App No: 2020111331

Revision received 12.14.20 - JE

Application General Infomation

Applicant Name	T-Mobile c/o Crown Castle USA	Updated	11/24/2020
Application Type	Minor Modification	Ann. Plan?	Yes
Carrier	T-Mobile	Will site be used to support government telecommunications facilities or other equipment for government use?	No
Solution Type	Macro		
Existing	Existing	Gvt. Use Desc.	

Application Description

Swap (3) Antennas; Remove (3) TMA's; Add (3) RRU's; Remove (1) existing cabinet and install (2) new cabinets.

Site Infomation

Site Id	415	Zoning	EOF-0.75
Structure Type	Monopole	Latitude	39.074992
Address	3351 Briggs Chaney Rd, Silver Spring	Longitude	-76.942228
County Site Name	Public Storage Briggs Chaney	Ground Elevation	354
Carrier Site Name	Public Storage-Briggs CHA	City	Silver Spring
Site Owner	Shurgard Maryland Properties Inc	Lease Status	Leased
Structure Owner	Crown Castle	Does the structure require an antenna structure registration under FCC Title 47	Yes
Existing Structure Height	140	Distance to Residential Property (New, Replacement, Colocation Only)	
Provide the proposed height of the replacement structure without any antenna (New, Replacement Apps Only)		Distance to Commercial Property (New, Replacement, Colocation Only)	

Justification of why this site was selected:

The proposed installation is intended to provide greater service to T-Mobiles customer base in the area. This site is needed to provided coverage within the surrounding area. T-Mobile selected this site due to their existing installation. By selecting thi

NearbySites (New, Replacement Apps Only):

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

Screening considerations(New, Colocations, Replacement Apps Only):

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

6409 Questions

Does this qualify as a 6409 application? (Minor Mod, Colocations Only): Yes

For towers outside the public ROW will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 20 feet, whichever is greater? No

Will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 6 feet? No

For towers outside the public ROW will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 20 feet? No

More than four Equipment Cabinets? YN: No

Will the proposed installation require excavation or expansion outside the current boundaries of the site? No

Does the structure or current installation have concealment elements/measures? No

Will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 10 feet, whichever is greater? No

If yes, describe how the proposed installation does not defeat the existing concealment.

Small Wireless Facility Informatio

Small Wireless Facility Questions

Small Wireless Facility? No

Is the structure 10% taller than adjacent structures?

Cumulative volume of the proposed wireless equipment(s) exclusive of antennas in cubic feet: 2.44

Please list adjacent structure heights

Tribal Lands? No

Cumulative volume of the proposed antenna antenna(s) exclusive of equipment

ROW Information

PROW? No

Pole Number

ROW owner

ROW width

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

Antenna Infomatio

Antenna Compliance	Yes
Compliance Desc	
Antenna Location	No
Antenna Loc. Desc.	
Env. Assessment	
Cat. Excluded?	
Routine Env. Evaluation	checked

Antenna Model	Ericsson AIR6449 B41						
Frequency	2593-2690 2496-2592						
RAD Center	140	Max ERP	34144	Antenna Dimensions	33.1 x 20.5 x 8.5	Quantity	3

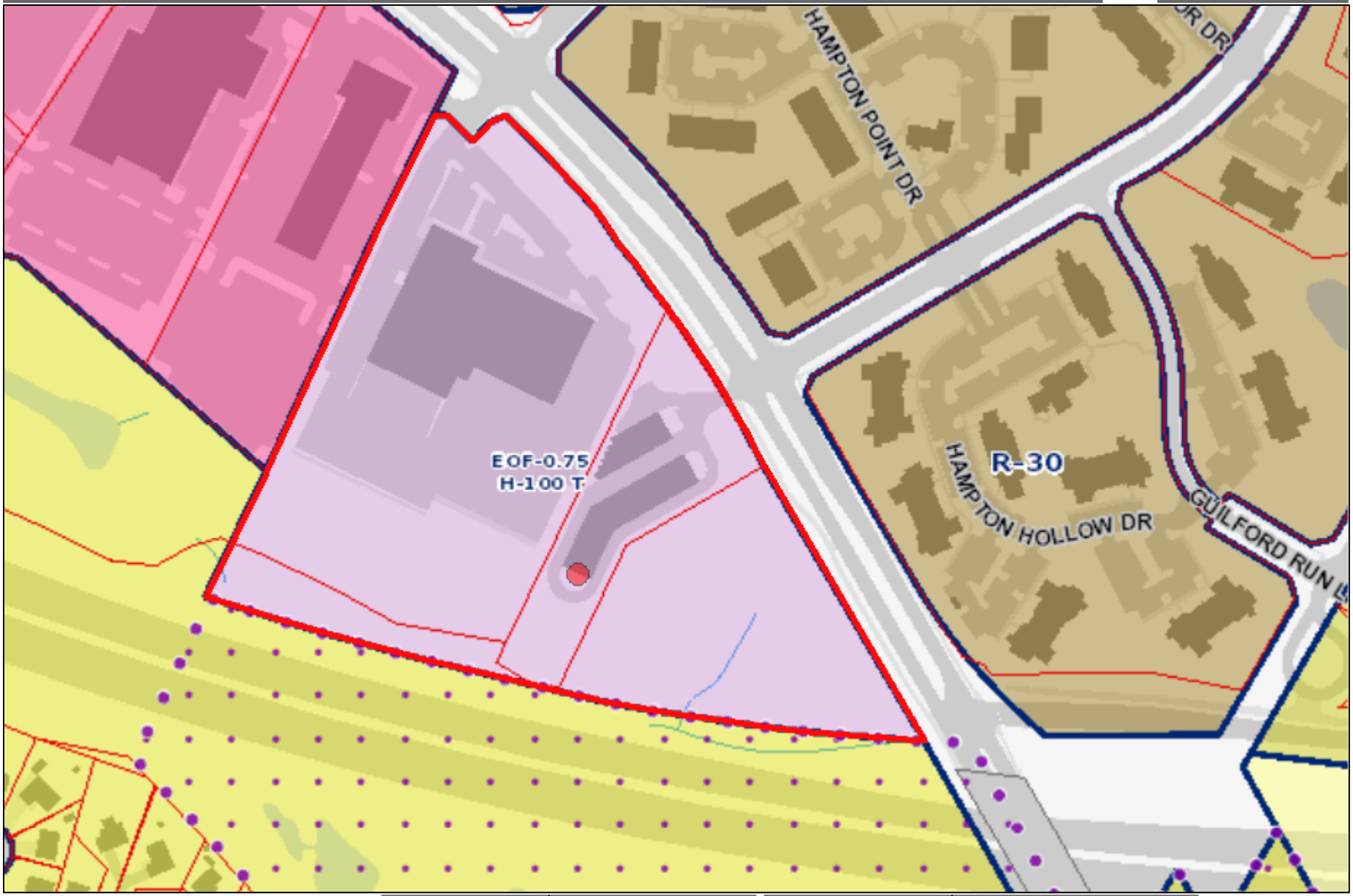
Monday, November 30, 2020

10:22:18 AM

Montgomery County Zoning

Date: 11/24/2020

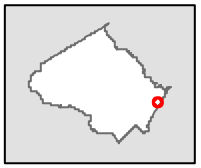
Montgomery County Planning Department
ITI Division



Account #	01831954
Address	3351 BRIGGS CHANEY RD SILVER SPRING, 20904
Zone	EOF-0.75 H-100 T
Overlay Zone	N/A
TDR Overlay Zone	N/A
Landuse	Industrial
Parcel, Lot, Block	N099 , N/A , N/A
WSSC Grid	217NE04
Map Amendments	G-747 G-956

Parking District	N/A
CBD	N/A
Special Protection Area	N/A
Urban District	N/A
Enterprise Zone	N/A
Arts & Ent. District	N/A
Special Tax District	N/A
Legal Description	PT PAR B BRIGGS CHANEY INDUSTRIAL PK

Bike/Ped Priority Area	N/A
Urban Renewal Area	N/A
Metro Station Policy Area	N/A
Priority Funding Area	Yes
Septic Tier	Tier 1: Sewer existing
Municipality	N/A
Master Plan	FAIRLAND MASTER PLAN
Historic Site/District	N/A
Water/Sewer Categories	W-1 / S-1



1 inch = 288 feet

New Product Introduction

Massive MIMO Mid-Band
AIR6449 B41
New Product Introduction Notification

ERICSSON

(Refresh: Update on AIR6449 usage for NY Boroughs)

PURPOSE

Ericsson's next generation AIR6449 B41 massive MIMO (M-MIMO) single band product provides additional RF power and has full band IBW sufficient to transmit 180 MHz of 4G/5G carrier bandwidth (vs. AIR6488 60 + 60 MHz carrier bandwidth). The AIR6449 also offers enhanced RF performance via a 192 antenna element array (vs. AIR6488 with 128).

BACKGROUND

The AIR6449 has a combined antenna/radio with 64 TRX. It has advantages over the previous AIR6488 model such as:

- Full 194 MHz IBW with NR+LTE mixed mode vs. 100 MHz on AIR6488
- Smaller dimensions (in height) and lighter in weight
- 25 Gbps eCPRI support

AIR 6488 vs. AIR 6449 comparison is available at this link.

USAGE GUIDELINES

- AIR6449 is planned to replace AIR6488 on a go forward basis once available
- Full Anchor Design (2.5GHz + PCS) or 2.5GHz Only (AKA "Skinny")
- All markets except New York Boroughs
    - Use existing AIR6488 if entitlement is complete or expected to complete before July 1st, 2020 (see AIR6488 NPI)
    - Use existing AIR6488 if site is expected to be on-air before July 1st, 2020 (see AIR6488 NPI)
    - Use AIR6449 if entitlement complete is forecasted after July 1st, 2020
- **New York Boroughs**
    - **NY is no longer required to use the AIR6488M product as of 6/12/2020 since T-Mobile now has access to the spectrum blocks previously used by public safety. NY should start entitling for AIR6449 starting with July'20 SC POR. August'20 HC POR should be built using AIR6449.**

TIMELINES

- Lab Entry: April 2020
- GA: July 03 2020
- New RFDS Templates for Anchor PORs reflecting AIR6449 have been created.
- This next generation hardware is expected to be available in commercial quantities in July 2020.

AFFECTED CONFIGURATIONS

Sites must be on an Anchor POR to use the AIR6449.

Site configurations that are designed with AIR6449 B41 will have a "**5A**" (5 for 2.5GHz + A for AIR6449) after the low-band indicator and/or before L19 indicator in the naming convention e.g., 67D92DB => 67D**5A**992DB, 92DB => **5A**992DB, etc.

PRODUCT DESCRIPTION

Frequency Range	LTE TDD B41: 2496 – 2690 MHz
Instantaneous BW	DL 194 MHz
Antenna Ports	64T64R
Technology	NR, LTE and NR+LTE MSMM
Antenna Elements	192
Output RF Power	320 W (=64 TRX x 5W)
Data Ports	4 x 25Gb/s CPRI
5G NR Support	YES
DC Feed	-48V DC power connector
Cooling	Passive cooling (vs. active cooling on AIR32 DB)
Dimensions (H x W x D)	33.1" x 20.6" x 8.6" inches (=841 x 524 x 217 mm)
Weight	104 lbs (=47 kg)
Electrical downtilt	-3 to 11 degrees
Horizontal beamwidth	+/- 65 degrees
HW/SW Availability	July 2020
Material SAP #	34105 – AIR 6449 B41

WARRANTY: 1 Year

SPARES: 2% of install base. Additional units can be requested as per need.

Baseband Requirements

For a typical 3-sector site,

- LTE: one dedicated BB6630 per site
- NR: one dedicated BB6648 (see its NPI) per site

Supplementary/Ancillary Materials

SKU	Description	Qty
34106	AIR6449 mandatory install kit	1 per AIR6449
34110	AIR6449 25G SFP	8 per AIR6449

The AIR6449 requires a voltage booster (i.e., PSU 4813) in almost all cases when using the current HCS 6x12. Please refer to Voltage Booster design doc for its usage guidance (depending on the HCS length and gauge). Note the installation kit is different for each cabinet type.

SKU	Description	Qty
34132	PSU 4813 main unit	1
34133	PSU installation kit for RBS61xx	Choose 1 per cabinet type
34134	PSU installation kit for PBC6200	
34135	PSU installation kit for E6x60/P6230	

LINKS

- Ericsson New T-Mobile Anchor Network Playbook
- AIR 6488 vs. AIR 6449 Comparison

CONTACTS

Kyuho Son	Principal Engineer, RAN Architecture
Weston Berry	Engineer, RAN Architecture

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Monopole Facility

November 13, 2020

Analysis Format: Theoretical Calculations

Sign Count	
	1
	0
	1
	0

Statement of Compliance

T-Mobile will be compliant with FCC Regulations once the mitigation measures recommended in this report are implemented.

7WAN285K
Public Storage-Briggs Cha
4200 Forbes Blvd, Silver Spring, MD 20904

Contents

Overview

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following T-Mobile wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all existing equipment for T-Mobile .

The facility is located on a monopole in Silver Spring, Maryland. Access to the facility is restricted to authorized personnel and facility management.

Analysis Site Data

Site ID:	7WAN285K
Site Name:	Public Storage-Briggs Cha
Site Address:	4200 Forbes Blvd, Silver Spring, MD 20904
Site Latitude:	39.075030
Site Longitude:	-76.94225
Facility Type:	Monopole

Compliance Summary

Status:	T-Mobile will be compliant with FCC Regulations Upon Installation of Signage
Site Modeled Composite MPE% (General Public Limit):	0.20 %
T-Mobile Max Modeled MPE% (General Public Limit):	0.20 %
Lock or Control Measures if Present:	Unknown

In addition to the T-Mobile antennas and radio equipment there are antennas and radio equipment for Verizon, & Crown Castle which have been included in this analysis as part of the overall site compliance determination.

*To be conservative, all sites are considered uncontrolled for modeling purposes unless confirmed otherwise by a site visit.

FCC Guidelines

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General Population/Uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600, 700, and 800 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$, and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS, 2100 MHz AWS, 2500 MHz, 3500 MHz CBRS, 5000 MHz LAA, 28GHz, and 39GHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density. Reference the Site Antenna Data Table for list of frequencies in operation at this site.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Calculation Methodology & Data

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofMaster® software from Waterford Consultants LLC. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.

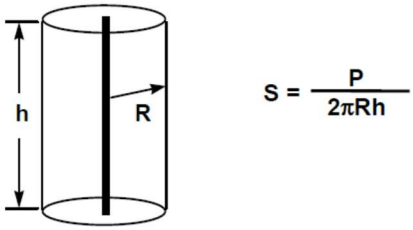


Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.

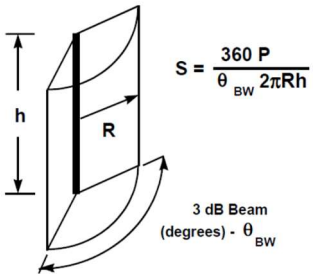


Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW)

The **proposed antenna configuration** for T-Mobile and any other known wireless carriers at this facility are shown below in **Table 1 – Site Antenna Data Table**.

All calculations for this facility were performed assuming that all radios were running at full power and were uncombined in their RF paths with the configuration shown in table 1. FCC OET Bulletin 65 – Edition 97-01 recommends that modeling of this nature should be done as described prior to yield a worst-case scenario. Due to the dynamic nature of many deployed systems the "real world" values will most likely be less than those shown in this report due to worst-case values being shown in all instances.

For all "Other" systems on this facility, exact equipment was used if available. In instances where "Other" system equipment was not available, standard radio configurations for these systems were utilized based upon prior experience with these systems on facilities in this area.

Site Antenna Data Table

Sector	Operator	Frequency Band	TX Power Per Channel	Tx #	ERP	Antenna Make	Antenna Model	Gain (dBd)	Az (°)	Antenna Centerline Height (ft)	Z Value (ft)**
A1	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	30	140	138.62
A1	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	30	140	138.62
A1	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	30	140	138.62
A2	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	30	140	137.72
A2	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A2	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A3	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	30	140	136.00
A3	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
A3	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
B4	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	210	140	136.00
B4	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B4	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B5	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	210	140	138.62
B5	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	210	140	138.62

B5	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	210	140	138.62
B6	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	210	140	137.72
B6	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
B6	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	300	140	138.62
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	300	140	138.62
C7	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	300	140	138.62
C8	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	300	140	136.00
C8	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	U1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C8	T-Mobile	L1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C9	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	300	140	137.72
C9	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
C9	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
10	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	30	118	115.00
11	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	30	118	115.00
12	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	30	118	115.00
13	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	30	118	115.00
14	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	210	118	115.00
15	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	210	118	115.00
16	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	210	118	115.00
17	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	210	118	115.00
18	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	300	118	115.00
19	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	300	118	115.00
20	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	300	118	115.00
21	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	300	118	115.00

*Table 1: Total Site Antenna data table **(Z Value is distance from bottom of antenna to walking surface)*

Results

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population for exposure to RF emissions as specified by federal standards.

T-Mobile's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface.

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**0.20%**	**Sector A**
Accessible **Occupational** MPE Limits:	**0.04%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.20%**
Ground Level **Occupational** MPE Limits:	**0.04%**

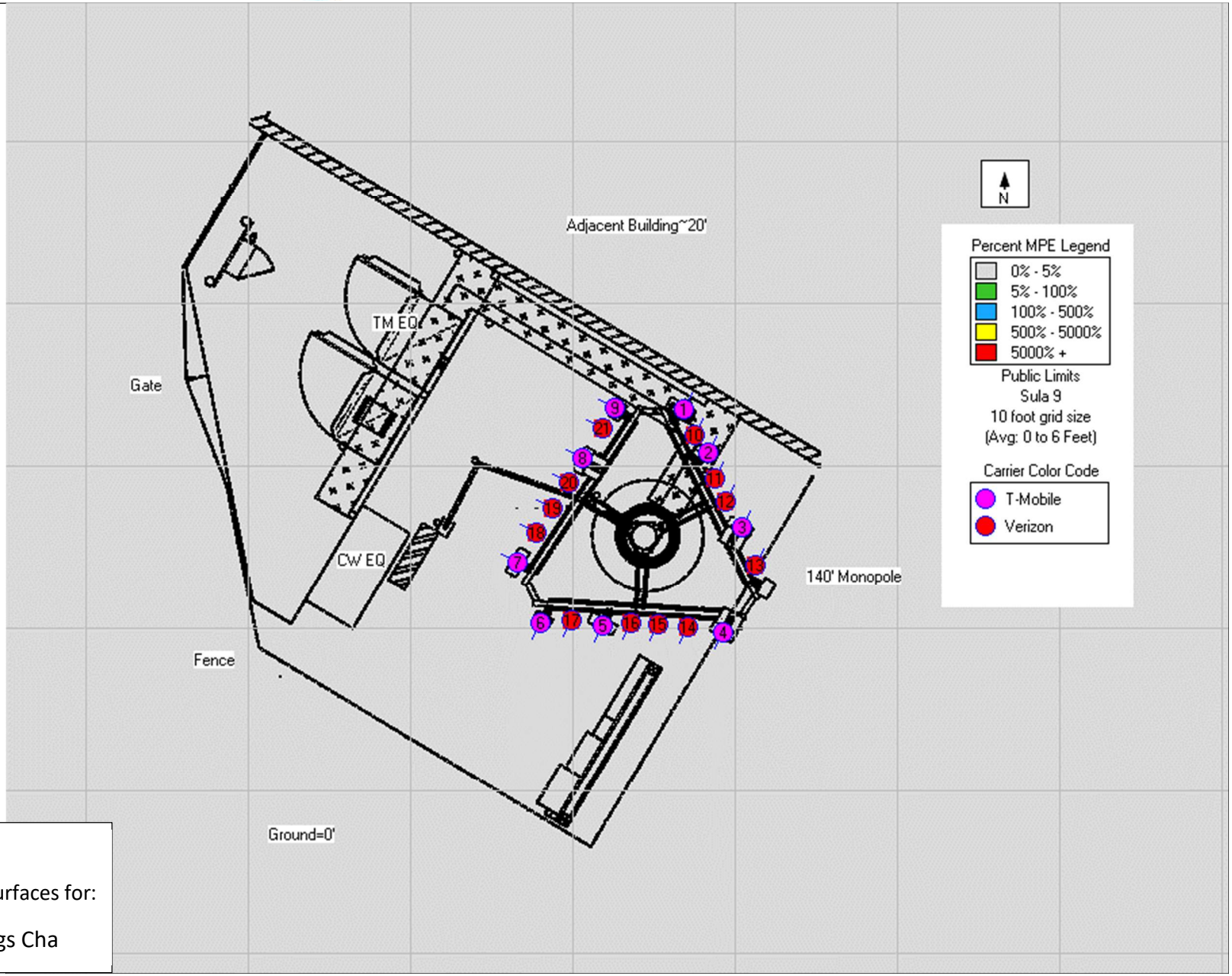
Sector A: Transmitting over Adjacent Building	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.20%**	**0**
Accessible **Occupational** MPE Limits:	**0.04%**	**0**

Sector B: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

Sector C: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

**Distance from Antenna is the distance that the MPE limits are exceeded from the front face of the antenna, outward across an accessible area.*

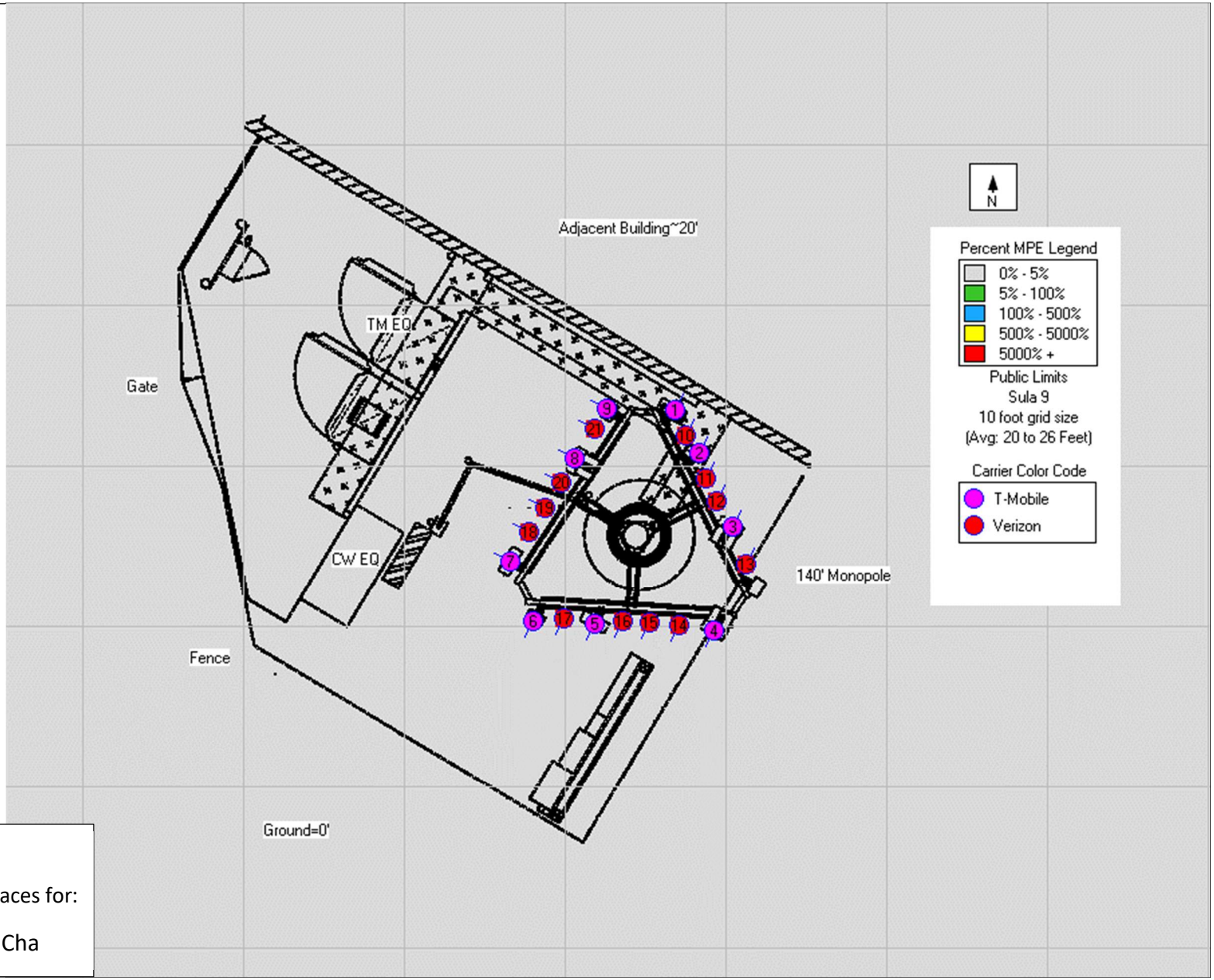
APPENDIX A: Emissions Thresholds for Walking Surfaces and Signage



Ground (0'ft.)

Emissions Thresholds for Walking Surfaces for:

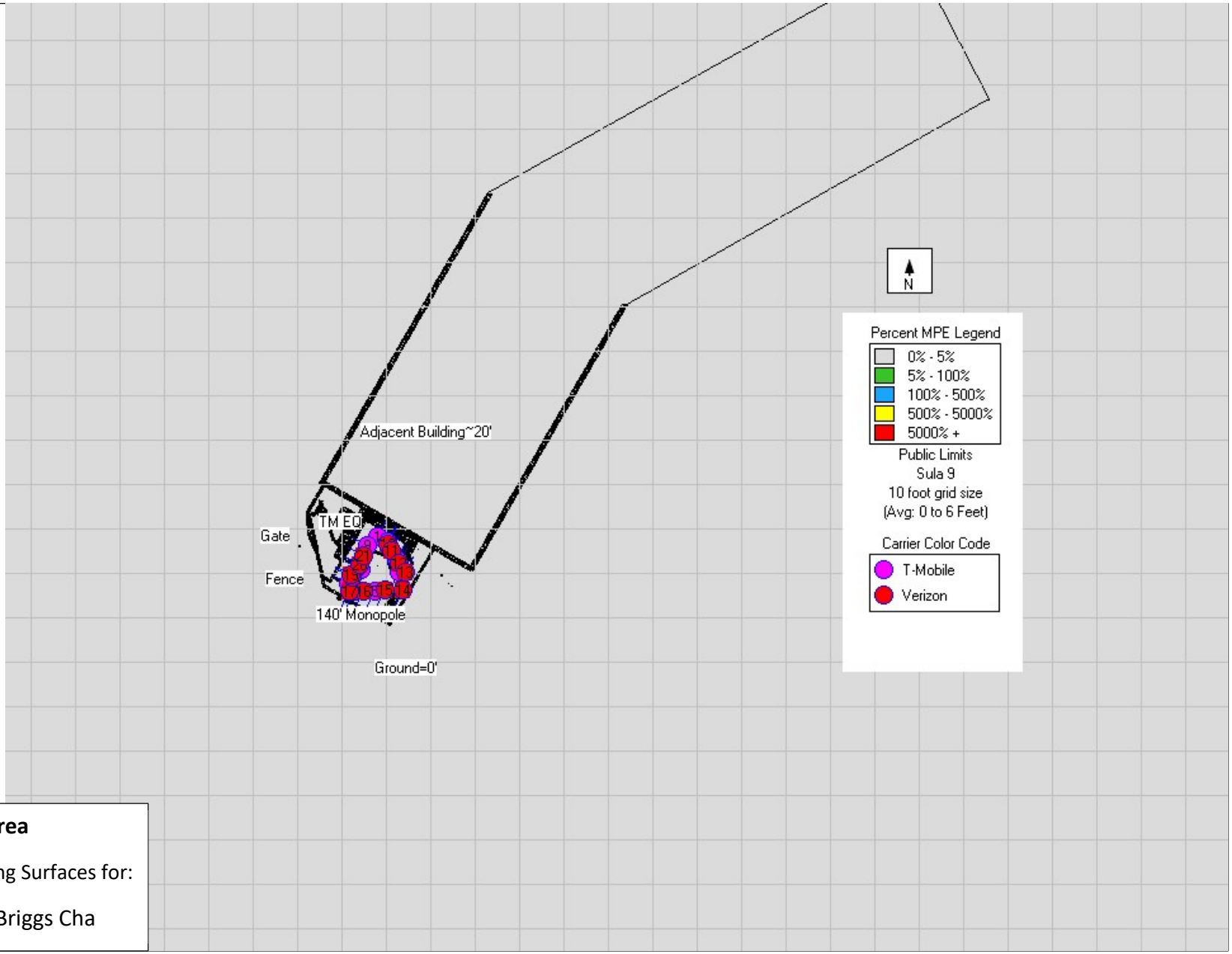
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20'ft.)

Emissions Thresholds for Walking Surfaces for:

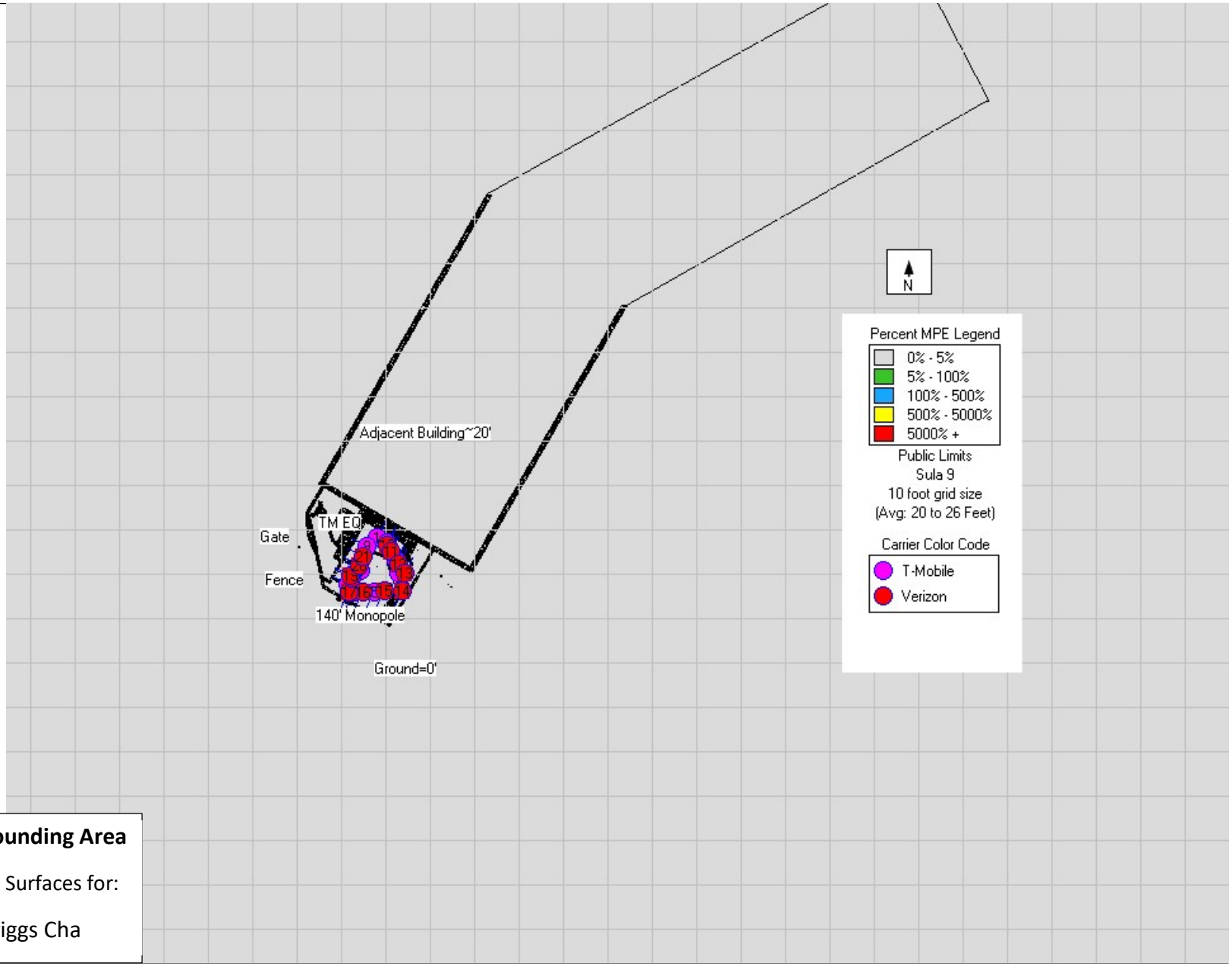
7WAN285K / Public Storage-Briggs Cha



Ground (0ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

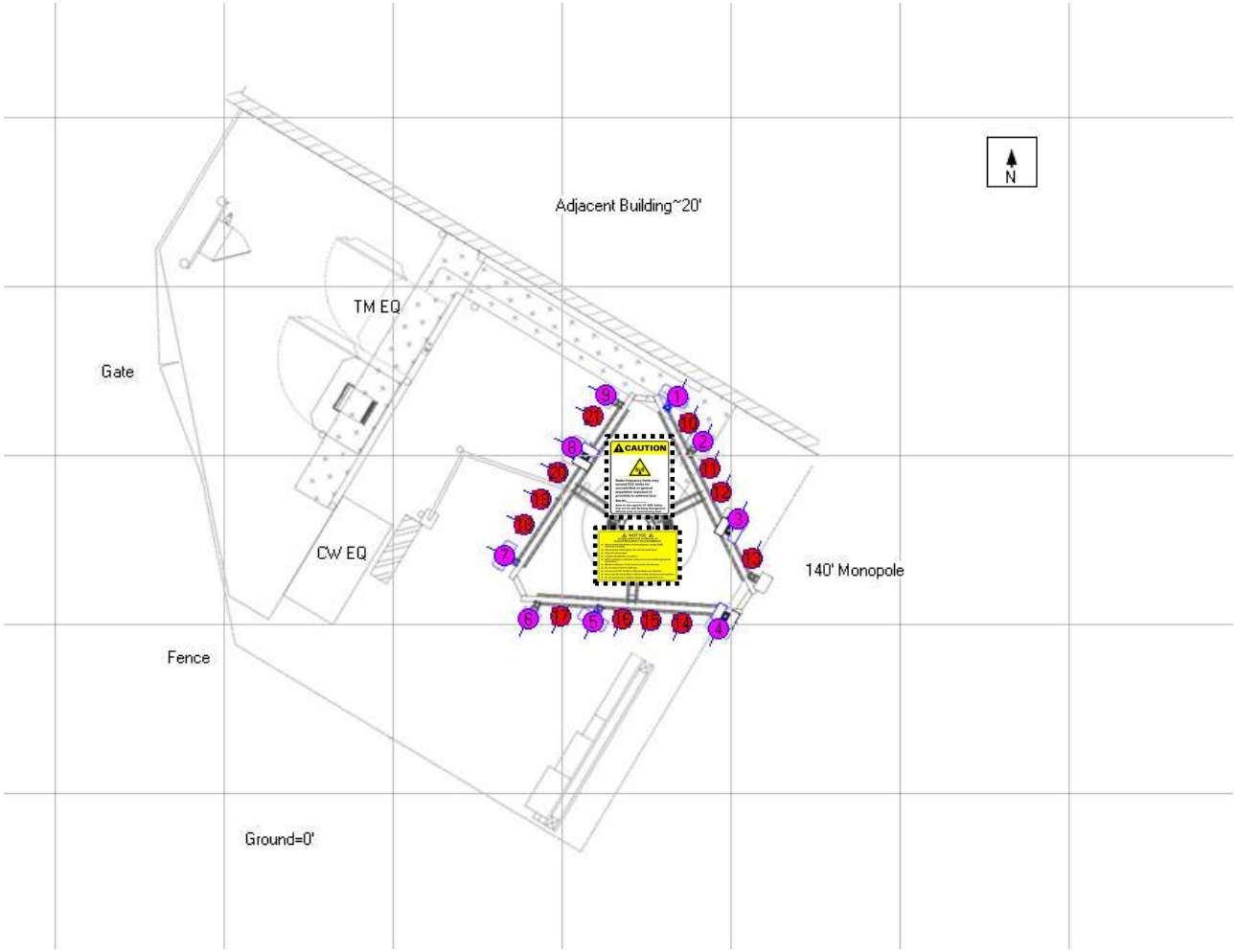
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

7WAN285K / Public Storage-Briggs Cha



Existing Item

Proposed Item

Signage Count							
	1		0		1		0

Signage Diagram

Signage for:

7WAN285K/ Public Storage-Briggs Cha

Compliance Actions:

Compliance Actions:

Access	• Install (1) Guideline sign on the base of the monopole. • Install (1) Caution sign on the base of the monopole.
Alpha Sector	• No Action Needed.
Beta Sector	• No Action Needed.
Gamma sector	• No Action Needed.
Notes:	• If there is a fixed climbing point located on this site, the Guideline and Caution signs should be installed at that location.

APPENDIX B: RF Signage Description Table

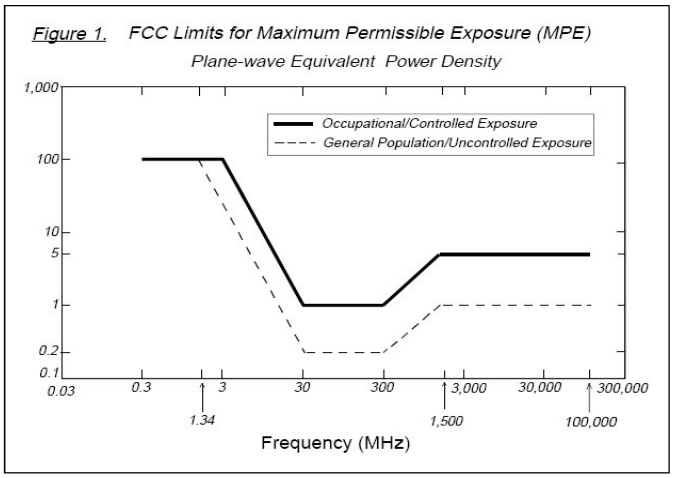
Sign	Description
	**RF Guideline Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. Must be placed anywhere the public can get within 30 feet vertically or horizontally of an antenna.
	**Yellow Caution Sign** Used to inform individuals that they are entering an area that may exceed the either the FCC's General Population or Occupational Emissions limits. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.
	**Red Warning Sign** Used to inform individuals that they are entering an area that may exceed 5x the FCC's Occupational emissions limit. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.

APPENDIX C: FCC Emissions Threshold Limits

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX D: Certifications

I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Michelle Stone

11/13/2020

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Brandon Green

11/13/2020

Date: **October 08, 2020**

Stephanie Lipscomb
Crown Castle
370 Mallory Station Road Suite 505
Franklin, TN 37067

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	7WAN285K
	Carrier Site Name:	Public Storage-Briggs Cha
Crown Castle Designation:	**Crown Castle BU Number:**	826848
	Crown Castle Site Name:	Public Storage-Briggs Cha
	Crown Castle JDE Job Number:	616150
	Crown Castle Work Order Number:	1887883
	Crown Castle Order Number:	525942 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1887883
Site Data:	**3351 Briggs Chaney Road, Silver Spring, Montgomery County, MD** **Latitude *39° 4' 29.97"*, Longitude *-76° 56' 32.02"*** **140 Foot - Monopole Tower**	

Dear Stephanie Lipscomb,

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

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

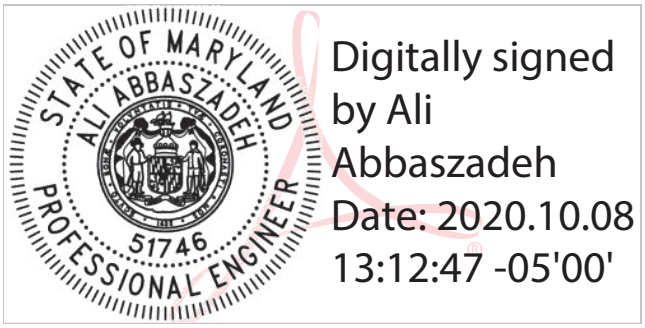
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 113 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jared Koski /AM

Respectfully submitted by:

Ali Abbaszadeh, P.E.
Senior Project Engineer



I hereby certify that these documents were prepared or approved by me, and that I am duly licensed professional engineer under the laws of State of Maryland.
License No. 51746
Expiration Date: 11/09/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by Valmont. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	113
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	40 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	141.0	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	15	1-1/4 1-5/8
		3	ericsson	RADIO 4449 B12/B71		
	140.0	4	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RRUS 4415 B25_CCIV2		
		1	tower mounts	T-Arm Mount [TA 701-3]		
		1	tower mounts	Miscellaneous [NA 507-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
127.0	127.0	1	tower mounts	T-Arm Mount [TA 602-3]	-	-
118.0	120.0	6	jma wireless	MX06FRO840-02 w/ Mount Pipe	11	1-1/4 1-5/8
		3	nokia	AIRSCALE DUAL RRH 4T4R B2/66A 320W		
		3	nokia	AIRSCALE DUAL RRH 4T4R B5/13 320W		
		1	raycap	RRFDC-3315-PF-48		
		1	raycap	RVZDC-6627-PF-48		
	118.0	1	tower mounts	Platform Mount [14' LP 404-1_KCKR]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	7941835	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont Industries, Inc.	3908664	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont Industries, Inc.	3475172	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Tower Engineering Professionals, Inc.	4081023	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Engineering, Inc.	4760657	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Engineering, Inc.	7944904	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	8305498	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
L2	135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
L3	130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
L4	125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
L5	120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
L6	115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
L7	110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
L8	105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L9	100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
L10	95 - 89.08	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
L11	89.08 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
L12	88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
L13	85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
L14	84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
L15	79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
L16	74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
L17	74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
L18	73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
L19	68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
L20	63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
L21	58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
L22	53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
L23	53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
L24	52.83 - 45.91	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
L25	45.91 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
L26	44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
L27	39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
L28	38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
L29	38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
L30	33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L31	33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L32	32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
L33	27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
L34	23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
L35	22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
L36	17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
L37	12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
L38	7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
L39	2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
					Summary	
				Pole	80.8%	Pass
				Reinforcement	79.8%	Pass
				Overall	80.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.1	Pass
1	Base Plate	0	59.1	Pass
1	Base Foundation (Structure)	0	68.6	Pass
1	Base Foundation (Soil Interaction)	0	76.5	Pass

Structure Rating (max from all components) =	80.8%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

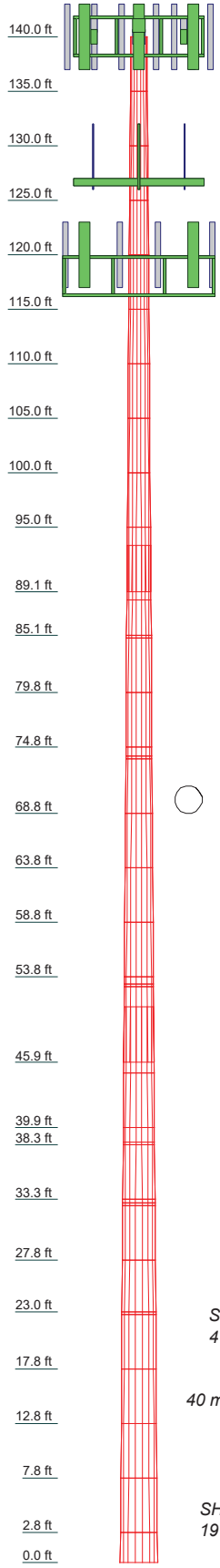
4.1) Recommendations

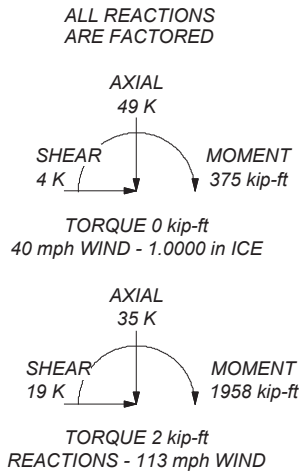
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.75	4.25	5.00	5.00	5.00	5.00	2.75
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.5563
Socket Length (ft)										4.25														5.08																	
Top Dia (in)	18.0000	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920
Bot Dia (in)	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920	51.3471
Grade	A572-65																																						
Weight (K)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.0	0.5	0.6	0.1	0.0	0.6	0.7	0.7	0.7	0.0	0.1	1.4	1.0	0.8	0.2	0.1	1.1	0.1	0.1	1.1	1.0	0.1	1.2	1.2	1.2	1.2	0.7





MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Montgomery County, Maryland.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 113 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 80.8%

CROWN CASTLE
The Pathway to Possible

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

Job: ***BU# 826848***			
Project:			
Client: Crown Castle	Drawn by: JKoski		App'd:
Code: TIA-222-H	Date: 10/07/20		Scale: NTS
Path: C:\Users\jkoski\Desktop\Work Area\826848\WO 1887883 - SA\Prod\826848.eri			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Montgomery County, Maryland.
4) Tower base elevation above sea level: 356.00 ft.
5) Basic wind speed of 113 mph.
6) Risk Category II.
7) Exposure Category C.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: 0.00 ft.
11) Nominal ice thickness of 1.0000 in.
12) Ice thickness is considered to increase with height.
13) Ice density of 56 pcf.
14) A wind speed of 40 mph is used in combination with ice.
15) Temperature drop of 50 °F.
16) Deflections calculated using a wind speed of 60 mph.
17) TOWER RATING: 80.8%.
18) A non-linear (P-delta) analysis was used.
19) Pressures are calculated at each section.
20) Stress ratio used in pole design is 1.05.
21) Tower analysis based on target reliabilities in accordance with Annex S.
22) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
23) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.00-135.00	5.00	0.00	18	18.0000	18.8551	0.1875	0.7500	A572-65 (65 ksi)
L2	135.00-130.00	5.00	0.00	18	18.8551	19.7101	0.1875	0.7500	A572-65 (65 ksi)
L3	130.00-125.00	5.00	0.00	18	19.7101	20.5652	0.1875	0.7500	A572-65 (65 ksi)
L4	125.00-120.00	5.00	0.00	18	20.5652	21.4203	0.1875	0.7500	A572-65 (65 ksi)
L5	120.00-115.00	5.00	0.00	18	21.4203	22.2753	0.1875	0.7500	A572-65 (65 ksi)
L6	115.00-110.00	5.00	0.00	18	22.2753	23.1304	0.1875	0.7500	A572-65 (65 ksi)
L7	110.00-105.00	5.00	0.00	18	23.1304	23.9855	0.1875	0.7500	A572-65 (65 ksi)
L8	105.00-100.00	5.00	0.00	18	23.9855	24.8405	0.1875	0.7500	A572-65 (65 ksi)
L9	100.00-95.00	5.00	0.00	18	24.8405	25.6956	0.1875	0.7500	A572-65 (65 ksi)
L10	95.00-89.08	5.92	4.25	18	25.6956	26.7080	0.1875	0.7500	A572-65 (65 ksi)
L11	89.08-88.33	5.00	0.00	18	25.6062	26.4612	0.2188	0.8750	A572-65 (65 ksi)
L12	88.33-85.08	3.25	0.00	18	26.4612	27.0169	0.2188	0.8750	A572-65 (65 ksi)
L13	85.08-84.83	0.25	0.00	18	27.0169	27.0597	0.4000	1.6000	A572-65 (65 ksi)
L14	84.83-79.83	5.00	0.00	18	27.0597	27.9147	0.3937	1.5750	A572-65 (65 ksi)
L15	79.83-74.83	5.00	0.00	18	27.9147	28.7697	0.3875	1.5500	A572-65 (65 ksi)
L16	74.83-74.00	0.83	0.00	18	28.7697	28.9116	0.3875	1.5500	A572-65 (65 ksi)
L17	74.00-73.75	0.25	0.00	18	28.9116	28.9544	0.4437	1.7750	A572-65 (65 ksi)
L18	73.75-68.75	5.00	0.00	18	28.9544	29.8094	0.4375	1.7500	A572-65 (65 ksi)
L19	68.75-63.75	5.00	0.00	18	29.8094	30.6644	0.4313	1.7250	A572-65 (65 ksi)
L20	63.75-58.75	5.00	0.00	18	30.6644	31.5194	0.4188	1.6750	A572-65 (65 ksi)
L21	58.75-53.75	5.00	0.00	18	31.5194	32.3744	0.4188	1.6750	A572-65 (65 ksi)
L22	53.75-53.08	0.67	0.00	18	32.3744	32.4889	0.4188	1.6750	A572-65 (65 ksi)
L23	53.08-52.83	0.25	0.00	18	32.4889	32.5317	0.5313	2.1250	A572-65 (65 ksi)
L24	52.83-45.91	6.92	5.08	18	32.5317	33.7150	0.5313	2.1250	A572-65 (65 ksi)
L25	45.91-44.91	6.08	0.00	18	32.4088	33.4487	0.4000	1.6000	A572-65 (65 ksi)
L26	44.91-39.91	5.00	0.00	18	33.4487	34.3039	0.4000	1.6000	A572-65 (65 ksi)
L27	39.91-38.58	1.33	0.00	18	34.3039	34.5314	0.3937	1.5750	A572-65 (65 ksi)
L28	38.58-38.33	0.25	0.00	18	34.5314	34.5742	0.5563	2.2250	A572-65 (65 ksi)
L29	38.33-33.33	5.00	0.00	18	34.5742	35.4293	0.5437	2.1750	A572-65 (65 ksi)
L30	33.33-33.00	0.33	0.00	18	35.4293	35.4858	0.5437	2.1750	A572-65 (65 ksi)
L31	33.00-32.75	0.25	0.00	18	35.4858	35.5285	0.5437	2.1750	A572-65 (65 ksi)
L32	32.75-27.75	5.00	0.00	18	35.5285	36.3837	0.5437	2.1750	A572-65 (65 ksi)
L33	27.75-23.00	4.75	0.00	18	36.3837	37.1961	0.5313	2.1250	A572-65 (65 ksi)

