



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

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### VIA ELECTRONIC MAIL

January 25, 2019

William Stone  
Real Estate Specialist  
Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

RE: **EM-T-MOBILE-084-190118** – T-Mobile notice of intent to modify an existing telecommunications facility located at 528 Wheelers Farm Road, Milford, Connecticut.

Dear Mr. Stone:

The Connecticut Siting Council (Council) is in receipt of your correspondence of January 24, 2019 submitted in response to the Council's January 22, 2019 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/emr



## Robidoux, Evan

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**From:** Stone, William <William.Stone@crowncastle.com>  
**Sent:** Thursday, January 24, 2019 9:28 AM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council  
**Subject:** RE: Council Incomplete Letter for EM-T-MOBILE-084-190118-WheelersFarmRd-Milford  
**Attachments:** CT11082 Passing Structural 01 18 19.pdf; CT11082E (BU 876320) L700 CD REV3 01.24.19.pdf

Evan – attached are the revised drawings as well as the revised structural analysis to address the comments received in the incomplete letter.

Please let me know if you would like original documents mailed to your office.

Thank you!

### WILL STONE

Real Estate Specialist  
T: (518) 373-3543 | M: (518) 210-0495 | F: (724) 416-6581

### CROWN CASTLE

3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065  
Crowncastle.com

**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Wednesday, January 23, 2019 9:57 AM  
**To:** Stone, William <William.Stone@crowncastle.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** Council Incomplete Letter for EM-T-MOBILE-084-190118-WheelersFarmRd-Milford

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

This email may contain confidential or privileged material. Use or disclosure of it by anyone other than the recipient is unauthorized. If you are not an intended recipient, please delete this email.

Date: **January 18, 2019**

Steve Tuttle  
Crown Castle  
8 Parkmeadow Drive  
Pittsford, NY 14534



Tower Engineering Professionals  
326 Tryon Road  
Raleigh, NC 27603  
(919) 661-6351

**Subject: Structural Analysis Report**

**Carrier Designation:** **T-Mobile Co-Locate**  
**Carrier Site Number:** CT11082E  
**Carrier Site Name:** Stratford/MP x 53/Main

**Crown Castle Designation:** **Crown Castle BU Number:** 876320  
**Crown Castle Site Name:** 528 Wheelers Farm Rd  
**Crown Castle JDE Job Number:** 510432  
**Crown Castle Work Order Number:** 1682009  
**Crown Castle Order Number:** 444441 Rev. 2

**Engineering Firm Designation:** **TEP Project Number:** 25570.206551

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

Dear Steve Tuttle,

*Tower Engineering Professionals* 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:

LC4.7: Modified Structure w/ Proposed Equipment Configuration

**Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Todd Lester, P.E. / TLI

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

01/18/2019

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## 1) INTRODUCTION

This tower is a 120-ft Monopole Tower designed by Paul J. Ford and Company. The tower has been modified multiple times in the past to accommodate additional loading. Shaft reinforcement designed by Semaan Engineering in February of 2004 was considered ineffective. The proposed modifications designed by Tower Engineering Professionals in August of 2018 were considered in this analysis. All information provided to TEP was assumed to be accurate and complete.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor:</b>	1.0
<b>Ice Thickness:</b>	1.5 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)
105.0	107.0	3	Ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	2 7	1-3/8 1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	AIR 3246 B66 w/ Mount Pipe		
		1	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
	105.0	2	Ericsson	KRY 112 144/1		
		1	SitePro 1	RMQP-496-HK		

**Table 2 - Other Considered Equipment**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
122.0	125.0	2	Andrew	VHLP2-11	6 1 3 4	5/16 1/8 7983A 1-1/4
	123.0	1	MTI Wireless Edge	MT-485025		
		1	Andrew	PX2F-52		
	122.0	3	Argus Technologies	LLPX310R w/ Mount Pipe		
		3	Samsung Telecommunications	FDD_R6_RRH		
		1	Tower Mounts	Miscellaneous [NA 507-1]		
		1	Tower Mounts	Platform Mount [LP 712-1]		
		3	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
	121.0	3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		2	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		1	Alcatel Lucent	800MHZ RRH		
		3	Alcatel Lucent	TD-RRH8x20-25		
		9	RFS Celwave	ACU-A20-N		
	120.0	1	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		2	Alcatel Lucent	800MHZ RRH		
		3	Alcatel Lucent	800 External Notch Filter		
	113.0	116.0	1	Trimble		
114.0		2	Commscope	JAHH-65B-R3B w/ Mount Pipe		
		4	Commscope	JAHH-45B-R3B w/ Mount Pipe		
		2	Andrew	DB846F65ZAXY w/ Mount Pipe		
		4	Antel	LPA-80063/4CF w/ Mount Pipe		
		2	RFS Celwave	DB-T1-6Z-8AB-0Z		
		3	Alcatel Lucent	RRH2X60-1900		
		3	Alcatel Lucent	RRH2x60-700		
		3	Alcatel Lucent	AWS-3 RRH4x45		
		3	Nokia	Airscale RRH 4T4R B5 160W		
113.0		1	Commscope	RK-36-3S		
		1	Commscope	MTC-195		
		15	Generic	P2.5 STD X72" Mount Pipes		
		1	Commscope	BSAMNT_SBS-2-2		
	2	Commscope	BSAMNT_SBS-2-3			
1	Tower Mounts	Platform Mount [LP 305-1]				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
96.0	98.0	3	Powerwave Technologies	7770.00 w/ Mount Pipe	3 6 12	3/8 3/4 1-1/4
		6	Kathrein	80010965 w/ Mount Pipe		
		3	Quintel Technology	QS66512-2 w/ Mount Pipe		
		1	Commscope	WCS-IMFQ-AMT		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 4449 B5/B12		
		6	Powerwave Technologies	LGP21401		
		3	Raycap	DC6-48-60-18-8F		
	6	Kaelus	DBC0061F1V51-2			
	96.0	96.0	1	Tower Mounts		
96.0		1	Tower Mounts	Platform Mount [LP 712-1]		
82.0	82.0	-	-	-	12	7/8
75.0	76.0	1	Trimble	ACUTIME 2000	1	1/2
	75.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Remarks	Reference	Source
Supplemental Geotechnical Report	FDH, Inc.	1613534	CCISites
Tower Foundation Drawings	Paul J. Ford and Co.	1614583	CCISites
Tower Manufacturer Drawings	Paul J. Ford and Co.	1614557	CCISites
Tower Reinforcement Drawings	Semaan Engineering Solutions	1613579	CCISites
Post Modification Inspection	Semaan Engineering Solutions	3350209	CCISites
Tower Reinforcement Drawings	B&T Engineering	2460630	CCISites
Post Modification Inspection	B&T Engineering	2460628	CCISites
Tower Reinforcement Drawings	B&T Engineering	3349207	CCISites
Post Modification Inspection	B&T Engineering	3349204	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Co.	3338935	CCISites
Post Modification Inspection	Tower Engineering Professionals	3753892	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Co.	4961357	CCISites
Post Modification Inspection	SGS, Inc.	5760332	CCISites
Tower Reinforcement Drawings	Paul J. Ford and Co.	5873963	CCISites
Post Modification Inspection	FDH Velocitel	6112300	CCISites
Tower Reinforcement Drawings	Tower Engineering Professionals	7728833	CCISites

### 3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

### 3.2) Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
- 3) All tower components are in sufficient condition to carry their full design capacity.
- 4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 5) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
- 6) The existing base plate grout was not considered in this analysis.
- 7) The shaft modifications designed by Semaan Engineering in February of 2004 were determined to be ineffective and not considered structurally in this analysis.

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

## 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)<sup>1,2</sup>**

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP23.01x22x0.25	Pole	8.4%	Pass
115 - 110	Pole	TP24.02x23.01x0.25	Pole	18.8%	Pass
110 - 105	Pole	TP25.031x24.02x0.25	Pole	29.5%	Pass
105 - 100	Pole	TP26.041x25.031x0.25	Pole	44.6%	Pass
100 - 99.25	Pole	TP26.192x26.041x0.25	Pole	46.5%	Pass
99.25 - 99	Pole + Reinf.	TP26.243x26.192x0.3625	Reinf. 14 Tension Rupture	43.2%	Pass
99 - 94	Pole + Reinf.	TP27.253x26.243x0.3563	Reinf. 14 Tension Rupture	57.8%	Pass
94 - 90.08	Pole + Reinf.	TP28.045x27.253x0.35	Reinf. 14 Tension Rupture	69.1%	Pass
90.08 - 89.83	Pole + Reinf.	TP28.096x28.045x0.5125	Reinf. 11 Tension Rupture	57.3%	Pass
89.83 - 89.5	Pole + Reinf.	TP28.162x28.096x0.5125	Reinf. 11 Tension Rupture	58.0%	Pass
89.5 - 89.25	Pole + Reinf.	TP28.213x28.162x0.725	Reinf. 15 Tension Rupture	44.9%	Pass
89.25 - 84.25	Pole + Reinf.	TP29.223x28.213x0.7	Reinf. 15 Tension Rupture	53.8%	Pass
84.25 - 81.75	Pole + Reinf.	TP30.486x29.223x0.7	Reinf. 15 Tension Rupture	58.1%	Pass
81.75 - 77	Pole + Reinf.	TP30.188x29.228x0.8625	Reinf. 17 Tension Rupture	52.3%	Pass



Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
77 - 76.75	Pole + Reinf.	TP30.239x30.188x0.8625	Reinf. 17 Tension Rupture	52.6%	Pass
76.75 - 76.5	Pole + Reinf.	TP30.289x30.239x0.9625	Reinf. 14 Tension Rupture	49.4%	Pass
76.5 - 75.5	Pole + Reinf.	TP30.491x30.289x0.9625	Reinf. 14 Tension Rupture	50.6%	Pass
75.5 - 75.25	Pole + Reinf.	TP30.542x30.491x0.7625	Reinf. 17 Tension Rupture	58.2%	Pass
75.25 - 74.5	Pole + Reinf.	TP30.693x30.542x0.7625	Reinf. 17 Tension Rupture	59.2%	Pass
74.5 - 74.25	Pole + Reinf.	TP30.744x30.693x0.8375	Reinf. 17 Tension Rupture	62.3%	Pass
74.25 - 72	Pole + Reinf.	TP31.198x30.744x0.825	Reinf. 17 Tension Rupture	65.4%	Pass
72 - 71.75	Pole + Reinf.	TP31.249x31.198x0.7625	Reinf. 17 Tension Rupture	62.7%	Pass
71.75 - 70.5	Pole + Reinf.	TP31.501x31.249x0.7625	Reinf. 17 Tension Rupture	64.2%	Pass
70.5 - 70.25	Pole + Reinf.	TP31.552x31.501x0.7875	Reinf. 17 Tension Rupture	64.3%	Pass
70.25 - 70	Pole + Reinf.	TP31.602x31.552x0.7875	Reinf. 17 Tension Rupture	64.6%	Pass
70 - 69.75	Pole + Reinf.	TP31.653x31.602x0.725	Reinf. 17 Tension Rupture	66.9%	Pass
69.75 - 69.5	Pole + Reinf.	TP31.703x31.653x0.875	Reinf. 4 Tension Rupture	56.8%	Pass
69.5 - 69.25	Pole + Reinf.	TP31.754x31.703x0.75	Reinf. 4 Tension Rupture	63.5%	Pass
69.25 - 64.25	Pole + Reinf.	TP32.764x31.754x0.7375	Reinf. 4 Tension Rupture	69.2%	Pass
64.25 - 59.25	Pole + Reinf.	TP33.774x32.764x0.7125	Reinf. 4 Tension Rupture	74.5%	Pass
59.25 - 56	Pole + Reinf.	TP34.431x33.774x0.7125	Reinf. 4 Tension Rupture	77.8%	Pass
56 - 55.75	Pole + Reinf.	TP34.481x34.431x0.8125	Reinf. 7 Tension Rupture	74.9%	Pass
55.75 - 55.5	Pole + Reinf.	TP34.532x34.481x0.8125	Reinf. 7 Tension Rupture	75.2%	Pass
55.5 - 55.25	Pole + Reinf.	TP34.582x34.532x0.8875	Reinf. 7 Tension Rupture	67.7%	Pass
55.25 - 54	Pole + Reinf.	TP34.835x34.582x0.875	Reinf. 7 Tension Rupture	68.8%	Pass
54 - 53.75	Pole + Reinf.	TP34.885x34.835x0.75	Reinf. 7 Tension Rupture	78.9%	Pass
53.75 - 53.5	Pole + Reinf.	TP34.936x34.885x0.7375	Reinf. 7 Tension Rupture	79.2%	Pass
53.5 - 53.25	Pole + Reinf.	TP34.986x34.936x0.6625	Reinf. 4 Tension Rupture	85.0%	Pass
53.25 - 53	Pole + Reinf.	TP35.037x34.986x0.6	Reinf. 12 Tension Rupture	87.9%	Pass
53 - 48	Pole + Reinf.	TP36.047x35.037x0.5875	Reinf. 12 Tension Rupture	93.1%	Pass
48 - 44.5	Pole + Reinf.	TP37.714x36.047x0.5875	Reinf. 12 Tension Rupture	96.6%	Pass
44.5 - 38.75	Pole + Reinf.	TP37.291x36.129x0.6625	Reinf. 4 Tension Rupture	94.1%	Pass
38.75 - 34.75	Pole + Reinf.	TP38.099x37.291x0.6625	Reinf. 4 Tension Rupture	97.1%	Pass
34.75 - 34.5	Pole + Reinf.	TP38.15x38.099x0.825	Reinf. 3 Tension Rupture	77.8%	Pass
34.5 - 33.75	Pole + Reinf.	TP38.301x38.15x0.825	Reinf. 3 Tension Rupture	78.3%	Pass
33.75 - 33.5	Pole + Reinf.	TP38.352x38.301x0.625	Reinf. 6 Tension Rupture	96.4%	Pass
33.5 - 32.75	Pole + Reinf.	TP38.503x38.352x0.625	Reinf. 6 Tension Rupture	96.9%	Pass
32.75 - 32.5	Pole + Reinf.	TP38.554x38.503x0.925	Reinf. 20 Tension Rupture	67.7%	Pass
32.5 - 27.5	Pole + Reinf.	TP39.564x38.554x0.9	Reinf. 20 Tension Rupture	70.4%	Pass
27.5 - 24	Pole + Reinf.	TP40.271x39.564x0.9	Reinf. 20 Tension Rupture	72.2%	Pass
24 - 23.75	Pole + Reinf.	TP40.322x40.271x1	Reinf. 3 Tension Rupture	70.1%	Pass
23.75 - 18.75	Pole + Reinf.	TP41.332x40.322x0.975	Reinf. 3 Tension Rupture	72.6%	Pass
18.75 - 14.25	Pole + Reinf.	TP42.241x41.332x0.975	Reinf. 3 Tension Rupture	74.8%	Pass
14.25 - 14	Pole + Reinf.	TP42.291x42.241x1	Reinf. 20 Tension Rupture	67.7%	Pass
14 - 12.75	Pole + Reinf.	TP42.544x42.291x0.9875	Reinf. 20 Tension Rupture	68.3%	Pass
12.75 - 12.5	Pole + Reinf.	TP42.595x42.544x0.775	Reinf. 3 Tension Rupture	90.9%	Pass
12.5 - 7.5	Pole + Reinf.	TP43.605x42.595x0.7625	Reinf. 3 Tension Rupture	93.3%	Pass
7.5 - 5	Pole + Reinf.	TP44.11x43.605x0.75	Reinf. 3 Tension Rupture	94.5%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
5 - 4.75	Pole + Reinf.	TP44.16x44.11x0.9125	Reinf. 3 Tension Rupture	85.9%	Pass
4.75 - 4.5	Pole + Reinf.	TP44.211x44.16x0.875	Reinf. 1 Compression	86.6%	Pass
4.5 - 0	Pole + Reinf.	TP45.12x44.211x0.8625	Reinf. 1 Compression	88.4%	Pass
				Summary	
			Pole	75.0%	Pass
			Reinforcement	97.1%	Pass
			<b>Overall</b>	<b>97.1%</b>	<b>Pass</b>

**Table 5 - Tower Component Stresses vs. Capacity - LC4.7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	88.5	Pass
1,2	Base Plate	-	63.6	Pass
1,2	Base Foundation Soil Interaction	-	73.7	Pass
1,2	Base Foundation Structural	-	65.0	Pass

<b>Structure Rating (max from all components) =</b>	<b>97.1%</b>
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Notes:

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

**4.1) Recommendations**

- 1) If the load differs from that described in Tables 1 and 2 of this report, the referenced drawings, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) 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**



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 1 of 62
	<b>Project</b> TEP No. 25570.206551	<b>Date</b> 14:43:12 01/17/19
	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

## 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: 213.000 ft.

Basic wind speed of 125 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 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56.00 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 1.05.

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

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

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

## Options

<ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>√ Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>Ignore KL/ry For 60 Deg. Angle Legs</li> </ul>	<ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>Include Angle Block Shear Check</li> <li>Use TIA-222-H Bracing Resist. Exemption</li> <li>Use TIA-222-H Tension Splice Exemption</li> <li style="text-align: center;">Poles</li> <li>√ Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are Known</li> </ul>
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## Tapered Pole Section Geometry

**tnxTower****Tower Engineering  
Professionals, Inc.**326 Tryon Road  
Raleigh, NC 27603  
Phone: (919) 661-6351  
FAX: (919) 661-6350**Job**

528 Wheelers Farm Rd (BU 876320)

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**Project**

TEP No. 25570.206551

**Date**

14:43:12 01/17/19

**Client**

Crown Castle

**Designed by**

tmlester

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	120.000-115.000	5.000	0.00	12	22.0000	23.0102	0.2500	1.0000	A607-60 (60 ksi)
L2	115.000-110.000	5.000	0.00	12	23.0102	24.0205	0.2500	1.0000	A607-60 (60 ksi)
L3	110.000-105.000	5.000	0.00	12	24.0205	25.0307	0.2500	1.0000	A607-60 (60 ksi)
L4	105.000-100.000	5.000	0.00	12	25.0307	26.0410	0.2500	1.0000	A607-60 (60 ksi)
L5	100.000-99.250	0.750	0.00	12	26.0410	26.1925	0.2500	1.0000	A607-60 (60 ksi)
L6	99.250-99.000	0.250	0.00	12	26.1925	26.2430	0.3625	1.4500	A607-60 (60 ksi)
L7	99.000-94.000	5.000	0.00	12	26.2430	27.2532	0.3563	1.4250	A607-60 (60 ksi)
L8	94.000-90.080	3.920	0.00	12	27.2532	28.0453	0.3500	1.4000	A607-60 (60 ksi)
L9	90.080-89.830	0.250	0.00	12	28.0453	28.0958	0.5125	2.0500	A607-60 (60 ksi)
L10	89.830-89.500	0.330	0.00	12	28.0958	28.1625	0.5125	2.0500	A607-60 (60 ksi)
L11	89.500-89.250	0.250	0.00	12	28.1625	28.2130	0.7250	2.9000	A607-60 (60 ksi)
L12	89.250-84.250	5.000	0.00	12	28.2130	29.2232	0.7000	2.8000	A607-60 (60 ksi)
L13	84.250-78.000	6.250	3.75	12	29.2232	30.4860	0.7000	2.8000	A607-60 (60 ksi)
L14	78.000-77.000	4.750	0.00	12	29.2283	30.1880	0.8625	3.4500	A607-60 (60 ksi)
L15	77.000-76.750	0.250	0.00	12	30.1880	30.2385	0.8625	3.4500	A607-60 (60 ksi)
L16	76.750-76.500	0.250	0.00	12	30.2385	30.2890	0.9625	3.8500	A607-60 (60 ksi)
L17	76.500-75.500	1.000	0.00	12	30.2890	30.4911	0.9625	3.8500	A607-60 (60 ksi)
L18	75.500-75.250	0.250	0.00	12	30.4911	30.5416	0.7625	3.0500	A607-60 (60 ksi)
L19	75.250-74.500	0.750	0.00	12	30.5416	30.6931	0.7625	3.0500	A607-60 (60 ksi)
L20	74.500-74.250	0.250	0.00	12	30.6931	30.7436	0.8375	3.3500	A607-60 (60 ksi)
L21	74.250-72.000	2.250	0.00	12	30.7436	31.1982	0.8250	3.3000	A607-60 (60 ksi)
L22	72.000-71.750	0.250	0.00	12	31.1982	31.2487	0.7625	3.0500	A607-60 (60 ksi)
L23	71.750-70.500	1.250	0.00	12	31.2487	31.5013	0.7625	3.0500	A607-60 (60 ksi)
L24	70.500-70.250	0.250	0.00	12	31.5013	31.5518	0.7875	3.1500	A607-60 (60 ksi)
L25	70.250-70.000	0.250	0.00	12	31.5518	31.6023	0.7875	3.1500	A607-60 (60 ksi)
L26	70.000-69.750	0.250	0.00	12	31.6023	31.6528	0.7250	2.9000	A607-60 (60 ksi)
L27	69.750-69.500	0.250	0.00	12	31.6528	31.7033	0.8750	3.5000	A607-60 (60 ksi)
L28	69.500-69.250	0.250	0.00	12	31.7033	31.7538	0.7500	3.0000	A607-60 (60 ksi)
L29	69.250-64.250	5.000	0.00	12	31.7538	32.7640	0.7375	2.9500	A607-60 (60 ksi)
L30	64.250-59.250	5.000	0.00	12	32.7640	33.7742	0.7125	2.8500	A607-60 (60 ksi)

**tnxTower****Tower Engineering  
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528 Wheelers Farm Rd (BU 876320)

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**Project**

TEP No. 25570.206551

**Date**

14:43:12 01/17/19

**Client**

Crown Castle

**Designed by**

tmlester

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
L31	59.250-56.000	3.250	0.00	12	33.7742	34.4309	0.7125	2.8500	A607-60 (60 ksi)
L32	56.000-55.750	0.250	0.00	12	34.4309	34.4814	0.8125	3.2500	A607-60 (60 ksi)
L33	55.750-55.500	0.250	0.00	12	34.4814	34.5319	0.8125	3.2500	A607-60 (60 ksi)
L34	55.500-55.250	0.250	0.00	12	34.5319	34.5824	0.8875	3.5500	A607-60 (60 ksi)
L35	55.250-54.000	1.250	0.00	12	34.5824	34.8349	0.8750	3.5000	A607-60 (60 ksi)
L36	54.000-53.750	0.250	0.00	12	34.8349	34.8854	0.7500	3.0000	A607-60 (60 ksi)
L37	53.750-53.500	0.250	0.00	12	34.8854	34.9359	0.7375	2.9500	A607-60 (60 ksi)
L38	53.500-53.250	0.250	0.00	12	34.9359	34.9865	0.6625	2.6500	A607-60 (60 ksi)
L39	53.250-53.000	0.250	0.00	12	34.9865	35.0370	0.6000	2.4000	A607-60 (60 ksi)
L40	53.000-48.000	5.000	0.00	12	35.0370	36.0472	0.5875	2.3500	A607-60 (60 ksi)
L41	48.000-39.750	8.250	4.75	12	36.0472	37.7140	0.5875	2.3500	A607-60 (60 ksi)
L42	39.750-38.750	5.750	0.00	12	36.1293	37.2910	0.6625	2.6500	A607-60 (60 ksi)
L43	38.750-34.750	4.000	0.00	12	37.2910	38.0992	0.6625	2.6500	A607-60 (60 ksi)
L44	34.750-34.500	0.250	0.00	12	38.0992	38.1497	0.8250	3.3000	A607-60 (60 ksi)
L45	34.500-33.750	0.750	0.00	12	38.1497	38.3012	0.8250	3.3000	A607-60 (60 ksi)
L46	33.750-33.500	0.250	0.00	12	38.3012	38.3517	0.6250	2.5000	A607-60 (60 ksi)
L47	33.500-32.750	0.750	0.00	12	38.3517	38.5033	0.6250	2.5000	A607-60 (60 ksi)
L48	32.750-32.500	0.250	0.00	12	38.5033	38.5538	0.9250	3.7000	A607-60 (60 ksi)
L49	32.500-27.500	5.000	0.00	12	38.5538	39.5640	0.9000	3.6000	A607-60 (60 ksi)
L50	27.500-24.000	3.500	0.00	12	39.5640	40.2711	0.9000	3.6000	A607-60 (60 ksi)
L51	24.000-23.750	0.250	0.00	12	40.2711	40.3216	1.0000	4.0000	A607-60 (60 ksi)
L52	23.750-18.750	5.000	0.00	12	40.3216	41.3318	0.9750	3.9000	A607-60 (60 ksi)
L53	18.750-14.250	4.500	0.00	12	41.3318	42.2410	0.9750	3.9000	A607-60 (60 ksi)
L54	14.250-14.000	0.250	0.00	12	42.2410	42.2915	1.0000	4.0000	A607-60 (60 ksi)
L55	14.000-12.750	1.250	0.00	12	42.2915	42.5440	0.9875	3.9500	A607-60 (60 ksi)
L56	12.750-12.500	0.250	0.00	12	42.5440	42.5945	0.7750	3.1000	A607-60 (60 ksi)
L57	12.500-7.500	5.000	0.00	12	42.5945	43.6047	0.7625	3.0500	A607-60 (60 ksi)
L58	7.500-5.000	2.500	0.00	12	43.6047	44.1098	0.7500	3.0000	A607-60 (60 ksi)
L59	5.000-4.750	0.250	0.00	12	44.1098	44.1603	0.9125	3.6500	A607-60 (60 ksi)
L60	4.750-4.500	0.250	0.00	12	44.1603	44.2108	0.8750	3.5000	A607-60 (60 ksi)
L61	4.500-0.000	4.500		12	44.2108	45.1200	0.8625	3.4500	A607-60

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	4 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	(60 ksi)

### Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	I/Q	w	w/t
	in	in <sup>2</sup>	in <sup>4</sup>	in	in	in <sup>3</sup>	in <sup>4</sup>	in <sup>2</sup>	in	
L1	22.6879	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.7338	18.3220	1211.4688	8.1482	11.9193	101.6392	2454.7642	9.0175	5.4967	21.987
L2	23.7338	18.3220	1211.4688	8.1482	11.9193	101.6392	2454.7642	9.0175	5.4967	21.987
	24.7796	19.1352	1380.0520	8.5098	12.4426	110.9134	2796.3596	9.4178	5.7675	23.07
L3	24.7796	19.1352	1380.0520	8.5098	12.4426	110.9134	2796.3596	9.4178	5.7675	23.07
	25.8255	19.9485	1563.5914	8.8715	12.9659	120.5925	3168.2601	9.8180	6.0382	24.153
L4	25.8255	19.9485	1563.5914	8.8715	12.9659	120.5925	3168.2601	9.8180	6.0382	24.153
	26.8714	20.7617	1762.7225	9.2332	13.4892	130.6765	3571.7537	10.2183	6.3090	25.236
L5	26.8714	20.7617	1762.7225	9.2332	13.4892	130.6765	3571.7537	10.2183	6.3090	25.236
	27.0283	20.8837	1793.9763	9.2874	13.5677	132.2240	3635.0824	10.2783	6.3496	25.398
L6	26.9886	30.1501	2567.5709	9.2471	13.5677	189.2413	5202.5948	14.8389	6.0481	16.684
	27.0409	30.2090	2582.6635	9.2652	13.5939	189.9873	5233.1764	14.8680	6.0616	16.722
L7	27.0431	29.6953	2539.9741	9.2675	13.5939	186.8470	5146.6761	14.6151	6.0784	17.062
	28.0890	30.8542	2849.0997	9.6291	14.1172	201.8179	5773.0484	15.1855	6.3491	17.822
L8	28.0912	30.3199	2801.0672	9.6314	14.1172	198.4155	5675.7215	14.9226	6.3659	18.188
	28.9111	31.2126	3055.8107	9.9149	14.5274	210.3474	6191.9009	15.3619	6.5781	18.795
L9	28.8538	45.4359	4396.2783	9.8567	14.5274	302.6188	8908.0517	22.3622	6.1426	11.986
	28.9061	45.5193	4420.5191	9.8748	14.5536	303.7403	8957.1702	22.4032	6.1562	12.012
L10	28.9061	45.5193	4420.5191	9.8748	14.5536	303.7403	8957.1702	22.4032	6.1562	12.012
	28.9751	45.6293	4452.6528	9.8987	14.5882	305.2240	9022.2818	22.4574	6.1740	12.047
L11	28.9002	64.0527	6154.7606	9.8226	14.5882	421.9014	12471.2135	31.5248	5.6045	7.73
	28.9525	64.1707	6188.8157	9.8407	14.6143	423.4763	12540.2184	31.5828	5.6181	7.749
L12	28.9613	62.0142	5991.7268	9.8496	14.6143	409.9902	12140.8629	30.5215	5.6851	8.122
	30.0072	64.2913	6676.2823	10.2113	15.1376	441.0391	13527.9580	31.6422	5.9558	8.508
L13	30.0072	64.2913	6676.2823	10.2113	15.1376	441.0391	13527.9580	31.6422	5.9558	8.508
	31.3145	67.1376	7602.8499	10.6634	15.7917	481.4445	15405.4352	33.0431	6.2942	8.992
L14	30.7395	78.7790	8090.7168	10.1550	15.1403	534.3839	16393.9857	38.7726	5.5217	6.402
	30.9487	81.4443	8940.0035	10.4985	15.6374	571.7069	18114.8709	40.0844	5.7789	6.7
L15	30.9487	81.4443	8940.0035	10.4985	15.6374	571.7069	18114.8709	40.0844	5.7789	6.7
	31.0010	81.5846	8986.2777	10.5166	15.6636	573.7062	18208.6349	40.1534	5.7924	6.716
L16	30.9657	90.7337	9926.1015	10.4808	15.6636	633.7069	20112.9727	44.6564	5.5244	5.74
	31.0180	90.8903	9977.5667	10.4989	15.6897	635.9303	20217.2553	44.7334	5.5380	5.754
L17	31.0180	90.8903	9977.5667	10.4989	15.6897	635.9303	20217.2553	44.7334	5.5380	5.754
	31.2271	91.5164	10185.2068	10.5712	15.7944	644.8629	20637.9903	45.0416	5.5921	5.81
L18	31.2977	72.9911	8233.8656	10.6428	15.7944	521.3163	16684.0439	35.9240	6.1281	8.037
	31.3500	73.1151	8275.9059	10.6609	15.8205	523.1115	16769.2290	35.9850	6.1416	8.055
L19	31.3500	73.1151	8275.9059	10.6609	15.8205	523.1115	16769.2290	35.9850	6.1416	8.055
	31.5069	73.4871	8402.8850	10.7152	15.8990	528.5155	17026.5231	36.1681	6.1823	8.108
L20	31.4804	80.5131	9160.1910	10.6883	15.8990	576.1477	18561.0304	39.6261	5.9813	7.142
	31.5327	80.6493	9206.7616	10.7064	15.9252	578.1255	18655.3950	39.6931	5.9948	7.158
L21	31.5371	79.4788	9080.7242	10.7109	15.9252	570.2112	18400.0092	39.1171	6.0283	7.307
	32.0077	80.6864	9500.9688	10.8736	16.1607	587.9067	19251.5386	39.7114	6.1501	7.455
L22	32.0298	74.7273	8835.5182	10.8960	16.1607	546.7296	17903.1553	36.7785	6.3176	8.285
	32.0821	74.8513	8879.5805	10.9141	16.1868	548.5680	17992.4375	36.8395	6.3312	8.303
L23	32.0821	74.8513	8879.5805	10.9141	16.1868	548.5680	17992.4375	36.8395	6.3312	8.303
	32.3435	75.4714	9102.0909	11.0045	16.3177	557.8062	18443.3039	37.1447	6.3988	8.392
L24	32.3347	77.8824	9377.6023	10.9955	16.3177	574.6904	19001.5646	38.3314	6.3318	8.04
	32.3870	78.0105	9423.9439	11.0136	16.3438	576.6059	19095.4653	38.3944	6.3454	8.058
L25	32.3870	78.0105	9423.9439	11.0136	16.3438	576.6059	19095.4653	38.3944	6.3454	8.058
	32.4393	78.1386	9470.4380	11.0317	16.3700	578.5245	19189.6749	38.4574	6.3589	8.075



<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	5 of 62
<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L26	32.4613	72.0830	8771.9753	11.0541	16.3700	535.8572	17774.4002	35.4771	6.5264	9.002
	32.5136	72.2010	8815.0942	11.0722	16.3962	537.6319	17861.7706	35.5351	6.5400	9.021
L27	32.4607	86.7165	10484.8600	11.0185	16.3962	639.4708	21245.1690	42.6792	6.1380	7.015
	32.5130	86.8588	10536.5655	11.0365	16.4223	641.6005	21349.9382	42.7492	6.1515	7.03
L28	32.5571	74.7522	9141.6464	11.0813	16.4223	556.6600	18523.4540	36.7908	6.4865	8.649
	32.6094	74.8742	9186.4718	11.0994	16.4485	558.4998	18614.2825	36.8508	6.5000	8.667
L29	32.6138	73.6560	9044.2945	11.1038	16.4485	549.8560	18326.1927	36.2512	6.5335	8.859
	33.6596	76.0550	9957.1062	11.4655	16.9718	586.6866	20175.7967	37.4319	6.8043	9.226
L30	33.6685	73.5342	9642.1220	11.4744	16.9718	568.1273	19537.5533	36.1913	6.8713	9.644
	34.7143	75.8519	10582.8602	11.8361	17.4950	604.9061	21443.7440	37.3320	7.1420	10.024
L31	34.7143	75.8519	10582.8602	11.8361	17.4950	604.9061	21443.7440	37.3320	7.1420	10.024
	35.3941	77.3583	11226.0164	12.0712	17.8352	629.4310	22746.9527	38.0734	7.3180	10.271
L32	35.3588	87.9540	12688.0363	12.0354	17.8352	711.4050	25709.4015	43.2883	7.0500	8.677
	35.4111	88.0862	12745.3118	12.0535	17.8613	713.5695	25825.4572	43.3533	7.0635	8.694
L33	35.4111	88.0862	12745.3118	12.0535	17.8613	713.5695	25825.4572	43.3533	7.0635	8.694
	35.4634	88.2183	12802.7595	12.0715	17.8875	715.7374	25941.8616	43.4184	7.0770	8.71
L34	35.4369	96.1472	13891.4450	12.0447	17.8875	776.6003	28147.8337	47.3207	6.8760	7.748
	35.4892	96.2915	13954.1043	12.0628	17.9137	778.9639	28274.7984	47.3918	6.8896	7.763
L35	35.4936	94.9705	13772.8845	12.0672	17.9137	768.8476	27907.5980	46.7416	6.9231	7.912
	35.7551	95.6821	14084.7854	12.1577	18.0445	780.5586	28539.5938	47.0918	6.9908	7.989
L36	35.7992	82.3151	12206.4761	12.2024	18.0445	676.4654	24733.6299	40.5130	7.3258	9.768
	35.8515	82.4371	12260.8224	12.2205	18.0707	678.4934	24843.7502	40.5730	7.3393	9.786
L37	35.8559	81.0928	12069.7250	12.2250	18.0707	667.9184	24456.5351	39.9114	7.3728	9.997
	35.9082	81.2128	12123.3632	12.2430	18.0968	669.9167	24565.2206	39.9705	7.3863	10.015
L38	35.9347	73.1138	10962.2871	12.2699	18.0968	605.7576	22212.5658	35.9844	7.5873	11.453
	35.9869	73.2216	11010.8251	12.2880	18.1230	607.5613	22310.9169	36.0374	7.6009	11.473
L39	36.0090	66.4346	10026.6413	12.3104	18.1230	553.2555	20316.6936	32.6971	7.7684	12.947
	36.0613	66.5322	10070.8904	12.3284	18.1492	554.8960	20406.3543	32.7451	7.7819	12.97
L40	36.0657	65.1698	9871.8223	12.3329	18.1492	543.9275	20002.9883	32.0746	7.8154	13.303
	37.1115	67.0808	10765.9848	12.6946	18.6724	576.5710	21814.8040	33.0151	8.0861	13.764
L41	37.1115	67.0808	10765.9848	12.6946	18.6724	576.5710	21814.8040	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	12147.7009	12.6971	18.7150	649.0896	24614.5354	37.2373	7.9072	11.935
	38.3728	78.1378	13380.9250	13.1130	19.3168	692.7109	27113.3819	38.4571	8.2185	12.405
L43	38.3728	78.1378	13380.9250	13.1130	19.3168	692.7109	27113.3819	38.4571	8.2185	12.405
	39.2095	79.8618	14286.2974	13.4023	19.7354	723.8929	28947.9117	39.3055	8.4351	12.732
L44	39.1521	99.0189	17559.8202	13.3442	19.7354	889.7637	35580.9564	48.7341	7.9996	9.696
	39.2044	99.1530	17631.3026	13.3622	19.7615	892.2029	35725.7991	48.8001	8.0131	9.713
L45	39.2044	99.1530	17631.3026	13.3622	19.7615	892.2029	35725.7991	48.8001	8.0131	9.713
	39.3613	99.5556	17846.9103	13.4165	19.8400	899.5404	36162.6788	48.9982	8.0537	9.762
L46	39.4319	75.8234	13738.0073	13.4881	19.8400	692.4388	27836.9273	37.3180	8.5897	13.744
	39.4842	75.9250	13793.3343	13.5062	19.8662	694.3118	27949.0348	37.3680	8.6033	13.765
L47	39.4842	75.9250	13793.3343	13.5062	19.8662	694.3118	27949.0348	37.3680	8.6033	13.765
	39.6410	76.2300	13960.2040	13.5604	19.9447	699.9460	28287.1581	37.5181	8.6439	13.83
L48	39.5352	111.9268	20174.0650	13.4530	19.9447	1011.5007	40878.1252	55.0870	7.8399	8.476
	39.5875	112.0773	20255.5240	13.4711	19.9709	1014.2544	41043.1832	55.1610	7.8534	8.49
L49	39.5963	109.1206	19747.3848	13.4800	19.9709	988.8104	40013.5554	53.7058	7.9204	8.8
	40.6421	112.0481	21379.7782	13.8417	20.4941	1043.2148	43321.2269	55.1467	8.1911	9.101
L50	40.6421	112.0481	21379.7782	13.8417	20.4941	1043.2148	43321.2269	55.1467	8.1911	9.101
	41.3742	114.0974	22574.4207	14.0948	20.8604	1082.1650	45741.8965	56.1553	8.3807	9.312
L51	41.3389	126.4529	24892.0495	14.0590	20.8604	1193.2667	50438.0408	62.2363	8.1127	8.113
	41.3912	126.6155	24988.2187	14.0771	20.8866	1196.3763	50632.9058	62.3163	8.1262	8.126
L52	41.4000	123.5286	24410.0125	14.0861	20.8866	1168.6932	49461.3032	60.7970	8.1932	8.403
	42.4459	126.7001	26338.8141	14.4477	21.4099	1230.2185	53369.5783	62.3580	8.4639	8.681
L53	42.4459	126.7001	26338.8141	14.4477	21.4099	1230.2185	53369.5783	62.3580	8.4639	8.681
	43.3871	129.5545	28159.3266	14.7732	21.8808	1286.9413	57058.4300	63.7628	8.7076	8.931
L54	43.3783	132.7959	28828.9011	14.7643	21.8808	1317.5423	58415.1696	65.3581	8.6406	8.641
	43.4306	132.9585	28934.9537	14.7823	21.9070	1320.8098	58630.0608	65.4381	8.6541	8.654
L55	43.4350	131.3363	28599.2242	14.7868	21.9070	1305.4845	57949.7819	64.6397	8.6876	8.798
	43.6965	132.1393	29127.0376	14.8772	22.0378	1321.6853	59019.2750	65.0350	8.7553	8.866
L56	43.7714	104.2346	23211.6630	14.9533	22.0378	1053.2659	47033.1223	51.3011	9.3248	12.032
	43.8237	104.3606	23295.9707	14.9714	22.0640	1055.8380	47203.9525	51.3631	9.3383	12.049



<p><b>tnxTower</b></p> <p><b>Tower Engineering Professionals, Inc.</b>  326 Tryon Road  Raleigh, NC 27603  Phone: (919) 661-6351  FAX: (919) 661-6350</p>	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 7 of 62
	<b>Project</b> TEP No. 25570.206551	<b>Date</b> 14:43:12 01/17/19
	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

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 <sup>2</sup>	in							
L21				1	1	0.894048			
74.250-72.000									
L22				1	1	1.07313			
72.000-71.750									
L23				1	1	1.06768			
71.750-70.500									
L24				1	1	1.09135			
70.500-70.250									
L25				1	1	1.09021			
70.250-70.000									
L26				1	1	1.11122			
70.000-69.750									
L27				1	1	0.981926			
69.750-69.500									
L28				1	1	0.979276			
69.500-69.250									
L29				1	1	0.977438			
69.250-64.250									
L30				1	1	0.993457			
64.250-59.250									
L31				1	1	0.982651			
59.250-56.000									
L32				1	1	1.01703			
56.000-55.750									
L33				1	1	1.01608			
55.750-55.500									
L34				1	1	0.978222			
55.500-55.250									
L35				1	1	0.987109			
55.250-54.000									
L36				1	1	1.03699			
54.000-53.750									
L37				1	1	1.05325			
53.750-53.500									
L38				1	1	1.10735			
53.500-53.250									
L39				1	1	1.09715			
53.250-53.000									
L40				1	1	1.10333			
53.000-48.000									
L41				1	1	1.09216			
48.000-39.750									
L42				1	1	0.976499			
39.750-38.750									
L43				1	1	0.967639			
38.750-34.750									
L44				1	1	0.981987			
34.750-34.500									
L45				1	1	0.979855			
34.500-33.750									
L46				1	1	1.02183			
33.750-33.500									
L47				1	1	1.02014			
33.500-32.750									
L48				1	1	0.984793			
32.750-32.500									
L49				1	1	0.995935			
32.500-27.500									
L50				1	1	0.985531			

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	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
27.500-24.000									
L51				1	1	0.926857			
24.000-23.750									
L52				1	1	0.935865			
23.750-18.750									
L53				1	1	0.92372			
18.750-14.250									
L54				1	1	0.988502			
14.250-14.000									
L55				1	1	0.996938			
14.000-12.750									
L56				1	1	0.951021			
12.750-12.500									
L57				1	1	0.955134			
12.500-7.500									
L58				1	1	0.965286			
7.500-5.000									
L59				1	1	0.899355			
5.000-4.750									
L60				1	1	0.895485			
4.750-4.500									
L61				1	1	0.898475			
4.500-0.000									

