.	TP34.532x34.481x0.8125	Reinf. 7 Tension Rupture	56.2%	Pass
55.5 - 55.25	Pole + Reinf.	TP34.582x34.532x0.8875	Reinf. 7 Tension Rupture	50.6%	Pass
55.25 - 54	Pole + Reinf.	TP34.835x34.582x0.875	Reinf. 7 Tension Rupture	51.5%	Pass
54 - 53.75	Pole + Reinf.	TP34.885x34.835x0.75	Reinf. 7 Tension Rupture	59.1%	Pass
53.75 - 53.5	Pole + Reinf.	TP34.936x34.885x0.7375	Reinf. 7 Tension Rupture	59.3%	Pass
53.5 - 53.25	Pole + Reinf.	TP34.986x34.936x0.6625	Reinf. 4 Tension Rupture	63.7%	Pass
53.25 - 53	Pole + Reinf.	TP35.037x34.986x0.6	Reinf. 12 Tension Rupture	65.8%	Pass
53 - 48	Pole + Reinf.	TP36.047x35.037x0.5875	Reinf. 12 Tension Rupture	70.0%	Pass
48 - 44.5	Pole + Reinf.	TP37.714x36.047x0.5875	Reinf. 12 Tension Rupture	72.8%	Pass
44.5 - 38.75	Pole + Reinf.	TP37.291x36.129x0.6625	Reinf. 4 Tension Rupture	71.1%	Pass
38.75 - 34.75	Pole + Reinf.	TP38.099x37.291x0.6625	Reinf. 4 Tension Rupture	73.5%	Pass
34.75 - 34.5	Pole + Reinf.	TP38.15x38.099x0.825	Reinf. 3 Tension Rupture	58.9%	Pass
34.5 - 33.75	Pole + Reinf.	TP38.301x38.15x0.825	Reinf. 3 Tension Rupture	59.3%	Pass
33.75 - 33.5	Pole + Reinf.	TP38.352x38.301x0.625	Reinf. 6 Tension Rupture	73.0%	Pass
33.5 - 28.5	Pole + Reinf.	TP39.362x38.352x0.6125	Reinf. 6 Tension Rupture	75.5%	Pass
28.5 - 24	Pole + Reinf.	TP40.271x39.362x0.6625	Reinf. 3 Tension Rupture	77.8%	Pass
24 - 23.75	Pole + Reinf.	TP40.322x40.271x0.7	Reinf. 3 Tension Rupture	74.3%	Pass
23.75 - 18.75	Pole + Reinf.	TP41.332x40.322x0.6875	Reinf. 3 Tension Rupture	76.6%	Pass
18.75 - 14.25	Pole + Reinf.	TP42.241x41.332x0.675	Reinf. 3 Tension Rupture	78.6%	Pass
14.25 - 14	Pole + Reinf.	TP42.291x42.241x0.775	Reinf. 3 Tension Rupture	68.4%	Pass
14 - 9	Pole + Reinf.	TP43.302x42.291x0.7625	Reinf. 3 Tension Rupture	70.2%	Pass
9 - 5	Pole + Reinf.	TP44.11x43.302x0.75	Reinf. 3 Tension Rupture	71.6%	Pass
5 - 4.75	Pole + Reinf.	TP44.16x44.11x0.9	Reinf. 3 Tension Rupture	65.2%	Pass
4.75 - 4.5	Pole + Reinf.	TP44.211x44.16x0.75	Reinf. 5 Tension Rupture	68.0%	Pass
4.5 - 0	Pole + Reinf.	TP45.12x44.211x0.75	Reinf. 5 Tension Rupture	69.5%	Pass
				Summary	
			Pole	58.4%	Pass
			Reinforcement	78.6%	Pass
			Overall	78.6%	Pass