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
L34	23.00-22.75	0.25	0.00	18	37.1961	37.2389	0.5813	2.3250	A572-65 (65 ksi)
L35	22.75-17.75	5.00	0.00	18	37.2389	38.0941	0.5813	2.3250	A572-65 (65 ksi)
L36	17.75-12.75	5.00	0.00	18	38.0941	38.9493	0.5687	2.2750	A572-65 (65 ksi)
L37	12.75-7.75	5.00	0.00	18	38.9493	39.8045	0.5687	2.2750	A572-65 (65 ksi)
L38	7.75-2.75	5.00	0.00	18	39.8045	40.6596	0.5563	2.2250	A572-65 (65 ksi)
L39	2.75-0.00	2.75		18	40.6596	41.1300	0.5563	2.2250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
L2	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
L3	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
L4	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
L5	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
L6	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
L7	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
L8	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
L9	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
L10	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
	27.0911	15.7830	1402.4609	9.4148	13.5677	103.3679	2806.7672	7.8930	4.3706	23.31
L11	26.7054	17.6268	1435.3220	9.0125	13.0079	110.3419	2872.5326	8.8151	4.1217	18.842
	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
L12	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
	27.4000	18.6063	1688.1416	9.5134	13.7246	123.0011	3378.5045	9.3049	4.3700	19.977
L13	27.3720	33.7929	3024.6755	9.4490	13.7246	220.3834	6053.3309	16.8996	4.0510	10.127
	27.4154	33.8471	3039.2729	9.4642	13.7463	221.0972	6082.5449	16.9268	4.0585	10.146
L14	27.4164	33.3261	2993.8889	9.4664	13.7463	217.7956	5991.7172	16.6662	4.0695	10.335
	28.2846	34.3946	3291.2033	9.7699	14.1807	232.0909	6586.7372	17.2006	4.2200	10.717
L15	28.2855	33.8564	3241.1691	9.7722	14.1807	228.5626	6486.6031	16.9314	4.2310	10.919
	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
L16	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
	29.2978	35.0825	3606.2244	10.1261	14.6871	245.5368	7217.1939	17.5446	4.4064	11.371
L17	29.2892	40.0959	4105.3252	10.1061	14.6871	279.5191	8216.0522	20.0518	4.3074	9.707
	29.3326	40.1561	4123.8477	10.1213	14.7088	280.3657	8253.1217	20.0819	4.3150	9.724
L18	29.3335	39.5992	4068.4398	10.1235	14.7088	276.5987	8142.2330	19.8034	4.3260	9.888
	30.2017	40.7865	4445.4636	10.4270	15.1432	293.5625	8896.7767	20.3971	4.4764	10.232
L19	30.2027	40.2124	4384.7549	10.4292	15.1432	289.5535	8775.2794	20.1100	4.4874	10.406
	31.0709	41.3827	4778.8365	10.7328	15.5775	306.7782	9563.9610	20.6953	4.6379	10.755
L20	31.0728	40.1998	4646.0775	10.7372	15.5775	298.2557	9298.2685	20.1037	4.6599	11.128
	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
L21	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
L22	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
	32.9255	42.6249	5538.6442	11.3849	16.5044	335.5864	11084.5763	21.3165	4.9811	11.895

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L23	32.9082	53.8866	6952.9504	11.3450	16.5044	421.2792	13915.0496	26.9484	4.7831	9.003
	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
L24	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
	34.1532	55.9540	7784.3025	11.7802	17.1272	454.4989	15578.8478	27.9823	4.9988	9.41
L25	33.7293	40.6384	5260.3351	11.3631	16.4637	319.5115	10527.5920	20.3231	5.0000	12.5
	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
L26	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
	34.7714	43.0444	6251.0618	12.0359	17.4264	358.7124	12510.3489	21.5263	5.3335	13.334
L27	34.7724	42.3796	6156.7926	12.0381	17.4264	353.3029	12321.6865	21.1939	5.3445	13.573
	35.0034	42.6639	6281.5304	12.1189	17.5419	358.0863	12571.3261	21.3360	5.3845	13.675
L28	34.9783	59.9844	8747.7871	12.0612	17.5419	498.6782	17507.0847	29.9979	5.0985	9.166
	35.0217	60.0599	8780.8571	12.0764	17.5637	499.9444	17573.2683	30.0356	5.1061	9.179
L29	35.0236	58.7318	8593.0001	12.0808	17.5637	489.2486	17197.3071	29.3715	5.1281	9.431
	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
L30	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
L31	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
L32	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
	36.8611	61.8549	10037.9871	12.7232	18.4829	543.0950	20089.1825	30.9333	5.4465	10.017
L33	36.8630	60.4540	9817.4939	12.7276	18.4829	531.1654	19647.9058	30.2327	5.4685	10.294
	37.6880	61.8239	10500.1321	13.0160	18.8956	555.6906	21014.0806	30.9178	5.6115	10.563
L34	37.6803	67.5504	11441.4437	12.9983	18.8956	605.5070	22897.9424	33.7816	5.5235	9.503
	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
L35	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
	38.5921	69.2070	12304.0266	13.3171	19.3518	635.8079	24624.2432	34.6101	5.6816	9.775
L36	38.5940	67.7412	12051.4632	13.3215	19.3518	622.7567	24118.7840	33.8770	5.7036	10.028
	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
L37	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
	40.3308	70.8288	13775.5970	13.9287	20.2207	681.2632	27569.3202	35.4211	6.0046	10.558
L38	40.3327	69.2942	13485.7175	13.9331	20.2207	666.9274	26989.1799	34.6537	6.0266	10.834
	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
L39	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
	41.6787	71.6345	14898.7504	14.4037	20.8940	713.0622	29817.1049	35.8240	6.2599	11.254

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.00-135.00				1	1	1			
L2 135.00-130.00				1	1	1			
L3 130.00-125.00				1	1	1			
L4 125.00-120.00				1	1	1			
L5 120.00-115.00				1	1	1			
L6 115.00-110.00				1	1	1			
L7 110.00-105.00				1	1	1			
L8 105.00-100.00				1	1	1			
L9 100.00-95.00				1	1	1			
L10 95.00-89.08				1	1	1			
L11 89.08-88.33				1	1	1			
L12 88.33-85.08				1	1	1			
L13 85.08-84.83				1	1	0.949459			
L14 84.83-79.83				1	1	0.951605			
L15 79.83-74.83				1	1	0.954618			
L16 74.83-74.00				1	1	0.952677			
L17 74.00-73.75				1	1	0.945115			
L18 73.75-68.75				1	1	0.945062			
L19 68.75-63.75				1	1	0.945792			
L20 63.75-58.75				1	1	0.961217			
L21 58.75-53.75				1	1	0.949475			
L22 53.75-53.08				1	1	0.94795			
L23 53.08-52.83				1	1	1.08299			
L24 52.83-45.91				1	1	1.07645			
L25 45.91-44.91				1	1	1.13466			
L26 44.91-39.91				1	1	1.12378			
L27 39.91-38.58				1	1	1.13856			
L28 38.58-38.33				1	1	1.0342			
L29 38.33-33.33				1	1	1.04434			
L30 33.33-33.00				1	1	1.04349			
L31 33.00-32.75				1	1	1.04285			
L32 32.75-27.75				1	1	1.0303			
L33 27.75-23.00				1	1	1.04255			
L34 23.00-				1	1	1.02016			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
22.75									
L35 22.75-17.75				1	1	1.00794			
L36 17.75-12.75				1	1	1.01782			
L37 12.75-7.75				1	1	1.00642			
L38 7.75-2.75				1	1	1.01755			
L39 2.75-0.00				1	1	1.01161			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HCS 6X12 6AWG(1-3/8) ***	B	No	Surface Ar (CaAa)	140.00 - 0.00	2	2	-0.100 -0.030	1.3800		1.70
CCI-WSFP-060100	A	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	A	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100 ***	C	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	A	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	A	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	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_AA_A ft^2/ft	Weight plf
***									
HB114-1-05U3-S3J(1-1/4)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HCS 6X12 6AWG(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
MLCH HYBRID 6X12(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	1.72
							1/2" Ice	0.00	1.72
							1" Ice	0.00	1.72
***									
HB114-1-05U3-S3J(1-1/4)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HB158-U12S24-XXX-LI(1-5/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.634	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.207	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.897	0.000	0.03
		C	0.000	0.000	1.000	0.000	0.01
L13	85.08-84.83	A	0.000	0.000	0.167	0.000	0.00
		B	0.000	0.000	0.236	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L14	84.83-79.83	A	0.000	0.000	3.333	0.000	0.00
		B	0.000	0.000	4.713	0.000	0.05
		C	0.000	0.000	3.333	0.000	0.02
L15	79.83-74.83	A	0.000	0.000	3.890	0.000	0.00
		B	0.000	0.000	5.270	0.000	0.05
		C	0.000	0.000	3.890	0.000	0.02
L16	74.83-74.00	A	0.000	0.000	0.830	0.000	0.00
		B	0.000	0.000	1.059	0.000	0.01
		C	0.000	0.000	0.830	0.000	0.00
L17	74.00-73.75	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.319	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L18	73.75-68.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L19	68.75-63.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L20	63.75-58.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L21	58.75-53.75	A	0.000	0.000	6.330	0.000	0.00
		B	0.000	0.000	7.710	0.000	0.05
		C	0.000	0.000	6.330	0.000	0.02
L22	53.75-53.08	A	0.000	0.000	1.340	0.000	0.00
		B	0.000	0.000	1.525	0.000	0.01
		C	0.000	0.000	1.340	0.000	0.00
L23	53.08-52.83	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L24	52.83-45.91	A	0.000	0.000	13.250	0.000	0.00
		B	0.000	0.000	15.160	0.000	0.07
		C	0.000	0.000	13.250	0.000	0.03
L25	45.91-44.91	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.276	0.000	0.01
		C	0.000	0.000	1.000	0.000	0.00
L26	44.91-39.91	A	0.000	0.000	5.113	0.000	0.00
		B	0.000	0.000	6.493	0.000	0.05
		C	0.000	0.000	5.113	0.000	0.02
L27	39.91-38.58	A	0.000	0.000	2.217	0.000	0.00
		B	0.000	0.000	2.584	0.000	0.01
		C	0.000	0.000	2.217	0.000	0.01
L28	38.58-38.33	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L29	38.33-33.33	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L30	33.33-33.00	A	0.000	0.000	0.550	0.000	0.00
		B	0.000	0.000	0.641	0.000	0.00
		C	0.000	0.000	0.550	0.000	0.00
L31	33.00-32.75	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L32	32.75-27.75	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L33	27.75-23.00	A	0.000	0.000	8.583	0.000	0.00
		B	0.000	0.000	9.894	0.000	0.04
		C	0.000	0.000	8.583	0.000	0.02
L34	23.00-22.75	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L35	22.75-17.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L36	17.75-12.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L37	12.75-7.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L38	7.75-2.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L39	2.75-0.00	A	0.000	0.000	5.500	0.000	0.00
		B	0.000	0.000	6.259	0.000	0.03
		C	0.000	0.000	5.500	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.950	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.977	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.946	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.973	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.941	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.969	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.936	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.931	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.926	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.921	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.915	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.947	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.909	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.942	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	3.436	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.938	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.435	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.936	0.000	0.000	1.220	0.000	0.01
		B		0.000	0.000	3.102	0.000	0.05
		C		0.000	0.000	1.220	0.000	0.02
L13	85.08-84.83	A	0.934	0.000	0.000	0.203	0.000	0.00
		B		0.000	0.000	0.348	0.000	0.00
		C		0.000	0.000	0.203	0.000	0.00
L14	84.83-79.83	A	0.931	0.000	0.000	4.064	0.000	0.02
		B		0.000	0.000	6.953	0.000	0.09
		C		0.000	0.000	4.064	0.000	0.04
L15	79.83-74.83	A	0.926	0.000	0.000	4.684	0.000	0.03
		B		0.000	0.000	7.566	0.000	0.09
		C		0.000	0.000	4.684	0.000	0.05
L16	74.83-74.00	A	0.922	0.000	0.000	0.983	0.000	0.01
		B		0.000	0.000	1.461	0.000	0.02
		C		0.000	0.000	0.983	0.000	0.01
L17	74.00-73.75	A	0.921	0.000	0.000	0.296	0.000	0.00
		B		0.000	0.000	0.440	0.000	0.00
		C		0.000	0.000	0.296	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L18	73.75-68.75	A	0.918	0.000	0.000	5.918	0.000	0.03
		B		0.000	0.000	8.790	0.000	0.10
		C		0.000	0.000	5.918	0.000	0.05
L19	68.75-63.75	A	0.911	0.000	0.000	5.911	0.000	0.03
		B		0.000	0.000	8.776	0.000	0.10
		C		0.000	0.000	5.911	0.000	0.05
L20	63.75-58.75	A	0.904	0.000	0.000	5.904	0.000	0.03
		B		0.000	0.000	8.759	0.000	0.10
		C		0.000	0.000	5.904	0.000	0.05
L21	58.75-53.75	A	0.897	0.000	0.000	7.465	0.000	0.04
		B		0.000	0.000	10.311	0.000	0.10
		C		0.000	0.000	7.465	0.000	0.06
L22	53.75-53.08	A	0.892	0.000	0.000	1.579	0.000	0.01
		B		0.000	0.000	1.960	0.000	0.02
		C		0.000	0.000	1.579	0.000	0.01
L23	53.08-52.83	A	0.891	0.000	0.000	0.589	0.000	0.00
		B		0.000	0.000	0.731	0.000	0.01
		C		0.000	0.000	0.589	0.000	0.00
L24	52.83-45.91	A	0.885	0.000	0.000	15.595	0.000	0.08
		B		0.000	0.000	19.513	0.000	0.17
		C		0.000	0.000	15.595	0.000	0.11
L25	45.91-44.91	A	0.878	0.000	0.000	1.177	0.000	0.01
		B		0.000	0.000	1.743	0.000	0.02
		C		0.000	0.000	1.177	0.000	0.01
L26	44.91-39.91	A	0.872	0.000	0.000	6.015	0.000	0.03
		B		0.000	0.000	8.829	0.000	0.09
		C		0.000	0.000	6.015	0.000	0.05
L27	39.91-38.58	A	0.865	0.000	0.000	2.677	0.000	0.01
		B		0.000	0.000	3.423	0.000	0.03
		C		0.000	0.000	2.677	0.000	0.02
L28	38.58-38.33	A	0.863	0.000	0.000	0.503	0.000	0.00
		B		0.000	0.000	0.643	0.000	0.01
		C		0.000	0.000	0.503	0.000	0.00
L29	38.33-33.33	A	0.857	0.000	0.000	10.047	0.000	0.05
		B		0.000	0.000	12.844	0.000	0.12
		C		0.000	0.000	10.047	0.000	0.07
L30	33.33-33.00	A	0.850	0.000	0.000	0.662	0.000	0.00
		B		0.000	0.000	0.846	0.000	0.01
		C		0.000	0.000	0.662	0.000	0.00
L31	33.00-32.75	A	0.850	0.000	0.000	0.502	0.000	0.00
		B		0.000	0.000	0.641	0.000	0.01
		C		0.000	0.000	0.502	0.000	0.00
L32	32.75-27.75	A	0.843	0.000	0.000	10.019	0.000	0.05
		B		0.000	0.000	12.797	0.000	0.11
		C		0.000	0.000	10.019	0.000	0.07
L33	27.75-23.00	A	0.828	0.000	0.000	10.156	0.000	0.05
		B		0.000	0.000	12.778	0.000	0.11
		C		0.000	0.000	10.156	0.000	0.07
L34	23.00-22.75	A	0.819	0.000	0.000	0.582	0.000	0.00
		B		0.000	0.000	0.719	0.000	0.01
		C		0.000	0.000	0.582	0.000	0.00
L35	22.75-17.75	A	0.809	0.000	0.000	11.619	0.000	0.05
		B		0.000	0.000	14.356	0.000	0.12
		C		0.000	0.000	11.619	0.000	0.07
L36	17.75-12.75	A	0.787	0.000	0.000	11.574	0.000	0.05
		B		0.000	0.000	14.282	0.000	0.11
		C		0.000	0.000	11.574	0.000	0.07
L37	12.75-7.75	A	0.756	0.000	0.000	11.512	0.000	0.05
		B		0.000	0.000	14.182	0.000	0.11
		C		0.000	0.000	11.512	0.000	0.07
L38	7.75-2.75	A	0.707	0.000	0.000	11.414	0.000	0.05
		B		0.000	0.000	14.023	0.000	0.11
		C		0.000	0.000	11.414	0.000	0.07
L39	2.75-0.00	A	0.618	0.000	0.000	6.180	0.000	0.02
		B		0.000	0.000	7.554	0.000	0.05
		C		0.000	0.000	6.180	0.000	0.03

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.00-135.00	1.5290	-1.1860	1.5032	-1.1660
L2	135.00-130.00	1.5376	-1.1927	1.5238	-1.1820
L3	130.00-125.00	1.5455	-1.1988	1.5432	-1.1970
L4	125.00-120.00	1.5529	-1.2045	1.5613	-1.2111
L5	120.00-115.00	1.5598	-1.2099	1.5784	-1.2243
L6	115.00-110.00	1.5662	-1.2149	1.5943	-1.2367
L7	110.00-105.00	1.5723	-1.2196	1.6092	-1.2483
L8	105.00-100.00	1.5780	-1.2241	1.6232	-1.2591
L9	100.00-95.00	1.5834	-1.2282	1.6363	-1.2692
L10	95.00-89.08	1.5890	-1.2325	1.6495	-1.2795
L11	89.08-88.33	1.5903	-1.2336	1.6532	-1.2823
L12	88.33-85.08	1.0763	-0.8349	1.2838	-0.9958
L13	85.08-84.83	0.7860	-0.6097	1.0230	-0.7935
L14	84.83-79.83	0.7928	-0.6150	1.0309	-0.7996
L15	79.83-74.83	0.7438	-0.5770	0.9884	-0.7667
L16	74.83-74.00	0.6520	-0.5058	0.8995	-0.6977
L17	74.00-73.75	0.6534	-0.5068	0.9011	-0.6990
L18	73.75-68.75	0.6594	-0.5115	0.9082	-0.7045
L19	68.75-63.75	0.6708	-0.5203	0.9214	-0.7147
L20	63.75-58.75	0.6819	-0.5289	0.9340	-0.7245
L21	58.75-53.75	0.6013	-0.4664	0.8456	-0.6559
L22	53.75-53.08	0.4455	-0.3456	0.6598	-0.5118
L23	53.08-52.83	0.4464	-0.3462	0.6609	-0.5126
L24	52.83-45.91	0.4667	-0.3620	0.6859	-0.5320
L25	45.91-44.91	0.7104	-0.5510	0.9657	-0.7491
L26	44.91-39.91	0.7076	-0.5489	0.9597	-0.7444
L27	39.91-38.58	0.5276	-0.4093	0.7453	-0.5781
L28	38.58-38.33	0.5291	-0.4104	0.7470	-0.5794
L29	38.33-33.33	0.5337	-0.4140	0.7518	-0.5832
L30	33.33-33.00	0.5384	-0.4176	0.7566	-0.5869
L31	33.00-32.75	0.5389	-0.4180	0.7571	-0.5873
L32	32.75-27.75	0.5434	-0.4215	0.7617	-0.5908
L33	27.75-23.00	0.5226	-0.4053	0.7406	-0.5745
L34	23.00-22.75	0.4911	-0.3810	0.7079	-0.5491
L35	22.75-17.75	0.4952	-0.3841	0.7113	-0.5517
L36	17.75-12.75	0.5030	-0.3902	0.7167	-0.5559
L37	12.75-7.75	0.5106	-0.3961	0.7200	-0.5585
L38	7.75-2.75	0.5182	-0.4020	0.7186	-0.5574
L39	2.75-0.00	0.5240	-0.4065	0.7050	-0.5468

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_a No Ice	K_a Ice
L1	4	HCS 6X12 6AWG(1-3/8)	135.00 - 140.00	1.0000	1.0000
L2	4	HCS 6X12 6AWG(1-3/8)	130.00 - 135.00	1.0000	1.0000
L3	4	HCS 6X12 6AWG(1-3/8)	125.00 - 130.00	1.0000	1.0000
L4	4	HCS 6X12 6AWG(1-3/8)	120.00 - 125.00	1.0000	1.0000
L5	4	HCS 6X12 6AWG(1-3/8)	115.00 - 120.00	1.0000	1.0000
L6	4	HCS 6X12 6AWG(1-3/8)	110.00 - 115.00	1.0000	1.0000
L7	4	HCS 6X12 6AWG(1-3/8)	105.00 - 110.00	1.0000	1.0000
L8	4	HCS 6X12 6AWG(1-3/8)	100.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.00		
L9	4	HCS 6X12 6AWG(1-3/8)	95.00 - 100.00	1.0000	1.0000
L10	4	HCS 6X12 6AWG(1-3/8)	89.08 - 95.00	1.0000	1.0000
L11	4	HCS 6X12 6AWG(1-3/8)	88.33 - 89.08	1.0000	1.0000
L12	4	HCS 6X12 6AWG(1-3/8)	85.08 - 88.33	1.0000	1.0000
L12	27	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L13	4	HCS 6X12 6AWG(1-3/8)	84.83 - 85.08	1.0000	1.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L14	4	HCS 6X12 6AWG(1-3/8)	79.83 - 84.83	1.0000	1.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L15	4	HCS 6X12 6AWG(1-3/8)	74.83 - 79.83	1.0000	1.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	15	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	16	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	27	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L16	4	HCS 6X12 6AWG(1-3/8)	74.00 - 74.83	1.0000	1.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	15	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	16	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L17	4	HCS 6X12 6AWG(1-3/8)	73.75 - 74.00	1.0000	1.0000
L17	14	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	15	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	16	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L18	4	HCS 6X12 6AWG(1-3/8)	68.75 - 73.75	1.0000	1.0000
L18	14	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	15	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	16	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	4	HCS 6X12 6AWG(1-3/8)	63.75 - 68.75	1.0000	1.0000
L19	14	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	15	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	16	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L20	4	HCS 6X12 6AWG(1-3/8)	58.75 - 63.75	1.0000	1.0000
L20	14	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	15	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	16	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L21	4	HCS 6X12 6AWG(1-3/8)	53.75 - 58.75	1.0000	1.0000
L21	14	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	15	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	16	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	21	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	22	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	23	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L22	4	HCS 6X12 6AWG(1-3/8)	53.08 - 53.75	1.0000	1.0000
L22	14	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	15	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	16	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	21	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	22	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	23	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L23	4	HCS 6X12 6AWG(1-3/8)	52.83 - 53.08	1.0000	1.0000
L23	14	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	15	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	16	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	21	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	22	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	23	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L24	4	HCS 6X12 6AWG(1-3/8)	45.91 - 52.83	1.0000	1.0000
L24	14	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	15	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	16	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	21	CCI-SFP-060100	45.91 - 52.83	1.0000	1.0000
L24	22	CCI-SFP-060100	45.91 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	23	CCI-SFP-060100	52.83 45.91 -	1.0000	1.0000
L25	4	HCS 6X12 6AWG(1-3/8)	52.83 44.91 -	1.0000	1.0000
L25	21	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	22	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	23	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L26	4	HCS 6X12 6AWG(1-3/8)	45.91 39.91 -	1.0000	1.0000
L26	21	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	22	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	23	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	24	CCI-SFP-45100	44.91 39.91 -	1.0000	1.0000
L26	25	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L26	26	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L27	4	HCS 6X12 6AWG(1-3/8)	40.08 38.58 -	1.0000	1.0000
L27	21	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	22	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	23	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	24	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	25	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L28	4	HCS 6X12 6AWG(1-3/8)	39.91 38.33 -	1.0000	1.0000
L28	21	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	22	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	23	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	24	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L29	4	HCS 6X12 6AWG(1-3/8)	38.58 33.33 -	1.0000	1.0000
L29	18	CCI-WSFP-060100	38.33 33.33 -	1.0000	1.0000
L29	19	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	20	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	21	CCI-SFP-060100	35.00 35.00 -	1.0000	1.0000
L29	22	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	23	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	24	CCI-SFP-45100	38.33 33.33 -	1.0000	1.0000
			38.33		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	25	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L29	26	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L30	4	HCS 6X12 6AWG(1-3/8)	33.00 - 33.33	1.0000	1.0000
L30	18	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	19	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	20	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	24	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	25	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	26	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L31	4	HCS 6X12 6AWG(1-3/8)	32.75 - 33.00	1.0000	1.0000
L31	18	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	19	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	20	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	24	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	25	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	26	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L32	4	HCS 6X12 6AWG(1-3/8)	27.75 - 32.75	1.0000	1.0000
L32	18	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	19	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	20	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	24	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	25	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	26	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L33	4	HCS 6X12 6AWG(1-3/8)	23.00 - 27.75	1.0000	1.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	12	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	13	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	18	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	19	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	20	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	24	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L34	4	HCS 6X12 6AWG(1-3/8)	22.75 - 23.00	1.0000	1.0000
L34	11	CCI-WSFP-060100	22.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	12	CCI-WSFP-060100	23.00 22.75 - 23.00	1.0000	1.0000
L34	13	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	18	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	19	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	20	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L35	4	HCS 6X12 6AWG(1-3/8)	17.75 - 22.75	1.0000	1.0000
L35	11	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	12	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	13	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	18	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	19	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	20	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L36	4	HCS 6X12 6AWG(1-3/8)	12.75 - 17.75	1.0000	1.0000
L36	11	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	12	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	13	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	18	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	19	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	20	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L37	4	HCS 6X12 6AWG(1-3/8)	7.75 - 12.75	1.0000	1.0000
L37	11	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	12	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	13	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	18	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	19	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	20	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L38	4	HCS 6X12 6AWG(1-3/8)	2.75 - 7.75	1.0000	1.0000
L38	11	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	20	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L39	4	HCS 6X12 6AWG(1-3/8)	0.00 - 2.75	1.0000	1.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	27	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	15	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	16	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	27	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	15	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	16	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L17	14	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	15	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	16	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L18	14	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	15	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	16	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L19	14	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	15	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	16	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L20	14	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	15	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	16	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L21	14	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	15	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	16	CCI-AFP-060100	53.75 -	Auto	0.1857

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	21	CCI-SFP-060100	58.75 53.75 - 55.08	Auto	0.1765
L21	22	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L21	23	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L22	14	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	15	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	16	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	21	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	22	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	23	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L23	14	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	15	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	16	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	21	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	22	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	23	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L24	14	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	15	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	16	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	21	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	22	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	23	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L25	21	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	22	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	23	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L26	21	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	22	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	23	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	24	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	25	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	26	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L27	21	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	22	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	23	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	24	CCI-SFP-45100	38.58 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	25	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L28	21	CCI-SFP-060100	39.91 38.33 -	Auto	0.1496
L28	22	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	23	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	24	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L29	18	CCI-WSFP-060100	38.58 33.33 -	Auto	0.1244
L29	19	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	20	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	21	CCI-SFP-060100	35.00 35.00 -	Auto	0.1370
L29	22	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	23	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	24	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	25	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	26	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L30	18	CCI-WSFP-060100	38.33 33.00 -	Auto	0.1194
L30	19	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	20	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	24	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	25	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	26	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L31	18	CCI-WSFP-060100	33.33 32.75 -	Auto	0.1180
L31	19	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	20	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	24	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	25	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	26	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L32	18	CCI-WSFP-060100	33.00 27.75 -	Auto	0.1048
L32	19	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	20	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	24	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000
L32	25	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	26	CCI-SFP-45100	32.75 27.75 - 32.75	Auto	0.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	12	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	13	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	18	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	19	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	20	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	24	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L34	11	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	12	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	13	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	18	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	19	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	20	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L35	11	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	12	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	13	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	18	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	19	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	20	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L36	11	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	12	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	13	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	18	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	19	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	20	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L37	11	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	12	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	13	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	18	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	19	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	20	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L38	11	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L38	20	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
(2) AIR 32 B2A/B66AA w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
RRUS 4415 B25_CCIV2	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RADIO 4449 B12/B71	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
T-Arm Mount [TA 701-3]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	23.94 30.04 36.16	23.94 30.04 36.16	1.09 1.48 1.95
Miscellaneous [NA 507-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
***									
T-Arm Mount [TA 602-3]	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice	13.40 16.44 19.70	13.40 16.44 19.70	0.77 1.00 1.29
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
***									
(2) MX06FRO840-02 w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
AIRSCALE DUAL RRH 4T4R B2/66A 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
AIRSCALE DUAL RRH 4T4R B2/66A 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B2/66A 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B5/13 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
RVZDC-6627-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
RRFDC-3315-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.03 0.06 0.09
Platform Mount [14' LP 404-1_KCKR]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	33.43 42.79 52.04	33.43 42.79 52.04	2.16 2.82 3.63
2' horizontal 2 1/2"x2 1/2" angle	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
(2) 3' Vertical x 3"x 3" Angle Mount	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									

Load Combinations

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

Comb. No.	Description
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	140 - 135	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-7.11	-1.33	0.77
			Max. Mx	8	-3.56	-27.95	0.44
			Max. My	2	-3.56	-0.72	27.55
			Max. Vy	8	5.26	-27.95	0.44
			Max. Vx	2	-5.24	-0.72	27.55
			Max. Torque	12			1.22
L2	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.54	-1.39	0.80
			Max. Mx	8	-3.82	-54.95	0.53
			Max. My	2	-3.83	-0.82	54.47
			Max. Vy	8	5.54	-54.95	0.53
			Max. Vx	2	-5.53	-0.82	54.47
			Max. Torque	12			1.22
L3	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.68	-1.45	0.84
			Max. Mx	8	-5.07	-85.74	0.62
			Max. My	2	-5.08	-0.93	85.18
			Max. Vy	8	6.76	-85.74	0.62
			Max. Vx	2	-6.75	-0.93	85.18
			Max. Torque	12			1.22
L4	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.14	-1.51	0.87
			Max. Mx	8	-5.37	-120.29	0.71
			Max. My	2	-5.38	-1.03	119.64
			Max. Vy	8	7.05	-120.29	0.71
			Max. Vx	2	-7.04	-1.03	119.64
			Max. Torque	12			1.22
L5	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.01	-2.44	1.41
			Max. Mx	8	-9.99	-175.49	1.12
			Max. My	2	-10.01	-1.56	174.41
			Max. Vy	8	12.14	-175.49	1.12
			Max. Vx	2	-12.08	-1.56	174.41
			Max. Torque	12			2.03
L6	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.53	-2.52	1.45
			Max. Mx	8	-10.39	-236.87	1.41
			Max. My	2	-10.40	-1.87	235.48
			Max. Vy	8	12.41	-236.87	1.41
			Max. Vx	2	-12.35	-1.87	235.48
			Max. Torque	12			2.03
L7	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.06	-2.60	1.50
			Max. Mx	8	-10.81	-299.57	1.69
			Max. My	2	-10.82	-2.17	297.87
			Max. Vy	8	12.67	-299.57	1.69
			Max. Vx	2	-12.61	-2.17	297.87
			Max. Torque	12			2.03
L8	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.60	-2.67	1.54

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-11.25	-363.56	1.97
			Max. My	2	-11.26	-2.47	361.56
			Max. Vy	8	12.93	-363.56	1.97
			Max. Vx	2	-12.87	-2.47	361.56
			Max. Torque	12			2.03
L9	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.16	-2.74	1.58
			Max. Mx	8	-11.71	-428.81	2.24
			Max. My	2	-11.72	-2.76	426.51
			Max. Vy	8	13.18	-428.81	2.24
			Max. Vx	2	-13.12	-2.76	426.51
			Max. Torque	12			2.03
L10	95 - 89.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.35	-2.77	1.60
			Max. Mx	8	-11.87	-450.88	2.33
			Max. My	2	-11.88	-2.85	448.48
			Max. Vy	8	13.27	-450.88	2.33
			Max. Vx	2	-13.21	-2.85	448.48
			Max. Torque	12			2.03
L11	89.08 - 88.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.38	-2.83	1.64
			Max. Mx	8	-12.63	-517.99	2.61
			Max. My	2	-12.64	-3.14	515.29
			Max. Vy	8	13.58	-517.99	2.61
			Max. Vx	2	-13.52	-3.14	515.29
			Max. Torque	12			2.02
L12	88.33 - 85.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.81	-2.88	1.66
			Max. Mx	8	-12.98	-562.38	2.78
			Max. My	2	-12.99	-3.33	559.48
			Max. Vy	8	13.75	-562.38	2.78
			Max. Vx	2	-13.69	-3.33	559.48
			Max. Torque	12			2.02
L13	85.08 - 84.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.86	-2.88	1.66
			Max. Mx	8	-13.03	-565.82	2.80
			Max. My	2	-13.04	-3.34	562.90
			Max. Vy	8	13.75	-565.82	2.80
			Max. Vx	2	-13.69	-3.34	562.90
			Max. Torque	12			2.02
L14	84.83 - 79.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.86	-2.94	1.70
			Max. Mx	8	-13.81	-635.37	3.07
			Max. My	2	-13.82	-3.63	632.16
			Max. Vy	8	14.07	-635.37	3.07
			Max. Vx	2	-14.01	-3.63	632.16
			Max. Torque	12			2.02
L15	79.83 - 74.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.88	-3.01	1.74
			Max. Mx	8	-14.61	-706.49	3.34
			Max. My	2	-14.62	-3.91	702.97
			Max. Vy	8	14.38	-706.49	3.34
			Max. Vx	2	-14.32	-3.91	702.97
			Max. Torque	12			2.02
L16	74.83 - 74	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.05	-3.02	1.74
			Max. Mx	8	-14.75	-718.44	3.38
			Max. My	2	-14.75	-3.96	714.88
			Max. Vy	8	14.43	-718.44	3.38
			Max. Vx	2	-14.37	-3.96	714.88
			Max. Torque	12			2.02
L17	74 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.11	-3.02	1.74
			Max. Mx	8	-14.79	-722.05	3.40

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-14.80	-3.97	718.47
			Max. Vy	8	14.44	-722.05	3.40
			Max. Vx	2	-14.38	-3.97	718.47
			Max. Torque	12			2.02
L18	73.75 - 68.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.25	-3.08	1.78
			Max. Mx	8	-15.69	-795.08	3.67
			Max. My	2	-15.70	-4.26	791.20
			Max. Vy	8	14.77	-795.08	3.67
			Max. Vx	2	-14.71	-4.26	791.20
			Max. Torque	12			2.02
L19	68.75 - 63.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.40	-3.15	1.82
			Max. Mx	8	-16.61	-869.70	3.94
			Max. My	2	-16.61	-4.54	865.52
			Max. Vy	8	15.09	-869.70	3.94
			Max. Vx	2	-15.03	-4.54	865.52
			Max. Torque	12			2.02
L20	63.75 - 58.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.57	-3.21	1.85
			Max. Mx	8	-17.54	-945.89	4.20
			Max. My	2	-17.55	-4.82	941.41
			Max. Vy	8	15.40	-945.89	4.20
			Max. Vx	2	-15.34	-4.82	941.41
			Max. Torque	12			2.02
L21	58.75 - 53.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.78	-3.27	1.89
			Max. Mx	8	-18.49	-1023.62	4.47
			Max. My	2	-18.50	-5.10	1018.84
			Max. Vy	8	15.70	-1023.62	4.47
			Max. Vx	2	-15.65	-5.10	1018.84
			Max. Torque	12			2.02
L22	53.75 - 53.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.95	-3.28	1.89
			Max. Mx	8	-18.63	-1034.16	4.51
			Max. My	2	-18.63	-5.14	1029.33
			Max. Vy	8	15.74	-1034.16	4.51
			Max. Vx	2	-15.68	-5.14	1029.33
			Max. Torque	12			2.02
L23	53.08 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.04	-3.28	1.89
			Max. Mx	8	-18.69	-1038.09	4.52
			Max. My	2	-18.70	-5.15	1033.26
			Max. Vy	20	-15.75	1035.06	-2.79
			Max. Vx	2	-15.70	-5.15	1033.26
			Max. Torque	12			2.02
L24	52.83 - 45.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.64	-3.30	1.91
			Max. Mx	8	-19.17	-1067.20	4.62
			Max. My	2	-19.17	-5.26	1062.25
			Max. Vy	8	15.89	-1067.20	4.62
			Max. Vx	2	-15.83	-5.26	1062.25
			Max. Torque	12			2.02
L25	45.91 - 44.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.77	-3.36	1.94
			Max. Mx	8	-21.70	-1165.18	4.94
			Max. My	2	-21.71	-5.60	1159.87
			Max. Vy	8	16.34	-1165.18	4.94
			Max. Vx	2	-16.28	-5.60	1159.87
			Max. Torque	12			2.02
L26	44.91 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	39.91						
			Max. Compression	26	-35.12	-3.41	1.97
			Max. Mx	8	-22.83	-1247.53	5.21
			Max. My	2	-22.83	-5.88	1241.93
			Max. Vy	8	16.61	-1247.53	5.21
			Max. Vx	2	-16.56	-5.88	1241.93
			Max. Torque	12			2.02
L27	39.91 - 38.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.50	-3.42	1.98
			Max. Mx	8	-23.13	-1269.67	5.28
			Max. My	2	-23.13	-5.95	1263.98
			Max. Vy	8	16.69	-1269.67	5.28
			Max. Vx	2	-16.63	-5.95	1263.98
			Max. Torque	12			2.02
L28	38.58 - 38.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.58	-3.42	1.98
			Max. Mx	8	-23.21	-1273.84	5.29
			Max. My	2	-23.21	-5.96	1268.14
			Max. Vy	20	-16.69	1270.64	-3.46
			Max. Vx	2	-16.63	-5.96	1268.14
			Max. Torque	12			2.02
L29	38.33 - 33.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.29	-3.47	2.01
			Max. Mx	8	-24.61	-1358.06	5.56
			Max. My	2	-24.61	-6.24	1352.06
			Max. Vy	8	17.00	-1358.06	5.56
			Max. Vx	2	-16.94	-6.24	1352.06
			Max. Torque	12			2.02
L30	33.33 - 33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.40	-3.48	2.01
			Max. Mx	8	-24.70	-1363.67	5.57
			Max. My	2	-24.71	-6.26	1357.65
			Max. Vy	8	17.01	-1363.67	5.57
			Max. Vx	2	-16.95	-6.26	1357.65
			Max. Torque	12			2.02
L31	33 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.49	-3.48	2.01
			Max. Mx	8	-24.78	-1367.92	5.59
			Max. My	2	-24.78	-6.27	1361.89
			Max. Vy	20	-17.02	1364.65	-3.71
			Max. Vx	2	-16.97	-6.27	1361.89
			Max. Torque	12			2.02
L32	32.75 - 27.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.22	-3.53	2.04
			Max. Mx	8	-26.19	-1453.77	5.85
			Max. My	2	-26.20	-6.55	1447.44
			Max. Vy	8	17.32	-1453.77	5.85
			Max. Vx	2	-17.26	-6.55	1447.44
			Max. Torque	12			2.02
L33	27.75 - 23	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.87	-3.58	2.07
			Max. Mx	8	-27.56	-1536.61	6.10
			Max. My	2	-27.56	-6.81	1530.00
			Max. Vy	8	17.57	-1536.61	6.10
			Max. Vx	2	-17.52	-6.81	1530.00
			Max. Torque	12			2.01
L34	23 - 22.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.97	-3.58	2.07
			Max. Mx	8	-27.64	-1541.00	6.11
			Max. My	2	-27.65	-6.82	1534.38
			Max. Vy	20	-17.58	1537.61	-4.17
			Max. Vx	2	-17.52	-6.82	1534.38
			Max. Torque	12			2.01
L35	22.75 - 17.75	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-42.82	-3.63	2.10
			Max. Mx	8	-29.18	-1629.57	6.37
			Max. My	2	-29.18	-7.09	1622.65
			Max. Vy	8	17.85	-1629.57	6.37
			Max. Vx	2	-17.79	-7.09	1622.65
			Max. Torque	12			2.01
L36	17.75 - 12.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.69	-3.68	2.13
			Max. Mx	8	-30.74	-1719.38	6.63
			Max. My	2	-30.74	-7.37	1712.18
			Max. Vy	8	18.09	-1719.38	6.63
			Max. Vx	2	-18.03	-7.37	1712.18
			Max. Torque	12			2.01
L37	12.75 - 7.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.56	-3.73	2.16
			Max. Mx	8	-32.32	-1810.39	6.89
			Max. My	2	-32.32	-7.64	1802.89
			Max. Vy	8	18.32	-1810.39	6.89
			Max. Vx	2	-18.27	-7.64	1802.89
			Max. Torque	12			2.01
L38	7.75 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.43	-3.79	2.19
			Max. Mx	8	-33.92	-1902.57	7.14
			Max. My	2	-33.92	-7.90	1894.79
			Max. Vy	8	18.56	-1902.57	7.14
			Max. Vx	2	-18.50	-7.90	1894.79
			Max. Torque	12			2.01
L39	2.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.44	-3.81	2.20
			Max. Mx	8	-34.80	-1953.77	7.28
			Max. My	2	-34.80	-8.05	1945.83
			Max. Vy	8	18.69	-1953.77	7.28
			Max. Vx	2	-18.64	-8.05	1945.83
			Max. Torque	12			2.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	49.44	-0.00	0.00
	Max. H_x	20	34.81	18.67	-0.05
	Max. H_z	3	26.11	-0.05	18.62
	Max. M_x	2	1945.83	-0.05	18.62
	Max. M_z	8	1953.77	-18.67	0.05
	Max. Torsion	12	2.01	-9.30	-16.10
	Min. Vert	13	26.11	-9.30	-16.10
	Min. H_x	9	26.11	-18.67	0.05
	Min. H_z	15	26.11	0.05	-18.62
	Min. M_x	14	-1943.71	0.05	-18.62
	Min. M_z	20	-1950.10	18.67	-0.05
	Min. Torsion	24	-2.01	9.30	16.10

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	29.01	0.00	0.00	-0.85	-1.47	0.00
1.2 Dead+1.0 Wind 0 deg -	34.81	0.05	-18.62	-1945.83	-8.05	1.75

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	26.11	0.05	-18.62	-1919.39	-7.47	1.72
1.2 Dead+1.0 Wind 30 deg - No Ice	34.81	9.38	-16.15	-1688.37	-983.19	1.01
0.9 Dead+1.0 Wind 30 deg - No Ice	26.11	9.38	-16.15	-1665.40	-969.50	0.99
1.2 Dead+1.0 Wind 60 deg - No Ice	34.81	16.20	-9.35	-978.82	-1695.36	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	26.11	16.20	-9.35	-965.38	-1672.09	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	34.81	18.67	-0.05	-7.28	-1953.77	-1.01
0.9 Dead+1.0 Wind 90 deg - No Ice	26.11	18.67	-0.05	-6.91	-1927.02	-0.99
1.2 Dead+1.0 Wind 120 deg - No Ice	34.81	16.15	9.27	965.94	-1689.16	-1.75
0.9 Dead+1.0 Wind 120 deg - No Ice	26.11	16.15	9.27	953.22	-1665.98	-1.72
1.2 Dead+1.0 Wind 150 deg - No Ice	34.81	9.30	16.10	1680.08	-972.42	-2.01
0.9 Dead+1.0 Wind 150 deg - No Ice	26.11	9.30	16.10	1657.76	-958.88	-1.98
1.2 Dead+1.0 Wind 180 deg - No Ice	34.81	-0.05	18.62	1943.71	4.41	-1.74
0.9 Dead+1.0 Wind 180 deg - No Ice	26.11	-0.05	18.62	1917.84	4.81	-1.71
1.2 Dead+1.0 Wind 210 deg - No Ice	34.81	-9.38	16.15	1686.24	979.53	-1.00
0.9 Dead+1.0 Wind 210 deg - No Ice	26.11	-9.38	16.15	1663.84	966.82	-0.98
1.2 Dead+1.0 Wind 240 deg - No Ice	34.81	-16.20	9.35	976.70	1691.69	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	26.11	-16.20	9.35	963.83	1669.40	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	34.81	-18.67	0.05	5.18	1950.10	1.00
0.9 Dead+1.0 Wind 270 deg - No Ice	26.11	-18.67	0.05	5.37	1924.33	0.98
1.2 Dead+1.0 Wind 300 deg - No Ice	34.81	-16.15	-9.27	-968.04	1685.51	1.74
0.9 Dead+1.0 Wind 300 deg - No Ice	26.11	-16.15	-9.27	-954.76	1663.30	1.71
1.2 Dead+1.0 Wind 330 deg - No Ice	34.81	-9.30	-16.10	-1682.18	968.78	2.01
0.9 Dead+1.0 Wind 330 deg - No Ice	26.11	-9.30	-16.10	-1659.30	956.22	1.98
1.2 Dead+1.0 Ice+1.0 Temp	49.44	0.00	-0.00	-2.20	-3.81	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	49.44	0.00	-3.56	-371.44	-4.53	0.30
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	49.44	1.79	-3.09	-322.30	-189.42	0.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	49.44	3.09	-1.79	-187.40	-324.59	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	49.44	3.57	-0.00	-2.89	-373.83	-0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	49.44	3.09	1.78	181.79	-323.94	-0.30
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	49.44	1.78	3.08	317.16	-188.30	-0.34
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	49.44	-0.00	3.56	366.95	-3.24	-0.30
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	49.44	-1.79	3.09	317.81	181.64	-0.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	49.44	-3.09	1.79	182.91	316.81	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	49.44	-3.57	0.00	-1.60	366.05	0.17
1.2 Dead+1.0 Wind 300	49.44	-3.09	-1.78	-186.28	316.16	0.30

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	49.44	-1.78	-3.08	-321.65	180.52	0.34
Dead+Wind 0 deg - Service	29.01	0.01	-4.94	-513.47	-3.16	0.47
Dead+Wind 30 deg - Service	29.01	2.49	-4.29	-445.61	-260.18	0.27
Dead+Wind 60 deg - Service	29.01	4.30	-2.48	-258.59	-447.90	-0.00
Dead+Wind 90 deg - Service	29.01	4.96	-0.01	-2.52	-516.01	-0.27
Dead+Wind 120 deg - Service	29.01	4.29	2.46	254.00	-446.26	-0.47
Dead+Wind 150 deg - Service	29.01	2.47	4.28	442.23	-257.34	-0.54
Dead+Wind 180 deg - Service	29.01	-0.01	4.94	511.72	0.12	-0.46
Dead+Wind 210 deg - Service	29.01	-2.49	4.29	443.86	257.15	-0.27
Dead+Wind 240 deg - Service	29.01	-4.30	2.48	256.84	444.86	-0.00
Dead+Wind 270 deg - Service	29.01	-4.96	0.01	0.77	512.97	0.27
Dead+Wind 300 deg - Service	29.01	-4.29	-2.46	-255.75	443.22	0.46
Dead+Wind 330 deg - Service	29.01	-2.47	-4.28	-443.98	254.31	0.54

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-29.01	0.00	-0.00	29.01	0.00	0.000%
2	0.05	-34.81	-18.62	-0.05	34.81	18.62	0.000%
3	0.05	-26.11	-18.62	-0.05	26.11	18.62	0.000%
4	9.38	-34.81	-16.15	-9.38	34.81	16.15	0.000%
5	9.38	-26.11	-16.15	-9.38	26.11	16.15	0.000%
6	16.20	-34.81	-9.35	-16.20	34.81	9.35	0.000%
7	16.20	-26.11	-9.35	-16.20	26.11	9.35	0.000%
8	18.67	-34.81	-0.05	-18.67	34.81	0.05	0.000%
9	18.67	-26.11	-0.05	-18.67	26.11	0.05	0.000%
10	16.15	-34.81	9.27	-16.15	34.81	-9.27	0.000%
11	16.15	-26.11	9.27	-16.15	26.11	-9.27	0.000%
12	9.30	-34.81	16.10	-9.30	34.81	-16.10	0.000%
13	9.30	-26.11	16.10	-9.30	26.11	-16.10	0.000%
14	-0.05	-34.81	18.62	0.05	34.81	-18.62	0.000%
15	-0.05	-26.11	18.62	0.05	26.11	-18.62	0.000%
16	-9.38	-34.81	16.15	9.38	34.81	-16.15	0.000%
17	-9.38	-26.11	16.15	9.38	26.11	-16.15	0.000%
18	-16.20	-34.81	9.35	16.20	34.81	-9.35	0.000%
19	-16.20	-26.11	9.35	16.20	26.11	-9.35	0.000%
20	-18.67	-34.81	0.05	18.67	34.81	-0.05	0.000%
21	-18.67	-26.11	0.05	18.67	26.11	-0.05	0.000%
22	-16.15	-34.81	-9.27	16.15	34.81	9.27	0.000%
23	-16.15	-26.11	-9.27	16.15	26.11	9.27	0.000%
24	-9.30	-34.81	-16.10	9.30	34.81	16.10	0.000%
25	-9.30	-26.11	-16.10	9.30	26.11	16.10	0.000%
26	0.00	-49.44	0.00	-0.00	49.44	0.00	0.000%
27	0.00	-49.44	-3.56	-0.00	49.44	3.56	0.000%
28	1.79	-49.44	-3.09	-1.79	49.44	3.09	0.000%
29	3.09	-49.44	-1.79	-3.09	49.44	1.79	0.000%
30	3.57	-49.44	-0.00	-3.57	49.44	0.00	0.000%
31	3.09	-49.44	1.78	-3.09	49.44	-1.78	0.000%
32	1.78	-49.44	3.08	-1.78	49.44	-3.08	0.000%
33	-0.00	-49.44	3.56	0.00	49.44	-3.56	0.000%
34	-1.79	-49.44	3.09	1.79	49.44	-3.09	0.000%
35	-3.09	-49.44	1.79	3.09	49.44	-1.79	0.000%
36	-3.57	-49.44	0.00	3.57	49.44	-0.00	0.000%
37	-3.09	-49.44	-1.78	3.09	49.44	1.78	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-1.78	-49.44	-3.08	1.78	49.44	3.08	0.000%
39	0.01	-29.01	-4.94	-0.01	29.01	4.94	0.000%
40	2.49	-29.01	-4.29	-2.49	29.01	4.29	0.000%
41	4.30	-29.01	-2.48	-4.30	29.01	2.48	0.000%
42	4.96	-29.01	-0.01	-4.96	29.01	0.01	0.000%
43	4.29	-29.01	2.46	-4.29	29.01	-2.46	0.000%
44	2.47	-29.01	4.28	-2.47	29.01	-4.28	0.000%
45	-0.01	-29.01	4.94	0.01	29.01	-4.94	0.000%
46	-2.49	-29.01	4.29	2.49	29.01	-4.29	0.000%
47	-4.30	-29.01	2.48	4.30	29.01	-2.48	0.000%
48	-4.96	-29.01	0.01	4.96	29.01	-0.01	0.000%
49	-4.29	-29.01	-2.46	4.29	29.01	2.46	0.000%
50	-2.47	-29.01	-4.28	2.47	29.01	4.28	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000489
2	Yes	6	0.00000001	0.00013823
3	Yes	5	0.00000001	0.00094968
4	Yes	7	0.00000001	0.00009173
5	Yes	6	0.00000001	0.00045620
6	Yes	7	0.00000001	0.00008891
7	Yes	6	0.00000001	0.00044174
8	Yes	6	0.00000001	0.00008609
9	Yes	5	0.00000001	0.00058795
10	Yes	7	0.00000001	0.00008313
11	Yes	6	0.00000001	0.00041322
12	Yes	7	0.00000001	0.00009353
13	Yes	6	0.00000001	0.00046618
14	Yes	6	0.00000001	0.00011448
15	Yes	5	0.00000001	0.00078708
16	Yes	7	0.00000001	0.00008558
17	Yes	6	0.00000001	0.00042589
18	Yes	7	0.00000001	0.00008824
19	Yes	6	0.00000001	0.00043921
20	Yes	5	0.00000001	0.00092235
21	Yes	5	0.00000001	0.00042647
22	Yes	7	0.00000001	0.00009258
23	Yes	6	0.00000001	0.00046145
24	Yes	7	0.00000001	0.00008236
25	Yes	6	0.00000001	0.00040970
26	Yes	5	0.00000001	0.00011514
27	Yes	6	0.00000001	0.00059209
28	Yes	6	0.00000001	0.00065134
29	Yes	6	0.00000001	0.00065211
30	Yes	6	0.00000001	0.00059825
31	Yes	6	0.00000001	0.00063742
32	Yes	6	0.00000001	0.00063525
33	Yes	6	0.00000001	0.00057656
34	Yes	6	0.00000001	0.00061529
35	Yes	6	0.00000001	0.00061511
36	Yes	6	0.00000001	0.00057150
37	Yes	6	0.00000001	0.00062577
38	Yes	6	0.00000001	0.00062735
39	Yes	5	0.00000001	0.00014420
40	Yes	5	0.00000001	0.00048765
41	Yes	5	0.00000001	0.00045134
42	Yes	5	0.00000001	0.00009694
43	Yes	5	0.00000001	0.00039390
44	Yes	5	0.00000001	0.00051698
45	Yes	5	0.00000001	0.00013725
46	Yes	5	0.00000001	0.00040789
47	Yes	5	0.00000001	0.00043623
48	Yes	5	0.00000001	0.00009058