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Sector	Exclude From Torque Calculation	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
				ft				in	in	plf
3" Flexible Conduit	B	No	Surface Af (CaAa)	120.000 - 0.000	2	2	0.250 0.250	0.0000	6.0000	1.04
HB114-1-0813U4-M5J(1-1/4)	B	No	Surface Af (CaAa)	120.000 - 0.000	4	4	0.250 0.250	0.0000	3.0800	1.20
LDF7-50A(1-5/8)	A	No	Surface Af (CaAa)	113.000 - 0.000	8	7	-0.250 -0.250	0.0000	3.9600	0.82
***										
LDF7-50A(1-5/8)	A	No	Surface Af (CaAa)	105.000 - 0.000	7	6	0.500 0.500	0.0000	3.9600	0.82
***										
Safety Line 3/8	C	No	Surface Af (CaAa)	120.000 - 0.000	1	1	0.000 0.000	0.0000	0.7500	0.22
***Existing Mods***										
(Area) Aero MP3-04	A	No	Surface Af (CaAa)	25.500 - 0.000	1	1	-0.250 -0.250	4.7800	12.7800	0.00
(Area) Aero MP3-04	A	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.500 0.500	4.7800	12.7800	0.00
(Area) Aero MP3-04	B	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.250 0.250	4.7800	12.7800	0.00
(Area) Aero MP3-04	C	No	Surface Af (CaAa)	25.500 - 0.000	1	1	0.000 0.000	4.7800	12.7800	0.00
*										
(Area) Aero MP3-03	A	No	Surface Af (CaAa)	45.500 - 25.500	1	1	-0.250 -0.250	4.0600	11.2600	0.00
(Area) Aero MP3-03	A	No	Surface Af	45.500 -	1	1	0.500	4.0600	11.2600	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) Aero MP3-03	B	No	(CaAa) Surface Af	25.500 - 45.500	1	1	0.250 - 0.250	4.0600	11.2600	0.00
(Area) Aero MP3-03	C	No	(CaAa) Surface Af	25.500 - 45.500	1	1	0.000 - 0.000	4.0600	11.2600	0.00
*										
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	56.000 - 45.500	1	1	-0.250 - 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	57.250 - 56.000	1	1	-0.250 - 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	56.000 - 45.500	1	1	0.500 - 0.500	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	57.250 - 56.000	1	1	0.500 - 0.500	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	B	No	(CaAa) Surface Af	50.500 - 45.500	1	1	0.250 - 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	C	No	(CaAa) Surface Af	56.000 - 45.500	1	1	0.000 - 0.000	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	C	No	(CaAa) Surface Af	57.250 - 56.000	1	1	0.000 - 0.000	4.5000	11.0000	0.00
*										
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	68.250 - 57.250	1	1	-0.250 - 0.250	4.5000	11.0000	0.00
(Area) CCI-65FP-045100	A	No	(CaAa) Surface Af	68.250 - 57.250	1	1	0.500 - 0.500	4.5000	11.0000	0.00
(Area) CCI-65FP-065125	B	No	(CaAa) Surface Af	56.000 - 50.500	1	1	0.250 - 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125	B	No	(CaAa) Surface Af	74.750 - 56.000	1	1	0.250 - 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-045100	C	No	(CaAa) Surface Af	68.250 - 57.250	1	1	0.000 - 0.000	4.5000	11.0000	0.00
*										
(Area) CCI-65FP-045125	A	No	(CaAa) Surface Af	78.250 - 68.250	1	1	-0.250 - 0.250	4.0000	10.5000	0.00
(Area) CCI-65FP-045125	A	No	(CaAa) Surface Af	80.000 - 68.250	1	1	0.500 - 0.500	4.0000	10.5000	0.00
(Area) CCI-65FP-045125	B	No	(CaAa) Surface Af	80.000 - 74.750	1	1	0.250 - 0.250	4.0000	10.5000	0.00
(Area) CCI-65FP-045125	C	No	(CaAa) Surface Af	80.000 - 68.250	1	1	0.000 - 0.000	4.0000	10.5000	0.00
*										
(Area) CCI-65FP-045125	A	No	(CaAa) Surface Af	100.750 - 78.250	1	1	-0.250 - 0.250	4.0000	10.5000	0.00
(Area) CCI-65FP-045125	A	No	(CaAa) Surface Af	100.750 - 80.000	1	1	0.500 - 0.500	4.0000	10.5000	0.00
*										
(Area) CCI-65FP-060100	B	No	(CaAa) Surface Af	92.080 - 80.000	1	1	0.250 - 0.250	6.0000	14.0000	0.00
(Area) CCI-65FP-060100	C	No	(CaAa) Surface Af	92.080 - 80.000	1	1	0.000 - 0.000	6.0000	14.0000	0.00
***Proposed Mods***										
(Area) CCI-65FP-065125	A	No	(CaAa) Surface Af	35.500 - 10.000	1	1	-0.250 - 0.250	6.5000	13.0000	0.00
(Area) CCI-65FP-065125	A	No	(CaAa) Surface Af	35.500 - 10.000	1	1	0.500 - 0.500	6.5000	13.0000	0.00
(Area) CCI-65FP-065125	B	No	(CaAa) Surface Af	35.500 - 10.000	1	1	0.250 - 0.250	6.5000	13.0000	0.00
(Area) CCI-65FP-065125	C	No	(CaAa) Surface Af	35.500 - 10.000	1	1	0.000 - 0.000	6.5000	13.0000	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
PL 1 x 5	A	No	Surface Af (CaAa)	72.000 - 2.500	1	1	-0.250 -0.250	5.0000	10.0000	0.00
PL 1 x 5	A	No	Surface Af (CaAa)	72.000 - 2.500	1	1	0.500 0.500	5.0000	10.0000	0.00
PL 1 x 5	B	No	Surface Af (CaAa)	72.000 - 2.500	1	1	0.250 0.250	5.0000	10.0000	0.00
PL 1 x 5	C	No	Surface Af (CaAa)	72.000 - 2.500	1	1	0.000 0.000	5.0000	10.0000	0.00
**										
(Area) Aero MP3-03	A	No	Surface Af (CaAa)	16.500 - 0.000	1	1	-0.250 -0.250	4.0600	8.1200	0.00
(Area) Aero MP3-03	A	No	Surface Af (CaAa)	16.500 - 0.000	1	1	0.500 0.500	4.0600	8.1200	0.00
(Area) Aero MP3-03	B	No	Surface Af (CaAa)	16.500 - 0.000	1	1	0.250 0.250	4.0600	8.1200	0.00
(Area) Aero MP3-03	C	No	Surface Af (CaAa)	16.500 - 0.000	1	1	0.000 0.000	4.0600	8.1200	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 <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
***									
1266A(1/8)	B	No	No	CaAa (Out Of Face)	120.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.01 0.41 1.41 5.25
7983A(ELLIPTICAL)	B	No	No	CaAa (Out Of Face)	120.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.08 0.74 2.01 6.37
9207(5/16)	B	No	No	Inside Pole	120.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.06 0.06 0.06 0.06
***									
HCS 6X12 6AWG(1-3/8)	A	No	No	CaAa (Out Of Face)	105.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.70 2.85 4.61 9.96
***									
***									
LDF6-50A(1 1/4")	C	No	No	Inside Pole	96.000 - 0.000	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.66 0.66 0.66 0.66
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	96.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.06 0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	96.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.58 0.58 0.58 0.58

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	11 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
2" Flexible Conduit	C	No	No	Inside Pole	96.000 - 0.000	2	No Ice	0.000	0.34
							1/2" Ice	0.000	0.34
							1" Ice	0.000	0.34
							2" Ice	0.000	0.34
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	82.000 - 0.000	12	No Ice	0.000	0.33
							1/2" Ice	0.000	0.33
							1" Ice	0.000	0.33
							2" Ice	0.000	0.33
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	75.000 - 0.000	1	No Ice	0.000	0.15
							1/2" Ice	0.000	0.15
							1" Ice	0.000	0.15
							2" Ice	0.000	0.15

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	120.000-115.000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L2	115.000-110.000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L3	110.000-105.000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L4	105.000-100.000	A	0.000	0.000	1.000	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L5	100.000-99.250	A	0.000	0.000	1.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L6	99.250-99.000	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L7	99.000-94.000	A	0.000	0.000	6.667	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.03
L8	94.000-90.080	A	0.000	0.000	5.227	0.000	0.06
		B	0.000	0.000	1.961	0.000	0.03
		C	0.000	0.000	1.961	0.000	0.05
L9	90.080-89.830	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.245	0.000	0.00
		C	0.000	0.000	0.245	0.000	0.00
L10	89.830-89.500	A	0.000	0.000	0.440	0.000	0.01
		B	0.000	0.000	0.324	0.000	0.00
		C	0.000	0.000	0.324	0.000	0.00
L11	89.500-89.250	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.245	0.000	0.00
		C	0.000	0.000	0.245	0.000	0.00
L12	89.250-84.250	A	0.000	0.000	6.667	0.000	0.08

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	<b>Project</b> TEP No. 25570.206551	<b>Date</b> 14:43:12 01/17/19
	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
		B	0.000	0.000	4.903	0.000	0.04
		C	0.000	0.000	4.903	0.000	0.06
L13	84.250-78.000	A	0.000	0.000	8.333	0.000	0.10
		B	0.000	0.000	5.279	0.000	0.05
		C	0.000	0.000	5.501	0.000	0.09
L14	78.000-77.000	A	0.000	0.000	1.333	0.000	0.02
		B	0.000	0.000	0.556	0.000	0.01
		C	0.000	0.000	0.667	0.000	0.02
L15	77.000-76.750	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.139	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L16	76.750-76.500	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.139	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L17	76.500-75.500	A	0.000	0.000	1.333	0.000	0.02
		B	0.000	0.000	0.556	0.000	0.01
		C	0.000	0.000	0.667	0.000	0.02
L18	75.500-75.250	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.139	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L19	75.250-74.500	A	0.000	0.000	1.000	0.000	0.01
		B	0.000	0.000	0.549	0.000	0.01
		C	0.000	0.000	0.500	0.000	0.01
L20	74.500-74.250	A	0.000	0.000	0.333	0.000	0.00
		B	0.000	0.000	0.271	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00
L21	74.250-72.000	A	0.000	0.000	3.000	0.000	0.04
		B	0.000	0.000	2.438	0.000	0.02
		C	0.000	0.000	1.500	0.000	0.04
L22	72.000-71.750	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L23	71.750-70.500	A	0.000	0.000	3.750	0.000	0.02
		B	0.000	0.000	2.396	0.000	0.01
		C	0.000	0.000	1.875	0.000	0.02
L24	70.500-70.250	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L25	70.250-70.000	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L26	70.000-69.750	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L27	69.750-69.500	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L28	69.500-69.250	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.375	0.000	0.00
L29	69.250-64.250	A	0.000	0.000	15.667	0.000	0.08
		B	0.000	0.000	9.583	0.000	0.04
		C	0.000	0.000	7.833	0.000	0.08
L30	64.250-59.250	A	0.000	0.000	15.833	0.000	0.08
		B	0.000	0.000	9.583	0.000	0.04
		C	0.000	0.000	7.917	0.000	0.08
L31	59.250-56.000	A	0.000	0.000	9.573	0.000	0.05
		B	0.000	0.000	6.229	0.000	0.02
		C	0.000	0.000	4.787	0.000	0.05
L32	56.000-55.750	A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00



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	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L33	55.750-55.500	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L34	55.500-55.250	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L35	55.250-54.000	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	3.958	0.000	0.02
		B	0.000	0.000	2.057	0.000	0.01
L36	54.000-53.750	C	0.000	0.000	1.979	0.000	0.02
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L37	53.750-53.500	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L38	53.500-53.250	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L39	53.250-53.000	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	0.792	0.000	0.00
		B	0.000	0.000	0.411	0.000	0.00
L40	53.000-48.000	C	0.000	0.000	0.396	0.000	0.00
		A	0.000	0.000	15.833	0.000	0.08
		B	0.000	0.000	7.697	0.000	0.04
L41	48.000-39.750	C	0.000	0.000	7.917	0.000	0.08
		A	0.000	0.000	25.282	0.000	0.13
		B	0.000	0.000	12.266	0.000	0.06
L42	39.750-38.750	C	0.000	0.000	12.641	0.000	0.14
		A	0.000	0.000	3.020	0.000	0.02
		B	0.000	0.000	1.510	0.000	0.01
L43	38.750-34.750	C	0.000	0.000	1.510	0.000	0.02
		A	0.000	0.000	13.705	0.000	0.06
		B	0.000	0.000	6.853	0.000	0.03
L44	34.750-34.500	C	0.000	0.000	6.853	0.000	0.07
		A	0.000	0.000	1.297	0.000	0.00
		B	0.000	0.000	0.648	0.000	0.00
L45	34.500-33.750	C	0.000	0.000	0.648	0.000	0.00
		A	0.000	0.000	3.890	0.000	0.01
		B	0.000	0.000	1.945	0.000	0.01
L46	33.750-33.500	C	0.000	0.000	1.945	0.000	0.01
		A	0.000	0.000	1.297	0.000	0.00
		B	0.000	0.000	0.648	0.000	0.00
L47	33.500-32.750	C	0.000	0.000	0.648	0.000	0.00
		A	0.000	0.000	3.890	0.000	0.01
		B	0.000	0.000	1.945	0.000	0.01
L48	32.750-32.500	C	0.000	0.000	1.945	0.000	0.01
		A	0.000	0.000	1.297	0.000	0.00
		B	0.000	0.000	0.648	0.000	0.00
L49	32.500-27.500	C	0.000	0.000	0.648	0.000	0.00
		A	0.000	0.000	25.933	0.000	0.08
		B	0.000	0.000	12.967	0.000	0.04
L50	27.500-24.000	C	0.000	0.000	12.967	0.000	0.08
		A	0.000	0.000	18.513	0.000	0.05
		B	0.000	0.000	9.257	0.000	0.03
L51	24.000-23.750	C	0.000	0.000	9.257	0.000	0.06
		A	0.000	0.000	1.357	0.000	0.00
		B	0.000	0.000	0.678	0.000	0.00
L52	23.750-18.750	C	0.000	0.000	0.678	0.000	0.00
		A	0.000	0.000	27.133	0.000	0.08
		B	0.000	0.000	13.567	0.000	0.04
		C	0.000	0.000	13.567	0.000	0.08

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	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
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Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L53	18.750-14.250	A	0.000	0.000	27.465	0.000	0.07
		B	0.000	0.000	13.733	0.000	0.03
		C	0.000	0.000	13.733	0.000	0.07
L54	14.250-14.000	A	0.000	0.000	1.695	0.000	0.00
		B	0.000	0.000	0.848	0.000	0.00
		C	0.000	0.000	0.848	0.000	0.00
L55	14.000-12.750	A	0.000	0.000	8.475	0.000	0.02
		B	0.000	0.000	4.237	0.000	0.01
		C	0.000	0.000	4.237	0.000	0.02
L56	12.750-12.500	A	0.000	0.000	1.695	0.000	0.00
		B	0.000	0.000	0.848	0.000	0.00
		C	0.000	0.000	0.848	0.000	0.00
L57	12.500-7.500	A	0.000	0.000	28.483	0.000	0.08
		B	0.000	0.000	14.242	0.000	0.04
		C	0.000	0.000	14.242	0.000	0.08
L58	7.500-5.000	A	0.000	0.000	11.533	0.000	0.04
		B	0.000	0.000	5.767	0.000	0.02
		C	0.000	0.000	5.767	0.000	0.04
L59	5.000-4.750	A	0.000	0.000	1.153	0.000	0.00
		B	0.000	0.000	0.577	0.000	0.00
		C	0.000	0.000	0.577	0.000	0.00
L60	4.750-4.500	A	0.000	0.000	1.153	0.000	0.00
		B	0.000	0.000	0.577	0.000	0.00
		C	0.000	0.000	0.577	0.000	0.00
L61	4.500-0.000	A	0.000	0.000	16.593	0.000	0.07
		B	0.000	0.000	8.297	0.000	0.03
		C	0.000	0.000	8.297	0.000	0.07

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	120.000-115.000	A	1.448	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	1.448	0.000	0.02
L2	115.000-110.000	A	1.441	0.000	0.000	1.703	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	1.441	0.000	0.02
L3	110.000-105.000	A	1.435	0.000	0.000	2.836	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	1.435	0.000	0.02
L4	105.000-100.000	A	1.428	0.000	0.000	7.096	0.000	0.22
		B		0.000	0.000	0.000	0.000	0.16
		C		0.000	0.000	1.428	0.000	0.02
L5	100.000-99.250	A	1.424	0.000	0.000	2.277	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.02
		C		0.000	0.000	0.214	0.000	0.00
L6	99.250-99.000	A	1.423	0.000	0.000	0.759	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.071	0.000	0.00
L7	99.000-94.000	A	1.419	0.000	0.000	15.167	0.000	0.29
		B		0.000	0.000	0.000	0.000	0.16
		C		0.000	0.000	1.419	0.000	0.04
L8	94.000-90.080	A	1.413	0.000	0.000	11.876	0.000	0.23
		B		0.000	0.000	2.258	0.000	0.15
		C		0.000	0.000	3.366	0.000	0.08
L9	90.080-89.830	A	1.409	0.000	0.000	0.757	0.000	0.01

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
		B		0.000	0.000	0.282	0.000	0.01
		C		0.000	0.000	0.353	0.000	0.01
L10	89.830-89.500	A	1.409	0.000	0.000	0.999	0.000	0.02
		B		0.000	0.000	0.372	0.000	0.01
		C		0.000	0.000	0.465	0.000	0.01
L11	89.500-89.250	A	1.409	0.000	0.000	0.757	0.000	0.01
		B		0.000	0.000	0.282	0.000	0.01
		C		0.000	0.000	0.353	0.000	0.01
L12	89.250-84.250	A	1.404	0.000	0.000	15.125	0.000	0.29
		B		0.000	0.000	5.641	0.000	0.21
		C		0.000	0.000	7.046	0.000	0.13
L13	84.250-78.000	A	1.395	0.000	0.000	18.774	0.000	0.36
		B		0.000	0.000	6.204	0.000	0.26
		C		0.000	0.000	8.350	0.000	0.18
L14	78.000-77.000	A	1.389	0.000	0.000	2.890	0.000	0.06
		B		0.000	0.000	0.707	0.000	0.04
		C		0.000	0.000	1.187	0.000	0.03
L15	77.000-76.750	A	1.388	0.000	0.000	0.722	0.000	0.01
		B		0.000	0.000	0.176	0.000	0.01
		C		0.000	0.000	0.296	0.000	0.01
L16	76.750-76.500	A	1.387	0.000	0.000	0.722	0.000	0.01
		B		0.000	0.000	0.176	0.000	0.01
		C		0.000	0.000	0.296	0.000	0.01
L17	76.500-75.500	A	1.386	0.000	0.000	2.886	0.000	0.06
		B		0.000	0.000	0.706	0.000	0.04
		C		0.000	0.000	1.184	0.000	0.03
L18	75.500-75.250	A	1.385	0.000	0.000	0.721	0.000	0.01
		B		0.000	0.000	0.176	0.000	0.01
		C		0.000	0.000	0.296	0.000	0.01
L19	75.250-74.500	A	1.384	0.000	0.000	2.164	0.000	0.04
		B		0.000	0.000	0.692	0.000	0.03
		C		0.000	0.000	0.887	0.000	0.02
L20	74.500-74.250	A	1.383	0.000	0.000	0.721	0.000	0.01
		B		0.000	0.000	0.339	0.000	0.01
		C		0.000	0.000	0.296	0.000	0.01
L21	74.250-72.000	A	1.381	0.000	0.000	6.490	0.000	0.13
		B		0.000	0.000	3.050	0.000	0.10
		C		0.000	0.000	2.660	0.000	0.06
L22	72.000-71.750	A	1.378	0.000	0.000	1.275	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.573	0.000	0.01
L23	71.750-70.500	A	1.377	0.000	0.000	6.375	0.000	0.09
		B		0.000	0.000	3.080	0.000	0.06
		C		0.000	0.000	2.862	0.000	0.05
L24	70.500-70.250	A	1.375	0.000	0.000	1.275	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L25	70.250-70.000	A	1.375	0.000	0.000	1.275	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L26	70.000-69.750	A	1.374	0.000	0.000	1.275	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L27	69.750-69.500	A	1.374	0.000	0.000	1.275	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L28	69.500-69.250	A	1.373	0.000	0.000	1.274	0.000	0.02
		B		0.000	0.000	0.616	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L29	69.250-64.250	A	1.368	0.000	0.000	25.946	0.000	0.36
		B		0.000	0.000	12.303	0.000	0.25

<p><b>tnxTower</b></p> <p><b>Tower Engineering Professionals, Inc.</b>  326 Tryon Road  Raleigh, NC 27603  Phone: (919) 661-6351  FAX: (919) 661-6350</p>	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	16 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L30	64.250-59.250	C		0.000	0.000	11.557	0.000	0.18
		A	1.357	0.000	0.000	26.025	0.000	0.36
		B		0.000	0.000	12.283	0.000	0.25
		C		0.000	0.000	11.563	0.000	0.18
L31	59.250-56.000	A	1.348	0.000	0.000	16.078	0.000	0.23
		B		0.000	0.000	7.973	0.000	0.16
		C		0.000	0.000	7.093	0.000	0.12
L32	56.000-55.750	A	1.344	0.000	0.000	1.291	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.573	0.000	0.01
L33	55.750-55.500	A	1.343	0.000	0.000	1.291	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L34	55.500-55.250	A	1.343	0.000	0.000	1.291	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L35	55.250-54.000	A	1.341	0.000	0.000	6.451	0.000	0.09
		B		0.000	0.000	2.575	0.000	0.06
		C		0.000	0.000	2.861	0.000	0.04
L36	54.000-53.750	A	1.339	0.000	0.000	1.290	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L37	53.750-53.500	A	1.338	0.000	0.000	1.290	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L38	53.500-53.250	A	1.338	0.000	0.000	1.290	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L39	53.250-53.000	A	1.337	0.000	0.000	1.290	0.000	0.02
		B		0.000	0.000	0.515	0.000	0.01
		C		0.000	0.000	0.572	0.000	0.01
L40	53.000-48.000	A	1.330	0.000	0.000	25.765	0.000	0.35
		B		0.000	0.000	9.749	0.000	0.24
		C		0.000	0.000	11.416	0.000	0.18
L41	48.000-39.750	A	1.312	0.000	0.000	42.663	0.000	0.57
		B		0.000	0.000	16.293	0.000	0.38
		C		0.000	0.000	18.893	0.000	0.29
L42	39.750-38.750	A	1.297	0.000	0.000	5.185	0.000	0.07
		B		0.000	0.000	2.035	0.000	0.05
		C		0.000	0.000	2.297	0.000	0.04
L43	38.750-34.750	A	1.289	0.000	0.000	22.665	0.000	0.29
		B		0.000	0.000	9.108	0.000	0.18
		C		0.000	0.000	10.139	0.000	0.15
L44	34.750-34.500	A	1.281	0.000	0.000	1.959	0.000	0.02
		B		0.000	0.000	0.841	0.000	0.01
		C		0.000	0.000	0.905	0.000	0.01
L45	34.500-33.750	A	1.279	0.000	0.000	5.875	0.000	0.06
		B		0.000	0.000	2.521	0.000	0.04
		C		0.000	0.000	2.713	0.000	0.03
L46	33.750-33.500	A	1.277	0.000	0.000	1.958	0.000	0.02
		B		0.000	0.000	0.840	0.000	0.01
		C		0.000	0.000	0.904	0.000	0.01
L47	33.500-32.750	A	1.275	0.000	0.000	5.871	0.000	0.06
		B		0.000	0.000	2.519	0.000	0.04
		C		0.000	0.000	2.710	0.000	0.03
L48	32.750-32.500	A	1.274	0.000	0.000	1.956	0.000	0.02
		B		0.000	0.000	0.839	0.000	0.01
		C		0.000	0.000	0.903	0.000	0.01
L49	32.500-27.500	A	1.263	0.000	0.000	39.054	0.000	0.42
		B		0.000	0.000	16.755	0.000	0.26
		C		0.000	0.000	18.018	0.000	0.22

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 17 of 62
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	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L50	27.500-24.000	A	1.244	0.000	0.000	27.607	0.000	0.29
		B		0.000	0.000	11.869	0.000	0.18
		C		0.000	0.000	12.739	0.000	0.15
L51	24.000-23.750	A	1.234	0.000	0.000	2.003	0.000	0.02
		B		0.000	0.000	0.863	0.000	0.01
		C		0.000	0.000	0.925	0.000	0.01
L52	23.750-18.750	A	1.220	0.000	0.000	39.965	0.000	0.41
		B		0.000	0.000	17.227	0.000	0.25
		C		0.000	0.000	18.447	0.000	0.21
L53	18.750-14.250	A	1.190	0.000	0.000	39.900	0.000	0.39
		B		0.000	0.000	17.480	0.000	0.23
		C		0.000	0.000	18.550	0.000	0.20
L54	14.250-14.000	A	1.171	0.000	0.000	2.437	0.000	0.02
		B		0.000	0.000	1.082	0.000	0.01
		C		0.000	0.000	1.140	0.000	0.01
L55	14.000-12.750	A	1.165	0.000	0.000	12.173	0.000	0.11
		B		0.000	0.000	5.402	0.000	0.07
		C		0.000	0.000	5.694	0.000	0.06
L56	12.750-12.500	A	1.158	0.000	0.000	2.432	0.000	0.02
		B		0.000	0.000	1.079	0.000	0.01
		C		0.000	0.000	1.137	0.000	0.01
L57	12.500-7.500	A	1.131	0.000	0.000	41.851	0.000	0.40
		B		0.000	0.000	18.202	0.000	0.24
		C		0.000	0.000	19.333	0.000	0.21
L58	7.500-5.000	A	1.080	0.000	0.000	17.478	0.000	0.17
		B		0.000	0.000	7.386	0.000	0.10
		C		0.000	0.000	7.926	0.000	0.09
L59	5.000-4.750	A	1.053	0.000	0.000	1.739	0.000	0.02
		B		0.000	0.000	0.735	0.000	0.01
		C		0.000	0.000	0.787	0.000	0.01
L60	4.750-4.500	A	1.048	0.000	0.000	1.737	0.000	0.02
		B		0.000	0.000	0.734	0.000	0.01
		C		0.000	0.000	0.786	0.000	0.01
L61	4.500-0.000	A	0.974	0.000	0.000	25.688	0.000	0.25
		B		0.000	0.000	10.440	0.000	0.15
		C		0.000	0.000	11.317	0.000	0.14

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	120.000-115.000	0.0000	0.0000	0.0000	0.9140
L2	115.000-110.000	0.0000	0.0000	-1.1016	1.2766
L3	110.000-105.000	0.0000	0.0000	-1.7019	1.4852
L4	105.000-100.000	-0.0220	-0.2510	-0.2001	-0.3398
L5	100.000-99.250	-0.1034	-1.1840	-0.2222	-1.0169
L6	99.250-99.000	-0.1033	-1.1863	-0.2220	-1.0194
L7	99.000-94.000	-0.1019	-1.1919	-0.2205	-1.0296
L8	94.000-90.080	1.3113	1.0941	0.7320	0.4543
L9	90.080-89.830	2.2354	2.5912	1.4471	1.5758
L10	89.830-89.500	2.2379	2.5942	1.4497	1.5785
L11	89.500-89.250	2.2431	2.6002	1.4532	1.5822
L12	89.250-84.250	2.2659	2.6267	1.4759	1.6060
L13	84.250-78.000	2.0586	2.3643	1.3381	1.5016
L14	78.000-77.000	1.4704	1.6304	1.0729	1.1136
L15	77.000-76.750	1.4733	1.6335	1.0767	1.1155

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	18 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Section	Elevation ft	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
		in	in	Ice in	Ice in
L16	76.750-76.500	1.4753	1.6357	1.0786	1.1173
L17	76.500-75.500	1.4781	1.6387	1.0822	1.1207
L18	75.500-75.250	1.4790	1.6397	1.0850	1.1232
L19	75.250-74.500	1.9145	1.8224	1.4174	1.2708
L20	74.500-74.250	2.7109	2.1558	2.0383	1.5456
L21	74.250-72.000	2.7212	2.1643	2.0508	1.5548
L22	72.000-71.750	3.1106	2.7486	2.6020	2.2553
L23	71.750-70.500	3.1209	2.7578	2.6124	2.2643
L24	70.500-70.250	3.1313	2.7671	2.6230	2.2733
L25	70.250-70.000	3.1347	2.7702	2.6265	2.2763
L26	70.000-69.750	3.1375	2.7726	2.6296	2.2789
L27	69.750-69.500	3.1424	2.7770	2.6340	2.2827
L28	69.500-69.250	3.1445	2.7789	2.6367	2.2850
L29	69.250-64.250	3.1156	2.8046	2.6057	2.3324
L30	64.250-59.250	3.1650	2.8627	2.6555	2.3951
L31	59.250-56.000	3.3311	2.9130	2.7829	2.4324
L32	56.000-55.750	2.8451	2.7785	2.3416	2.2993
L33	55.750-55.500	2.8478	2.7812	2.3445	2.3019
L34	55.500-55.250	2.8513	2.7846	2.3476	2.3050
L35	55.250-54.000	2.8594	2.7926	2.3560	2.3128
L36	54.000-53.750	2.8665	2.7996	2.3637	2.3201
L37	53.750-53.500	2.8691	2.8021	2.3665	2.3227
L38	53.500-53.250	2.8711	2.8041	2.3689	2.3249
L39	53.250-53.000	2.8733	2.8062	2.3713	2.3272
L40	53.000-48.000	2.7328	2.7695	2.2805	2.3068
L41	48.000-39.750	2.7592	2.8030	2.3756	2.3923
L42	39.750-38.750	2.8331	2.8331	2.4544	2.4371
L43	38.750-34.750	2.9899	2.9899	2.6180	2.5970
L44	34.750-34.500	3.4017	3.4017	3.0684	3.0506
L45	34.500-33.750	3.4084	3.4084	3.0753	3.0572
L46	33.750-33.500	3.4135	3.4135	3.0812	3.0628
L47	33.500-32.750	3.4202	3.4202	3.0880	3.0693
L48	32.750-32.500	3.4292	3.4292	3.0964	3.0773
L49	32.500-27.500	3.4640	3.4640	3.1323	3.1112
L50	27.500-24.000	3.5384	3.5384	3.2067	3.1823
L51	24.000-23.750	3.5872	3.5872	3.2540	3.2283
L52	23.750-18.750	3.6220	3.6220	3.2901	3.2616
L53	18.750-14.250	3.7970	3.7970	3.4967	3.4653
L54	14.250-14.000	3.9224	3.9224	3.6483	3.6163
L55	14.000-12.750	3.9332	3.9332	3.6594	3.6264
L56	12.750-12.500	3.9425	3.9425	3.6696	3.6355
L57	12.500-7.500	3.8117	3.8117	3.5226	3.4793
L58	7.500-5.000	3.6413	3.6413	3.3388	3.2781
L59	5.000-4.750	3.6587	3.6587	3.3567	3.2902
L60	4.750-4.500	3.6613	3.6613	3.3596	3.2918
L61	4.500-0.000	3.4196	3.4196	3.0975	3.0012

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

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	5	3" Flexible Conduit	115.00 -	1.0000	1.0000

<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	19 of 62
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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
			120.00		
L1	6	HB114-1-0813U4-M5J(1-1/4 )	115.00 - 120.00	1.0000	1.0000
L1	27	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L2	5	3" Flexible Conduit	110.00 - 115.00	1.0000	1.0000
L2	6	HB114-1-0813U4-M5J(1-1/4 )	110.00 - 115.00	1.0000	1.0000
L2	9	LDF7-50A(1-5/8)	110.00 - 113.00	1.0000	1.0000
L2	27	Safety Line 3/8	110.00 - 115.00	1.0000	1.0000
L3	5	3" Flexible Conduit	105.00 - 110.00	1.0000	1.0000
L3	6	HB114-1-0813U4-M5J(1-1/4 )	105.00 - 110.00	1.0000	1.0000
L3	9	LDF7-50A(1-5/8)	105.00 - 110.00	1.0000	1.0000
L3	27	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L4	5	3" Flexible Conduit	100.00 - 105.00	1.0000	1.0000
L4	6	HB114-1-0813U4-M5J(1-1/4 )	100.00 - 105.00	1.0000	1.0000
L4	9	LDF7-50A(1-5/8)	100.00 - 105.00	1.0000	1.0000
L4	11	LDF7-50A(1-5/8)	100.00 - 105.00	1.0000	1.0000
L4	27	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L4	59	(Area) CCI-65FP-045125	100.00 - 100.75	1.0000	1.0000
L4	60	(Area) CCI-65FP-045125	100.00 - 100.75	1.0000	1.0000
L5	5	3" Flexible Conduit	99.25 - 100.00	1.0000	1.0000
L5	6	HB114-1-0813U4-M5J(1-1/4 )	99.25 - 100.00	1.0000	1.0000
L5	9	LDF7-50A(1-5/8)	99.25 - 100.00	1.0000	1.0000
L5	11	LDF7-50A(1-5/8)	99.25 - 100.00	1.0000	1.0000
L5	27	Safety Line 3/8	99.25 - 100.00	1.0000	1.0000
L5	59	(Area) CCI-65FP-045125	99.25 - 100.00	1.0000	1.0000
L5	60	(Area) CCI-65FP-045125	99.25 - 100.00	1.0000	1.0000
L6	5	3" Flexible Conduit	99.00 - 99.25	1.0000	1.0000
L6	6	HB114-1-0813U4-M5J(1-1/4 )	99.00 - 99.25	1.0000	1.0000
L6	9	LDF7-50A(1-5/8)	99.00 - 99.25	1.0000	1.0000
L6	11	LDF7-50A(1-5/8)	99.00 - 99.25	1.0000	1.0000
L6	27	Safety Line 3/8	99.00 - 99.25	1.0000	1.0000
L6	59	(Area) CCI-65FP-045125	99.00 - 99.25	1.0000	1.0000
L6	60	(Area) CCI-65FP-045125	99.00 - 99.25	1.0000	1.0000
L7	5	3" Flexible Conduit	94.00 - 99.00	1.0000	1.0000
L7	6	HB114-1-0813U4-M5J(1-1/4 )	94.00 - 99.00	1.0000	1.0000
L7	9	LDF7-50A(1-5/8)	94.00 - 99.00	1.0000	1.0000
L7	11	LDF7-50A(1-5/8)	94.00 - 99.00	1.0000	1.0000
L7	27	Safety Line 3/8	94.00 - 99.00	1.0000	1.0000
L7	59	(Area) CCI-65FP-045125	94.00 - 99.00	1.0000	1.0000
L7	60	(Area) CCI-65FP-045125	94.00 - 99.00	1.0000	1.0000
L8	5	3" Flexible Conduit	90.08 - 94.00	1.0000	1.0000
L8	6	HB114-1-0813U4-M5J(1-1/4 )	90.08 - 94.00	1.0000	1.0000

<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	20 of 62
<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L8	9	LDF7-50A(1-5/8)	90.08 - 94.00	1.0000	1.0000
L8	11	LDF7-50A(1-5/8)	90.08 - 94.00	1.0000	1.0000
L8	27	Safety Line 3/8	90.08 - 94.00	1.0000	1.0000
L8	59	(Area) CCI-65FP-045125	90.08 - 94.00	1.0000	1.0000
L8	60	(Area) CCI-65FP-045125	90.08 - 94.00	1.0000	1.0000
L8	62	(Area) CCI-65FP-060100	90.08 - 92.08	1.0000	1.0000
L8	63	(Area) CCI-65FP-060100	90.08 - 92.08	1.0000	1.0000
L9	5	3" Flexible Conduit	89.83 - 90.08	1.0000	1.0000
L9	6	HB114-1-0813U4-M5J(1-1/4)	89.83 - 90.08	1.0000	1.0000
L9	9	LDF7-50A(1-5/8)	89.83 - 90.08	1.0000	1.0000
L9	11	LDF7-50A(1-5/8)	89.83 - 90.08	1.0000	1.0000
L9	27	Safety Line 3/8	89.83 - 90.08	1.0000	1.0000
L9	59	(Area) CCI-65FP-045125	89.83 - 90.08	1.0000	1.0000
L9	60	(Area) CCI-65FP-045125	89.83 - 90.08	1.0000	1.0000
L9	62	(Area) CCI-65FP-060100	89.83 - 90.08	1.0000	1.0000
L9	63	(Area) CCI-65FP-060100	89.83 - 90.08	1.0000	1.0000
L10	5	3" Flexible Conduit	89.50 - 89.83	1.0000	1.0000
L10	6	HB114-1-0813U4-M5J(1-1/4)	89.50 - 89.83	1.0000	1.0000
L10	9	LDF7-50A(1-5/8)	89.50 - 89.83	1.0000	1.0000
L10	11	LDF7-50A(1-5/8)	89.50 - 89.83	1.0000	1.0000
L10	27	Safety Line 3/8	89.50 - 89.83	1.0000	1.0000
L10	59	(Area) CCI-65FP-045125	89.50 - 89.83	1.0000	1.0000
L10	60	(Area) CCI-65FP-045125	89.50 - 89.83	1.0000	1.0000
L10	62	(Area) CCI-65FP-060100	89.50 - 89.83	1.0000	1.0000
L10	63	(Area) CCI-65FP-060100	89.50 - 89.83	1.0000	1.0000
L11	5	3" Flexible Conduit	89.25 - 89.50	1.0000	1.0000
L11	6	HB114-1-0813U4-M5J(1-1/4)	89.25 - 89.50	1.0000	1.0000
L11	9	LDF7-50A(1-5/8)	89.25 - 89.50	1.0000	1.0000
L11	11	LDF7-50A(1-5/8)	89.25 - 89.50	1.0000	1.0000
L11	27	Safety Line 3/8	89.25 - 89.50	1.0000	1.0000
L11	59	(Area) CCI-65FP-045125	89.25 - 89.50	1.0000	1.0000
L11	60	(Area) CCI-65FP-045125	89.25 - 89.50	1.0000	1.0000
L11	62	(Area) CCI-65FP-060100	89.25 - 89.50	1.0000	1.0000
L11	63	(Area) CCI-65FP-060100	89.25 - 89.50	1.0000	1.0000
L12	5	3" Flexible Conduit	84.25 - 89.25	1.0000	1.0000
L12	6	HB114-1-0813U4-M5J(1-1/4)	84.25 - 89.25	1.0000	1.0000
L12	9	LDF7-50A(1-5/8)	84.25 - 89.25	1.0000	1.0000
L12	11	LDF7-50A(1-5/8)	84.25 - 89.25	1.0000	1.0000
L12	27	Safety Line 3/8	84.25 - 89.25	1.0000	1.0000
L12	59	(Area) CCI-65FP-045125	84.25 - 89.25	1.0000	1.0000
L12	60	(Area) CCI-65FP-045125	84.25 - 89.25	1.0000	1.0000
L12	62	(Area) CCI-65FP-060100	84.25 - 89.25	1.0000	1.0000
L12	63	(Area) CCI-65FP-060100	84.25 - 89.25	1.0000	1.0000
L13	5	3" Flexible Conduit	78.00 - 84.25	1.0000	1.0000
L13	6	HB114-1-0813U4-M5J(1-1/4)	78.00 - 84.25	1.0000	1.0000
L13	9	LDF7-50A(1-5/8)	78.00 - 84.25	1.0000	1.0000
L13	11	LDF7-50A(1-5/8)	78.00 - 84.25	1.0000	1.0000
L13	27	Safety Line 3/8	78.00 - 84.25	1.0000	1.0000
L13	54	(Area) CCI-65FP-045125	78.00 - 78.25	1.0000	1.0000
L13	55	(Area) CCI-65FP-045125	78.00 - 80.00	1.0000	1.0000
L13	56	(Area) CCI-65FP-045125	78.00 - 80.00	1.0000	1.0000
L13	57	(Area) CCI-65FP-045125	78.00 - 80.00	1.0000	1.0000
L13	59	(Area) CCI-65FP-045125	78.25 - 84.25	1.0000	1.0000
L13	60	(Area) CCI-65FP-045125	80.00 - 84.25	1.0000	1.0000
L13	62	(Area) CCI-65FP-060100	80.00 - 84.25	1.0000	1.0000
L13	63	(Area) CCI-65FP-060100	80.00 - 84.25	1.0000	1.0000
L15	5	3" Flexible Conduit	76.75 - 77.00	1.0000	1.0000



**tnxTower****Tower Engineering  
Professionals, Inc.**326 Tryon Road  
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528 Wheelers Farm Rd (BU 876320)