Monopole Base Plate Connection

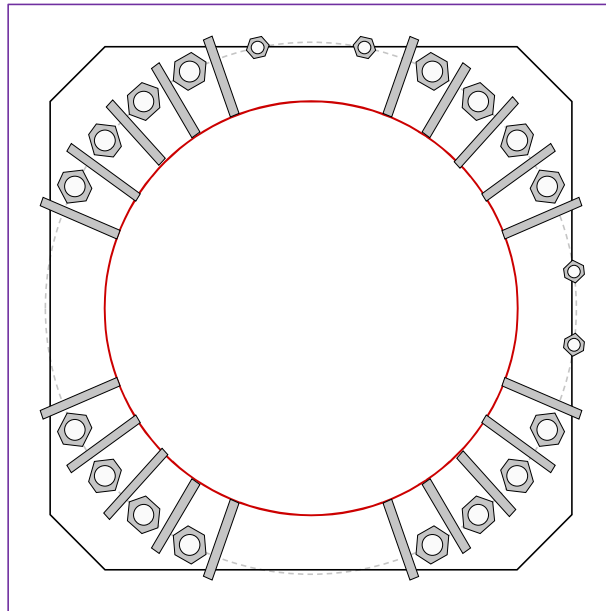


Site Info	
BU #	876320
Site Name	28 WHEELERS FARM R
Order #	556503 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
I_{gr} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	3311.52
Axial Force (kips)	63.51
Shear Force (kips)	37.43

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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Anchor Rod Data

GROUP 1: (16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 58" BC
Anchor Spacing: 6 in

GROUP 2: (4) 1-3/8" ϕ bolts (R71 150ksi 1-3/8" N; $F_y=120$ ksi, $F_u=125$ ksi) on 58" BC
pos. (deg): 7.9, 78.4, 101.6, 352.1

Base Plate Data

57" W x 3.25" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi); Clip: 6 in

Stiffener Data

(20) 18"H x 9"W x 1"T, Notch: 0.75"
plate: $F_y=50$ ksi ; weld: $F_y=80$ ksi
horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet
vert. weld: 0.375" fillet

Pole Data

45.12" x 0.375" 12-sided pole (A607-60; $F_y=60$ ksi, $F_u=75$ ksi)

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

GROUP 1:

$P_{u,t} = 163.56$	$\phi P_{n,t} = 243.75$	Stress Rating
$V_u = 2.34$	$\phi V_n = 149.1$	63.9%
$M_u = n/a$	$\phi M_n = n/a$	Pass

GROUP 2:

$P_{u,t} = 53.28$	$\phi P_{n,t} = 108.75$	Stress Rating
$V_u = 0$	$\phi V_n = 69.6$	46.7%
$M_u = n/a$	$\phi M_n = n/a$	Pass

Base Plate Summary

Max Stress (ksi):	3.27	(Shear)
Allowable Stress (ksi):	29.25	
Stress Rating:	10.6%	Pass

Stiffener Summary

Horizontal Weld:	32.7%	Pass
Vertical Weld:	43.1%	Pass
Plate Flexure+Shear:	16.2%	Pass
Plate Tension+Shear:	33.7%	Pass
Plate Compression:	48.0%	Pass

Pole Summary

Punching Shear:	18.7%	Pass
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Elevation (ft) 0 (Base)