49	Yes	5	0.00000001	0.00050181
50	Yes	5	0.00000001	0.00038693

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	26.230	41	1.8761	0.0126
L2	135 - 130	24.272	41	1.8624	0.0114
L3	130 - 125	22.337	41	1.8315	0.0103
L4	125 - 120	20.442	41	1.7867	0.0093
L5	120 - 115	18.601	41	1.7288	0.0085
L6	115 - 110	16.827	41	1.6565	0.0075
L7	110 - 105	15.139	41	1.5655	0.0063
L8	105 - 100	13.554	41	1.4598	0.0053
L9	100 - 95	12.086	41	1.3428	0.0044
L10	95 - 89.08	10.745	41	1.2169	0.0036
L11	93.33 - 88.33	10.327	41	1.1733	0.0033
L12	88.33 - 85.08	9.132	41	1.1009	0.0030
L13	85.08 - 84.83	8.410	41	1.0201	0.0026
L14	84.83 - 79.83	8.357	41	1.0166	0.0026
L15	79.83 - 74.83	7.330	41	0.9446	0.0023
L16	74.83 - 74	6.379	41	0.8703	0.0020
L17	74 - 73.75	6.229	41	0.8579	0.0019
L18	73.75 - 68.75	6.184	41	0.8546	0.0019
L19	68.75 - 63.75	5.325	41	0.7876	0.0017
L20	63.75 - 58.75	4.536	41	0.7192	0.0015
L21	58.75 - 53.75	3.819	41	0.6488	0.0013
L22	53.75 - 53.08	3.177	41	0.5784	0.0011
L23	53.08 - 52.83	3.096	41	0.5690	0.0010
L24	52.83 - 45.91	3.067	41	0.5663	0.0010
L25	50.99 - 44.91	2.852	41	0.5457	0.0010
L26	44.91 - 39.91	2.183	41	0.4979	0.0009
L27	39.91 - 38.58	1.701	41	0.4225	0.0007
L28	38.58 - 38.33	1.586	41	0.4025	0.0007
L29	38.33 - 33.33	1.565	41	0.3997	0.0007
L30	33.33 - 33	1.176	41	0.3443	0.0006
L31	33 - 32.75	1.152	41	0.3406	0.0005
L32	32.75 - 27.75	1.134	41	0.3379	0.0005
L33	27.75 - 23	0.809	41	0.2831	0.0004
L34	23 - 22.75	0.554	41	0.2305	0.0003
L35	22.75 - 17.75	0.542	41	0.2280	0.0003
L36	17.75 - 12.75	0.329	41	0.1778	0.0003
L37	12.75 - 7.75	0.170	41	0.1273	0.0002
L38	7.75 - 2.75	0.063	41	0.0774	0.0001
L39	2.75 - 0	0.008	41	0.0273	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	41	26.230	1.8761	0.0126	12694
127.00	T-Arm Mount [TA 602-3]	41	21.194	1.8062	0.0097	6209
118.00	(2) MX06FRO840-02 w/ Mount Pipe	41	17.882	1.7019	0.0081	4040

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	99.045	6	7.0782	0.0474
L2	135 - 130	91.683	6	7.0318	0.0427
L3	130 - 125	84.404	6	6.9197	0.0386
L4	125 - 120	77.270	6	6.7539	0.0351
L5	120 - 115	70.334	6	6.5378	0.0319
L6	115 - 110	63.647	6	6.2673	0.0280
L7	110 - 105	57.278	6	5.9255	0.0238
L8	105 - 100	51.294	6	5.5277	0.0200
L9	100 - 95	45.748	6	5.0859	0.0166
L10	95 - 89.08	40.679	6	4.6101	0.0135
L11	93.33 - 88.33	39.098	6	4.4450	0.0126
L12	88.33 - 85.08	34.577	6	4.1711	0.0111
L13	85.08 - 84.83	31.846	6	3.8652	0.0097
L14	84.83 - 79.83	31.644	6	3.8520	0.0096
L15	79.83 - 74.83	27.757	6	3.5794	0.0084
L16	74.83 - 74	24.160	6	3.2977	0.0074
L17	74 - 73.75	23.591	6	3.2510	0.0072
L18	73.75 - 68.75	23.421	6	3.2385	0.0071
L19	68.75 - 63.75	20.165	6	2.9844	0.0063
L20	63.75 - 58.75	17.178	6	2.7253	0.0055
L21	58.75 - 53.75	14.465	6	2.4583	0.0047
L22	53.75 - 53.08	12.032	6	2.1916	0.0040
L23	53.08 - 52.83	11.727	6	2.1561	0.0039
L24	52.83 - 45.91	11.614	6	2.1455	0.0039
L25	50.99 - 44.91	10.803	6	2.0676	0.0037
L26	44.91 - 39.91	8.268	6	1.8864	0.0033
L27	39.91 - 38.58	6.443	6	1.6007	0.0027
L28	38.58 - 38.33	6.007	6	1.5247	0.0025
L29	38.33 - 33.33	5.928	6	1.5144	0.0025
L30	33.33 - 33	4.453	6	1.3041	0.0021
L31	33 - 32.75	4.363	6	1.2903	0.0021
L32	32.75 - 27.75	4.296	6	1.2799	0.0020
L33	27.75 - 23	3.064	6	1.0722	0.0017
L34	23 - 22.75	2.097	6	0.8729	0.0013
L35	22.75 - 17.75	2.052	6	0.8633	0.0013
L36	17.75 - 12.75	1.247	6	0.6733	0.0010
L37	12.75 - 7.75	0.643	6	0.4819	0.0007
L38	7.75 - 2.75	0.237	6	0.2932	0.0004
L39	2.75 - 0	0.030	6	0.1032	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	6	99.045	7.0782	0.0474	3687
127.00	T-Arm Mount [TA 602-3]	6	80.103	6.8262	0.0364	1724
118.00	(2) MX06FRO840-02 w/ Mount Pipe	6	67.625	6.4373	0.0304	1107

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.00	0.00	0.0	11.1095	-3.55	649.91	0.005
L2	135 - 130 (2)	TP19.7101x18.8551x0.1875	5.00	0.00	0.0	11.6184	-3.82	679.68	0.006
L3	130 - 125 (3)	TP20.5652x19.7101x0.1875	5.00	0.00	0.0	12.1273	-5.07	709.45	0.007
L4	125 - 120 (4)	TP21.4203x20.5652x0.1875	5.00	0.00	0.0	12.6362	-5.37	739.22	0.007
L5	120 - 115 (5)	TP22.2753x21.4203x0.1875	5.00	0.00	0.0	13.1450	-9.99	768.98	0.013
L6	115 - 110 (6)	TP23.1304x22.2753x0.1875	5.00	0.00	0.0	13.6539	-10.38	798.75	0.013
L7	110 - 105 (7)	TP23.9855x23.1304x0.1875	5.00	0.00	0.0	14.1628	-10.80	828.52	0.013
L8	105 - 100 (8)	TP24.8405x23.9855x0.1875	5.00	0.00	0.0	14.6716	-11.24	858.29	0.013
L9	100 - 95 (9)	TP25.6956x24.8405x0.1875	5.00	0.00	0.0	15.1805	-11.71	888.06	0.013
L10	95 - 89.08 (10)	TP26.708x25.6956x0.1875	5.92	0.00	0.0	15.3505	-11.86	898.00	0.013
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.2188	5.00	0.00	0.0	18.2205	-12.63	1065.90	0.012
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.2188	3.25	0.00	0.0	18.6063	-12.98	1088.47	0.012
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	0.25	0.00	0.0	33.8471	-13.03	1980.06	0.007
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	5.00	0.00	0.0	34.3946	-13.81	2012.09	0.007
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	5.00	0.00	0.0	34.9080	-14.61	2042.12	0.007
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	0.83	0.00	0.0	35.0825	-14.74	2052.33	0.007
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	0.25	0.00	0.0	40.1561	-14.79	2349.13	0.006
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	5.00	0.00	0.0	40.7865	-15.69	2386.01	0.007
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	5.00	0.00	0.0	41.3827	-16.61	2420.89	0.007
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	5.00	0.00	0.0	41.3362	-17.54	2418.17	0.007
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	5.00	0.00	0.0	42.4726	-18.49	2484.65	0.007
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	0.67	0.00	0.0	42.6249	-18.62	2493.56	0.007
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	0.25	0.00	0.0	53.9587	-18.69	3156.59	0.006
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	6.92	0.00	0.0	54.4893	-19.17	3187.62	0.006
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	6.08	0.00	0.0	41.9587	-21.70	2454.58	0.009
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	5.00	0.00	0.0	43.0444	-22.83	2518.10	0.009
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	1.33	0.00	0.0	42.6639	-23.13	2495.84	0.009
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	0.25	0.00	0.0	60.0599	-23.21	3513.50	0.007
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	5.00	0.00	0.0	60.2077	-24.61	3522.15	0.007
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	0.33	0.00	0.0	60.3051	-24.70	3527.85	0.007
L31	33 - 32.75	TP35.5285x35.4858x0.54	0.25	0.00	0.0	60.378	-24.77	3532.17	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(31)	38				9			
L32	32.75 - 27.75	TP36.3837x35.5285x0.54	5.00	0.00	0.0	61.854	-26.19	3618.51	0.007
	(32)	38				9			
L33	27.75 - 23	TP37.1961x36.3837x0.53	4.75	0.00	0.0	61.823	-27.56	3616.70	0.008
	(33)	13				9			
L34	23 - 22.75	TP37.2389x37.1961x0.58	0.25	0.00	0.0	67.629	-27.64	3956.31	0.007
	(34)	13				3			
L35	22.75 - 17.75	TP38.0941x37.2389x0.58	5.00	0.00	0.0	69.207	-29.18	4048.61	0.007
	(35)	13				0			
L36	17.75 - 12.75	TP38.9493x38.0941x0.56	5.00	0.00	0.0	69.285	-30.74	4053.17	0.008
	(36)	88				0			
L37	12.75 - 7.75	TP39.8045x38.9493x0.56	5.00	0.00	0.0	70.828	-32.32	4143.48	0.008
	(37)	88				8			
L38	7.75 - 2.75	TP40.6596x39.8045x0.55	5.00	0.00	0.0	70.804	-33.92	4142.04	0.008
	(38)	63				1			
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	2.75	0.00	0.0	71.634	-34.80	4190.62	0.008
						5			

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	28.10	312.58	0.090	0.00	312.58	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18	55.15	338.07	0.163	0.00	338.07	0.000
		75						
L3	130 - 125 (3)	TP20.5652x19.7101x0.18	85.98	364.17	0.236	0.00	364.17	0.000
		75						
L4	125 - 120 (4)	TP21.4203x20.5652x0.18	120.57	390.83	0.308	0.00	390.83	0.000
		75						
L5	120 - 115 (5)	TP22.2753x21.4203x0.18	175.97	418.02	0.421	0.00	418.02	0.000
		75						
L6	115 - 110 (6)	TP23.1304x22.2753x0.18	237.50	445.68	0.533	0.00	445.68	0.000
		75						
L7	110 - 105 (7)	TP23.9855x23.1304x0.18	300.35	473.77	0.634	0.00	473.77	0.000
		75						
L8	105 - 100 (8)	TP24.8405x23.9855x0.18	364.49	502.25	0.726	0.00	502.25	0.000
		75						
L9	100 - 95 (9)	TP25.6956x24.8405x0.18	429.89	531.06	0.809	0.00	531.06	0.000
		75						
L10	95 - 89.08	TP26.708x25.6956x0.187	452.01	540.75	0.836	0.00	540.75	0.000
	(10)	5						
L11	89.08 - 88.33	TP26.4612x25.6062x0.21	519.27	684.55	0.759	0.00	684.55	0.000
	(11)	88						
L12	88.33 - 85.08	TP27.0169x26.4612x0.21	563.76	709.12	0.795	0.00	709.12	0.000
	(12)	88						
L13	85.08 - 84.83	TP27.0597x27.0169x0.4	567.20	1368.87	0.414	0.00	1368.87	0.000
	(13)							
L14	84.83 - 79.83	TP27.9147x27.0597x0.39	636.90	1436.93	0.443	0.00	1436.93	0.000
	(14)	38						
L15	79.83 - 74.83	TP28.7697x27.9147x0.38	708.17	1504.99	0.471	0.00	1504.99	0.000
	(15)	75						
L16	74.83 - 74	TP28.9116x28.7697x0.38	720.15	1520.18	0.474	0.00	1520.18	0.000
	(16)	75						
L17	74 - 73.75	TP28.9544x28.9116x0.44	723.76	1735.82	0.417	0.00	1735.82	0.000
	(17)	38						
L18	73.75 - 68.75	TP29.8094x28.9544x0.43	796.94	1817.52	0.438	0.00	1817.52	0.000
	(18)	75						
L19	68.75 - 63.75	TP30.6644x29.8094x0.43	871.72	1899.34	0.459	0.00	1899.34	0.000
	(19)	13						
L20	63.75 - 58.75	TP31.5194x30.6644x0.41	948.05	1953.18	0.485	0.00	1953.18	0.000
	(20)	88						
L21	58.75 - 53.75	TP32.3744x31.5194x0.41	1025.93	2062.78	0.497	0.00	2062.78	0.000
	(21)	88						
L22	53.75 - 53.08	TP32.4889x32.3744x0.41	1036.48	2077.70	0.499	0.00	2077.70	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	(22)	88						
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.53 13	1040.43	2615.28	0.398	0.00	2615.28	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.531 3	1069.58	2667.39	0.401	0.00	2667.39	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	1167.74	2109.62	0.554	0.00	2109.62	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	1250.25	2220.88	0.563	0.00	2220.88	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.39 38	1272.43	2217.00	0.574	0.00	2217.00	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.55 63	1276.60	3095.28	0.412	0.00	3095.28	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.54 38	1360.97	3184.44	0.427	0.00	3184.44	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.54 38	1366.58	3194.83	0.428	0.00	3194.83	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.54 38	1370.85	3202.72	0.428	0.00	3202.72	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.54 38	1456.84	3362.43	0.433	0.00	3362.43	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.53 13	1539.82	3440.42	0.448	0.00	3440.42	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.58 13	1544.22	3757.68	0.411	0.00	3757.68	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.58 13	1632.93	3936.44	0.415	0.00	3936.44	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.56 88	1722.88	4034.72	0.427	0.00	4034.72	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.56 88	1814.03	4217.88	0.430	0.00	4217.88	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.55 63	1906.36	4312.30	0.442	0.00	4312.30	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	1957.63	4414.75	0.443	0.00	4414.75	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.27	194.97	0.027	0.00	318.74	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18 75	5.55	203.90	0.027	0.00	348.61	0.000
L3	130 - 125 (3)	TP20.5652x19.7101x0.18 75	6.77	212.83	0.032	0.00	379.82	0.000
L4	125 - 120 (4)	TP21.4203x20.5652x0.18 75	7.06	221.76	0.032	0.00	412.36	0.000
L5	120 - 115 (5)	TP22.2753x21.4203x0.18 75	12.17	230.69	0.053	0.00	446.24	0.000
L6	115 - 110 (6)	TP23.1304x22.2753x0.18 75	12.44	239.63	0.052	0.00	481.46	0.000
L7	110 - 105 (7)	TP23.9855x23.1304x0.18 75	12.70	248.56	0.051	0.00	518.02	0.000
L8	105 - 100 (8)	TP24.8405x23.9855x0.18 75	12.96	257.49	0.050	0.00	555.91	0.000
L9	100 - 95 (9)	TP25.6956x24.8405x0.18 75	13.21	266.42	0.050	0.00	595.14	0.000
L10	95 - 89.08 (10)	TP26.708x25.6956x0.187 5	13.30	269.40	0.049	0.00	608.54	0.000
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.21 88	13.61	319.77	0.043	0.00	734.89	0.000
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.21 88	13.78	326.54	0.042	0.00	766.34	0.000
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	13.78	594.02	0.023	0.00	1386.87	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	14.10	603.63	0.023	0.00	1454.83	0.000
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	14.41	612.63	0.024	0.00	1522.75	0.000
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	14.46	615.70	0.023	0.00	1538.02	0.000
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	14.47	704.74	0.021	0.00	1759.61	0.000
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	14.80	715.80	0.021	0.00	1841.22	0.000
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	15.11	726.27	0.021	0.00	1922.91	0.000
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	15.43	725.45	0.021	0.00	1975.87	0.000
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	15.73	745.39	0.021	0.00	2085.99	0.000
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	15.77	748.07	0.021	0.00	2100.97	0.000
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	15.78	946.98	0.017	0.00	2653.84	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	15.91	956.29	0.017	0.00	2706.28	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	16.37	736.38	0.022	0.00	2131.24	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	16.64	755.43	0.022	0.00	2242.97	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	16.72	748.75	0.022	0.00	2238.47	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	16.72	1054.05	0.016	0.00	3140.14	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	17.02	1056.65	0.016	0.00	3228.16	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	17.04	1058.36	0.016	0.00	3238.62	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.5438	17.05	1059.65	0.016	0.00	3246.55	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.5438	17.34	1085.55	0.016	0.00	3407.21	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.5313	17.60	1085.01	0.016	0.00	3483.88	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.5813	17.61	1186.89	0.015	0.00	3810.28	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.5813	17.88	1214.58	0.015	0.00	3990.13	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.5688	18.11	1215.95	0.015	0.00	4087.03	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.5688	18.35	1243.05	0.015	0.00	4271.18	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.5563	18.59	1242.61	0.015	0.00	4364.12	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	18.72	1257.19	0.015	0.00	4467.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 135 (1)	0.005	0.090	0.000	0.027	0.000	0.096	1.050	4.8.2
L2	135 - 130 (2)	0.006	0.163	0.000	0.027	0.000	0.169	1.050	4.8.2
L3	130 - 125 (3)	0.007	0.236	0.000	0.032	0.000	0.244	1.050	4.8.2
L4	125 - 120 (4)	0.007	0.308	0.000	0.032	0.000	0.317	1.050	4.8.2
L5	120 - 115 (5)	0.013	0.421	0.000	0.053	0.000	0.437	1.050	4.8.2
L6	115 - 110 (6)	0.013	0.533	0.000	0.052	0.000	0.549	1.050	4.8.2
L7	110 - 105 (7)	0.013	0.634	0.000	0.051	0.000	0.650	1.050	4.8.2
L8	105 - 100 (8)	0.013	0.726	0.000	0.050	0.000	0.741	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L9	100 - 95 (9)	0.013	0.809	0.000	0.050	0.000	0.825	1.050	4.8.2
L10	95 - 89.08 (10)	0.013	0.836	0.000	0.049	0.000	0.852	1.050	4.8.2
L11	89.08 - 88.33 (11)	0.012	0.759	0.000	0.043	0.000	0.772	1.050	4.8.2
L12	88.33 - 85.08 (12)	0.012	0.795	0.000	0.042	0.000	0.809	1.050	4.8.2
L13	85.08 - 84.83 (13)	0.007	0.414	0.000	0.023	0.000	0.421	1.050	4.8.2
L14	84.83 - 79.83 (14)	0.007	0.443	0.000	0.023	0.000	0.451	1.050	4.8.2
L15	79.83 - 74.83 (15)	0.007	0.471	0.000	0.024	0.000	0.478	1.050	4.8.2
L16	74.83 - 74 (16)	0.007	0.474	0.000	0.023	0.000	0.481	1.050	4.8.2
L17	74 - 73.75 (17)	0.006	0.417	0.000	0.021	0.000	0.424	1.050	4.8.2
L18	73.75 - 68.75 (18)	0.007	0.438	0.000	0.021	0.000	0.445	1.050	4.8.2
L19	68.75 - 63.75 (19)	0.007	0.459	0.000	0.021	0.000	0.466	1.050	4.8.2
L20	63.75 - 58.75 (20)	0.007	0.485	0.000	0.021	0.000	0.493	1.050	4.8.2
L21	58.75 - 53.75 (21)	0.007	0.497	0.000	0.021	0.000	0.505	1.050	4.8.2
L22	53.75 - 53.08 (22)	0.007	0.499	0.000	0.021	0.000	0.507	1.050	4.8.2
L23	53.08 - 52.83 (23)	0.006	0.398	0.000	0.017	0.000	0.404	1.050	4.8.2
L24	52.83 - 45.91 (24)	0.006	0.401	0.000	0.017	0.000	0.407	1.050	4.8.2
L25	45.91 - 44.91 (25)	0.009	0.554	0.000	0.022	0.000	0.563	1.050	4.8.2
L26	44.91 - 39.91 (26)	0.009	0.563	0.000	0.022	0.000	0.573	1.050	4.8.2
L27	39.91 - 38.58 (27)	0.009	0.574	0.000	0.022	0.000	0.584	1.050	4.8.2
L28	38.58 - 38.33 (28)	0.007	0.412	0.000	0.016	0.000	0.419	1.050	4.8.2
L29	38.33 - 33.33 (29)	0.007	0.427	0.000	0.016	0.000	0.435	1.050	4.8.2
L30	33.33 - 33 (30)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L31	33 - 32.75 (31)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L32	32.75 - 27.75 (32)	0.007	0.433	0.000	0.016	0.000	0.441	1.050	4.8.2
L33	27.75 - 23 (33)	0.008	0.448	0.000	0.016	0.000	0.455	1.050	4.8.2
L34	23 - 22.75 (34)	0.007	0.411	0.000	0.015	0.000	0.418	1.050	4.8.2
L35	22.75 - 17.75 (35)	0.007	0.415	0.000	0.015	0.000	0.422	1.050	4.8.2
L36	17.75 - 12.75 (36)	0.008	0.427	0.000	0.015	0.000	0.435	1.050	4.8.2
L37	12.75 - 7.75 (37)	0.008	0.430	0.000	0.015	0.000	0.438	1.050	4.8.2
L38	7.75 - 2.75 (38)	0.008	0.442	0.000	0.015	0.000	0.450	1.050	4.8.2
L39	2.75 - 0 (39)	0.008	0.443	0.000	0.015	0.000	0.452	1.050	4.8.2

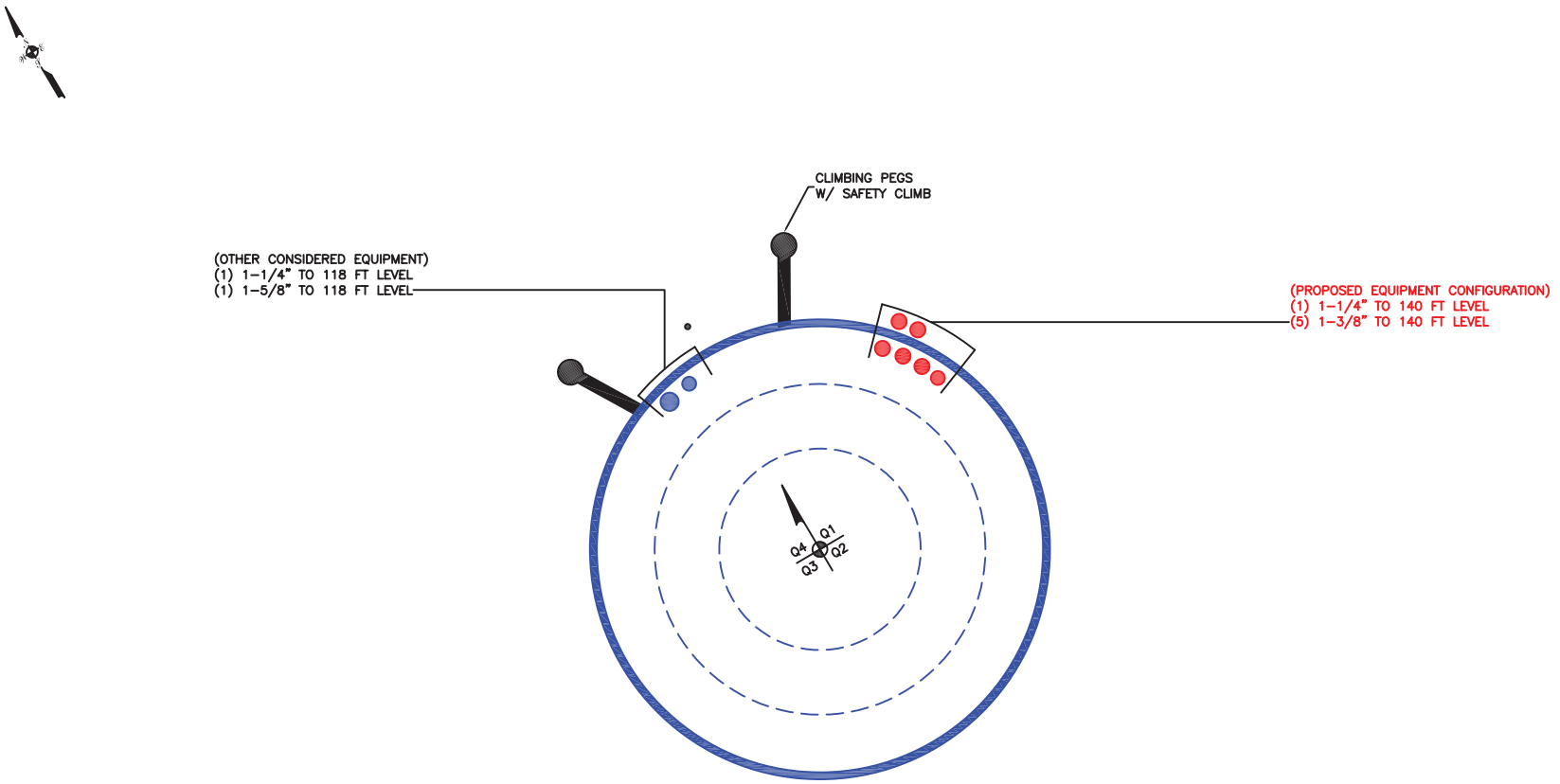
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 135	Pole	TP18.8551x18x0.1875	1	-3.55	682.40	9.2	Pass
L2	135 - 130	Pole	TP19.7101x18.8551x0.1875	2	-3.82	713.66	16.1	Pass
L3	130 - 125	Pole	TP20.5652x19.7101x0.1875	3	-5.07	744.92	23.3	Pass
L4	125 - 120	Pole	TP21.4203x20.5652x0.1875	4	-5.37	776.18	30.2	Pass
L5	120 - 115	Pole	TP22.2753x21.4203x0.1875	5	-9.99	807.43	41.6	Pass
L6	115 - 110	Pole	TP23.1304x22.2753x0.1875	6	-10.38	838.69	52.2	Pass
L7	110 - 105	Pole	TP23.9855x23.1304x0.1875	7	-10.80	869.95	61.9	Pass
L8	105 - 100	Pole	TP24.8405x23.9855x0.1875	8	-11.24	901.21	70.6	Pass
L9	100 - 95	Pole	TP25.6956x24.8405x0.1875	9	-11.71	932.46	78.6	Pass
L10	95 - 89.08	Pole	TP26.708x25.6956x0.1875	10	-11.86	942.90	81.1	Pass
L11	89.08 - 88.33	Pole	TP26.4612x25.6062x0.2188	11	-12.63	1119.19	73.5	Pass
L12	88.33 - 85.08	Pole	TP27.0169x26.4612x0.2188	12	-12.98	1142.89	77.0	Pass
L13	85.08 - 84.83	Pole	TP27.0597x27.0169x0.4	13	-13.03	2079.06	40.1	Pass
L14	84.83 - 79.83	Pole	TP27.9147x27.0597x0.3938	14	-13.81	2112.69	42.9	Pass
L15	79.83 - 74.83	Pole	TP28.7697x27.9147x0.3875	15	-14.61	2144.23	45.5	Pass
L16	74.83 - 74	Pole	TP28.9116x28.7697x0.3875	16	-14.74	2154.95	45.9	Pass
L17	74 - 73.75	Pole	TP28.9544x28.9116x0.4438	17	-14.79	2466.59	40.4	Pass
L18	73.75 - 68.75	Pole	TP29.8094x28.9544x0.4375	18	-15.69	2505.31	42.4	Pass
L19	68.75 - 63.75	Pole	TP30.6644x29.8094x0.4313	19	-16.61	2541.93	44.4	Pass
L20	63.75 - 58.75	Pole	TP31.5194x30.6644x0.4188	20	-17.54	2539.08	47.0	Pass
L21	58.75 - 53.75	Pole	TP32.3744x31.5194x0.4188	21	-18.49	2608.88	48.1	Pass
L22	53.75 - 53.08	Pole	TP32.4889x32.3744x0.4188	22	-18.62	2618.24	48.3	Pass
L23	53.08 - 52.83	Pole	TP32.5317x32.4889x0.5313	23	-18.69	3314.42	38.5	Pass
L24	52.83 - 45.91	Pole	TP33.715x32.5317x0.5313	24	-19.17	3347.00	38.8	Pass
L25	45.91 - 44.91	Pole	TP33.4487x32.4088x0.4	25	-21.70	2577.31	53.6	Pass
L26	44.91 - 39.91	Pole	TP34.3039x33.4487x0.4	26	-22.83	2644.00	54.5	Pass
L27	39.91 - 38.58	Pole	TP34.5314x34.3039x0.3938	27	-23.13	2620.63	55.6	Pass
L28	38.58 - 38.33	Pole	TP34.5742x34.5314x0.5563	28	-23.21	3689.17	39.9	Pass
L29	38.33 - 33.33	Pole	TP35.4293x34.5742x0.5438	29	-24.61	3698.26	41.4	Pass
L30	33.33 - 33	Pole	TP35.4858x35.4293x0.5438	30	-24.70	3704.24	41.4	Pass
L31	33 - 32.75	Pole	TP35.5285x35.4858x0.5438	31	-24.77	3708.78	41.5	Pass
L32	32.75 - 27.75	Pole	TP36.3837x35.5285x0.5438	32	-26.19	3799.44	42.0	Pass
L33	27.75 - 23	Pole	TP37.1961x36.3837x0.5313	33	-27.56	3797.53	43.4	Pass
L34	23 - 22.75	Pole	TP37.2389x37.1961x0.5813	34	-27.64	4154.13	39.8	Pass
L35	22.75 - 17.75	Pole	TP38.0941x37.2389x0.5813	35	-29.18	4251.04	40.2	Pass
L36	17.75 - 12.75	Pole	TP38.9493x38.0941x0.5688	36	-30.74	4255.83	41.4	Pass
L37	12.75 - 7.75	Pole	TP39.8045x38.9493x0.5688	37	-32.32	4350.65	41.7	Pass
L38	7.75 - 2.75	Pole	TP40.6596x39.8045x0.5563	38	-33.92	4349.14	42.9	Pass
L39	2.75 - 0	Pole	TP41.13x40.6596x0.5563	39	-34.80	4400.15	43.0	Pass
							Summary	
						Pole (L10)	81.1	Pass
						RATING =	**81.1**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 118 FT LEVEL
(1) 1-5/8" TO 118 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/4" TO 140 FT LEVEL
(5) 1-3/8" TO 140 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 826848

Work Order: 1887883

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	140	50.92	4.25	18	18	26.708	0.1875	Auto	A572-65
2	93.33	47.42	5.08	18	25.61	33.715	0.21875	Auto	A572-65
3	50.99	50.99	0	18	32.41	41.13	0.28125	Auto	A572-65

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	13	14	15	16	17	18
1	0	23	plate	CI-65FP-060100 (Welde	3																		
2	49	74	plate	CCI-65FP-060100	3																		
3	0	33	plate	CCI-WSFP-060100	3																		
4	33	53.08	plate	CCI-SFP-060100	3																		
5	23	38.58	plate	CCI-SFP-045100	3																		
6	74	85.08	plate	CCI-SFP-045100	3																		
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
6	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	140 - 135	5		18	18.000	18.855	0.1875	A572-65	1.000
2	135 - 130	5		18	18.855	19.710	0.1875	A572-65	1.000
3	130 - 125	5		18	19.710	20.565	0.1875	A572-65	1.000
4	125 - 120	5		18	20.565	21.420	0.1875	A572-65	1.000
5	120 - 115	5		18	21.420	22.275	0.1875	A572-65	1.000
6	115 - 110	5		18	22.275	23.130	0.1875	A572-65	1.000
7	110 - 105	5		18	23.130	23.985	0.1875	A572-65	1.000
8	105 - 100	5		18	23.985	24.841	0.1875	A572-65	1.000
9	100 - 95	5		18	24.841	25.696	0.1875	A572-65	1.000
10	95 - 93.33	5.92	4.25	18	25.696	26.708	0.1875	A572-65	1.000
11	93.33 - 88.33	5		18	25.606	26.461	0.21875	A572-65	1.000
12	88.33 - 85.08	3.25		18	26.461	27.017	0.21875	A572-65	1.000
13	85.08 - 84.83	0.25		18	27.017	27.060	0.4	A572-65	0.949
14	84.83 - 79.83	5		18	27.060	27.915	0.39375	A572-65	0.952
15	79.83 - 74.83	5		18	27.915	28.770	0.3875	A572-65	0.955
16	74.83 - 74	0.83		18	28.770	28.912	0.3875	A572-65	0.953
17	74 - 73.75	0.25		18	28.912	28.954	0.44375	A572-65	0.945
18	73.75 - 68.75	5		18	28.954	29.809	0.4375	A572-65	0.945
19	68.75 - 63.75	5		18	29.809	30.664	0.43125	A572-65	0.946
20	63.75 - 58.75	5		18	30.664	31.519	0.41875	A572-65	0.961
21	58.75 - 53.75	5		18	31.519	32.374	0.41875	A572-65	0.949
22	53.75 - 53.08	0.67		18	32.374	32.489	0.41875	A572-65	0.948
23	53.08 - 52.83	0.25		18	32.489	32.532	0.53125	A572-65	1.083
24	52.83 - 50.99	6.92	5.08	18	32.532	33.715	0.53125	A572-65	1.076
25	50.99 - 44.91	6.08		18	32.409	33.449	0.4	A572-65	1.135
26	44.91 - 39.91	5		18	33.449	34.304	0.4	A572-65	1.124
27	39.91 - 38.58	1.33		18	34.304	34.531	0.39375	A572-65	1.139
28	38.58 - 38.33	0.25		18	34.531	34.574	0.55625	A572-65	1.034
29	38.33 - 33.33	5		18	34.574	35.429	0.54375	A572-65	1.044
30	33.33 - 33	0.33		18	35.429	35.486	0.54375	A572-65	1.043
31	33 - 32.75	0.25		18	35.486	35.529	0.54375	A572-65	1.043
32	32.75 - 27.75	5		18	35.529	36.384	0.54375	A572-65	1.030
33	27.75 - 23	4.75		18	36.384	37.196	0.53125	A572-65	1.043
34	23 - 22.75	0.25		18	37.196	37.239	0.58125	A572-65	1.020
35	22.75 - 17.75	5		18	37.239	38.094	0.58125	A572-65	1.008
36	17.75 - 12.75	5		18	38.094	38.949	0.56875	A572-65	1.018
37	12.75 - 7.75	5		18	38.949	39.804	0.56875	A572-65	1.006
38	7.75 - 2.75	5		18	39.804	40.660	0.55625	A572-65	1.018
39	2.75 - 0	2.75		18	40.660	41.130	0.55625	A572-65	1.012

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	3.55	28.10	5.27
2	135 - 130	3.82	55.15	5.55
3	130 - 125	5.07	85.98	6.77
4	125 - 120	5.37	120.57	7.06
5	120 - 115	9.99	175.97	12.17
6	115 - 110	10.38	237.50	12.44
7	110 - 105	10.80	300.35	12.70
8	105 - 100	11.24	364.48	12.96
9	100 - 95	11.71	429.89	13.21
10	95 - 93.33	11.86	452.01	13.30
11	93.33 - 88.33	12.63	519.27	13.61
12	88.33 - 85.08	12.98	563.76	13.78
13	85.08 - 84.83	13.03	567.20	13.78
14	84.83 - 79.83	13.81	636.90	14.10
15	79.83 - 74.83	14.61	708.17	14.41
16	74.83 - 74	14.74	720.15	14.46
17	74 - 73.75	14.79	723.77	14.47
18	73.75 - 68.75	15.69	796.94	14.80
19	68.75 - 63.75	16.61	871.71	15.11
20	63.75 - 58.75	17.54	948.05	15.43
21	58.75 - 53.75	18.49	1025.93	15.73
22	53.75 - 53.08	18.62	1036.48	15.77
23	53.08 - 52.83	18.69	1040.42	15.78
24	52.83 - 50.99	19.17	1069.58	15.91
25	50.99 - 44.91	21.70	1167.74	16.37
26	44.91 - 39.91	22.83	1250.25	16.64
27	39.91 - 38.58	23.13	1272.42	16.72
28	38.58 - 38.33	23.21	1276.60	16.72
29	38.33 - 33.33	24.61	1360.97	17.02
30	33.33 - 33	24.70	1366.59	17.04
31	33 - 32.75	24.77	1370.85	17.05
32	32.75 - 27.75	26.19	1456.84	17.34
33	27.75 - 23	27.56	1539.82	17.60
34	23 - 22.75	27.64	1544.22	17.61
35	22.75 - 17.75	29.18	1632.92	17.88
36	17.75 - 12.75	30.74	1722.88	18.11
37	12.75 - 7.75	32.32	1814.04	18.35
38	7.75 - 2.75	33.92	1906.36	18.59
39	2.75 - 0	34.80	1957.64	18.72

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass
100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
95 - 93.33	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
93.33 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
52.83 - 50.99	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
50.99 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
				Summary	
			Pole	80.8%	Pass
			Reinforcement	79.8%	Pass
			Overall	80.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
140 - 135	489	n/a	489	11.11	n/a	11.11	9.0%						
135 - 130	559	n/a	559	11.62	n/a	11.62	16.0%						
130 - 125	636	n/a	636	12.13	n/a	12.13	23.1%						
125 - 120	719	n/a	719	12.64	n/a	12.64	30.0%						
120 - 115	810	n/a	810	13.14	n/a	13.14	41.2%						
115 - 110	908	n/a	908	13.65	n/a	13.65	51.9%						
110 - 105	1013	n/a	1013	14.16	n/a	14.16	61.5%						
105 - 100	1126	n/a	1126	14.67	n/a	14.67	70.3%						
100 - 95	1247	n/a	1247	15.18	n/a	15.18	78.3%						
95 - 93.33	1290	n/a	1290	15.35	n/a	15.35	80.8%						
93.33 - 88.33	1585	n/a	1585	18.22	n/a	18.22	73.2%						
88.33 - 85.08	1688	n/a	1688	18.61	n/a	18.61	76.7%						
85.08 - 84.83	1696	1341	3036	18.64	13.50	32.14	42.5%						69.8%
84.83 - 79.83	1863	1423	3286	19.23	13.50	32.73	45.9%						74.6%
79.83 - 74.83	2041	1507	3548	19.82	13.50	33.32	49.2%						79.1%
74.83 - 74	2071	1522	3593	19.92	13.50	33.42	49.8%						79.8%
74 - 73.75	2081	2047	4127	19.95	18.00	37.95	43.6%		63.8%				
73.75 - 68.75	2272	2163	4435	20.54	18.00	38.54	46.5%		67.3%				
68.75 - 63.75	2475	2284	4758	21.14	18.00	39.14	49.3%		70.5%				
63.75 - 58.75	2689	2407	5096	21.73	18.00	39.73	52.1%		73.5%				
58.75 - 53.75	2915	2534	5449	22.33	18.00	40.33	54.7%		76.4%				
53.75 - 53.08	2947	2551	5498	22.40	18.00	40.40	55.1%		76.7%				
53.08 - 52.83	2979	4032	7011	22.43	36.00	58.43	46.4%		63.6%		54.7%		
52.83 - 50.99	3067	4107	7174	22.65	36.00	58.65	47.3%		64.5%		54.1%		
50.99 - 44.91	4167	1690	5857	29.61	18.00	47.61	60.2%				74.1%		
44.91 - 39.91	4496	1775	6271	30.37	18.00	48.37	62.1%				76.0%		
39.91 - 38.58	4586	1798	6384	30.57	18.00	48.57	62.6%				76.5%		
38.58 - 38.33	4555	4227	8782	30.61	31.50	62.11	44.0%				56.8%	65.8%	
38.33 - 33.33	4904	4431	9335	31.38	31.50	62.88	45.5%				58.4%	67.6%	
33.33 - 33	4927	4444	9372	31.43	31.50	62.93	45.6%				58.5%	67.8%	
33 - 32.75	4945	4455	9400	31.46	31.50	62.96	45.7%			58.6%		67.8%	
32.75 - 27.75	5314	4664	9978	32.23	31.50	63.73	47.3%			60.1%		69.6%	
27.75 - 23	5681	4867	10547	32.95	31.50	64.45	48.7%			61.5%		71.1%	
23 - 22.75	5696	5889	11584	32.99	36.00	68.99	44.2%	59.9%		58.5%			
22.75 - 17.75	6100	6152	12252	33.75	36.00	69.75	45.6%	61.2%		59.8%			
17.75 - 12.75	6523	6422	12945	34.52	36.00	70.52	46.9%	62.5%		61.1%			
12.75 - 7.75	6966	6697	13663	35.28	36.00	71.28	48.3%	63.7%		62.3%			
7.75 - 2.75	7427	6978	14406	36.04	36.00	72.04	49.6%	64.9%		63.4%			
2.75 - 0	7690	7135	14825	36.46	36.00	72.46	50.3%	65.5%		64.1%			

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

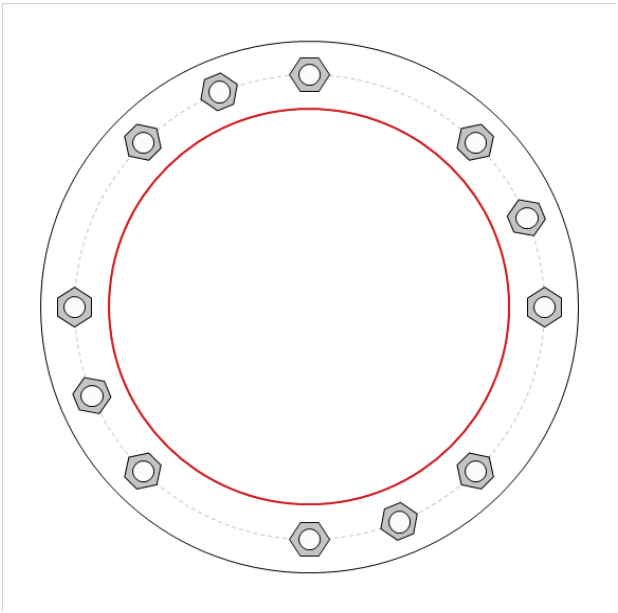
Monopole Base Plate Connection

Site Info	
BU #	826848
Site Name	ublic Storage-Briggs Ch
Order #	525942 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	1957.64
Axial Force (kips)	34.80
Shear Force (kips)	18.72

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 48.26" BC

GROUP 2: (4) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 48.26" BC

Base Plate Data

55.11" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

41.13" x 0.28125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 166.46	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.34	ϕVn = 120.77	**59.1%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 161.96	ϕPn_c = 375.74	**Stress Rating**
Vu = 0	ϕVn = 169.08	**41.1%**
Mu = 0	ϕMn = 179.4	**Pass**

Base Plate Summary

Max Stress (ksi):	27.92	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**59.1%**	**Pass**

Drilled Pier Foundation

BU # :	826848
Site Name:	Public Storage-Briggs (
Order Number:	525942 Rev 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1957.63	
Axial Force (kips)	34.81	
Shear Force (kips)	18.7	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	18	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 18' below grade		
Pier Diameter	6	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.27	-
Soil Safety Factor	1.66	-
Max Moment (kip-ft)	2043.29	-
Rating*	*76.5%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	219.13	-
End Bearing (kips)	382.34	-
Weight of Concrete (kips)	94.15	-
Total Capacity (kips)	601.47	-
Axial (kips)	128.96	-
Rating*	*20.4%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.93	-
Critical Moment (kip-ft)	2042.52	-
Critical Moment Capacity	3481.78	-
Rating*	*55.9%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.53	-
Critical Shear (kip)	356.27	-
Critical Shear Capacity	494.96	-
Rating*	*68.6%*	-

Soil Interaction Rating*	**76.5%**
Structural Foundation Rating*	**68.6%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	5

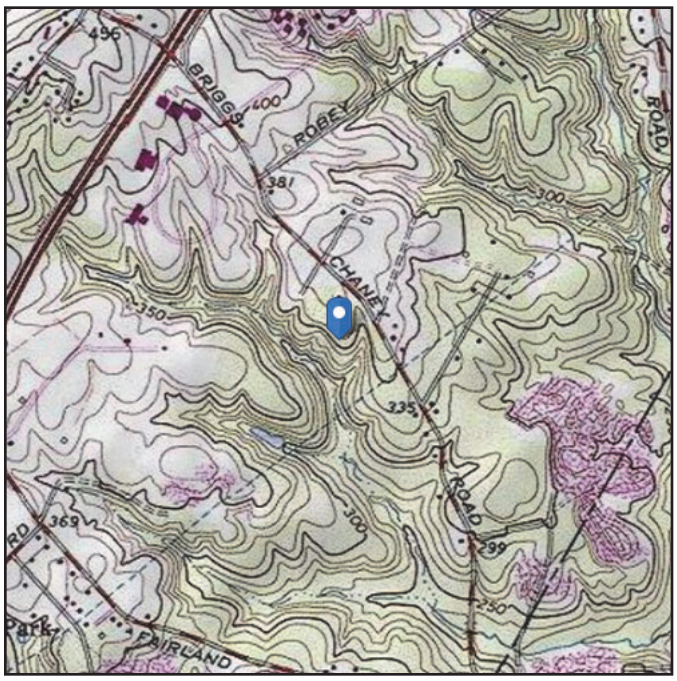
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	5	2	100	150	0	26	0.000	0.000	0.00	0.00			Cohesionless
3	5	8	3	110	150	0	30	0.000	0.000	0.00	0.00			Cohesionless
4	8	13	5	125	150	0	34	0.000	0.000	0.98	0.98			Cohesionless
5	13	18	5	135	150	0	40	0.000	0.000	2.12	2.12	18.03		Cohesionless

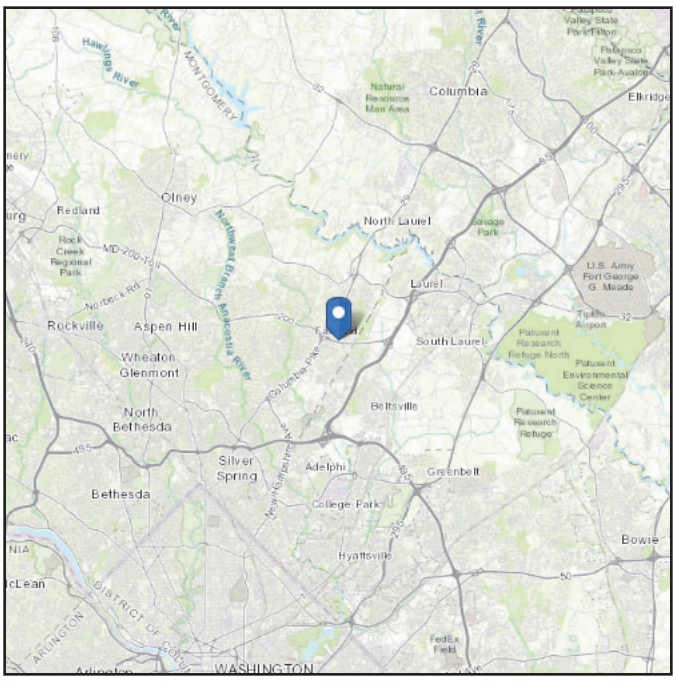
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 356.26 ft (NAVD 88)
Latitude: 39.074992
Longitude: -76.942228