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**Project**

TEP No. 25570.206551

**Date**

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**Client**

Crown Castle

**Designed by**

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L15	6	HB114-1-0813U4-M5J(1-1/4 )	76.75 - 77.00	1.0000	1.0000
L15	9	LDF7-50A(1-5/8)	76.75 - 77.00	1.0000	1.0000
L15	11	LDF7-50A(1-5/8)	76.75 - 77.00	1.0000	1.0000
L15	27	Safety Line 3/8	76.75 - 77.00	1.0000	1.0000
L15	54	(Area) CCI-65FP-045125	76.75 - 77.00	1.0000	1.0000
L15	55	(Area) CCI-65FP-045125	76.75 - 77.00	1.0000	1.0000
L15	56	(Area) CCI-65FP-045125	76.75 - 77.00	1.0000	1.0000
L15	57	(Area) CCI-65FP-045125	76.75 - 77.00	1.0000	1.0000
L16	5	3" Flexible Conduit	76.50 - 76.75	1.0000	1.0000
L16	6	HB114-1-0813U4-M5J(1-1/4 )	76.50 - 76.75	1.0000	1.0000
L16	9	LDF7-50A(1-5/8)	76.50 - 76.75	1.0000	1.0000
L16	11	LDF7-50A(1-5/8)	76.50 - 76.75	1.0000	1.0000
L16	27	Safety Line 3/8	76.50 - 76.75	1.0000	1.0000
L16	54	(Area) CCI-65FP-045125	76.50 - 76.75	1.0000	1.0000
L16	55	(Area) CCI-65FP-045125	76.50 - 76.75	1.0000	1.0000
L16	56	(Area) CCI-65FP-045125	76.50 - 76.75	1.0000	1.0000
L16	57	(Area) CCI-65FP-045125	76.50 - 76.75	1.0000	1.0000
L17	5	3" Flexible Conduit	75.50 - 76.50	1.0000	1.0000
L17	6	HB114-1-0813U4-M5J(1-1/4 )	75.50 - 76.50	1.0000	1.0000
L17	9	LDF7-50A(1-5/8)	75.50 - 76.50	1.0000	1.0000
L17	11	LDF7-50A(1-5/8)	75.50 - 76.50	1.0000	1.0000
L17	27	Safety Line 3/8	75.50 - 76.50	1.0000	1.0000
L17	54	(Area) CCI-65FP-045125	75.50 - 76.50	1.0000	1.0000
L17	55	(Area) CCI-65FP-045125	75.50 - 76.50	1.0000	1.0000
L17	56	(Area) CCI-65FP-045125	75.50 - 76.50	1.0000	1.0000
L17	57	(Area) CCI-65FP-045125	75.50 - 76.50	1.0000	1.0000
L18	5	3" Flexible Conduit	75.25 - 75.50	1.0000	1.0000
L18	6	HB114-1-0813U4-M5J(1-1/4 )	75.25 - 75.50	1.0000	1.0000
L18	9	LDF7-50A(1-5/8)	75.25 - 75.50	1.0000	1.0000
L18	11	LDF7-50A(1-5/8)	75.25 - 75.50	1.0000	1.0000
L18	27	Safety Line 3/8	75.25 - 75.50	1.0000	1.0000
L18	54	(Area) CCI-65FP-045125	75.25 - 75.50	1.0000	1.0000
L18	55	(Area) CCI-65FP-045125	75.25 - 75.50	1.0000	1.0000
L18	56	(Area) CCI-65FP-045125	75.25 - 75.50	1.0000	1.0000
L18	57	(Area) CCI-65FP-045125	75.25 - 75.50	1.0000	1.0000
L19	5	3" Flexible Conduit	74.50 - 75.25	1.0000	1.0000
L19	6	HB114-1-0813U4-M5J(1-1/4 )	74.50 - 75.25	1.0000	1.0000
L19	9	LDF7-50A(1-5/8)	74.50 - 75.25	1.0000	1.0000
L19	11	LDF7-50A(1-5/8)	74.50 - 75.25	1.0000	1.0000
L19	27	Safety Line 3/8	74.50 - 75.25	1.0000	1.0000
L19	51	(Area) CCI-65FP-065125	74.50 - 74.75	1.0000	1.0000
L19	54	(Area) CCI-65FP-045125	74.50 - 75.25	1.0000	1.0000
L19	55	(Area) CCI-65FP-045125	74.50 - 75.25	1.0000	1.0000
L19	56	(Area) CCI-65FP-045125	74.75 - 75.25	1.0000	1.0000
L19	57	(Area) CCI-65FP-045125	74.50 - 75.25	1.0000	1.0000
L20	5	3" Flexible Conduit	74.25 - 74.50	1.0000	1.0000
L20	6	HB114-1-0813U4-M5J(1-1/4 )	74.25 - 74.50	1.0000	1.0000
L20	9	LDF7-50A(1-5/8)	74.25 - 74.50	1.0000	1.0000
L20	11	LDF7-50A(1-5/8)	74.25 - 74.50	1.0000	1.0000
L20	27	Safety Line 3/8	74.25 - 74.50	1.0000	1.0000
L20	51	(Area) CCI-65FP-065125	74.25 - 74.50	1.0000	1.0000
L20	54	(Area) CCI-65FP-045125	74.25 - 74.50	1.0000	1.0000
L20	55	(Area) CCI-65FP-045125	74.25 - 74.50	1.0000	1.0000
L20	57	(Area) CCI-65FP-045125	74.25 - 74.50	1.0000	1.0000
L21	5	3" Flexible Conduit	72.00 - 74.25	1.0000	1.0000
L21	6	HB114-1-0813U4-M5J(1-1/4 )	72.00 - 74.25	1.0000	1.0000

# tnxTower

## Tower Engineering Professionals, Inc.

326 Tryon Road  
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### Job

528 Wheelers Farm Rd (BU 876320)

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### Project

TEP No. 25570.206551

### Date

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### Client

Crown Castle

### Designed by

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L21	9	LDF7-50A(1-5/8)	72.00 - 74.25	1.0000	1.0000
L21	11	LDF7-50A(1-5/8)	72.00 - 74.25	1.0000	1.0000
L21	27	Safety Line 3/8	72.00 - 74.25	1.0000	1.0000
L21	51	(Area) CCI-65FP-065125	72.00 - 74.25	1.0000	1.0000
L21	54	(Area) CCI-65FP-045125	72.00 - 74.25	1.0000	1.0000
L21	55	(Area) CCI-65FP-045125	72.00 - 74.25	1.0000	1.0000
L21	57	(Area) CCI-65FP-045125	72.00 - 74.25	1.0000	1.0000
L22	5	3" Flexible Conduit	71.75 - 72.00	1.0000	1.0000
L22	6	HB114-1-0813U4-M5J(1-1/4)	71.75 - 72.00	1.0000	1.0000
L22	9	LDF7-50A(1-5/8)	71.75 - 72.00	1.0000	1.0000
L22	11	LDF7-50A(1-5/8)	71.75 - 72.00	1.0000	1.0000
L22	27	Safety Line 3/8	71.75 - 72.00	1.0000	1.0000
L22	51	(Area) CCI-65FP-065125	71.75 - 72.00	1.0000	1.0000
L22	54	(Area) CCI-65FP-045125	71.75 - 72.00	1.0000	1.0000
L22	55	(Area) CCI-65FP-045125	71.75 - 72.00	1.0000	1.0000
L22	57	(Area) CCI-65FP-045125	71.75 - 72.00	1.0000	1.0000
L22	70	PL 1 x 5	71.75 - 72.00	1.0000	1.0000
L22	71	PL 1 x 5	71.75 - 72.00	1.0000	1.0000
L22	72	PL 1 x 5	71.75 - 72.00	1.0000	1.0000
L22	73	PL 1 x 5	71.75 - 72.00	1.0000	1.0000
L23	5	3" Flexible Conduit	70.50 - 71.75	1.0000	1.0000
L23	6	HB114-1-0813U4-M5J(1-1/4)	70.50 - 71.75	1.0000	1.0000
L23	9	LDF7-50A(1-5/8)	70.50 - 71.75	1.0000	1.0000
L23	11	LDF7-50A(1-5/8)	70.50 - 71.75	1.0000	1.0000
L23	27	Safety Line 3/8	70.50 - 71.75	1.0000	1.0000
L23	51	(Area) CCI-65FP-065125	70.50 - 71.75	1.0000	1.0000
L23	54	(Area) CCI-65FP-045125	70.50 - 71.75	1.0000	1.0000
L23	55	(Area) CCI-65FP-045125	70.50 - 71.75	1.0000	1.0000
L23	57	(Area) CCI-65FP-045125	70.50 - 71.75	1.0000	1.0000
L23	70	PL 1 x 5	70.50 - 71.75	1.0000	1.0000
L23	71	PL 1 x 5	70.50 - 71.75	1.0000	1.0000
L23	72	PL 1 x 5	70.50 - 71.75	1.0000	1.0000
L23	73	PL 1 x 5	70.50 - 71.75	1.0000	1.0000
L24	5	3" Flexible Conduit	70.25 - 70.50	1.0000	1.0000
L24	6	HB114-1-0813U4-M5J(1-1/4)	70.25 - 70.50	1.0000	1.0000
L24	9	LDF7-50A(1-5/8)	70.25 - 70.50	1.0000	1.0000
L24	11	LDF7-50A(1-5/8)	70.25 - 70.50	1.0000	1.0000
L24	27	Safety Line 3/8	70.25 - 70.50	1.0000	1.0000
L24	51	(Area) CCI-65FP-065125	70.25 - 70.50	1.0000	1.0000
L24	54	(Area) CCI-65FP-045125	70.25 - 70.50	1.0000	1.0000
L24	55	(Area) CCI-65FP-045125	70.25 - 70.50	1.0000	1.0000
L24	57	(Area) CCI-65FP-045125	70.25 - 70.50	1.0000	1.0000
L24	70	PL 1 x 5	70.25 - 70.50	1.0000	1.0000
L24	71	PL 1 x 5	70.25 - 70.50	1.0000	1.0000
L24	72	PL 1 x 5	70.25 - 70.50	1.0000	1.0000
L24	73	PL 1 x 5	70.25 - 70.50	1.0000	1.0000
L25	5	3" Flexible Conduit	70.00 - 70.25	1.0000	1.0000
L25	6	HB114-1-0813U4-M5J(1-1/4)	70.00 - 70.25	1.0000	1.0000
L25	9	LDF7-50A(1-5/8)	70.00 - 70.25	1.0000	1.0000
L25	11	LDF7-50A(1-5/8)	70.00 - 70.25	1.0000	1.0000
L25	27	Safety Line 3/8	70.00 - 70.25	1.0000	1.0000
L25	51	(Area) CCI-65FP-065125	70.00 - 70.25	1.0000	1.0000
L25	54	(Area) CCI-65FP-045125	70.00 - 70.25	1.0000	1.0000
L25	55	(Area) CCI-65FP-045125	70.00 - 70.25	1.0000	1.0000
L25	57	(Area) CCI-65FP-045125	70.00 - 70.25	1.0000	1.0000
L25	70	PL 1 x 5	70.00 - 70.25	1.0000	1.0000
L25	71	PL 1 x 5	70.00 - 70.25	1.0000	1.0000

<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	23 of 62
<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L25	72	PL 1 x 5	70.00 - 70.25	1.0000	1.0000
L25	73	PL 1 x 5	70.00 - 70.25	1.0000	1.0000
L26	5	3" Flexible Conduit	69.75 - 70.00	1.0000	1.0000
L26	6	HB114-1-0813U4-M5J(1-1/4)	69.75 - 70.00	1.0000	1.0000
		)			
L26	9	LDF7-50A(1-5/8)	69.75 - 70.00	1.0000	1.0000
L26	11	LDF7-50A(1-5/8)	69.75 - 70.00	1.0000	1.0000
L26	27	Safety Line 3/8	69.75 - 70.00	1.0000	1.0000
L26	51	(Area) CCI-65FP-065125	69.75 - 70.00	1.0000	1.0000
L26	54	(Area) CCI-65FP-045125	69.75 - 70.00	1.0000	1.0000
L26	55	(Area) CCI-65FP-045125	69.75 - 70.00	1.0000	1.0000
L26	57	(Area) CCI-65FP-045125	69.75 - 70.00	1.0000	1.0000
L26	70	PL 1 x 5	69.75 - 70.00	1.0000	1.0000
L26	71	PL 1 x 5	69.75 - 70.00	1.0000	1.0000
L26	72	PL 1 x 5	69.75 - 70.00	1.0000	1.0000
L26	73	PL 1 x 5	69.75 - 70.00	1.0000	1.0000
L27	5	3" Flexible Conduit	69.50 - 69.75	1.0000	1.0000
L27	6	HB114-1-0813U4-M5J(1-1/4)	69.50 - 69.75	1.0000	1.0000
		)			
L27	9	LDF7-50A(1-5/8)	69.50 - 69.75	1.0000	1.0000
L27	11	LDF7-50A(1-5/8)	69.50 - 69.75	1.0000	1.0000
L27	27	Safety Line 3/8	69.50 - 69.75	1.0000	1.0000
L27	51	(Area) CCI-65FP-065125	69.50 - 69.75	1.0000	1.0000
L27	54	(Area) CCI-65FP-045125	69.50 - 69.75	1.0000	1.0000
L27	55	(Area) CCI-65FP-045125	69.50 - 69.75	1.0000	1.0000
L27	57	(Area) CCI-65FP-045125	69.50 - 69.75	1.0000	1.0000
L27	70	PL 1 x 5	69.50 - 69.75	1.0000	1.0000
L27	71	PL 1 x 5	69.50 - 69.75	1.0000	1.0000
L27	72	PL 1 x 5	69.50 - 69.75	1.0000	1.0000
L27	73	PL 1 x 5	69.50 - 69.75	1.0000	1.0000
L28	5	3" Flexible Conduit	69.25 - 69.50	1.0000	1.0000
L28	6	HB114-1-0813U4-M5J(1-1/4)	69.25 - 69.50	1.0000	1.0000
		)			
L28	9	LDF7-50A(1-5/8)	69.25 - 69.50	1.0000	1.0000
L28	11	LDF7-50A(1-5/8)	69.25 - 69.50	1.0000	1.0000
L28	27	Safety Line 3/8	69.25 - 69.50	1.0000	1.0000
L28	51	(Area) CCI-65FP-065125	69.25 - 69.50	1.0000	1.0000
L28	54	(Area) CCI-65FP-045125	69.25 - 69.50	1.0000	1.0000
L28	55	(Area) CCI-65FP-045125	69.25 - 69.50	1.0000	1.0000
L28	57	(Area) CCI-65FP-045125	69.25 - 69.50	1.0000	1.0000
L28	70	PL 1 x 5	69.25 - 69.50	1.0000	1.0000
L28	71	PL 1 x 5	69.25 - 69.50	1.0000	1.0000
L28	72	PL 1 x 5	69.25 - 69.50	1.0000	1.0000
L28	73	PL 1 x 5	69.25 - 69.50	1.0000	1.0000
L29	5	3" Flexible Conduit	64.25 - 69.25	1.0000	1.0000
L29	6	HB114-1-0813U4-M5J(1-1/4)	64.25 - 69.25	1.0000	1.0000
		)			
L29	9	LDF7-50A(1-5/8)	64.25 - 69.25	1.0000	1.0000
L29	11	LDF7-50A(1-5/8)	64.25 - 69.25	1.0000	1.0000
L29	27	Safety Line 3/8	64.25 - 69.25	1.0000	1.0000
L29	48	(Area) CCI-65FP-045100	64.25 - 68.25	1.0000	1.0000
L29	49	(Area) CCI-65FP-045100	64.25 - 68.25	1.0000	1.0000
L29	51	(Area) CCI-65FP-065125	64.25 - 69.25	1.0000	1.0000
L29	52	(Area) CCI-65FP-045100	64.25 - 68.25	1.0000	1.0000
L29	54	(Area) CCI-65FP-045125	68.25 - 69.25	1.0000	1.0000
L29	55	(Area) CCI-65FP-045125	68.25 - 69.25	1.0000	1.0000
L29	57	(Area) CCI-65FP-045125	68.25 - 69.25	1.0000	1.0000
L29	70	PL 1 x 5	64.25 - 69.25	1.0000	1.0000
L29	71	PL 1 x 5	64.25 - 69.25	1.0000	1.0000
L29	72	PL 1 x 5	64.25 - 69.25	1.0000	1.0000
L29	73	PL 1 x 5	64.25 - 69.25	1.0000	1.0000
L30	5	3" Flexible Conduit	59.25 - 64.25	1.0000	1.0000

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<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L30	6	HB114-1-0813U4-M5J(1-1/4 )	59.25 - 64.25	1.0000	1.0000
L30	9	LDF7-50A(1-5/8)	59.25 - 64.25	1.0000	1.0000
L30	11	LDF7-50A(1-5/8)	59.25 - 64.25	1.0000	1.0000
L30	27	Safety Line 3/8	59.25 - 64.25	1.0000	1.0000
L30	48	(Area) CCI-65FP-045100	59.25 - 64.25	1.0000	1.0000
L30	49	(Area) CCI-65FP-045100	59.25 - 64.25	1.0000	1.0000
L30	51	(Area) CCI-65FP-065125	59.25 - 64.25	1.0000	1.0000
L30	52	(Area) CCI-65FP-045100	59.25 - 64.25	1.0000	1.0000
L30	70	PL 1 x 5	59.25 - 64.25	1.0000	1.0000
L30	71	PL 1 x 5	59.25 - 64.25	1.0000	1.0000
L30	72	PL 1 x 5	59.25 - 64.25	1.0000	1.0000
L30	73	PL 1 x 5	59.25 - 64.25	1.0000	1.0000
L31	5	3" Flexible Conduit	56.00 - 59.25	1.0000	1.0000
L31	6	HB114-1-0813U4-M5J(1-1/4 )	56.00 - 59.25	1.0000	1.0000
L31	9	LDF7-50A(1-5/8)	56.00 - 59.25	1.0000	1.0000
L31	11	LDF7-50A(1-5/8)	56.00 - 59.25	1.0000	1.0000
L31	27	Safety Line 3/8	56.00 - 59.25	1.0000	1.0000
L31	41	(Area) CCI-65FP-045100	56.00 - 57.25	1.0000	1.0000
L31	43	(Area) CCI-65FP-045100	56.00 - 57.25	1.0000	1.0000
L31	46	(Area) CCI-65FP-045100	56.00 - 57.25	1.0000	1.0000
L31	48	(Area) CCI-65FP-045100	57.25 - 59.25	1.0000	1.0000
L31	49	(Area) CCI-65FP-045100	57.25 - 59.25	1.0000	1.0000
L31	51	(Area) CCI-65FP-065125	56.00 - 59.25	1.0000	1.0000
L31	52	(Area) CCI-65FP-045100	57.25 - 59.25	1.0000	1.0000
L31	70	PL 1 x 5	56.00 - 59.25	1.0000	1.0000
L31	71	PL 1 x 5	56.00 - 59.25	1.0000	1.0000
L31	72	PL 1 x 5	56.00 - 59.25	1.0000	1.0000
L31	73	PL 1 x 5	56.00 - 59.25	1.0000	1.0000
L32	5	3" Flexible Conduit	55.75 - 56.00	1.0000	1.0000
L32	6	HB114-1-0813U4-M5J(1-1/4 )	55.75 - 56.00	1.0000	1.0000
L32	9	LDF7-50A(1-5/8)	55.75 - 56.00	1.0000	1.0000
L32	11	LDF7-50A(1-5/8)	55.75 - 56.00	1.0000	1.0000
L32	27	Safety Line 3/8	55.75 - 56.00	1.0000	1.0000
L32	40	(Area) CCI-65FP-045100	55.75 - 56.00	1.0000	1.0000
L32	42	(Area) CCI-65FP-045100	55.75 - 56.00	1.0000	1.0000
L32	45	(Area) CCI-65FP-045100	55.75 - 56.00	1.0000	1.0000
L32	50	(Area) CCI-65FP-065125	55.75 - 56.00	1.0000	1.0000
L32	70	PL 1 x 5	55.75 - 56.00	1.0000	1.0000
L32	71	PL 1 x 5	55.75 - 56.00	1.0000	1.0000
L32	72	PL 1 x 5	55.75 - 56.00	1.0000	1.0000
L32	73	PL 1 x 5	55.75 - 56.00	1.0000	1.0000
L33	5	3" Flexible Conduit	55.50 - 55.75	1.0000	1.0000
L33	6	HB114-1-0813U4-M5J(1-1/4 )	55.50 - 55.75	1.0000	1.0000
L33	9	LDF7-50A(1-5/8)	55.50 - 55.75	1.0000	1.0000
L33	11	LDF7-50A(1-5/8)	55.50 - 55.75	1.0000	1.0000
L33	27	Safety Line 3/8	55.50 - 55.75	1.0000	1.0000
L33	40	(Area) CCI-65FP-045100	55.50 - 55.75	1.0000	1.0000
L33	42	(Area) CCI-65FP-045100	55.50 - 55.75	1.0000	1.0000
L33	45	(Area) CCI-65FP-045100	55.50 - 55.75	1.0000	1.0000
L33	50	(Area) CCI-65FP-065125	55.50 - 55.75	1.0000	1.0000
L33	70	PL 1 x 5	55.50 - 55.75	1.0000	1.0000
L33	71	PL 1 x 5	55.50 - 55.75	1.0000	1.0000
L33	72	PL 1 x 5	55.50 - 55.75	1.0000	1.0000
L33	73	PL 1 x 5	55.50 - 55.75	1.0000	1.0000
L34	5	3" Flexible Conduit	55.25 - 55.50	1.0000	1.0000
L34	6	HB114-1-0813U4-M5J(1-1/4 )	55.25 - 55.50	1.0000	1.0000
L34	9	LDF7-50A(1-5/8)	55.25 - 55.50	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L34	11	LDF7-50A(1-5/8)	55.25 - 55.50	1.0000	1.0000
L34	27	Safety Line 3/8	55.25 - 55.50	1.0000	1.0000
L34	40	(Area) CCI-65FP-045100	55.25 - 55.50	1.0000	1.0000
L34	42	(Area) CCI-65FP-045100	55.25 - 55.50	1.0000	1.0000
L34	45	(Area) CCI-65FP-045100	55.25 - 55.50	1.0000	1.0000
L34	50	(Area) CCI-65FP-065125	55.25 - 55.50	1.0000	1.0000
L34	70	PL 1 x 5	55.25 - 55.50	1.0000	1.0000
L34	71	PL 1 x 5	55.25 - 55.50	1.0000	1.0000
L34	72	PL 1 x 5	55.25 - 55.50	1.0000	1.0000
L34	73	PL 1 x 5	55.25 - 55.50	1.0000	1.0000
L35	5	3" Flexible Conduit	54.00 - 55.25	1.0000	1.0000
L35	6	HB114-1-0813U4-M5J(1-1/4)	54.00 - 55.25	1.0000	1.0000
L35	9	LDF7-50A(1-5/8)	54.00 - 55.25	1.0000	1.0000
L35	11	LDF7-50A(1-5/8)	54.00 - 55.25	1.0000	1.0000
L35	27	Safety Line 3/8	54.00 - 55.25	1.0000	1.0000
L35	40	(Area) CCI-65FP-045100	54.00 - 55.25	1.0000	1.0000
L35	42	(Area) CCI-65FP-045100	54.00 - 55.25	1.0000	1.0000
L35	45	(Area) CCI-65FP-045100	54.00 - 55.25	1.0000	1.0000
L35	50	(Area) CCI-65FP-065125	54.00 - 55.25	1.0000	1.0000
L35	70	PL 1 x 5	54.00 - 55.25	1.0000	1.0000
L35	71	PL 1 x 5	54.00 - 55.25	1.0000	1.0000
L35	72	PL 1 x 5	54.00 - 55.25	1.0000	1.0000
L35	73	PL 1 x 5	54.00 - 55.25	1.0000	1.0000
L36	5	3" Flexible Conduit	53.75 - 54.00	1.0000	1.0000
L36	6	HB114-1-0813U4-M5J(1-1/4)	53.75 - 54.00	1.0000	1.0000
L36	9	LDF7-50A(1-5/8)	53.75 - 54.00	1.0000	1.0000
L36	11	LDF7-50A(1-5/8)	53.75 - 54.00	1.0000	1.0000
L36	27	Safety Line 3/8	53.75 - 54.00	1.0000	1.0000
L36	40	(Area) CCI-65FP-045100	53.75 - 54.00	1.0000	1.0000
L36	42	(Area) CCI-65FP-045100	53.75 - 54.00	1.0000	1.0000
L36	45	(Area) CCI-65FP-045100	53.75 - 54.00	1.0000	1.0000
L36	50	(Area) CCI-65FP-065125	53.75 - 54.00	1.0000	1.0000
L36	70	PL 1 x 5	53.75 - 54.00	1.0000	1.0000
L36	71	PL 1 x 5	53.75 - 54.00	1.0000	1.0000
L36	72	PL 1 x 5	53.75 - 54.00	1.0000	1.0000
L36	73	PL 1 x 5	53.75 - 54.00	1.0000	1.0000
L37	5	3" Flexible Conduit	53.50 - 53.75	1.0000	1.0000
L37	6	HB114-1-0813U4-M5J(1-1/4)	53.50 - 53.75	1.0000	1.0000
L37	9	LDF7-50A(1-5/8)	53.50 - 53.75	1.0000	1.0000
L37	11	LDF7-50A(1-5/8)	53.50 - 53.75	1.0000	1.0000
L37	27	Safety Line 3/8	53.50 - 53.75	1.0000	1.0000
L37	40	(Area) CCI-65FP-045100	53.50 - 53.75	1.0000	1.0000
L37	42	(Area) CCI-65FP-045100	53.50 - 53.75	1.0000	1.0000
L37	45	(Area) CCI-65FP-045100	53.50 - 53.75	1.0000	1.0000
L37	50	(Area) CCI-65FP-065125	53.50 - 53.75	1.0000	1.0000
L37	70	PL 1 x 5	53.50 - 53.75	1.0000	1.0000
L37	71	PL 1 x 5	53.50 - 53.75	1.0000	1.0000
L37	72	PL 1 x 5	53.50 - 53.75	1.0000	1.0000
L37	73	PL 1 x 5	53.50 - 53.75	1.0000	1.0000
L38	5	3" Flexible Conduit	53.25 - 53.50	1.0000	1.0000
L38	6	HB114-1-0813U4-M5J(1-1/4)	53.25 - 53.50	1.0000	1.0000
L38	9	LDF7-50A(1-5/8)	53.25 - 53.50	1.0000	1.0000
L38	11	LDF7-50A(1-5/8)	53.25 - 53.50	1.0000	1.0000
L38	27	Safety Line 3/8	53.25 - 53.50	1.0000	1.0000
L38	40	(Area) CCI-65FP-045100	53.25 - 53.50	1.0000	1.0000
L38	42	(Area) CCI-65FP-045100	53.25 - 53.50	1.0000	1.0000
L38	45	(Area) CCI-65FP-045100	53.25 - 53.50	1.0000	1.0000
L38	50	(Area) CCI-65FP-065125	53.25 - 53.50	1.0000	1.0000

**tnxTower****Tower Engineering  
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Crown Castle

**Designed by**

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L38	70	PL 1 x 5	53.25 - 53.50	1.0000	1.0000
L38	71	PL 1 x 5	53.25 - 53.50	1.0000	1.0000
L38	72	PL 1 x 5	53.25 - 53.50	1.0000	1.0000
L38	73	PL 1 x 5	53.25 - 53.50	1.0000	1.0000
L39	5	3" Flexible Conduit	53.00 - 53.25	1.0000	1.0000
L39	6	HB114-1-0813U4-M5J(1-1/4)	53.00 - 53.25	1.0000	1.0000
L39	9	LDF7-50A(1-5/8)	53.00 - 53.25	1.0000	1.0000
L39	11	LDF7-50A(1-5/8)	53.00 - 53.25	1.0000	1.0000
L39	27	Safety Line 3/8	53.00 - 53.25	1.0000	1.0000
L39	40	(Area) CCI-65FP-045100	53.00 - 53.25	1.0000	1.0000
L39	42	(Area) CCI-65FP-045100	53.00 - 53.25	1.0000	1.0000
L39	45	(Area) CCI-65FP-045100	53.00 - 53.25	1.0000	1.0000
L39	50	(Area) CCI-65FP-065125	53.00 - 53.25	1.0000	1.0000
L39	70	PL 1 x 5	53.00 - 53.25	1.0000	1.0000
L39	71	PL 1 x 5	53.00 - 53.25	1.0000	1.0000
L39	72	PL 1 x 5	53.00 - 53.25	1.0000	1.0000
L39	73	PL 1 x 5	53.00 - 53.25	1.0000	1.0000
L40	5	3" Flexible Conduit	48.00 - 53.00	1.0000	1.0000
L40	6	HB114-1-0813U4-M5J(1-1/4)	48.00 - 53.00	1.0000	1.0000
L40	9	LDF7-50A(1-5/8)	48.00 - 53.00	1.0000	1.0000
L40	11	LDF7-50A(1-5/8)	48.00 - 53.00	1.0000	1.0000
L40	27	Safety Line 3/8	48.00 - 53.00	1.0000	1.0000
L40	40	(Area) CCI-65FP-045100	48.00 - 53.00	1.0000	1.0000
L40	42	(Area) CCI-65FP-045100	48.00 - 53.00	1.0000	1.0000
L40	44	(Area) CCI-65FP-045100	48.00 - 50.50	1.0000	1.0000
L40	45	(Area) CCI-65FP-045100	48.00 - 53.00	1.0000	1.0000
L40	50	(Area) CCI-65FP-065125	50.50 - 53.00	1.0000	1.0000
L40	70	PL 1 x 5	48.00 - 53.00	1.0000	1.0000
L40	71	PL 1 x 5	48.00 - 53.00	1.0000	1.0000
L40	72	PL 1 x 5	48.00 - 53.00	1.0000	1.0000
L40	73	PL 1 x 5	48.00 - 53.00	1.0000	1.0000
L41	5	3" Flexible Conduit	39.75 - 48.00	1.0000	1.0000
L41	6	HB114-1-0813U4-M5J(1-1/4)	39.75 - 48.00	1.0000	1.0000
L41	9	LDF7-50A(1-5/8)	39.75 - 48.00	1.0000	1.0000
L41	11	LDF7-50A(1-5/8)	39.75 - 48.00	1.0000	1.0000
L41	27	Safety Line 3/8	39.75 - 48.00	1.0000	1.0000
L41	35	(Area) Aero MP3-03	39.75 - 45.50	1.0000	1.0000
L41	36	(Area) Aero MP3-03	39.75 - 45.50	1.0000	1.0000
L41	37	(Area) Aero MP3-03	39.75 - 45.50	1.0000	1.0000
L41	38	(Area) Aero MP3-03	39.75 - 45.50	1.0000	1.0000
L41	40	(Area) CCI-65FP-045100	45.50 - 48.00	1.0000	1.0000
L41	42	(Area) CCI-65FP-045100	45.50 - 48.00	1.0000	1.0000
L41	44	(Area) CCI-65FP-045100	45.50 - 48.00	1.0000	1.0000
L41	45	(Area) CCI-65FP-045100	45.50 - 48.00	1.0000	1.0000
L41	70	PL 1 x 5	39.75 - 48.00	1.0000	1.0000
L41	71	PL 1 x 5	39.75 - 48.00	1.0000	1.0000
L41	72	PL 1 x 5	39.75 - 48.00	1.0000	1.0000
L41	73	PL 1 x 5	39.75 - 48.00	1.0000	1.0000
L43	5	3" Flexible Conduit	34.75 - 38.75	1.0000	1.0000
L43	6	HB114-1-0813U4-M5J(1-1/4)	34.75 - 38.75	1.0000	1.0000
L43	9	LDF7-50A(1-5/8)	34.75 - 38.75	1.0000	1.0000
L43	11	LDF7-50A(1-5/8)	34.75 - 38.75	1.0000	1.0000
L43	27	Safety Line 3/8	34.75 - 38.75	1.0000	1.0000
L43	35	(Area) Aero MP3-03	34.75 - 38.75	1.0000	1.0000
L43	36	(Area) Aero MP3-03	34.75 - 38.75	1.0000	1.0000
L43	37	(Area) Aero MP3-03	34.75 - 38.75	1.0000	1.0000
L43	38	(Area) Aero MP3-03	34.75 - 38.75	1.0000	1.0000
L43	65	(Area) CCI-65FP-065125	34.75 - 35.50	1.0000	1.0000

**tnxTower****Tower Engineering  
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**Project**

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**Date**

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Crown Castle

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tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L43	66	(Area) CCI-65FP-065125	34.75 - 35.50	1.0000	1.0000
L43	67	(Area) CCI-65FP-065125	34.75 - 35.50	1.0000	1.0000
L43	68	(Area) CCI-65FP-065125	34.75 - 35.50	1.0000	1.0000
L43	70	PL 1 x 5	34.75 - 38.75	1.0000	1.0000
L43	71	PL 1 x 5	34.75 - 38.75	1.0000	1.0000
L43	72	PL 1 x 5	34.75 - 38.75	1.0000	1.0000
L43	73	PL 1 x 5	34.75 - 38.75	1.0000	1.0000
L44	5	3" Flexible Conduit	34.50 - 34.75	1.0000	1.0000
L44	6	HB114-1-0813U4-M5J(1-1/4 )	34.50 - 34.75	1.0000	1.0000
L44	9	LDF7-50A(1-5/8)	34.50 - 34.75	1.0000	1.0000
L44	11	LDF7-50A(1-5/8)	34.50 - 34.75	1.0000	1.0000
L44	27	Safety Line 3/8	34.50 - 34.75	1.0000	1.0000
L44	35	(Area) Aero MP3-03	34.50 - 34.75	1.0000	1.0000
L44	36	(Area) Aero MP3-03	34.50 - 34.75	1.0000	1.0000
L44	37	(Area) Aero MP3-03	34.50 - 34.75	1.0000	1.0000
L44	38	(Area) Aero MP3-03	34.50 - 34.75	1.0000	1.0000
L44	65	(Area) CCI-65FP-065125	34.50 - 34.75	1.0000	1.0000
L44	66	(Area) CCI-65FP-065125	34.50 - 34.75	1.0000	1.0000
L44	67	(Area) CCI-65FP-065125	34.50 - 34.75	1.0000	1.0000
L44	68	(Area) CCI-65FP-065125	34.50 - 34.75	1.0000	1.0000
L44	70	PL 1 x 5	34.50 - 34.75	1.0000	1.0000
L44	71	PL 1 x 5	34.50 - 34.75	1.0000	1.0000
L44	72	PL 1 x 5	34.50 - 34.75	1.0000	1.0000
L44	73	PL 1 x 5	34.50 - 34.75	1.0000	1.0000
L45	5	3" Flexible Conduit	33.75 - 34.50	1.0000	1.0000
L45	6	HB114-1-0813U4-M5J(1-1/4 )	33.75 - 34.50	1.0000	1.0000
L45	9	LDF7-50A(1-5/8)	33.75 - 34.50	1.0000	1.0000
L45	11	LDF7-50A(1-5/8)	33.75 - 34.50	1.0000	1.0000
L45	27	Safety Line 3/8	33.75 - 34.50	1.0000	1.0000
L45	35	(Area) Aero MP3-03	33.75 - 34.50	1.0000	1.0000
L45	36	(Area) Aero MP3-03	33.75 - 34.50	1.0000	1.0000
L45	37	(Area) Aero MP3-03	33.75 - 34.50	1.0000	1.0000
L45	38	(Area) Aero MP3-03	33.75 - 34.50	1.0000	1.0000
L45	65	(Area) CCI-65FP-065125	33.75 - 34.50	1.0000	1.0000
L45	66	(Area) CCI-65FP-065125	33.75 - 34.50	1.0000	1.0000
L45	67	(Area) CCI-65FP-065125	33.75 - 34.50	1.0000	1.0000
L45	68	(Area) CCI-65FP-065125	33.75 - 34.50	1.0000	1.0000
L45	70	PL 1 x 5	33.75 - 34.50	1.0000	1.0000
L45	71	PL 1 x 5	33.75 - 34.50	1.0000	1.0000
L45	72	PL 1 x 5	33.75 - 34.50	1.0000	1.0000
L45	73	PL 1 x 5	33.75 - 34.50	1.0000	1.0000
L46	5	3" Flexible Conduit	33.50 - 33.75	1.0000	1.0000
L46	6	HB114-1-0813U4-M5J(1-1/4 )	33.50 - 33.75	1.0000	1.0000
L46	9	LDF7-50A(1-5/8)	33.50 - 33.75	1.0000	1.0000
L46	11	LDF7-50A(1-5/8)	33.50 - 33.75	1.0000	1.0000
L46	27	Safety Line 3/8	33.50 - 33.75	1.0000	1.0000
L46	35	(Area) Aero MP3-03	33.50 - 33.75	1.0000	1.0000
L46	36	(Area) Aero MP3-03	33.50 - 33.75	1.0000	1.0000
L46	37	(Area) Aero MP3-03	33.50 - 33.75	1.0000	1.0000
L46	38	(Area) Aero MP3-03	33.50 - 33.75	1.0000	1.0000
L46	65	(Area) CCI-65FP-065125	33.50 - 33.75	1.0000	1.0000
L46	66	(Area) CCI-65FP-065125	33.50 - 33.75	1.0000	1.0000
L46	67	(Area) CCI-65FP-065125	33.50 - 33.75	1.0000	1.0000
L46	68	(Area) CCI-65FP-065125	33.50 - 33.75	1.0000	1.0000
L46	70	PL 1 x 5	33.50 - 33.75	1.0000	1.0000
L46	71	PL 1 x 5	33.50 - 33.75	1.0000	1.0000
L46	72	PL 1 x 5	33.50 - 33.75	1.0000	1.0000
L46	73	PL 1 x 5	33.50 - 33.75	1.0000	1.0000
L47	5	3" Flexible Conduit	32.75 - 33.50	1.0000	1.0000

# tnxTower

## Tower Engineering Professionals, Inc.

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### Job

528 Wheelers Farm Rd (BU 876320)

### Page

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### Project

TEP No. 25570.206551

### Date

14:43:12 01/17/19

### Client

Crown Castle

### Designed by

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L47	6	HB114-1-0813U4-M5J(1-1/4 )	32.75 - 33.50	1.0000	1.0000
L47	9	LDF7-50A(1-5/8)	32.75 - 33.50	1.0000	1.0000
L47	11	LDF7-50A(1-5/8)	32.75 - 33.50	1.0000	1.0000
L47	27	Safety Line 3/8	32.75 - 33.50	1.0000	1.0000
L47	35	(Area) Aero MP3-03	32.75 - 33.50	1.0000	1.0000
L47	36	(Area) Aero MP3-03	32.75 - 33.50	1.0000	1.0000
L47	37	(Area) Aero MP3-03	32.75 - 33.50	1.0000	1.0000
L47	38	(Area) Aero MP3-03	32.75 - 33.50	1.0000	1.0000
L47	65	(Area) CCI-65FP-065125	32.75 - 33.50	1.0000	1.0000
L47	66	(Area) CCI-65FP-065125	32.75 - 33.50	1.0000	1.0000
L47	67	(Area) CCI-65FP-065125	32.75 - 33.50	1.0000	1.0000
L47	68	(Area) CCI-65FP-065125	32.75 - 33.50	1.0000	1.0000
L47	70	PL 1 x 5	32.75 - 33.50	1.0000	1.0000
L47	71	PL 1 x 5	32.75 - 33.50	1.0000	1.0000
L47	72	PL 1 x 5	32.75 - 33.50	1.0000	1.0000
L47	73	PL 1 x 5	32.75 - 33.50	1.0000	1.0000
L48	5	3" Flexible Conduit	32.50 - 32.75	1.0000	1.0000
L48	6	HB114-1-0813U4-M5J(1-1/4 )	32.50 - 32.75	1.0000	1.0000
L48	9	LDF7-50A(1-5/8)	32.50 - 32.75	1.0000	1.0000
L48	11	LDF7-50A(1-5/8)	32.50 - 32.75	1.0000	1.0000
L48	27	Safety Line 3/8	32.50 - 32.75	1.0000	1.0000
L48	35	(Area) Aero MP3-03	32.50 - 32.75	1.0000	1.0000
L48	36	(Area) Aero MP3-03	32.50 - 32.75	1.0000	1.0000
L48	37	(Area) Aero MP3-03	32.50 - 32.75	1.0000	1.0000
L48	38	(Area) Aero MP3-03	32.50 - 32.75	1.0000	1.0000
L48	65	(Area) CCI-65FP-065125	32.50 - 32.75	1.0000	1.0000
L48	66	(Area) CCI-65FP-065125	32.50 - 32.75	1.0000	1.0000
L48	67	(Area) CCI-65FP-065125	32.50 - 32.75	1.0000	1.0000
L48	68	(Area) CCI-65FP-065125	32.50 - 32.75	1.0000	1.0000
L48	70	PL 1 x 5	32.50 - 32.75	1.0000	1.0000
L48	71	PL 1 x 5	32.50 - 32.75	1.0000	1.0000
L48	72	PL 1 x 5	32.50 - 32.75	1.0000	1.0000
L48	73	PL 1 x 5	32.50 - 32.75	1.0000	1.0000
L49	5	3" Flexible Conduit	27.50 - 32.50	1.0000	1.0000
L49	6	HB114-1-0813U4-M5J(1-1/4 )	27.50 - 32.50	1.0000	1.0000
L49	9	LDF7-50A(1-5/8)	27.50 - 32.50	1.0000	1.0000
L49	11	LDF7-50A(1-5/8)	27.50 - 32.50	1.0000	1.0000
L49	27	Safety Line 3/8	27.50 - 32.50	1.0000	1.0000
L49	35	(Area) Aero MP3-03	27.50 - 32.50	1.0000	1.0000
L49	36	(Area) Aero MP3-03	27.50 - 32.50	1.0000	1.0000
L49	37	(Area) Aero MP3-03	27.50 - 32.50	1.0000	1.0000
L49	38	(Area) Aero MP3-03	27.50 - 32.50	1.0000	1.0000
L49	65	(Area) CCI-65FP-065125	27.50 - 32.50	1.0000	1.0000
L49	66	(Area) CCI-65FP-065125	27.50 - 32.50	1.0000	1.0000
L49	67	(Area) CCI-65FP-065125	27.50 - 32.50	1.0000	1.0000
L49	68	(Area) CCI-65FP-065125	27.50 - 32.50	1.0000	1.0000
L49	70	PL 1 x 5	27.50 - 32.50	1.0000	1.0000
L49	71	PL 1 x 5	27.50 - 32.50	1.0000	1.0000
L49	72	PL 1 x 5	27.50 - 32.50	1.0000	1.0000
L49	73	PL 1 x 5	27.50 - 32.50	1.0000	1.0000
L50	5	3" Flexible Conduit	24.00 - 27.50	1.0000	1.0000
L50	6	HB114-1-0813U4-M5J(1-1/4 )	24.00 - 27.50	1.0000	1.0000
L50	9	LDF7-50A(1-5/8)	24.00 - 27.50	1.0000	1.0000
L50	11	LDF7-50A(1-5/8)	24.00 - 27.50	1.0000	1.0000
L50	27	Safety Line 3/8	24.00 - 27.50	1.0000	1.0000
L50	30	(Area) Aero MP3-04	24.00 - 25.50	1.0000	1.0000
L50	31	(Area) Aero MP3-04	24.00 - 25.50	1.0000	1.0000
L50	32	(Area) Aero MP3-04	24.00 - 25.50	1.0000	1.0000