note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	Yes	No	No	No	No	

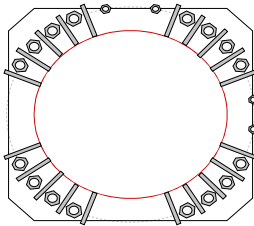
Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η	L _e (in):	Thread Type	Area Override, in ²	Tension Only
1	1	27.1866826	2.25	A615-75	58	0.5	2	N-Included		No
2	1	39.0622275	2.25	A615-75	58	0.5	2	N-Included		No
3	1	50.9377725	2.25	A615-75	58	0.5	2	N-Included		No
4	1	62.8133174	2.25	A615-75	58	0.5	2	N-Included		No
5	1	117.186683	2.25	A615-75	58	0.5	2	N-Included		No
6	1	129.062228	2.25	A615-75	58	0.5	2	N-Included		No
7	1	140.937772	2.25	A615-75	58	0.5	2	N-Included		No
8	1	152.813317	2.25	A615-75	58	0.5	2	N-Included		No
9	1	207.186683	2.25	A615-75	58	0.5	2	N-Included		No
10	1	219.062228	2.25	A615-75	58	0.5	2	N-Included		No
11	1	230.937772	2.25	A615-75	58	0.5	2	N-Included		No
12	1	242.813317	2.25	A615-75	58	0.5	2	N-Included		No
13	1	297.186683	2.25	A615-75	58	0.5	2	N-Included		No
14	1	309.062228	2.25	A615-75	58	0.5	2	N-Included		No
15	1	320.937772	2.25	A615-75	58	0.5	2	N-Included		No
16	1	332.813317	2.25	A615-75	58	0.5	2	N-Included		No
17	2	7.9	1.375	R71 150ksi 1-3/8"	58	0.5	0.25	N-Included		No
18	2	78.4	1.375	R71 150ksi 1-3/8"	58	0.5	0.25	N-Included		No
19	2	101.6	1.375	R71 150ksi 1-3/8"	58	0.5	0.25	N-Included		No
20	2	352.1	1.375	R71 150ksi 1-3/8"	58	0.5	0.25	N-Included		No

Custom Stiffener Connection

Stiffener	Stiffener Group ID	Location (deg.)	Width (in)	Height (in)	Thickness (in)	H. Notch (in)	V. Notch (in)	Grade (ksi)	Weld Type	Groove Depth (in)	Groove Angle (deg.)	H. Fillet Weld Size (in)	V. Fillet Weld Size (in)	Weld Strength (ksi)
1	1	21.2489102	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
2	1	33.1244551	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
3	1	45	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
4	1	56.8755449	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
5	1	68.7510898	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
6	1	117.24891	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
7	1	123.124455	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
8	1	135	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
9	1	146.875545	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
10	1	158.75109	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
11	1	201.24891	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
12	1	213.124455	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
13	1	225	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
14	1	236.875545	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
15	1	248.75109	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
16	1	291.24891	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
17	1	303.124455	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
18	1	315	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
19	1	326.875545	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80
20	1	338.75109	9	18	1	0.75	0.75	50	Both	0.5	45	0.5	0.375	80

Plot Graphic



Drilled Pier Foundation

BU #: 876320
 Site Name: 528 WHEELERS FARM RD
 Order Number: 556503 Rev 0
 TIA-222 Revision: H
 Tower Type: Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{req} (ft from TOC)	5.74	-
Soil Safety Factor	2.50	-
Max Moment (kip-ft)	3502.17	-
Rating*	50.6%	-

Soil Vertical Check

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	525.15	-
End Bearing (kips)	600.00	-
Weight of Concrete (kips)	100.49	-
Total Capacity (kips)	1125.15	-
Axial (kips)	164.49	-
Rating*	13.9%	-

Reinforced Concrete Flexure

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	5.57	-
Critical Moment (kip-ft)	3501.74	-
Critical Moment Capacity	7549.76	-
Rating*	44.2%	-

Reinforced Concrete Shear

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	15.42	-
Critical Shear (kip)	593.64	-
Critical Shear Capacity	697.68	-
Rating*	81.0%	-

Structural Foundation Rating*	81.0%
Soil Interaction Rating*	50.6%

*Rating per TIA-222-H Section 15.5

Rebar 2 Fy Override (ksi)

Concrete Strength, f _c :	3 ksi
Rebar Strength, F _y :	60 ksi
Tie Yield Strength, F _y :	40 ksi

Rebar & Pier Options

Embedded Rele Inputs

Belled Pier Inputs

Pier Design Data

Depth	19 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
<i>From 0.5' above grade to 19' below grade</i>	
Pier Diameter	7 ft
Rebar Quantity	32
Rebar Size	11
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	18 in