Wind

Results:

Wind Speed:	113 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4

Date Accessed: Mon Oct 05 2020

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

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

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

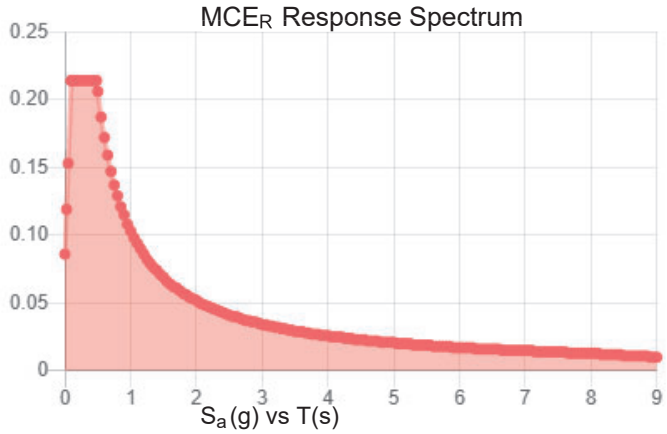
Seismic

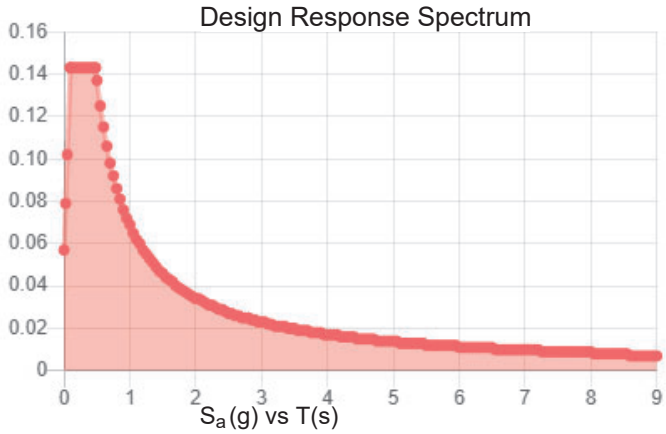
Site Soil Class: D - Default (see Section 11.4.3)

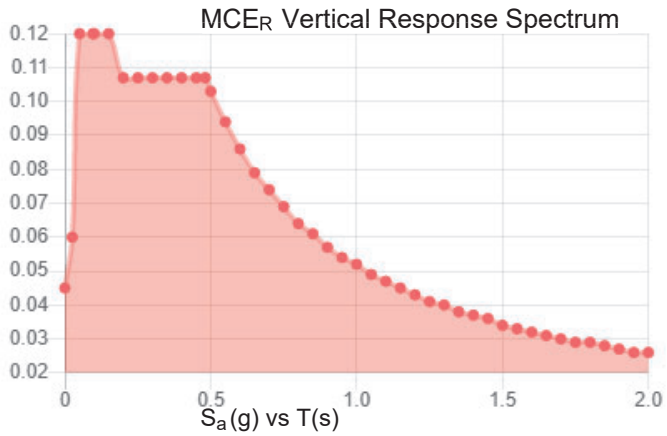
Results:

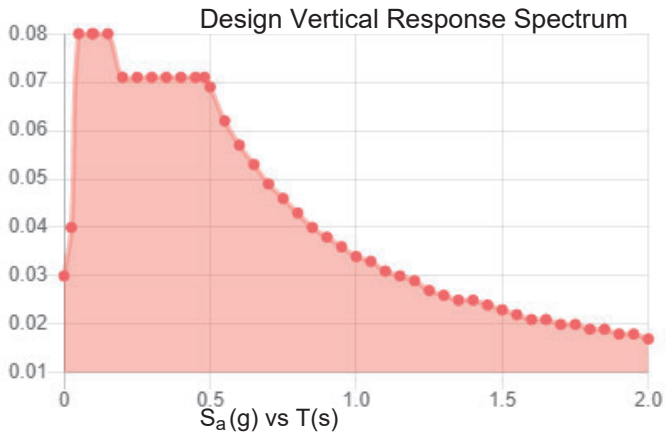
S_S :	0.134	S_{D1} :	0.069
S_1 :	0.043	T_L :	8
F_a :	1.6	PGA :	0.069
F_v :	2.4	PGA_M :	0.111
S_{MS} :	0.214	F_{PGA} :	1.6
S_{M1} :	0.103	I_e :	1
S_{DS} :	0.143	C_v :	0.7

Seismic Design Category B









Data Accessed: Mon Oct 05 2020

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Oct 05 2020

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

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

T-Mobile

T-MOBILE SITE NUMBER: 7WAN285K
T-MOBILE SITE NAME: PUBLIC STORAGE-BRIGGS CHA
T-MOBILE PROJECT: ANCHOR

BUSINESS UNIT #: 826848
SITE ADDRESS: 3351 BRIGGS CHANEY ROAD SILVER SPRING, MD 20904
COUNTY: MONTGOMERY
SITE TYPE: MONOPOLE
TOWER HEIGHT: 140'-0"

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	PUBLIC STORAGE-BRIGGS CHA
SITE ADDRESS:	3351 BRIGGS CHANEY ROAD SILVER SPRING, MD 20904
COUNTY:	MONTGOMERY
MAP/PARCEL #:	01831954
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	39° 4' 29.97" N
LONGITUDE:	76° 56' 32.02" W
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	354'
CURRENT ZONING:	EOF
JURISDICTION:	MONTGOMERY COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	SHURGARD MARYLAND PROPERTIES INC C/O SSC ACQ DEPT PT-MD-08080 PO BOX 25025 GLENDALE, CA 91020
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	BALTIMORE GAS AND ELECTRIC (410) 685-0123
TELCO PROVIDER:	VERIZON (800) 483-2000

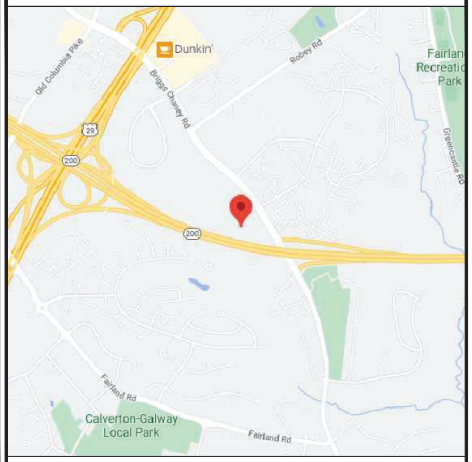
PROJECT TEAM

A&E FIRM:	KIMLEY-HORN & ASSOCIATES, INC. COA: 47923 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 KEVIN.CLEMENTS@KIMLEY-HORN.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 SHANNON CAMPBELL - PROJECT MANAGER SHANNON.CAMPBELL@CROWNCASTLE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	EXISTING EQUIPMENT PLAN
C-1.3	FINAL EQUIPMENT PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	FINAL EQUIPMENT SCHEDULE
C-4	EQUIPMENT SPECS
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	PANEL SCHEDULE & ONE-LINE DIAGRAM
E-2	PANEL SCHEDULE & PANEL PHOTO
G-1	GROUNDING DETAILS

LOCATION MAP



NO SCALE

SITE PHOTO

SCOPING NOTES

1. GROUND SCOPE OF WORK:
   - REMOVE (1) 2106 CABINET
   - INSTALL (1) 6160 SSC CABINET
   - INSTALL (1) B160 BATTERY CABINET
   - INSTALL (1) BB 6630 BASEBAND RADIOS
   - INSTALL (1) BB 6648 BASEBAND RADIO
   - INSTALL (1) XMU MULTIPLEXER
   - INSTALL (1) PSU 4813
   - INSTALL (2) 6x12 HCS (1-3/8")
2. TOWER SCOPE OF WORK:
   - REMOVE (3) ANTENNAS
   - REMOVE (3) TMAS
   - INSTALL (3) ANTENNAS
   - INSTALL (3) RRH'S
3. ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

CALL MARYLAND ONE CALL
(800) 282-8555
CALL 3 WORKING DAYS BEFORE YOU DIG!

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY CROWN CASTLE (1887883))
DATED:	10/08/20
MOUNT ANALYSIS:	BY TOWER ENGINEERING PROFESSIONALS (PROJECT #: 50342.447392)
DATED:	09/30/2020
RFDS REVISION:	7
DATED:	9/15/2020

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J. CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: T-1
REVISION: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE" AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR 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.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR 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.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER 40 ksi
   #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER 2"
   #5 BARS AND SMALLER 1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS 3/4"
   BEAMS AND COLUMNS 1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. 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.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T · · Mobile · · ·
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

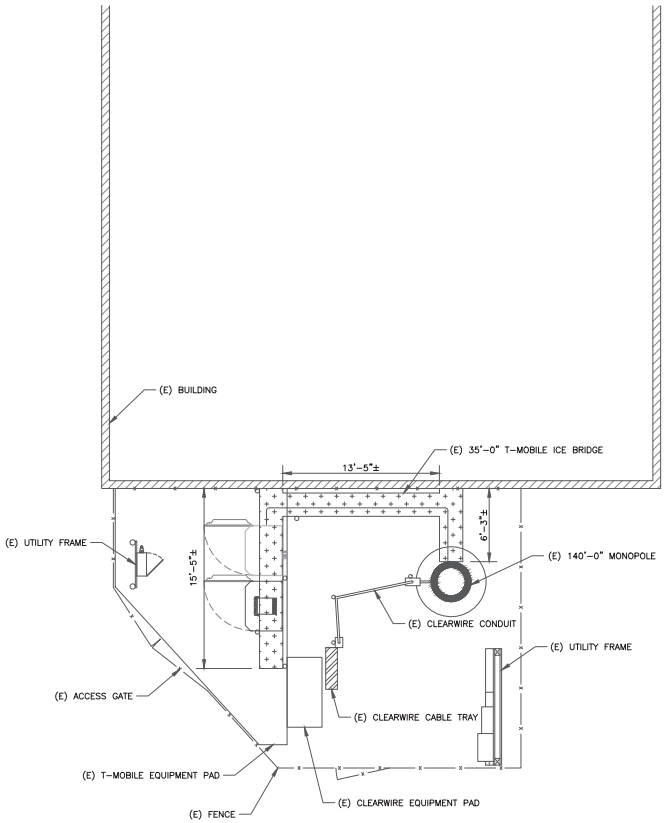
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
T-2	1



1 OVERALL SITE PLAN

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

N

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

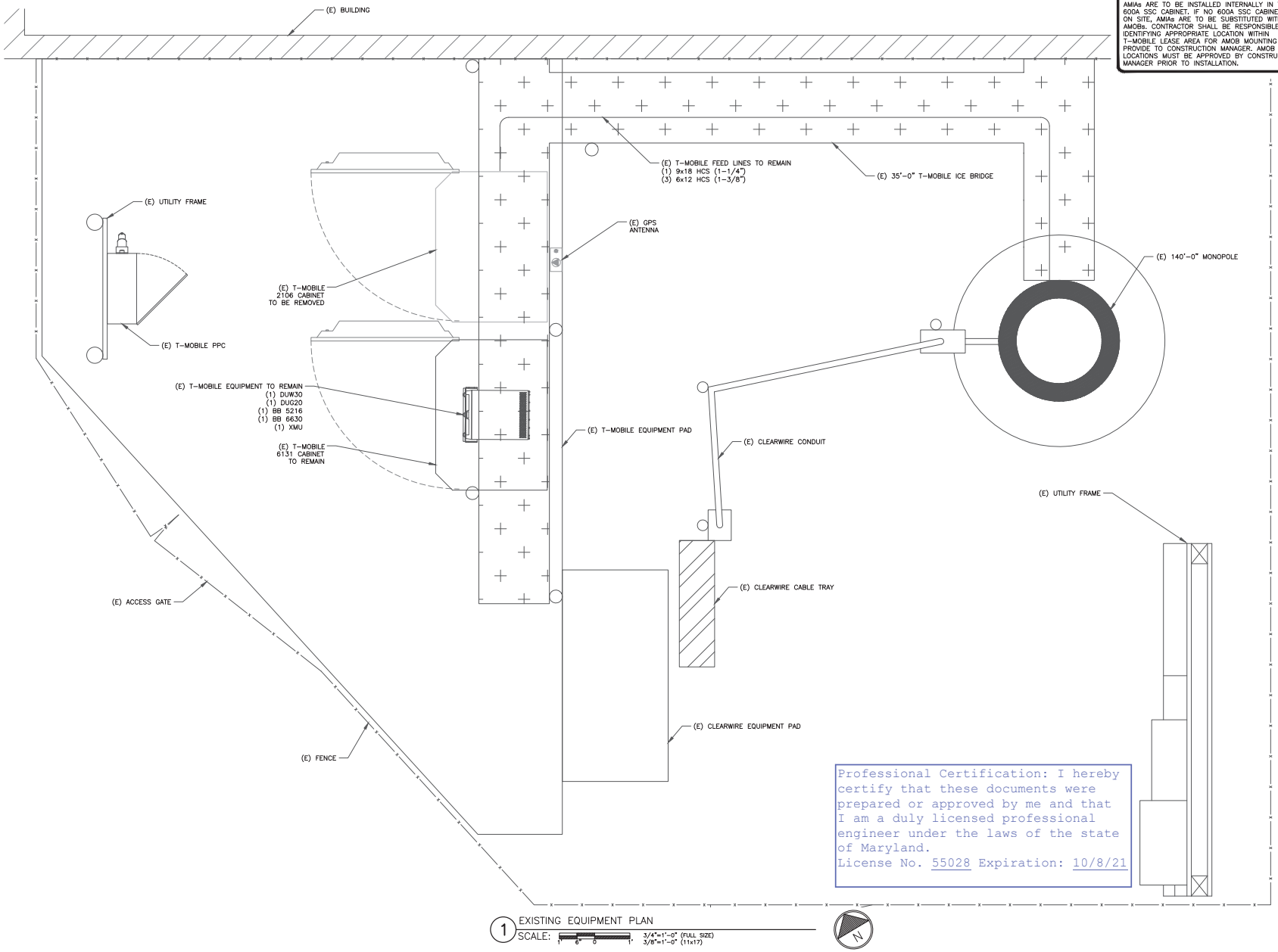
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
C-1.1	1



1 EXISTING EQUIPMENT PLAN

SCALE: 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

INSTALLER NOTE:

AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

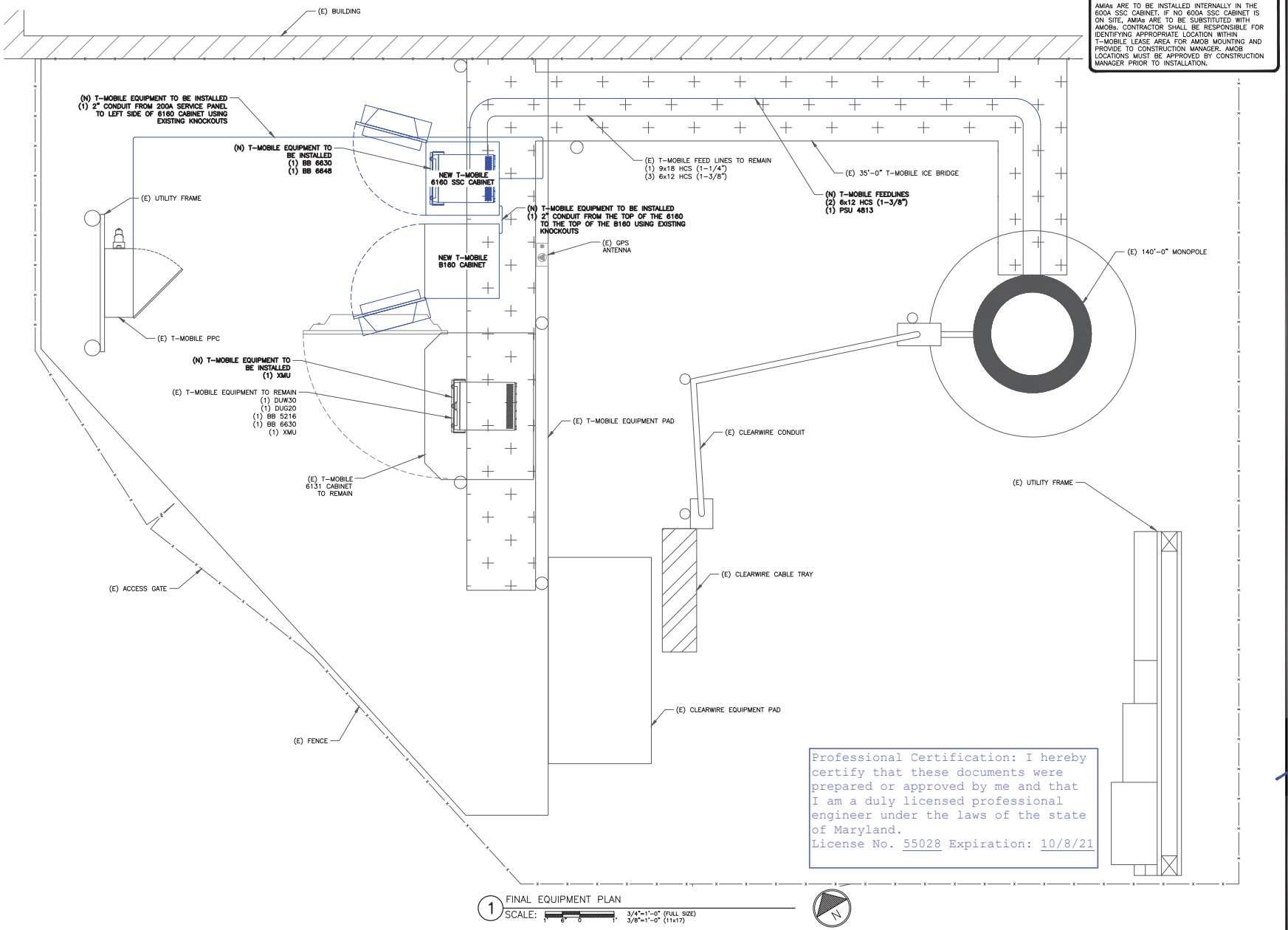
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-1.2
REVISION: 1



INSTALLER NOTE:

AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

1 FINAL EQUIPMENT PLAN
SCALE: 1" 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

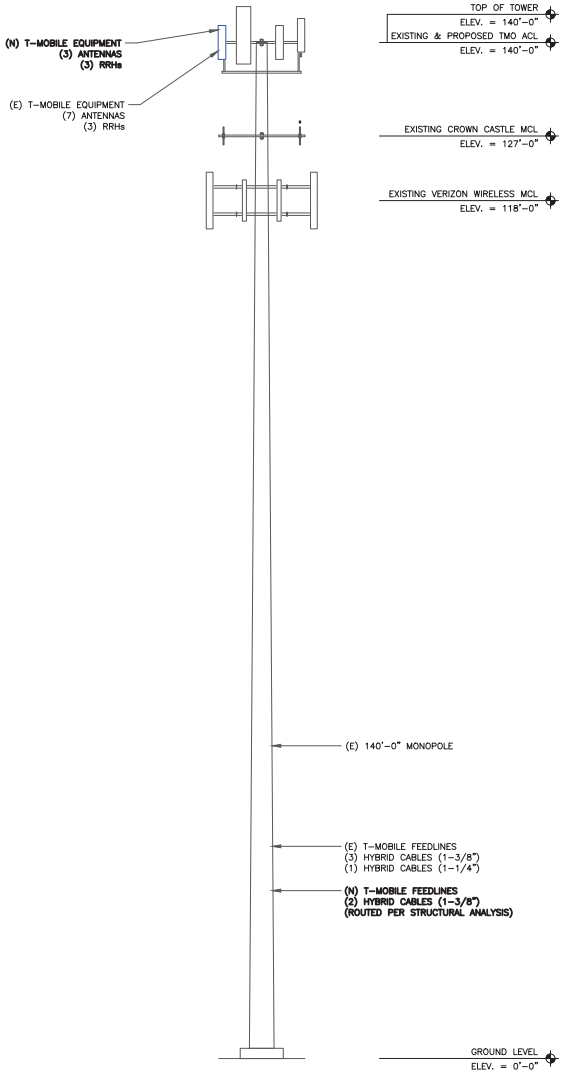
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

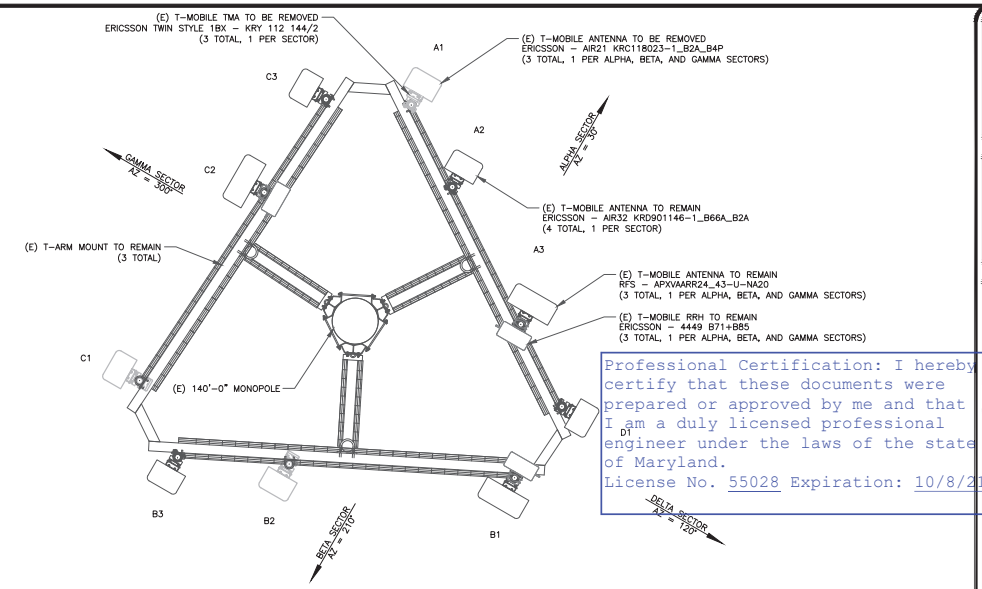
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

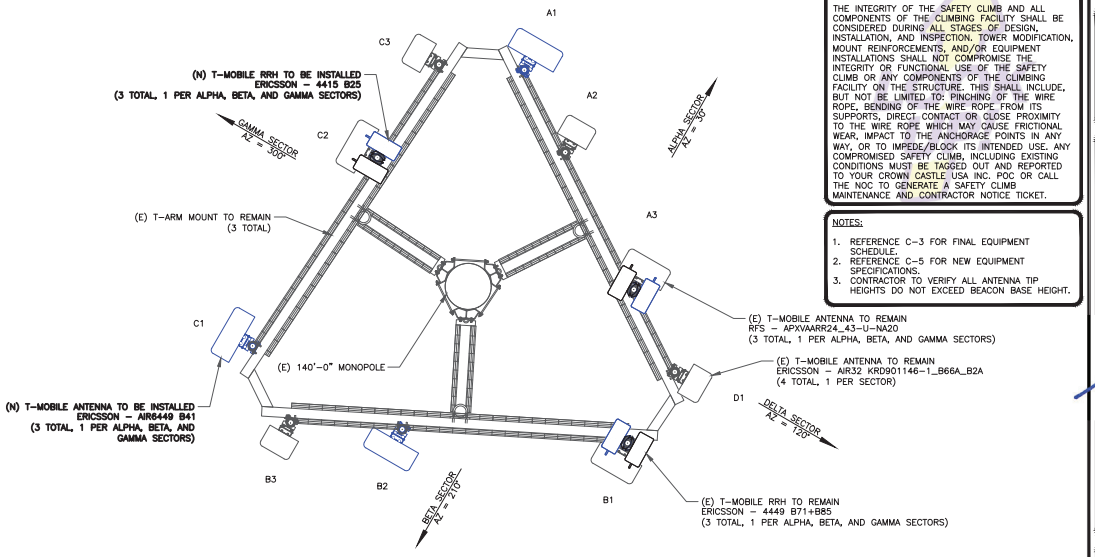
SHEET NUMBER: C-1.3
REVISION: 1



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

"LOOK UP" – CROWN CASTLE USA INC.
SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-5 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-2
REVISION: 1

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
ALPHA																		
A1	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	30°	140'-0"	–	–	–	–	–	–	–	–	–	–	**2**	**(N) HYBRID**	**1-3/8"**	**190'-0"**
A2	G1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	30°	140'-0"	–	–	–	–	–	–	–	–	–	–	3	(E) HYBRID	1-3/8"	190'-0"
A3	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	30°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	1	(E) HYBRID	1-1/4"	190'-0"
BETA																		
B2	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	210°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	–	SHARED	–	–
B3	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	210°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
B4	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	210°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
GAMMA																		
C1	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	300°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
C2	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	300°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	–	SHARED	–	–
C3	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	300°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
DELTA																		
D1	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	120°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
															0	(E) UNUSED	–	–

NOTE:
(E) – EXISTING
(N) – NEW

1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

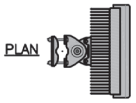
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

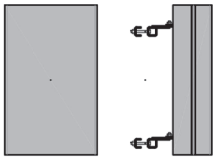
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-3
REVISION: 1

L25+N25 ANTENNA DIMENSIONS	
MODEL #	AIR 6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.5"
WEIGHT	103 LBS





1 ANTENNA SPECIFICATIONS
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

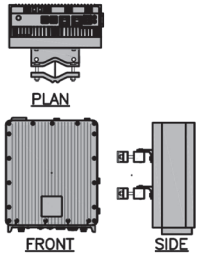
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
C-4	1

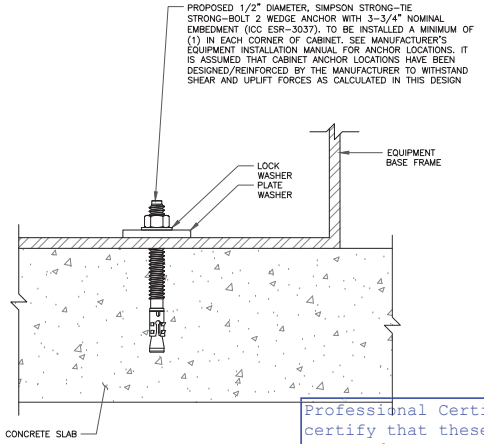
1 NOT USED
SCALE: NOT TO SCALE

RADIO 4415 DIMENSIONS	
MODEL #	RADIO 4415 B66A RADIO 4415 B25
MANUF.	ERICSSON
WIDTH	13.47"
DEPTH	6.30"
HEIGHT	16.54"
WEIGHT	49.6 LBS



2 RADIO 4415 B25 DETAIL
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE



4 CABINET ANCHOR DETAIL
SCALE: NOT TO SCALE

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

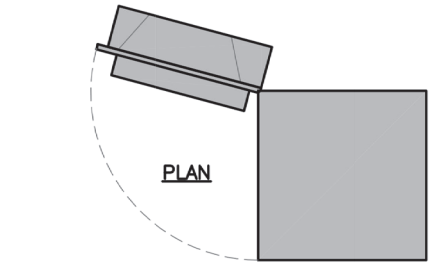
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

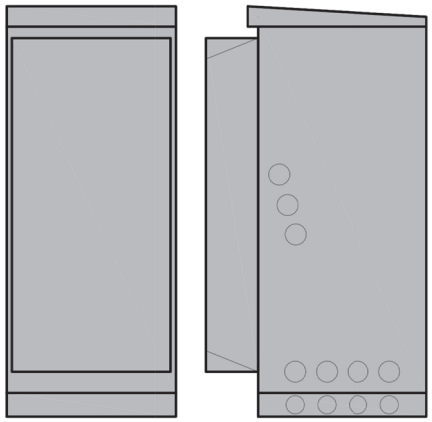
11/11/20
Exp. 10/08/21

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

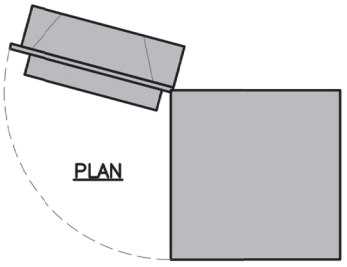
SHEET NUMBER:	REVISION:
C-5	1

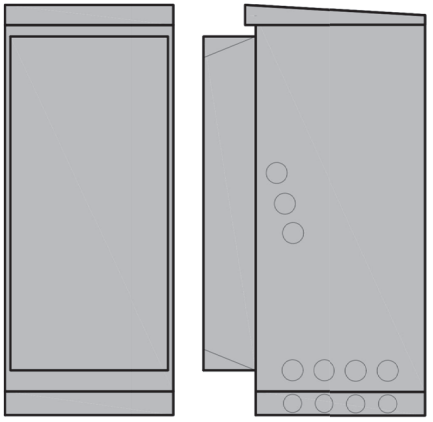
CABINET DIMENSIONS	
MODEL #	6160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH (W/ DOOR)	33.5"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	





CABINET DIMENSIONS	
MODEL #	B160 BATTERY CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	2000 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	





Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

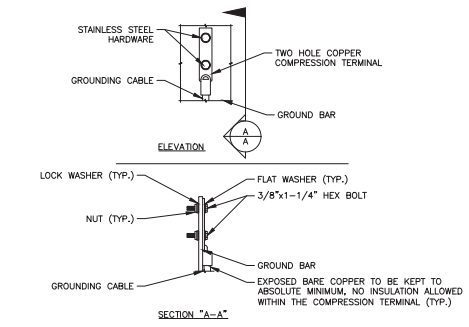
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

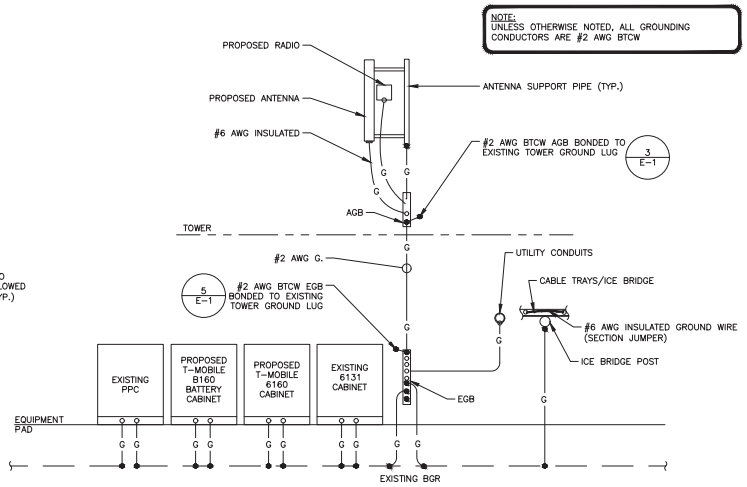
SHEET NUMBER:	REVISION:
C-6	1



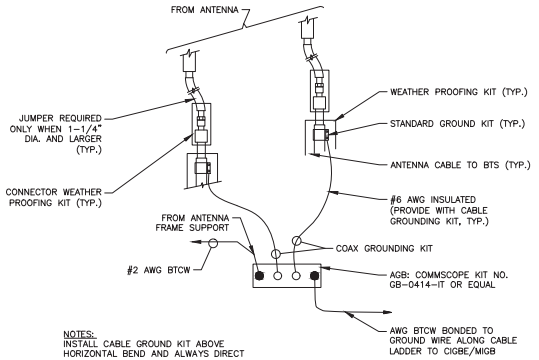
NOTES:

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.

1 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE

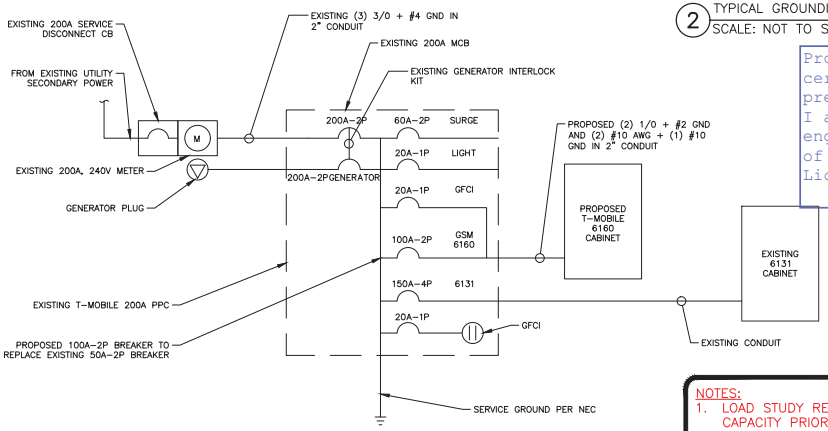


2 TYPICAL GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE



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

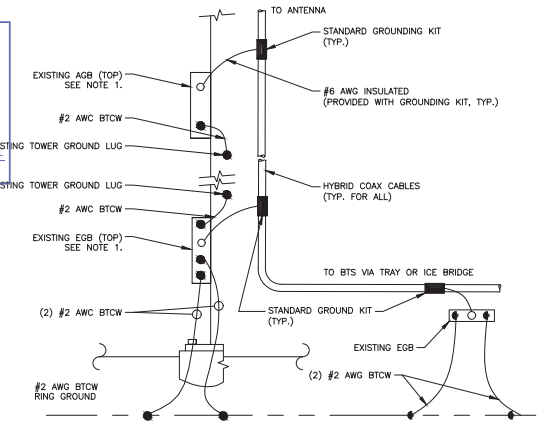
3 GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



4 ONE LINE POWER DIAGRAM
SCALE: NOT TO SCALE

NOTES:
1. LOAD STUDY REQUIRED TO CONFIRM AVAILABLE CAPACITY PRIOR TO BREAKER UPGRADE
2. GC TO REPLACE LOSS OF COMMERCIAL POWER RELAY CURRENTLY INSTALLED

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21



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

5 TOWER BOTTOM CABLE GROUNDING DETAIL
SCALE: NOT TO SCALE

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
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"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	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.
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 CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CAD WELD 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 AT6" 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 CABLES 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
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
E-1	1

VOLTAGE	120/240V	AIC RATING	65,000 AMPS*
MAIN BREAKER	200 AMP	BUSS RATING	200 AMPS
MOUNT	INSIDE PPC ENCLOSURE	NEUTRAL BAR	YES
ENCLOSURE TYPE	NEMA 3R	GROUND BAR	YES
PANEL STATUS	EXISTING	N TO GROUND BOND	YES
PHASE, WIRES	SINGLE, 3	INTERNAL TVSS	TBD

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	SURGE	60	2	ON	0	1.00	180		1.00	180	ON	1	20	GFI RECEPTICALE	2
3		60	2	ON	0	1.00		560	1.00	560	ON	1	20	LIGHT	4
5	NEW 6160	100*	2	ON	4,800	1.25	12000		1.25	4,800	ON	2	150	6131	6
7		100*	2	ON	4,800	1.25		12000	1.25	4,800	ON	2	150		8
9	UNKNOWN	100	2	OFF	0	1.25	6000		1.25	4,800	ON	2	150	6131	10
11		100	2	OFF	0	1.25		6000	1.25	4,800	ON	2	150		12
13	---	---	1	N/A	0	1.25	225		1.25	180	ON	1	20	NEW GFCI	14
15	---	---	1	N/A	0	1.25		0	1.00	0	N/A	1	---	---	16
17	---	---	1	N/A	0	1.25	0		1.25	0	N/A	1	---	---	18
19	---	---	1	N/A	0	1.25		0	1.25	0	N/A	1	---	---	20
21	---	---	1	N/A	0	1.25	0		1.25	0	N/A	1	---	---	22
23	---	---	1	N/A	0	1.25		0	1.25	0	N/A	1	---	---	24
							18405	18560							

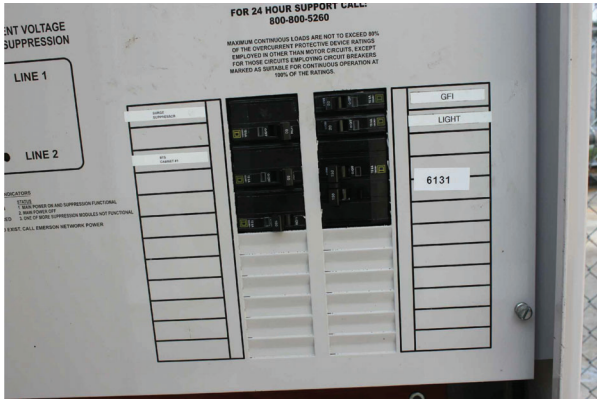
OVERALL LOAD SUMMARY	
TOTAL SERVICE LOAD kVA	36.97
AMPS	154.02

= Loading provided by CCI/TMO

* = PROPOSED BRANCH BREAKERS TYPE QO RATED 10-125A, 120/240V, 10kAIC

NOTES:
1. LOAD STUDY REQUIRED TO CONFIRM AVAILABLE CAPACITY PRIOR TO BREAKER UPGRADE
2. GC TO REPLACE LOSS OF COMMERCIAL POWER RELAY CURRENTLY INSTALLED

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



2 PANEL PHOTO
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

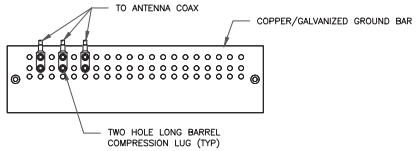
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

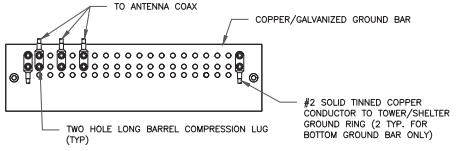
SHEET NUMBER:	REVISION:
E-2	1



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE

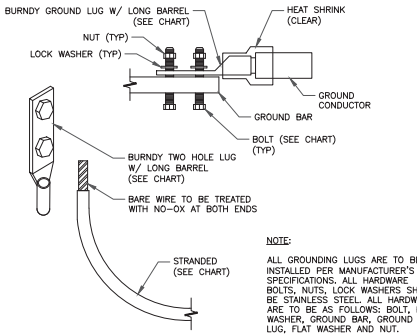


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

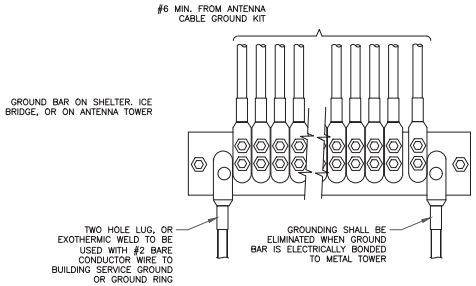
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



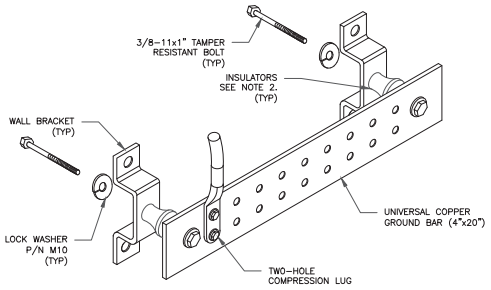
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

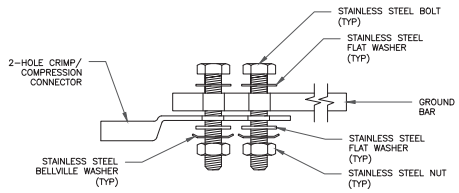


NOTES:

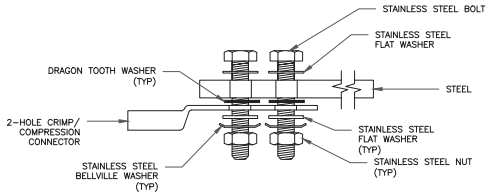
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAG-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

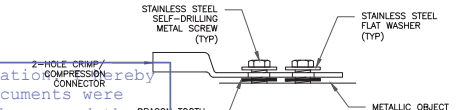
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

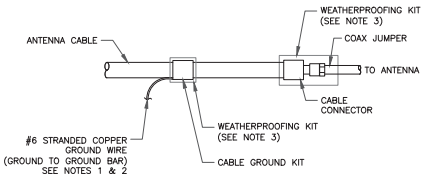


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

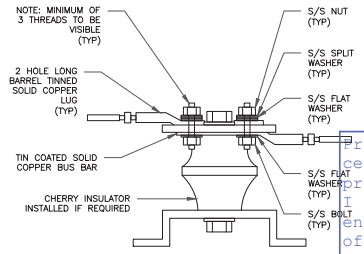
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: G-1
REVISION: 1

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Monopole Facility

November 13, 2020

Analysis Format: Theoretical Calculations

Sign Count	
	1
	0
	1
	0

Statement of Compliance

T-Mobile will be compliant with FCC Regulations once the mitigation measures recommended in this report are implemented.

7WAN285K
Public Storage-Briggs Cha
3351 Briggs Chaney RD, Silver Spring, MD 20904

Contents

Overview

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following T-Mobile wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all existing equipment for T-Mobile .

The facility is located on a monopole in Silver Spring, Maryland. Access to the facility is restricted to authorized personnel and facility management.

Analysis Site Data

Site ID:	7WAN285K
Site Name:	Public Storage-Briggs Cha
Site Address:	3351 Briggs Chaney RD, Silver Spring, MD 20904
Site Latitude:	39.075030
Site Longitude:	-76.94225
Facility Type:	Monopole

Compliance Summary

Status:	T-Mobile will be compliant with FCC Regulations Upon Installation of Signage
Site Modeled Composite MPE% (General Public Limit):	0.20 %
T-Mobile Max Modeled MPE% (General Public Limit):	0.20 %
Lock or Control Measures if Present:	Unknown

In addition to the T-Mobile antennas and radio equipment there are antennas and radio equipment for Verizon, & Crown Castle which have been included in this analysis as part of the overall site compliance determination.

*To be conservative, all sites are considered uncontrolled for modeling purposes unless confirmed otherwise by a site visit.

FCC Guidelines

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General Population/Uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600, 700, and 800 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$, and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS, 2100 MHz AWS, 2500 MHz, 3500 MHz CBRS, 5000 MHz LAA, 28GHz, and 39GHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density. Reference the Site Antenna Data Table for list of frequencies in operation at this site.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Calculation Methodology & Data

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofMaster® software from Waterford Consultants LLC. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.

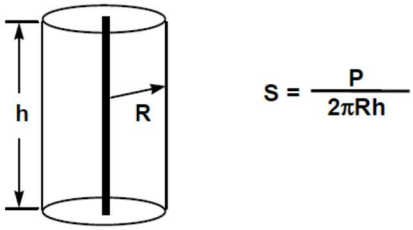


Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.

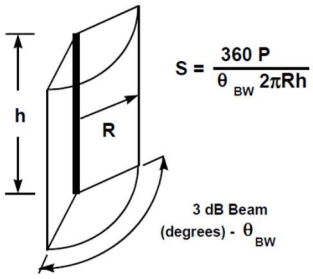


Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW)

The **proposed antenna configuration** for T-Mobile and any other known wireless carriers at this facility are shown below in **Table 1 – Site Antenna Data Table**.

All calculations for this facility were performed assuming that all radios were running at full power and were uncombined in their RF paths with the configuration shown in table 1. FCC OET Bulletin 65 – Edition 97-01 recommends that modeling of this nature should be done as described prior to yield a worst-case scenario. Due to the dynamic nature of many deployed systems the "real world" values will most likely be less than those shown in this report due to worst-case values being shown in all instances.

For all "Other" systems on this facility, exact equipment was used if available. In instances where "Other" system equipment was not available, standard radio configurations for these systems were utilized based upon prior experience with these systems on facilities in this area.

Site Antenna Data Table

Sector	Operator	Frequency Band	TX Power Per Channel	Tx #	ERP	Antenna Make	Antenna Model	Gain (dBd)	Az (°)	Antenna Centerline Height (ft)	Z Value (ft)**
A1	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	30	140	138.62
A1	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	30	140	138.62
A1	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	30	140	138.62
A2	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	30	140	137.72
A2	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A2	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A3	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	30	140	136.00
A3	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
A3	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
B4	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	210	140	136.00
B4	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B4	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B5	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	210	140	138.62
B5	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	210	140	138.62

B5	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	210	140	138.62
B6	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	210	140	137.72
B6	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
B6	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	300	140	138.62
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	300	140	138.62
C7	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	300	140	138.62
C8	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	300	140	136.00
C8	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	U1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C8	T-Mobile	L1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C9	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	300	140	137.72
C9	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
C9	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
10	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	30	118	115.00
11	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	30	118	115.00
12	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	30	118	115.00
13	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	30	118	115.00
14	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	210	118	115.00
15	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	210	118	115.00
16	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	210	118	115.00
17	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	210	118	115.00
18	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	300	118	115.00
19	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	300	118	115.00
20	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	300	118	115.00
21	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	300	118	115.00

*Table 1: Total Site Antenna data table **(Z Value is distance from bottom of antenna to walking surface)*

Results

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population for exposure to RF emissions as specified by federal standards.

T-Mobile's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface.

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**0.20%**	**Sector A**
Accessible **Occupational** MPE Limits:	**0.04%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.20%**
Ground Level **Occupational** MPE Limits:	**0.04%**

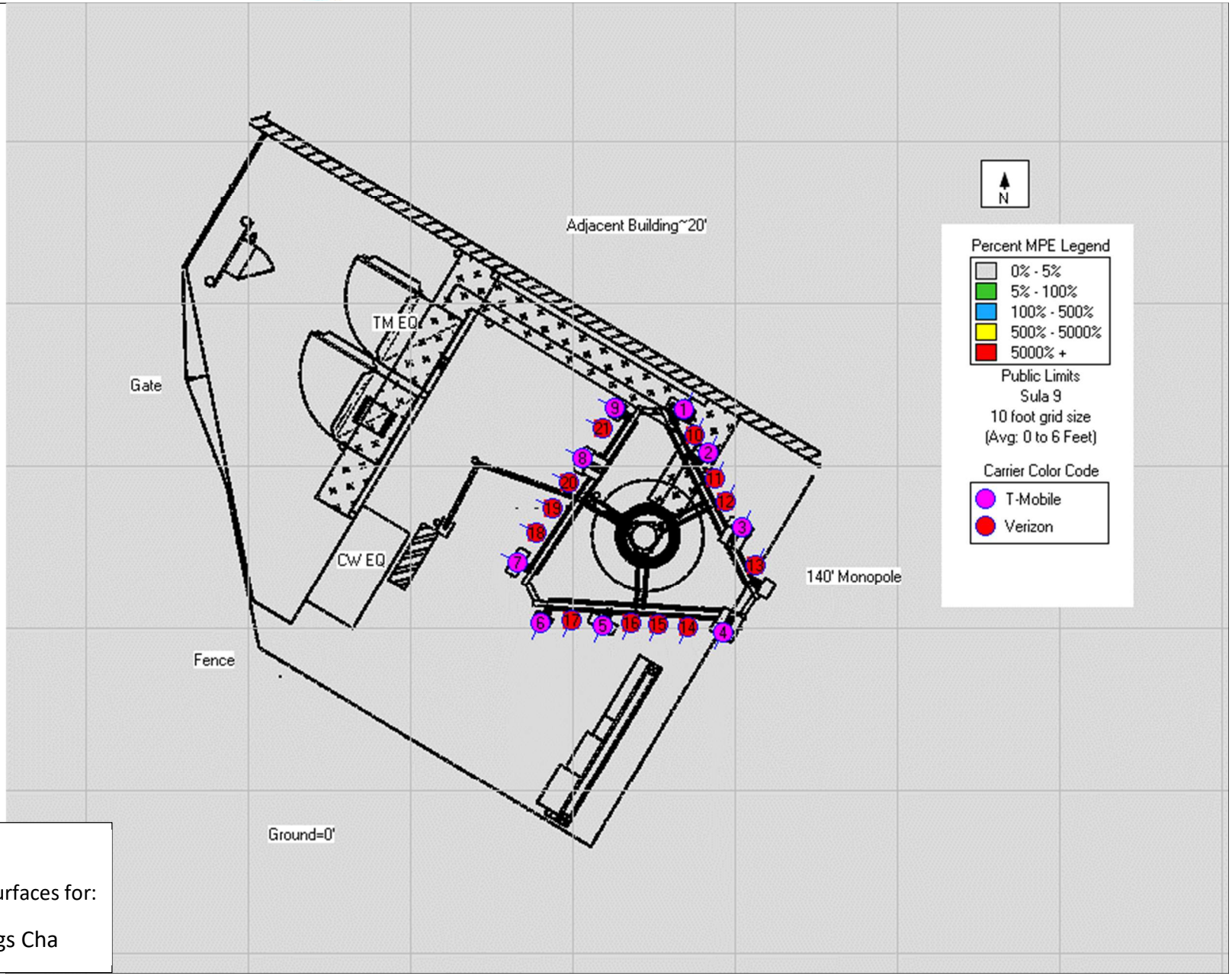
Sector A: Transmitting over Adjacent Building	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.20%**	**0**
Accessible **Occupational** MPE Limits:	**0.04%**	**0**

Sector B: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

Sector C: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

**Distance from Antenna is the distance that the MPE limits are exceeded from the front face of the antenna, outward across an accessible area.*

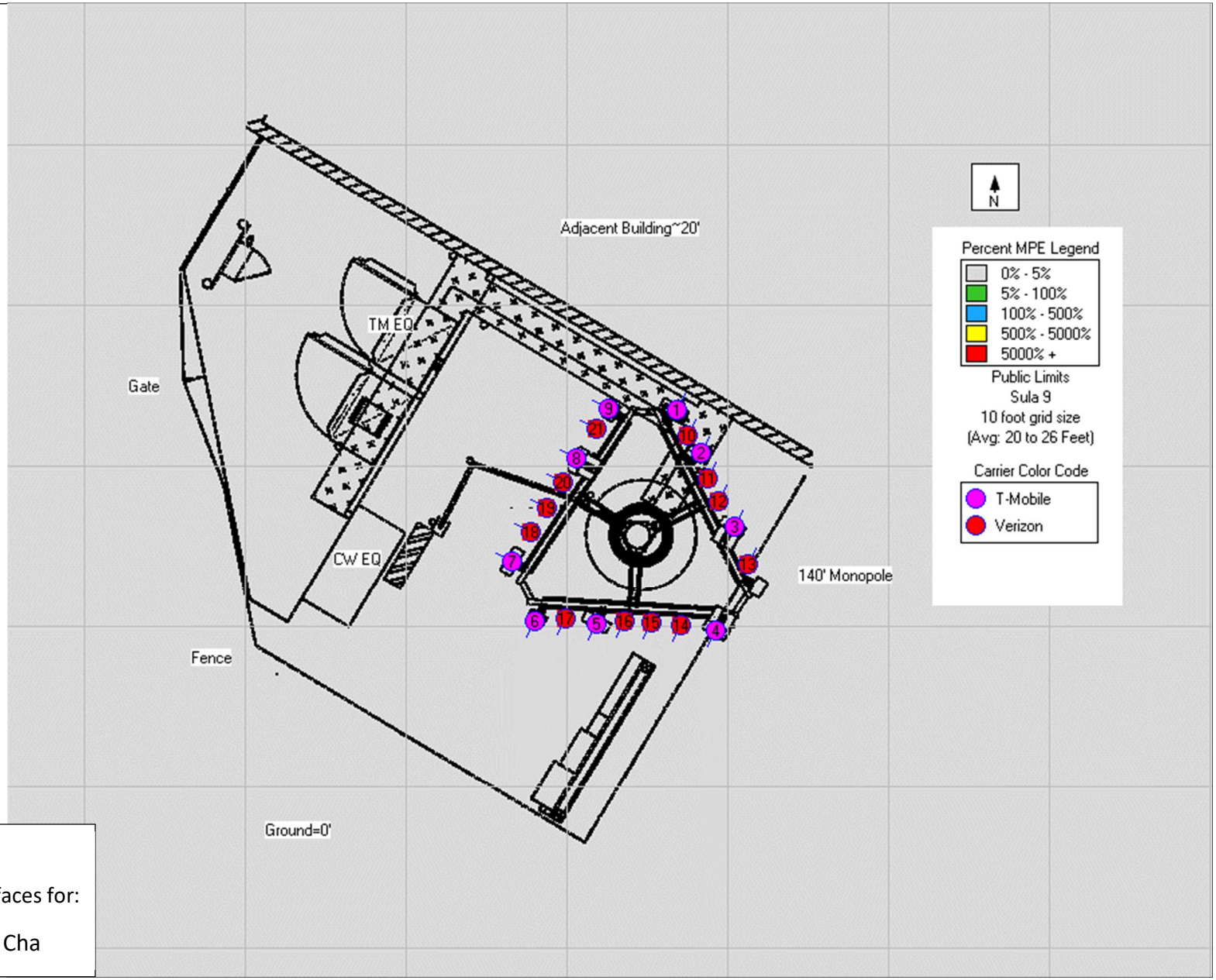
APPENDIX A: Emissions Thresholds for Walking Surfaces and Signage



Ground (0'ft.)