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### Job

528 Wheelers Farm Rd (BU 876320)

### Page

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### Project

TEP No. 25570.206551

### Date

14:43:12 01/17/19

### Client

Crown Castle

### Designed by

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L50	33	(Area) Aero MP3-04	24.00 - 25.50	1.0000	1.0000
L50	35	(Area) Aero MP3-03	25.50 - 27.50	1.0000	1.0000
L50	36	(Area) Aero MP3-03	25.50 - 27.50	1.0000	1.0000
L50	37	(Area) Aero MP3-03	25.50 - 27.50	1.0000	1.0000
L50	38	(Area) Aero MP3-03	25.50 - 27.50	1.0000	1.0000
L50	65	(Area) CCI-65FP-065125	24.00 - 27.50	1.0000	1.0000
L50	66	(Area) CCI-65FP-065125	24.00 - 27.50	1.0000	1.0000
L50	67	(Area) CCI-65FP-065125	24.00 - 27.50	1.0000	1.0000
L50	68	(Area) CCI-65FP-065125	24.00 - 27.50	1.0000	1.0000
L50	70	PL 1 x 5	24.00 - 27.50	1.0000	1.0000
L50	71	PL 1 x 5	24.00 - 27.50	1.0000	1.0000
L50	72	PL 1 x 5	24.00 - 27.50	1.0000	1.0000
L50	73	PL 1 x 5	24.00 - 27.50	1.0000	1.0000
L51	5	3" Flexible Conduit	23.75 - 24.00	1.0000	1.0000
L51	6	HB114-1-0813U4-M5J(1-1/4)	23.75 - 24.00	1.0000	1.0000
L51	9	LDF7-50A(1-5/8)	23.75 - 24.00	1.0000	1.0000
L51	11	LDF7-50A(1-5/8)	23.75 - 24.00	1.0000	1.0000
L51	27	Safety Line 3/8	23.75 - 24.00	1.0000	1.0000
L51	30	(Area) Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L51	31	(Area) Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L51	32	(Area) Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L51	33	(Area) Aero MP3-04	23.75 - 24.00	1.0000	1.0000
L51	65	(Area) CCI-65FP-065125	23.75 - 24.00	1.0000	1.0000
L51	66	(Area) CCI-65FP-065125	23.75 - 24.00	1.0000	1.0000
L51	67	(Area) CCI-65FP-065125	23.75 - 24.00	1.0000	1.0000
L51	68	(Area) CCI-65FP-065125	23.75 - 24.00	1.0000	1.0000
L51	70	PL 1 x 5	23.75 - 24.00	1.0000	1.0000
L51	71	PL 1 x 5	23.75 - 24.00	1.0000	1.0000
L51	72	PL 1 x 5	23.75 - 24.00	1.0000	1.0000
L51	73	PL 1 x 5	23.75 - 24.00	1.0000	1.0000
L52	5	3" Flexible Conduit	18.75 - 23.75	1.0000	1.0000
L52	6	HB114-1-0813U4-M5J(1-1/4)	18.75 - 23.75	1.0000	1.0000
L52	9	LDF7-50A(1-5/8)	18.75 - 23.75	1.0000	1.0000
L52	11	LDF7-50A(1-5/8)	18.75 - 23.75	1.0000	1.0000
L52	27	Safety Line 3/8	18.75 - 23.75	1.0000	1.0000
L52	30	(Area) Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L52	31	(Area) Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L52	32	(Area) Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L52	33	(Area) Aero MP3-04	18.75 - 23.75	1.0000	1.0000
L52	65	(Area) CCI-65FP-065125	18.75 - 23.75	1.0000	1.0000
L52	66	(Area) CCI-65FP-065125	18.75 - 23.75	1.0000	1.0000
L52	67	(Area) CCI-65FP-065125	18.75 - 23.75	1.0000	1.0000
L52	68	(Area) CCI-65FP-065125	18.75 - 23.75	1.0000	1.0000
L52	70	PL 1 x 5	18.75 - 23.75	1.0000	1.0000
L52	71	PL 1 x 5	18.75 - 23.75	1.0000	1.0000
L52	72	PL 1 x 5	18.75 - 23.75	1.0000	1.0000
L52	73	PL 1 x 5	18.75 - 23.75	1.0000	1.0000
L53	5	3" Flexible Conduit	14.25 - 18.75	1.0000	1.0000
L53	6	HB114-1-0813U4-M5J(1-1/4)	14.25 - 18.75	1.0000	1.0000
L53	9	LDF7-50A(1-5/8)	14.25 - 18.75	1.0000	1.0000
L53	11	LDF7-50A(1-5/8)	14.25 - 18.75	1.0000	1.0000
L53	27	Safety Line 3/8	14.25 - 18.75	1.0000	1.0000
L53	30	(Area) Aero MP3-04	14.25 - 18.75	1.0000	1.0000
L53	31	(Area) Aero MP3-04	14.25 - 18.75	1.0000	1.0000
L53	32	(Area) Aero MP3-04	14.25 - 18.75	1.0000	1.0000
L53	33	(Area) Aero MP3-04	14.25 - 18.75	1.0000	1.0000
L53	65	(Area) CCI-65FP-065125	14.25 - 18.75	1.0000	1.0000
L53	66	(Area) CCI-65FP-065125	14.25 - 18.75	1.0000	1.0000
L53	67	(Area) CCI-65FP-065125	14.25 - 18.75	1.0000	1.0000

# tnxTower

## Tower Engineering Professionals, Inc.

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### Job

528 Wheelers Farm Rd (BU 876320)

### Page

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### Project

TEP No. 25570.206551

### Date

14:43:12 01/17/19

### Client

Crown Castle

### Designed by

tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L53	68	(Area) CCI-65FP-065125	14.25 - 18.75	1.0000	1.0000
L53	70	PL 1 x 5	14.25 - 18.75	1.0000	1.0000
L53	71	PL 1 x 5	14.25 - 18.75	1.0000	1.0000
L53	72	PL 1 x 5	14.25 - 18.75	1.0000	1.0000
L53	73	PL 1 x 5	14.25 - 18.75	1.0000	1.0000
L53	75	(Area) Aero MP3-03	14.25 - 16.50	1.0000	1.0000
L53	76	(Area) Aero MP3-03	14.25 - 16.50	1.0000	1.0000
L53	77	(Area) Aero MP3-03	14.25 - 16.50	1.0000	1.0000
L53	78	(Area) Aero MP3-03	14.25 - 16.50	1.0000	1.0000
L54	5	3" Flexible Conduit	14.00 - 14.25	1.0000	1.0000
L54	6	HB114-1-0813U4-M5J(1-1/4)	14.00 - 14.25	1.0000	1.0000
L54	9	LDF7-50A(1-5/8)	14.00 - 14.25	1.0000	1.0000
L54	11	LDF7-50A(1-5/8)	14.00 - 14.25	1.0000	1.0000
L54	27	Safety Line 3/8	14.00 - 14.25	1.0000	1.0000
L54	30	(Area) Aero MP3-04	14.00 - 14.25	1.0000	1.0000
L54	31	(Area) Aero MP3-04	14.00 - 14.25	1.0000	1.0000
L54	32	(Area) Aero MP3-04	14.00 - 14.25	1.0000	1.0000
L54	33	(Area) Aero MP3-04	14.00 - 14.25	1.0000	1.0000
L54	65	(Area) CCI-65FP-065125	14.00 - 14.25	1.0000	1.0000
L54	66	(Area) CCI-65FP-065125	14.00 - 14.25	1.0000	1.0000
L54	67	(Area) CCI-65FP-065125	14.00 - 14.25	1.0000	1.0000
L54	68	(Area) CCI-65FP-065125	14.00 - 14.25	1.0000	1.0000
L54	70	PL 1 x 5	14.00 - 14.25	1.0000	1.0000
L54	71	PL 1 x 5	14.00 - 14.25	1.0000	1.0000
L54	72	PL 1 x 5	14.00 - 14.25	1.0000	1.0000
L54	73	PL 1 x 5	14.00 - 14.25	1.0000	1.0000
L54	75	(Area) Aero MP3-03	14.00 - 14.25	1.0000	1.0000
L54	76	(Area) Aero MP3-03	14.00 - 14.25	1.0000	1.0000
L54	77	(Area) Aero MP3-03	14.00 - 14.25	1.0000	1.0000
L54	78	(Area) Aero MP3-03	14.00 - 14.25	1.0000	1.0000
L55	5	3" Flexible Conduit	12.75 - 14.00	1.0000	1.0000
L55	6	HB114-1-0813U4-M5J(1-1/4)	12.75 - 14.00	1.0000	1.0000
L55	9	LDF7-50A(1-5/8)	12.75 - 14.00	1.0000	1.0000
L55	11	LDF7-50A(1-5/8)	12.75 - 14.00	1.0000	1.0000
L55	27	Safety Line 3/8	12.75 - 14.00	1.0000	1.0000
L55	30	(Area) Aero MP3-04	12.75 - 14.00	1.0000	1.0000
L55	31	(Area) Aero MP3-04	12.75 - 14.00	1.0000	1.0000
L55	32	(Area) Aero MP3-04	12.75 - 14.00	1.0000	1.0000
L55	33	(Area) Aero MP3-04	12.75 - 14.00	1.0000	1.0000
L55	65	(Area) CCI-65FP-065125	12.75 - 14.00	1.0000	1.0000
L55	66	(Area) CCI-65FP-065125	12.75 - 14.00	1.0000	1.0000
L55	67	(Area) CCI-65FP-065125	12.75 - 14.00	1.0000	1.0000
L55	68	(Area) CCI-65FP-065125	12.75 - 14.00	1.0000	1.0000
L55	70	PL 1 x 5	12.75 - 14.00	1.0000	1.0000
L55	71	PL 1 x 5	12.75 - 14.00	1.0000	1.0000
L55	72	PL 1 x 5	12.75 - 14.00	1.0000	1.0000
L55	73	PL 1 x 5	12.75 - 14.00	1.0000	1.0000
L55	75	(Area) Aero MP3-03	12.75 - 14.00	1.0000	1.0000
L55	76	(Area) Aero MP3-03	12.75 - 14.00	1.0000	1.0000
L55	77	(Area) Aero MP3-03	12.75 - 14.00	1.0000	1.0000
L55	78	(Area) Aero MP3-03	12.75 - 14.00	1.0000	1.0000
L56	5	3" Flexible Conduit	12.50 - 12.75	1.0000	1.0000
L56	6	HB114-1-0813U4-M5J(1-1/4)	12.50 - 12.75	1.0000	1.0000
L56	9	LDF7-50A(1-5/8)	12.50 - 12.75	1.0000	1.0000
L56	11	LDF7-50A(1-5/8)	12.50 - 12.75	1.0000	1.0000
L56	27	Safety Line 3/8	12.50 - 12.75	1.0000	1.0000
L56	30	(Area) Aero MP3-04	12.50 - 12.75	1.0000	1.0000
L56	31	(Area) Aero MP3-04	12.50 - 12.75	1.0000	1.0000
L56	32	(Area) Aero MP3-04	12.50 - 12.75	1.0000	1.0000

<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	31 of 62
<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L56	33	(Area) Aero MP3-04	12.50 - 12.75	1.0000	1.0000
L56	65	(Area) CCI-65FP-065125	12.50 - 12.75	1.0000	1.0000
L56	66	(Area) CCI-65FP-065125	12.50 - 12.75	1.0000	1.0000
L56	67	(Area) CCI-65FP-065125	12.50 - 12.75	1.0000	1.0000
L56	68	(Area) CCI-65FP-065125	12.50 - 12.75	1.0000	1.0000
L56	70	PL 1 x 5	12.50 - 12.75	1.0000	1.0000
L56	71	PL 1 x 5	12.50 - 12.75	1.0000	1.0000
L56	72	PL 1 x 5	12.50 - 12.75	1.0000	1.0000
L56	73	PL 1 x 5	12.50 - 12.75	1.0000	1.0000
L56	75	(Area) Aero MP3-03	12.50 - 12.75	1.0000	1.0000
L56	76	(Area) Aero MP3-03	12.50 - 12.75	1.0000	1.0000
L56	77	(Area) Aero MP3-03	12.50 - 12.75	1.0000	1.0000
L56	78	(Area) Aero MP3-03	12.50 - 12.75	1.0000	1.0000
L57	5	3" Flexible Conduit	7.50 - 12.50	1.0000	1.0000
L57	6	HB114-1-0813U4-M5J(1-1/4 )	7.50 - 12.50	1.0000	1.0000
L57	9	LDF7-50A(1-5/8)	7.50 - 12.50	1.0000	1.0000
L57	11	LDF7-50A(1-5/8)	7.50 - 12.50	1.0000	1.0000
L57	27	Safety Line 3/8	7.50 - 12.50	1.0000	1.0000
L57	30	(Area) Aero MP3-04	7.50 - 12.50	1.0000	1.0000
L57	31	(Area) Aero MP3-04	7.50 - 12.50	1.0000	1.0000
L57	32	(Area) Aero MP3-04	7.50 - 12.50	1.0000	1.0000
L57	33	(Area) Aero MP3-04	7.50 - 12.50	1.0000	1.0000
L57	65	(Area) CCI-65FP-065125	10.00 - 12.50	1.0000	1.0000
L57	66	(Area) CCI-65FP-065125	10.00 - 12.50	1.0000	1.0000
L57	67	(Area) CCI-65FP-065125	10.00 - 12.50	1.0000	1.0000
L57	68	(Area) CCI-65FP-065125	10.00 - 12.50	1.0000	1.0000
L57	70	PL 1 x 5	7.50 - 12.50	1.0000	1.0000
L57	71	PL 1 x 5	7.50 - 12.50	1.0000	1.0000
L57	72	PL 1 x 5	7.50 - 12.50	1.0000	1.0000
L57	73	PL 1 x 5	7.50 - 12.50	1.0000	1.0000
L57	75	(Area) Aero MP3-03	7.50 - 12.50	1.0000	1.0000
L57	76	(Area) Aero MP3-03	7.50 - 12.50	1.0000	1.0000
L57	77	(Area) Aero MP3-03	7.50 - 12.50	1.0000	1.0000
L57	78	(Area) Aero MP3-03	7.50 - 12.50	1.0000	1.0000
L58	5	3" Flexible Conduit	5.00 - 7.50	1.0000	1.0000
L58	6	HB114-1-0813U4-M5J(1-1/4 )	5.00 - 7.50	1.0000	1.0000
L58	9	LDF7-50A(1-5/8)	5.00 - 7.50	1.0000	1.0000
L58	11	LDF7-50A(1-5/8)	5.00 - 7.50	1.0000	1.0000
L58	27	Safety Line 3/8	5.00 - 7.50	1.0000	1.0000
L58	30	(Area) Aero MP3-04	5.00 - 7.50	1.0000	1.0000
L58	31	(Area) Aero MP3-04	5.00 - 7.50	1.0000	1.0000
L58	32	(Area) Aero MP3-04	5.00 - 7.50	1.0000	1.0000
L58	33	(Area) Aero MP3-04	5.00 - 7.50	1.0000	1.0000
L58	70	PL 1 x 5	5.00 - 7.50	1.0000	1.0000
L58	71	PL 1 x 5	5.00 - 7.50	1.0000	1.0000
L58	72	PL 1 x 5	5.00 - 7.50	1.0000	1.0000
L58	73	PL 1 x 5	5.00 - 7.50	1.0000	1.0000
L58	75	(Area) Aero MP3-03	5.00 - 7.50	1.0000	1.0000
L58	76	(Area) Aero MP3-03	5.00 - 7.50	1.0000	1.0000
L58	77	(Area) Aero MP3-03	5.00 - 7.50	1.0000	1.0000
L58	78	(Area) Aero MP3-03	5.00 - 7.50	1.0000	1.0000
L59	5	3" Flexible Conduit	4.75 - 5.00	1.0000	1.0000
L59	6	HB114-1-0813U4-M5J(1-1/4 )	4.75 - 5.00	1.0000	1.0000
L59	9	LDF7-50A(1-5/8)	4.75 - 5.00	1.0000	1.0000
L59	11	LDF7-50A(1-5/8)	4.75 - 5.00	1.0000	1.0000
L59	27	Safety Line 3/8	4.75 - 5.00	1.0000	1.0000
L59	30	(Area) Aero MP3-04	4.75 - 5.00	1.0000	1.0000
L59	31	(Area) Aero MP3-04	4.75 - 5.00	1.0000	1.0000
L59	32	(Area) Aero MP3-04	4.75 - 5.00	1.0000	1.0000

<p><b>tnxTower</b></p> <p><b>Tower Engineering Professionals, Inc.</b>  326 Tryon Road  Raleigh, NC 27603  Phone: (919) 661-6351  FAX: (919) 661-6350</p>	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 32 of 62
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	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
L59	33	(Area) Aero MP3-04	4.75 - 5.00	1.0000	1.0000
L59	70	PL 1 x 5	4.75 - 5.00	1.0000	1.0000
L59	71	PL 1 x 5	4.75 - 5.00	1.0000	1.0000
L59	72	PL 1 x 5	4.75 - 5.00	1.0000	1.0000
L59	73	PL 1 x 5	4.75 - 5.00	1.0000	1.0000
L59	75	(Area) Aero MP3-03	4.75 - 5.00	1.0000	1.0000
L59	76	(Area) Aero MP3-03	4.75 - 5.00	1.0000	1.0000
L59	77	(Area) Aero MP3-03	4.75 - 5.00	1.0000	1.0000
L59	78	(Area) Aero MP3-03	4.75 - 5.00	1.0000	1.0000
L60	5	3" Flexible Conduit	4.50 - 4.75	1.0000	1.0000
L60	6	HB114-1-0813U4-M5J(1-1/4 )	4.50 - 4.75	1.0000	1.0000
L60	9	LDF7-50A(1-5/8)	4.50 - 4.75	1.0000	1.0000
L60	11	LDF7-50A(1-5/8)	4.50 - 4.75	1.0000	1.0000
L60	27	Safety Line 3/8	4.50 - 4.75	1.0000	1.0000
L60	30	(Area) Aero MP3-04	4.50 - 4.75	1.0000	1.0000
L60	31	(Area) Aero MP3-04	4.50 - 4.75	1.0000	1.0000
L60	32	(Area) Aero MP3-04	4.50 - 4.75	1.0000	1.0000
L60	33	(Area) Aero MP3-04	4.50 - 4.75	1.0000	1.0000
L60	70	PL 1 x 5	4.50 - 4.75	1.0000	1.0000
L60	71	PL 1 x 5	4.50 - 4.75	1.0000	1.0000
L60	72	PL 1 x 5	4.50 - 4.75	1.0000	1.0000
L60	73	PL 1 x 5	4.50 - 4.75	1.0000	1.0000
L60	75	(Area) Aero MP3-03	4.50 - 4.75	1.0000	1.0000
L60	76	(Area) Aero MP3-03	4.50 - 4.75	1.0000	1.0000
L60	77	(Area) Aero MP3-03	4.50 - 4.75	1.0000	1.0000
L60	78	(Area) Aero MP3-03	4.50 - 4.75	1.0000	1.0000
L61	5	3" Flexible Conduit	0.00 - 4.50	1.0000	1.0000
L61	6	HB114-1-0813U4-M5J(1-1/4 )	0.00 - 4.50	1.0000	1.0000
L61	9	LDF7-50A(1-5/8)	0.00 - 4.50	1.0000	1.0000
L61	11	LDF7-50A(1-5/8)	0.00 - 4.50	1.0000	1.0000
L61	27	Safety Line 3/8	0.00 - 4.50	1.0000	1.0000
L61	30	(Area) Aero MP3-04	0.00 - 4.50	1.0000	1.0000
L61	31	(Area) Aero MP3-04	0.00 - 4.50	1.0000	1.0000
L61	32	(Area) Aero MP3-04	0.00 - 4.50	1.0000	1.0000
L61	33	(Area) Aero MP3-04	0.00 - 4.50	1.0000	1.0000
L61	70	PL 1 x 5	2.50 - 4.50	1.0000	1.0000
L61	71	PL 1 x 5	2.50 - 4.50	1.0000	1.0000
L61	72	PL 1 x 5	2.50 - 4.50	1.0000	1.0000
L61	73	PL 1 x 5	2.50 - 4.50	1.0000	1.0000
L61	75	(Area) Aero MP3-03	0.00 - 4.50	1.0000	1.0000
L61	76	(Area) Aero MP3-03	0.00 - 4.50	1.0000	1.0000
L61	77	(Area) Aero MP3-03	0.00 - 4.50	1.0000	1.0000
L61	78	(Area) Aero MP3-03	0.00 - 4.50	1.0000	1.0000

## Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement	$C_{AA}$ Front	$C_{AA}$ Side	Weight
			ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
			ft					
			ft					

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	33 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i> <i>ft ft ft</i>	<i>Azimuth Adjustment</i> <i>°</i>	<i>Placement</i> <i>ft</i>	<i>C<sub>AA</sub> Front</i> <i>ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side</i> <i>ft<sup>2</sup></i>	<i>Weight</i> <i>K</i>
***								
Pipe 6" x 10'	C	From Leg	0.00 0.00 5.00	0.00	120.000	No Ice 3.232 1/2" Ice 6.050 1" Ice 6.665 2" Ice 7.922	3.232 6.050 6.665 7.922	0.19 0.23 0.28 0.40
***122***								
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Centroid-Le g	4.000 -6.00 -1.00	30.00	122.000	No Ice 6.580 1/2" Ice 7.031 1" Ice 7.473 2" Ice 8.385	4.959 5.754 6.472 7.941	0.08 0.13 0.19 0.34
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Centroid-Le g	4.000 -6.00 -1.00	10.00	122.000	No Ice 6.580 1/2" Ice 7.031 1" Ice 7.473 2" Ice 8.385	4.959 5.754 6.472 7.941	0.08 0.13 0.19 0.34
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Centroid-Le g	4.000 2.00 -1.00	30.00	122.000	No Ice 6.580 1/2" Ice 7.031 1" Ice 7.473 2" Ice 8.385	4.959 5.754 6.472 7.941	0.08 0.13 0.19 0.34
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Le g	4.000 -2.00 -1.00	30.00	122.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346 2" Ice 10.418	6.946 8.127 9.021 10.844	0.08 0.15 0.23 0.41
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Le g	4.000 -2.00 -1.00	10.00	122.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346 2" Ice 10.418	6.946 8.127 9.021 10.844	0.08 0.15 0.23 0.41
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Le g	4.000 -2.00 -1.00	30.00	122.000	No Ice 8.262 1/2" Ice 8.822 1" Ice 9.346 2" Ice 10.418	6.946 8.127 9.021 10.844	0.08 0.15 0.23 0.41
LLPX310R w/ Mount Pipe	A	From Centroid-Le g	4.000 0.00 0.00	30.00	122.000	No Ice 4.455 1/2" Ice 4.787 1" Ice 5.129 2" Ice 5.837	2.874 3.398 3.937 5.048	0.04 0.08 0.12 0.23
LLPX310R w/ Mount Pipe	B	From Centroid-Le g	4.000 0.00 0.00	30.00	122.000	No Ice 4.455 1/2" Ice 4.787 1" Ice 5.129 2" Ice 5.837	2.874 3.398 3.937 5.048	0.04 0.08 0.12 0.23
LLPX310R w/ Mount Pipe	C	From Centroid-Le g	4.000 0.00 0.00	30.00	122.000	No Ice 4.455 1/2" Ice 4.787 1" Ice 5.129 2" Ice 5.837	2.874 3.398 3.937 5.048	0.04 0.08 0.12 0.23
MT-485025	C	From Centroid-Le g	4.000 -6.00 1.00	30.00	122.000	No Ice 2.075 1/2" Ice 2.269 1" Ice 2.471 2" Ice 2.902	0.236 0.333 0.451 0.712	0.01 0.01 0.03 0.06
(3) ACU-A20-N	A	From Centroid-Le g	4.000 -2.00 -2.00	30.00	122.000	No Ice 0.067 1/2" Ice 0.104 1" Ice 0.148 2" Ice 0.259	0.117 0.162 0.215 0.343	0.00 0.00 0.00 0.01
(3) ACU-A20-N	B	From Centroid-Le g	4.000 -2.00 -2.00	10.00	122.000	No Ice 0.067 1/2" Ice 0.104 1" Ice 0.148 2" Ice 0.259	0.117 0.162 0.215 0.343	0.00 0.00 0.00 0.01
(3) ACU-A20-N	C	From Centroid-Le g	4.000 -2.00 -2.00	30.00	122.000	No Ice 0.067 1/2" Ice 0.104 1" Ice 0.148	0.117 0.162 0.215	0.00 0.00 0.00

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	34 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
PCS 1900MHz 4x45W-65MHz	A	From Centroid-Le g	4.000	30.00	122.000	2" Ice	0.259	0.343	0.01
			-2.00			No Ice	2.322	2.238	0.06
			-1.00			1/2" Ice	2.527	2.441	0.08
						1" Ice	2.739	2.651	0.11
						2" Ice	3.185	3.093	0.17
PCS 1900MHz 4x45W-65MHz	B	From Centroid-Le g	4.000	10.00	122.000	No Ice	2.322	2.238	0.06
			-2.00			1/2" Ice	2.527	2.441	0.08
			-2.00			1" Ice	2.739	2.651	0.11
						2" Ice	3.185	3.093	0.17
						No Ice	2.322	2.238	0.06
PCS 1900MHz 4x45W-65MHz	C	From Centroid-Le g	4.000	30.00	122.000	1/2" Ice	2.527	2.441	0.08
			-2.00			1" Ice	2.739	2.651	0.11
			-1.00			2" Ice	3.185	3.093	0.17
						No Ice	2.322	2.238	0.06
						1/2" Ice	2.527	2.441	0.08
800MHZ RRH	A	From Centroid-Le g	4.000	30.00	122.000	1" Ice	2.739	2.651	0.11
			-2.00			2" Ice	3.185	3.093	0.17
			-2.00			No Ice	2.134	1.773	0.05
						1/2" Ice	2.320	1.946	0.07
						1" Ice	2.512	2.127	0.10
800MHZ RRH	B	From Centroid-Le g	4.000	10.00	122.000	2" Ice	2.920	2.510	0.16
			-2.00			No Ice	2.134	1.773	0.05
			-1.00			1/2" Ice	2.320	1.946	0.07
						1" Ice	2.512	2.127	0.10
						2" Ice	2.920	2.510	0.16
800MHZ RRH	C	From Centroid-Le g	4.000	30.00	122.000	No Ice	2.134	1.773	0.05
			-2.00			1/2" Ice	2.320	1.946	0.07
			-2.00			1" Ice	2.512	2.127	0.10
						2" Ice	2.920	2.510	0.16
						No Ice	0.660	0.321	0.01
800 EXTERNAL NOTCH FILTER	A	From Centroid-Le g	4.000	30.00	122.000	1/2" Ice	0.763	0.398	0.02
			-2.00			1" Ice	0.873	0.483	0.02
			-2.00			2" Ice	1.115	0.674	0.04
						No Ice	0.660	0.321	0.01
						1/2" Ice	0.763	0.398	0.02
800 EXTERNAL NOTCH FILTER	B	From Centroid-Le g	4.000	10.00	122.000	1" Ice	0.873	0.483	0.02
			-2.00			2" Ice	1.115	0.674	0.04
			-2.00			No Ice	0.660	0.321	0.01
						1/2" Ice	0.763	0.398	0.02
						1" Ice	0.873	0.483	0.02
800 EXTERNAL NOTCH FILTER	C	From Centroid-Le g	4.000	30.00	122.000	2" Ice	1.115	0.674	0.04
			-2.00			No Ice	0.660	0.321	0.01
			-2.00			1/2" Ice	0.763	0.398	0.02
						1" Ice	0.873	0.483	0.02
						2" Ice	1.115	0.674	0.04
FDD_R6_RRH	A	From Centroid-Le g	4.000	25.00	122.000	No Ice	1.533	0.684	0.03
			0.00			1/2" Ice	1.690	0.800	0.04
			0.00			1" Ice	1.854	0.923	0.06
						2" Ice	2.204	1.193	0.09
						No Ice	1.533	0.684	0.03
FDD_R6_RRH	B	From Centroid-Le g	4.000	10.00	122.000	1/2" Ice	1.690	0.800	0.04
			0.00			1" Ice	1.854	0.923	0.06
			0.00			2" Ice	2.204	1.193	0.09
						No Ice	1.533	0.684	0.03
						1/2" Ice	1.690	0.800	0.04
FDD_R6_RRH	C	From Centroid-Le g	4.000	30.00	122.000	1" Ice	1.854	0.923	0.06
			0.00			2" Ice	2.204	1.193	0.09
			0.00			No Ice	1.533	0.684	0.03
						1/2" Ice	1.690	0.800	0.04
						1" Ice	1.854	0.923	0.06
TD-RRH8x20-25	A	From Centroid-Le g	4.000	37.00	122.000	2" Ice	2.204	1.193	0.09
			2.00			No Ice	3.704	1.294	0.07
			-1.00			1/2" Ice	3.946	1.465	0.09
						1" Ice	4.196	1.642	0.12
						2" Ice	4.717	2.019	0.18
TD-RRH8x20-25	B	From Centroid-Le g	4.000	30.00	122.000	No Ice	3.704	1.294	0.07
			2.00			1/2" Ice	3.946	1.465	0.09
			-1.00			1" Ice	4.196	1.642	0.12
						2" Ice	4.717	2.019	0.18
						No Ice	3.704	1.294	0.07

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	35 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i> <i>ft ft ft</i>	<i>Azimuth Adjustment</i> <i>°</i>	<i>Placement</i> <i>ft</i>	<i>C<sub>AA</sub> Front</i> <i>ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side</i> <i>ft<sup>2</sup></i>	<i>Weight</i> <i>K</i>
TD-RRH8x20-25	C	From Centroid-Le g	4.000 2.00 -1.00	30.00	122.000	No Ice 3.704 1/2" Ice 3.946 1" Ice 4.196 2" Ice 4.717	1.294 1.465 1.642 2.019	0.07 0.09 0.12 0.18
(2) 2.4" Dia. x 5-ft Pipe	A	From Centroid-Le g	4.000 4.00 0.00	0.00	122.000	No Ice 1.200 1/2" Ice 1.502 1" Ice 1.814 2" Ice 2.465	1.200 1.502 1.814 2.465	0.02 0.03 0.04 0.08
(2) 2.4" Dia. x 5-ft Pipe	B	From Centroid-Le g	4.000 4.00 0.00	0.00	122.000	No Ice 1.200 1/2" Ice 1.502 1" Ice 1.814 2" Ice 2.465	1.200 1.502 1.814 2.465	0.02 0.03 0.04 0.08
(2) 2.4" Dia. x 5-ft Pipe	C	From Centroid-Le g	4.000 6.00 0.00	0.00	122.000	No Ice 1.200 1/2" Ice 1.502 1" Ice 1.814 2" Ice 2.465	1.200 1.502 1.814 2.465	0.02 0.03 0.04 0.08
Miscellaneous [NA 507-1]	C	None		0.00	122.000	No Ice 4.800 1/2" Ice 6.700 1" Ice 8.600 2" Ice 12.400	4.800 6.700 8.600 12.400	0.25 0.29 0.34 0.44
Platform Mount [LP 712-1]	C	None		0.00	122.000	No Ice 24.530 1/2" Ice 29.940 1" Ice 35.350 2" Ice 46.170	24.530 29.940 35.350 46.170	1.34 1.65 1.96 2.58
***113***								
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Centroid-Le g	4.000 -4.00 1.00	0.00	113.000	No Ice 9.351 1/2" Ice 9.921 1" Ice 10.455 2" Ice 11.547	7.646 8.833 9.734 11.562	0.09 0.16 0.25 0.45
(2) JAHH-45B-R3B w/ Mount Pipe	B	From Centroid-Le g	4.000 -4.00 1.00	-40.00	113.000	No Ice 11.637 1/2" Ice 12.228 1" Ice 12.784 2" Ice 13.919	6.946 8.127 9.021 10.844	0.11 0.19 0.29 0.50
(2) JAHH-45B-R3B w/ Mount Pipe	C	From Centroid-Le g	4.000 -4.00 1.00	30.00	113.000	No Ice 11.637 1/2" Ice 12.228 1" Ice 12.784 2" Ice 13.919	6.946 8.127 9.021 10.844	0.11 0.19 0.29 0.50
(2) DB846F65ZAXY w/ Mount Pipe	A	From Centroid-Le g	4.000 4.00 1.00	30.00	113.000	No Ice 7.271 1/2" Ice 7.832 1" Ice 8.348 2" Ice 9.402	7.821 9.010 9.912 11.731	0.05 0.11 0.19 0.37
(2) LPA-80063/4CF w/ Mount Pipe	B	From Centroid-Le g	4.000 4.00 1.00	10.00	113.000	No Ice 6.396 1/2" Ice 6.799 1" Ice 7.210 2" Ice 8.059	6.614 7.250 7.898 9.241	0.04 0.10 0.18 0.34
(2) LPA-80063/4CF w/ Mount Pipe	C	From Centroid-Le g	4.000 4.00 1.00	30.00	113.000	No Ice 6.396 1/2" Ice 6.799 1" Ice 7.210 2" Ice 8.059	6.614 7.250 7.898 9.241	0.04 0.10 0.18 0.34
ACUTIME 2000	A	From Centroid-Le g	4.000 6.00 3.00	0.00	113.000	No Ice 0.255 1/2" Ice 0.320 1" Ice 0.393 2" Ice 0.561	0.255 0.320 0.393 0.561	0.00 0.00 0.01 0.02
DB-T1-6Z-8AB-0Z	A	From Centroid-Le g	4.000 6.00 1.00	30.00	113.000	No Ice 4.800 1/2" Ice 5.070 1" Ice 5.348 2" Ice 5.926	2.000 2.193 2.393 2.815	0.04 0.08 0.12 0.21

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	36 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			Lateral		°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
DB-T1-6Z-8AB-0Z	B	From Centroid-Le g	4.000	-40.00	113.000	No Ice	4.800	2.000	0.04
			-2.00			1/2" Ice	5.070	2.193	0.08
			1.00			1" Ice	5.348	2.393	0.12
						2" Ice	5.926	2.815	0.21
RRH2X60-1900	A	From Centroid-Le g	4.000	0.00	113.000	No Ice	1.874	1.218	0.04
			-6.00			1/2" Ice	2.052	1.367	0.06
			1.00			1" Ice	2.237	1.523	0.08
						2" Ice	2.629	1.870	0.12
RRH2X60-1900	B	From Centroid-Le g	4.000	-40.00	113.000	No Ice	1.874	1.218	0.04
			-6.00			1/2" Ice	2.052	1.367	0.06
			1.00			1" Ice	2.237	1.523	0.08
						2" Ice	2.629	1.870	0.12
RRH2X60-1900	C	From Centroid-Le g	4.000	30.00	113.000	No Ice	1.874	1.218	0.04
			-6.00			1/2" Ice	2.052	1.367	0.06
			1.00			1" Ice	2.237	1.523	0.08
						2" Ice	2.629	1.870	0.12
RRH2x60-700	A	From Centroid-Le g	4.000	0.00	113.000	No Ice	3.500	1.816	0.06
			6.00			1/2" Ice	3.761	2.052	0.08
			1.00			1" Ice	4.029	2.289	0.11
						2" Ice	4.585	2.785	0.17
RRH2x60-700	B	From Centroid-Le g	4.000	10.00	113.000	No Ice	3.500	1.816	0.06
			6.00			1/2" Ice	3.761	2.052	0.08
			1.00			1" Ice	4.029	2.289	0.11
						2" Ice	4.585	2.785	0.17
RRH2x60-700	C	From Centroid-Le g	4.000	30.00	113.000	No Ice	3.500	1.816	0.06
			6.00			1/2" Ice	3.761	2.052	0.08
			1.00			1" Ice	4.029	2.289	0.11
						2" Ice	4.585	2.785	0.17
AWS-3 RRH4X45	A	From Centroid-Le g	4.000	0.00	113.000	No Ice	3.112	3.624	0.08
			-2.00			1/2" Ice	3.345	3.878	0.11
			1.00			1" Ice	3.595	4.139	0.15
						2" Ice	4.117	4.684	0.24
AWS-3 RRH4X45	B	From Centroid-Le g	4.000	-40.00	113.000	No Ice	3.112	3.624	0.08
			-2.00			1/2" Ice	3.345	3.878	0.11
			1.00			1" Ice	3.595	4.139	0.15
						2" Ice	4.117	4.684	0.24
AWS-3 RRH4X45	C	From Centroid-Le g	4.000	30.00	113.000	No Ice	3.112	3.624	0.08
			-2.00			1/2" Ice	3.345	3.878	0.11
			1.00			1" Ice	3.595	4.139	0.15
						2" Ice	4.117	4.684	0.24
AIRSCALE RRH 4T4R B5 160W	A	From Centroid-Le g	4.000	30.00	113.000	No Ice	1.286	0.720	0.04
			2.00			1/2" Ice	1.428	0.834	0.05
			1.00			1" Ice	1.577	0.955	0.06
						2" Ice	1.898	1.220	0.09
AIRSCALE RRH 4T4R B5 160W	B	From Centroid-Le g	4.000	10.00	113.000	No Ice	1.286	0.720	0.04
			2.00			1/2" Ice	1.428	0.834	0.05
			1.00			1" Ice	1.577	0.955	0.06
						2" Ice	1.898	1.220	0.09
AIRSCALE RRH 4T4R B5 160W	C	From Centroid-Le g	4.000	30.00	113.000	No Ice	1.286	0.720	0.04
			2.00			1/2" Ice	1.428	0.834	0.05
			1.00			1" Ice	1.577	0.955	0.06
						2" Ice	1.898	1.220	0.09
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Le g	4.000	0.00	113.000	No Ice	1.428	1.428	0.02
			-1.00			1/2" Ice	1.927	1.927	0.03
			1.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
(2) 2.4" Dia x 6-ft Pipe	B	From	4.000	0.00	113.000	No Ice	1.428	1.428	0.02



<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	37 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			Lateral		°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
		Centroid-Le	-1.00			1/2" Ice	1.927	1.927	0.03
		g	1.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
(2) 2.4" Dia x 6-ft Pipe	C	From	4.000	0.00	113.000	No Ice	1.428	1.428	0.02
		Centroid-Le	-1.00			1/2" Ice	1.927	1.927	0.03
		g	1.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
Miscellaneous [NA 507-1]	C	None		0.00	113.000	No Ice	4.800	4.800	0.25
						1/2" Ice	6.700	6.700	0.29
						1" Ice	8.600	8.600	0.34
						2" Ice	12.400	12.400	0.44
Miscellaneous [NA 509-3]	C	None		0.00	113.000	No Ice	11.840	11.840	0.28
						1/2" Ice	16.960	16.960	0.30
						1" Ice	22.080	22.080	0.32
						2" Ice	32.320	32.320	0.36
Platform Mount [LP 305-1]	C	None		0.00	113.000	No Ice	18.010	18.010	1.12
						1/2" Ice	23.330	23.330	1.35
						1" Ice	28.650	28.650	1.58
						2" Ice	39.290	39.290	2.05
***105***									
AIR 32 B2a/B66Aa w/ Mount Pipe	A	From	4.000	30.00	105.000	No Ice	6.747	6.070	0.15
		Centroid-Le	-6.00			1/2" Ice	7.202	6.867	0.21
		g	2.00			1" Ice	7.648	7.583	0.28
						2" Ice	8.565	9.063	0.44
AIR 32 B2a/B66Aa w/ Mount Pipe	B	From	4.000	30.00	105.000	No Ice	6.747	6.070	0.15
		Centroid-Le	-2.00			1/2" Ice	7.202	6.867	0.21
		g	2.00			1" Ice	7.648	7.583	0.28
						2" Ice	8.565	9.063	0.44
AIR 32 B2a/B66Aa w/ Mount Pipe	C	From	4.000	30.00	105.000	No Ice	6.747	6.070	0.15
		Centroid-Le	-2.00			1/2" Ice	7.202	6.867	0.21
		g	2.00			1" Ice	7.648	7.583	0.28
						2" Ice	8.565	9.063	0.44
KRY 112 144/1	A	From	4.000	30.00	105.000	No Ice	0.352	0.162	0.01
		Centroid-Le	2.00			1/2" Ice	0.428	0.219	0.01
		g	2.00			1" Ice	0.512	0.285	0.02
						2" Ice	0.701	0.437	0.03
KRY 112 144/1	B	From	4.000	30.00	105.000	No Ice	0.352	0.162	0.01
		Centroid-Le	-2.00			1/2" Ice	0.428	0.219	0.01
		g	0.00			1" Ice	0.512	0.285	0.02
						2" Ice	0.701	0.437	0.03
KRY 112 144/1	C	From	4.000	30.00	105.000	No Ice	0.352	0.162	0.01
		Centroid-Le	-6.00			1/2" Ice	0.428	0.219	0.01
		g	0.00			1" Ice	0.512	0.285	0.02
						2" Ice	0.701	0.437	0.03
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From	4.000	30.00	105.000	No Ice	20.480	11.024	0.16
		Centroid-Le	6.00			1/2" Ice	21.231	12.550	0.30
		g	2.00			1" Ice	21.990	14.099	0.44
						2" Ice	23.444	16.451	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From	4.000	30.00	105.000	No Ice	20.480	11.024	0.16
		Centroid-Le	-6.00			1/2" Ice	21.231	12.550	0.30
		g	2.00			1" Ice	21.990	14.099	0.44
						2" Ice	23.444	16.451	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From	4.000	30.00	105.000	No Ice	20.480	11.024	0.16
		Centroid-Le	6.00			1/2" Ice	21.231	12.550	0.30
		g	2.00			1" Ice	21.990	14.099	0.44
						2" Ice	23.444	16.451	0.78
AIR 3246 B66 w/ Mount Pipe	A	From	4.000	30.00	105.000	No Ice	8.177	6.559	0.20

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	38 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Lateral					
		Centroid-Le	-2.00			1/2" Ice	8.656	7.393	0.27
		g	2.00			1" Ice	9.124	8.128	0.35
						2" Ice	10.086	9.646	0.53
AIR 3246 B66 w/ Mount Pipe	B	From	4.000	30.00	105.000	No Ice	8.177	6.559	0.20
		Centroid-Le	6.00			1/2" Ice	8.656	7.393	0.27
		g	2.00			1" Ice	9.124	8.128	0.35
						2" Ice	10.086	9.646	0.53
AIR 3246 B66 w/ Mount Pipe	C	From	4.000	30.00	105.000	No Ice	8.177	6.559	0.20
		Centroid-Le	-6.00			1/2" Ice	8.656	7.393	0.27
		g	2.00			1" Ice	9.124	8.128	0.35
						2" Ice	10.086	9.646	0.53
RADIO 4449 B12/B71	A	From	4.000	30.00	105.000	No Ice	1.650	1.163	0.07
		Centroid-Le	-2.00			1/2" Ice	1.810	1.301	0.09
		g	2.00			1" Ice	1.978	1.447	0.11
						2" Ice	2.336	1.762	0.16
RADIO 4449 B12/B71	B	From	4.000	30.00	105.000	No Ice	1.650	1.163	0.07
		Centroid-Le	-2.00			1/2" Ice	1.810	1.301	0.09
		g	2.00			1" Ice	1.978	1.447	0.11
						2" Ice	2.336	1.762	0.16
RADIO 4449 B12/B71	C	From	4.000	30.00	105.000	No Ice	1.650	1.163	0.07
		Centroid-Le	-2.00			1/2" Ice	1.810	1.301	0.09
		g	2.00			1" Ice	1.978	1.447	0.11
						2" Ice	2.336	1.762	0.16
2.4" Dia x 8-ft Mount Pipe	A	From	4.000	0.00	105.000	No Ice	1.900	1.900	0.03
		Centroid-Le	2.00			1/2" Ice	2.728	2.728	0.04
		g	0.00			1" Ice	3.401	3.401	0.06
						2" Ice	4.396	4.396	0.12
2.4" Dia x 8-ft Mount Pipe	B	From	4.000	0.00	105.000	No Ice	1.900	1.900	0.03
		Centroid-Le	2.00			1/2" Ice	2.728	2.728	0.04
		g	0.00			1" Ice	3.401	3.401	0.06
						2" Ice	4.396	4.396	0.12
2.4" Dia x 8-ft Mount Pipe	C	From	4.000	0.00	105.000	No Ice	1.900	1.900	0.03
		Centroid-Le	2.00			1/2" Ice	2.728	2.728	0.04
		g	0.00			1" Ice	3.401	3.401	0.06
						2" Ice	4.396	4.396	0.12
Miscellaneous [NA 507-1]	C	None		0.00	105.000	No Ice	4.800	4.800	0.25
						1/2" Ice	6.700	6.700	0.29
						1" Ice	8.600	8.600	0.34
						2" Ice	12.400	12.400	0.44
Miscellaneous [NA 509-3]	C	None		0.00	105.000	No Ice	11.840	11.840	0.28
						1/2" Ice	16.960	16.960	0.30
						1" Ice	22.080	22.080	0.32
						2" Ice	32.320	32.320	0.36
Platform Mount [LP 303-1]	C	None		0.00	105.000	No Ice	14.660	14.660	1.25
						1/2" Ice	18.870	18.870	1.48
						1" Ice	23.080	23.080	1.71
						2" Ice	31.500	31.500	2.18
***97***									
***96***									
7770.00 w/ Mount Pipe	A	From	4.000	23.00	96.000	No Ice	5.746	4.254	0.06
		Centroid-Le	-6.00			1/2" Ice	6.179	5.014	0.10
		g	2.00			1" Ice	6.607	5.711	0.16
						2" Ice	7.488	7.155	0.29
7770.00 w/ Mount Pipe	B	From	4.000	23.00	96.000	No Ice	5.746	4.254	0.06
		Centroid-Le	-6.00			1/2" Ice	6.179	5.014	0.10
		g	2.00			1" Ice	6.607	5.711	0.16
						2" Ice	7.488	7.155	0.29