Soil Profile

# of Layers	7
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Groundwater Depth	7
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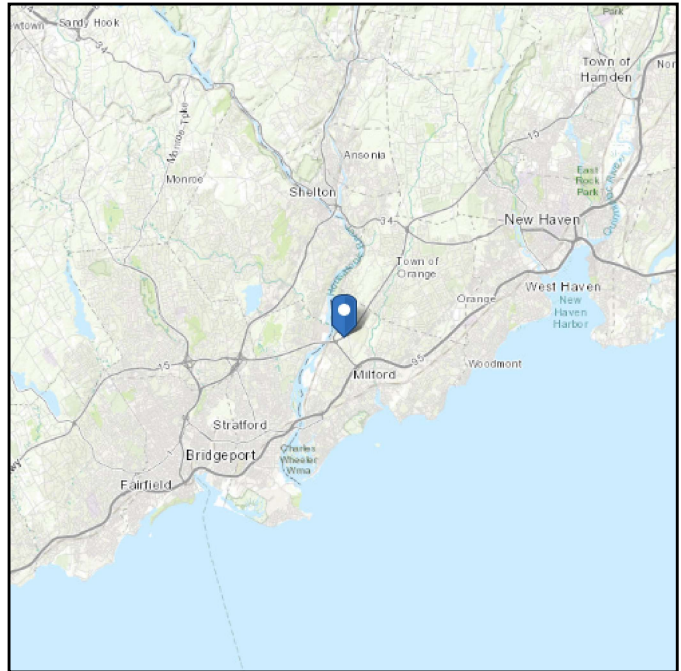
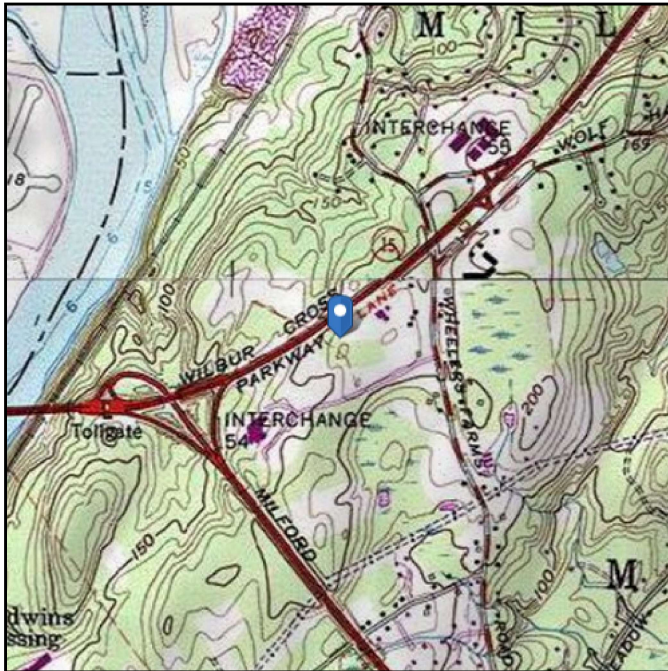
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	100	150			0.000	0.000					Cohesionless
2	2	3.5	1.5	135	150			0.000	0.000					Cohesionless
3	3.5	6	2.5	135	150		42	0.000	0.000	0.00	0.00			Cohesionless
4	6	7	1	135	150		42	0.000	0.000	1.28	1.28			Cohesionless
5	7	13.5	6.5	72.6	87.6	8	42	0.000	0.000	1.28	1.28			Cohesionless
6	13.5	14	0.5	77.6	87.6	8		3.600	3.600	1.28	1.28			Cohesive
7	14	19	5	77.6	87.6	8		3.60	3.60	4.32	4.32	20,787.58		Cohesive

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: 212.97 ft (NAVD 88)
Latitude: 41.248431
Longitude: -73.079075



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 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 Sep 09 2021

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).