Emissions Thresholds for Walking Surfaces for:

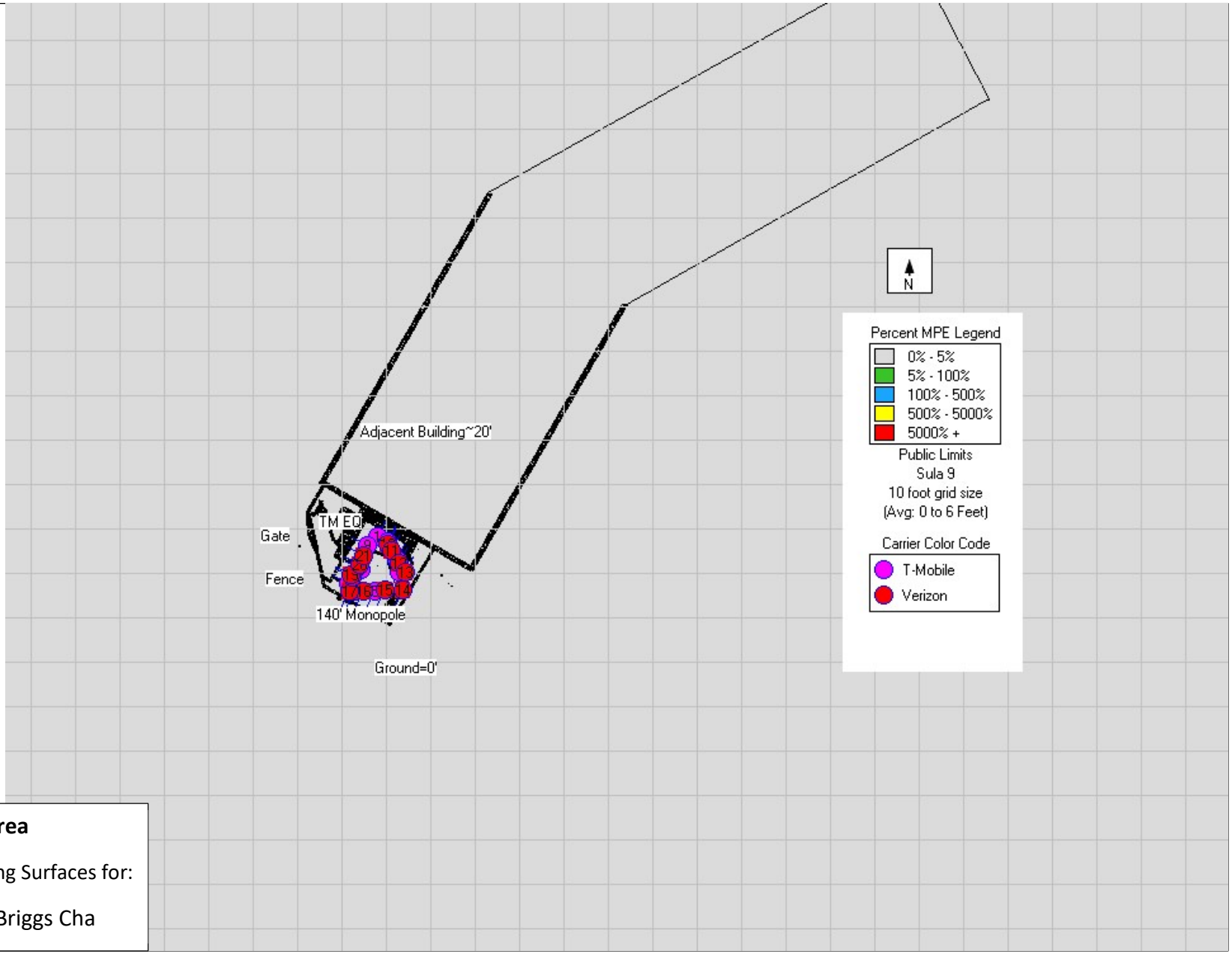
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20'ft.)

Emissions Thresholds for Walking Surfaces for:

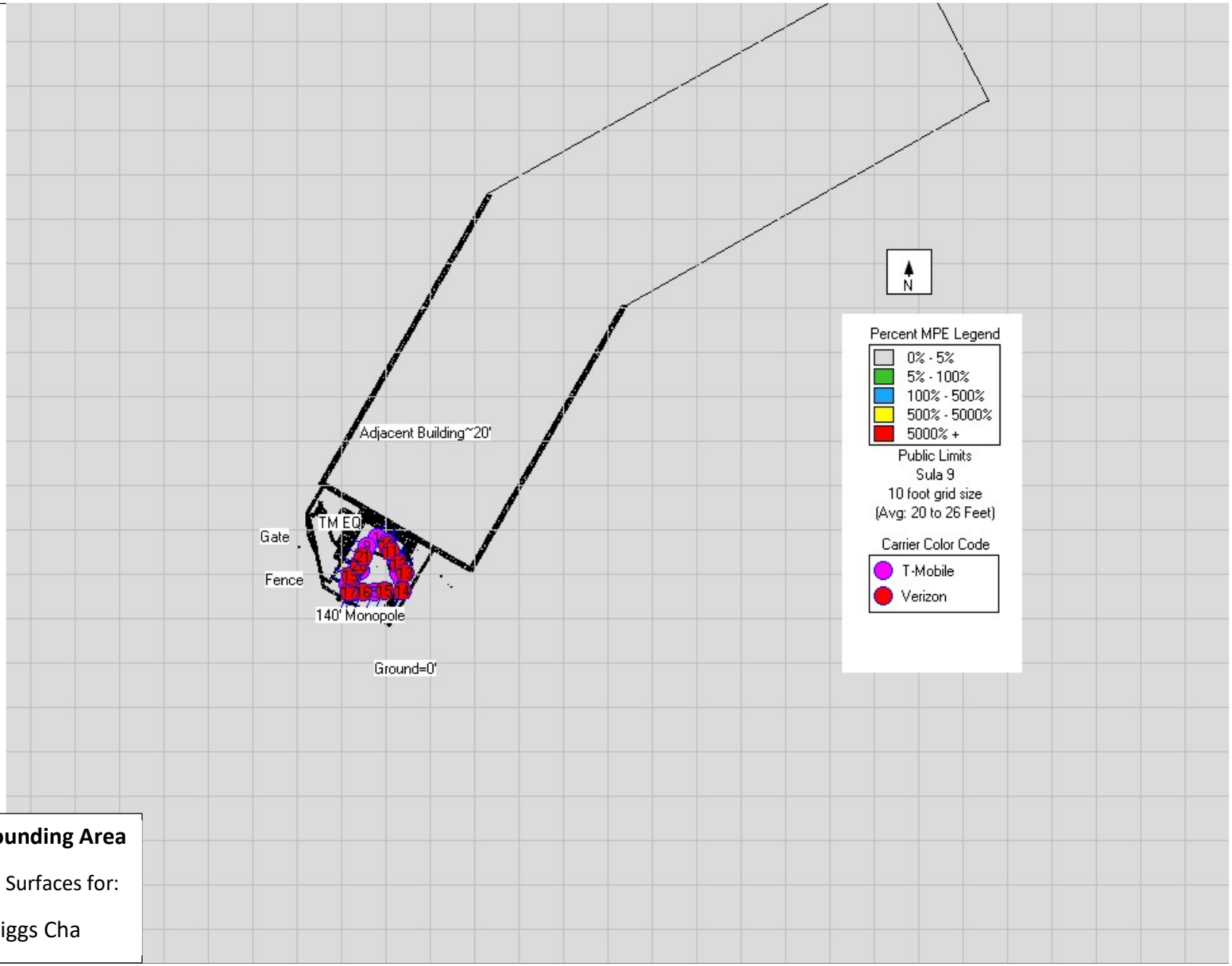
7WAN285K / Public Storage-Briggs Cha



Ground (0ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

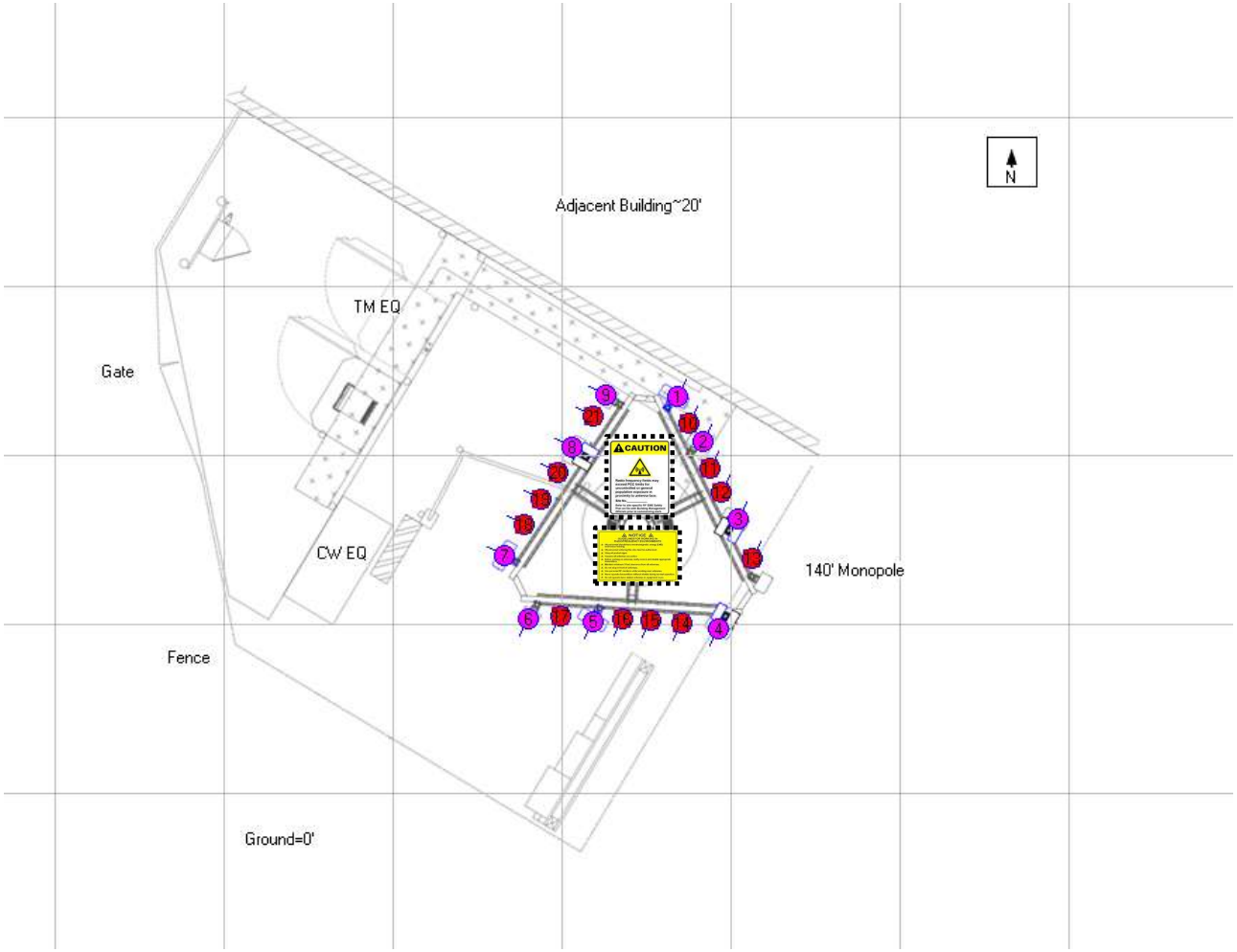
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

7WAN285K / Public Storage-Briggs Cha



Existing Item

Proposed Item

Signage Count							
	1		0		1		0

Signage Diagram

Signage for:

7WAN285K/ Public Storage-Briggs Cha

Compliance Actions:

Compliance Actions:

Access	• Install (1) Guideline sign on the base of the monopole. • Install (1) Caution sign on the base of the monopole.
Alpha Sector	• No Action Needed.
Beta Sector	• No Action Needed.
Gamma sector	• No Action Needed.
Notes:	• If there is a fixed climbing point located on this site, the Guideline and Caution signs should be installed at that location.

APPENDIX B: RF Signage Description Table

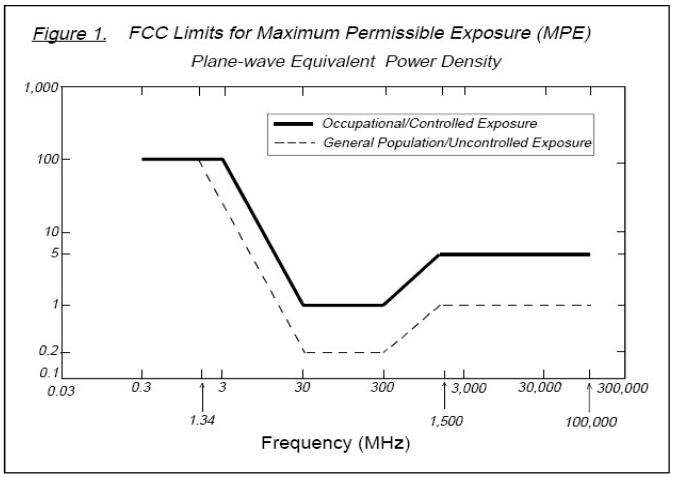
Sign	Description
	**RF Guideline Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. Must be placed anywhere the public can get within 30 feet vertically or horizontally of an antenna.
	**Yellow Caution Sign** Used to inform individuals that they are entering an area that may exceed the either the FCC's General Population or Occupational Emissions limits. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.
	**Red Warning Sign** Used to inform individuals that they are entering an area that may exceed 5x the FCC's Occupational emissions limit. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.

APPENDIX C: FCC Emissions Threshold Limits

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX D: Certifications

I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Michelle Stone

11/13/2020

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Brandon Green

11/13/2020

Date: **October 08, 2020**

Stephanie Lipscomb
Crown Castle
370 Mallory Station Road Suite 505
Franklin, TN 37067

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	7WAN285K
	Carrier Site Name:	Public Storage-Briggs Cha
Crown Castle Designation:	**Crown Castle BU Number:**	826848
	Crown Castle Site Name:	Public Storage-Briggs Cha
	Crown Castle JDE Job Number:	616150
	Crown Castle Work Order Number:	1887883
	Crown Castle Order Number:	525942 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1887883
Site Data:	**3351 Briggs Chaney Road, Silver Spring, Montgomery County, MD** **Latitude *39° 4' 29.97"*, Longitude *-76° 56' 32.02"*** **140 Foot - Monopole Tower**	

Dear Stephanie Lipscomb,

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

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

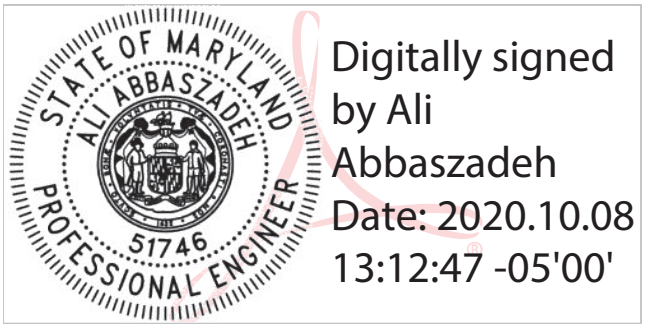
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 113 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jared Koski /AM

Respectfully submitted by:

Ali Abbaszadeh, P.E.
Senior Project Engineer



I hereby certify that these documents were prepared or approved by me, and that I am duly licensed professional engineer under the laws of State of Maryland.
License No. 51746
Expiration Date: 11/09/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by Valmont. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	113
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	40 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	140.0	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	15	1-1/4 1-5/8
		3	ericsson	RADIO 4449 B12/B71		
	140.0	4	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RRUS 4415 B25_CCIV2		
		1	tower mounts	T-Arm Mount [TA 701-3]		
		1	tower mounts	Miscellaneous [NA 507-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
127.0	127.0	1	tower mounts	T-Arm Mount [TA 602-3]	-	-
118.0	120.0	6	jma wireless	MX06FRO840-02 w/ Mount Pipe	11	1-1/4 1-5/8
		3	nokia	AIRSCALE DUAL RRH 4T4R B2/66A 320W		
		3	nokia	AIRSCALE DUAL RRH 4T4R B5/13 320W		
		1	raycap	RRFDC-3315-PF-48		
		1	raycap	RVZDC-6627-PF-48		
	118.0	1	tower mounts	Platform Mount [14' LP 404-1_KCKR]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	7941835	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont Industries, Inc.	3908664	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont Industries, Inc.	3475172	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Tower Engineering Professionals, Inc.	4081023	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Engineering, Inc.	4760657	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Engineering, Inc.	7944904	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	8305498	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
L2	135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
L3	130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
L4	125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
L5	120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
L6	115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
L7	110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
L8	105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L9	100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
L10	95 - 89.08	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
L11	89.08 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
L12	88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
L13	85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
L14	84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
L15	79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
L16	74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
L17	74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
L18	73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
L19	68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
L20	63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
L21	58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
L22	53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
L23	53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
L24	52.83 - 45.91	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
L25	45.91 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
L26	44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
L27	39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
L28	38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
L29	38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
L30	33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L31	33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L32	32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
L33	27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
L34	23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
L35	22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
L36	17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
L37	12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
L38	7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
L39	2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
					Summary	
				Pole	80.8%	Pass
				Reinforcement	79.8%	Pass
				Overall	80.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.1	Pass
1	Base Plate	0	59.1	Pass
1	Base Foundation (Structure)	0	68.6	Pass
1	Base Foundation (Soil Interaction)	0	76.5	Pass

Structure Rating (max from all components) =	80.8%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

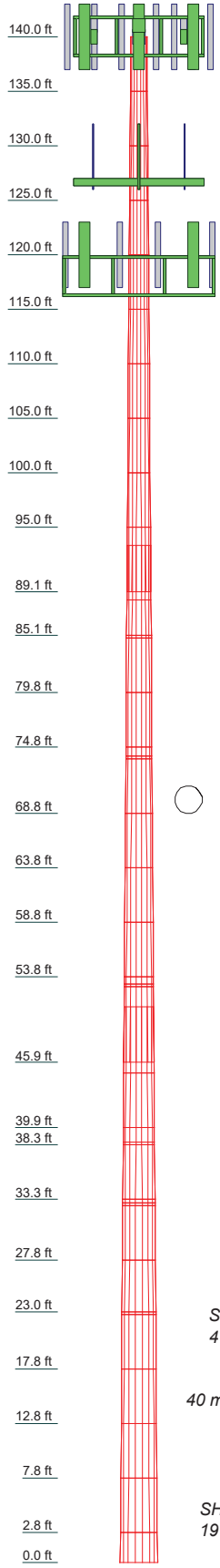
4.1) Recommendations

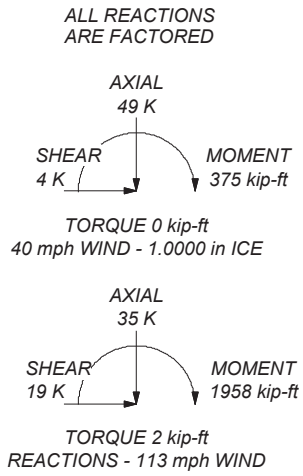
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.75	4.25	5.00	5.00	5.00	5.00	2.75
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.5563
Socket Length (ft)										4.25														5.08																	
Top Dia (in)	18.0000	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920
Bot Dia (in)	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920	51.3471
Grade	A572-65																																						
Weight (K)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.0	0.5	0.6	0.1	0.0	0.6	0.7	0.7	0.7	0.0	0.1	1.4	1.0	0.8	0.2	0.1	1.1	0.1	0.1	1.1	1.0	0.1	1.2	1.2	1.2	1.2	0.7





MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Montgomery County, Maryland.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 113 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 80.8%

CROWN CASTLE
The Pathway to Possible

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

Job: ***BU# 826848***			
Project:			
Client: Crown Castle	Drawn by: JKoski		App'd:
Code: TIA-222-H	Date: 10/07/20		Scale: NTS
Path: C:\Users\jkoski\Desktop\Work Area\826848\WO 1887883 - SA\Prod\826848.eri			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Montgomery County, Maryland.
4) Tower base elevation above sea level: 356.00 ft.
5) Basic wind speed of 113 mph.
6) Risk Category II.
7) Exposure Category C.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: 0.00 ft.
11) Nominal ice thickness of 1.0000 in.
12) Ice thickness is considered to increase with height.
13) Ice density of 56 pcf.
14) A wind speed of 40 mph is used in combination with ice.
15) Temperature drop of 50 °F.
16) Deflections calculated using a wind speed of 60 mph.
17) TOWER RATING: 80.8%.
18) A non-linear (P-delta) analysis was used.
19) Pressures are calculated at each section.
20) Stress ratio used in pole design is 1.05.
21) Tower analysis based on target reliabilities in accordance with Annex S.
22) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
23) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.00-135.00	5.00	0.00	18	18.0000	18.8551	0.1875	0.7500	A572-65 (65 ksi)
L2	135.00-130.00	5.00	0.00	18	18.8551	19.7101	0.1875	0.7500	A572-65 (65 ksi)
L3	130.00-125.00	5.00	0.00	18	19.7101	20.5652	0.1875	0.7500	A572-65 (65 ksi)
L4	125.00-120.00	5.00	0.00	18	20.5652	21.4203	0.1875	0.7500	A572-65 (65 ksi)
L5	120.00-115.00	5.00	0.00	18	21.4203	22.2753	0.1875	0.7500	A572-65 (65 ksi)
L6	115.00-110.00	5.00	0.00	18	22.2753	23.1304	0.1875	0.7500	A572-65 (65 ksi)
L7	110.00-105.00	5.00	0.00	18	23.1304	23.9855	0.1875	0.7500	A572-65 (65 ksi)
L8	105.00-100.00	5.00	0.00	18	23.9855	24.8405	0.1875	0.7500	A572-65 (65 ksi)
L9	100.00-95.00	5.00	0.00	18	24.8405	25.6956	0.1875	0.7500	A572-65 (65 ksi)
L10	95.00-89.08	5.92	4.25	18	25.6956	26.7080	0.1875	0.7500	A572-65 (65 ksi)
L11	89.08-88.33	5.00	0.00	18	25.6062	26.4612	0.2188	0.8750	A572-65 (65 ksi)
L12	88.33-85.08	3.25	0.00	18	26.4612	27.0169	0.2188	0.8750	A572-65 (65 ksi)
L13	85.08-84.83	0.25	0.00	18	27.0169	27.0597	0.4000	1.6000	A572-65 (65 ksi)
L14	84.83-79.83	5.00	0.00	18	27.0597	27.9147	0.3937	1.5750	A572-65 (65 ksi)
L15	79.83-74.83	5.00	0.00	18	27.9147	28.7697	0.3875	1.5500	A572-65 (65 ksi)
L16	74.83-74.00	0.83	0.00	18	28.7697	28.9116	0.3875	1.5500	A572-65 (65 ksi)
L17	74.00-73.75	0.25	0.00	18	28.9116	28.9544	0.4437	1.7750	A572-65 (65 ksi)
L18	73.75-68.75	5.00	0.00	18	28.9544	29.8094	0.4375	1.7500	A572-65 (65 ksi)
L19	68.75-63.75	5.00	0.00	18	29.8094	30.6644	0.4313	1.7250	A572-65 (65 ksi)
L20	63.75-58.75	5.00	0.00	18	30.6644	31.5194	0.4188	1.6750	A572-65 (65 ksi)
L21	58.75-53.75	5.00	0.00	18	31.5194	32.3744	0.4188	1.6750	A572-65 (65 ksi)
L22	53.75-53.08	0.67	0.00	18	32.3744	32.4889	0.4188	1.6750	A572-65 (65 ksi)
L23	53.08-52.83	0.25	0.00	18	32.4889	32.5317	0.5313	2.1250	A572-65 (65 ksi)
L24	52.83-45.91	6.92	5.08	18	32.5317	33.7150	0.5313	2.1250	A572-65 (65 ksi)
L25	45.91-44.91	6.08	0.00	18	32.4088	33.4487	0.4000	1.6000	A572-65 (65 ksi)
L26	44.91-39.91	5.00	0.00	18	33.4487	34.3039	0.4000	1.6000	A572-65 (65 ksi)
L27	39.91-38.58	1.33	0.00	18	34.3039	34.5314	0.3937	1.5750	A572-65 (65 ksi)
L28	38.58-38.33	0.25	0.00	18	34.5314	34.5742	0.5563	2.2250	A572-65 (65 ksi)
L29	38.33-33.33	5.00	0.00	18	34.5742	35.4293	0.5437	2.1750	A572-65 (65 ksi)
L30	33.33-33.00	0.33	0.00	18	35.4293	35.4858	0.5437	2.1750	A572-65 (65 ksi)
L31	33.00-32.75	0.25	0.00	18	35.4858	35.5285	0.5437	2.1750	A572-65 (65 ksi)
L32	32.75-27.75	5.00	0.00	18	35.5285	36.3837	0.5437	2.1750	A572-65 (65 ksi)
L33	27.75-23.00	4.75	0.00	18	36.3837	37.1961	0.5313	2.1250	A572-65 (65 ksi)

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
L34	23.00-22.75	0.25	0.00	18	37.1961	37.2389	0.5813	2.3250	A572-65 (65 ksi)
L35	22.75-17.75	5.00	0.00	18	37.2389	38.0941	0.5813	2.3250	A572-65 (65 ksi)
L36	17.75-12.75	5.00	0.00	18	38.0941	38.9493	0.5687	2.2750	A572-65 (65 ksi)
L37	12.75-7.75	5.00	0.00	18	38.9493	39.8045	0.5687	2.2750	A572-65 (65 ksi)
L38	7.75-2.75	5.00	0.00	18	39.8045	40.6596	0.5563	2.2250	A572-65 (65 ksi)
L39	2.75-0.00	2.75		18	40.6596	41.1300	0.5563	2.2250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
L2	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
L3	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
L4	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
L5	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
L6	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
L7	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
L8	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
L9	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
L10	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
	27.0911	15.7830	1402.4609	9.4148	13.5677	103.3679	2806.7672	7.8930	4.3706	23.31
L11	26.7054	17.6268	1435.3220	9.0125	13.0079	110.3419	2872.5326	8.8151	4.1217	18.842
	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
L12	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
	27.4000	18.6063	1688.1416	9.5134	13.7246	123.0011	3378.5045	9.3049	4.3700	19.977
L13	27.3720	33.7929	3024.6755	9.4490	13.7246	220.3834	6053.3309	16.8996	4.0510	10.127
	27.4154	33.8471	3039.2729	9.4642	13.7463	221.0972	6082.5449	16.9268	4.0585	10.146
L14	27.4164	33.3261	2993.8889	9.4664	13.7463	217.7956	5991.7172	16.6662	4.0695	10.335
	28.2846	34.3946	3291.2033	9.7699	14.1807	232.0909	6586.7372	17.2006	4.2200	10.717
L15	28.2855	33.8564	3241.1691	9.7722	14.1807	228.5626	6486.6031	16.9314	4.2310	10.919
	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
L16	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
	29.2978	35.0825	3606.2244	10.1261	14.6871	245.5368	7217.1939	17.5446	4.4064	11.371
L17	29.2892	40.0959	4105.3252	10.1061	14.6871	279.5191	8216.0522	20.0518	4.3074	9.707
	29.3326	40.1561	4123.8477	10.1213	14.7088	280.3657	8253.1217	20.0819	4.3150	9.724
L18	29.3335	39.5992	4068.4398	10.1235	14.7088	276.5987	8142.2330	19.8034	4.3260	9.888
	30.2017	40.7865	4445.4636	10.4270	15.1432	293.5625	8896.7767	20.3971	4.4764	10.232
L19	30.2027	40.2124	4384.7549	10.4292	15.1432	289.5535	8775.2794	20.1100	4.4874	10.406
	31.0709	41.3827	4778.8365	10.7328	15.5775	306.7782	9563.9610	20.6953	4.6379	10.755
L20	31.0728	40.1998	4646.0775	10.7372	15.5775	298.2557	9298.2685	20.1037	4.6599	11.128
	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
L21	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
L22	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
	32.9255	42.6249	5538.6442	11.3849	16.5044	335.5864	11084.5763	21.3165	4.9811	11.895

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L23	32.9082	53.8866	6952.9504	11.3450	16.5044	421.2792	13915.0496	26.9484	4.7831	9.003
	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
L24	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
	34.1532	55.9540	7784.3025	11.7802	17.1272	454.4989	15578.8478	27.9823	4.9988	9.41
L25	33.7293	40.6384	5260.3351	11.3631	16.4637	319.5115	10527.5920	20.3231	5.0000	12.5
	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
L26	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
	34.7714	43.0444	6251.0618	12.0359	17.4264	358.7124	12510.3489	21.5263	5.3335	13.334
L27	34.7724	42.3796	6156.7926	12.0381	17.4264	353.3029	12321.6865	21.1939	5.3445	13.573
	35.0034	42.6639	6281.5304	12.1189	17.5419	358.0863	12571.3261	21.3360	5.3845	13.675
L28	34.9783	59.9844	8747.7871	12.0612	17.5419	498.6782	17507.0847	29.9979	5.0985	9.166
	35.0217	60.0599	8780.8571	12.0764	17.5637	499.9444	17573.2683	30.0356	5.1061	9.179
L29	35.0236	58.7318	8593.0001	12.0808	17.5637	489.2486	17197.3071	29.3715	5.1281	9.431
	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
L30	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
L31	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
L32	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
	36.8611	61.8549	10037.9871	12.7232	18.4829	543.0950	20089.1825	30.9333	5.4465	10.017
L33	36.8630	60.4540	9817.4939	12.7276	18.4829	531.1654	19647.9058	30.2327	5.4685	10.294
	37.6880	61.8239	10500.1321	13.0160	18.8956	555.6906	21014.0806	30.9178	5.6115	10.563
L34	37.6803	67.5504	11441.4437	12.9983	18.8956	605.5070	22897.9424	33.7816	5.5235	9.503
	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
L35	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
	38.5921	69.2070	12304.0266	13.3171	19.3518	635.8079	24624.2432	34.6101	5.6816	9.775
L36	38.5940	67.7412	12051.4632	13.3215	19.3518	622.7567	24118.7840	33.8770	5.7036	10.028
	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
L37	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
	40.3308	70.8288	13775.5970	13.9287	20.2207	681.2632	27569.3202	35.4211	6.0046	10.558
L38	40.3327	69.2942	13485.7175	13.9331	20.2207	666.9274	26989.1799	34.6537	6.0266	10.834
	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
L39	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
	41.6787	71.6345	14898.7504	14.4037	20.8940	713.0622	29817.1049	35.8240	6.2599	11.254

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.00-135.00				1	1	1			
L2 135.00-130.00				1	1	1			
L3 130.00-125.00				1	1	1			
L4 125.00-120.00				1	1	1			
L5 120.00-115.00				1	1	1			
L6 115.00-110.00				1	1	1			
L7 110.00-105.00				1	1	1			
L8 105.00-100.00				1	1	1			
L9 100.00-95.00				1	1	1			
L10 95.00-89.08				1	1	1			
L11 89.08-88.33				1	1	1			
L12 88.33-85.08				1	1	1			
L13 85.08-84.83				1	1	0.949459			
L14 84.83-79.83				1	1	0.951605			
L15 79.83-74.83				1	1	0.954618			
L16 74.83-74.00				1	1	0.952677			
L17 74.00-73.75				1	1	0.945115			
L18 73.75-68.75				1	1	0.945062			
L19 68.75-63.75				1	1	0.945792			
L20 63.75-58.75				1	1	0.961217			
L21 58.75-53.75				1	1	0.949475			
L22 53.75-53.08				1	1	0.94795			
L23 53.08-52.83				1	1	1.08299			
L24 52.83-45.91				1	1	1.07645			
L25 45.91-44.91				1	1	1.13466			
L26 44.91-39.91				1	1	1.12378			
L27 39.91-38.58				1	1	1.13856			
L28 38.58-38.33				1	1	1.0342			
L29 38.33-33.33				1	1	1.04434			
L30 33.33-33.00				1	1	1.04349			
L31 33.00-32.75				1	1	1.04285			
L32 32.75-27.75				1	1	1.0303			
L33 27.75-23.00				1	1	1.04255			
L34 23.00-				1	1	1.02016			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
22.75									
L35 22.75-17.75				1	1	1.00794			
L36 17.75-12.75				1	1	1.01782			
L37 12.75-7.75				1	1	1.00642			
L38 7.75-2.75				1	1	1.01755			
L39 2.75-0.00				1	1	1.01161			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HCS 6X12 6AWG(1-3/8) ***	B	No	Surface Ar (CaAa)	140.00 - 0.00	2	2	-0.100 -0.030	1.3800		1.70
CCI-WSFP-060100	A	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	A	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100 ***	C	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	A	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	A	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	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_AA_A ft^2/ft	Weight plf
***									
HB114-1-05U3-S3J(1-1/4)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HCS 6X12 6AWG(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
MLCH HYBRID 6X12(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	1.72
							1/2" Ice	0.00	1.72
							1" Ice	0.00	1.72
***									
HB114-1-05U3-S3J(1-1/4)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HB158-U12S24-XXX-LI(1-5/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.634	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.207	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.897	0.000	0.03
		C	0.000	0.000	1.000	0.000	0.01
L13	85.08-84.83	A	0.000	0.000	0.167	0.000	0.00
		B	0.000	0.000	0.236	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L14	84.83-79.83	A	0.000	0.000	3.333	0.000	0.00
		B	0.000	0.000	4.713	0.000	0.05
		C	0.000	0.000	3.333	0.000	0.02
L15	79.83-74.83	A	0.000	0.000	3.890	0.000	0.00
		B	0.000	0.000	5.270	0.000	0.05
		C	0.000	0.000	3.890	0.000	0.02
L16	74.83-74.00	A	0.000	0.000	0.830	0.000	0.00
		B	0.000	0.000	1.059	0.000	0.01
		C	0.000	0.000	0.830	0.000	0.00
L17	74.00-73.75	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.319	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L18	73.75-68.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L19	68.75-63.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L20	63.75-58.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L21	58.75-53.75	A	0.000	0.000	6.330	0.000	0.00
		B	0.000	0.000	7.710	0.000	0.05
		C	0.000	0.000	6.330	0.000	0.02
L22	53.75-53.08	A	0.000	0.000	1.340	0.000	0.00
		B	0.000	0.000	1.525	0.000	0.01
		C	0.000	0.000	1.340	0.000	0.00
L23	53.08-52.83	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L24	52.83-45.91	A	0.000	0.000	13.250	0.000	0.00
		B	0.000	0.000	15.160	0.000	0.07
		C	0.000	0.000	13.250	0.000	0.03
L25	45.91-44.91	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.276	0.000	0.01
		C	0.000	0.000	1.000	0.000	0.00
L26	44.91-39.91	A	0.000	0.000	5.113	0.000	0.00
		B	0.000	0.000	6.493	0.000	0.05
		C	0.000	0.000	5.113	0.000	0.02
L27	39.91-38.58	A	0.000	0.000	2.217	0.000	0.00
		B	0.000	0.000	2.584	0.000	0.01
		C	0.000	0.000	2.217	0.000	0.01
L28	38.58-38.33	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L29	38.33-33.33	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L30	33.33-33.00	A	0.000	0.000	0.550	0.000	0.00
		B	0.000	0.000	0.641	0.000	0.00
		C	0.000	0.000	0.550	0.000	0.00
L31	33.00-32.75	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L32	32.75-27.75	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L33	27.75-23.00	A	0.000	0.000	8.583	0.000	0.00
		B	0.000	0.000	9.894	0.000	0.04
		C	0.000	0.000	8.583	0.000	0.02
L34	23.00-22.75	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L35	22.75-17.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L36	17.75-12.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L37	12.75-7.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L38	7.75-2.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L39	2.75-0.00	A	0.000	0.000	5.500	0.000	0.00
		B	0.000	0.000	6.259	0.000	0.03
		C	0.000	0.000	5.500	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.950	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.977	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.946	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.973	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.941	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.969	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.936	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.931	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.926	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.921	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.915	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.947	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.909	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.942	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	3.436	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.938	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.435	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.936	0.000	0.000	1.220	0.000	0.01
		B		0.000	0.000	3.102	0.000	0.05
		C		0.000	0.000	1.220	0.000	0.02
L13	85.08-84.83	A	0.934	0.000	0.000	0.203	0.000	0.00
		B		0.000	0.000	0.348	0.000	0.00
		C		0.000	0.000	0.203	0.000	0.00
L14	84.83-79.83	A	0.931	0.000	0.000	4.064	0.000	0.02
		B		0.000	0.000	6.953	0.000	0.09
		C		0.000	0.000	4.064	0.000	0.04
L15	79.83-74.83	A	0.926	0.000	0.000	4.684	0.000	0.03
		B		0.000	0.000	7.566	0.000	0.09
		C		0.000	0.000	4.684	0.000	0.05
L16	74.83-74.00	A	0.922	0.000	0.000	0.983	0.000	0.01
		B		0.000	0.000	1.461	0.000	0.02
		C		0.000	0.000	0.983	0.000	0.01
L17	74.00-73.75	A	0.921	0.000	0.000	0.296	0.000	0.00
		B		0.000	0.000	0.440	0.000	0.00
		C		0.000	0.000	0.296	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L18	73.75-68.75	A	0.918	0.000	0.000	5.918	0.000	0.03
		B		0.000	0.000	8.790	0.000	0.10
		C		0.000	0.000	5.918	0.000	0.05
L19	68.75-63.75	A	0.911	0.000	0.000	5.911	0.000	0.03
		B		0.000	0.000	8.776	0.000	0.10
		C		0.000	0.000	5.911	0.000	0.05
L20	63.75-58.75	A	0.904	0.000	0.000	5.904	0.000	0.03
		B		0.000	0.000	8.759	0.000	0.10
		C		0.000	0.000	5.904	0.000	0.05
L21	58.75-53.75	A	0.897	0.000	0.000	7.465	0.000	0.04
		B		0.000	0.000	10.311	0.000	0.10
		C		0.000	0.000	7.465	0.000	0.06
L22	53.75-53.08	A	0.892	0.000	0.000	1.579	0.000	0.01
		B		0.000	0.000	1.960	0.000	0.02
		C		0.000	0.000	1.579	0.000	0.01
L23	53.08-52.83	A	0.891	0.000	0.000	0.589	0.000	0.00
		B		0.000	0.000	0.731	0.000	0.01
		C		0.000	0.000	0.589	0.000	0.00
L24	52.83-45.91	A	0.885	0.000	0.000	15.595	0.000	0.08
		B		0.000	0.000	19.513	0.000	0.17
		C		0.000	0.000	15.595	0.000	0.11
L25	45.91-44.91	A	0.878	0.000	0.000	1.177	0.000	0.01
		B		0.000	0.000	1.743	0.000	0.02
		C		0.000	0.000	1.177	0.000	0.01
L26	44.91-39.91	A	0.872	0.000	0.000	6.015	0.000	0.03
		B		0.000	0.000	8.829	0.000	0.09
		C		0.000	0.000	6.015	0.000	0.05
L27	39.91-38.58	A	0.865	0.000	0.000	2.677	0.000	0.01
		B		0.000	0.000	3.423	0.000	0.03
		C		0.000	0.000	2.677	0.000	0.02
L28	38.58-38.33	A	0.863	0.000	0.000	0.503	0.000	0.00
		B		0.000	0.000	0.643	0.000	0.01
		C		0.000	0.000	0.503	0.000	0.00
L29	38.33-33.33	A	0.857	0.000	0.000	10.047	0.000	0.05
		B		0.000	0.000	12.844	0.000	0.12
		C		0.000	0.000	10.047	0.000	0.07
L30	33.33-33.00	A	0.850	0.000	0.000	0.662	0.000	0.00
		B		0.000	0.000	0.846	0.000	0.01
		C		0.000	0.000	0.662	0.000	0.00
L31	33.00-32.75	A	0.850	0.000	0.000	0.502	0.000	0.00
		B		0.000	0.000	0.641	0.000	0.01
		C		0.000	0.000	0.502	0.000	0.00
L32	32.75-27.75	A	0.843	0.000	0.000	10.019	0.000	0.05
		B		0.000	0.000	12.797	0.000	0.11
		C		0.000	0.000	10.019	0.000	0.07
L33	27.75-23.00	A	0.828	0.000	0.000	10.156	0.000	0.05
		B		0.000	0.000	12.778	0.000	0.11
		C		0.000	0.000	10.156	0.000	0.07
L34	23.00-22.75	A	0.819	0.000	0.000	0.582	0.000	0.00
		B		0.000	0.000	0.719	0.000	0.01
		C		0.000	0.000	0.582	0.000	0.00
L35	22.75-17.75	A	0.809	0.000	0.000	11.619	0.000	0.05
		B		0.000	0.000	14.356	0.000	0.12
		C		0.000	0.000	11.619	0.000	0.07
L36	17.75-12.75	A	0.787	0.000	0.000	11.574	0.000	0.05
		B		0.000	0.000	14.282	0.000	0.11
		C		0.000	0.000	11.574	0.000	0.07
L37	12.75-7.75	A	0.756	0.000	0.000	11.512	0.000	0.05
		B		0.000	0.000	14.182	0.000	0.11
		C		0.000	0.000	11.512	0.000	0.07
L38	7.75-2.75	A	0.707	0.000	0.000	11.414	0.000	0.05
		B		0.000	0.000	14.023	0.000	0.11
		C		0.000	0.000	11.414	0.000	0.07
L39	2.75-0.00	A	0.618	0.000	0.000	6.180	0.000	0.02
		B		0.000	0.000	7.554	0.000	0.05
		C		0.000	0.000	6.180	0.000	0.03

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.00-135.00	1.5290	-1.1860	1.5032	-1.1660
L2	135.00-130.00	1.5376	-1.1927	1.5238	-1.1820
L3	130.00-125.00	1.5455	-1.1988	1.5432	-1.1970
L4	125.00-120.00	1.5529	-1.2045	1.5613	-1.2111
L5	120.00-115.00	1.5598	-1.2099	1.5784	-1.2243
L6	115.00-110.00	1.5662	-1.2149	1.5943	-1.2367
L7	110.00-105.00	1.5723	-1.2196	1.6092	-1.2483
L8	105.00-100.00	1.5780	-1.2241	1.6232	-1.2591
L9	100.00-95.00	1.5834	-1.2282	1.6363	-1.2692
L10	95.00-89.08	1.5890	-1.2325	1.6495	-1.2795
L11	89.08-88.33	1.5903	-1.2336	1.6532	-1.2823
L12	88.33-85.08	1.0763	-0.8349	1.2838	-0.9958
L13	85.08-84.83	0.7860	-0.6097	1.0230	-0.7935
L14	84.83-79.83	0.7928	-0.6150	1.0309	-0.7996
L15	79.83-74.83	0.7438	-0.5770	0.9884	-0.7667
L16	74.83-74.00	0.6520	-0.5058	0.8995	-0.6977
L17	74.00-73.75	0.6534	-0.5068	0.9011	-0.6990
L18	73.75-68.75	0.6594	-0.5115	0.9082	-0.7045
L19	68.75-63.75	0.6708	-0.5203	0.9214	-0.7147
L20	63.75-58.75	0.6819	-0.5289	0.9340	-0.7245
L21	58.75-53.75	0.6013	-0.4664	0.8456	-0.6559
L22	53.75-53.08	0.4455	-0.3456	0.6598	-0.5118
L23	53.08-52.83	0.4464	-0.3462	0.6609	-0.5126
L24	52.83-45.91	0.4667	-0.3620	0.6859	-0.5320
L25	45.91-44.91	0.7104	-0.5510	0.9657	-0.7491
L26	44.91-39.91	0.7076	-0.5489	0.9597	-0.7444
L27	39.91-38.58	0.5276	-0.4093	0.7453	-0.5781
L28	38.58-38.33	0.5291	-0.4104	0.7470	-0.5794
L29	38.33-33.33	0.5337	-0.4140	0.7518	-0.5832
L30	33.33-33.00	0.5384	-0.4176	0.7566	-0.5869
L31	33.00-32.75	0.5389	-0.4180	0.7571	-0.5873
L32	32.75-27.75	0.5434	-0.4215	0.7617	-0.5908
L33	27.75-23.00	0.5226	-0.4053	0.7406	-0.5745
L34	23.00-22.75	0.4911	-0.3810	0.7079	-0.5491
L35	22.75-17.75	0.4952	-0.3841	0.7113	-0.5517
L36	17.75-12.75	0.5030	-0.3902	0.7167	-0.5559
L37	12.75-7.75	0.5106	-0.3961	0.7200	-0.5585
L38	7.75-2.75	0.5182	-0.4020	0.7186	-0.5574
L39	2.75-0.00	0.5240	-0.4065	0.7050	-0.5468