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	39 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
7770.00 w/ Mount Pipe	C	From Centroid-Le g	4.000		23.00	96.000	No Ice	5.746	4.254	0.06
			-6.00				1/2" Ice	6.179	5.014	0.10
			2.00				1" Ice	6.607	5.711	0.16
							2" Ice	7.488	7.155	0.29
QS66512-2 w/ Mount Pipe	A	From Centroid-Le g	4.000		30.00	96.000	No Ice	8.371	8.463	0.14
			6.00				1/2" Ice	8.931	9.657	0.21
			2.00				1" Ice	9.457	10.548	0.30
							2" Ice	10.531	12.352	0.49
QS66512-2 w/ Mount Pipe	B	From Centroid-Le g	4.000		30.00	96.000	No Ice	8.371	8.463	0.14
			6.00				1/2" Ice	8.931	9.657	0.21
			2.00				1" Ice	9.457	10.548	0.30
							2" Ice	10.531	12.352	0.49
QS66512-2 w/ Mount Pipe	C	From Centroid-Le g	4.000		30.00	96.000	No Ice	8.371	8.463	0.14
			6.00				1/2" Ice	8.931	9.657	0.21
			2.00				1" Ice	9.457	10.548	0.30
							2" Ice	10.531	12.352	0.49
(2) 80010965 w/ Mount Pipe	A	From Centroid-Le g	4.000		30.00	96.000	No Ice	14.051	7.628	0.13
			0.00				1/2" Ice	14.688	8.903	0.22
			2.00				1" Ice	15.303	9.963	0.33
							2" Ice	16.530	11.925	0.57
(2) 80010965 w/ Mount Pipe	B	From Centroid-Le g	4.000		30.00	96.000	No Ice	14.051	7.628	0.13
			0.00				1/2" Ice	14.688	8.903	0.22
			2.00				1" Ice	15.303	9.963	0.33
							2" Ice	16.530	11.925	0.57
(2) 80010965 w/ Mount Pipe	C	From Centroid-Le g	4.000		30.00	96.000	No Ice	14.051	7.628	0.13
			0.00				1/2" Ice	14.688	8.903	0.22
			2.00				1" Ice	15.303	9.963	0.33
							2" Ice	16.530	11.925	0.57
WCS-IMFQ-AMT	C	From Centroid-Le g	4.000		30.00	96.000	No Ice	0.989	0.644	0.03
			-2.00				1/2" Ice	1.114	0.748	0.04
			2.00				1" Ice	1.246	0.860	0.05
							2" Ice	1.533	1.105	0.08
RRUS 8843 B2/B66A	A	From Centroid-Le g	4.000		23.00	96.000	No Ice	1.639	1.353	0.07
			-6.00				1/2" Ice	1.799	1.500	0.09
			2.00				1" Ice	1.966	1.655	0.11
							2" Ice	2.323	1.986	0.16
RRUS 8843 B2/B66A	B	From Centroid-Le g	4.000		23.00	96.000	No Ice	1.639	1.353	0.07
			-6.00				1/2" Ice	1.799	1.500	0.09
			2.00				1" Ice	1.966	1.655	0.11
							2" Ice	2.323	1.986	0.16
RRUS 8843 B2/B66A	C	From Centroid-Le g	4.000		23.00	96.000	No Ice	1.639	1.353	0.07
			-6.00				1/2" Ice	1.799	1.500	0.09
			2.00				1" Ice	1.966	1.655	0.11
							2" Ice	2.323	1.986	0.16
RRUS 32	A	From Centroid-Le g	4.000		30.00	96.000	No Ice	2.857	1.777	0.06
			-2.00				1/2" Ice	3.083	1.968	0.08
			2.00				1" Ice	3.316	2.166	0.10
							2" Ice	3.805	2.583	0.16
RRUS 32	B	From Centroid-Le g	4.000		30.00	96.000	No Ice	2.857	1.777	0.06
			-2.00				1/2" Ice	3.083	1.968	0.08
			2.00				1" Ice	3.316	2.166	0.10
							2" Ice	3.805	2.583	0.16
RRUS 32	C	From Centroid-Le g	4.000		30.00	96.000	No Ice	2.857	1.777	0.06
			-2.00				1/2" Ice	3.083	1.968	0.08
			2.00				1" Ice	3.316	2.166	0.10
							2" Ice	3.805	2.583	0.16
RRUS 4478 B14	A	From	4.000		30.00	96.000	No Ice	1.843	1.059	0.06

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	40 of 62
	<b>Project</b>	TEP No. 25570.206551	<b>Date</b>	14:43:12 01/17/19
	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i> <i>ft ft ft</i>	<i>Azimuth Adjustment</i> <i>°</i>	<i>Placement</i> <i>ft</i>	<i>C<sub>AA</sub> Front</i> <i>ft<sup>2</sup></i>	<i>C<sub>AA</sub> Side</i> <i>ft<sup>2</sup></i>	<i>Weight</i> <i>K</i>	
RRUS 4478 B14	B	Centroid-Le	2.00	30.00	96.000	1/2" Ice	2.012	1.197	0.08
		g	2.00			1" Ice	2.190	1.342	0.09
						2" Ice	2.566	1.656	0.14
RRUS 4478 B14	C	From	4.000	30.00	96.000	No Ice	1.843	1.059	0.06
		Centroid-Le	2.00			1/2" Ice	2.012	1.197	0.08
		g	2.00			1" Ice	2.190	1.342	0.09
RRUS 4449 B5/B12	A	From	4.000	30.00	96.000	No Ice	1.843	1.059	0.06
		Centroid-Le	2.00			1/2" Ice	2.012	1.197	0.08
		g	2.00			1" Ice	2.190	1.342	0.09
RRUS 4449 B5/B12	B	From	4.000	30.00	96.000	No Ice	1.968	1.408	0.07
		Centroid-Le	6.00			1/2" Ice	2.144	1.564	0.09
		g	2.00			1" Ice	2.328	1.727	0.11
RRUS 4449 B5/B12	C	From	4.000	30.00	96.000	No Ice	1.968	1.408	0.07
		Centroid-Le	6.00			1/2" Ice	2.144	1.564	0.09
		g	2.00			1" Ice	2.328	1.727	0.11
LGP21401	A	From	4.000	23.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	-6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
LGP21401	A	From	4.000	30.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
LGP21401	B	From	4.000	23.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	-6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
LGP21401	B	From	4.000	30.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
LGP21401	C	From	4.000	23.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	-6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
LGP21401	C	From	4.000	30.00	96.000	No Ice	1.104	0.207	0.01
		Centroid-Le	6.00			1/2" Ice	1.239	0.274	0.02
		g	2.00			1" Ice	1.381	0.348	0.03
DC6-48-60-18-8F	A	From	4.000	23.00	96.000	No Ice	1.212	1.212	0.03
		Centroid-Le	-6.00			1/2" Ice	1.892	1.892	0.05
		g	2.00			1" Ice	2.105	2.105	0.08
DC6-48-60-18-8F	B	From	4.000	23.00	96.000	No Ice	2.570	2.570	0.14
		Centroid-Le	-6.00			1/2" Ice	1.212	1.212	0.03
		g	2.00			1" Ice	1.892	1.892	0.05
DC6-48-60-18-8F	C	From	4.000	23.00	96.000	No Ice	2.105	2.105	0.08
		Centroid-Le	-6.00			1" Ice	2.570	2.570	0.14
		g	-6.00			1/2" Ice	1.212	1.212	0.03

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	41 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
		g	2.00			1" Ice	2.105	2.105	0.08
						2" Ice	2.570	2.570	0.14
DBC0061F1V51-2	A	From Centroid-Le	4.000		23.00	No Ice	0.430	0.413	0.03
		g	-6.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
DBC0061F1V51-2	A	From Centroid-Le	4.000		30.00	No Ice	0.430	0.413	0.03
		g	-2.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
DBC0061F1V51-2	B	From Centroid-Le	4.000		23.00	No Ice	0.430	0.413	0.03
		g	-6.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
DBC0061F1V51-2	B	From Centroid-Le	4.000		30.00	No Ice	0.430	0.413	0.03
		g	-2.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
DBC0061F1V51-2	C	From Centroid-Le	4.000		23.00	No Ice	0.430	0.413	0.03
		g	-6.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
DBC0061F1V51-2	C	From Centroid-Le	4.000		30.00	No Ice	0.430	0.413	0.03
		g	-2.00			1/2" Ice	0.514	0.496	0.03
			2.00			1" Ice	0.605	0.586	0.04
						2" Ice	0.810	0.788	0.06
2.4" Dia x 6-ft Pipe	A	From Centroid-Le	4.000		0.00	No Ice	1.428	1.428	0.02
		g	2.00			1/2" Ice	1.927	1.927	0.03
			0.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
2.4" Dia x 6-ft Pipe	B	From Centroid-Le	4.000		0.00	No Ice	1.428	1.428	0.02
		g	2.00			1/2" Ice	1.927	1.927	0.03
			0.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
2.4" Dia x 6-ft Pipe	C	From Centroid-Le	4.000		0.00	No Ice	1.428	1.428	0.02
		g	2.00			1/2" Ice	1.927	1.927	0.03
			0.00			1" Ice	2.296	2.296	0.05
						2" Ice	3.061	3.061	0.09
Miscellaneous [NA 507-1]	C	None			0.00	No Ice	4.800	4.800	0.25
						1/2" Ice	6.700	6.700	0.29
						1" Ice	8.600	8.600	0.34
						2" Ice	12.400	12.400	0.44
Platform Mount [LP 712-1]	C	None			0.00	No Ice	24.530	24.530	1.34
						1/2" Ice	29.940	29.940	1.65
						1" Ice	35.350	35.350	1.96
						2" Ice	46.170	46.170	2.58
***75***									
ACUTIME 2000	A	From Leg	3.000		0.00	No Ice	0.255	0.255	0.00
			0.00			1/2" Ice	0.320	0.320	0.00
			1.00			1" Ice	0.393	0.393	0.01
						2" Ice	0.561	0.561	0.02
Side Arm Mount [SO 701-1]	A	From Leg	0.500		0.00	No Ice	0.850	1.670	0.07
			0.00			1/2" Ice	1.140	2.340	0.08
			0.00			1" Ice	1.430	3.010	0.09
						2" Ice	2.010	4.350	0.12

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## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz Lateral	Vert							
				ft	°	°	ft	ft	ft <sup>2</sup>	K		
PX2F-52	A	Paraboloid w/Radome	From Centroid -Leg	4.000	25.00			122.000	2.092	No Ice	3.440	0.02
				0.00						1/2" Ice	3.720	0.04
				1.00						1" Ice	3.990	0.06
										2" Ice	4.550	0.09
VHLP2-11	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.000	37.00			122.000	2.000	No Ice	3.720	0.03
				2.00						1/2" Ice	4.010	0.05
				3.00						1" Ice	4.300	0.07
										2" Ice	4.880	0.11
VHLP2-11	B	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.000	10.00			122.000	2.000	No Ice	3.720	0.03
				0.00						1/2" Ice	4.010	0.05
				3.00						1" Ice	4.300	0.07
										2" Ice	4.880	0.11

## 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

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Comb. No.	Description
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	120 - 115	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-8.84	0.84	2.12
			Max. Mx	20	-3.72	48.15	0.24
			Max. My	2	-3.72	0.78	46.82
			Max. Vy	20	-7.49	48.15	0.24
			Max. Vx	14	7.39	0.27	-45.80
			Max. Torque	18			-3.09
			Max Tension	1	0.00	0.00	0.00
L2	115 - 110	Pole	Max. Compression	26	-18.85	-1.73	2.57
			Max. Mx	20	-7.58	116.12	-0.08
			Max. My	2	-7.60	-0.08	113.00
			Max. Vy	20	-16.03	116.12	-0.08
			Max. Vx	14	15.59	-0.14	-112.10
			Max. Torque	18			-3.09
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.75	-1.84	2.57
L3	110 - 105	Pole	Max. Mx	20	-8.07	197.57	-0.67
			Max. My	2	-8.05	-0.28	192.97
			Max. Vy	20	-16.55	197.57	-0.67
			Max. Vx	14	16.52	0.29	-192.35
			Max. Torque	18			-1.53
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.01	-3.32	4.28
			Max. Mx	20	-12.58	318.95	-1.99
L4	105 - 100	Pole	Max. My	14	-12.53	1.03	-314.80
			Max. Vy	20	-23.09	318.95	-1.99
			Max. Vx	14	23.36	1.03	-314.80
			Max. Torque	22			-6.12
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.18	-3.32	4.32
			Max. Mx	20	-12.68	336.31	-2.07
			Max. My	14	-12.62	1.10	-332.35
L5	100 - 99.25	Pole	Max. Vy	20	-23.21	336.31	-2.07
			Max. Vx	14	23.50	1.10	-332.35
			Max. Torque	22			-6.12

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L6	99.25 - 99	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.26	-3.32	4.33
			Max. Mx	20	-12.73	342.12	-2.10
			Max. My	14	-12.67	1.12	-338.23
			Max. Vy	20	-23.25	342.12	-2.10
			Max. Vx	14	23.55	1.12	-338.23
			Max. Torque	22			-6.12
L7	99 - 94	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.15	-3.15	4.35
			Max. Mx	20	-18.15	486.34	-2.75
			Max. My	14	-18.08	1.65	-484.15
			Max. Vy	20	-31.52	486.34	-2.75
			Max. Vx	14	31.94	1.65	-484.15
			Max. Torque	22			-6.12
L8	94 - 90.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.43	-3.18	4.55
			Max. Mx	20	-18.97	611.19	-3.16
			Max. My	14	-18.89	2.01	-610.76
			Max. Vy	20	-32.20	611.19	-3.16
			Max. Vx	14	32.72	2.01	-610.76
			Max. Torque	22			-5.96
L9	90.08 - 89.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.53	-3.19	4.56
			Max. Mx	20	-19.05	619.24	-3.19
			Max. My	14	-18.97	2.04	-618.94
			Max. Vy	20	-32.23	619.24	-3.19
			Max. Vx	14	32.76	2.04	-618.94
			Max. Torque	22			-5.95
L10	89.83 - 89.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.65	-3.19	4.57
			Max. Mx	20	-19.13	629.89	-3.22
			Max. My	14	-19.05	2.07	-629.75
			Max. Vy	20	-32.29	629.89	-3.22
			Max. Vx	14	32.83	2.07	-629.75
			Max. Torque	22			-5.95
L11	89.5 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.76	-3.20	4.59
			Max. Mx	20	-19.21	637.96	-3.25
			Max. My	14	-19.12	2.09	-637.96
			Max. Vy	20	-32.34	637.96	-3.25
			Max. Vx	14	32.88	2.09	-637.96
			Max. Torque	22			-5.95
L12	89.25 - 84.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.88	-3.27	4.81
			Max. Mx	20	-20.64	802.01	-3.77
			Max. My	14	-20.54	2.55	-804.92
			Max. Vy	20	-33.28	802.01	-3.77
			Max. Vx	14	33.95	2.55	-804.92
			Max. Torque	22			-5.95
L13	84.25 - 78	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.96	-3.30	4.93
			Max. Mx	20	-21.38	885.80	-4.03
			Max. My	14	-21.28	2.79	-890.41
			Max. Vy	20	-33.76	885.80	-4.03
			Max. Vx	14	34.49	2.79	-890.41
			Max. Torque	22			-5.95
L14	78 - 77	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.54	-3.37	5.16
			Max. Mx	20	-24.08	1048.55	-4.52
			Max. My	14	-23.97	3.23	-1056.81
			Max. Vy	20	-34.76	1048.55	-4.52



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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L15	77 - 76.75	Pole	Max. Vx	14	35.61	3.23	-1056.81
			Max. Torque	22			-5.95
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.67	-3.37	5.17
			Max. Mx	20	-24.18	1057.24	-4.55
			Max. My	14	-24.08	3.25	-1065.72
			Max. Vy	20	-34.80	1057.24	-4.55
L16	76.75 - 76.5	Pole	Max. Vx	14	35.66	3.25	-1065.72
			Max. Torque	22			-5.95
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.80	-3.37	5.18
			Max. Mx	20	-24.28	1065.95	-4.58
			Max. My	14	-24.18	3.27	-1074.63
			Max. Vy	20	-34.85	1065.95	-4.58
L17	76.5 - 75.5	Pole	Max. Vx	14	35.72	3.27	-1074.63
			Max. Torque	22			-5.95
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.34	-3.39	5.23
			Max. Mx	20	-24.68	1100.90	-4.68
			Max. My	14	-24.58	3.37	-1110.44
			Max. Vy	20	-35.05	1100.90	-4.68
L18	75.5 - 75.25	Pole	Max. Vx	14	35.94	3.37	-1110.44
			Max. Torque	22			-5.95
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.47	-3.39	5.24
			Max. Mx	20	-24.78	1109.67	-4.71
			Max. My	14	-24.67	3.39	-1119.43
			Max. Vy	20	-35.10	1109.67	-4.71
L19	75.25 - 74.5	Pole	Max. Vx	14	35.99	3.39	-1119.43
			Max. Torque	22			-5.95
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.98	-3.40	5.56
			Max. Mx	20	-25.13	1136.10	-4.65
			Max. My	14	-25.02	3.46	-1146.36
			Max. Vy	20	-35.34	1136.10	-4.65
L20	74.5 - 74.25	Pole	Max. Vx	14	36.22	3.46	-1146.36
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.10	-3.40	5.57
			Max. Mx	20	-25.22	1144.94	-4.68
			Max. My	14	-25.12	3.48	-1155.42
			Max. Vy	20	-35.38	1144.94	-4.68
L21	74.25 - 72	Pole	Max. Vx	14	36.27	3.48	-1155.42
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.19	-3.44	5.68
			Max. Mx	20	-26.00	1225.04	-4.91
			Max. My	14	-25.90	3.70	-1237.51
			Max. Vy	20	-35.82	1225.04	-4.91
L22	72 - 71.75	Pole	Max. Vx	14	36.76	3.70	-1237.51
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.33	-3.44	5.69
			Max. Mx	20	-26.11	1234.00	-4.94
			Max. My	14	-26.00	3.72	-1246.70
			Max. Vy	20	-35.86	1234.00	-4.94
L23	71.75 - 70.5	Pole	Max. Vx	14	36.81	3.72	-1246.70
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.02	-3.46	5.76
			Max. Mx	20	-26.59	1278.98	-5.07

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 46 of 62
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	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L24	70.5 - 70.25	Pole	Max. My	14	-26.48	3.84	-1292.85
			Max. Vy	20	-36.12	1278.98	-5.07
			Max. Vx	14	37.09	3.84	-1292.85
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.16	-3.46	5.78
			Max. Mx	20	-26.70	1288.01	-5.10
			Max. My	14	-26.59	3.86	-1302.12
			Max. Vy	20	-36.16	1288.01	-5.10
			Max. Vx	14	37.13	3.86	-1302.12
L25	70.25 - 70	Pole	Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.30	-3.46	5.79
			Max. Mx	20	-26.80	1297.06	-5.12
			Max. My	14	-26.69	3.88	-1311.41
			Max. Vy	20	-36.21	1297.06	-5.12
			Max. Vx	14	37.19	3.88	-1311.41
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.44	-3.47	5.81
L26	70 - 69.75	Pole	Max. Mx	20	-26.90	1306.11	-5.15
			Max. My	14	-26.79	3.91	-1320.70
			Max. Vy	20	-36.26	1306.11	-5.15
			Max. Vx	14	37.24	3.91	-1320.70
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.58	-3.47	5.82
			Max. Mx	20	-27.00	1315.18	-5.18
			Max. My	14	-26.89	3.93	-1330.02
			Max. Vy	20	-36.31	1315.18	-5.18
L27	69.75 - 69.5	Pole	Max. Vx	14	37.30	3.93	-1330.02
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.71	-3.47	5.83
			Max. Mx	20	-27.09	1324.27	-5.20
			Max. My	14	-26.98	3.95	-1339.34
			Max. Vy	20	-36.36	1324.27	-5.20
			Max. Vx	14	37.35	3.95	-1339.34
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
L28	69.5 - 69.25	Pole	Max. Compression	26	-56.33	-3.53	6.12
			Max. Mx	20	-28.91	1507.99	-5.73
			Max. My	14	-28.79	4.43	-1528.66
			Max. Vy	20	-37.14	1507.99	-5.73
			Max. Vx	14	38.43	4.43	-1528.66
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.97	-3.59	6.40
			Max. Mx	20	-30.77	1695.56	-6.25
			Max. My	14	-30.64	4.90	-1723.30
L29	69.25 - 64.25	Pole	Max. Vy	20	-37.91	1695.56	-6.25
			Max. Vx	14	39.49	4.90	-1723.30
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.70	-3.62	6.59
			Max. Mx	20	-32.00	1819.53	-6.59
			Max. My	14	-31.87	5.21	-1852.63
			Max. Vy	20	-38.40	1819.53	-6.59
			Max. Vx	14	40.17	5.21	-1852.63
			Max. Torque	22			-6.11
L30	64.25 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.70	-3.62	6.59
L31	59.25 - 56	Pole	Max. Mx	20	-32.00	1819.53	-6.59
			Max. My	14	-31.87	5.21	-1852.63
			Max. Vy	20	-38.40	1819.53	-6.59
			Max. Vx	14	40.17	5.21	-1852.63
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.70	-3.62	6.59
			Max. Mx	20	-32.00	1819.53	-6.59
			Max. My	14	-31.87	5.21	-1852.63
			Max. Vy	20	-38.40	1819.53	-6.59
L32	56 - 55.75	Pole	Max. Vx	14	40.17	5.21	-1852.63
			Max. Torque	22			-6.11

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L33	55.75 - 55.5	Pole	Max. Compression	26	-60.85	-3.63	6.60
			Max. Mx	20	-32.12	1829.14	-6.62
			Max. My	14	-31.99	5.23	-1862.67
			Max. Vy	20	-38.43	1829.14	-6.62
			Max. Vx	14	40.21	5.23	-1862.67
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.00	-3.63	6.62
			Max. Mx	20	-32.23	1838.75	-6.65
			Max. My	14	-32.10	5.26	-1872.72
L34	55.5 - 55.25	Pole	Max. Vy	20	-38.47	1838.75	-6.65
			Max. Vx	14	40.27	5.26	-1872.72
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.15	-3.63	6.63
			Max. Mx	20	-32.34	1848.37	-6.67
			Max. My	14	-32.21	5.28	-1882.79
			Max. Vy	20	-38.51	1848.37	-6.67
			Max. Vx	14	40.32	5.28	-1882.79
			Max. Torque	22			-6.11
L35	55.25 - 54	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.91	-3.65	6.70
			Max. Mx	20	-32.89	1896.63	-6.80
			Max. My	14	-32.76	5.40	-1933.33
			Max. Vy	20	-38.72	1896.63	-6.80
			Max. Vx	14	40.60	5.40	-1933.33
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.05	-3.65	6.72
			Max. Mx	20	-33.01	1906.32	-6.83
L36	54 - 53.75	Pole	Max. My	14	-32.88	5.42	-1943.47
			Max. Vy	20	-38.75	1906.32	-6.83
			Max. Vx	14	40.64	5.42	-1943.47
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.20	-3.65	6.73
			Max. Mx	20	-33.11	1916.01	-6.85
			Max. My	14	-32.98	5.45	-1953.63
			Max. Vy	20	-38.78	1916.01	-6.85
			Max. Vx	14	40.69	5.45	-1953.63
L37	53.75 - 53.5	Pole	Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.33	-3.66	6.75
			Max. Mx	20	-33.21	1925.71	-6.88
			Max. My	14	-33.08	5.47	-1963.81
			Max. Vy	20	-38.82	1925.71	-6.88
			Max. Vx	14	40.75	5.47	-1963.81
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.46	-3.66	6.76
L38	53.5 - 53.25	Pole	Max. Mx	20	-33.31	1935.42	-6.91
			Max. My	14	-33.18	5.49	-1973.99
			Max. Vy	20	-38.86	1935.42	-6.91
			Max. Vx	14	40.80	5.49	-1973.99
			Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.07	-3.70	7.05
			Max. Mx	20	-35.18	2131.48	-7.43
			Max. My	14	-35.05	5.97	-2180.30
			Max. Vy	20	-39.58	2131.48	-7.43
L40	53 - 48	Pole	Max. Vx	14	41.80	5.97	-2180.30

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L41	48 - 39.75	Pole	Max. Torque	22			-6.11
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.90	-3.72	7.24
			Max. Mx	20	-36.52	2270.79	-7.79
			Max. My	14	-36.39	6.31	-2327.63
			Max. Vy	20	-40.06	2270.79	-7.79
			Max. Vx	14	42.48	6.31	-2327.63
L42	39.75 - 38.75	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.70	-3.74	7.55
			Max. Mx	20	-40.13	2503.72	-8.38
			Max. My	14	-40.01	6.85	-2575.30
			Max. Vy	20	-40.97	2503.72	-8.38
			Max. Vx	14	43.73	6.85	-2575.30
L43	38.75 - 34.75	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.85	-3.75	7.76
			Max. Mx	20	-41.71	2668.58	-8.80
			Max. My	14	-41.59	7.24	-2751.57
			Max. Vy	20	-41.49	2668.58	-8.80
			Max. Vx	14	44.49	7.24	-2751.57
L44	34.75 - 34.5	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.02	-3.75	7.78
			Max. Mx	20	-41.84	2678.95	-8.82
			Max. My	14	-41.72	7.26	-2762.69
			Max. Vy	20	-41.51	2678.95	-8.82
			Max. Vx	14	44.52	7.26	-2762.69
L45	34.5 - 33.75	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.50	-3.75	7.82
			Max. Mx	20	-42.19	2710.13	-8.90
			Max. My	14	-42.07	7.33	-2796.12
			Max. Vy	20	-41.63	2710.13	-8.90
			Max. Vx	14	44.68	7.33	-2796.12
L46	33.75 - 33.5	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.65	-3.75	7.84
			Max. Mx	20	-42.29	2720.54	-8.92
			Max. My	14	-42.18	7.36	-2807.28
			Max. Vy	20	-41.66	2720.54	-8.92
			Max. Vx	14	44.73	7.36	-2807.28
L47	33.5 - 32.75	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.07	-3.74	7.89
			Max. Mx	20	-42.59	2751.82	-9.00
			Max. My	14	-42.47	7.43	-2840.86
			Max. Vy	20	-41.77	2751.82	-9.00
			Max. Vx	14	44.88	7.43	-2840.86
L48	32.75 - 32.5	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.25	-3.74	7.90
			Max. Mx	20	-42.73	2762.26	-9.03
			Max. My	14	-42.62	7.45	-2852.07
			Max. Vy	20	-41.79	2762.26	-9.03
			Max. Vx	14	44.92	7.45	-2852.07
L49	32.5 - 27.5	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.76	-3.73	8.21
			Max. Mx	20	-45.33	2973.02	-9.54
			Max. My	14	-45.23	7.93	-3079.01

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L50	27.5 - 24	Pole	Max. Vy	20	-42.52	2973.02	-9.54
			Max. Vx	14	45.93	7.93	-3079.01
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.23	-3.72	8.43
			Max. Mx	20	-47.18	3122.67	-9.89
			Max. My	14	-47.09	8.26	-3240.80
			Max. Vy	20	-43.02	3122.67	-9.89
L51	24 - 23.75	Pole	Max. Vx	14	46.61	8.26	-3240.80
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.41	-3.72	8.44
			Max. Mx	20	-47.33	3133.42	-9.92
			Max. My	14	-47.24	8.29	-3252.45
			Max. Vy	20	-43.04	3133.42	-9.92
			Max. Vx	14	46.64	8.29	-3252.45
L52	23.75 - 18.75	Pole	Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.04	-3.71	8.76
			Max. Mx	20	-50.08	3350.32	-10.42
			Max. My	14	-50.00	8.76	-3487.86
			Max. Vy	20	-43.73	3350.32	-10.42
			Max. Vx	14	47.60	8.76	-3487.86
			Max. Torque	22			-6.10
L53	18.75 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.36	-3.68	9.05
			Max. Mx	20	-52.58	3548.38	-10.87
			Max. My	14	-52.51	9.19	-3703.68
			Max. Vy	20	-44.32	3548.38	-10.87
			Max. Vx	14	48.41	9.19	-3703.68
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
L54	14.25 - 14	Pole	Max. Compression	26	-88.56	-3.68	9.07
			Max. Mx	20	-52.75	3559.46	-10.89
			Max. My	14	-52.68	9.22	-3715.78
			Max. Vy	20	-44.34	3559.46	-10.89
			Max. Vx	14	48.44	9.22	-3715.78
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.56	-3.67	9.15
L55	14 - 12.75	Pole	Max. Mx	20	-53.50	3614.99	-11.02
			Max. My	14	-53.43	9.34	-3776.43
			Max. Vy	20	-44.52	3614.99	-11.02
			Max. Vx	14	48.68	9.34	-3776.43
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.73	-3.67	9.17
			Max. Mx	20	-53.63	3626.12	-11.04
L56	12.75 - 12.5	Pole	Max. My	14	-53.57	9.36	-3788.59
			Max. Vy	20	-44.54	3626.12	-11.04
			Max. Vx	14	48.71	9.36	-3788.59
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.95	-3.65	9.49
			Max. Mx	20	-56.05	3850.27	-11.54
			Max. My	14	-56.01	9.84	-4034.02
L57	12.5 - 7.5	Pole	Max. Vy	20	-45.14	3850.27	-11.54
			Max. Vx	14	49.55	9.84	-4034.02
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.52	-3.64	9.64
			Max. Mx	20	-56.05	3850.27	-11.54
			Max. My	14	-56.01	9.84	-4034.02
			Max. Vy	20	-45.14	3850.27	-11.54
L58	7.5 - 5	Pole	Max. Vx	14	49.55	9.84	-4034.02
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.52	-3.64	9.64

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L59	5 - 4.75	Pole	Max. Mx	20	-57.28	3963.44	-11.78
			Max. My	14	-57.25	10.08	-4158.27
			Max. Vy	20	-45.43	3963.44	-11.78
			Max. Vx	14	49.96	10.08	-4158.27
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.69	-3.64	9.66
			Max. Mx	20	-57.43	3974.80	-11.81
			Max. My	14	-57.41	10.10	-4170.75
			Max. Vy	20	-45.44	3974.80	-11.81
L60	4.75 - 4.5	Pole	Max. Vx	14	49.98	10.10	-4170.75
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.85	-3.63	9.67
			Max. Mx	20	-57.57	3986.16	-11.83
			Max. My	14	-57.54	10.12	-4183.24
			Max. Vy	20	-45.47	3986.16	-11.83
			Max. Vx	14	50.02	10.12	-4183.24
			Max. Torque	22			-6.10
			Max Tension	1	0.00	0.00	0.00
L61	4.5 - 0	Pole	Max. Compression	26	-97.69	-3.62	9.92
			Max. Mx	20	-59.91	4191.95	-12.27
			Max. My	14	-59.91	10.55	-4409.82
			Max. Vy	20	-46.01	4191.95	-12.27
			Max. Vx	14	50.77	10.55	-4409.82
			Max. Torque	22			-6.10

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	97.69	-0.00	0.00
	Max. H <sub>x</sub>	20	59.93	45.99	-0.12
	Max. H <sub>z</sub>	2	59.93	-0.03	50.69
	Max. M <sub>x</sub>	2	4407.72	-0.03	50.69
	Max. M <sub>z</sub>	8	4174.85	-45.82	0.07
	Max. Torsion	10	6.01	-39.55	-22.28
	Min. Vert	13	44.95	-22.74	-38.76
	Min. H <sub>x</sub>	8	59.93	-45.82	0.07
	Min. H <sub>z</sub>	14	59.93	0.09	-50.75
	Min. M <sub>x</sub>	14	-4409.82	0.09	-50.75
	Min. M <sub>z</sub>	20	-4191.95	45.99	-0.12
	Min. Torsion	22	-6.10	39.53	22.25

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	49.94	0.00	0.00	-2.22	0.05	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	59.93	0.03	-50.69	-4407.72	-3.40	5.77

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p>	<p><b>Job</b></p> <p style="text-align: center;">528 Wheelers Farm Rd (BU 876320)</p>	<p><b>Page</b></p> <p style="text-align: center;">51 of 62</p>
	<p><b>Project</b></p> <p style="text-align: center;">TEP No. 25570.206551</p>	<p><b>Date</b></p> <p style="text-align: center;">14:43:12 01/17/19</p>
	<p><b>Client</b></p> <p style="text-align: center;">Crown Castle</p>	<p><b>Designed by</b></p> <p style="text-align: center;">tmlester</p>

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 0 deg - No Ice	44.95	0.03	-50.69	-4375.07	-3.39	5.76
1.2 Dead+1.0 Wind 30 deg - No Ice	59.93	22.85	-38.65	-3452.14	-2053.78	0.97
0.9 Dead+1.0 Wind 30 deg - No Ice	44.95	22.85	-38.65	-3426.05	-2038.63	0.97
1.2 Dead+1.0 Wind 60 deg - No Ice	59.93	39.51	-22.33	-1996.10	-3550.17	-2.11
0.9 Dead+1.0 Wind 60 deg - No Ice	44.95	39.51	-22.33	-1980.73	-3523.98	-2.11
1.2 Dead+1.0 Wind 90 deg - No Ice	59.93	45.82	-0.07	-11.35	-4174.85	-4.42
0.9 Dead+1.0 Wind 90 deg - No Ice	44.95	45.82	-0.07	-10.58	-4144.01	-4.42
1.2 Dead+1.0 Wind 120 deg - No Ice	59.93	39.55	22.28	1983.45	-3552.66	-6.01
0.9 Dead+1.0 Wind 120 deg - No Ice	44.95	39.55	22.28	1969.55	-3526.46	-6.00
1.2 Dead+1.0 Wind 150 deg - No Ice	59.93	22.74	38.76	3457.63	-2040.16	-5.50
0.9 Dead+1.0 Wind 150 deg - No Ice	44.95	22.74	38.76	3432.86	-2025.14	-5.49
1.2 Dead+1.0 Wind 180 deg - No Ice	59.93	-0.09	50.75	4409.82	10.55	-5.71
0.9 Dead+1.0 Wind 180 deg - No Ice	44.95	-0.09	50.75	4378.51	10.45	-5.70
1.2 Dead+1.0 Wind 210 deg - No Ice	59.93	-22.92	38.80	3461.29	2060.93	-0.94
0.9 Dead+1.0 Wind 210 deg - No Ice	44.95	-22.92	38.80	3436.51	2045.70	-0.93
1.2 Dead+1.0 Wind 240 deg - No Ice	59.93	-39.67	22.41	1998.21	3566.51	2.37
0.9 Dead+1.0 Wind 240 deg - No Ice	44.95	-39.67	22.41	1984.19	3540.17	2.37
1.2 Dead+1.0 Wind 270 deg - No Ice	59.93	-45.99	0.12	12.27	4191.95	4.53
0.9 Dead+1.0 Wind 270 deg - No Ice	44.95	-45.99	0.12	12.84	4160.96	4.52
1.2 Dead+1.0 Wind 300 deg - No Ice	59.93	-39.53	-22.25	-1984.47	3548.94	6.10
0.9 Dead+1.0 Wind 300 deg - No Ice	44.95	-39.53	-22.25	-1969.21	3522.75	6.09
1.2 Dead+1.0 Wind 330 deg - No Ice	59.93	-22.76	-38.66	-3449.76	2042.38	5.69
0.9 Dead+1.0 Wind 330 deg - No Ice	44.95	-22.76	-38.66	-3423.71	2027.30	5.68
1.2 Dead+1.0 Ice+1.0 Temp	97.69	0.00	-0.00	-9.92	-3.62	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	97.69	-0.00	-11.08	-1020.30	-3.52	1.16
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	97.69	4.78	-8.15	-796.83	-466.66	0.09
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	97.69	8.28	-4.71	-464.19	-805.01	-0.61
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	97.69	9.69	-0.01	-10.95	-950.43	-1.12
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	97.69	8.26	4.69	442.38	-803.41	-1.40
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	97.69	4.76	8.15	776.80	-463.68	-1.22
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	97.69	-0.01	11.09	1001.71	-2.43	-1.14

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	52 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlster

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	97.69	-4.79	8.18	779.55	460.65	-0.08
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	97.69	-8.31	4.72	445.53	800.84	0.66
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	97.69	-9.73	0.02	-7.90	946.41	1.14
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	97.69	-8.29	-4.70	-463.25	798.08	1.41
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	97.69	-4.78	-8.16	-797.06	458.36	1.25
Dead+Wind 0 deg - Service	49.94	0.01	-11.00	-954.36	-0.71	1.26
Dead+Wind 30 deg - Service	49.94	4.96	-8.39	-747.69	-443.79	0.21
Dead+Wind 60 deg - Service	49.94	8.57	-4.85	-433.06	-767.17	-0.46
Dead+Wind 90 deg - Service	49.94	9.94	-0.02	-4.14	-902.20	-0.97
Dead+Wind 120 deg - Service	49.94	8.58	4.84	426.94	-767.71	-1.31
Dead+Wind 150 deg - Service	49.94	4.94	8.41	745.50	-440.85	-1.20
Dead+Wind 180 deg - Service	49.94	-0.02	11.01	951.44	2.31	-1.25
Dead+Wind 210 deg - Service	49.94	-4.97	8.42	746.30	445.39	-0.20
Dead+Wind 240 deg - Service	49.94	-8.61	4.86	430.14	770.77	0.52
Dead+Wind 270 deg - Service	49.94	-9.98	0.03	0.96	905.97	0.99
Dead+Wind 300 deg - Service	49.94	-8.58	-4.83	-430.55	766.96	1.33
Dead+Wind 330 deg - Service	49.94	-4.94	-8.39	-747.18	441.38	1.24

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-49.94	0.00	0.00	49.94	0.00	0.000%
2	0.03	-59.93	-50.69	-0.03	59.93	50.69	0.000%
3	0.03	-44.95	-50.69	-0.03	44.95	50.69	0.000%
4	22.85	-59.93	-38.65	-22.85	59.93	38.65	0.000%
5	22.85	-44.95	-38.65	-22.85	44.95	38.65	0.000%
6	39.51	-59.93	-22.33	-39.51	59.93	22.33	0.000%
7	39.51	-44.95	-22.33	-39.51	44.95	22.33	0.000%
8	45.82	-59.93	-0.07	-45.82	59.93	0.07	0.000%
9	45.82	-44.95	-0.07	-45.82	44.95	0.07	0.000%
10	39.55	-59.93	22.28	-39.55	59.93	-22.28	0.000%
11	39.55	-44.95	22.28	-39.55	44.95	-22.28	0.000%
12	22.74	-59.93	38.76	-22.74	59.93	-38.76	0.000%
13	22.74	-44.95	38.76	-22.74	44.95	-38.76	0.000%
14	-0.09	-59.93	50.75	0.09	59.93	-50.75	0.000%
15	-0.09	-44.95	50.75	0.09	44.95	-50.75	0.000%
16	-22.92	-59.93	38.80	22.92	59.93	-38.80	0.000%
17	-22.92	-44.95	38.80	22.92	44.95	-38.80	0.000%
18	-39.67	-59.93	22.41	39.67	59.93	-22.41	0.000%
19	-39.67	-44.95	22.41	39.67	44.95	-22.41	0.000%
20	-45.99	-59.93	0.12	45.99	59.93	-0.12	0.000%
21	-45.99	-44.95	0.12	45.99	44.95	-0.12	0.000%
22	-39.53	-59.93	-22.25	39.53	59.93	22.25	0.000%
23	-39.53	-44.95	-22.25	39.53	44.95	22.25	0.000%
24	-22.76	-59.93	-38.66	22.76	59.93	38.66	0.000%
25	-22.76	-44.95	-38.66	22.76	44.95	38.66	0.000%
26	0.00	-97.69	0.00	-0.00	97.69	0.00	0.000%
27	-0.00	-97.69	-11.08	0.00	97.69	11.08	0.000%
28	4.78	-97.69	-8.15	-4.78	97.69	8.15	0.000%
29	8.28	-97.69	-4.71	-8.28	97.69	4.71	0.000%
30	9.69	-97.69	-0.01	-9.69	97.69	0.01	0.000%