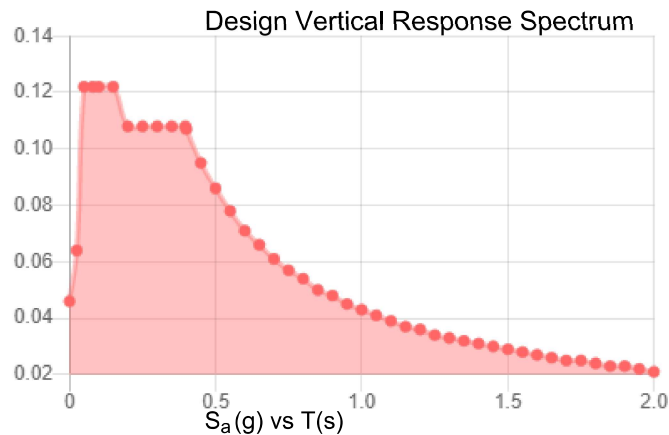
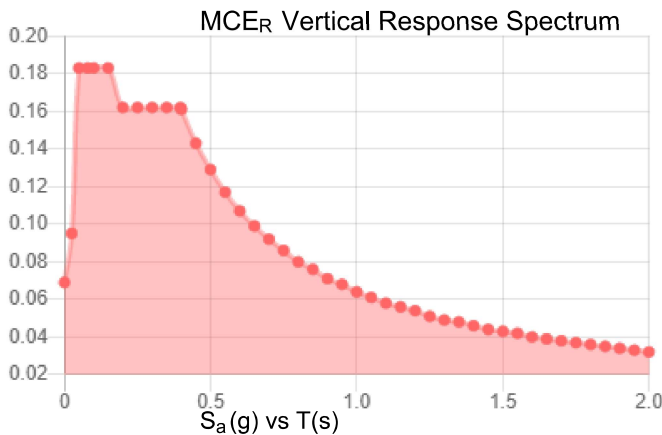
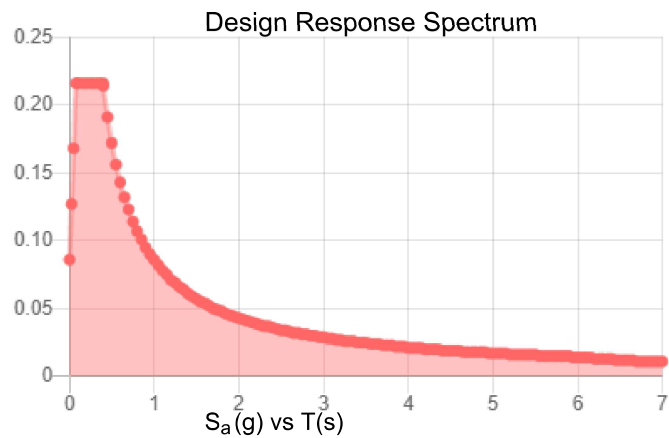
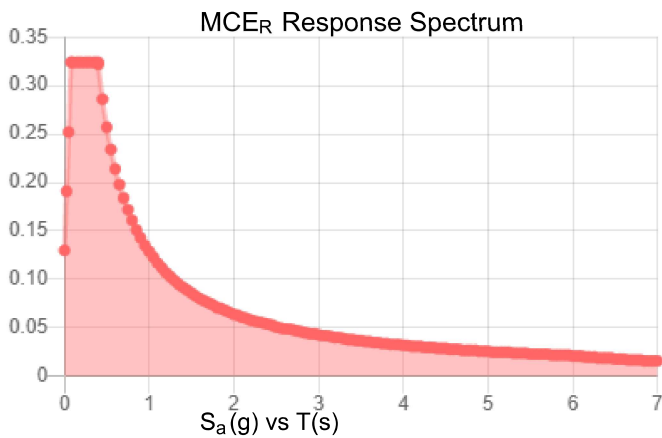
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.203	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.114
F_v :	2.4	PGA _M :	0.179
S_{MS} :	0.324	F_{PGA} :	1.572
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.216	C_v :	0.705

Seismic Design Category B



Data Accessed:

Thu Sep 09 2021

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 Sep 09 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 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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