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_a No Ice	K_a Ice
L1	4	HCS 6X12 6AWG(1-3/8)	135.00 - 140.00	1.0000	1.0000
L2	4	HCS 6X12 6AWG(1-3/8)	130.00 - 135.00	1.0000	1.0000
L3	4	HCS 6X12 6AWG(1-3/8)	125.00 - 130.00	1.0000	1.0000
L4	4	HCS 6X12 6AWG(1-3/8)	120.00 - 125.00	1.0000	1.0000
L5	4	HCS 6X12 6AWG(1-3/8)	115.00 - 120.00	1.0000	1.0000
L6	4	HCS 6X12 6AWG(1-3/8)	110.00 - 115.00	1.0000	1.0000
L7	4	HCS 6X12 6AWG(1-3/8)	105.00 - 110.00	1.0000	1.0000
L8	4	HCS 6X12 6AWG(1-3/8)	100.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.00		
L9	4	HCS 6X12 6AWG(1-3/8)	95.00 - 100.00	1.0000	1.0000
L10	4	HCS 6X12 6AWG(1-3/8)	89.08 - 95.00	1.0000	1.0000
L11	4	HCS 6X12 6AWG(1-3/8)	88.33 - 89.08	1.0000	1.0000
L12	4	HCS 6X12 6AWG(1-3/8)	85.08 - 88.33	1.0000	1.0000
L12	27	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L13	4	HCS 6X12 6AWG(1-3/8)	84.83 - 85.08	1.0000	1.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L14	4	HCS 6X12 6AWG(1-3/8)	79.83 - 84.83	1.0000	1.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L15	4	HCS 6X12 6AWG(1-3/8)	74.83 - 79.83	1.0000	1.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	15	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	16	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	27	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L16	4	HCS 6X12 6AWG(1-3/8)	74.00 - 74.83	1.0000	1.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	15	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	16	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L17	4	HCS 6X12 6AWG(1-3/8)	73.75 - 74.00	1.0000	1.0000
L17	14	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	15	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	16	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L18	4	HCS 6X12 6AWG(1-3/8)	68.75 - 73.75	1.0000	1.0000
L18	14	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	15	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	16	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	4	HCS 6X12 6AWG(1-3/8)	63.75 - 68.75	1.0000	1.0000
L19	14	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	15	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	16	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L20	4	HCS 6X12 6AWG(1-3/8)	58.75 - 63.75	1.0000	1.0000
L20	14	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	15	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	16	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L21	4	HCS 6X12 6AWG(1-3/8)	53.75 - 58.75	1.0000	1.0000
L21	14	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	15	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	16	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	21	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	22	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	23	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L22	4	HCS 6X12 6AWG(1-3/8)	53.08 - 53.75	1.0000	1.0000
L22	14	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	15	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	16	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	21	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	22	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	23	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L23	4	HCS 6X12 6AWG(1-3/8)	52.83 - 53.08	1.0000	1.0000
L23	14	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	15	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	16	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	21	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	22	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	23	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L24	4	HCS 6X12 6AWG(1-3/8)	45.91 - 52.83	1.0000	1.0000
L24	14	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	15	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	16	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	21	CCI-SFP-060100	45.91 - 52.83	1.0000	1.0000
L24	22	CCI-SFP-060100	45.91 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	23	CCI-SFP-060100	52.83 45.91 -	1.0000	1.0000
L25	4	HCS 6X12 6AWG(1-3/8)	52.83 44.91 -	1.0000	1.0000
L25	21	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	22	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	23	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L26	4	HCS 6X12 6AWG(1-3/8)	45.91 39.91 -	1.0000	1.0000
L26	21	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	22	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	23	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	24	CCI-SFP-45100	44.91 39.91 -	1.0000	1.0000
L26	25	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L26	26	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L27	4	HCS 6X12 6AWG(1-3/8)	40.08 38.58 -	1.0000	1.0000
L27	21	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	22	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	23	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	24	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	25	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L28	4	HCS 6X12 6AWG(1-3/8)	39.91 38.33 -	1.0000	1.0000
L28	21	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	22	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	23	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	24	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L29	4	HCS 6X12 6AWG(1-3/8)	38.58 33.33 -	1.0000	1.0000
L29	18	CCI-WSFP-060100	38.33 33.33 -	1.0000	1.0000
L29	19	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	20	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	21	CCI-SFP-060100	35.00 35.00 -	1.0000	1.0000
L29	22	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	23	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	24	CCI-SFP-45100	38.33 33.33 -	1.0000	1.0000
			38.33		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	25	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L29	26	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L30	4	HCS 6X12 6AWG(1-3/8)	33.00 - 33.33	1.0000	1.0000
L30	18	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	19	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	20	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	24	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	25	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	26	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L31	4	HCS 6X12 6AWG(1-3/8)	32.75 - 33.00	1.0000	1.0000
L31	18	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	19	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	20	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	24	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	25	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	26	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L32	4	HCS 6X12 6AWG(1-3/8)	27.75 - 32.75	1.0000	1.0000
L32	18	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	19	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	20	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	24	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	25	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	26	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L33	4	HCS 6X12 6AWG(1-3/8)	23.00 - 27.75	1.0000	1.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	12	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	13	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	18	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	19	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	20	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	24	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L34	4	HCS 6X12 6AWG(1-3/8)	22.75 - 23.00	1.0000	1.0000
L34	11	CCI-WSFP-060100	22.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	12	CCI-WSFP-060100	23.00 22.75 - 23.00	1.0000	1.0000
L34	13	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	18	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	19	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	20	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L35	4	HCS 6X12 6AWG(1-3/8)	17.75 - 22.75	1.0000	1.0000
L35	11	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	12	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	13	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	18	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	19	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	20	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L36	4	HCS 6X12 6AWG(1-3/8)	12.75 - 17.75	1.0000	1.0000
L36	11	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	12	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	13	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	18	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	19	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	20	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L37	4	HCS 6X12 6AWG(1-3/8)	7.75 - 12.75	1.0000	1.0000
L37	11	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	12	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	13	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	18	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	19	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	20	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L38	4	HCS 6X12 6AWG(1-3/8)	2.75 - 7.75	1.0000	1.0000
L38	11	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	20	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L39	4	HCS 6X12 6AWG(1-3/8)	0.00 - 2.75	1.0000	1.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	27	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	15	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	16	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	27	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	15	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	16	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L17	14	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	15	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	16	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L18	14	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	15	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	16	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L19	14	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	15	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	16	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L20	14	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	15	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	16	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L21	14	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	15	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	16	CCI-AFP-060100	53.75 -	Auto	0.1857

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	21	CCI-SFP-060100	58.75 53.75 - 55.08	Auto	0.1765
L21	22	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L21	23	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L22	14	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	15	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	16	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	21	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	22	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	23	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L23	14	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	15	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	16	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	21	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	22	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	23	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L24	14	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	15	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	16	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	21	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	22	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	23	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L25	21	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	22	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	23	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L26	21	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	22	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	23	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	24	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	25	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	26	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L27	21	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	22	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	23	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	24	CCI-SFP-45100	38.58 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	25	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L28	21	CCI-SFP-060100	39.91 38.33 -	Auto	0.1496
L28	22	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	23	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	24	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L29	18	CCI-WSFP-060100	38.58 33.33 -	Auto	0.1244
L29	19	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	20	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	21	CCI-SFP-060100	35.00 35.00 -	Auto	0.1370
L29	22	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	23	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	24	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	25	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	26	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L30	18	CCI-WSFP-060100	38.33 33.00 -	Auto	0.1194
L30	19	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	20	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	24	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	25	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	26	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L31	18	CCI-WSFP-060100	33.33 32.75 -	Auto	0.1180
L31	19	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	20	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	24	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	25	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	26	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L32	18	CCI-WSFP-060100	33.00 27.75 -	Auto	0.1048
L32	19	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	20	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	24	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000
L32	25	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	26	CCI-SFP-45100	32.75 27.75 - 32.75	Auto	0.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	12	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	13	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	18	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	19	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	20	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	24	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L34	11	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	12	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	13	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	18	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	19	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	20	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L35	11	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	12	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	13	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	18	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	19	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	20	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L36	11	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	12	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	13	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	18	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	19	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	20	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L37	11	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	12	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	13	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	18	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	19	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	20	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L38	11	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L38	20	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
(2) AIR 32 B2A/B66AA w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
RRUS 4415 B25_CCIV2	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RADIO 4449 B12/B71	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
T-Arm Mount [TA 701-3]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	23.94 30.04 36.16	23.94 30.04 36.16	1.09 1.48 1.95
Miscellaneous [NA 507-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
***									
T-Arm Mount [TA 602-3]	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice	13.40 16.44 19.70	13.40 16.44 19.70	0.77 1.00 1.29
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
***									
(2) MX06FRO840-02 w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
AIRSCALE DUAL RRH 4T4R B2/66A 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
AIRSCALE DUAL RRH 4T4R B2/66A 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B2/66A 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B5/13 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
RVZDC-6627-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
RRFDC-3315-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.03 0.06 0.09
Platform Mount [14' LP 404-1_KCKR]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	33.43 42.79 52.04	33.43 42.79 52.04	2.16 2.82 3.63
2' horizontal 2 1/2"x2 1/2" angle	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
(2) 3' Vertical x 3"x 3" Angle Mount	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									

Load Combinations

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

Comb. No.	Description
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	140 - 135	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-7.11	-1.33	0.77
			Max. Mx	8	-3.56	-27.95	0.44
			Max. My	2	-3.56	-0.72	27.55
			Max. Vy	8	5.26	-27.95	0.44
			Max. Vx	2	-5.24	-0.72	27.55
			Max. Torque	12			1.22
L2	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.54	-1.39	0.80
			Max. Mx	8	-3.82	-54.95	0.53
			Max. My	2	-3.83	-0.82	54.47
			Max. Vy	8	5.54	-54.95	0.53
			Max. Vx	2	-5.53	-0.82	54.47
			Max. Torque	12			1.22
L3	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.68	-1.45	0.84
			Max. Mx	8	-5.07	-85.74	0.62
			Max. My	2	-5.08	-0.93	85.18
			Max. Vy	8	6.76	-85.74	0.62
			Max. Vx	2	-6.75	-0.93	85.18
			Max. Torque	12			1.22
L4	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.14	-1.51	0.87
			Max. Mx	8	-5.37	-120.29	0.71
			Max. My	2	-5.38	-1.03	119.64
			Max. Vy	8	7.05	-120.29	0.71
			Max. Vx	2	-7.04	-1.03	119.64
			Max. Torque	12			1.22
L5	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.01	-2.44	1.41
			Max. Mx	8	-9.99	-175.49	1.12
			Max. My	2	-10.01	-1.56	174.41
			Max. Vy	8	12.14	-175.49	1.12
			Max. Vx	2	-12.08	-1.56	174.41
			Max. Torque	12			2.03
L6	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.53	-2.52	1.45
			Max. Mx	8	-10.39	-236.87	1.41
			Max. My	2	-10.40	-1.87	235.48
			Max. Vy	8	12.41	-236.87	1.41
			Max. Vx	2	-12.35	-1.87	235.48
			Max. Torque	12			2.03
L7	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.06	-2.60	1.50
			Max. Mx	8	-10.81	-299.57	1.69
			Max. My	2	-10.82	-2.17	297.87
			Max. Vy	8	12.67	-299.57	1.69
			Max. Vx	2	-12.61	-2.17	297.87
			Max. Torque	12			2.03
L8	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.60	-2.67	1.54

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-11.25	-363.56	1.97
			Max. My	2	-11.26	-2.47	361.56
			Max. Vy	8	12.93	-363.56	1.97
			Max. Vx	2	-12.87	-2.47	361.56
			Max. Torque	12			2.03
L9	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.16	-2.74	1.58
			Max. Mx	8	-11.71	-428.81	2.24
			Max. My	2	-11.72	-2.76	426.51
			Max. Vy	8	13.18	-428.81	2.24
			Max. Vx	2	-13.12	-2.76	426.51
			Max. Torque	12			2.03
L10	95 - 89.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.35	-2.77	1.60
			Max. Mx	8	-11.87	-450.88	2.33
			Max. My	2	-11.88	-2.85	448.48
			Max. Vy	8	13.27	-450.88	2.33
			Max. Vx	2	-13.21	-2.85	448.48
			Max. Torque	12			2.03
L11	89.08 - 88.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.38	-2.83	1.64
			Max. Mx	8	-12.63	-517.99	2.61
			Max. My	2	-12.64	-3.14	515.29
			Max. Vy	8	13.58	-517.99	2.61
			Max. Vx	2	-13.52	-3.14	515.29
			Max. Torque	12			2.02
L12	88.33 - 85.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.81	-2.88	1.66
			Max. Mx	8	-12.98	-562.38	2.78
			Max. My	2	-12.99	-3.33	559.48
			Max. Vy	8	13.75	-562.38	2.78
			Max. Vx	2	-13.69	-3.33	559.48
			Max. Torque	12			2.02
L13	85.08 - 84.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.86	-2.88	1.66
			Max. Mx	8	-13.03	-565.82	2.80
			Max. My	2	-13.04	-3.34	562.90
			Max. Vy	8	13.75	-565.82	2.80
			Max. Vx	2	-13.69	-3.34	562.90
			Max. Torque	12			2.02
L14	84.83 - 79.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.86	-2.94	1.70
			Max. Mx	8	-13.81	-635.37	3.07
			Max. My	2	-13.82	-3.63	632.16
			Max. Vy	8	14.07	-635.37	3.07
			Max. Vx	2	-14.01	-3.63	632.16
			Max. Torque	12			2.02
L15	79.83 - 74.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.88	-3.01	1.74
			Max. Mx	8	-14.61	-706.49	3.34
			Max. My	2	-14.62	-3.91	702.97
			Max. Vy	8	14.38	-706.49	3.34
			Max. Vx	2	-14.32	-3.91	702.97
			Max. Torque	12			2.02
L16	74.83 - 74	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.05	-3.02	1.74
			Max. Mx	8	-14.75	-718.44	3.38
			Max. My	2	-14.75	-3.96	714.88
			Max. Vy	8	14.43	-718.44	3.38
			Max. Vx	2	-14.37	-3.96	714.88
			Max. Torque	12			2.02
L17	74 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.11	-3.02	1.74
			Max. Mx	8	-14.79	-722.05	3.40

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-14.80	-3.97	718.47
			Max. Vy	8	14.44	-722.05	3.40
			Max. Vx	2	-14.38	-3.97	718.47
			Max. Torque	12			2.02
L18	73.75 - 68.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.25	-3.08	1.78
			Max. Mx	8	-15.69	-795.08	3.67
			Max. My	2	-15.70	-4.26	791.20
			Max. Vy	8	14.77	-795.08	3.67
			Max. Vx	2	-14.71	-4.26	791.20
			Max. Torque	12			2.02
L19	68.75 - 63.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.40	-3.15	1.82
			Max. Mx	8	-16.61	-869.70	3.94
			Max. My	2	-16.61	-4.54	865.52
			Max. Vy	8	15.09	-869.70	3.94
			Max. Vx	2	-15.03	-4.54	865.52
			Max. Torque	12			2.02
L20	63.75 - 58.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.57	-3.21	1.85
			Max. Mx	8	-17.54	-945.89	4.20
			Max. My	2	-17.55	-4.82	941.41
			Max. Vy	8	15.40	-945.89	4.20
			Max. Vx	2	-15.34	-4.82	941.41
			Max. Torque	12			2.02
L21	58.75 - 53.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.78	-3.27	1.89
			Max. Mx	8	-18.49	-1023.62	4.47
			Max. My	2	-18.50	-5.10	1018.84
			Max. Vy	8	15.70	-1023.62	4.47
			Max. Vx	2	-15.65	-5.10	1018.84
			Max. Torque	12			2.02
L22	53.75 - 53.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.95	-3.28	1.89
			Max. Mx	8	-18.63	-1034.16	4.51
			Max. My	2	-18.63	-5.14	1029.33
			Max. Vy	8	15.74	-1034.16	4.51
			Max. Vx	2	-15.68	-5.14	1029.33
			Max. Torque	12			2.02
L23	53.08 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.04	-3.28	1.89
			Max. Mx	8	-18.69	-1038.09	4.52
			Max. My	2	-18.70	-5.15	1033.26
			Max. Vy	20	-15.75	1035.06	-2.79
			Max. Vx	2	-15.70	-5.15	1033.26
			Max. Torque	12			2.02
L24	52.83 - 45.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.64	-3.30	1.91
			Max. Mx	8	-19.17	-1067.20	4.62
			Max. My	2	-19.17	-5.26	1062.25
			Max. Vy	8	15.89	-1067.20	4.62
			Max. Vx	2	-15.83	-5.26	1062.25
			Max. Torque	12			2.02
L25	45.91 - 44.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.77	-3.36	1.94
			Max. Mx	8	-21.70	-1165.18	4.94
			Max. My	2	-21.71	-5.60	1159.87
			Max. Vy	8	16.34	-1165.18	4.94
			Max. Vx	2	-16.28	-5.60	1159.87
			Max. Torque	12			2.02
L26	44.91 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	39.91						
			Max. Compression	26	-35.12	-3.41	1.97
			Max. Mx	8	-22.83	-1247.53	5.21
			Max. My	2	-22.83	-5.88	1241.93
			Max. Vy	8	16.61	-1247.53	5.21
			Max. Vx	2	-16.56	-5.88	1241.93
			Max. Torque	12			2.02
L27	39.91 - 38.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.50	-3.42	1.98
			Max. Mx	8	-23.13	-1269.67	5.28
			Max. My	2	-23.13	-5.95	1263.98
			Max. Vy	8	16.69	-1269.67	5.28
			Max. Vx	2	-16.63	-5.95	1263.98
			Max. Torque	12			2.02
L28	38.58 - 38.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.58	-3.42	1.98
			Max. Mx	8	-23.21	-1273.84	5.29
			Max. My	2	-23.21	-5.96	1268.14
			Max. Vy	20	-16.69	1270.64	-3.46
			Max. Vx	2	-16.63	-5.96	1268.14
			Max. Torque	12			2.02
L29	38.33 - 33.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.29	-3.47	2.01
			Max. Mx	8	-24.61	-1358.06	5.56
			Max. My	2	-24.61	-6.24	1352.06
			Max. Vy	8	17.00	-1358.06	5.56
			Max. Vx	2	-16.94	-6.24	1352.06
			Max. Torque	12			2.02
L30	33.33 - 33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.40	-3.48	2.01
			Max. Mx	8	-24.70	-1363.67	5.57
			Max. My	2	-24.71	-6.26	1357.65
			Max. Vy	8	17.01	-1363.67	5.57
			Max. Vx	2	-16.95	-6.26	1357.65
			Max. Torque	12			2.02
L31	33 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.49	-3.48	2.01
			Max. Mx	8	-24.78	-1367.92	5.59
			Max. My	2	-24.78	-6.27	1361.89
			Max. Vy	20	-17.02	1364.65	-3.71
			Max. Vx	2	-16.97	-6.27	1361.89
			Max. Torque	12			2.02
L32	32.75 - 27.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.22	-3.53	2.04
			Max. Mx	8	-26.19	-1453.77	5.85
			Max. My	2	-26.20	-6.55	1447.44
			Max. Vy	8	17.32	-1453.77	5.85
			Max. Vx	2	-17.26	-6.55	1447.44
			Max. Torque	12			2.02
L33	27.75 - 23	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.87	-3.58	2.07
			Max. Mx	8	-27.56	-1536.61	6.10
			Max. My	2	-27.56	-6.81	1530.00
			Max. Vy	8	17.57	-1536.61	6.10
			Max. Vx	2	-17.52	-6.81	1530.00
			Max. Torque	12			2.01
L34	23 - 22.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.97	-3.58	2.07
			Max. Mx	8	-27.64	-1541.00	6.11
			Max. My	2	-27.65	-6.82	1534.38
			Max. Vy	20	-17.58	1537.61	-4.17
			Max. Vx	2	-17.52	-6.82	1534.38
			Max. Torque	12			2.01
L35	22.75 - 17.75	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-42.82	-3.63	2.10
			Max. Mx	8	-29.18	-1629.57	6.37
			Max. My	2	-29.18	-7.09	1622.65
			Max. Vy	8	17.85	-1629.57	6.37
			Max. Vx	2	-17.79	-7.09	1622.65
			Max. Torque	12			2.01
L36	17.75 - 12.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.69	-3.68	2.13
			Max. Mx	8	-30.74	-1719.38	6.63
			Max. My	2	-30.74	-7.37	1712.18
			Max. Vy	8	18.09	-1719.38	6.63
			Max. Vx	2	-18.03	-7.37	1712.18
			Max. Torque	12			2.01
L37	12.75 - 7.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.56	-3.73	2.16
			Max. Mx	8	-32.32	-1810.39	6.89
			Max. My	2	-32.32	-7.64	1802.89
			Max. Vy	8	18.32	-1810.39	6.89
			Max. Vx	2	-18.27	-7.64	1802.89
			Max. Torque	12			2.01
L38	7.75 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.43	-3.79	2.19
			Max. Mx	8	-33.92	-1902.57	7.14
			Max. My	2	-33.92	-7.90	1894.79
			Max. Vy	8	18.56	-1902.57	7.14
			Max. Vx	2	-18.50	-7.90	1894.79
			Max. Torque	12			2.01
L39	2.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.44	-3.81	2.20
			Max. Mx	8	-34.80	-1953.77	7.28
			Max. My	2	-34.80	-8.05	1945.83
			Max. Vy	8	18.69	-1953.77	7.28
			Max. Vx	2	-18.64	-8.05	1945.83
			Max. Torque	12			2.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	49.44	-0.00	0.00
	Max. H_x	20	34.81	18.67	-0.05
	Max. H_z	3	26.11	-0.05	18.62
	Max. M_x	2	1945.83	-0.05	18.62
	Max. M_z	8	1953.77	-18.67	0.05
	Max. Torsion	12	2.01	-9.30	-16.10
	Min. Vert	13	26.11	-9.30	-16.10
	Min. H_x	9	26.11	-18.67	0.05
	Min. H_z	15	26.11	0.05	-18.62
	Min. M_x	14	-1943.71	0.05	-18.62
	Min. M_z	20	-1950.10	18.67	-0.05
	Min. Torsion	24	-2.01	9.30	16.10

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	29.01	0.00	0.00	-0.85	-1.47	0.00
1.2 Dead+1.0 Wind 0 deg -	34.81	0.05	-18.62	-1945.83	-8.05	1.75

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	26.11	0.05	-18.62	-1919.39	-7.47	1.72
1.2 Dead+1.0 Wind 30 deg - No Ice	34.81	9.38	-16.15	-1688.37	-983.19	1.01
0.9 Dead+1.0 Wind 30 deg - No Ice	26.11	9.38	-16.15	-1665.40	-969.50	0.99
1.2 Dead+1.0 Wind 60 deg - No Ice	34.81	16.20	-9.35	-978.82	-1695.36	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	26.11	16.20	-9.35	-965.38	-1672.09	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	34.81	18.67	-0.05	-7.28	-1953.77	-1.01
0.9 Dead+1.0 Wind 90 deg - No Ice	26.11	18.67	-0.05	-6.91	-1927.02	-0.99
1.2 Dead+1.0 Wind 120 deg - No Ice	34.81	16.15	9.27	965.94	-1689.16	-1.75
0.9 Dead+1.0 Wind 120 deg - No Ice	26.11	16.15	9.27	953.22	-1665.98	-1.72
1.2 Dead+1.0 Wind 150 deg - No Ice	34.81	9.30	16.10	1680.08	-972.42	-2.01
0.9 Dead+1.0 Wind 150 deg - No Ice	26.11	9.30	16.10	1657.76	-958.88	-1.98
1.2 Dead+1.0 Wind 180 deg - No Ice	34.81	-0.05	18.62	1943.71	4.41	-1.74
0.9 Dead+1.0 Wind 180 deg - No Ice	26.11	-0.05	18.62	1917.84	4.81	-1.71
1.2 Dead+1.0 Wind 210 deg - No Ice	34.81	-9.38	16.15	1686.24	979.53	-1.00
0.9 Dead+1.0 Wind 210 deg - No Ice	26.11	-9.38	16.15	1663.84	966.82	-0.98
1.2 Dead+1.0 Wind 240 deg - No Ice	34.81	-16.20	9.35	976.70	1691.69	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	26.11	-16.20	9.35	963.83	1669.40	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	34.81	-18.67	0.05	5.18	1950.10	1.00
0.9 Dead+1.0 Wind 270 deg - No Ice	26.11	-18.67	0.05	5.37	1924.33	0.98
1.2 Dead+1.0 Wind 300 deg - No Ice	34.81	-16.15	-9.27	-968.04	1685.51	1.74
0.9 Dead+1.0 Wind 300 deg - No Ice	26.11	-16.15	-9.27	-954.76	1663.30	1.71
1.2 Dead+1.0 Wind 330 deg - No Ice	34.81	-9.30	-16.10	-1682.18	968.78	2.01
0.9 Dead+1.0 Wind 330 deg - No Ice	26.11	-9.30	-16.10	-1659.30	956.22	1.98
1.2 Dead+1.0 Ice+1.0 Temp	49.44	0.00	-0.00	-2.20	-3.81	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	49.44	0.00	-3.56	-371.44	-4.53	0.30
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	49.44	1.79	-3.09	-322.30	-189.42	0.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	49.44	3.09	-1.79	-187.40	-324.59	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	49.44	3.57	-0.00	-2.89	-373.83	-0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	49.44	3.09	1.78	181.79	-323.94	-0.30
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	49.44	1.78	3.08	317.16	-188.30	-0.34
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	49.44	-0.00	3.56	366.95	-3.24	-0.30
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	49.44	-1.79	3.09	317.81	181.64	-0.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	49.44	-3.09	1.79	182.91	316.81	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	49.44	-3.57	0.00	-1.60	366.05	0.17
1.2 Dead+1.0 Wind 300	49.44	-3.09	-1.78	-186.28	316.16	0.30

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	49.44	-1.78	-3.08	-321.65	180.52	0.34
Dead+Wind 0 deg - Service	29.01	0.01	-4.94	-513.47	-3.16	0.47
Dead+Wind 30 deg - Service	29.01	2.49	-4.29	-445.61	-260.18	0.27
Dead+Wind 60 deg - Service	29.01	4.30	-2.48	-258.59	-447.90	-0.00
Dead+Wind 90 deg - Service	29.01	4.96	-0.01	-2.52	-516.01	-0.27
Dead+Wind 120 deg - Service	29.01	4.29	2.46	254.00	-446.26	-0.47
Dead+Wind 150 deg - Service	29.01	2.47	4.28	442.23	-257.34	-0.54
Dead+Wind 180 deg - Service	29.01	-0.01	4.94	511.72	0.12	-0.46
Dead+Wind 210 deg - Service	29.01	-2.49	4.29	443.86	257.15	-0.27
Dead+Wind 240 deg - Service	29.01	-4.30	2.48	256.84	444.86	-0.00
Dead+Wind 270 deg - Service	29.01	-4.96	0.01	0.77	512.97	0.27
Dead+Wind 300 deg - Service	29.01	-4.29	-2.46	-255.75	443.22	0.46
Dead+Wind 330 deg - Service	29.01	-2.47	-4.28	-443.98	254.31	0.54

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-29.01	0.00	-0.00	29.01	0.00	0.000%
2	0.05	-34.81	-18.62	-0.05	34.81	18.62	0.000%
3	0.05	-26.11	-18.62	-0.05	26.11	18.62	0.000%
4	9.38	-34.81	-16.15	-9.38	34.81	16.15	0.000%
5	9.38	-26.11	-16.15	-9.38	26.11	16.15	0.000%
6	16.20	-34.81	-9.35	-16.20	34.81	9.35	0.000%
7	16.20	-26.11	-9.35	-16.20	26.11	9.35	0.000%
8	18.67	-34.81	-0.05	-18.67	34.81	0.05	0.000%
9	18.67	-26.11	-0.05	-18.67	26.11	0.05	0.000%
10	16.15	-34.81	9.27	-16.15	34.81	-9.27	0.000%
11	16.15	-26.11	9.27	-16.15	26.11	-9.27	0.000%
12	9.30	-34.81	16.10	-9.30	34.81	-16.10	0.000%
13	9.30	-26.11	16.10	-9.30	26.11	-16.10	0.000%
14	-0.05	-34.81	18.62	0.05	34.81	-18.62	0.000%
15	-0.05	-26.11	18.62	0.05	26.11	-18.62	0.000%
16	-9.38	-34.81	16.15	9.38	34.81	-16.15	0.000%
17	-9.38	-26.11	16.15	9.38	26.11	-16.15	0.000%
18	-16.20	-34.81	9.35	16.20	34.81	-9.35	0.000%
19	-16.20	-26.11	9.35	16.20	26.11	-9.35	0.000%
20	-18.67	-34.81	0.05	18.67	34.81	-0.05	0.000%
21	-18.67	-26.11	0.05	18.67	26.11	-0.05	0.000%
22	-16.15	-34.81	-9.27	16.15	34.81	9.27	0.000%
23	-16.15	-26.11	-9.27	16.15	26.11	9.27	0.000%
24	-9.30	-34.81	-16.10	9.30	34.81	16.10	0.000%
25	-9.30	-26.11	-16.10	9.30	26.11	16.10	0.000%
26	0.00	-49.44	0.00	-0.00	49.44	0.00	0.000%
27	0.00	-49.44	-3.56	-0.00	49.44	3.56	0.000%
28	1.79	-49.44	-3.09	-1.79	49.44	3.09	0.000%
29	3.09	-49.44	-1.79	-3.09	49.44	1.79	0.000%
30	3.57	-49.44	-0.00	-3.57	49.44	0.00	0.000%
31	3.09	-49.44	1.78	-3.09	49.44	-1.78	0.000%
32	1.78	-49.44	3.08	-1.78	49.44	-3.08	0.000%
33	-0.00	-49.44	3.56	0.00	49.44	-3.56	0.000%
34	-1.79	-49.44	3.09	1.79	49.44	-3.09	0.000%
35	-3.09	-49.44	1.79	3.09	49.44	-1.79	0.000%
36	-3.57	-49.44	0.00	3.57	49.44	-0.00	0.000%
37	-3.09	-49.44	-1.78	3.09	49.44	1.78	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-1.78	-49.44	-3.08	1.78	49.44	3.08	0.000%
39	0.01	-29.01	-4.94	-0.01	29.01	4.94	0.000%
40	2.49	-29.01	-4.29	-2.49	29.01	4.29	0.000%
41	4.30	-29.01	-2.48	-4.30	29.01	2.48	0.000%
42	4.96	-29.01	-0.01	-4.96	29.01	0.01	0.000%
43	4.29	-29.01	2.46	-4.29	29.01	-2.46	0.000%
44	2.47	-29.01	4.28	-2.47	29.01	-4.28	0.000%
45	-0.01	-29.01	4.94	0.01	29.01	-4.94	0.000%
46	-2.49	-29.01	4.29	2.49	29.01	-4.29	0.000%
47	-4.30	-29.01	2.48	4.30	29.01	-2.48	0.000%
48	-4.96	-29.01	0.01	4.96	29.01	-0.01	0.000%
49	-4.29	-29.01	-2.46	4.29	29.01	2.46	0.000%
50	-2.47	-29.01	-4.28	2.47	29.01	4.28	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000489
2	Yes	6	0.00000001	0.00013823
3	Yes	5	0.00000001	0.00094968
4	Yes	7	0.00000001	0.00009173
5	Yes	6	0.00000001	0.00045620
6	Yes	7	0.00000001	0.00008891
7	Yes	6	0.00000001	0.00044174
8	Yes	6	0.00000001	0.00008609
9	Yes	5	0.00000001	0.00058795
10	Yes	7	0.00000001	0.00008313
11	Yes	6	0.00000001	0.00041322
12	Yes	7	0.00000001	0.00009353
13	Yes	6	0.00000001	0.00046618
14	Yes	6	0.00000001	0.00011448
15	Yes	5	0.00000001	0.00078708
16	Yes	7	0.00000001	0.00008558
17	Yes	6	0.00000001	0.00042589
18	Yes	7	0.00000001	0.00008824
19	Yes	6	0.00000001	0.00043921
20	Yes	5	0.00000001	0.00092235
21	Yes	5	0.00000001	0.00042647
22	Yes	7	0.00000001	0.00009258
23	Yes	6	0.00000001	0.00046145
24	Yes	7	0.00000001	0.00008236
25	Yes	6	0.00000001	0.00040970
26	Yes	5	0.00000001	0.00011514
27	Yes	6	0.00000001	0.00059209
28	Yes	6	0.00000001	0.00065134
29	Yes	6	0.00000001	0.00065211
30	Yes	6	0.00000001	0.00059825
31	Yes	6	0.00000001	0.00063742
32	Yes	6	0.00000001	0.00063525
33	Yes	6	0.00000001	0.00057656
34	Yes	6	0.00000001	0.00061529
35	Yes	6	0.00000001	0.00061511
36	Yes	6	0.00000001	0.00057150
37	Yes	6	0.00000001	0.00062577
38	Yes	6	0.00000001	0.00062735
39	Yes	5	0.00000001	0.00014420
40	Yes	5	0.00000001	0.00048765
41	Yes	5	0.00000001	0.00045134
42	Yes	5	0.00000001	0.00009694
43	Yes	5	0.00000001	0.00039390
44	Yes	5	0.00000001	0.00051698
45	Yes	5	0.00000001	0.00013725
46	Yes	5	0.00000001	0.00040789
47	Yes	5	0.00000001	0.00043623
48	Yes	5	0.00000001	0.00009058

49	Yes	5	0.00000001	0.00050181
50	Yes	5	0.00000001	0.00038693

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	26.230	41	1.8761	0.0126
L2	135 - 130	24.272	41	1.8624	0.0114
L3	130 - 125	22.337	41	1.8315	0.0103
L4	125 - 120	20.442	41	1.7867	0.0093
L5	120 - 115	18.601	41	1.7288	0.0085
L6	115 - 110	16.827	41	1.6565	0.0075
L7	110 - 105	15.139	41	1.5655	0.0063
L8	105 - 100	13.554	41	1.4598	0.0053
L9	100 - 95	12.086	41	1.3428	0.0044
L10	95 - 89.08	10.745	41	1.2169	0.0036
L11	93.33 - 88.33	10.327	41	1.1733	0.0033
L12	88.33 - 85.08	9.132	41	1.1009	0.0030
L13	85.08 - 84.83	8.410	41	1.0201	0.0026
L14	84.83 - 79.83	8.357	41	1.0166	0.0026
L15	79.83 - 74.83	7.330	41	0.9446	0.0023
L16	74.83 - 74	6.379	41	0.8703	0.0020
L17	74 - 73.75	6.229	41	0.8579	0.0019
L18	73.75 - 68.75	6.184	41	0.8546	0.0019
L19	68.75 - 63.75	5.325	41	0.7876	0.0017
L20	63.75 - 58.75	4.536	41	0.7192	0.0015
L21	58.75 - 53.75	3.819	41	0.6488	0.0013
L22	53.75 - 53.08	3.177	41	0.5784	0.0011
L23	53.08 - 52.83	3.096	41	0.5690	0.0010
L24	52.83 - 45.91	3.067	41	0.5663	0.0010
L25	50.99 - 44.91	2.852	41	0.5457	0.0010
L26	44.91 - 39.91	2.183	41	0.4979	0.0009
L27	39.91 - 38.58	1.701	41	0.4225	0.0007
L28	38.58 - 38.33	1.586	41	0.4025	0.0007
L29	38.33 - 33.33	1.565	41	0.3997	0.0007
L30	33.33 - 33	1.176	41	0.3443	0.0006
L31	33 - 32.75	1.152	41	0.3406	0.0005
L32	32.75 - 27.75	1.134	41	0.3379	0.0005
L33	27.75 - 23	0.809	41	0.2831	0.0004
L34	23 - 22.75	0.554	41	0.2305	0.0003
L35	22.75 - 17.75	0.542	41	0.2280	0.0003
L36	17.75 - 12.75	0.329	41	0.1778	0.0003
L37	12.75 - 7.75	0.170	41	0.1273	0.0002
L38	7.75 - 2.75	0.063	41	0.0774	0.0001
L39	2.75 - 0	0.008	41	0.0273	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	41	26.230	1.8761	0.0126	12694
127.00	T-Arm Mount [TA 602-3]	41	21.194	1.8062	0.0097	6209
118.00	(2) MX06FRO840-02 w/ Mount Pipe	41	17.882	1.7019	0.0081	4040

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	99.045	6	7.0782	0.0474
L2	135 - 130	91.683	6	7.0318	0.0427
L3	130 - 125	84.404	6	6.9197	0.0386
L4	125 - 120	77.270	6	6.7539	0.0351
L5	120 - 115	70.334	6	6.5378	0.0319
L6	115 - 110	63.647	6	6.2673	0.0280
L7	110 - 105	57.278	6	5.9255	0.0238
L8	105 - 100	51.294	6	5.5277	0.0200
L9	100 - 95	45.748	6	5.0859	0.0166
L10	95 - 89.08	40.679	6	4.6101	0.0135
L11	93.33 - 88.33	39.098	6	4.4450	0.0126
L12	88.33 - 85.08	34.577	6	4.1711	0.0111
L13	85.08 - 84.83	31.846	6	3.8652	0.0097
L14	84.83 - 79.83	31.644	6	3.8520	0.0096
L15	79.83 - 74.83	27.757	6	3.5794	0.0084
L16	74.83 - 74	24.160	6	3.2977	0.0074
L17	74 - 73.75	23.591	6	3.2510	0.0072
L18	73.75 - 68.75	23.421	6	3.2385	0.0071
L19	68.75 - 63.75	20.165	6	2.9844	0.0063
L20	63.75 - 58.75	17.178	6	2.7253	0.0055
L21	58.75 - 53.75	14.465	6	2.4583	0.0047
L22	53.75 - 53.08	12.032	6	2.1916	0.0040
L23	53.08 - 52.83	11.727	6	2.1561	0.0039
L24	52.83 - 45.91	11.614	6	2.1455	0.0039
L25	50.99 - 44.91	10.803	6	2.0676	0.0037
L26	44.91 - 39.91	8.268	6	1.8864	0.0033
L27	39.91 - 38.58	6.443	6	1.6007	0.0027
L28	38.58 - 38.33	6.007	6	1.5247	0.0025
L29	38.33 - 33.33	5.928	6	1.5144	0.0025
L30	33.33 - 33	4.453	6	1.3041	0.0021
L31	33 - 32.75	4.363	6	1.2903	0.0021
L32	32.75 - 27.75	4.296	6	1.2799	0.0020
L33	27.75 - 23	3.064	6	1.0722	0.0017
L34	23 - 22.75	2.097	6	0.8729	0.0013
L35	22.75 - 17.75	2.052	6	0.8633	0.0013
L36	17.75 - 12.75	1.247	6	0.6733	0.0010
L37	12.75 - 7.75	0.643	6	0.4819	0.0007
L38	7.75 - 2.75	0.237	6	0.2932	0.0004
L39	2.75 - 0	0.030	6	0.1032	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	6	99.045	7.0782	0.0474	3687
127.00	T-Arm Mount [TA 602-3]	6	80.103	6.8262	0.0364	1724
118.00	(2) MX06FRO840-02 w/ Mount Pipe	6	67.625	6.4373	0.0304	1107

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.00	0.00	0.0	11.1095	-3.55	649.91	0.005
L2	135 - 130 (2)	TP19.7101x18.8551x0.1875	5.00	0.00	0.0	11.6184	-3.82	679.68	0.006
L3	130 - 125 (3)	TP20.5652x19.7101x0.1875	5.00	0.00	0.0	12.1273	-5.07	709.45	0.007
L4	125 - 120 (4)	TP21.4203x20.5652x0.1875	5.00	0.00	0.0	12.6362	-5.37	739.22	0.007
L5	120 - 115 (5)	TP22.2753x21.4203x0.1875	5.00	0.00	0.0	13.1450	-9.99	768.98	0.013
L6	115 - 110 (6)	TP23.1304x22.2753x0.1875	5.00	0.00	0.0	13.6539	-10.38	798.75	0.013
L7	110 - 105 (7)	TP23.9855x23.1304x0.1875	5.00	0.00	0.0	14.1628	-10.80	828.52	0.013
L8	105 - 100 (8)	TP24.8405x23.9855x0.1875	5.00	0.00	0.0	14.6716	-11.24	858.29	0.013
L9	100 - 95 (9)	TP25.6956x24.8405x0.1875	5.00	0.00	0.0	15.1805	-11.71	888.06	0.013
L10	95 - 89.08 (10)	TP26.708x25.6956x0.1875	5.92	0.00	0.0	15.3505	-11.86	898.00	0.013
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.2188	5.00	0.00	0.0	18.2205	-12.63	1065.90	0.012
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.2188	3.25	0.00	0.0	18.6063	-12.98	1088.47	0.012
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	0.25	0.00	0.0	33.8471	-13.03	1980.06	0.007
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	5.00	0.00	0.0	34.3946	-13.81	2012.09	0.007
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	5.00	0.00	0.0	34.9080	-14.61	2042.12	0.007
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	0.83	0.00	0.0	35.0825	-14.74	2052.33	0.007
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	0.25	0.00	0.0	40.1561	-14.79	2349.13	0.006
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	5.00	0.00	0.0	40.7865	-15.69	2386.01	0.007
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	5.00	0.00	0.0	41.3827	-16.61	2420.89	0.007
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	5.00	0.00	0.0	41.3362	-17.54	2418.17	0.007
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	5.00	0.00	0.0	42.4726	-18.49	2484.65	0.007
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	0.67	0.00	0.0	42.6249	-18.62	2493.56	0.007
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	0.25	0.00	0.0	53.9587	-18.69	3156.59	0.006
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	6.92	0.00	0.0	54.4893	-19.17	3187.62	0.006
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	6.08	0.00	0.0	41.9587	-21.70	2454.58	0.009
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	5.00	0.00	0.0	43.0444	-22.83	2518.10	0.009
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	1.33	0.00	0.0	42.6639	-23.13	2495.84	0.009
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	0.25	0.00	0.0	60.0599	-23.21	3513.50	0.007
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	5.00	0.00	0.0	60.2077	-24.61	3522.15	0.007
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	0.33	0.00	0.0	60.3051	-24.70	3527.85	0.007
L31	33 - 32.75	TP35.5285x35.4858x0.54	0.25	0.00	0.0	60.378	-24.77	3532.17	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(31)	38				9			
L32	32.75 - 27.75	TP36.3837x35.5285x0.54	5.00	0.00	0.0	61.854	-26.19	3618.51	0.007
	(32)	38				9			
L33	27.75 - 23	TP37.1961x36.3837x0.53	4.75	0.00	0.0	61.823	-27.56	3616.70	0.008
	(33)	13				9			
L34	23 - 22.75	TP37.2389x37.1961x0.58	0.25	0.00	0.0	67.629	-27.64	3956.31	0.007
	(34)	13				3			
L35	22.75 - 17.75	TP38.0941x37.2389x0.58	5.00	0.00	0.0	69.207	-29.18	4048.61	0.007
	(35)	13				0			
L36	17.75 - 12.75	TP38.9493x38.0941x0.56	5.00	0.00	0.0	69.285	-30.74	4053.17	0.008
	(36)	88				0			
L37	12.75 - 7.75	TP39.8045x38.9493x0.56	5.00	0.00	0.0	70.828	-32.32	4143.48	0.008
	(37)	88				8			
L38	7.75 - 2.75	TP40.6596x39.8045x0.55	5.00	0.00	0.0	70.804	-33.92	4142.04	0.008
	(38)	63				1			
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	2.75	0.00	0.0	71.634	-34.80	4190.62	0.008
						5			

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	28.10	312.58	0.090	0.00	312.58	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18	55.15	338.07	0.163	0.00	338.07	0.000
		75						
L3	130 - 125 (3)	TP20.5652x19.7101x0.18	85.98	364.17	0.236	0.00	364.17	0.000
		75						
L4	125 - 120 (4)	TP21.4203x20.5652x0.18	120.57	390.83	0.308	0.00	390.83	0.000
		75						
L5	120 - 115 (5)	TP22.2753x21.4203x0.18	175.97	418.02	0.421	0.00	418.02	0.000
		75						
L6	115 - 110 (6)	TP23.1304x22.2753x0.18	237.50	445.68	0.533	0.00	445.68	0.000
		75						
L7	110 - 105 (7)	TP23.9855x23.1304x0.18	300.35	473.77	0.634	0.00	473.77	0.000
		75						
L8	105 - 100 (8)	TP24.8405x23.9855x0.18	364.49	502.25	0.726	0.00	502.25	0.000
		75						
L9	100 - 95 (9)	TP25.6956x24.8405x0.18	429.89	531.06	0.809	0.00	531.06	0.000
		75						
L10	95 - 89.08	TP26.708x25.6956x0.187	452.01	540.75	0.836	0.00	540.75	0.000
	(10)	5						
L11	89.08 - 88.33	TP26.4612x25.6062x0.21	519.27	684.55	0.759	0.00	684.55	0.000
	(11)	88						
L12	88.33 - 85.08	TP27.0169x26.4612x0.21	563.76	709.12	0.795	0.00	709.12	0.000
	(12)	88						
L13	85.08 - 84.83	TP27.0597x27.0169x0.4	567.20	1368.87	0.414	0.00	1368.87	0.000
	(13)							
L14	84.83 - 79.83	TP27.9147x27.0597x0.39	636.90	1436.93	0.443	0.00	1436.93	0.000
	(14)	38						
L15	79.83 - 74.83	TP28.7697x27.9147x0.38	708.17	1504.99	0.471	0.00	1504.99	0.000
	(15)	75						
L16	74.83 - 74	TP28.9116x28.7697x0.38	720.15	1520.18	0.474	0.00	1520.18	0.000
	(16)	75						
L17	74 - 73.75	TP28.9544x28.9116x0.44	723.76	1735.82	0.417	0.00	1735.82	0.000
	(17)	38						
L18	73.75 - 68.75	TP29.8094x28.9544x0.43	796.94	1817.52	0.438	0.00	1817.52	0.000
	(18)	75						
L19	68.75 - 63.75	TP30.6644x29.8094x0.43	871.72	1899.34	0.459	0.00	1899.34	0.000
	(19)	13						
L20	63.75 - 58.75	TP31.5194x30.6644x0.41	948.05	1953.18	0.485	0.00	1953.18	0.000
	(20)	88						
L21	58.75 - 53.75	TP32.3744x31.5194x0.41	1025.93	2062.78	0.497	0.00	2062.78	0.000
	(21)	88						
L22	53.75 - 53.08	TP32.4889x32.3744x0.41	1036.48	2077.70	0.499	0.00	2077.70	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	(22)	88						
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.53 13	1040.43	2615.28	0.398	0.00	2615.28	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.531 3	1069.58	2667.39	0.401	0.00	2667.39	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	1167.74	2109.62	0.554	0.00	2109.62	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	1250.25	2220.88	0.563	0.00	2220.88	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.39 38	1272.43	2217.00	0.574	0.00	2217.00	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.55 63	1276.60	3095.28	0.412	0.00	3095.28	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.54 38	1360.97	3184.44	0.427	0.00	3184.44	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.54 38	1366.58	3194.83	0.428	0.00	3194.83	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.54 38	1370.85	3202.72	0.428	0.00	3202.72	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.54 38	1456.84	3362.43	0.433	0.00	3362.43	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.53 13	1539.82	3440.42	0.448	0.00	3440.42	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.58 13	1544.22	3757.68	0.411	0.00	3757.68	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.58 13	1632.93	3936.44	0.415	0.00	3936.44	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.56 88	1722.88	4034.72	0.427	0.00	4034.72	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.56 88	1814.03	4217.88	0.430	0.00	4217.88	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.55 63	1906.36	4312.30	0.442	0.00	4312.30	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	1957.63	4414.75	0.443	0.00	4414.75	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.27	194.97	0.027	0.00	318.74	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18 75	5.55	203.90	0.027	0.00	348.61	0.000
L3	130 - 125 (3)	TP20.5652x19.7101x0.18 75	6.77	212.83	0.032	0.00	379.82	0.000
L4	125 - 120 (4)	TP21.4203x20.5652x0.18 75	7.06	221.76	0.032	0.00	412.36	0.000
L5	120 - 115 (5)	TP22.2753x21.4203x0.18 75	12.17	230.69	0.053	0.00	446.24	0.000
L6	115 - 110 (6)	TP23.1304x22.2753x0.18 75	12.44	239.63	0.052	0.00	481.46	0.000
L7	110 - 105 (7)	TP23.9855x23.1304x0.18 75	12.70	248.56	0.051	0.00	518.02	0.000
L8	105 - 100 (8)	TP24.8405x23.9855x0.18 75	12.96	257.49	0.050	0.00	555.91	0.000
L9	100 - 95 (9)	TP25.6956x24.8405x0.18 75	13.21	266.42	0.050	0.00	595.14	0.000
L10	95 - 89.08 (10)	TP26.708x25.6956x0.187 5	13.30	269.40	0.049	0.00	608.54	0.000
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.21 88	13.61	319.77	0.043	0.00	734.89	0.000
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.21 88	13.78	326.54	0.042	0.00	766.34	0.000
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	13.78	594.02	0.023	0.00	1386.87	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	14.10	603.63	0.023	0.00	1454.83	0.000
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	14.41	612.63	0.024	0.00	1522.75	0.000
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	14.46	615.70	0.023	0.00	1538.02	0.000
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	14.47	704.74	0.021	0.00	1759.61	0.000
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	14.80	715.80	0.021	0.00	1841.22	0.000
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	15.11	726.27	0.021	0.00	1922.91	0.000
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	15.43	725.45	0.021	0.00	1975.87	0.000
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	15.73	745.39	0.021	0.00	2085.99	0.000
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	15.77	748.07	0.021	0.00	2100.97	0.000
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	15.78	946.98	0.017	0.00	2653.84	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	15.91	956.29	0.017	0.00	2706.28	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	16.37	736.38	0.022	0.00	2131.24	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	16.64	755.43	0.022	0.00	2242.97	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	16.72	748.75	0.022	0.00	2238.47	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	16.72	1054.05	0.016	0.00	3140.14	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	17.02	1056.65	0.016	0.00	3228.16	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	17.04	1058.36	0.016	0.00	3238.62	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.5438	17.05	1059.65	0.016	0.00	3246.55	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.5438	17.34	1085.55	0.016	0.00	3407.21	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.5313	17.60	1085.01	0.016	0.00	3483.88	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.5813	17.61	1186.89	0.015	0.00	3810.28	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.5813	17.88	1214.58	0.015	0.00	3990.13	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.5688	18.11	1215.95	0.015	0.00	4087.03	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.5688	18.35	1243.05	0.015	0.00	4271.18	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.5563	18.59	1242.61	0.015	0.00	4364.12	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	18.72	1257.19	0.015	0.00	4467.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 135 (1)	0.005	0.090	0.000	0.027	0.000	0.096	1.050	4.8.2
L2	135 - 130 (2)	0.006	0.163	0.000	0.027	0.000	0.169	1.050	4.8.2
L3	130 - 125 (3)	0.007	0.236	0.000	0.032	0.000	0.244	1.050	4.8.2
L4	125 - 120 (4)	0.007	0.308	0.000	0.032	0.000	0.317	1.050	4.8.2
L5	120 - 115 (5)	0.013	0.421	0.000	0.053	0.000	0.437	1.050	4.8.2
L6	115 - 110 (6)	0.013	0.533	0.000	0.052	0.000	0.549	1.050	4.8.2
L7	110 - 105 (7)	0.013	0.634	0.000	0.051	0.000	0.650	1.050	4.8.2
L8	105 - 100 (8)	0.013	0.726	0.000	0.050	0.000	0.741	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L9	100 - 95 (9)	0.013	0.809	0.000	0.050	0.000	0.825	1.050	4.8.2
L10	95 - 89.08 (10)	0.013	0.836	0.000	0.049	0.000	0.852	1.050	4.8.2
L11	89.08 - 88.33 (11)	0.012	0.759	0.000	0.043	0.000	0.772	1.050	4.8.2
L12	88.33 - 85.08 (12)	0.012	0.795	0.000	0.042	0.000	0.809	1.050	4.8.2
L13	85.08 - 84.83 (13)	0.007	0.414	0.000	0.023	0.000	0.421	1.050	4.8.2
L14	84.83 - 79.83 (14)	0.007	0.443	0.000	0.023	0.000	0.451	1.050	4.8.2
L15	79.83 - 74.83 (15)	0.007	0.471	0.000	0.024	0.000	0.478	1.050	4.8.2
L16	74.83 - 74 (16)	0.007	0.474	0.000	0.023	0.000	0.481	1.050	4.8.2
L17	74 - 73.75 (17)	0.006	0.417	0.000	0.021	0.000	0.424	1.050	4.8.2
L18	73.75 - 68.75 (18)	0.007	0.438	0.000	0.021	0.000	0.445	1.050	4.8.2
L19	68.75 - 63.75 (19)	0.007	0.459	0.000	0.021	0.000	0.466	1.050	4.8.2
L20	63.75 - 58.75 (20)	0.007	0.485	0.000	0.021	0.000	0.493	1.050	4.8.2
L21	58.75 - 53.75 (21)	0.007	0.497	0.000	0.021	0.000	0.505	1.050	4.8.2
L22	53.75 - 53.08 (22)	0.007	0.499	0.000	0.021	0.000	0.507	1.050	4.8.2
L23	53.08 - 52.83 (23)	0.006	0.398	0.000	0.017	0.000	0.404	1.050	4.8.2
L24	52.83 - 45.91 (24)	0.006	0.401	0.000	0.017	0.000	0.407	1.050	4.8.2
L25	45.91 - 44.91 (25)	0.009	0.554	0.000	0.022	0.000	0.563	1.050	4.8.2
L26	44.91 - 39.91 (26)	0.009	0.563	0.000	0.022	0.000	0.573	1.050	4.8.2
L27	39.91 - 38.58 (27)	0.009	0.574	0.000	0.022	0.000	0.584	1.050	4.8.2
L28	38.58 - 38.33 (28)	0.007	0.412	0.000	0.016	0.000	0.419	1.050	4.8.2
L29	38.33 - 33.33 (29)	0.007	0.427	0.000	0.016	0.000	0.435	1.050	4.8.2
L30	33.33 - 33 (30)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L31	33 - 32.75 (31)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L32	32.75 - 27.75 (32)	0.007	0.433	0.000	0.016	0.000	0.441	1.050	4.8.2
L33	27.75 - 23 (33)	0.008	0.448	0.000	0.016	0.000	0.455	1.050	4.8.2
L34	23 - 22.75 (34)	0.007	0.411	0.000	0.015	0.000	0.418	1.050	4.8.2
L35	22.75 - 17.75 (35)	0.007	0.415	0.000	0.015	0.000	0.422	1.050	4.8.2
L36	17.75 - 12.75 (36)	0.008	0.427	0.000	0.015	0.000	0.435	1.050	4.8.2
L37	12.75 - 7.75 (37)	0.008	0.430	0.000	0.015	0.000	0.438	1.050	4.8.2
L38	7.75 - 2.75 (38)	0.008	0.442	0.000	0.015	0.000	0.450	1.050	4.8.2
L39	2.75 - 0 (39)	0.008	0.443	0.000	0.015	0.000	0.452	1.050	4.8.2