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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
31	8.26	-97.69	4.69	-8.26	97.69	-4.69	0.000%
32	4.76	-97.69	8.15	-4.76	97.69	-8.15	0.000%
33	-0.01	-97.69	11.09	0.01	97.69	-11.09	0.000%
34	-4.79	-97.69	8.18	4.79	97.69	-8.18	0.000%
35	-8.31	-97.69	4.72	8.31	97.69	-4.72	0.000%
36	-9.73	-97.69	0.02	9.73	97.69	-0.02	0.000%
37	-8.29	-97.69	-4.70	8.29	97.69	4.70	0.000%
38	-4.78	-97.69	-8.16	4.78	97.69	8.16	0.000%
39	0.01	-49.94	-11.00	-0.01	49.94	11.00	0.000%
40	4.96	-49.94	-8.39	-4.96	49.94	8.39	0.000%
41	8.57	-49.94	-4.85	-8.57	49.94	4.85	0.000%
42	9.94	-49.94	-0.02	-9.94	49.94	0.02	0.000%
43	8.58	-49.94	4.84	-8.58	49.94	-4.84	0.000%
44	4.94	-49.94	8.41	-4.94	49.94	-8.41	0.000%
45	-0.02	-49.94	11.01	0.02	49.94	-11.01	0.000%
46	-4.97	-49.94	8.42	4.97	49.94	-8.42	0.000%
47	-8.61	-49.94	4.86	8.61	49.94	-4.86	0.000%
48	-9.98	-49.94	0.03	9.98	49.94	-0.03	0.000%
49	-8.58	-49.94	-4.83	8.58	49.94	4.83	0.000%
50	-4.94	-49.94	-8.39	4.94	49.94	8.39	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	5	0.0000001	0.00076959
3	Yes	5	0.0000001	0.00034568
4	Yes	6	0.0000001	0.00018943
5	Yes	6	0.0000001	0.00006045
6	Yes	6	0.0000001	0.00019448
7	Yes	6	0.0000001	0.00006201
8	Yes	5	0.0000001	0.00075214
9	Yes	5	0.0000001	0.00034048
10	Yes	6	0.0000001	0.00017046
11	Yes	6	0.0000001	0.00005378
12	Yes	6	0.0000001	0.00020332
13	Yes	6	0.0000001	0.00006548
14	Yes	5	0.0000001	0.00070655
15	Yes	5	0.0000001	0.00031759
16	Yes	6	0.0000001	0.00018490
17	Yes	6	0.0000001	0.00005879
18	Yes	6	0.0000001	0.00018156
19	Yes	6	0.0000001	0.00005742
20	Yes	5	0.0000001	0.00067832
21	Yes	5	0.0000001	0.00030721
22	Yes	6	0.0000001	0.00020766
23	Yes	6	0.0000001	0.00006677
24	Yes	6	0.0000001	0.00017181
25	Yes	6	0.0000001	0.00005443
26	Yes	4	0.0000001	0.00076645
27	Yes	6	0.0000001	0.00022495
28	Yes	6	0.0000001	0.00023784
29	Yes	6	0.0000001	0.00024014
30	Yes	6	0.0000001	0.00021629
31	Yes	6	0.0000001	0.00023202

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32	Yes	6	0.00000001	0.00023214
33	Yes	6	0.00000001	0.00021875
34	Yes	6	0.00000001	0.00022861
35	Yes	6	0.00000001	0.00023030
36	Yes	6	0.00000001	0.00021352
37	Yes	6	0.00000001	0.00023787
38	Yes	6	0.00000001	0.00023377
39	Yes	5	0.00000001	0.00004464
40	Yes	5	0.00000001	0.00008144
41	Yes	5	0.00000001	0.00008791
42	Yes	5	0.00000001	0.00004134
43	Yes	5	0.00000001	0.00007091
44	Yes	5	0.00000001	0.00010311
45	Yes	5	0.00000001	0.00004335
46	Yes	5	0.00000001	0.00007519
47	Yes	5	0.00000001	0.00007217
48	Yes	5	0.00000001	0.00004136
49	Yes	5	0.00000001	0.00010975
50	Yes	5	0.00000001	0.00007224

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	13.80	39	1.02	0.01
L2	115 - 110	12.74	39	1.01	0.01
L3	110 - 105	11.70	39	0.99	0.01
L4	105 - 100	10.68	39	0.96	0.01
L5	100 - 99.25	9.70	39	0.91	0.01
L6	99.25 - 99	9.56	39	0.90	0.00
L7	99 - 94	9.51	39	0.90	0.00
L8	94 - 90.08	8.60	39	0.85	0.00
L9	90.08 - 89.83	7.91	39	0.81	0.00
L10	89.83 - 89.5	7.87	39	0.80	0.00
L11	89.5 - 89.25	7.82	39	0.80	0.00
L12	89.25 - 84.25	7.77	39	0.80	0.00
L13	84.25 - 78	6.95	39	0.77	0.00
L14	81.75 - 77	6.56	39	0.75	0.00
L15	77 - 76.75	5.82	39	0.73	0.00
L16	76.75 - 76.5	5.79	39	0.72	0.00
L17	76.5 - 75.5	5.75	39	0.72	0.00
L18	75.5 - 75.25	5.60	39	0.72	0.00
L19	75.25 - 74.5	5.56	39	0.71	0.00
L20	74.5 - 74.25	5.45	39	0.71	0.00
L21	74.25 - 72	5.41	39	0.70	0.00
L22	72 - 71.75	5.08	39	0.69	0.00
L23	71.75 - 70.5	5.05	39	0.69	0.00
L24	70.5 - 70.25	4.87	39	0.67	0.00
L25	70.25 - 70	4.84	39	0.67	0.00
L26	70 - 69.75	4.80	39	0.67	0.00
L27	69.75 - 69.5	4.76	39	0.67	0.00
L28	69.5 - 69.25	4.73	39	0.67	0.00
L29	69.25 - 64.25	4.70	39	0.66	0.00
L30	64.25 - 59.25	4.02	39	0.62	0.00
L31	59.25 - 56	3.40	39	0.57	0.00
L32	56 - 55.75	3.03	39	0.53	0.00
L33	55.75 - 55.5	3.00	39	0.53	0.00
L34	55.5 - 55.25	2.97	39	0.53	0.00
L35	55.25 - 54	2.95	39	0.53	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	54 - 53.75	2.81	39	0.52	0.00
L37	53.75 - 53.5	2.78	39	0.52	0.00
L38	53.5 - 53.25	2.75	39	0.51	0.00
L39	53.25 - 53	2.73	39	0.51	0.00
L40	53 - 48	2.70	39	0.51	0.00
L41	48 - 39.75	2.20	39	0.45	0.00
L42	44.5 - 38.75	1.89	39	0.40	0.00
L43	38.75 - 34.75	1.43	39	0.36	0.00
L44	34.75 - 34.5	1.15	39	0.31	0.00
L45	34.5 - 33.75	1.13	39	0.31	0.00
L46	33.75 - 33.5	1.08	39	0.30	0.00
L47	33.5 - 32.75	1.07	39	0.30	0.00
L48	32.75 - 32.5	1.02	39	0.29	0.00
L49	32.5 - 27.5	1.00	39	0.29	0.00
L50	27.5 - 24	0.72	39	0.25	0.00
L51	24 - 23.75	0.56	39	0.21	0.00
L52	23.75 - 18.75	0.54	39	0.21	0.00
L53	18.75 - 14.25	0.34	39	0.17	0.00
L54	14.25 - 14	0.20	39	0.13	0.00
L55	14 - 12.75	0.19	39	0.13	0.00
L56	12.75 - 12.5	0.16	39	0.12	0.00
L57	12.5 - 7.5	0.15	39	0.12	0.00
L58	7.5 - 5	0.05	39	0.07	0.00
L59	5 - 4.75	0.02	39	0.04	0.00
L60	4.75 - 4.5	0.02	39	0.04	0.00
L61	4.5 - 0	0.02	39	0.04	0.00

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	VHLP2-11	39	13.80	1.02	0.01	22170
123.000	PX2F-52	39	13.80	1.02	0.01	22170
122.000	APXVTM14-ALU-I20 w/ Mount Pipe	39	13.80	1.02	0.01	22170
120.000	Pipe 6" x 10'	39	13.80	1.02	0.01	22170
113.000	(2) JAHH-65B-R3B w/ Mount Pipe	39	12.32	1.00	0.01	16049
105.000	AIR 32 B2a/B66Aa w/ Mount Pipe	39	10.68	0.96	0.01	7113
96.000	7770.00 w/ Mount Pipe	39	8.96	0.87	0.00	5874
75.000	ACUTIME 2000	39	5.52	0.71	0.00	7900

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	63.79	14	4.68	0.04
L2	115 - 110	58.90	14	4.65	0.03
L3	110 - 105	54.08	14	4.57	0.03
L4	105 - 100	49.37	14	4.42	0.03
L5	100 - 99.25	44.85	14	4.20	0.02

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L6	99.25 - 99	44.19	14	4.16	0.02
L7	99 - 94	43.98	14	4.15	0.02
L8	94 - 90.08	39.74	14	3.94	0.02
L9	90.08 - 89.83	36.59	14	3.73	0.02
L10	89.83 - 89.5	36.39	14	3.72	0.02
L11	89.5 - 89.25	36.14	14	3.71	0.02
L12	89.25 - 84.25	35.94	14	3.70	0.01
L13	84.25 - 78	32.15	14	3.54	0.01
L14	81.75 - 77	30.32	14	3.45	0.01
L15	77 - 76.75	26.93	14	3.35	0.01
L16	76.75 - 76.5	26.75	14	3.35	0.01
L17	76.5 - 75.5	26.58	14	3.34	0.01
L18	75.5 - 75.25	25.88	14	3.31	0.01
L19	75.25 - 74.5	25.71	14	3.30	0.01
L20	74.5 - 74.25	25.19	14	3.27	0.01
L21	74.25 - 72	25.02	14	3.26	0.01
L22	72 - 71.75	23.51	14	3.18	0.01
L23	71.75 - 70.5	23.34	14	3.17	0.01
L24	70.5 - 70.25	22.52	14	3.12	0.01
L25	70.25 - 70	22.35	14	3.11	0.01
L26	70 - 69.75	22.19	14	3.10	0.01
L27	69.75 - 69.5	22.03	14	3.09	0.01
L28	69.5 - 69.25	21.87	14	3.08	0.01
L29	69.25 - 64.25	21.71	14	3.07	0.01
L30	64.25 - 59.25	18.61	14	2.85	0.01
L31	59.25 - 56	15.74	14	2.63	0.01
L32	56 - 55.75	14.00	14	2.47	0.01
L33	55.75 - 55.5	13.87	14	2.46	0.01
L34	55.5 - 55.25	13.74	14	2.45	0.01
L35	55.25 - 54	13.62	14	2.44	0.01
L36	54 - 53.75	12.98	14	2.40	0.01
L37	53.75 - 53.5	12.86	14	2.38	0.01
L38	53.5 - 53.25	12.73	14	2.37	0.01
L39	53.25 - 53	12.61	14	2.36	0.01
L40	53 - 48	12.49	14	2.35	0.01
L41	48 - 39.75	10.18	14	2.06	0.01
L42	44.5 - 38.75	8.74	14	1.86	0.00
L43	38.75 - 34.75	6.60	14	1.67	0.00
L44	34.75 - 34.5	5.30	14	1.45	0.00
L45	34.5 - 33.75	5.22	14	1.44	0.00
L46	33.75 - 33.5	5.00	14	1.41	0.00
L47	33.5 - 32.75	4.93	14	1.39	0.00
L48	32.75 - 32.5	4.71	14	1.35	0.00
L49	32.5 - 27.5	4.64	14	1.34	0.00
L50	27.5 - 24	3.35	14	1.13	0.00
L51	24 - 23.75	2.57	14	0.99	0.00
L52	23.75 - 18.75	2.52	14	0.98	0.00
L53	18.75 - 14.25	1.59	14	0.79	0.00
L54	14.25 - 14	0.92	14	0.62	0.00
L55	14 - 12.75	0.89	14	0.61	0.00
L56	12.75 - 12.5	0.73	14	0.57	0.00
L57	12.5 - 7.5	0.71	14	0.56	0.00
L58	7.5 - 5	0.25	14	0.32	0.00
L59	5 - 4.75	0.11	14	0.20	0.00
L60	4.75 - 4.5	0.10	14	0.19	0.00
L61	4.5 - 0	0.09	14	0.18	0.00

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b> 528 Wheelers Farm Rd (BU 876320)	<b>Page</b> 57 of 62
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	<b>Client</b> Crown Castle	<b>Designed by</b> tmlester

## Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.000	VHLP2-11	14	63.79	4.68	0.04	4959
123.000	PX2F-52	14	63.79	4.68	0.04	4959
122.000	APXVTM14-ALU-I20 w/ Mount Pipe	14	63.79	4.68	0.04	4959
120.000	Pipe 6" x 10'	14	63.79	4.68	0.04	4959
113.000	(2) JAHH-65B-R3B w/ Mount Pipe	14	56.96	4.62	0.03	3541
105.000	AIR 32 B2a/B66Aa w/ Mount Pipe	14	49.37	4.42	0.03	1556
96.000	7770.00 w/ Mount Pipe	14	41.41	4.04	0.02	1277
75.000	ACUTIME 2000	14	25.54	3.29	0.01	1718

## Compression Checks

## Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> /φP <sub>n</sub>
L1	120 - 115 (1)	TP23.0102x22x0.25	5.000	0.000	0.0	18.3220	-3.72	989.39	0.004
L2	115 - 110 (2)	TP24.0205x23.0102x0.25	5.000	0.000	0.0	19.1352	-7.58	1033.30	0.007
L3	110 - 105 (3)	TP25.0307x24.0205x0.25	5.000	0.000	0.0	19.9485	-8.07	1077.22	0.007
L4	105 - 100 (4)	TP26.041x25.0307x0.25	5.000	0.000	0.0	20.7617	-12.58	1121.13	0.011
L5	100 - 99.25 (5)	TP26.1925x26.041x0.25	0.750	0.000	0.0	20.8837	-12.68	1127.72	0.011
L6	99.25 - 99 (6)	TP26.243x26.1925x0.3625	0.250	0.000	0.0	30.2090	-12.73	1631.29	0.008
L7	99 - 94 (7)	TP27.2532x26.243x0.3563	5.000	0.000	0.0	30.8542	-18.15	1666.13	0.011
L8	94 - 90.08 (8)	TP28.0453x27.2532x0.35	3.920	0.000	0.0	31.2126	-18.97	1685.48	0.011
L9	90.08 - 89.83 (9)	TP28.0958x28.0453x0.5125	0.250	0.000	0.0	45.5193	-19.05	2458.04	0.008
L10	89.83 - 89.5 (10)	TP28.1625x28.0958x0.5125	0.330	0.000	0.0	45.6293	-19.13	2463.98	0.008
L11	89.5 - 89.25 (11)	TP28.213x28.1625x0.725	0.250	0.000	0.0	64.1707	-19.21	3465.22	0.006
L12	89.25 - 84.25 (12)	TP29.2232x28.213x0.7	5.000	0.000	0.0	64.2913	-20.54	3471.73	0.006
L13	84.25 - 78 (13)	TP30.486x29.2232x0.7	6.250	0.000	0.0	65.4298	-21.28	3533.21	0.006
L14	78 - 77 (14)	TP30.188x29.2283x0.8625	4.750	0.000	0.0	81.4443	-23.97	4397.99	0.005
L15	77 - 76.75 (15)	TP30.2385x30.188x0.8625	0.250	0.000	0.0	81.5846	-24.08	4405.57	0.005
L16	76.75 - 76.5 (16)	TP30.289x30.2385x0.9625	0.250	0.000	0.0	90.8903	-24.18	4908.07	0.005
L17	76.5 - 75.5 (17)	TP30.4911x30.289x0.9625	1.000	0.000	0.0	91.5164	-24.58	4941.89	0.005
L18	75.5 - 75.25 (18)	TP30.5416x30.4911x0.7625	0.250	0.000	0.0	73.1151	-24.67	3948.21	0.006
L19	75.25 - 74.5 (19)	TP30.6931x30.5416x0.7625	0.750	0.000	0.0	73.4871	-25.02	3968.31	0.006
L20	74.5 - 74.25 (20)	TP30.7436x30.6931x0.8375	0.250	0.000	0.0	80.6493	-25.12	4355.06	0.006
L21	74.25 - 72 (21)	TP31.1982x30.7436x0.825	2.250	0.000	0.0	80.6864	-25.90	4357.07	0.006
L22	72 - 71.75 (22)	TP31.2487x31.1982x0.7625	0.250	0.000	0.0	74.8513	-26.00	4041.97	0.006
L23	71.75 - 70.5 (23)	TP31.5013x31.2487x0.7625	1.250	0.000	0.0	75.4714	-26.48	4075.45	0.006
L24	70.5 - 70.25 (24)	TP31.5518x31.5013x0.7875	0.250	0.000	0.0	78.0105	-26.59	4212.57	0.006

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	<p><b>Designed by</b></p> <p>tmlester</p>
<p><b>Project</b></p> <p>TEP No. 25570.206551</p>	
<p><b>Client</b></p> <p>Crown Castle</p>	

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L25	70.25 - 70 (25)	TP31.6023x31.5518x0.7875	0.250	0.000	0.0	78.1386	-26.69	4219.48	0.006
L26	70 - 69.75 (26)	TP31.6528x31.6023x0.725	0.250	0.000	0.0	72.2010	-26.79	3898.85	0.007
L27	69.75 - 69.5 (27)	TP31.7033x31.6528x0.875	0.250	0.000	0.0	86.8588	-26.89	4690.37	0.006
L28	69.5 - 69.25 (28)	TP31.7538x31.7033x0.75	0.250	0.000	0.0	74.8742	-26.98	4043.21	0.007
L29	69.25 - 64.25 (29)	TP32.764x31.7538x0.7375	5.000	0.000	0.0	76.0550	-28.79	4106.97	0.007
L30	64.25 - 59.25 (30)	TP33.7742x32.764x0.7125	5.000	0.000	0.0	75.8519	-30.64	4096.00	0.007
L31	59.25 - 56 (31)	TP34.4309x33.7742x0.7125	3.250	0.000	0.0	77.3583	-31.87	4177.35	0.008
L32	56 - 55.75 (32)	TP34.4814x34.4309x0.8125	0.250	0.000	0.0	88.0862	-31.99	4756.65	0.007
L33	55.75 - 55.5 (33)	TP34.5319x34.4814x0.8125	0.250	0.000	0.0	88.2183	-32.10	4763.79	0.007
L34	55.5 - 55.25 (34)	TP34.5824x34.5319x0.8875	0.250	0.000	0.0	96.2915	-32.21	5199.74	0.006
L35	55.25 - 54 (35)	TP34.8349x34.5824x0.875	1.250	0.000	0.0	95.6821	-32.76	5166.83	0.006
L36	54 - 53.75 (36)	TP34.8854x34.8349x0.75	0.250	0.000	0.0	82.4371	-32.88	4451.60	0.007
L37	53.75 - 53.5 (37)	TP34.936x34.8854x0.7375	0.250	0.000	0.0	81.2128	-32.98	4385.49	0.008
L38	53.5 - 53.25 (38)	TP34.9865x34.936x0.6625	0.250	0.000	0.0	73.2216	-33.08	3953.97	0.008
L39	53.25 - 53 (39)	TP35.037x34.9865x0.6	0.250	0.000	0.0	66.5322	-33.18	3592.74	0.009
L40	53 - 48 (40)	TP36.0472x35.037x0.5875	5.000	0.000	0.0	67.0808	-35.05	3622.36	0.010
L41	48 - 39.75 (41)	TP37.714x36.0472x0.5875	8.250	0.000	0.0	68.4186	-36.39	3694.60	0.010
L42	39.75 - 38.75 (42)	TP37.291x36.1293x0.6625	5.750	0.000	0.0	78.1378	-40.01	4219.44	0.009
L43	38.75 - 34.75 (43)	TP38.0992x37.291x0.6625	4.000	0.000	0.0	79.8618	-41.59	4312.54	0.010
L44	34.75 - 34.5 (44)	TP38.1497x38.0992x0.825	0.250	0.000	0.0	99.1530	-41.72	5354.26	0.008
L45	34.5 - 33.75 (45)	TP38.3012x38.1497x0.825	0.750	0.000	0.0	99.5556	-42.07	5376.00	0.008
L46	33.75 - 33.5 (46)	TP38.3517x38.3012x0.625	0.250	0.000	0.0	75.9250	-42.18	4099.95	0.010
L47	33.5 - 32.75 (47)	TP38.5033x38.3517x0.625	0.750	0.000	0.0	76.2300	-42.47	4116.42	0.010
L48	32.75 - 32.5 (48)	TP38.5538x38.5033x0.925	0.250	0.000	0.0	112.077 0	-42.62	6052.17	0.007
L49	32.5 - 27.5 (49)	TP39.564x38.5538x0.9	5.000	0.000	0.0	112.048 0	-45.23	6050.60	0.007
L50	27.5 - 24 (50)	TP40.2711x39.564x0.9	3.500	0.000	0.0	114.097 0	-47.09	6161.26	0.008
L51	24 - 23.75 (51)	TP40.3216x40.2711x1	0.250	0.000	0.0	126.616 0	-47.24	6837.24	0.007
L52	23.75 - 18.75 (52)	TP41.3318x40.3216x0.975	5.000	0.000	0.0	126.700 0	-50.00	6841.81	0.007
L53	18.75 - 14.25 (53)	TP42.241x41.3318x0.975	4.500	0.000	0.0	129.554 0	-52.51	6995.94	0.008
L54	14.25 - 14 (54)	TP42.2915x42.241x1	0.250	0.000	0.0	132.959 0	-52.68	7179.76	0.007
L55	14 - 12.75 (55)	TP42.544x42.2915x0.9875	1.250	0.000	0.0	132.139 0	-53.43	7135.52	0.007
L56	12.75 - 12.5 (56)	TP42.5945x42.544x0.775	0.250	0.000	0.0	104.361 0	-53.57	5635.47	0.010
L57	12.5 - 7.5 (57)	TP43.6047x42.5945x0.7625	5.000	0.000	0.0	105.188 0	-56.01	5680.17	0.010
L58	7.5 - 5 (58)	TP44.1098x43.6047x0.75	2.500	0.000	0.0	104.714 0	-57.25	5654.55	0.010
L59	5 - 4.75 (59)	TP44.1603x44.1098x0.9125	0.250	0.000	0.0	127.073	-57.41	6861.94	0.008

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L60	4.75 - 4.5 (60)	TP44.2108x44.1603x0.875	0.250	0.000	0.0	122.099 0	-57.54	6593.33	0.009
L61	4.5 - 0 (61)	TP45.12x44.2108x0.8625	4.500	0.000	0.0	122.914 0	-59.91	6637.36	0.009

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	120 - 115 (1)	TP23.0102x22x0.25	48.15	564.83	0.085	0.00	564.83	0.000
L2	115 - 110 (2)	TP24.0205x23.0102x0.25	116.12	607.66	0.191	0.00	607.66	0.000
L3	110 - 105 (3)	TP25.0307x24.0205x0.25	197.57	651.21	0.303	0.00	651.21	0.000
L4	105 - 100 (4)	TP26.041x25.0307x0.25	318.95	695.40	0.459	0.00	695.40	0.000
L5	100 - 99.25 (5)	TP26.1925x26.041x0.25	336.32	702.08	0.479	0.00	702.08	0.000
L6	99.25 - 99 (6)	TP26.243x26.1925x0.3625	342.13	1077.22	0.318	0.00	1077.22	0.000
L7	99 - 94 (7)	TP27.2532x26.243x0.3563	486.35	1144.31	0.425	0.00	1144.31	0.000
L8	94 - 90.08 (8)	TP28.0453x27.2532x0.35	611.20	1192.67	0.512	0.00	1192.67	0.000
L9	90.08 - 89.83 (9)	TP28.0958x28.0453x0.5125	619.25	1722.21	0.360	0.00	1722.21	0.000
L10	89.83 - 89.5 (10)	TP28.1625x28.0958x0.5125	629.89	1730.62	0.364	0.00	1730.62	0.000
L11	89.5 - 89.25 (11)	TP28.213x28.1625x0.725	637.97	2401.11	0.266	0.00	2401.11	0.000
L12	89.25 - 84.25 (12)	TP29.2232x28.213x0.7	804.93	2500.69	0.322	0.00	2500.69	0.000
L13	84.25 - 78 (13)	TP30.486x29.2232x0.7	890.41	2591.13	0.344	0.00	2591.13	0.000
L14	78 - 77 (14)	TP30.188x29.2283x0.8625	1056.82	3241.57	0.326	0.00	3241.57	0.000
L15	77 - 76.75 (15)	TP30.2385x30.188x0.8625	1065.72	3252.92	0.328	0.00	3252.92	0.000
L16	76.75 - 76.5 (16)	TP30.289x30.2385x0.9625	1074.64	3605.72	0.298	0.00	3605.72	0.000
L17	76.5 - 75.5 (17)	TP30.4911x30.289x0.9625	1110.45	3656.38	0.304	0.00	3656.38	0.000
L18	75.5 - 75.25 (18)	TP30.5416x30.4911x0.7625	1119.43	2966.04	0.377	0.00	2966.04	0.000
L19	75.25 - 74.5 (19)	TP30.6931x30.5416x0.7625	1146.37	2996.68	0.383	0.00	2996.68	0.000
L20	74.5 - 74.25 (20)	TP30.7436x30.6931x0.8375	1155.43	3277.97	0.352	0.00	3277.97	0.000
L21	74.25 - 72 (21)	TP31.1982x30.7436x0.825	1237.52	3333.43	0.371	0.00	3333.43	0.000
L22	72 - 71.75 (22)	TP31.2487x31.1982x0.7625	1246.71	3110.38	0.401	0.00	3110.38	0.000
L23	71.75 - 70.5 (23)	TP31.5013x31.2487x0.7625	1292.86	3162.76	0.409	0.00	3162.76	0.000
L24	70.5 - 70.25 (24)	TP31.5518x31.5013x0.7875	1302.13	3269.36	0.398	0.00	3269.36	0.000
L25	70.25 - 70 (25)	TP31.6023x31.5518x0.7875	1311.41	3280.23	0.400	0.00	3280.23	0.000
L26	70 - 69.75 (26)	TP31.6528x31.6023x0.725	1320.71	3048.38	0.433	0.00	3048.38	0.000
L27	69.75 - 69.5 (27)	TP31.7033x31.6528x0.875	1330.03	3637.88	0.366	0.00	3637.88	0.000
L28	69.5 - 69.25 (28)	TP31.7538x31.7033x0.75	1339.35	3166.69	0.423	0.00	3166.69	0.000
L29	69.25 - 64.25 (29)	TP32.764x31.7538x0.7375	1528.67	3326.52	0.460	0.00	3326.52	0.000
L30	64.25 - 59.25 (30)	TP33.7742x32.764x0.7125	1723.30	3429.82	0.502	0.00	3429.82	0.000
L31	59.25 - 56 (31)	TP34.4309x33.7742x0.7125	1852.63	3568.88	0.519	0.00	3568.88	0.000

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{rx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ kip-ft	$\phi M_{ry}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L32	56 - 55.75 (32)	TP34.4814x34.4309x0.8125	1862.68	4045.94	0.460	0.00	4045.94	0.000
L33	55.75 - 55.5 (33)	TP34.5319x34.4814x0.8125	1872.73	4058.23	0.461	0.00	4058.23	0.000
L34	55.5 - 55.25 (34)	TP34.5824x34.5319x0.8875	1882.80	4416.73	0.426	0.00	4416.73	0.000
L35	55.25 - 54 (35)	TP34.8349x34.5824x0.875	1933.33	4425.77	0.437	0.00	4425.77	0.000
L36	54 - 53.75 (36)	TP34.8854x34.8349x0.75	1943.48	3847.06	0.505	0.00	3847.06	0.000
L37	53.75 - 53.5 (37)	TP34.936x34.8854x0.7375	1953.64	3798.43	0.514	0.00	3798.43	0.000
L38	53.5 - 53.25 (38)	TP34.9865x34.936x0.6625	1963.82	3444.88	0.570	0.00	3444.88	0.000
L39	53.25 - 53 (39)	TP35.037x34.9865x0.6	1974.00	3146.26	0.627	0.00	3146.26	0.000
L40	53 - 48 (40)	TP36.0472x35.037x0.5875	2180.31	3269.16	0.667	0.00	3269.16	0.000
L41	48 - 39.75 (41)	TP37.714x36.0472x0.5875	2327.63	3401.93	0.684	0.00	3401.93	0.000
L42	39.75 - 38.75 (42)	TP37.291x36.1293x0.6625	2575.31	3927.67	0.656	0.00	3927.67	0.000
L43	38.75 - 34.75 (43)	TP38.0992x37.291x0.6625	2751.57	4104.48	0.670	0.00	4104.48	0.000
L44	34.75 - 34.5 (44)	TP38.1497x38.0992x0.825	2762.70	5058.79	0.546	0.00	5058.79	0.000
L45	34.5 - 33.75 (45)	TP38.3012x38.1497x0.825	2796.13	5100.39	0.548	0.00	5100.39	0.000
L46	33.75 - 33.5 (46)	TP38.3517x38.3012x0.625	2807.29	3936.75	0.713	0.00	3936.75	0.000
L47	33.5 - 32.75 (47)	TP38.5033x38.3517x0.625	2840.87	3968.69	0.716	0.00	3968.69	0.000
L48	32.75 - 32.5 (48)	TP38.5538x38.5033x0.925	2852.08	5750.82	0.496	0.00	5750.82	0.000
L49	32.5 - 27.5 (49)	TP39.564x38.5538x0.9	3079.02	5915.02	0.521	0.00	5915.02	0.000
L50	27.5 - 24 (50)	TP40.2711x39.564x0.9	3240.81	6135.87	0.528	0.00	6135.87	0.000
L51	24 - 23.75 (51)	TP40.3216x40.2711x1	3252.46	6783.45	0.479	0.00	6783.45	0.000
L52	23.75 - 18.75 (52)	TP41.3318x40.3216x0.975	3487.88	6975.34	0.500	0.00	6975.34	0.000
L53	18.75 - 14.25 (53)	TP42.241x41.3318x0.975	3703.69	7296.96	0.508	0.00	7296.96	0.000
L54	14.25 - 14 (54)	TP42.2915x42.241x1	3715.78	7488.99	0.496	0.00	7488.99	0.000
L55	14 - 12.75 (55)	TP42.544x42.2915x0.9875	3776.44	7493.96	0.504	0.00	7493.96	0.000
L56	12.75 - 12.5 (56)	TP42.5945x42.544x0.775	3788.60	5986.60	0.633	0.00	5986.60	0.000
L57	12.5 - 7.5 (57)	TP43.6047x42.5945x0.7625	4034.03	6186.11	0.652	0.00	6186.11	0.000
L58	7.5 - 5 (58)	TP44.1098x43.6047x0.75	4158.28	6235.67	0.667	0.00	6235.67	0.000
L59	5 - 4.75 (59)	TP44.1603x44.1098x0.9125	4170.77	7519.49	0.555	0.00	7519.49	0.000
L60	4.75 - 4.5 (60)	TP44.2108x44.1603x0.875	4183.25	7246.29	0.577	0.00	7246.29	0.000
L61	4.5 - 0 (61)	TP45.12x44.2108x0.8625	4409.84	7454.97	0.592	0.00	7454.97	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	120 - 115 (1)	TP23.0102x22x0.25	7.49	296.82	0.025	2.75	594.24	0.005
L2	115 - 110 (2)	TP24.0205x23.0102x0.25	16.03	309.99	0.052	1.44	648.17	0.002
L3	110 - 105 (3)	TP25.0307x24.0205x0.25	16.55	323.17	0.051	1.44	704.43	0.002
L4	105 - 100 (4)	TP26.041x25.0307x0.25	23.09	336.34	0.069	4.79	763.04	0.006
L5	100 - 99.25 (5)	TP26.1925x26.041x0.25	23.21	338.32	0.069	4.80	772.03	0.006
L6	99.25 - 99 (6)	TP26.243x26.1925x0.3625	23.25	489.39	0.048	4.80	1114.10	0.004



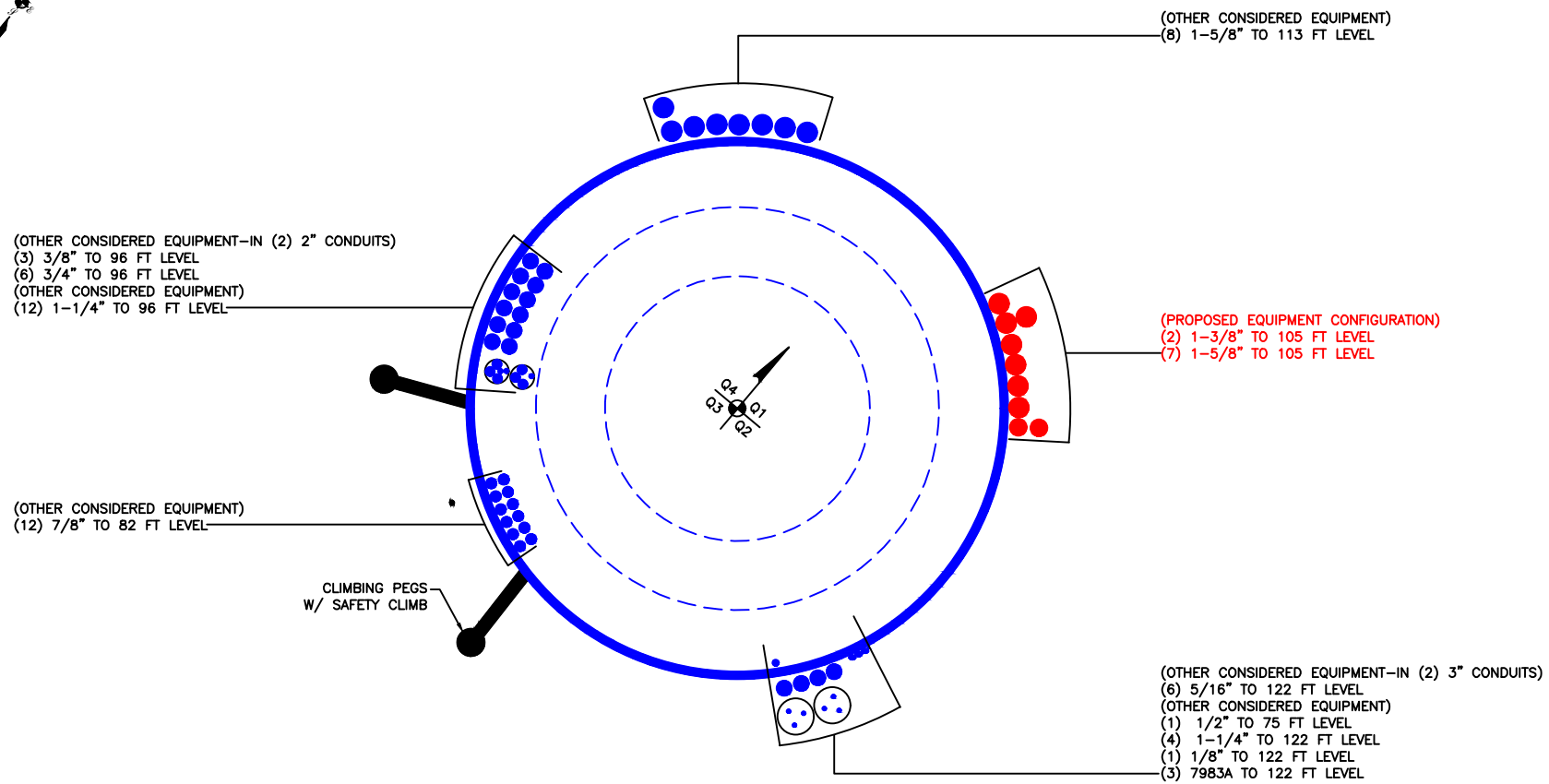
<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	<b>Job</b>	528 Wheelers Farm Rd (BU 876320)	<b>Page</b>	61 of 62
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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L7	99 - 94 (7)	TP27.2532x26.243x0.3563	31.52	499.84	0.063	4.70	1182.58	0.004
L8	94 - 90.08 (8)	TP28.0453x27.2532x0.35	32.20	505.64	0.064	4.68	1231.83	0.004
L9	90.08 - 89.83 (9)	TP28.0958x28.0453x0.5125	32.23	737.41	0.044	4.67	1789.19	0.003
L10	89.83 - 89.5 (10)	TP28.1625x28.0958x0.5125	32.29	739.20	0.044	4.66	1797.85	0.003
L11	89.5 - 89.25 (11)	TP28.213x28.1625x0.725	32.34	1039.56	0.031	4.66	2513.58	0.002
L12	89.25 - 84.25 (12)	TP29.2232x28.213x0.7	33.95	1041.52	0.033	3.80	2613.16	0.001
L13	84.25 - 78 (13)	TP30.486x29.2232x0.7	34.49	1059.96	0.033	3.86	2706.53	0.001
L14	78 - 77 (14)	TP30.188x29.2283x0.8625	35.61	1319.40	0.027	3.96	3403.47	0.001
L15	77 - 76.75 (15)	TP30.2385x30.188x0.8625	35.66	1321.67	0.027	3.96	3415.20	0.001
L16	76.75 - 76.5 (16)	TP30.289x30.2385x0.9625	35.72	1472.42	0.024	3.97	3798.33	0.001
L17	76.5 - 75.5 (17)	TP30.4911x30.289x0.9625	35.94	1482.57	0.024	3.99	3850.85	0.001
L18	75.5 - 75.25 (18)	TP30.5416x30.4911x0.7625	35.99	1184.46	0.030	3.99	3102.65	0.001
L19	75.25 - 74.5 (19)	TP30.6931x30.5416x0.7625	36.22	1190.49	0.030	4.01	3134.31	0.001
L20	74.5 - 74.25 (20)	TP30.7436x30.6931x0.8375	36.27	1306.52	0.028	4.01	3436.97	0.001
L21	74.25 - 72 (21)	TP31.1982x30.7436x0.825	36.76	1307.12	0.028	4.08	3492.26	0.001
L22	72 - 71.75 (22)	TP31.2487x31.1982x0.7625	36.81	1212.59	0.030	4.09	3251.76	0.001
L23	71.75 - 70.5 (23)	TP31.5013x31.2487x0.7625	37.09	1222.64	0.030	4.12	3305.85	0.001
L24	70.5 - 70.25 (24)	TP31.5518x31.5013x0.7875	37.13	1263.77	0.029	4.12	3419.91	0.001
L25	70.25 - 70 (25)	TP31.6023x31.5518x0.7875	37.19	1265.85	0.029	4.13	3431.15	0.001
L26	70 - 69.75 (26)	TP31.6528x31.6023x0.725	37.24	1169.66	0.032	4.13	3182.05	0.001
L27	69.75 - 69.5 (27)	TP31.7033x31.6528x0.875	37.30	1407.11	0.027	4.14	3815.73	0.001
L28	69.5 - 69.25 (28)	TP31.7538x31.7033x0.75	37.35	1212.96	0.031	4.15	3307.97	0.001
L29	69.25 - 64.25 (29)	TP32.764x31.7538x0.7375	38.43	1232.09	0.031	4.27	3470.98	0.001
L30	64.25 - 59.25 (30)	TP33.7742x32.764x0.7125	39.49	1228.80	0.032	4.39	3573.61	0.001
L31	59.25 - 56 (31)	TP34.4309x33.7742x0.7125	40.17	1253.20	0.032	4.47	3716.97	0.001
L32	56 - 55.75 (32)	TP34.4814x34.4309x0.8125	40.21	1427.00	0.028	4.48	4226.21	0.001
L33	55.75 - 55.5 (33)	TP34.5319x34.4814x0.8125	40.27	1429.14	0.028	4.48	4238.90	0.001
L34	55.5 - 55.25 (34)	TP34.5824x34.5319x0.8875	40.32	1559.92	0.026	4.49	4623.46	0.001
L35	55.25 - 54 (35)	TP34.8349x34.5824x0.875	40.60	1550.05	0.026	4.51	4630.33	0.001
L36	54 - 53.75 (36)	TP34.8854x34.8349x0.75	40.64	1335.48	0.030	4.52	4009.98	0.001
L37	53.75 - 53.5 (37)	TP34.936x34.8854x0.7375	40.69	1315.65	0.031	4.52	3957.72	0.001
L38	53.5 - 53.25 (38)	TP34.9865x34.936x0.6625	40.75	1186.19	0.034	4.53	3581.39	0.001
L39	53.25 - 53 (39)	TP35.037x34.9865x0.6	40.80	1077.82	0.038	4.54	3264.92	0.001
L40	53 - 48 (40)	TP36.0472x35.037x0.5875	41.80	1086.71	0.038	4.64	3389.60	0.001
L41	48 - 39.75 (41)	TP37.714x36.0472x0.5875	42.48	1108.38	0.038	4.71	3526.13	0.001
L42	39.75 - 38.75 (42)	TP37.291x36.1293x0.6625	43.73	1265.83	0.035	4.84	4078.45	0.001
L43	38.75 - 34.75 (43)	TP38.0992x37.291x0.6625	44.49	1293.76	0.034	4.93	4260.41	0.001
L44	34.75 - 34.5 (44)	TP38.1497x38.0992x0.825	44.52	1606.28	0.028	4.94	5273.72	0.001
L45	34.5 - 33.75	TP38.3012x38.1497x0.825	44.68	1612.80	0.028	4.96	5316.63	0.001

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	<b>Client</b>	Crown Castle	<b>Designed by</b>	tmlester

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L46	(45) 33.75 - 33.5	TP38.3517x38.3012x0.625	44.73	1229.99	0.036	4.96	4081.78	0.001
L47	(46) 33.5 - 32.75	TP38.5033x38.3517x0.625	44.88	1234.93	0.036	4.98	4114.63	0.001
L48	(47) 32.75 - 32.5	TP38.5538x38.5033x0.925	44.92	1815.65	0.025	4.98	6009.69	0.001
L49	(48) 32.5 - 27.5 (49)	TP39.564x38.5538x0.9	45.93	1815.18	0.025	5.10	6173.42	0.001
L50	27.5 - 24 (50)	TP40.2711x39.564x0.9	46.61	1848.38	0.025	5.18	6401.30	0.001
L51	24 - 23.75 (51)	TP40.3216x40.2711x1	46.64	2051.17	0.023	5.18	7094.68	0.001
L52	23.75 - 18.75 (52)	TP41.3318x40.3216x0.975	47.60	2052.54	0.023	5.29	7286.32	0.001
L53	18.75 - 14.25 (53)	TP42.241x41.3318x0.975	48.41	2098.78	0.023	5.39	7618.32	0.001
L54	14.25 - 14 (54)	TP42.2915x42.241x1	48.44	2153.93	0.022	5.40	7823.32	0.001
L55	14 - 12.75 (55)	TP42.544x42.2915x0.9875	48.68	2140.66	0.023	5.42	7825.03	0.001
L56	12.75 - 12.5 (56)	TP42.5945x42.544x0.775	48.71	1690.64	0.029	5.43	6219.14	0.001
L57	12.5 - 7.5 (57)	TP43.6047x42.5945x0.7625	49.55	1704.05	0.029	5.54	6421.77	0.001
L58	7.5 - 5 (58)	TP44.1098x43.6047x0.75	49.96	1696.37	0.029	5.59	6470.03	0.001
L59	5 - 4.75 (59)	TP44.1603x44.1098x0.9125	49.98	2058.58	0.024	5.60	7831.27	0.001
L60	4.75 - 4.5 (60)	TP44.2108x44.1603x0.875	50.02	1978.00	0.025	5.61	7540.02	0.001
L61	4.5 - 0 (61)	TP45.12x44.2108x0.8625	50.77	1991.21	0.025	5.71	7751.82	0.001