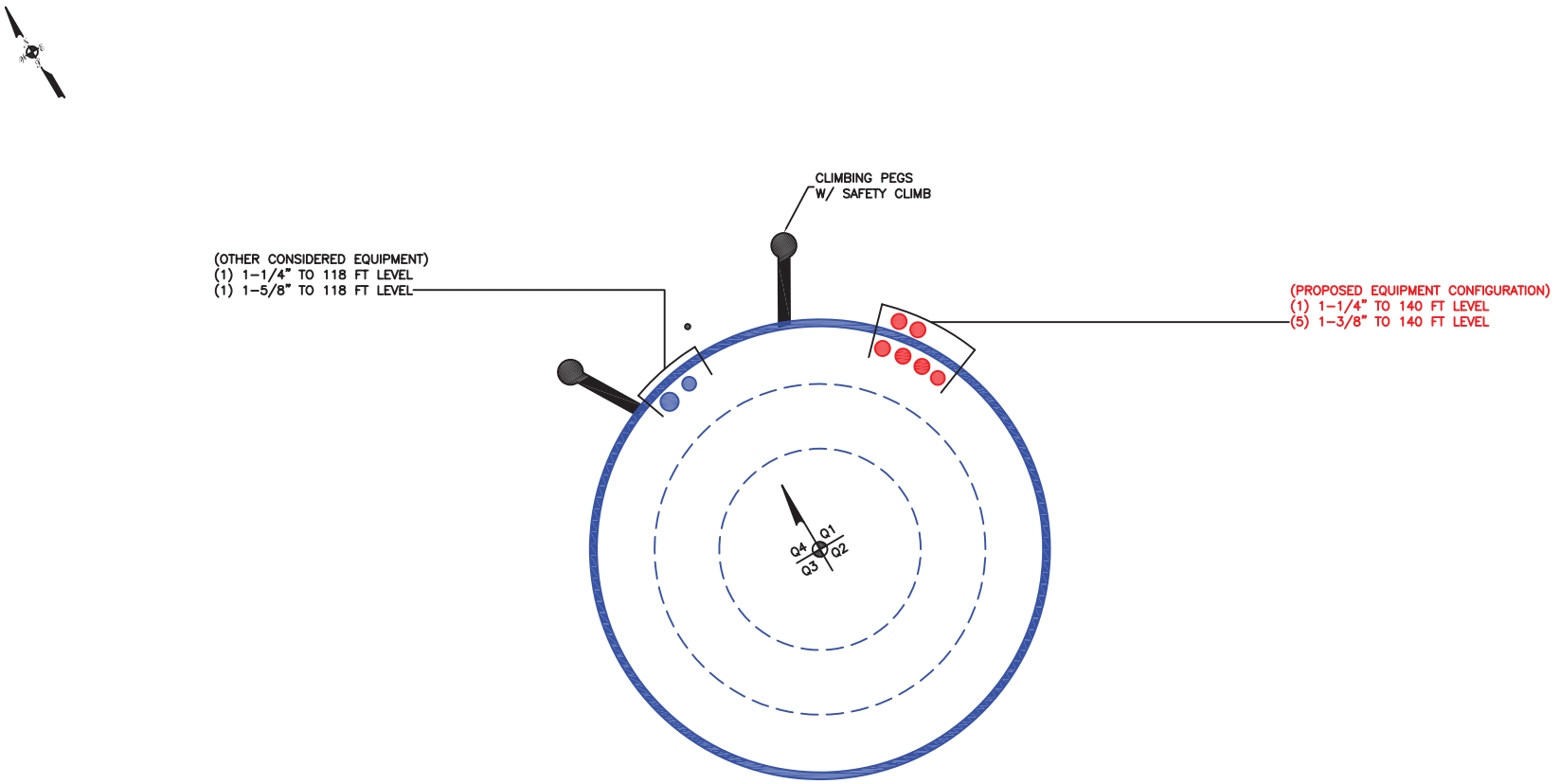
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 135	Pole	TP18.8551x18x0.1875	1	-3.55	682.40	9.2	Pass
L2	135 - 130	Pole	TP19.7101x18.8551x0.1875	2	-3.82	713.66	16.1	Pass
L3	130 - 125	Pole	TP20.5652x19.7101x0.1875	3	-5.07	744.92	23.3	Pass
L4	125 - 120	Pole	TP21.4203x20.5652x0.1875	4	-5.37	776.18	30.2	Pass
L5	120 - 115	Pole	TP22.2753x21.4203x0.1875	5	-9.99	807.43	41.6	Pass
L6	115 - 110	Pole	TP23.1304x22.2753x0.1875	6	-10.38	838.69	52.2	Pass
L7	110 - 105	Pole	TP23.9855x23.1304x0.1875	7	-10.80	869.95	61.9	Pass
L8	105 - 100	Pole	TP24.8405x23.9855x0.1875	8	-11.24	901.21	70.6	Pass
L9	100 - 95	Pole	TP25.6956x24.8405x0.1875	9	-11.71	932.46	78.6	Pass
L10	95 - 89.08	Pole	TP26.708x25.6956x0.1875	10	-11.86	942.90	81.1	Pass
L11	89.08 - 88.33	Pole	TP26.4612x25.6062x0.2188	11	-12.63	1119.19	73.5	Pass
L12	88.33 - 85.08	Pole	TP27.0169x26.4612x0.2188	12	-12.98	1142.89	77.0	Pass
L13	85.08 - 84.83	Pole	TP27.0597x27.0169x0.4	13	-13.03	2079.06	40.1	Pass
L14	84.83 - 79.83	Pole	TP27.9147x27.0597x0.3938	14	-13.81	2112.69	42.9	Pass
L15	79.83 - 74.83	Pole	TP28.7697x27.9147x0.3875	15	-14.61	2144.23	45.5	Pass
L16	74.83 - 74	Pole	TP28.9116x28.7697x0.3875	16	-14.74	2154.95	45.9	Pass
L17	74 - 73.75	Pole	TP28.9544x28.9116x0.4438	17	-14.79	2466.59	40.4	Pass
L18	73.75 - 68.75	Pole	TP29.8094x28.9544x0.4375	18	-15.69	2505.31	42.4	Pass
L19	68.75 - 63.75	Pole	TP30.6644x29.8094x0.4313	19	-16.61	2541.93	44.4	Pass
L20	63.75 - 58.75	Pole	TP31.5194x30.6644x0.4188	20	-17.54	2539.08	47.0	Pass
L21	58.75 - 53.75	Pole	TP32.3744x31.5194x0.4188	21	-18.49	2608.88	48.1	Pass
L22	53.75 - 53.08	Pole	TP32.4889x32.3744x0.4188	22	-18.62	2618.24	48.3	Pass
L23	53.08 - 52.83	Pole	TP32.5317x32.4889x0.5313	23	-18.69	3314.42	38.5	Pass
L24	52.83 - 45.91	Pole	TP33.715x32.5317x0.5313	24	-19.17	3347.00	38.8	Pass
L25	45.91 - 44.91	Pole	TP33.4487x32.4088x0.4	25	-21.70	2577.31	53.6	Pass
L26	44.91 - 39.91	Pole	TP34.3039x33.4487x0.4	26	-22.83	2644.00	54.5	Pass
L27	39.91 - 38.58	Pole	TP34.5314x34.3039x0.3938	27	-23.13	2620.63	55.6	Pass
L28	38.58 - 38.33	Pole	TP34.5742x34.5314x0.5563	28	-23.21	3689.17	39.9	Pass
L29	38.33 - 33.33	Pole	TP35.4293x34.5742x0.5438	29	-24.61	3698.26	41.4	Pass
L30	33.33 - 33	Pole	TP35.4858x35.4293x0.5438	30	-24.70	3704.24	41.4	Pass
L31	33 - 32.75	Pole	TP35.5285x35.4858x0.5438	31	-24.77	3708.78	41.5	Pass
L32	32.75 - 27.75	Pole	TP36.3837x35.5285x0.5438	32	-26.19	3799.44	42.0	Pass
L33	27.75 - 23	Pole	TP37.1961x36.3837x0.5313	33	-27.56	3797.53	43.4	Pass
L34	23 - 22.75	Pole	TP37.2389x37.1961x0.5813	34	-27.64	4154.13	39.8	Pass
L35	22.75 - 17.75	Pole	TP38.0941x37.2389x0.5813	35	-29.18	4251.04	40.2	Pass
L36	17.75 - 12.75	Pole	TP38.9493x38.0941x0.5688	36	-30.74	4255.83	41.4	Pass
L37	12.75 - 7.75	Pole	TP39.8045x38.9493x0.5688	37	-32.32	4350.65	41.7	Pass
L38	7.75 - 2.75	Pole	TP40.6596x39.8045x0.5563	38	-33.92	4349.14	42.9	Pass
L39	2.75 - 0	Pole	TP41.13x40.6596x0.5563	39	-34.80	4400.15	43.0	Pass
							Summary	
						Pole (L10)	81.1	Pass
						RATING =	**81.1**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 118 FT LEVEL
(1) 1-5/8" TO 118 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/4" TO 140 FT LEVEL
(5) 1-3/8" TO 140 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 826848

Work Order: 1887883

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	140	50.92	4.25	18	18	26.708	0.1875	Auto	A572-65
2	93.33	47.42	5.08	18	25.61	33.715	0.21875	Auto	A572-65
3	50.99	50.99	0	18	32.41	41.13	0.28125	Auto	A572-65

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	13	14	15	16	17	18
1	0	23	plate	CI-65FP-060100 (Welde	3																		
2	49	74	plate	CCI-65FP-060100	3																		
3	0	33	plate	CCI-WSFP-060100	3																		
4	33	53.08	plate	CCI-SFP-060100	3																		
5	23	38.58	plate	CCI-SFP-045100	3																		
6	74	85.08	plate	CCI-SFP-045100	3																		
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
6	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	140 - 135	5		18	18.000	18.855	0.1875	A572-65	1.000
2	135 - 130	5		18	18.855	19.710	0.1875	A572-65	1.000
3	130 - 125	5		18	19.710	20.565	0.1875	A572-65	1.000
4	125 - 120	5		18	20.565	21.420	0.1875	A572-65	1.000
5	120 - 115	5		18	21.420	22.275	0.1875	A572-65	1.000
6	115 - 110	5		18	22.275	23.130	0.1875	A572-65	1.000
7	110 - 105	5		18	23.130	23.985	0.1875	A572-65	1.000
8	105 - 100	5		18	23.985	24.841	0.1875	A572-65	1.000
9	100 - 95	5		18	24.841	25.696	0.1875	A572-65	1.000
10	95 - 93.33	5.92	4.25	18	25.696	26.708	0.1875	A572-65	1.000
11	93.33 - 88.33	5		18	25.606	26.461	0.21875	A572-65	1.000
12	88.33 - 85.08	3.25		18	26.461	27.017	0.21875	A572-65	1.000
13	85.08 - 84.83	0.25		18	27.017	27.060	0.4	A572-65	0.949
14	84.83 - 79.83	5		18	27.060	27.915	0.39375	A572-65	0.952
15	79.83 - 74.83	5		18	27.915	28.770	0.3875	A572-65	0.955
16	74.83 - 74	0.83		18	28.770	28.912	0.3875	A572-65	0.953
17	74 - 73.75	0.25		18	28.912	28.954	0.44375	A572-65	0.945
18	73.75 - 68.75	5		18	28.954	29.809	0.4375	A572-65	0.945
19	68.75 - 63.75	5		18	29.809	30.664	0.43125	A572-65	0.946
20	63.75 - 58.75	5		18	30.664	31.519	0.41875	A572-65	0.961
21	58.75 - 53.75	5		18	31.519	32.374	0.41875	A572-65	0.949
22	53.75 - 53.08	0.67		18	32.374	32.489	0.41875	A572-65	0.948
23	53.08 - 52.83	0.25		18	32.489	32.532	0.53125	A572-65	1.083
24	52.83 - 50.99	6.92	5.08	18	32.532	33.715	0.53125	A572-65	1.076
25	50.99 - 44.91	6.08		18	32.409	33.449	0.4	A572-65	1.135
26	44.91 - 39.91	5		18	33.449	34.304	0.4	A572-65	1.124
27	39.91 - 38.58	1.33		18	34.304	34.531	0.39375	A572-65	1.139
28	38.58 - 38.33	0.25		18	34.531	34.574	0.55625	A572-65	1.034
29	38.33 - 33.33	5		18	34.574	35.429	0.54375	A572-65	1.044
30	33.33 - 33	0.33		18	35.429	35.486	0.54375	A572-65	1.043
31	33 - 32.75	0.25		18	35.486	35.529	0.54375	A572-65	1.043
32	32.75 - 27.75	5		18	35.529	36.384	0.54375	A572-65	1.030
33	27.75 - 23	4.75		18	36.384	37.196	0.53125	A572-65	1.043
34	23 - 22.75	0.25		18	37.196	37.239	0.58125	A572-65	1.020
35	22.75 - 17.75	5		18	37.239	38.094	0.58125	A572-65	1.008
36	17.75 - 12.75	5		18	38.094	38.949	0.56875	A572-65	1.018
37	12.75 - 7.75	5		18	38.949	39.804	0.56875	A572-65	1.006
38	7.75 - 2.75	5		18	39.804	40.660	0.55625	A572-65	1.018
39	2.75 - 0	2.75		18	40.660	41.130	0.55625	A572-65	1.012

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	3.55	28.10	5.27
2	135 - 130	3.82	55.15	5.55
3	130 - 125	5.07	85.98	6.77
4	125 - 120	5.37	120.57	7.06
5	120 - 115	9.99	175.97	12.17
6	115 - 110	10.38	237.50	12.44
7	110 - 105	10.80	300.35	12.70
8	105 - 100	11.24	364.48	12.96
9	100 - 95	11.71	429.89	13.21
10	95 - 93.33	11.86	452.01	13.30
11	93.33 - 88.33	12.63	519.27	13.61
12	88.33 - 85.08	12.98	563.76	13.78
13	85.08 - 84.83	13.03	567.20	13.78
14	84.83 - 79.83	13.81	636.90	14.10
15	79.83 - 74.83	14.61	708.17	14.41
16	74.83 - 74	14.74	720.15	14.46
17	74 - 73.75	14.79	723.77	14.47
18	73.75 - 68.75	15.69	796.94	14.80
19	68.75 - 63.75	16.61	871.71	15.11
20	63.75 - 58.75	17.54	948.05	15.43
21	58.75 - 53.75	18.49	1025.93	15.73
22	53.75 - 53.08	18.62	1036.48	15.77
23	53.08 - 52.83	18.69	1040.42	15.78
24	52.83 - 50.99	19.17	1069.58	15.91
25	50.99 - 44.91	21.70	1167.74	16.37
26	44.91 - 39.91	22.83	1250.25	16.64
27	39.91 - 38.58	23.13	1272.42	16.72
28	38.58 - 38.33	23.21	1276.60	16.72
29	38.33 - 33.33	24.61	1360.97	17.02
30	33.33 - 33	24.70	1366.59	17.04
31	33 - 32.75	24.77	1370.85	17.05
32	32.75 - 27.75	26.19	1456.84	17.34
33	27.75 - 23	27.56	1539.82	17.60
34	23 - 22.75	27.64	1544.22	17.61
35	22.75 - 17.75	29.18	1632.92	17.88
36	17.75 - 12.75	30.74	1722.88	18.11
37	12.75 - 7.75	32.32	1814.04	18.35
38	7.75 - 2.75	33.92	1906.36	18.59
39	2.75 - 0	34.80	1957.64	18.72

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass
100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
95 - 93.33	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
93.33 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
52.83 - 50.99	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
50.99 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
				Summary	
			Pole	80.8%	Pass
			Reinforcement	79.8%	Pass
			Overall	80.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
140 - 135	489	n/a	489	11.11	n/a	11.11	9.0%						
135 - 130	559	n/a	559	11.62	n/a	11.62	16.0%						
130 - 125	636	n/a	636	12.13	n/a	12.13	23.1%						
125 - 120	719	n/a	719	12.64	n/a	12.64	30.0%						
120 - 115	810	n/a	810	13.14	n/a	13.14	41.2%						
115 - 110	908	n/a	908	13.65	n/a	13.65	51.9%						
110 - 105	1013	n/a	1013	14.16	n/a	14.16	61.5%						
105 - 100	1126	n/a	1126	14.67	n/a	14.67	70.3%						
100 - 95	1247	n/a	1247	15.18	n/a	15.18	78.3%						
95 - 93.33	1290	n/a	1290	15.35	n/a	15.35	80.8%						
93.33 - 88.33	1585	n/a	1585	18.22	n/a	18.22	73.2%						
88.33 - 85.08	1688	n/a	1688	18.61	n/a	18.61	76.7%						
85.08 - 84.83	1696	1341	3036	18.64	13.50	32.14	42.5%						69.8%
84.83 - 79.83	1863	1423	3286	19.23	13.50	32.73	45.9%						74.6%
79.83 - 74.83	2041	1507	3548	19.82	13.50	33.32	49.2%						79.1%
74.83 - 74	2071	1522	3593	19.92	13.50	33.42	49.8%						79.8%
74 - 73.75	2081	2047	4127	19.95	18.00	37.95	43.6%		63.8%				
73.75 - 68.75	2272	2163	4435	20.54	18.00	38.54	46.5%		67.3%				
68.75 - 63.75	2475	2284	4758	21.14	18.00	39.14	49.3%		70.5%				
63.75 - 58.75	2689	2407	5096	21.73	18.00	39.73	52.1%		73.5%				
58.75 - 53.75	2915	2534	5449	22.33	18.00	40.33	54.7%		76.4%				
53.75 - 53.08	2947	2551	5498	22.40	18.00	40.40	55.1%		76.7%				
53.08 - 52.83	2979	4032	7011	22.43	36.00	58.43	46.4%		63.6%		54.7%		
52.83 - 50.99	3067	4107	7174	22.65	36.00	58.65	47.3%		64.5%		54.1%		
50.99 - 44.91	4167	1690	5857	29.61	18.00	47.61	60.2%				74.1%		
44.91 - 39.91	4496	1775	6271	30.37	18.00	48.37	62.1%				76.0%		
39.91 - 38.58	4586	1798	6384	30.57	18.00	48.57	62.6%				76.5%		
38.58 - 38.33	4555	4227	8782	30.61	31.50	62.11	44.0%				56.8%	65.8%	
38.33 - 33.33	4904	4431	9335	31.38	31.50	62.88	45.5%				58.4%	67.6%	
33.33 - 33	4927	4444	9372	31.43	31.50	62.93	45.6%				58.5%	67.8%	
33 - 32.75	4945	4455	9400	31.46	31.50	62.96	45.7%			58.6%		67.8%	
32.75 - 27.75	5314	4664	9978	32.23	31.50	63.73	47.3%			60.1%		69.6%	
27.75 - 23	5681	4867	10547	32.95	31.50	64.45	48.7%			61.5%		71.1%	
23 - 22.75	5696	5889	11584	32.99	36.00	68.99	44.2%	59.9%		58.5%			
22.75 - 17.75	6100	6152	12252	33.75	36.00	69.75	45.6%	61.2%		59.8%			
17.75 - 12.75	6523	6422	12945	34.52	36.00	70.52	46.9%	62.5%		61.1%			
12.75 - 7.75	6966	6697	13663	35.28	36.00	71.28	48.3%	63.7%		62.3%			
7.75 - 2.75	7427	6978	14406	36.04	36.00	72.04	49.6%	64.9%		63.4%			
2.75 - 0	7690	7135	14825	36.46	36.00	72.46	50.3%	65.5%		64.1%			

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

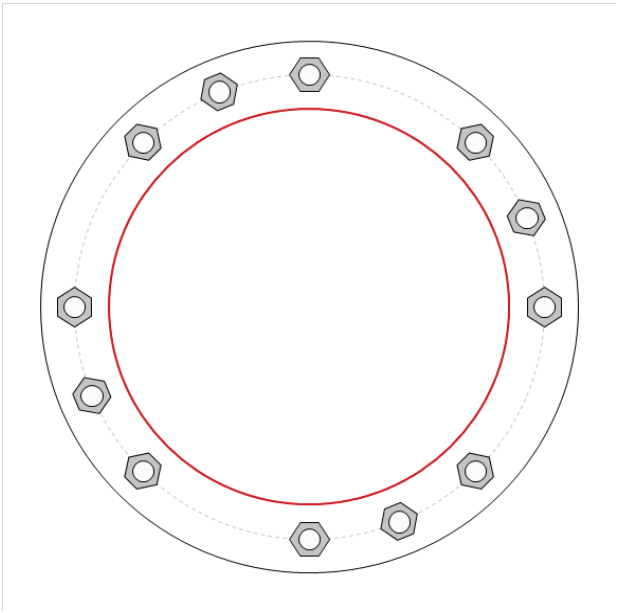
Monopole Base Plate Connection

Site Info	
BU #	826848
Site Name	ublic Storage-Briggs Ch
Order #	525942 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	1957.64
Axial Force (kips)	34.80
Shear Force (kips)	18.72

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 48.26" BC

GROUP 2: (4) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 48.26" BC

Base Plate Data

55.11" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

41.13" x 0.28125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 166.46	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.34	ϕVn = 120.77	**59.1%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 161.96	ϕPn_c = 375.74	**Stress Rating**
Vu = 0	ϕVn = 169.08	**41.1%**
Mu = 0	ϕMn = 179.4	**Pass**

Base Plate Summary

Max Stress (ksi):	27.92	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**59.1%**	**Pass**

Drilled Pier Foundation

BU # :	826848
Site Name:	Public Storage-Briggs (
Order Number:	525942 Rev 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1957.63	
Axial Force (kips)	34.81	
Shear Force (kips)	18.7	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	18	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 18' below grade		
Pier Diameter	6	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.27	-
Soil Safety Factor	1.66	-
Max Moment (kip-ft)	2043.29	-
Rating*	*76.5%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	219.13	-
End Bearing (kips)	382.34	-
Weight of Concrete (kips)	94.15	-
Total Capacity (kips)	601.47	-
Axial (kips)	128.96	-
Rating*	*20.4%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.93	-
Critical Moment (kip-ft)	2042.52	-
Critical Moment Capacity	3481.78	-
Rating*	*55.9%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.53	-
Critical Shear (kip)	356.27	-
Critical Shear Capacity	494.96	-
Rating*	*68.6%*	-

Soil Interaction Rating*	**76.5%**
Structural Foundation Rating*	**68.6%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	5

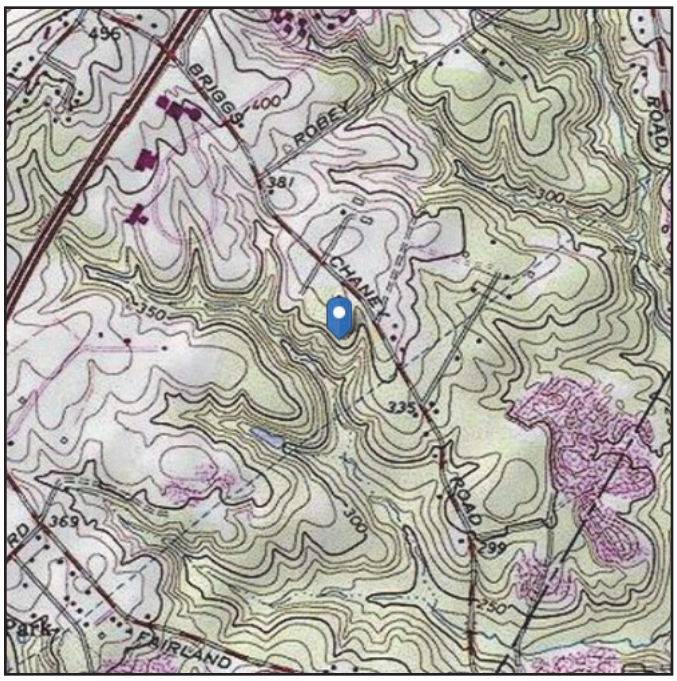
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	5	2	100	150	0	26	0.000	0.000	0.00	0.00			Cohesionless
3	5	8	3	110	150	0	30	0.000	0.000	0.00	0.00			Cohesionless
4	8	13	5	125	150	0	34	0.000	0.000	0.98	0.98			Cohesionless
5	13	18	5	135	150	0	40	0.000	0.000	2.12	2.12	18.03		Cohesionless

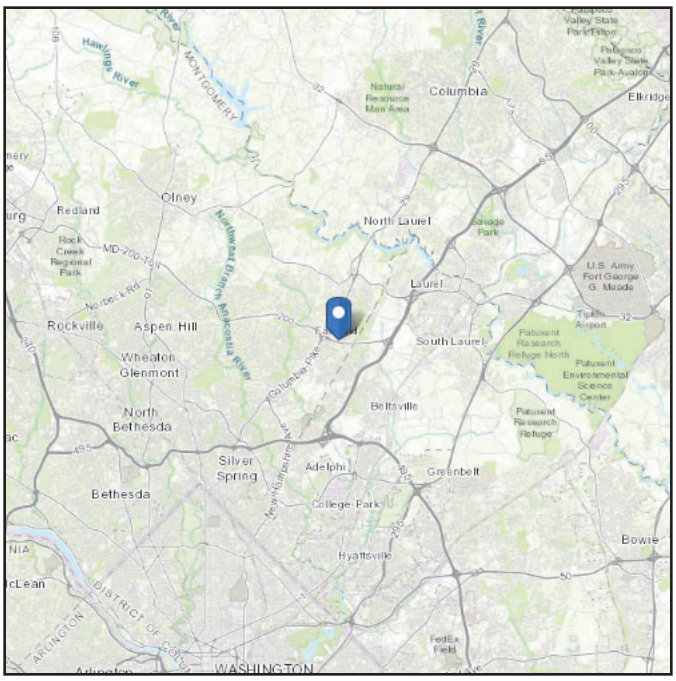
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 356.26 ft (NAVD 88)
Latitude: 39.074992
Longitude: -76.942228





Wind

Results:

Wind Speed:	113 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4

Date Accessed: Mon Oct 05 2020

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

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

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

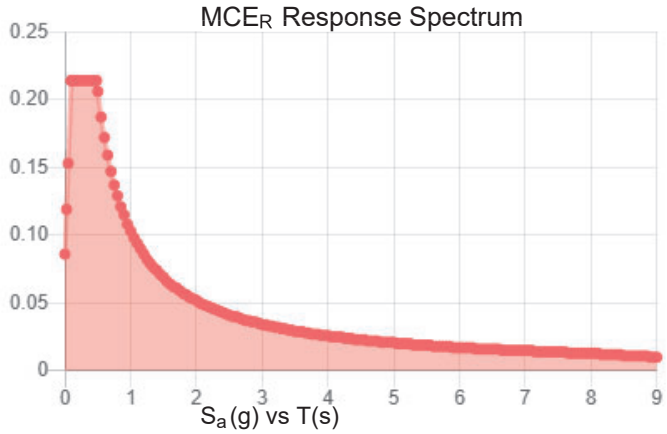
Seismic

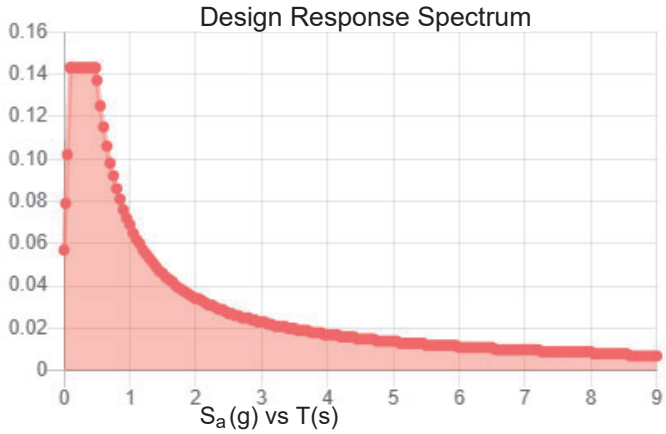
Site Soil Class: D - Default (see Section 11.4.3)

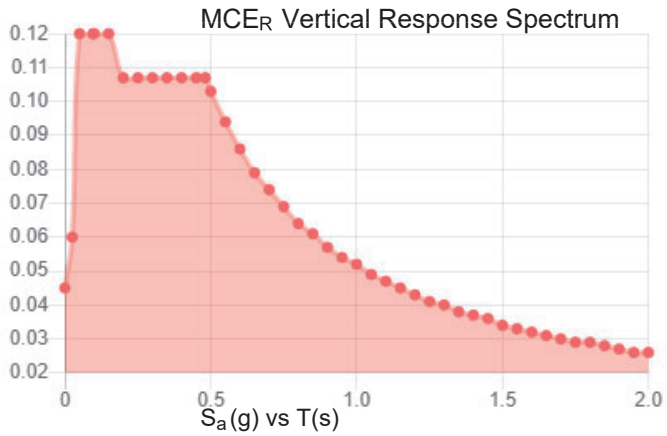
Results:

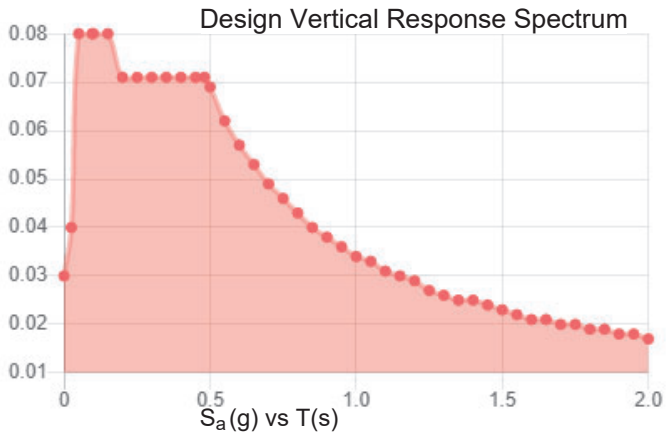
S_S :	0.134	S_{D1} :	0.069
S_1 :	0.043	T_L :	8
F_a :	1.6	PGA :	0.069
F_v :	2.4	PGA_M :	0.111
S_{MS} :	0.214	F_{PGA} :	1.6
S_{M1} :	0.103	I_e :	1
S_{DS} :	0.143	C_v :	0.7

Seismic Design Category B









Data Accessed: Mon Oct 05 2020

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Oct 05 2020

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

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

App No: 2020111331

Application General Infomation

Applicant Name	T-Mobile c/o Crown Castle USA	Updated	11/24/2020
Application Type	Minor Modification	Ann. Plan?	Yes
Carrier	T-Mobile	Will site be used to support government telecommunications facilities or other equipment for government use?	No
Solution Type	Macro		
Existing	Existing	Gvt. Use Desc.	

Application Description

Swap (3) Antennas; Remove (3) TMA's; Add (3) RRU's; Remove (1) existing cabinet and install (2) new cabinets.

Site Infomation

Site Id	415	Zoning	EOF-0.75
Structure Type	Monopole	Latitude	39.074992
Address	3351 Briggs Chaney Rd, Silver Spring	Longitude	-76.942228
County Site Name	Public Storage Briggs Chaney	Ground Elevation	354
Carrier Site Name	Public Storage-Briggs CHA	City	Silver Spring
Site Owner	Shurgard Maryland Properties Inc	Lease Status	Leased
Structure Owner	Crown Castle	Does the structure require an antenna structure registration under FCC Title 47	Yes
Existing Structure Height	140		
Provide the proposed height of the replacement structure without any antenna (New, Replacement Apps Only)		Distance to Residential Property (New, Replacement, Colocation Only)	
		Distance to Commercial Property (New, Replacement, Colocation Only)	

Justification of why this site was selected:

The proposed installation is intended to provide greater service to T-Mobiles customer base in the area. This site is needed to provided coverage within the surrounding area. T-Mobile selected this site due to their existing installation. By selecting thi

NearbySites (New, Replacement Apps Only):

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

Screening considerations(New, Colocations, Replacement Apps Only):

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

6409 Questions

Does this qualify as a 6409 application? (Minor Mod, Colocations Only): Yes

For towers outside the public ROW will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 20 feet, whichever is greater? No

Will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 6 feet? No

For towers outside the public ROW will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 20 feet? No

More than four Equipment Cabinets? YN: No

Will the proposed installation require excavation or expansion outside the current boundaries of the site? No

Does the structure or current installation have concealment elements/measures? No

Will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 10 feet, whichever is greater? No

If yes, describe how the proposed installation does not defeat the existing concealment.

Small Wireless Facility Informatio

Small Wireless Facility Questions

Small Wireless Facility? No

Is the structure 10% taller than adjacent structures?

Cumulative volume of the proposed wireless equipment(s) exclusive of antennas in cubic feet: 2.44

Please list adjacent structure heights

Tribal Lands? No

Cumulative volume of the proposed antenna antenna(s) exclusive of equipment

ROW Information

PROW? No

Pole Number

ROW owner

ROW width

Monday, November 30, 2020

10:22:18 AM

App No: 2020111331

Antenna Infomatio

Antenna Compliance	Yes
Compliance Desc	
Antenna Location	No
Antenna Loc. Desc.	
Env. Assessment	
Cat. Excluded?	
Routine Env. Evaluation	checked

Antenna Model	Ericsson AIR6449 B41						
Frequency	2593-2690 2496-2592						
RAD Center	140	Max ERP	34144	Antenna Dimensions	33.1 x 20.5 x 8.5	Quantity	3

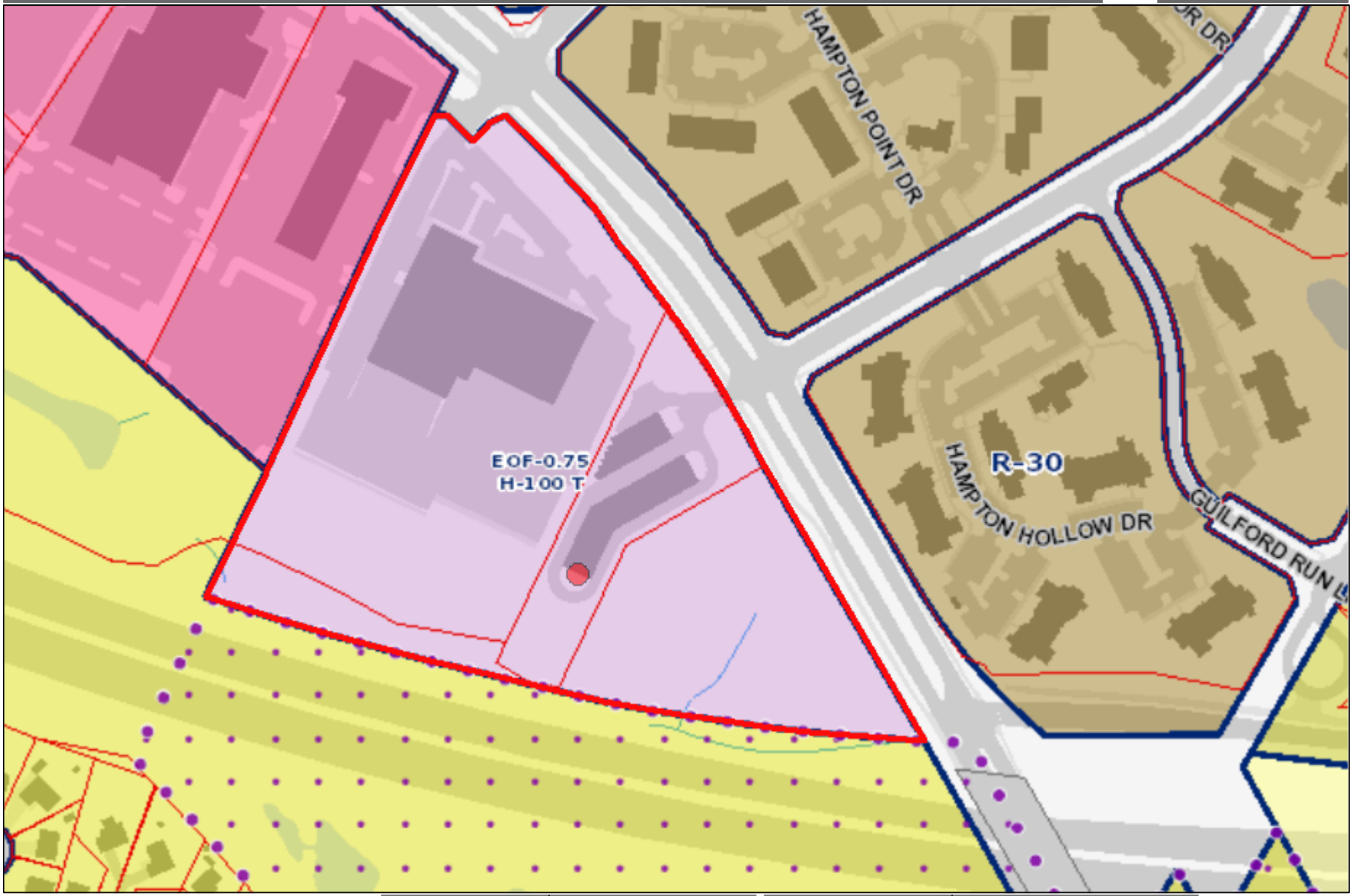
Monday, November 30, 2020

10:22:18 AM

Montgomery County Zoning

Date: 11/24/2020

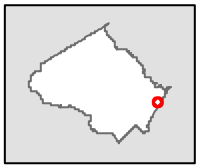
Montgomery County Planning Department
ITI Division



Account #	01831954
Address	3351 BRIGGS CHANEY RD SILVER SPRING, 20904
Zone	EOF-0.75 H-100 T
Overlay Zone	N/A
TDR Overlay Zone	N/A
Landuse	Industrial
Parcel, Lot, Block	N099 , N/A , N/A
WSSC Grid	217NE04
Map Amendments	G-747 G-956

Parking District	N/A
CBD	N/A
Special Protection Area	N/A
Urban District	N/A
Enterprise Zone	N/A
Arts & Ent. District	N/A
Special Tax District	N/A
Legal Description	PT PAR B BRIGGS CHANEY INDUSTRIAL PK

Bike/Ped Priority Area	N/A
Urban Renewal Area	N/A
Metro Station Policy Area	N/A
Priority Funding Area	Yes
Septic Tier	Tier 1: Sewer existing
Municipality	N/A
Master Plan	FAIRLAND MASTER PLAN
Historic Site/District	N/A
Water/Sewer Categories	W-1 / S-1



1 inch = 288 feet

New Product Introduction

Massive MIMO Mid-Band
AIR6449 B41
New Product Introduction Notification

ERICSSON

(Refresh: Update on AIR6449 usage for NY Boroughs)

PURPOSE

Ericsson's next generation AIR6449 B41 massive MIMO (M-MIMO) single band product provides additional RF power and has full band IBW sufficient to transmit 180 MHz of 4G/5G carrier bandwidth (vs. AIR6488 60 + 60 MHz carrier bandwidth). The AIR6449 also offers enhanced RF performance via a 192 antenna element array (vs. AIR6488 with 128).

BACKGROUND

The AIR6449 has a combined antenna/radio with 64 TRX. It has advantages over the previous AIR6488 model such as:

- Full 194 MHz IBW with NR+LTE mixed mode vs. 100 MHz on AIR6488
- Smaller dimensions (in height) and lighter in weight
- 25 Gbps eCPRI support

AIR 6488 vs. AIR 6449 comparison is available at this link.

USAGE GUIDELINES

- AIR6449 is planned to replace AIR6488 on a go forward basis once available
- Full Anchor Design (2.5GHz + PCS) or 2.5GHz Only (AKA "Skinny")
- All markets except New York Boroughs
    - Use existing AIR6488 if entitlement is complete or expected to complete before July 1st, 2020 (see AIR6488 NPI)
    - Use existing AIR6488 if site is expected to be on-air before July 1st, 2020 (see AIR6488 NPI)
    - Use AIR6449 if entitlement complete is forecasted after July 1st, 2020
- **New York Boroughs**
    - **NY is no longer required to use the AIR6488M product as of 6/12/2020 since T-Mobile now has access to the spectrum blocks previously used by public safety. NY should start entitling for AIR6449 starting with July'20 SC POR. August'20 HC POR should be built using AIR6449.**

TIMELINES

- Lab Entry: April 2020
- GA: July 03 2020
- New RFDS Templates for Anchor PORs reflecting AIR6449 have been created.
- This next generation hardware is expected to be available in commercial quantities in July 2020.

AFFECTED CONFIGURATIONS

Sites must be on an Anchor POR to use the AIR6449.

Site configurations that are designed with AIR6449 B41 will have a "**5A**" (5 for 2.5GHz + A for AIR6449) after the low-band indicator and/or before L19 indicator in the naming convention e.g., 67D92DB => 67D**5A**992DB, 92DB => **5A**992DB, etc.

PRODUCT DESCRIPTION

Frequency Range	LTE TDD B41: 2496 – 2690 MHz
Instantaneous BW	DL 194 MHz
Antenna Ports	64T64R
Technology	NR, LTE and NR+LTE MSMM
Antenna Elements	192
Output RF Power	320 W (=64 TRX x 5W)
Data Ports	4 x 25Gb/s CPRI
5G NR Support	YES
DC Feed	-48V DC power connector
Cooling	Passive cooling (vs. active cooling on AIR32 DB)
Dimensions (H x W x D)	33.1" x 20.6" x 8.6" inches (=841 x 524 x 217 mm)
Weight	104 lbs (=47 kg)
Electrical downtilt	-3 to 11 degrees
Horizontal beamwidth	+/- 65 degrees
HW/SW Availability	July 2020
Material SAP #	34105 – AIR 6449 B41

WARRANTY: 1 Year

SPARES: 2% of install base. Additional units can be requested as per need.

Baseband Requirements

For a typical 3-sector site,

- LTE: one dedicated BB6630 per site
- NR: one dedicated BB6648 (see its NPI) per site

Supplementary/Ancillary Materials

SKU	Description	Qty
34106	AIR6449 mandatory install kit	1 per AIR6449
34110	AIR6449 25G SFP	8 per AIR6449

The AIR6449 requires a voltage booster (i.e., PSU 4813) in almost all cases when using the current HCS 6x12. Please refer to Voltage Booster design doc for its usage guidance (depending on the HCS length and gauge). Note the installation kit is different for each cabinet type.

SKU	Description	Qty
34132	PSU 4813 main unit	1
34133	PSU installation kit for RBS61xx	Choose 1 per cabinet type
34134	PSU installation kit for PBC6200	
34135	PSU installation kit for E6x60/P6230	

LINKS

- Ericsson New T-Mobile Anchor Network Playbook
- AIR 6488 vs. AIR 6449 Comparison

CONTACTS

Kyuho Son	Principal Engineer, RAN Architecture
Weston Berry	Engineer, RAN Architecture

Radio Frequency Emissions Analysis Report

T-Mobile Wireless Monopole Facility

November 13, 2020

Analysis Format: Theoretical Calculations

Sign Count	
	1
	0
	1
	0

Statement of Compliance

T-Mobile will be compliant with FCC Regulations once the mitigation measures recommended in this report are implemented.

7WAN285K
Public Storage-Briggs Cha
4200 Forbes Blvd, Silver Spring, MD 20904

Contents

Overview

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following T-Mobile wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all existing equipment for T-Mobile .

The facility is located on a monopole in Silver Spring, Maryland. Access to the facility is restricted to authorized personnel and facility management.

Analysis Site Data

Site ID:	7WAN285K
Site Name:	Public Storage-Briggs Cha
Site Address:	4200 Forbes Blvd, Silver Spring, MD 20904
Site Latitude:	39.075030
Site Longitude:	-76.94225
Facility Type:	Monopole

Compliance Summary

Status:	T-Mobile will be compliant with FCC Regulations Upon Installation of Signage
Site Modeled Composite MPE% (General Public Limit):	0.20 %
T-Mobile Max Modeled MPE% (General Public Limit):	0.20 %
Lock or Control Measures if Present:	Unknown

In addition to the T-Mobile antennas and radio equipment there are antennas and radio equipment for Verizon, & Crown Castle which have been included in this analysis as part of the overall site compliance determination.

*To be conservative, all sites are considered uncontrolled for modeling purposes unless confirmed otherwise by a site visit.

FCC Guidelines

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General Population/Uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600, 700, and 800 MHz Bands is approximately 400 $\mu W/cm^2$, 467 $\mu W/cm^2$, and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS, 2100 MHz AWS, 2500 MHz, 3500 MHz CBRS, 5000 MHz LAA, 28GHz, and 39GHz bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density. Reference the Site Antenna Data Table for list of frequencies in operation at this site.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

Calculation Methodology & Data

Centerline has performed theoretical calculations on all transmission equipment located on this facility. All calculations have been performed using the RoofMaster® software from Waterford Consultants LLC. This software performs calculations using a cylindrical model for very conservative power density predictions within the near-field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

The below calculation in Figure 1 shows the theoretical distribution of power over an imaginary cylinder with equal power distribution in all directions.

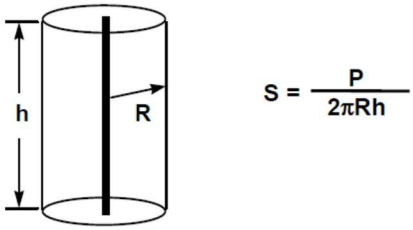


Figure 1: Distribution of power over an imaginary cylinder in all directions

This model can be modified for directional antennas to show directionality of power distribution. This formula will tend to be conservative as it assumes that all power is focused between the 3 dB power roll off points as shown in Figure 2.

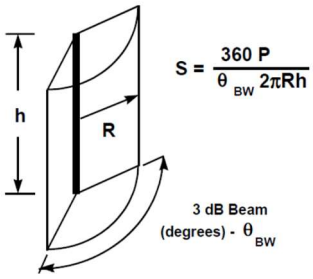


Figure 2: Distribution of power over an imaginary cylinder in all directions inside the half power roll off points (HBW)

The **proposed antenna configuration** for T-Mobile and any other known wireless carriers at this facility are shown below in **Table 1 – Site Antenna Data Table**.

All calculations for this facility were performed assuming that all radios were running at full power and were uncombined in their RF paths with the configuration shown in table 1. FCC OET Bulletin 65 – Edition 97-01 recommends that modeling of this nature should be done as described prior to yield a worst-case scenario. Due to the dynamic nature of many deployed systems the "real world" values will most likely be less than those shown in this report due to worst-case values being shown in all instances.

For all "Other" systems on this facility, exact equipment was used if available. In instances where "Other" system equipment was not available, standard radio configurations for these systems were utilized based upon prior experience with these systems on facilities in this area.