**APPENDIX B**  
**BASE LEVEL DRAWING**



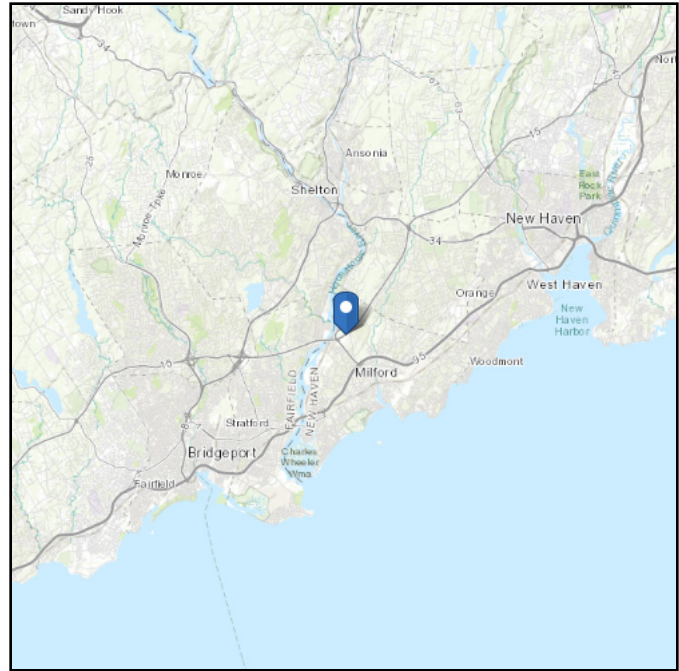
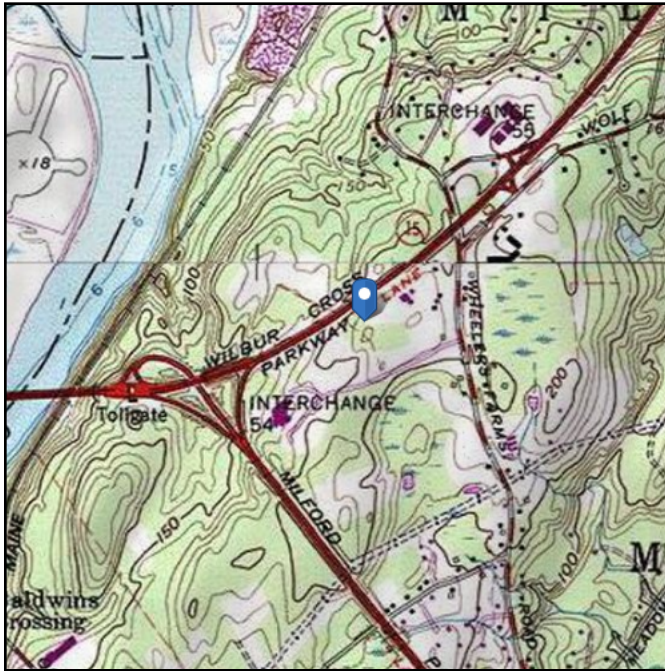
**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

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



## Wind

### Results:

Wind Speed:	124 Vmph	<b>*Milford, CT Requires 125 mph Vult</b>
10-year MRI	77 Vmph	
25-year MRI	87 Vmph	
50-year MRI	93 Vmph	
100-year MRI	100 Vmph	

**Data Source:** ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

**Date Accessed:** Tue Sep 18 2018

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 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

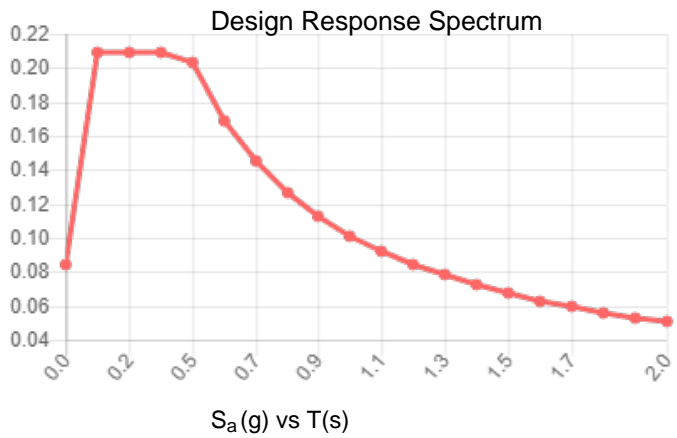
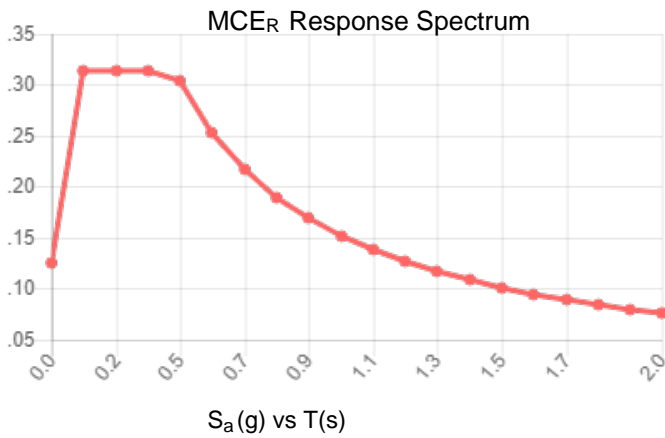
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_S$ :	0.196	$S_{DS}$ :	0.209
$S_1$ :	0.063	$S_{D1}$ :	0.101
$F_a$ :	1.600	$T_L$ :	6.000
$F_v$ :	2.400	PGA :	0.104
$S_{MS}$ :	0.314	PGA <sub>M</sub> :	0.166
$S_{M1}$ :	0.152	F <sub>PGA</sub> :	1.591
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Tue Sep 18 2018

**Date Source:**

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

## Ice

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**Results:**

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

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

**Date Accessed:** Tue Sep 18 2018

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

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

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

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**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 (65 ksi)	3			x		x						x	
2	0	24	channel	MP3-04 (1.25in)	4			x		x				x		x	
3	4.75	34.75	plate	PL 1" X 5"	4		3				-3		-4				-3.3
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		0				1.8
6	24	44.25	channel	MP3-03 (1.25in)	4			x		x				x		x	
7	53.5	70.5	plate	CCI-SFP-045100	1											2.25	
8	53.25	72	plate	CCI-SFP-065125	1			x									
9	54	70	plate	CCI-AFP-045100	2					x				x			
10	69.5	89.5	plate	CCI-AFP-060100	2	x									x		
11	70	90.08	plate	CCI-AFP-045100	2					x				x			
12	44	56	plate	CCI-SFP-045100	3			3			-3		-3				
13	43.75	55.5	plate	CCI-SFP-045100	1				x								-3
14	74.5	99.25	plate	PL 1.25" X 4"	1				x								
15	75.5	99.25	plate	PL 1.25" X 4"	1						x						
16	75.5	99.25	plate	PL 1.25" X 4"	1												x
17	69.75	78.5	plate	PL 1.25" X 4"	2				x			x					
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	12.75	32.75	plate	CCI-SFP-065125	4	x			x			x			x		
21	0	5	plate	(TS) 1.25x6.00 (65 ksi)	2							x			x		
22																	

**Reinforcement Details**

	B (in)	H (in)	Gross Area (in <sup>2</sup> )	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L <sub>v</sub> (in)	Net Area (in <sup>2</sup> )	Bolt Hole Size (in)	Reinforcement Material
1	1.25	4	5	8	n/a	n/a	6.000	5.000	0.0000	A572-65
2	4.78	1.61	4.13	0.61	17.000	17.000	18.000	3.566	1.2500	A572-65
3	5	1	5	0.5	27.000	27.000	18.000	3.750	1.1875	A572-65
4	5	1	5	0.5	27.000	27.000	18.000	3.750	1.1875	A572-65
5	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.526	1.2500	A572-65
6	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.526	1.2500	A572-65
7	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
8	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
9	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
10	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
11	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
13	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
14	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
15	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
16	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
17	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
18	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
19	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65
20	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
21	1.25	5.25	6.5625	3.375	n/a	n/a	0.750	6.563	0.0000	A572-65

# TNX Geometry Input

Increment (ft): 5

	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	0.3625	A607-60	1.190
7	99 - 94	5		12	26.243	27.253	0.35625	A607-60	1.191
8	94 - 90.08	3.92		12	27.253	28.045	0.35	A607-60	1.198
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 - 32.75	0.75		12	38.352	38.503	0.625	A607-60	1.020
48	32.75 - 32.5	0.25		12	38.503	38.554	0.925	A607-60	0.985
49	32.5 - 27.5	5		12	38.554	39.564	0.9	A607-60	0.996
50	27.5 - 24	3.5		12	39.564	40.271	0.9	A607-60	0.986
51	24 - 23.75	0.25		12	40.271	40.322	1	A607-60	0.927
52	23.75 - 18.75	5		12	40.322	41.332	0.975	A607-60	0.936
53	18.75 - 14.25	4.5		12	41.332	42.241	0.975	A607-60	0.924
54	14.25 - 14	0.25		12	42.241	42.291	1	A607-60	0.989
55	14 - 12.75	1.25		12	42.291	42.544	0.9875	A607-60	0.997
56	12.75 - 12.5	0.25		12	42.544	42.595	0.775	A607-60	0.951
57	12.5 - 7.5	5		12	42.595	43.605	0.7625	A607-60	0.955
58	7.5 - 5	2.5		12	43.605	44.110	0.75	A607-60	0.965
59	5 - 4.75	0.25		12	44.110	44.160	0.9125	A607-60	0.899
60	4.75 - 4.5	0.25		12	44.160	44.211	0.875	A607-60	0.895
61	4.5 - 0	4.5		12	44.211	45.120	0.8625	A607-60	0.898

# TNX Section Forces

Increment (ft):		TNX Output		
5		P <sub>u</sub>	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)
	Section Height (ft)	(K)		
1	120 - 115	3.72	48.15	7.49
2	115 - 110	7.58	116.12	16.03
3	110 - 105	8.07	197.57	16.55
4	105 - 100	12.58	318.95	23.09
5	100 - 99.25	12.68	336.32	23.21
6	99.25 - 99	12.73	342.13	23.25
7	99 - 94	18.15	486.35	31.52
8	94 - 90.08	18.97	611.19	32.20
9	90.08 - 89.83	19.05	619.25	32.23
10	89.83 - 89.5	19.13	629.89	32.29
11	89.5 - 89.25	19.21	637.97	32.34
12	89.25 - 84.25	20.54	804.93	33.95
13	84.25 - 81.75	21.28	890.41	34.49
14	81.75 - 77	23.97	1056.82	35.61
15	77 - 76.75	24.08	1065.72	35.66
16	76.75 - 76.5	24.18	1074.64	35.72
17	76.5 - 75.5	24.58	1110.45	35.94
18	75.5 - 75.25	24.67	1119.43	35.99
19	75.25 - 74.5	25.02	1146.37	36.22
20	74.5 - 74.25	25.12	1155.42	36.27
21	74.25 - 72	25.90	1237.52	36.76
22	72 - 71.75	26.00	1246.71	36.81
23	71.75 - 70.5	26.48	1292.86	37.09
24	70.5 - 70.25	26.59	1302.13	37.13
25	70.25 - 70	26.69	1311.41	37.19
26	70 - 69.75	26.79	1320.71	37.24
27	69.75 - 69.5	26.89	1330.02	37.30
28	69.5 - 69.25	26.98	1339.35	37.35
29	69.25 - 64.25	28.79	1528.67	38.43
30	64.25 - 59.25	30.64	1723.30	39.49
31	59.25 - 56	31.87	1852.64	40.17
32	56 - 55.75	31.99	1862.68	40.21
33	55.75 - 55.5	32.10	1872.73	40.27
34	55.5 - 55.25	32.21	1882.80	40.32
35	55.25 - 54	32.76	1933.33	40.60
36	54 - 53.75	32.88	1943.48	40.64
37	53.75 - 53.5	32.98	1953.64	40.69
38	53.5 - 53.25	33.08	1963.81	40.75
39	53.25 - 53	33.18	1974.00	40.80
40	53 - 48	35.05	2180.31	41.80
41	48 - 44.5	36.39	2327.63	42.48
42	44.5 - 38.75	40.01	2575.31	43.73
43	38.75 - 34.75	41.59	2751.58	44.49
44	34.75 - 34.5	41.72	2762.70	44.52
45	34.5 - 33.75	42.07	2796.13	44.68
46	33.75 - 33.5	42.18	2807.29	44.73
47	33.5 - 32.75	42.47	2840.87	44.88
48	32.75 - 32.5	42.62	2852.08	44.92
49	32.5 - 27.5	45.23	3079.02	45.93
50	27.5 - 24	47.09	3240.81	46.61
51	24 - 23.75	47.24	3252.46	46.64
52	23.75 - 18.75	50.00	3487.87	47.60
53	18.75 - 14.25	52.51	3703.69	48.41
54	14.25 - 14	52.68	3715.79	48.44
55	14 - 12.75	53.43	3776.44	48.68
56	12.75 - 12.5	53.57	3788.60	48.71
57	12.5 - 7.5	56.01	4034.03	49.55
58	7.5 - 5	57.25	4158.28	49.96
59	5 - 4.75	57.41	4170.76	49.98
60	4.75 - 4.5	57.54	4183.25	50.02
61	4.5 - 0	59.91	4409.84	50.77

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP23.01x22x0.25	Pole	8.4%	Pass
115 - 110	Pole	TP24.02x23.01x0.25	Pole	18.8%	Pass
110 - 105	Pole	TP25.031x24.02x0.25	Pole	29.5%	Pass
105 - 100	Pole	TP26.041x25.031x0.25	Pole	44.6%	Pass
100 - 99.25	Pole	TP26.192x26.041x0.25	Pole	46.5%	Pass
99.25 - 99	Pole + Reinf.	TP26.243x26.192x0.3625	Reinf. 14 Tension Rupture	43.2%	Pass
99 - 94	Pole + Reinf.	TP27.253x26.243x0.3563	Reinf. 14 Tension Rupture	57.8%	Pass
94 - 90.08	Pole + Reinf.	TP28.045x27.253x0.35	Reinf. 14 Tension Rupture	69.1%	Pass
90.08 - 89.83	Pole + Reinf.	TP28.096x28.045x0.5125	Reinf. 11 Tension Rupture	57.3%	Pass
89.83 - 89.5	Pole + Reinf.	TP28.162x28.096x0.5125	Reinf. 11 Tension Rupture	58.0%	Pass
89.5 - 89.25	Pole + Reinf.	TP28.213x28.162x0.725	Reinf. 15 Tension Rupture	44.9%	Pass
89.25 - 84.25	Pole + Reinf.	TP29.223x28.213x0.7	Reinf. 15 Tension Rupture	53.8%	Pass
84.25 - 81.75	Pole + Reinf.	TP30.486x29.223x0.7	Reinf. 15 Tension Rupture	58.1%	Pass
81.75 - 77	Pole + Reinf.	TP30.188x29.228x0.8625	Reinf. 17 Tension Rupture	52.3%	Pass
77 - 76.75	Pole + Reinf.	TP30.239x30.188x0.8625	Reinf. 17 Tension Rupture	52.6%	Pass
76.75 - 76.5	Pole + Reinf.	TP30.289x30.239x0.9625	Reinf. 14 Tension Rupture	49.4%	Pass
76.5 - 75.5	Pole + Reinf.	TP30.491x30.289x0.9625	Reinf. 14 Tension Rupture	50.6%	Pass
75.5 - 75.25	Pole + Reinf.	TP30.542x30.491x0.7625	Reinf. 17 Tension Rupture	58.2%	Pass
75.25 - 74.5	Pole + Reinf.	TP30.693x30.542x0.7625	Reinf. 17 Tension Rupture	59.2%	Pass
74.5 - 74.25	Pole + Reinf.	TP30.744x30.693x0.8375	Reinf. 17 Tension Rupture	62.3%	Pass
74.25 - 72	Pole + Reinf.	TP31.198x30.744x0.825	Reinf. 17 Tension Rupture	65.4%	Pass
72 - 71.75	Pole + Reinf.	TP31.249x31.198x0.7625	Reinf. 17 Tension Rupture	62.7%	Pass
71.75 - 70.5	Pole + Reinf.	TP31.501x31.249x0.7625	Reinf. 17 Tension Rupture	64.2%	Pass
70.5 - 70.25	Pole + Reinf.	TP31.552x31.501x0.7875	Reinf. 17 Tension Rupture	64.3%	Pass
70.25 - 70	Pole + Reinf.	TP31.602x31.552x0.7875	Reinf. 17 Tension Rupture	64.6%	Pass
70 - 69.75	Pole + Reinf.	TP31.653x31.602x0.725	Reinf. 17 Tension Rupture	66.9%	Pass
69.75 - 69.5	Pole + Reinf.	TP31.703x31.653x0.875	Reinf. 4 Tension Rupture	56.8%	Pass
69.5 - 69.25	Pole + Reinf.	TP31.754x31.703x0.75	Reinf. 4 Tension Rupture	63.5%	Pass
69.25 - 64.25	Pole + Reinf.	TP32.764x31.754x0.7375	Reinf. 4 Tension Rupture	69.2%	Pass
64.25 - 59.25	Pole + Reinf.	TP33.774x32.764x0.7125	Reinf. 4 Tension Rupture	74.5%	Pass
59.25 - 56	Pole + Reinf.	TP34.431x33.774x0.7125	Reinf. 4 Tension Rupture	77.8%	Pass
56 - 55.75	Pole + Reinf.	TP34.481x34.431x0.8125	Reinf. 7 Tension Rupture	74.9%	Pass
55.75 - 55.5	Pole + Reinf.	TP34.532x34.481x0.8125	Reinf. 7 Tension Rupture	75.2%	Pass
55.5 - 55.25	Pole + Reinf.	TP34.582x34.532x0.8875	Reinf. 7 Tension Rupture	67.7%	Pass
55.25 - 54	Pole + Reinf.	TP34.835x34.582x0.875	Reinf. 7 Tension Rupture	68.8%	Pass
54 - 53.75	Pole + Reinf.	TP34.885x34.835x0.75	Reinf. 7 Tension Rupture	78.9%	Pass
53.75 - 53.5	Pole + Reinf.	TP34.936x34.885x0.7375	Reinf. 7 Tension Rupture	79.2%	Pass
53.5 - 53.25	Pole + Reinf.	TP34.986x34.936x0.6625	Reinf. 4 Tension Rupture	85.0%	Pass
53.25 - 53	Pole + Reinf.	TP35.037x34.986x0.6	Reinf. 12 Tension Rupture	87.9%	Pass
53 - 48	Pole + Reinf.	TP36.047x35.037x0.5875	Reinf. 12 Tension Rupture	93.1%	Pass
48 - 44.5	Pole + Reinf.	TP37.714x36.047x0.5875	Reinf. 12 Tension Rupture	96.6%	Pass
44.5 - 38.75	Pole + Reinf.	TP37.291x36.129x0.6625	Reinf. 4 Tension Rupture	94.1%	Pass
38.75 - 34.75	Pole + Reinf.	TP38.099x37.291x0.6625	Reinf. 4 Tension Rupture	97.1%	Pass
34.75 - 34.5	Pole + Reinf.	TP38.15x38.099x0.825	Reinf. 3 Tension Rupture	77.8%	Pass
34.5 - 33.75	Pole + Reinf.	TP38.301x38.15x0.825	Reinf. 3 Tension Rupture	78.3%	Pass
33.75 - 33.5	Pole + Reinf.	TP38.352x38.301x0.625	Reinf. 6 Tension Rupture	96.4%	Pass
33.5 - 32.75	Pole + Reinf.	TP38.503x38.352x0.625	Reinf. 6 Tension Rupture	96.9%	Pass
32.75 - 32.5	Pole + Reinf.	TP38.554x38.503x0.925	Reinf. 20 Tension Rupture	67.7%	Pass
32.5 - 27.5	Pole + Reinf.	TP39.564x38.554x0.9	Reinf. 20 Tension Rupture	70.4%	Pass
27.5 - 24	Pole + Reinf.	TP40.271x39.564x0.9	Reinf. 20 Tension Rupture	72.2%	Pass
24 - 23.75	Pole + Reinf.	TP40.322x40.271x1	Reinf. 3 Tension Rupture	70.1%	Pass
23.75 - 18.75	Pole + Reinf.	TP41.332x40.322x0.975	Reinf. 3 Tension Rupture	72.6%	Pass
18.75 - 14.25	Pole + Reinf.	TP42.241x41.332x0.975	Reinf. 3 Tension Rupture	74.8%	Pass
14.25 - 14	Pole + Reinf.	TP42.291x42.241x1	Reinf. 20 Tension Rupture	67.7%	Pass
14 - 12.75	Pole + Reinf.	TP42.544x42.291x0.9875	Reinf. 20 Tension Rupture	68.3%	Pass
12.75 - 12.5	Pole + Reinf.	TP42.595x42.544x0.775	Reinf. 3 Tension Rupture	90.9%	Pass
12.5 - 7.5	Pole + Reinf.	TP43.605x42.595x0.7625	Reinf. 3 Tension Rupture	93.3%	Pass
7.5 - 5	Pole + Reinf.	TP44.11x43.605x0.75	Reinf. 3 Tension Rupture	94.5%	Pass
5 - 4.75	Pole + Reinf.	TP44.16x44.11x0.9125	Reinf. 3 Tension Rupture	85.9%	Pass
4.75 - 4.5	Pole + Reinf.	TP44.211x44.16x0.875	Reinf. 1 Compression	86.6%	Pass
4.5 - 0	Pole + Reinf.	TP45.12x44.211x0.8625	Reinf. 1 Compression	88.4%	Pass
				Summary	
			Pole	75.0%	Pass
			Reinforcement	97.1%	Pass
			Overall	97.1%	Pass



# Monopole Base Plate Connection

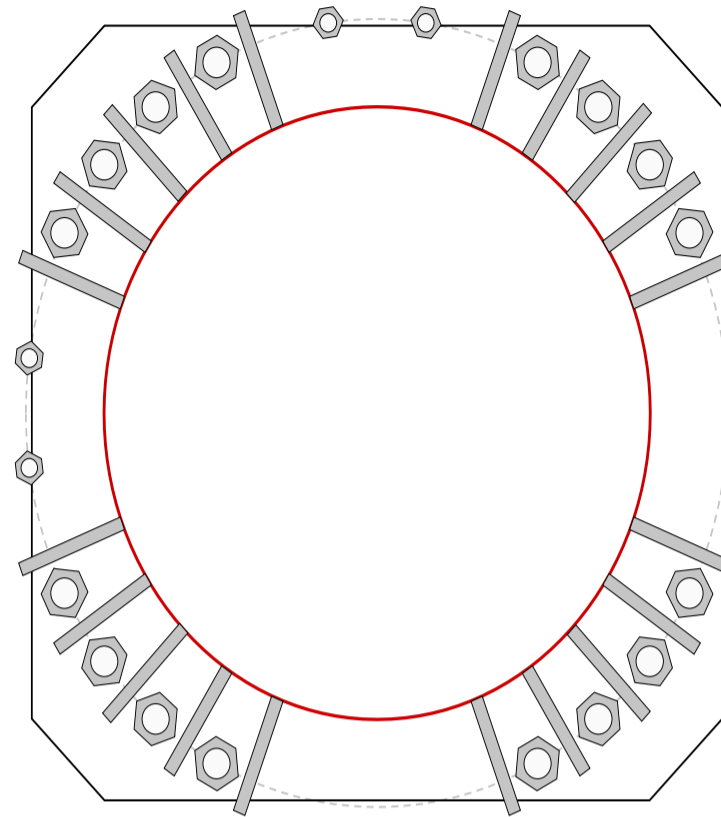


Site Info	
BU #	876320
Site Name	528 Wheelers Farm Rd
Order #	444441 Rev. 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{ar}$ (in)	2

Applied Loads	
Moment (kip-ft)	4410.00
Axial Force (kips)	60.00
Shear Force (kips)	51.00

\*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
GROUP 1: (16) 2-1/4" $\phi$ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 58" BC
GROUP 2: (4) 1-3/8" $\phi$ bolts (R71 150ksi 1-3/8" N; $F_y=120$ ksi, $F_u=125$ ksi) on 58" BC

Base Plate Data
57" OD x 3.25" Plate (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)

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	<i>(units of kips, kip-in)</i>	
GROUP 1:		
$P_{u\_c} = 226.12$	$\phi P_{n\_c} = 243.75$	<b>Stress Rating</b>
$V_u = 2.93$	$\phi V_n = 73.13$	<b>88.5%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>
GROUP 2:		
$P_{u\_c} = 73.58$	$\phi P_{n\_c} = 139.2$	<b>Stress Rating</b>
$V_u = 1.04$	$\phi V_n = 41.76$	<b>50.4%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>
<b>Base Plate Summary</b>		
Max Stress (ksi):	4.33	(Shear)
Allowable Stress (ksi):	29.25	
Stress Rating:	<b>14.1%</b>	<b>Pass</b>
<b>Stiffener Summary</b>		
Horizontal Weld:	<b>44.3%</b>	<b>Pass</b>
Vertical Weld:	<b>57.1%</b>	<b>Pass</b>
Plate Flexure+Shear:	<b>23.5%</b>	<b>Pass</b>
Plate Tension+Shear:	<b>46.2%</b>	<b>Pass</b>
Plate Compression:	<b>63.6%</b>	<b>Pass</b>
<b>Pole Summary</b>		
Punching Shear:	<b>24.8%</b>	<b>Pass</b>

# Drilled Pier Foundation



BU #: 876320  
 Site Name: 528 Wheelers Farm Rd  
 Order Number: 444441 Rev. 2

TIA-222 Revision: H  
 Tower Type: Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	4410	
Axial Force (kips)	60	
Shear Force (kips)	51	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

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	

Analysis Results		
Soil Lateral Capacity	Compression	Uplift
D <sub>v=0</sub> (ft from TOC)	5.62	-
Soil Safety Factor	1.72	-
Max Moment (kip-ft)	5151.72	-
Rating*	73.7%	-
Soil Vertical Capacity	Compression	Uplift
Skin Friction (kips)	525.15	-
End Bearing (kips)	651.55	-
Weight of Concrete (kips)	100.50	-
Total Capacity (kips)	1176.70	-
Axial (kips)	160.50	-
Rating*	13.0%	-
Reinforced Concrete Capacity	Compression	Uplift
Critical Depth (ft from TOC)	5.42	-
Critical Moment (kip-ft)	5151.01	-
Critical Moment Capacity	7542.21	-
Rating*	65.0%	-

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>

Soil Interaction Rating*	73.7%
Structural Foundation Rating*	65.0%

\*Rating per TIA-222-H Section 15.5

Soil Profile		
Groundwater Depth	7	ft
# of Layers	7	

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	V <sub>soil</sub> (pcf)	V <sub>concrete</sub> (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	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	3.5	1.5	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.5	6	2.5	135	150	0	42	0.000	0.000	0.00	0.00			Cohesionless
4	6	7	1	135	150	0	42	0.000	0.000	1.28	1.28			Cohesionless
5	7	13.5	6.5	72.6	87.6	0	42	0.000	0.000	1.28	1.28			Cohesionless
6	13.5	14	0.5	77.6	87.6	8	0	3.600	3.600	1.28	1.28			Cohesive
7	14	19	5	77.6	87.6	8	0	3.60	3.60	4.32	4.32	22.5737		Cohesive

# SITE NAME: STRATFORD/MP X 53/MAIN

528 WHEELERS FARM ROAD

MILFORD, CT 06460

NEW HAVEN COUNTY

**T-MOBILE SITE NUMBER: CT11082E**

**CROWN BU NUMBER: 876320**

**RF DESIGN GUIDELINE: 67D92M OUTDOOR**

**CONTRACTOR TO NOTIFY CROWN CM PRIOR TO CONSTRUCTION START**

**T-MOBILE TECHNICIAN SITE SAFETY NOTES**

LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

**T-MOBILE  
NORTHEAST LLC**

103 MONARCH DRIVE  
LIVERPOOL, NY 13088  
(315) 265-1882



CROWN CASTLE  
12 GILL STREET, SUITE 5800  
WOBURN, MA 01801



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

**GENERAL NOTES**

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

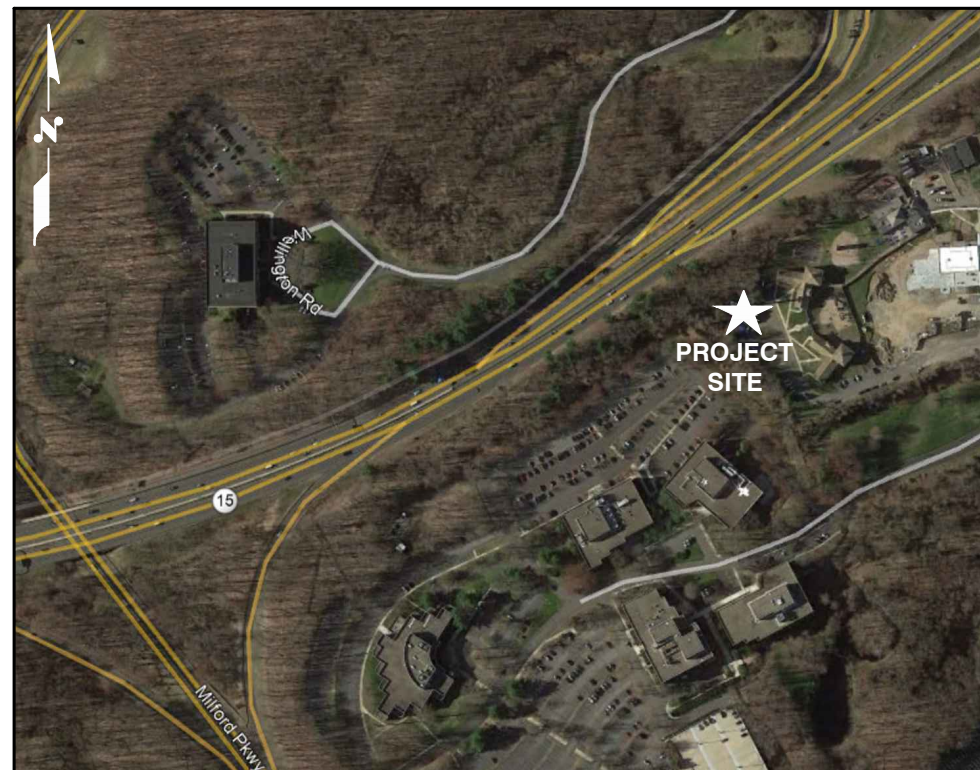
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

**SPECIAL STRUCTURAL NOTES**

CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS AND GLOBAL STRUCTURAL STABILITY ANALYSIS COMPLETED ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE SUPPORT STRUCTURE, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE L700 EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE EQUIPMENT IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES



**PROJECT SUMMARY**

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION

ZONING JURISDICTION: (CITY OF MILFORD) BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

SITE ADDRESS: 528 WHEELERS FARM ROAD  
MILFORD, CT 06460

LATITUDE: 41° 14' 54.35" N

LONGITUDE: 73° 4' 44.67" W

JURISDICTION: NEW HAVEN COUNTY

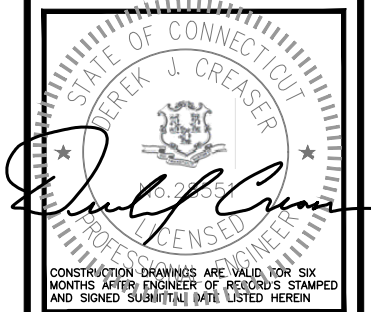
CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

**CROWN CASTLE CM:** CHRIS MILLER (585) 739-1780

**CROWN CASTLE SITE NAME:** 528 WHEELERS FARM RD

**CROWN CASTLE SITE ID:** 876320



CHECKED BY: BB

APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
3	01/24/19	CONSTRUCTION FINAL	BB
2	10/25/18	CONSTRUCTION FINAL	DJM
1	08/31/18	CONSTRUCTION REVISED	DJM
0	08/16/18	ISSUED FOR CONSTRUCTION	GA

**APPROVALS**

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

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**DRAWING INDEX**

SHEET NO.	DESCRIPTION	REV.
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GN-1	GENERAL NOTES	3
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A-2	ANTENNA LAYOUTS & ELEVATION	3
A-3	ANTENNA DETAILS	3
A-4	EQUIPMENT DETAILS	3
A-5	ANTENNA AND COAX SCHEDULE & PLUMBING DIAGRAM	3
E-1	ONE-LINE DIAGRAM AND GROUNDING DETAILS	3

SITE NUMBER:  
CT11082E  
CROWN CASTLE SITE ID:  
876320  
SITE NAME:  
STRATFORD/MP X  
53/MAIN  
SITE ADDRESS:  
528 WHEELERS FARM ROAD  
MILFORD, CT 06460  
NEW HAVEN COUNTY

SHEET TITLE  
TITLE SHEET  
(L700)

SHEET NUMBER  
**T-1**



**GROUNDING NOTES**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
  
CONTRACTOR – CROWN CASTLE INTERNATIONAL  
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER – T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH L700 SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:  
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.  
BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS  
ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70)

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

**T-MOBILE  
NORTHEAST LLC**

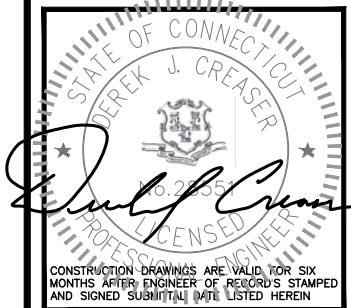
103 MONARCH DRIVE  
LIVERPOOL, NY 13088  
(315) 265-1882



CROWN CASTLE  
12 GILL STREET, SUITE 5800  
WOBBURN, MA 01801



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: BB

APPROVED BY: DJC

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
3	01/24/19	CONSTRUCTION FINAL	BB
2	10/25/18	CONSTRUCTION FINAL	DJM
1	08/31/18	CONSTRUCTION REVISED	DJM
0	08/16/18	ISSUED FOR CONSTRUCTION	GA

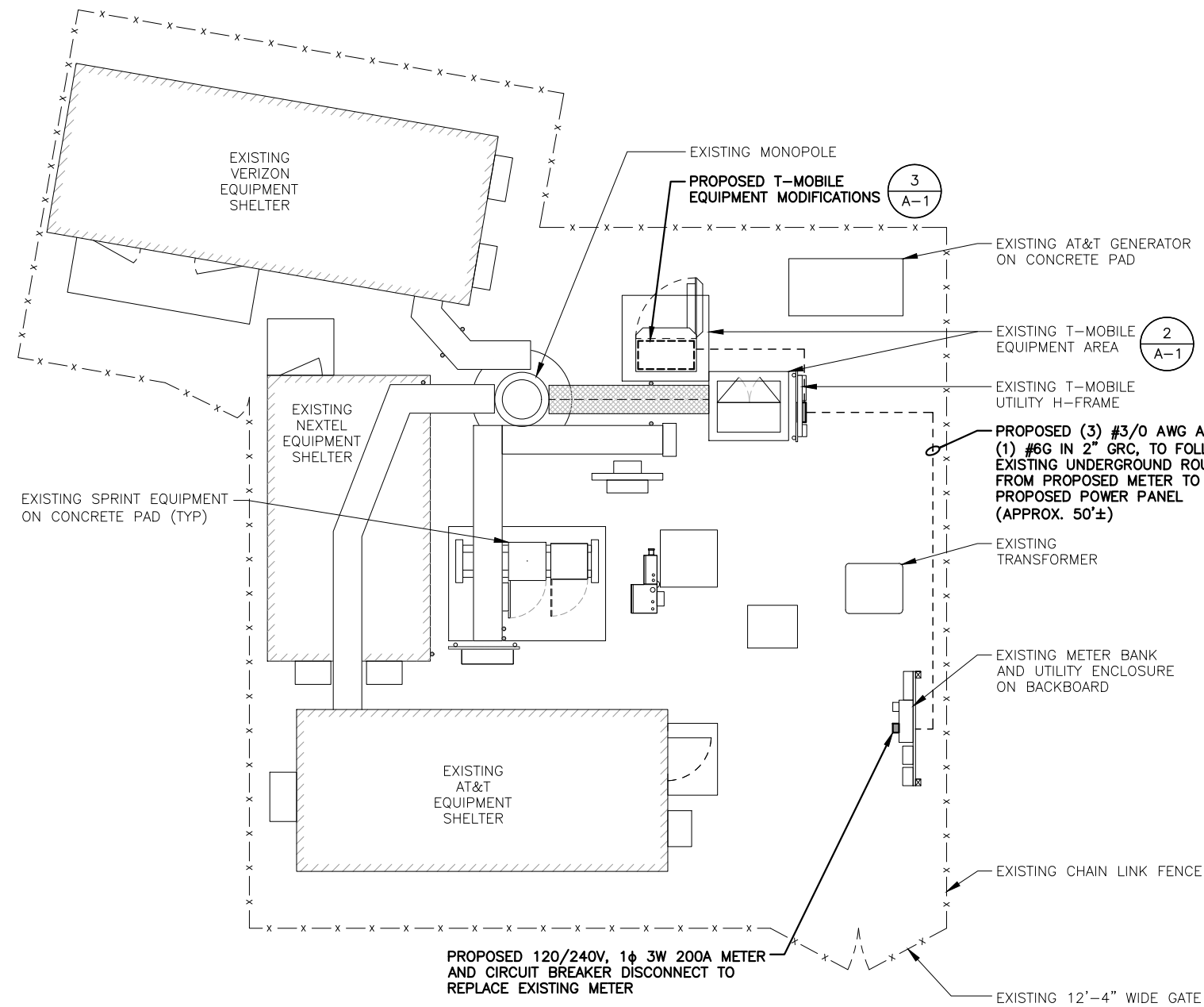
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CT11082E  
CROWN CASTLE SITE ID:  
876320  
SITE NAME:  
STRATFORD/MP X  
53/MAIN  
SITE ADDRESS:  
528 WHEELERS FARM ROAD  
MILFORD, CT 06460  
NEW HAVEN COUNTY

SHEET TITLE  
**GENERAL NOTES**  
(L700)

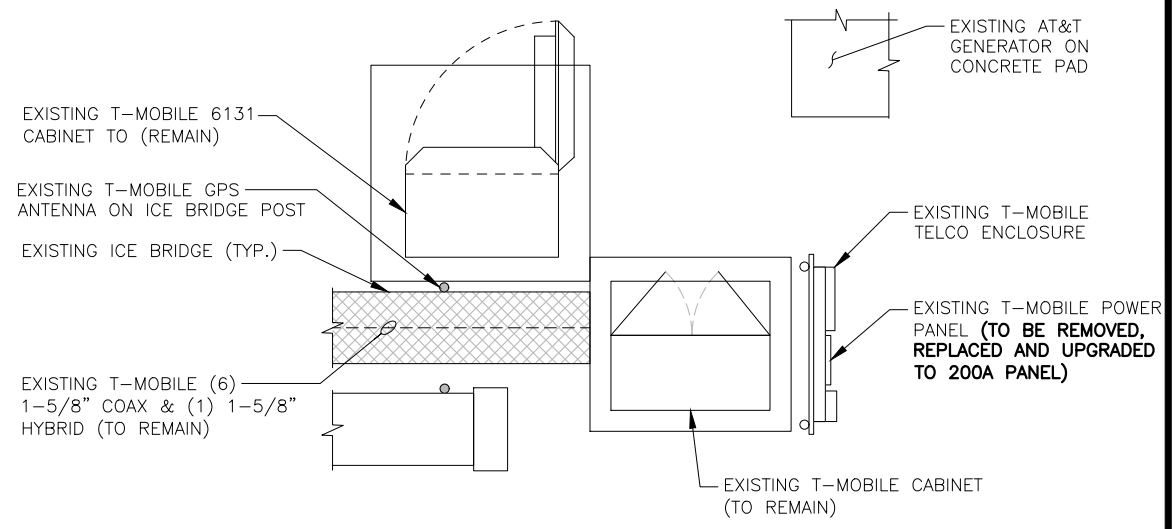
SHEET NUMBER  
**GN-1**

**STRUCTURAL NOTES:**  
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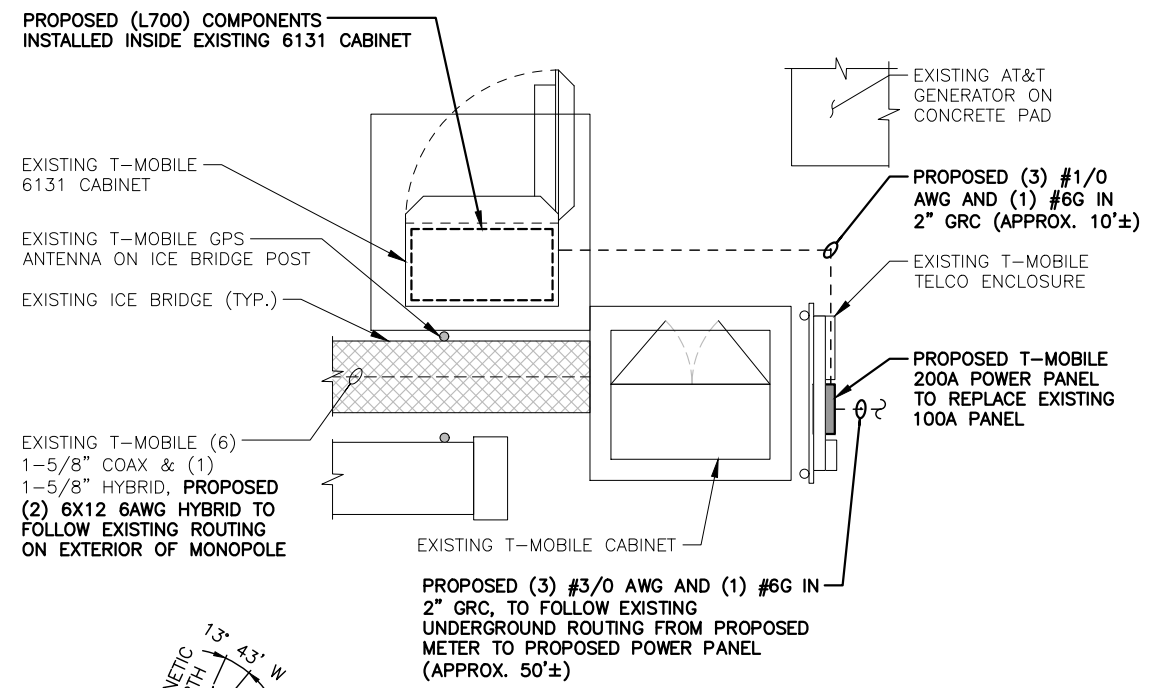
**NOTE:**  
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



**COMPOUND PLAN** 1  
 22x34 SCALE: 3/16"=1'-0"  
 11x17 SCALE: 3/32"=1'-0"  
 MAGNETIC NORTH 13° 43' W  
 TRUE NORTH  
 0 2'-8" 5'-4" 10'-8" 16'-0"



**EXISTING EQUIPMENT PLAN** 2  
 22x34 SCALE: 3/8"=1'-0"  
 11x17 SCALE: 3/16"=1'-0"  
 MAGNETIC NORTH 13° 43' W  
 TRUE NORTH  
 0 1'-4" 2'-8" 5'-4" 8'-0"



**PROPOSED EQUIPMENT PLAN** 3  
 22x34 SCALE: 3/8"=1'-0"  
 11x17 SCALE: 3/16"=1'-0"  
 MAGNETIC NORTH 13° 43' W  
 TRUE NORTH  
 0 1'-4" 2'-8" 5'-4" 8'-0"

**T-MOBILE NORTHEAST LLC**  
 103 MONARCH DRIVE  
 LIVERPOOL, NY 13088  
 (315) 265-1882

**CROWN CASTLE**  
 CROWN CASTLE  
 12 GILL STREET, SUITE 5800  
 WOBURN, MA 01801

**HG HUDSON Design Group LLC**  
 45 BEECHWOOD DRIVE  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

STATE OF CONNECTICUT  
 BEREK J. GREASER  
 10.2835  
 PROFESSIONAL ENGINEER  
 CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: BB  
 APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
3	01/24/19	CONSTRUCTION FINAL	BB
2	10/25/18	CONSTRUCTION FINAL	DJM
1	08/31/18	CONSTRUCTION REVISED	DJM
0	08/16/18	ISSUED FOR CONSTRUCTION	GA

SITE NUMBER:  
 CT11082E  
 CROWN CASTLE SITE ID:  
 876320  
 SITE NAME:  
 STRATFORD/MP X  
 53/MAIN  
 SITE ADDRESS:  
 528 WHEELERS FARM ROAD  
 MILFORD, CT 06460  
 NEW HAVEN COUNTY

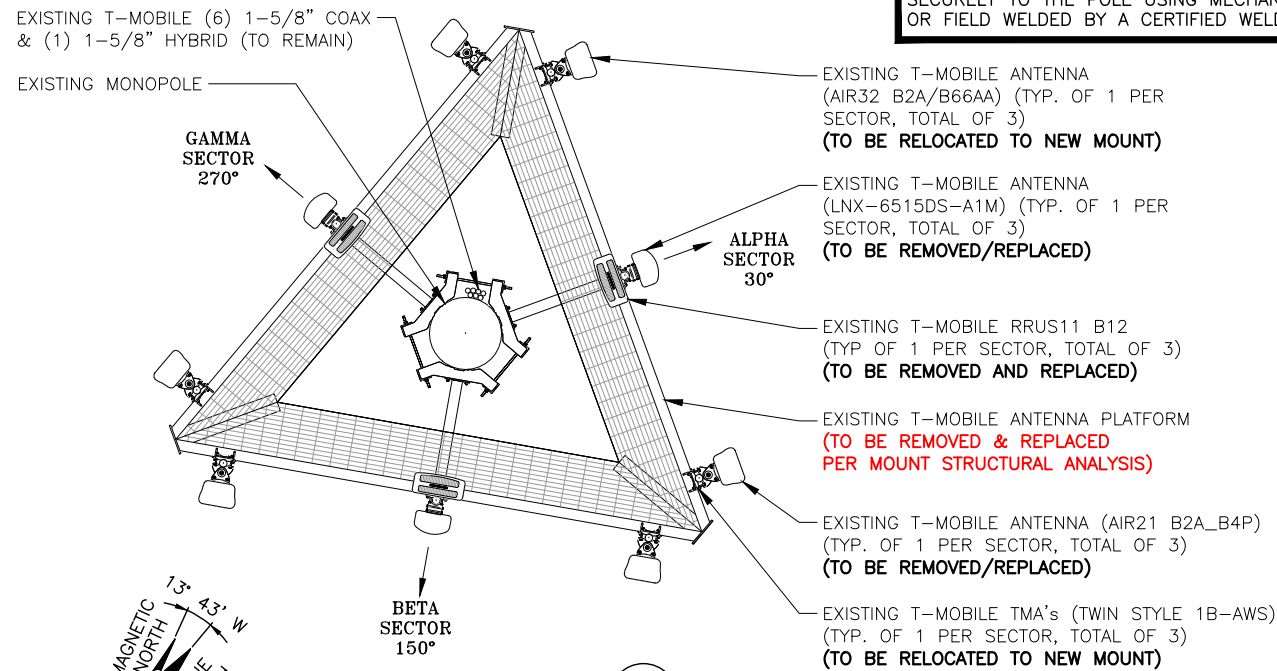
SHEET TITLE  
 COMPOUND &  
 EQUIPMENT PLAN  
 (L700)

SHEET NUMBER  
**A-1**

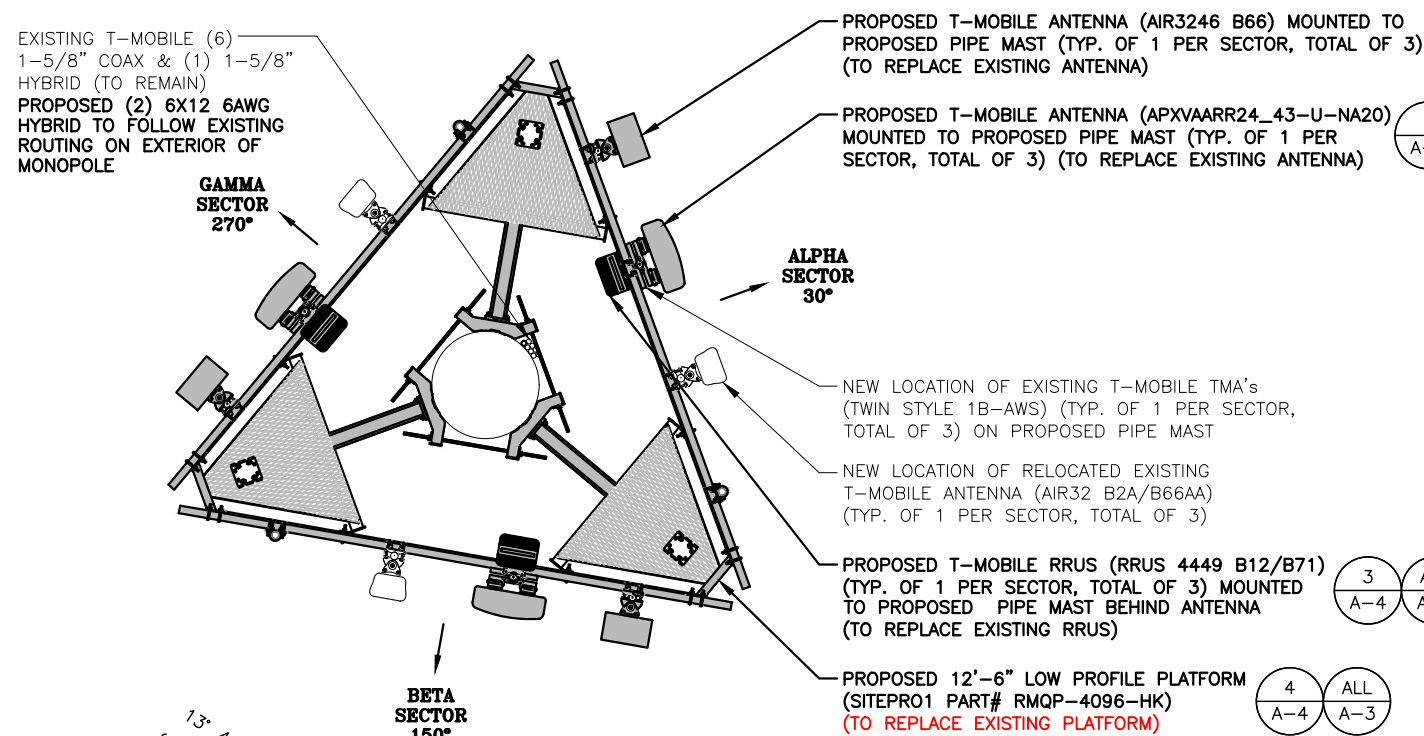
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**SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):**  
 GENERAL CONTRACTOR SHALL ORIENT PROPOSED STRUCTURAL AUGMENT REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED RING-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.



**EXISTING ANTENNA PLAN** 1  
 SCALE: N.T.S. A-2



**PROPOSED ANTENNA PLAN** 2  
 SCALE: N.T.S. A-2

TOP OF HIGHEST APPURTENANCE  
 ELEV. = 131'-0"± A.G.L.

TOP OF EXISTING MONOPOLE  
 ELEV. = 120'-0"± A.G.L.

CL OF PROPOSED/EXISTING T-MOBILE ANTENNAS  
 ELEV. = 107'-0"± A.G.L.

PROPOSED 12'-6" LOW PROFILE PLATFORM (SITEPRO1 PART# RMQP-4096-HK) (TO REPLACE EXISTING PLATFORM)

NEW LOCATION OF RELOCATED EXISTING T-MOBILE ANTENNA (AIR32 B2A/B66AA) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED T-MOBILE ANTENNA (APXVAARR24\_43-U-NA20) MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING ANTENNA)

PROPOSED T-MOBILE ANTENNA (AIR3246 B66) MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING ANTENNA)

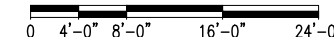
PROPOSED T-MOBILE RRUS (RRUS 4449 B12/B71) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO PROPOSED PIPE MAST BEHIND ANTENNA (TO REPLACE EXISTING RRUS)

EXISTING ANTENNA (BY OTHERS) (TYP.)

EXISTING GPS ANTENNA (BY OTHERS)

GROUND LEVEL  
 ELEV. = 0'-0"± A.G.L.

**ELEVATION** 3  
 22x34 SCALE: 1/8"=1'-0" A-2  
 11x17 SCALE: 1/16"=1'-0"



**NOTE:**  
 GROUND EQUIPMENT NOT SHOWN FOR CLARITY

**T-MOBILE  
 NORTHEAST LLC**

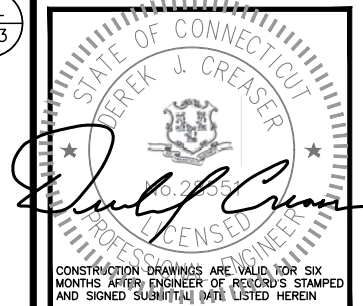
103 MONARCH DRIVE  
 LIVERPOOL, NY 13088  
 (315) 265-1882

**CROWN  
 CASTLE**

CROWN CASTLE  
 12 GILL STREET, SUITE 5800  
 WOBURN, MA 01801

**H2G  
 HUDSON  
 Design Group LLC**

45 BEECHWOOD DRIVE TEL: (978) 557-5553  
 N. ANDOVER, MA 01845 FAX: (978) 336-5586



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CHECKED BY: BB

APPROVED BY: DJC

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 SITE ADDRESS:  
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 MILFORD, CT 06460  
 NEW HAVEN COUNTY

SHEET TITLE  
 ANTENNA LAYOUTS  
 & ELEVATION  
 (L700)

SHEET NUMBER  
**A-2**

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3  
A-4

ALL  
A-3

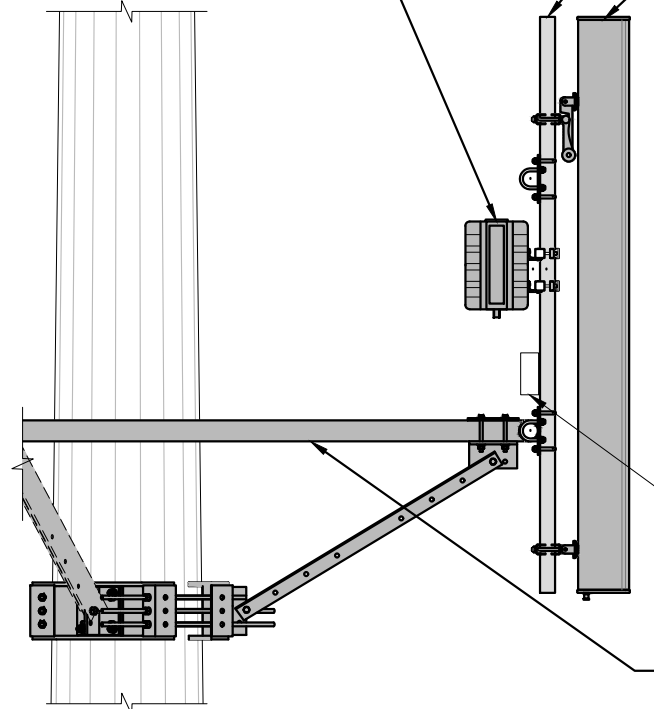
PROPOSED T-MOBILE RRUS (RRUS 4449 B12/B71) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO PROPOSED PIPE MAST BEHIND ANTENNA (TO REPLACE EXISTING RRUS)

PROPOSED 2.5" STD (2-7/8" O.D.) X 96" LONG PIPE MAST (TYP OF 4 PER SECTOR, TOTAL OF 12) (INCLUDED IN KIT)

PROPOSED T-MOBILE ANTENNA (APXVAARR24\_43-U-NA20) MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING ANTENNA)

1  
A-4

2  
A-2



CL OF PROPOSED/EXISTING T-MOBILE ANTENNAS  
 ELEV. = 107'-0" ± A.G.L

**ANTENNA INSTALLATION SPECIAL WORK NOTE:**  
 ANTENNA INSTALLATION WORKING POINT IS THE VERTICAL CENTERLINE OF THE PROPOSED UPPER HANDRAIL AND PLATFORM. **UNLESS NOTED OTHERWISE, VERTICALLY CENTER ALL PIPE MASTS AND ALL ANTENNAS BETWEEN THESE WORKING POINTS.**

NEW LOCATION OF EXISTING T-MOBILE TMA's (TWIN STYLE 1B-AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) ON PROPOSED PIPE MAST (BEHIND ANTENNA)

PROPOSED 12'-6" LOW PROFILE PLATFORM (SITEPRO1 PART# RMQP-4096-HK) (TO REPLACE EXISTING PLATFORM)

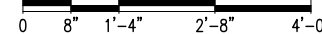
4  
A-4

2  
A-2

**ANTENNA MOUNTING DETAIL**

22x34 SCALE: 3/4"=1'-0"  
 11x17 SCALE: 3/8"=1'-0"

1  
A-3

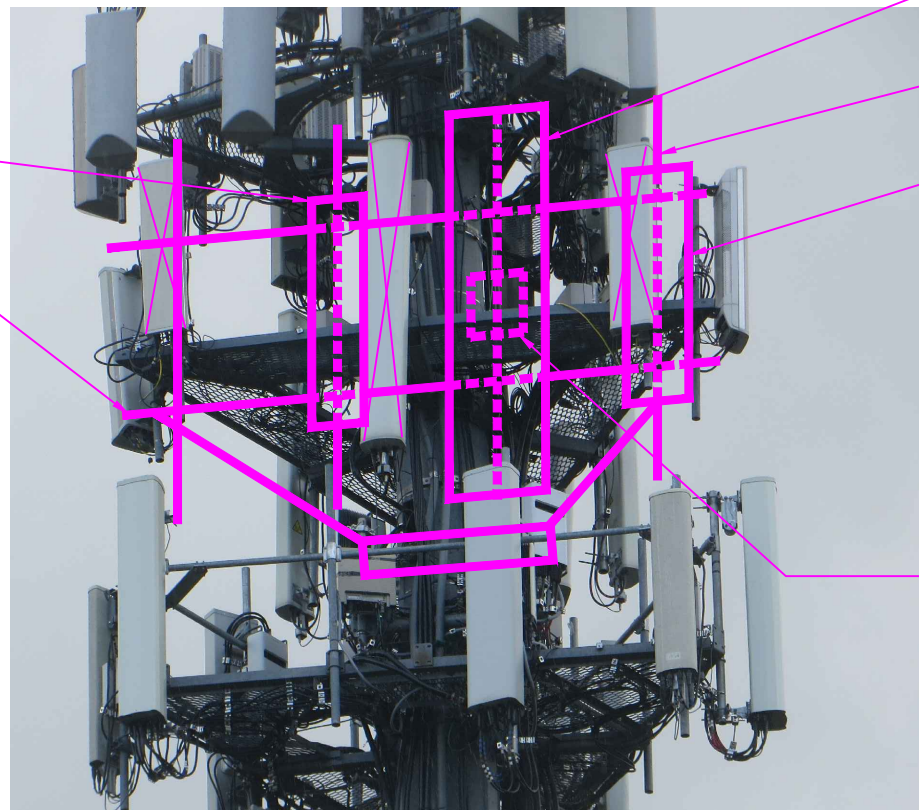


NEW LOCATION OF RELOCATED EXISTING T-MOBILE ANTENNA (AIR32 B2A/B66AA) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

4  
A-4

2  
A-2

PROPOSED 12'-6" LOW PROFILE PLATFORM (SITEPRO1 PART# RMQP-4096-HK) (TO REPLACE EXISTING PLATFORM)



PROPOSED T-MOBILE ANTENNA (APXVAARR24\_43-U-NA20) MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING ANTENNA)

1  
A-4

2  
A-2

PROPOSED 2.5" STD (2-7/8" O.D.) X 96" LONG PIPE MAST (TYP OF 4 PER SECTOR, TOTAL OF 12) (INCLUDED IN KIT)

PROPOSED T-MOBILE ANTENNA (AIR3246 B66) MOUNTED TO PROPOSED PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING ANTENNA)

2  
A-4

2  
A-2

PROPOSED T-MOBILE RRUS (RRUS 4449 B12/B71) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO PROPOSED PIPE MAST BEHIND ANTENNA (TO REPLACE EXISTING RRUS)

3  
A-4

2  
A-2

**T-MOBILE ELEVATION PHOTO DETAIL**

SCALE: N.T.S

2  
A-3

**T-MOBILE NORTHEAST LLC**

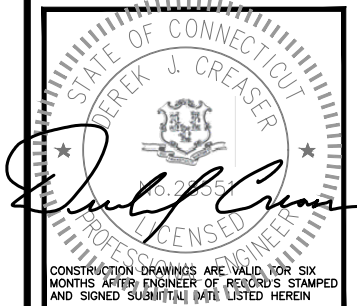
103 MONARCH DRIVE  
 LIVERPOOL, NY 13088  
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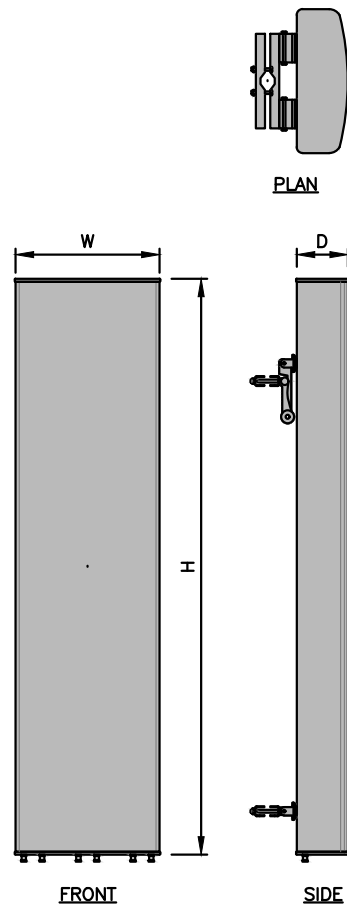
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SHEET TITLE  
 ANTENNA DETAILS  
 (L700)

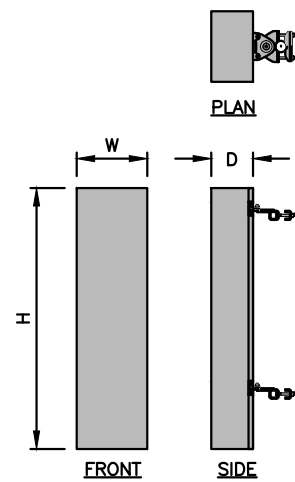
SHEET NUMBER  
**A-3**

U21/L7/L6 ANTENNA DIMENSIONS	
MODEL #	APXVAARR24_43-U-NA20 (OCTA)
MANUF.	RFS
HEIGHT	95.9"
WIDTH	24"
DEPTH	8.7"
WEIGHT	128 LBS



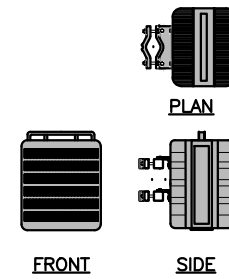
**U21/L7/L6 ANTENNA DETAIL** 1  
SCALE: N.T.S. A-4

L2100 ANTENNA DIMENSIONS	
MODEL #	AIR3246 B66
MANUF.	ERICSSON
HEIGHT	58.1"
WIDTH	15.7"
DEPTH	9.4"
WEIGHT	180 LBS

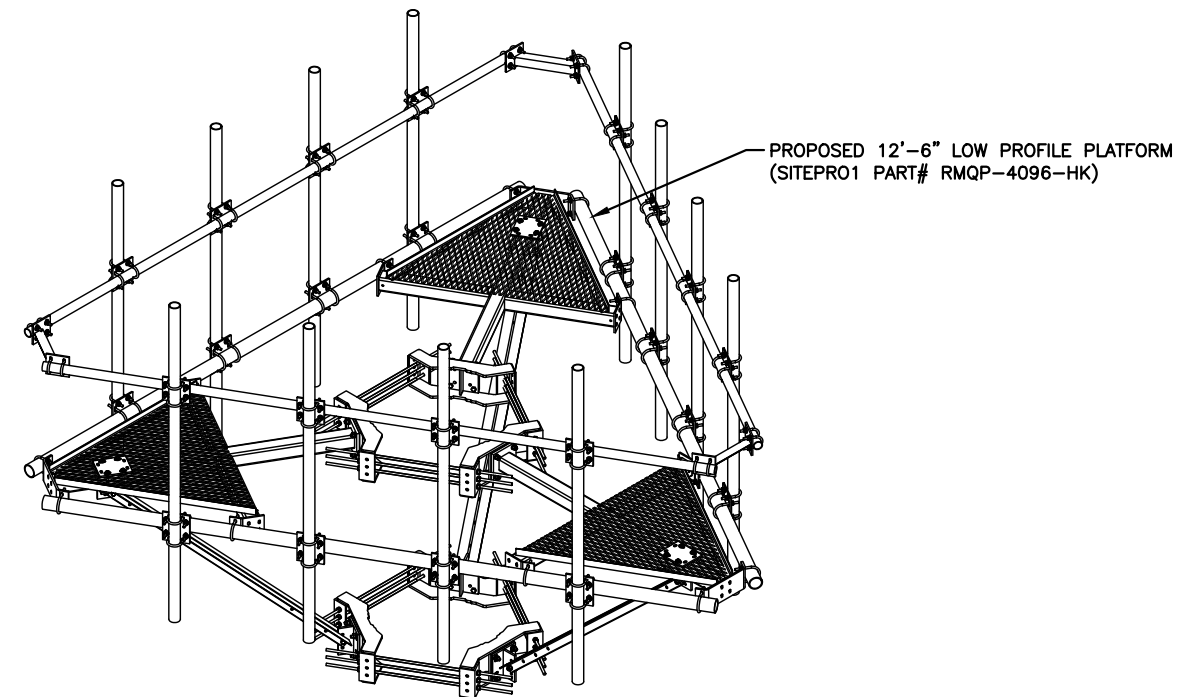


**L2100 ANTENNA DETAIL** 2  
SCALE: N.T.S. A-4

RADIO DIMENSIONS	
MODEL #	RADIO 4449 B12+B71
MANUF.	ERICSSON
HEIGHT	14.95"
WIDTH	13.19"
DEPTH	9.25"
WEIGHT	78 LBS



**RADIO DETAIL** 3  
SCALE: N.T.S. A-4



**LOW PROFILE PLATFORM DETAIL** 4  
SCALE: N.T.S. A-4

**T-MOBILE  
NORTHEAST LLC**

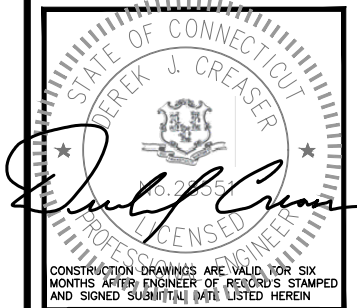
103 MONARCH DRIVE  
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876320  
SITE NAME:  
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53/MAIN  
SITE ADDRESS:  
528 WHEELERS FARM ROAD  
MILFORD, CT 06460  
NEW HAVEN COUNTY

SHEET TITLE  
EQUIPMENT DETAILS  
(L700)

SHEET NUMBER  
**A-4**

**T-MOBILE  
NORTHEAST LLC**

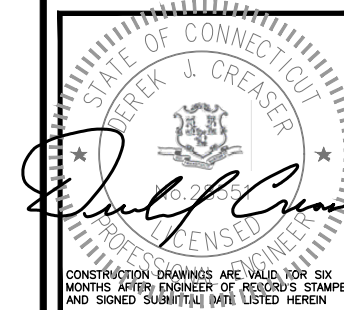
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NEW HAVEN COUNTY

SHEET TITLE

ANTENNA AND COAX

SCHEDULE &

PLUMBING DIAGRAM

(L700)

SHEET NUMBER

**A-5**

PROPOSED ANTENNA AND COAXIAL CABLE SCHEDULE											
SECTOR MARK	ANTENNA MODEL	AZIMUT H	E-TILT	M-TILT	ANTENNA CENTERLINE	SECTOR	TMA/SBiasT/RRU	TX/RX	CABLE FEED LINES	JUMPER TYPE	CABLE LENGTH
A-1 L21	ERICSSON AIR3246 B66 (58.10x15.70x9.40)	30°	0	0	107'	RIGHT ALPHA	0/0/0	TX-RX-1 TX-RX-2	-	-	-
A-2 U21/L7/L6	RFS/CELWAVE APXVAARR24_43-U-NA20 (95.90X24X8.7)	30°	0	0	107'	CENTER ALPHA	1/0/1	TX-RX-1 TX-RX-2	(2) (E) 1-5/8" COAX (1) (E) 1-5/8" HYBRID (2) (P) HCS 6X12 6AWG	-	160'±
A-2 AIR32	ERICSSON AIR32 B2A/B66AA (56.60X12.90X8.70)	30°	0	0	107'	LEFT ALPHA	0/0/0	TX-RX-1 TX-RX-2	-	-	-
B-1 L21	ERICSSON AIR3246 B66 (58.10X15.70X9.40)	150°	0	0	107'	RIGHT BETA	0/0/0	TX-RX-1 TX-RX-2	-	-	-
B-2 U21/L7/L6	RFS/CELWAVE APXVAARR24_43-U-NA20 (95.90X24X8.7)	150°	0	0	107'	CENTER BETA	1/0/1	TX-RX-1 TX-RX-2	(2) (E) 1-5/8" COAX	-	160'±
B-2 AIR32	ERICSSON AIR32 B2A/B66AA (56.60X12.90X8.70)	150°	0	0	107'	LEFT BETA	0/0/0	TX-RX-1 TX-RX-2	-	-	-
C-1 L21	ERICSSON AIR3246 B66 (58.10X15.70X9.40)	270°	0	0	107'	RIGHT GAMMA	0/0/0	TX-RX-1 TX-RX-2	-	-	-
C-2 U21/L7/L6	RFS/CELWAVE APXVAARR24_43-U-NA20 (95.90X24X8.7)	270°	0	0	107'	CENTER GAMMA	1/0/1	TX-RX-1 TX-RX-2	(2) (E) 1-5/8" COAX	-	160'±
C-3 AIR32	ERICSSON AIR32 B2A/B66AA (56.60X12.90X8.70)	270°	0	0	107'	LEFT GAMMA	0/0/0	TX-RX-1 TX-RX-2	-	-	-

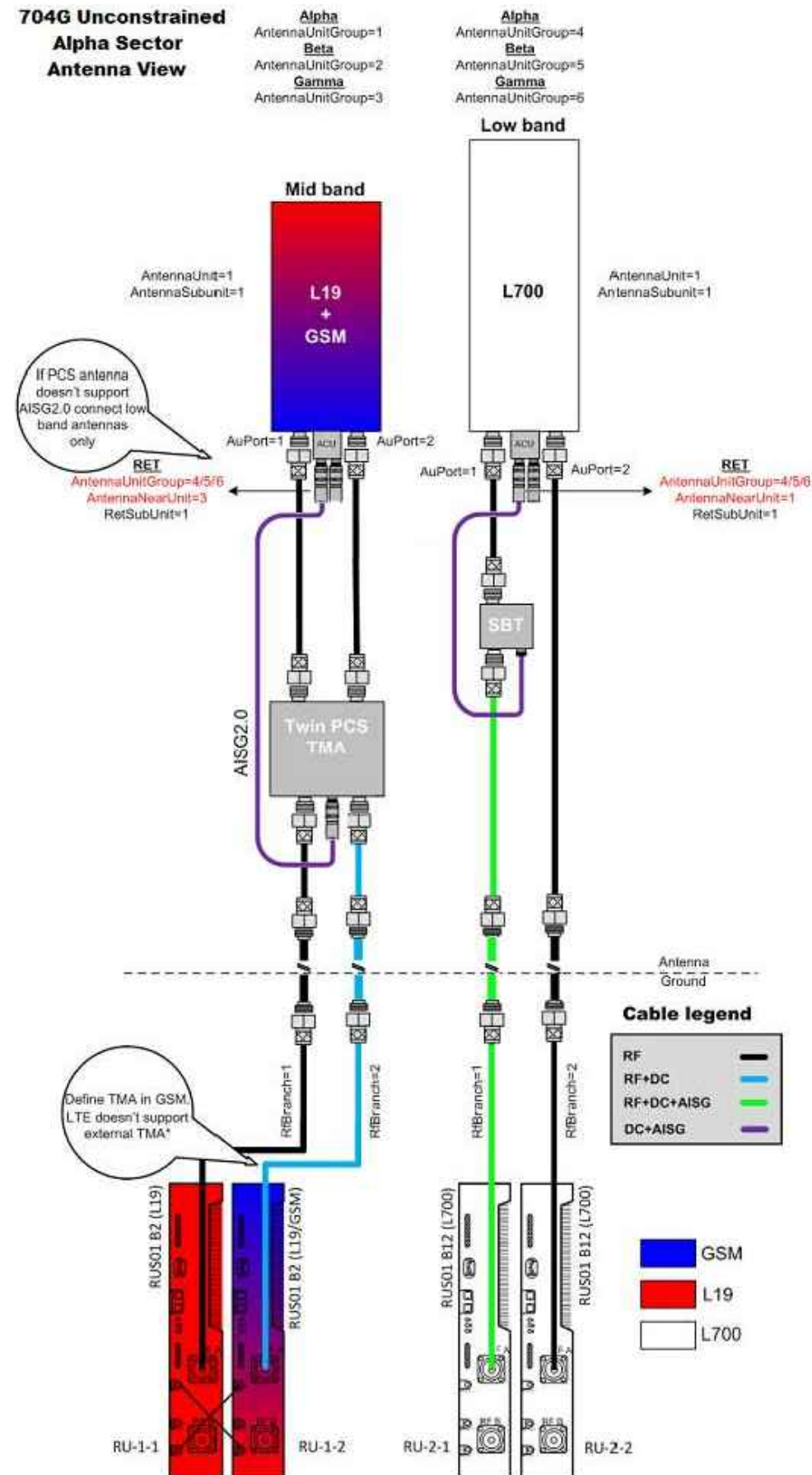
NOTES:  
INFORMATION BASED ON CCI APP. REVISION #0 DATED 05/23/2018 AND RFDS REV 2.1 DATED 05/02/18. CHECK WITH RF ENGINEER FOR LATEST RFDS.

**PROPOSED ANTENNA AND COAXIAL CABLE SCHEDULE**

SCALE: N.T.S

1  
A-5

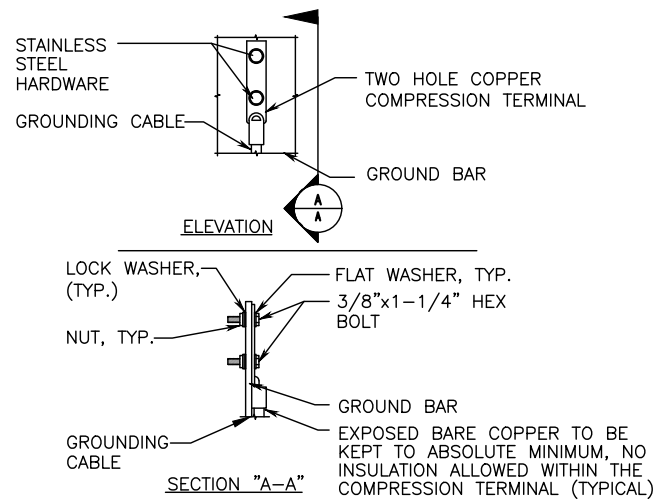
**704G Unconstrained  
Alpha Sector  
Antenna View**



**PLUMBING DIAGRAM**

SCALE: N.T.S

2  
A-5

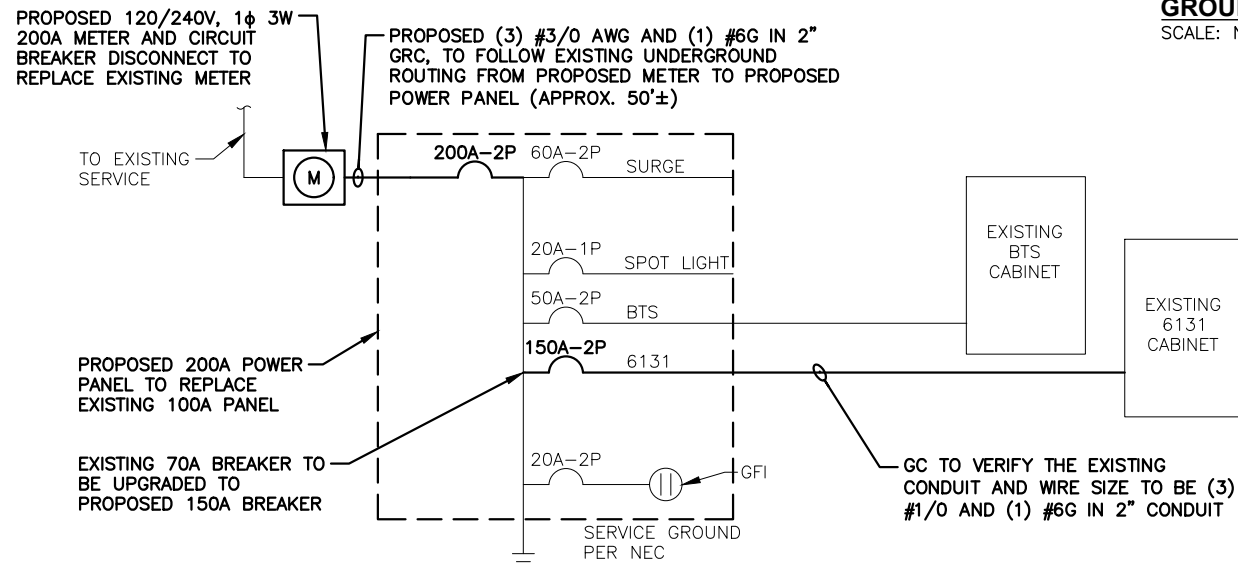


- NOTE:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
  2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
  3. CADWELD DOWNLEADS FROM UPPER AGB/EGB, LOWER EGB, AND MGB.

**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S

1  
E-1

NOTE:  
REFER TO EE MEMO FOR DETAILS ON THE ELECTRICAL UPGRADE.



**ONE LINE POWER DIAGRAM**  
SCALE: N.T.S

4  
E-1

**ELECTRICAL LEGEND**

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTWC	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
MGB	MASTER GROUND BAR
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
⊙	5/8" COPPER CLAD STAINLESS STEEL GROUND ROD
⊙	EXOTHERMIC (CAD WELD) OR MECHANICAL CONNECTION
⊙	MECHANICAL CONNECTION (COMPRESSION TYPE)
⊙	POWER PROTECTION CABINET
⊙	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

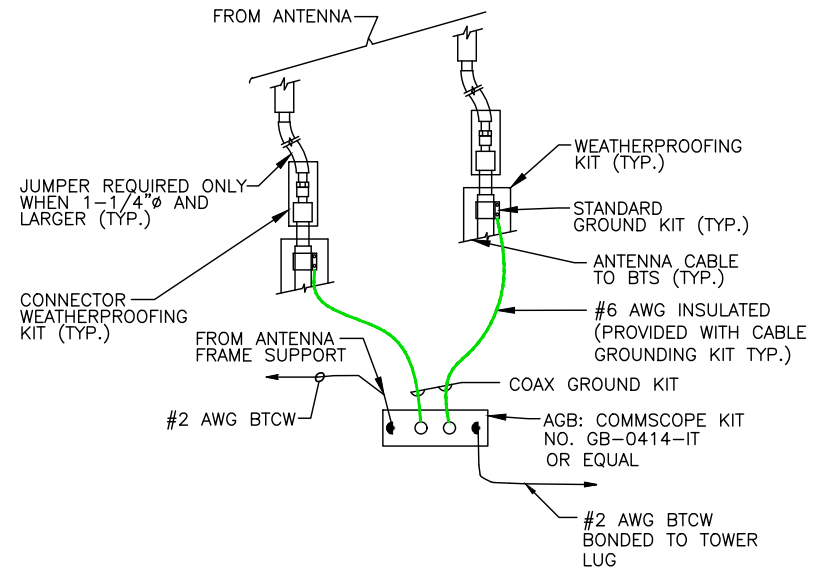
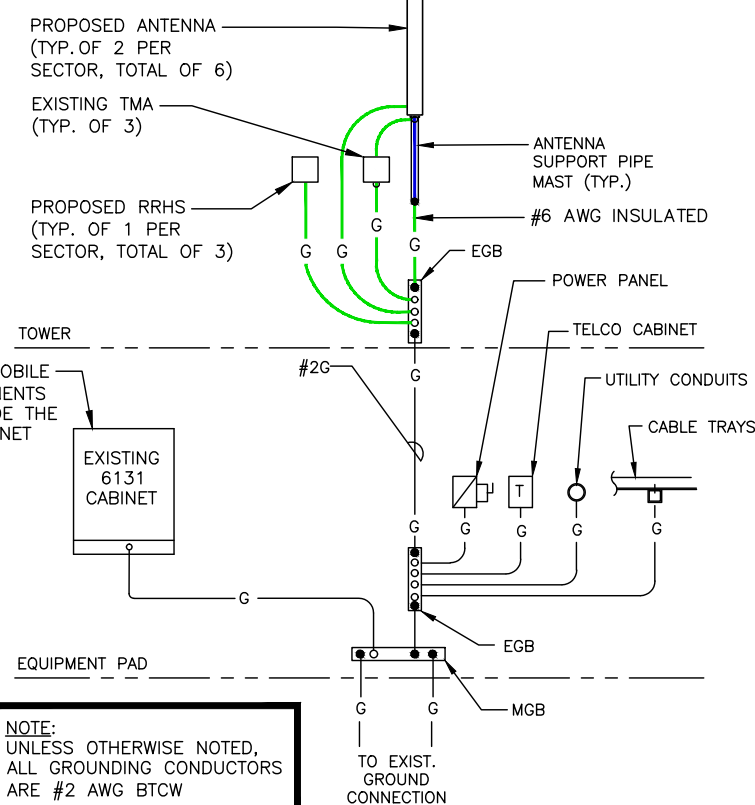
**ELECTRICAL & GROUNDING NOTES**

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

NOTE:  
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

**GROUNDING RISER DIAGRAM**  
SCALE: N.T.S

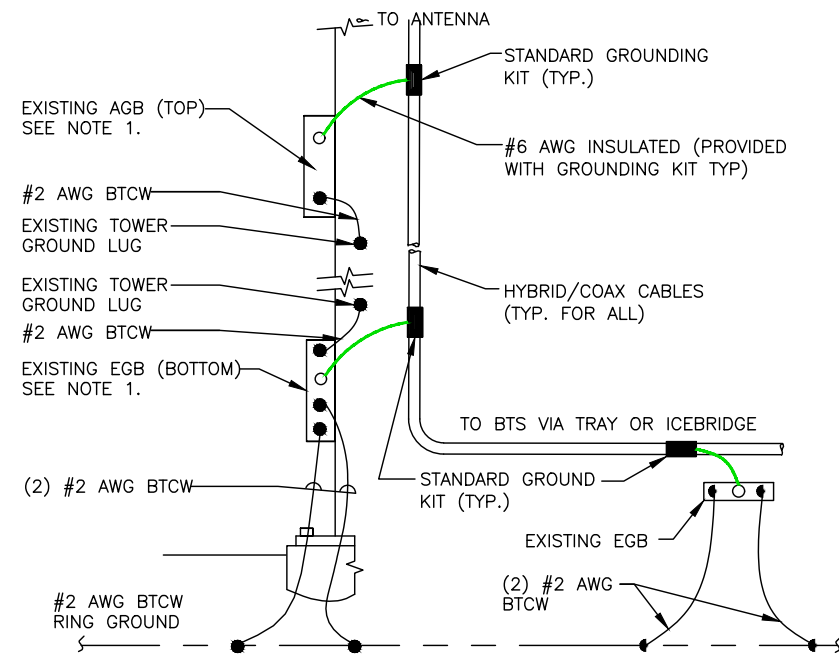
2  
E-1



NOTE:  
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

**TOWER TOP CABLE GROUNDING DETAIL**  
SCALE: N.T.S

3  
E-1



- NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
  2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

**TOWER BOTTOM CABLE GROUNDING DETAIL**  
SCALE: N.T.S

5  
E-1

13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

**T-MOBILE NORTHEAST LLC**

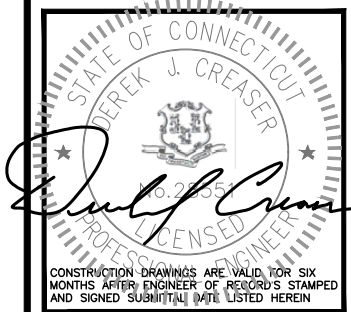
103 MONARCH DRIVE  
LIVERPOOL, NY 13088  
(315) 265-1882

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12 GILL STREET, SUITE 5800  
WOBURN, MA 01801

**HUDSON Design Group LLC**

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N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: BB

APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
3	01/24/19	CONSTRUCTION FINAL	BB
2	10/25/18	CONSTRUCTION FINAL	DJM
1	08/31/18	CONSTRUCTION REVISED	DJM
0	08/16/18	ISSUED FOR CONSTRUCTION	GA

SITE NUMBER:  
CT11082E  
CROWN CASTLE SITE ID:  
876320  
SITE NAME:  
STRATFORD/MP X  
53/MAIN  
SITE ADDRESS:  
528 WHEELERS FARM ROAD  
MILFORD, CT 06460  
NEW HAVEN COUNTY

SHEET TITLE  
**ONE-LINE DIAGRAM & GROUNDING DETAILS (L700)**

SHEET NUMBER  
**E-1**