Site Antenna Data Table

Sector	Operator	Frequency Band	TX Power Per Channel	Tx #	ERP	Antenna Make	Antenna Model	Gain (dBd)	Az (°)	Antenna Centerline Height (ft)	Z Value (ft)**
A1	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	30	140	138.62
A1	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	30	140	138.62
A1	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	30	140	138.62
A2	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	30	140	137.72
A2	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A2	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	30	140	137.72
A3	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	30	140	136.00
A3	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	30	140	136.00
A3	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
A3	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	30	140	136.00
B4	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	210	140	136.00
B4	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	210	140	136.00
B4	T-Mobile	U1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B4	T-Mobile	L1900	40	2	3041.52	RFS	APXVAARR24_43-U-NA20	15.8	210	140	136.00
B5	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	210	140	138.62
B5	T-Mobile	N2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	210	140	138.62

B5	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	210	140	138.62
B6	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	210	140	137.72
B6	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
B6	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	210	140	137.72
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 LTE TB	22.35	300	140	138.62
C7	T-Mobile	L2500	90	1	15461.18	ERICSSON	SON_AIR6449 2500 NR TB	22.35	300	140	138.62
C7	T-Mobile	L/N2500	60	1	3222.19	ERICSSON	SON_AIR6449 2500 LTE MACRO	17.3	300	140	138.62
C8	T-Mobile	L700	40	2	1694.69	RFS	APXVAARR24 43-U-NA20	13.26	300	140	136.00
C8	T-Mobile	L600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	N600	40	1	812.94	RFS	APXVAARR24 43-U-NA20	13.08	300	140	136.00
C8	T-Mobile	U1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C8	T-Mobile	L1900	40	2	2951.82	RFS	APXVAARR24_43-U-NA20	15.67	300	140	136.00
C9	T-Mobile	L2100	30	4	4307.06	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.55	300	140	137.72
C9	T-Mobile	L1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
C9	T-Mobile	G1900	30	2	2255.02	ERICSSON	AIR 32 KRD901146-1_B66A_B2A	15.75	300	140	137.72
10	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	30	118	115.00
11	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	30	118	115.00
12	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	30	118	115.00
13	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	30	118	115.00
14	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	210	118	115.00
15	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	210	118	115.00
16	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	210	118	115.00
17	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	210	118	115.00
18	Verizon	850	40	4	2924.96	GENERIC	PANEL 6FT	12.62	300	118	115.00
19	Verizon	1900	40	4	6139.32	GENERIC	PANEL 6FT	15.84	300	118	115.00
20	Verizon	2100	40	4	6968.19	GENERIC	PANEL 6FT	16.39	300	118	115.00
21	Verizon	700	40	4	2736.02	GENERIC	PANEL 6FT	12.33	300	118	115.00

*Table 1: Total Site Antenna data table **(Z Value is distance from bottom of antenna to walking surface)*

Results

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population for exposure to RF emissions as specified by federal standards.

T-Mobile's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface.

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**0.20%**	**Sector A**
Accessible **Occupational** MPE Limits:	**0.04%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.20%**
Ground Level **Occupational** MPE Limits:	**0.04%**

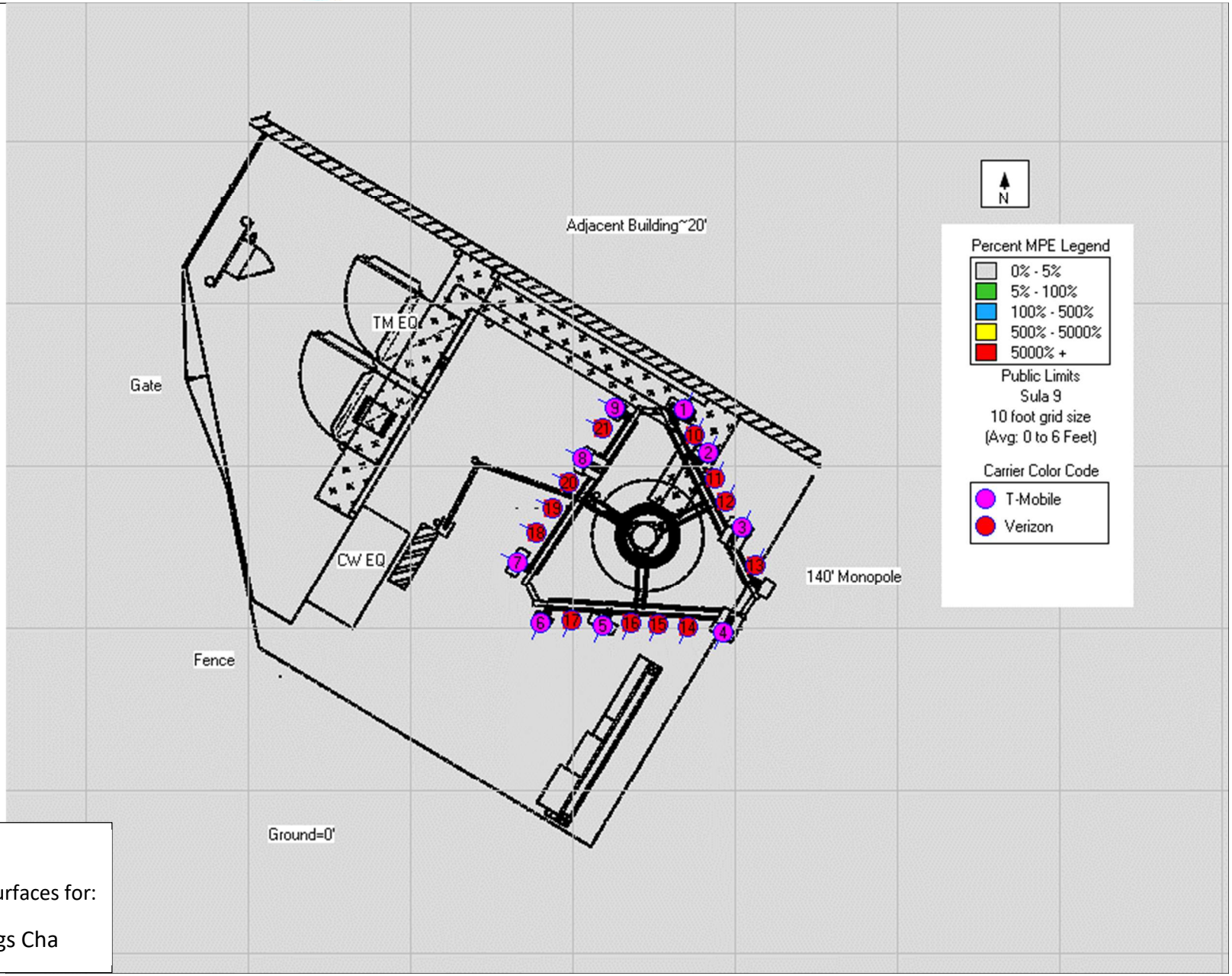
Sector A: Transmitting over Adjacent Building	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.20%**	**0**
Accessible **Occupational** MPE Limits:	**0.04%**	**0**

Sector B: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

Sector C: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.15%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

**Distance from Antenna is the distance that the MPE limits are exceeded from the front face of the antenna, outward across an accessible area.*

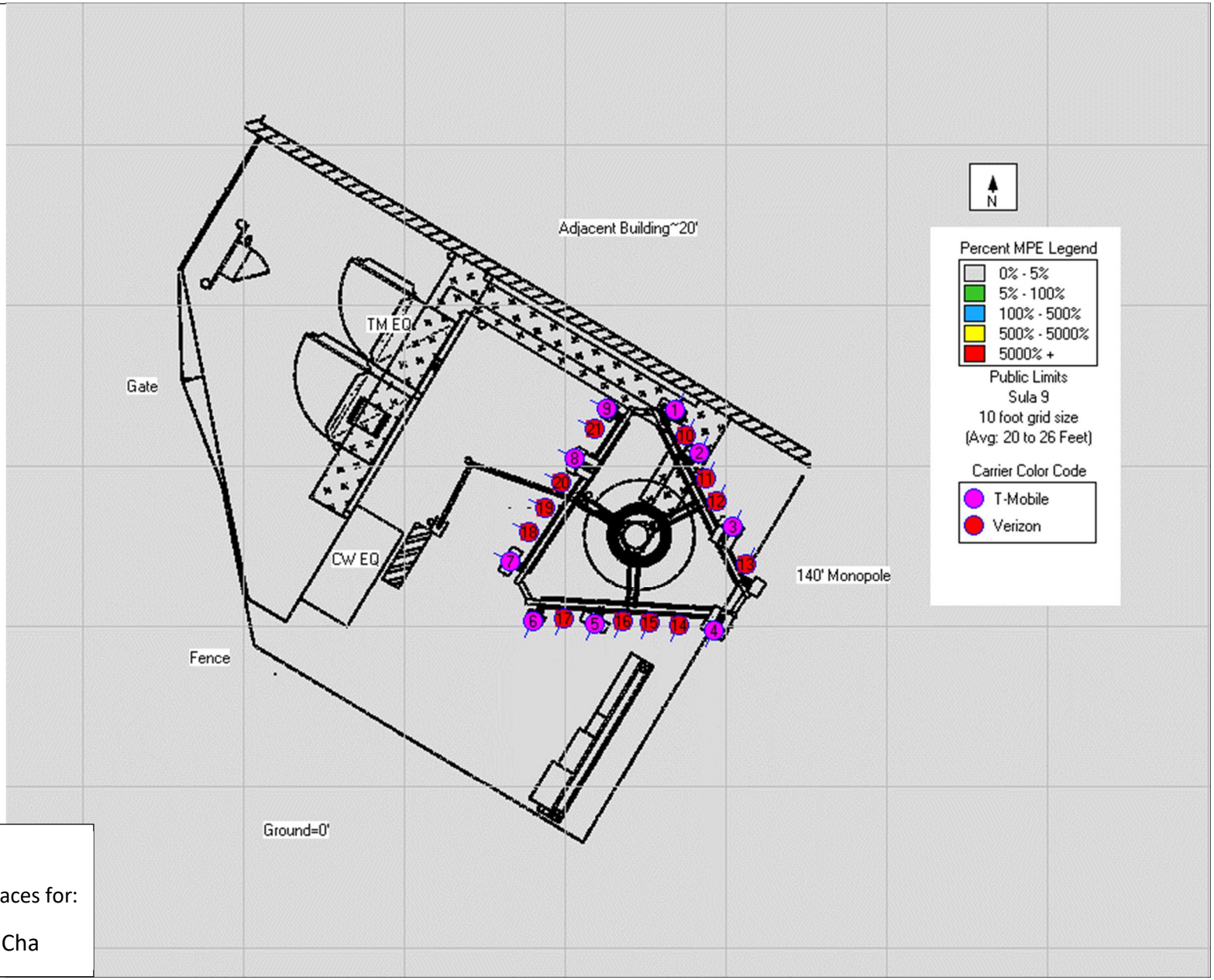
APPENDIX A: Emissions Thresholds for Walking Surfaces and Signage



Ground (0'ft.)

Emissions Thresholds for Walking Surfaces for:

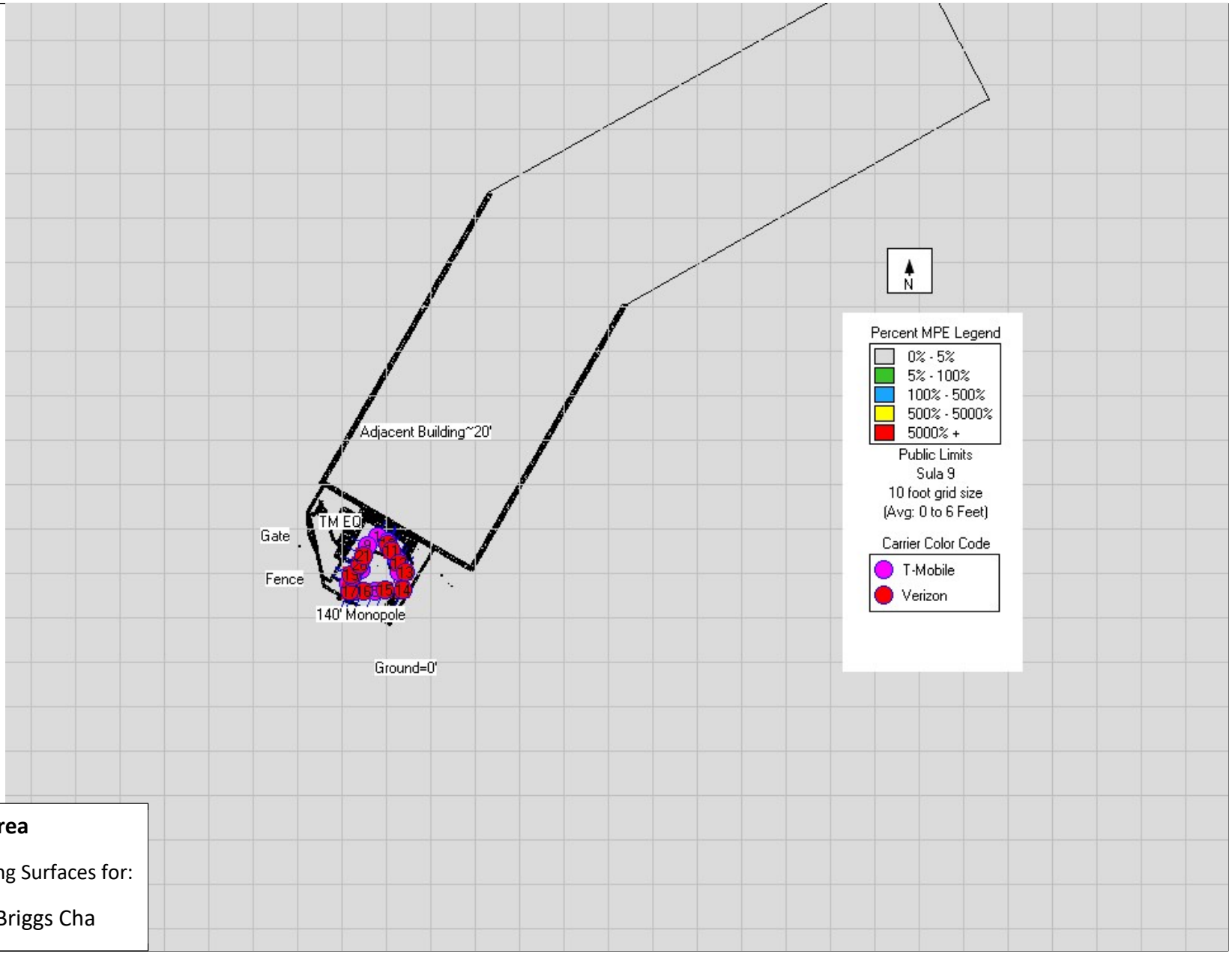
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20'ft.)

Emissions Thresholds for Walking Surfaces for:

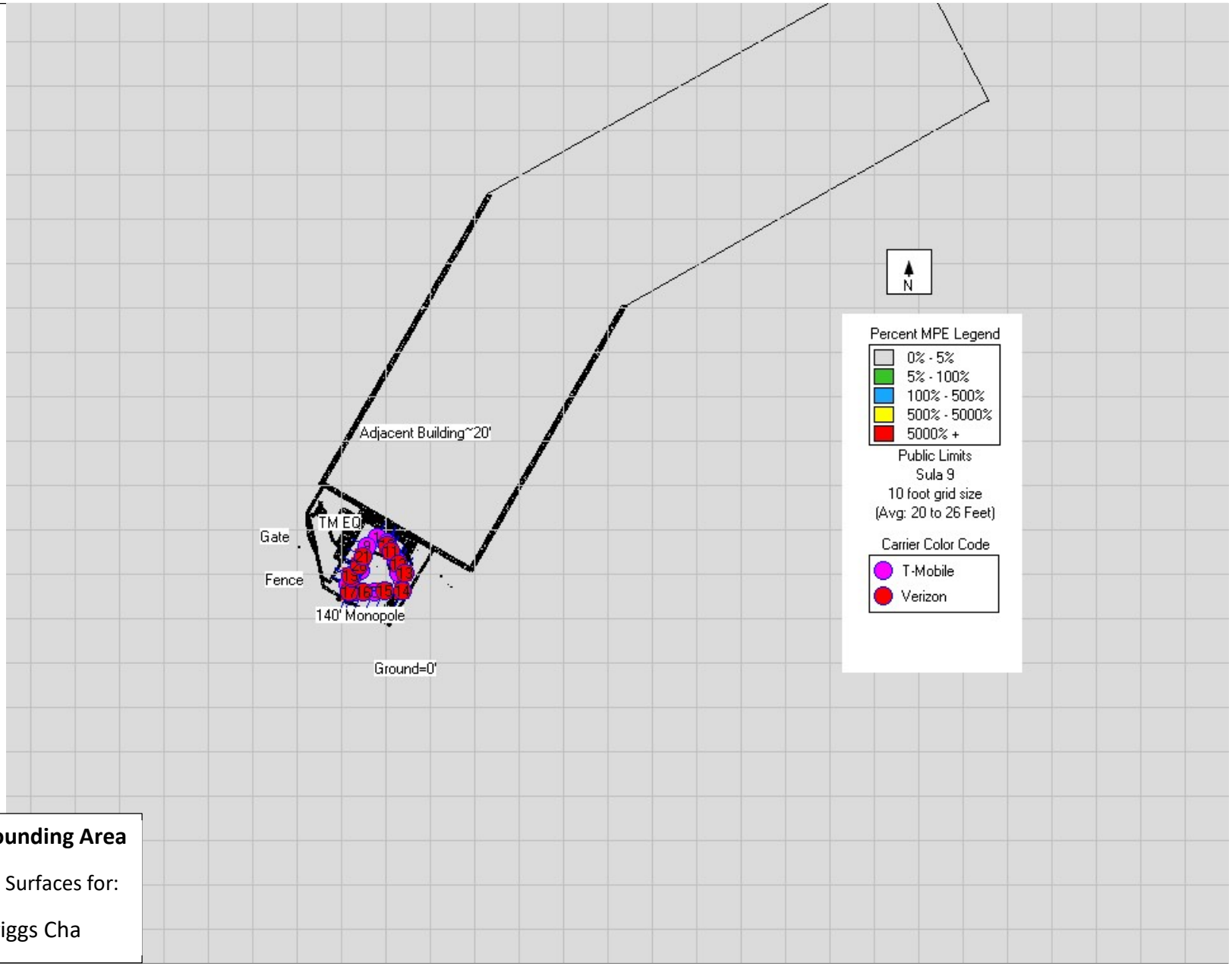
7WAN285K / Public Storage-Briggs Cha



Ground (0ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

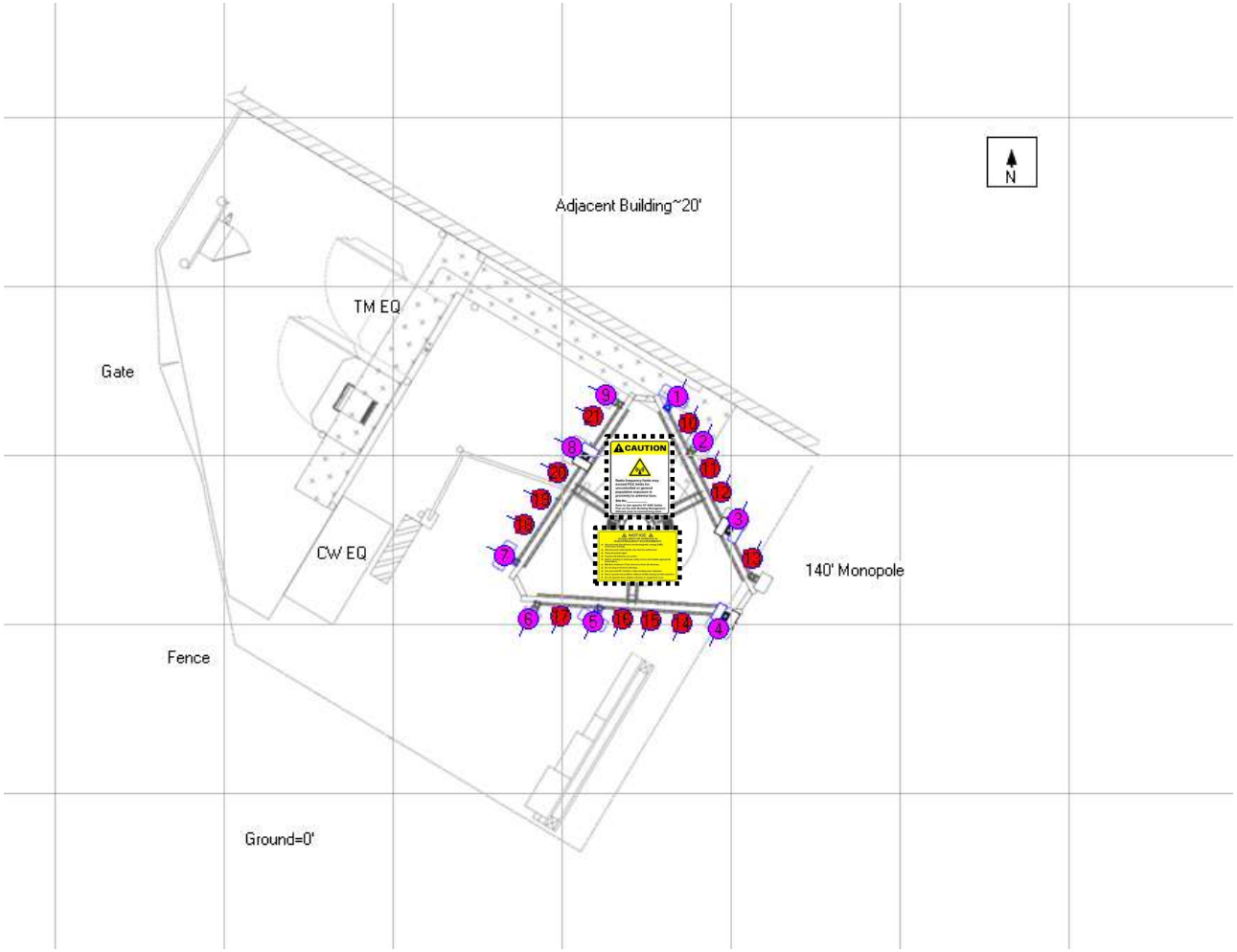
7WAN285K / Public Storage-Briggs Cha



Adjacent Building (20ft.) Surrounding Area

Emissions Thresholds for Walking Surfaces for:

7WAN285K / Public Storage-Briggs Cha



Existing Item

Proposed Item

Signage Count							
	1		0		1		0

Signage Diagram

Signage for:

7WAN285K/ Public Storage-Briggs Cha

Compliance Actions:

Compliance Actions:

Access	• Install (1) Guideline sign on the base of the monopole. • Install (1) Caution sign on the base of the monopole.
Alpha Sector	• No Action Needed.
Beta Sector	• No Action Needed.
Gamma sector	• No Action Needed.
Notes:	• If there is a fixed climbing point located on this site, the Guideline and Caution signs should be installed at that location.

APPENDIX B: RF Signage Description Table

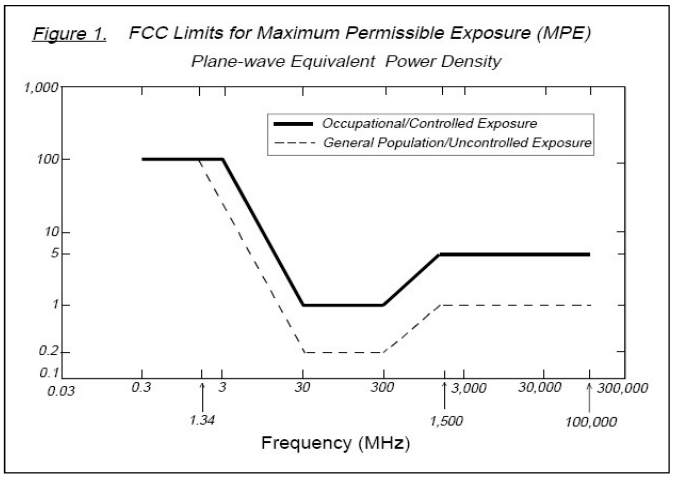
Sign	Description
	**RF Guideline Sign** Gives guidelines on how to proceed in areas that may exceed either the FCC's General Population or Occupational emissions limits.
	**Blue Notice Sign** Used to inform individuals that they are entering an area that may exceed the FCC's General Population limits. Must be placed anywhere the public can get within 30 feet vertically or horizontally of an antenna.
	**Yellow Caution Sign** Used to inform individuals that they are entering an area that may exceed the either the FCC's General Population or Occupational Emissions limits. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.
	**Red Warning Sign** Used to inform individuals that they are entering an area that may exceed 5x the FCC's Occupational emissions limit. It must be placed so it is visible from all approachable sides. It must also be just outside of the area predicted to exceed the MPE limits so it can be read without standing within the affected area.

APPENDIX C: FCC Emissions Threshold Limits

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX D: Certifications

I, Michelle Stone, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Michelle Stone

11/13/2020

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in T-Mobile's FCC Regulatory Compliance Manual.

Brandon Green

11/13/2020

Date: **October 08, 2020**

Stephanie Lipscomb
Crown Castle
370 Mallory Station Road Suite 505
Franklin, TN 37067

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	7WAN285K
	Carrier Site Name:	Public Storage-Briggs Cha
Crown Castle Designation:	**Crown Castle BU Number:**	826848
	Crown Castle Site Name:	Public Storage-Briggs Cha
	Crown Castle JDE Job Number:	616150
	Crown Castle Work Order Number:	1887883
	Crown Castle Order Number:	525942 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1887883
Site Data:	**3351 Briggs Chaney Road, Silver Spring, Montgomery County, MD** **Latitude *39° 4' 29.97"*, Longitude *-76° 56' 32.02"*** **140 Foot - Monopole Tower**	

Dear Stephanie Lipscomb,

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

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

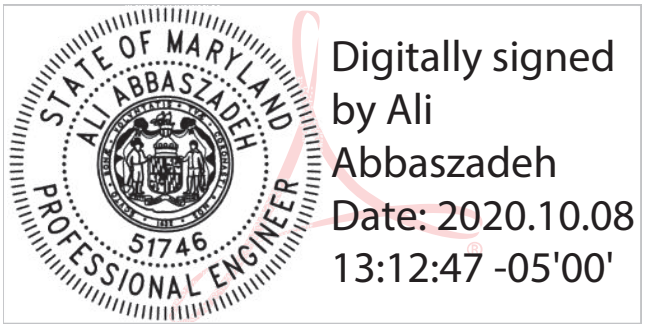
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 113 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jared Koski /AM

Respectfully submitted by:

Ali Abbaszadeh, P.E.
Senior Project Engineer



I hereby certify that these documents were prepared or approved by me, and that I am duly licensed professional engineer under the laws of State of Maryland.
License No. 51746
Expiration Date: 11/09/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by Valmont. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	113
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	40 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	141.0	3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe	15	1-1/4 1-5/8
		3	ericsson	RADIO 4449 B12/B71		
	140.0	4	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RRUS 4415 B25_CCIV2		
		1	tower mounts	T-Arm Mount [TA 701-3]		
		1	tower mounts	Miscellaneous [NA 507-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
127.0	127.0	1	tower mounts	T-Arm Mount [TA 602-3]	-	-
118.0	120.0	6	jma wireless	MX06FRO840-02 w/ Mount Pipe	11	1-1/4 1-5/8
		3	nokia	AIRSCALE DUAL RRH 4T4R B2/66A 320W		
		3	nokia	AIRSCALE DUAL RRH 4T4R B5/13 320W		
		1	raycap	RRFDC-3315-PF-48		
		1	raycap	RVZDC-6627-PF-48		
	118.0	1	tower mounts	Platform Mount [14' LP 404-1_KCKR]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	7941835	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont Industries, Inc.	3908664	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont Industries, Inc.	3475172	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Tower Engineering Professionals, Inc.	4081023	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Engineering, Inc.	4760657	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Engineering, Inc.	7944904	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	8305498	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 Standard.

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
L2	135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
L3	130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
L4	125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
L5	120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
L6	115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
L7	110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
L8	105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L9	100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
L10	95 - 89.08	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
L11	89.08 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
L12	88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
L13	85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
L14	84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
L15	79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
L16	74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
L17	74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
L18	73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
L19	68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
L20	63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
L21	58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
L22	53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
L23	53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
L24	52.83 - 45.91	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
L25	45.91 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
L26	44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
L27	39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
L28	38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
L29	38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
L30	33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L31	33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
L32	32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
L33	27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
L34	23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
L35	22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
L36	17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
L37	12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
L38	7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
L39	2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
					Summary	
				Pole	80.8%	Pass
				Reinforcement	79.8%	Pass
				Overall	80.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	59.1	Pass
1	Base Plate	0	59.1	Pass
1	Base Foundation (Structure)	0	68.6	Pass
1	Base Foundation (Soil Interaction)	0	76.5	Pass

Structure Rating (max from all components) =	80.8%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

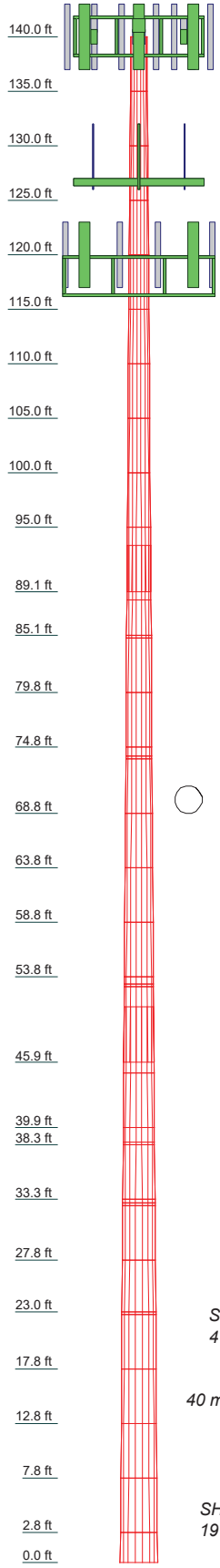
4.1) Recommendations

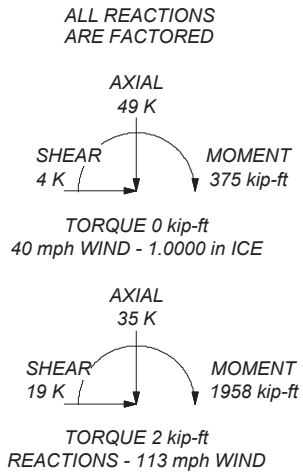
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.75	4.25	5.00	5.00	5.00	5.00	2.75
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.1875	0.5563
Socket Length (ft)										4.25														5.08																	
Top Dia (in)	18.0000	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920
Bot Dia (in)	18.8551	19.7101	20.5652	21.4203	22.2753	23.1304	23.9855	24.8405	25.6956	26.5506	27.4057	28.2607	29.1158	29.9708	30.8259	31.6809	32.5360	33.3910	34.2461	35.1011	35.9562	36.8112	37.6663	38.5213	39.3764	40.2314	41.0865	41.9415	42.7966	43.6516	44.5067	45.3617	46.2168	47.0718	47.9269	48.7819	49.6370	50.4920	51.3471
Grade	A572-65																																						
Weight (K)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.0	0.5	0.6	0.1	0.0	0.6	0.7	0.7	0.7	0.0	0.1	1.4	1.0	0.8	0.2	0.1	1.1	0.1	0.1	1.1	1.0	0.1	1.2	1.2	1.2	1.2	0.7





MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Montgomery County, Maryland.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 113 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 80.8%

CROWN CASTLE
The Pathway to Possible

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

Job: ***BU# 826848***			
Project:			
Client: Crown Castle	Drawn by: JKoski		App'd:
Code: TIA-222-H	Date: 10/07/20		Scale: NTS
Path: C:\Users\jkoski\Desktop\Work Area\826848\WO 1887883 - SA\Prod\826848.eri			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Montgomery County, Maryland.
4) Tower base elevation above sea level: 356.00 ft.
5) Basic wind speed of 113 mph.
6) Risk Category II.
7) Exposure Category C.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: 0.00 ft.
11) Nominal ice thickness of 1.0000 in.
12) Ice thickness is considered to increase with height.
13) Ice density of 56 pcf.
14) A wind speed of 40 mph is used in combination with ice.
15) Temperature drop of 50 °F.
16) Deflections calculated using a wind speed of 60 mph.
17) TOWER RATING: 80.8%.
18) A non-linear (P-delta) analysis was used.
19) Pressures are calculated at each section.
20) Stress ratio used in pole design is 1.05.
21) Tower analysis based on target reliabilities in accordance with Annex S.
22) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
23) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.00-135.00	5.00	0.00	18	18.0000	18.8551	0.1875	0.7500	A572-65 (65 ksi)
L2	135.00-130.00	5.00	0.00	18	18.8551	19.7101	0.1875	0.7500	A572-65 (65 ksi)
L3	130.00-125.00	5.00	0.00	18	19.7101	20.5652	0.1875	0.7500	A572-65 (65 ksi)
L4	125.00-120.00	5.00	0.00	18	20.5652	21.4203	0.1875	0.7500	A572-65 (65 ksi)
L5	120.00-115.00	5.00	0.00	18	21.4203	22.2753	0.1875	0.7500	A572-65 (65 ksi)
L6	115.00-110.00	5.00	0.00	18	22.2753	23.1304	0.1875	0.7500	A572-65 (65 ksi)
L7	110.00-105.00	5.00	0.00	18	23.1304	23.9855	0.1875	0.7500	A572-65 (65 ksi)
L8	105.00-100.00	5.00	0.00	18	23.9855	24.8405	0.1875	0.7500	A572-65 (65 ksi)
L9	100.00-95.00	5.00	0.00	18	24.8405	25.6956	0.1875	0.7500	A572-65 (65 ksi)
L10	95.00-89.08	5.92	4.25	18	25.6956	26.7080	0.1875	0.7500	A572-65 (65 ksi)
L11	89.08-88.33	5.00	0.00	18	25.6062	26.4612	0.2188	0.8750	A572-65 (65 ksi)
L12	88.33-85.08	3.25	0.00	18	26.4612	27.0169	0.2188	0.8750	A572-65 (65 ksi)
L13	85.08-84.83	0.25	0.00	18	27.0169	27.0597	0.4000	1.6000	A572-65 (65 ksi)
L14	84.83-79.83	5.00	0.00	18	27.0597	27.9147	0.3937	1.5750	A572-65 (65 ksi)
L15	79.83-74.83	5.00	0.00	18	27.9147	28.7697	0.3875	1.5500	A572-65 (65 ksi)
L16	74.83-74.00	0.83	0.00	18	28.7697	28.9116	0.3875	1.5500	A572-65 (65 ksi)
L17	74.00-73.75	0.25	0.00	18	28.9116	28.9544	0.4437	1.7750	A572-65 (65 ksi)
L18	73.75-68.75	5.00	0.00	18	28.9544	29.8094	0.4375	1.7500	A572-65 (65 ksi)
L19	68.75-63.75	5.00	0.00	18	29.8094	30.6644	0.4313	1.7250	A572-65 (65 ksi)
L20	63.75-58.75	5.00	0.00	18	30.6644	31.5194	0.4188	1.6750	A572-65 (65 ksi)
L21	58.75-53.75	5.00	0.00	18	31.5194	32.3744	0.4188	1.6750	A572-65 (65 ksi)
L22	53.75-53.08	0.67	0.00	18	32.3744	32.4889	0.4188	1.6750	A572-65 (65 ksi)
L23	53.08-52.83	0.25	0.00	18	32.4889	32.5317	0.5313	2.1250	A572-65 (65 ksi)
L24	52.83-45.91	6.92	5.08	18	32.5317	33.7150	0.5313	2.1250	A572-65 (65 ksi)
L25	45.91-44.91	6.08	0.00	18	32.4088	33.4487	0.4000	1.6000	A572-65 (65 ksi)
L26	44.91-39.91	5.00	0.00	18	33.4487	34.3039	0.4000	1.6000	A572-65 (65 ksi)
L27	39.91-38.58	1.33	0.00	18	34.3039	34.5314	0.3937	1.5750	A572-65 (65 ksi)
L28	38.58-38.33	0.25	0.00	18	34.5314	34.5742	0.5563	2.2250	A572-65 (65 ksi)
L29	38.33-33.33	5.00	0.00	18	34.5742	35.4293	0.5437	2.1750	A572-65 (65 ksi)
L30	33.33-33.00	0.33	0.00	18	35.4293	35.4858	0.5437	2.1750	A572-65 (65 ksi)
L31	33.00-32.75	0.25	0.00	18	35.4858	35.5285	0.5437	2.1750	A572-65 (65 ksi)
L32	32.75-27.75	5.00	0.00	18	35.5285	36.3837	0.5437	2.1750	A572-65 (65 ksi)
L33	27.75-23.00	4.75	0.00	18	36.3837	37.1961	0.5313	2.1250	A572-65 (65 ksi)

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
L34	23.00-22.75	0.25	0.00	18	37.1961	37.2389	0.5813	2.3250	A572-65 (65 ksi)
L35	22.75-17.75	5.00	0.00	18	37.2389	38.0941	0.5813	2.3250	A572-65 (65 ksi)
L36	17.75-12.75	5.00	0.00	18	38.0941	38.9493	0.5687	2.2750	A572-65 (65 ksi)
L37	12.75-7.75	5.00	0.00	18	38.9493	39.8045	0.5687	2.2750	A572-65 (65 ksi)
L38	7.75-2.75	5.00	0.00	18	39.8045	40.6596	0.5563	2.2250	A572-65 (65 ksi)
L39	2.75-0.00	2.75		18	40.6596	41.1300	0.5563	2.2250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
L2	19.1170	11.1095	489.1125	6.6270	9.5784	51.0643	978.8686	5.5558	2.9885	15.939
	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
L3	19.9853	11.6184	559.4495	6.9305	10.0127	55.8737	1119.6350	5.8103	3.1390	16.741
	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
L4	20.8535	12.1273	636.2256	7.2341	10.4471	60.8996	1273.2884	6.0648	3.2895	17.544
	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
L5	21.7218	12.6362	719.7231	7.5376	10.8815	66.1419	1440.3932	6.3193	3.4400	18.346
	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
L6	22.5900	13.1450	810.2239	7.8412	11.3159	71.6007	1621.5138	6.5738	3.5905	19.149
	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
L7	23.4583	13.6539	908.0100	8.1447	11.7502	77.2758	1817.2147	6.8282	3.7410	19.952
	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
L8	24.3266	14.1628	1013.3635	8.4483	12.1846	83.1674	2028.0603	7.0827	3.8914	20.754
	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
L9	25.1948	14.6716	1126.5664	8.7518	12.6190	89.2755	2254.6151	7.3372	4.0419	21.557
	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
L10	26.0631	15.1805	1247.9007	9.0554	13.0534	95.5999	2497.4434	7.5917	4.1924	22.36
	27.0911	15.7830	1402.4609	9.4148	13.5677	103.3679	2806.7672	7.8930	4.3706	23.31
L11	26.7054	17.6268	1435.3220	9.0125	13.0079	110.3419	2872.5326	8.8151	4.1217	18.842
	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
L12	26.8357	18.2205	1585.2770	9.3161	13.4423	117.9321	3172.6400	9.1120	4.2722	19.53
	27.4000	18.6063	1688.1416	9.5134	13.7246	123.0011	3378.5045	9.3049	4.3700	19.977
L13	27.3720	33.7929	3024.6755	9.4490	13.7246	220.3834	6053.3309	16.8996	4.0510	10.127
	27.4154	33.8471	3039.2729	9.4642	13.7463	221.0972	6082.5449	16.9268	4.0585	10.146
L14	27.4164	33.3261	2993.8889	9.4664	13.7463	217.7956	5991.7172	16.6662	4.0695	10.335
	28.2846	34.3946	3291.2033	9.7699	14.1807	232.0909	6586.7372	17.2006	4.2200	10.717
L15	28.2855	33.8564	3241.1691	9.7722	14.1807	228.5626	6486.6031	16.9314	4.2310	10.919
	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
L16	29.1537	34.9080	3552.6604	10.0757	14.6150	243.0831	7109.9956	17.4573	4.3815	11.307
	29.2978	35.0825	3606.2244	10.1261	14.6871	245.5368	7217.1939	17.5446	4.4064	11.371
L17	29.2892	40.0959	4105.3252	10.1061	14.6871	279.5191	8216.0522	20.0518	4.3074	9.707
	29.3326	40.1561	4123.8477	10.1213	14.7088	280.3657	8253.1217	20.0819	4.3150	9.724
L18	29.3335	39.5992	4068.4398	10.1235	14.7088	276.5987	8142.2330	19.8034	4.3260	9.888
	30.2017	40.7865	4445.4636	10.4270	15.1432	293.5625	8896.7767	20.3971	4.4764	10.232
L19	30.2027	40.2124	4384.7549	10.4292	15.1432	289.5535	8775.2794	20.1100	4.4874	10.406
	31.0709	41.3827	4778.8365	10.7328	15.5775	306.7782	9563.9610	20.6953	4.6379	10.755
L20	31.0728	40.1998	4646.0775	10.7372	15.5775	298.2557	9298.2685	20.1037	4.6599	11.128
	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
L21	31.9410	41.3362	5051.3338	11.0407	16.0118	315.4750	10109.3142	20.6720	4.8104	11.488
	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
L22	32.8092	42.4726	5479.4961	11.3442	16.4462	333.1775	10966.2022	21.2403	4.9609	11.847
	32.9255	42.6249	5538.6442	11.3849	16.5044	335.5864	11084.5763	21.3165	4.9811	11.895

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L23	32.9082	53.8866	6952.9504	11.3450	16.5044	421.2792	13915.0496	26.9484	4.7831	9.003
	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
L24	32.9516	53.9587	6980.8907	11.3602	16.5261	422.4162	13970.9670	26.9845	4.7906	9.018
	34.1532	55.9540	7784.3025	11.7802	17.1272	454.4989	15578.8478	27.9823	4.9988	9.41
L25	33.7293	40.6384	5260.3351	11.3631	16.4637	319.5115	10527.5920	20.3231	5.0000	12.5
	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
L26	33.9030	41.9587	5789.8666	11.7323	16.9920	340.7417	11587.3516	20.9833	5.1830	12.957
	34.7714	43.0444	6251.0618	12.0359	17.4264	358.7124	12510.3489	21.5263	5.3335	13.334
L27	34.7724	42.3796	6156.7926	12.0381	17.4264	353.3029	12321.6865	21.1939	5.3445	13.573
	35.0034	42.6639	6281.5304	12.1189	17.5419	358.0863	12571.3261	21.3360	5.3845	13.675
L28	34.9783	59.9844	8747.7871	12.0612	17.5419	498.6782	17507.0847	29.9979	5.0985	9.166
	35.0217	60.0599	8780.8571	12.0764	17.5637	499.9444	17573.2683	30.0356	5.1061	9.179
L29	35.0236	58.7318	8593.0001	12.0808	17.5637	489.2486	17197.3071	29.3715	5.1281	9.431
	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
L30	35.8920	60.2077	9257.2436	12.3844	17.9981	514.3455	18526.6681	30.1096	5.2786	9.708
	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
L31	35.9493	60.3051	9302.2489	12.4044	18.0268	516.0240	18616.7379	30.1583	5.2885	9.726
	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
L32	35.9927	60.3789	9336.4407	12.4196	18.0485	517.2974	18685.1666	30.1952	5.2960	9.74
	36.8611	61.8549	10037.9871	12.7232	18.4829	543.0950	20089.1825	30.9333	5.4465	10.017
L33	36.8630	60.4540	9817.4939	12.7276	18.4829	531.1654	19647.9058	30.2327	5.4685	10.294
	37.6880	61.8239	10500.1321	13.0160	18.8956	555.6906	21014.0806	30.9178	5.6115	10.563
L34	37.6803	67.5504	11441.4437	12.9983	18.8956	605.5070	22897.9424	33.7816	5.5235	9.503
	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
L35	37.7237	67.6293	11481.5749	13.0135	18.9174	606.9331	22978.2575	33.8211	5.5310	9.516
	38.5921	69.2070	12304.0266	13.3171	19.3518	635.8079	24624.2432	34.6101	5.6816	9.775
L36	38.5940	67.7412	12051.4632	13.3215	19.3518	622.7567	24118.7840	33.8770	5.7036	10.028
	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
L37	39.4624	69.2850	12894.3249	13.6251	19.7862	651.6816	25805.6165	34.6491	5.8541	10.293
	40.3308	70.8288	13775.5970	13.9287	20.2207	681.2632	27569.3202	35.4211	6.0046	10.558
L38	40.3327	69.2942	13485.7175	13.9331	20.2207	666.9274	26989.1799	34.6537	6.0266	10.834
	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
L39	41.2011	70.8041	14386.5917	14.2367	20.6551	696.5152	28792.1137	35.4088	6.1771	11.105
	41.6787	71.6345	14898.7504	14.4037	20.8940	713.0622	29817.1049	35.8240	6.2599	11.254

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 140.00-135.00				1	1	1			
L2 135.00-130.00				1	1	1			
L3 130.00-125.00				1	1	1			
L4 125.00-120.00				1	1	1			
L5 120.00-115.00				1	1	1			
L6 115.00-110.00				1	1	1			
L7 110.00-105.00				1	1	1			
L8 105.00-100.00				1	1	1			
L9 100.00-95.00				1	1	1			
L10 95.00-89.08				1	1	1			
L11 89.08-88.33				1	1	1			
L12 88.33-85.08				1	1	1			
L13 85.08-84.83				1	1	0.949459			
L14 84.83-79.83				1	1	0.951605			
L15 79.83-74.83				1	1	0.954618			
L16 74.83-74.00				1	1	0.952677			
L17 74.00-73.75				1	1	0.945115			
L18 73.75-68.75				1	1	0.945062			
L19 68.75-63.75				1	1	0.945792			
L20 63.75-58.75				1	1	0.961217			
L21 58.75-53.75				1	1	0.949475			
L22 53.75-53.08				1	1	0.94795			
L23 53.08-52.83				1	1	1.08299			
L24 52.83-45.91				1	1	1.07645			
L25 45.91-44.91				1	1	1.13466			
L26 44.91-39.91				1	1	1.12378			
L27 39.91-38.58				1	1	1.13856			
L28 38.58-38.33				1	1	1.0342			
L29 38.33-33.33				1	1	1.04434			
L30 33.33-33.00				1	1	1.04349			
L31 33.00-32.75				1	1	1.04285			
L32 32.75-27.75				1	1	1.0303			
L33 27.75-23.00				1	1	1.04255			
L34 23.00-				1	1	1.02016			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
22.75									
L35 22.75-17.75				1	1	1.00794			
L36 17.75-12.75				1	1	1.01782			
L37 12.75-7.75				1	1	1.00642			
L38 7.75-2.75				1	1	1.01755			
L39 2.75-0.00				1	1	1.01161			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HCS 6X12 6AWG(1-3/8) ***	B	No	Surface Ar (CaAa)	140.00 - 0.00	2	2	-0.100 -0.030	1.3800		1.70
CCI-WSFP-060100	A	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	25.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	A	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-AFP-060100 ***	C	No	Surface Af (CaAa)	76.50 - 46.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	A	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	B	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-WSFP-060100	C	No	Surface Af (CaAa)	35.00 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	A	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	No	Surface Af (CaAa)	55.08 - 35.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	40.08 - 25.00	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	A	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	B	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	0.00
CCI-SFP-45100	C	No	Surface Af (CaAa)	86.58 - 76.50	1	1	0.000 0.000	4.0000	10.0000	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_AA_A ft^2/ft	Weight plf
***									
HB114-1-05U3-S3J(1-1/4)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HCS 6X12 6AWG(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
MLCH HYBRID 6X12(1-3/8)	B	No	No	Inside Pole	140.00 - 0.00	2	No Ice	0.00	1.72
							1/2" Ice	0.00	1.72
							1" Ice	0.00	1.72
***									
HB114-1-05U3-S3J(1-1/4)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	0.90
							1/2" Ice	0.00	0.90
							1" Ice	0.00	0.90
HB158-U12S24-XXX-LI(1-5/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.380	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.634	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.207	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.897	0.000	0.03
		C	0.000	0.000	1.000	0.000	0.01
L13	85.08-84.83	A	0.000	0.000	0.167	0.000	0.00
		B	0.000	0.000	0.236	0.000	0.00
		C	0.000	0.000	0.167	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L14	84.83-79.83	A	0.000	0.000	3.333	0.000	0.00
		B	0.000	0.000	4.713	0.000	0.05
		C	0.000	0.000	3.333	0.000	0.02
L15	79.83-74.83	A	0.000	0.000	3.890	0.000	0.00
		B	0.000	0.000	5.270	0.000	0.05
		C	0.000	0.000	3.890	0.000	0.02
L16	74.83-74.00	A	0.000	0.000	0.830	0.000	0.00
		B	0.000	0.000	1.059	0.000	0.01
		C	0.000	0.000	0.830	0.000	0.00
L17	74.00-73.75	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.319	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L18	73.75-68.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L19	68.75-63.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L20	63.75-58.75	A	0.000	0.000	5.000	0.000	0.00
		B	0.000	0.000	6.380	0.000	0.05
		C	0.000	0.000	5.000	0.000	0.02
L21	58.75-53.75	A	0.000	0.000	6.330	0.000	0.00
		B	0.000	0.000	7.710	0.000	0.05
		C	0.000	0.000	6.330	0.000	0.02
L22	53.75-53.08	A	0.000	0.000	1.340	0.000	0.00
		B	0.000	0.000	1.525	0.000	0.01
		C	0.000	0.000	1.340	0.000	0.00
L23	53.08-52.83	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L24	52.83-45.91	A	0.000	0.000	13.250	0.000	0.00
		B	0.000	0.000	15.160	0.000	0.07
		C	0.000	0.000	13.250	0.000	0.03
L25	45.91-44.91	A	0.000	0.000	1.000	0.000	0.00
		B	0.000	0.000	1.276	0.000	0.01
		C	0.000	0.000	1.000	0.000	0.00
L26	44.91-39.91	A	0.000	0.000	5.113	0.000	0.00
		B	0.000	0.000	6.493	0.000	0.05
		C	0.000	0.000	5.113	0.000	0.02
L27	39.91-38.58	A	0.000	0.000	2.217	0.000	0.00
		B	0.000	0.000	2.584	0.000	0.01
		C	0.000	0.000	2.217	0.000	0.01
L28	38.58-38.33	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L29	38.33-33.33	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L30	33.33-33.00	A	0.000	0.000	0.550	0.000	0.00
		B	0.000	0.000	0.641	0.000	0.00
		C	0.000	0.000	0.550	0.000	0.00
L31	33.00-32.75	A	0.000	0.000	0.417	0.000	0.00
		B	0.000	0.000	0.486	0.000	0.00
		C	0.000	0.000	0.417	0.000	0.00
L32	32.75-27.75	A	0.000	0.000	8.333	0.000	0.00
		B	0.000	0.000	9.713	0.000	0.05
		C	0.000	0.000	8.333	0.000	0.02
L33	27.75-23.00	A	0.000	0.000	8.583	0.000	0.00
		B	0.000	0.000	9.894	0.000	0.04
		C	0.000	0.000	8.583	0.000	0.02
L34	23.00-22.75	A	0.000	0.000	0.500	0.000	0.00
		B	0.000	0.000	0.569	0.000	0.00
		C	0.000	0.000	0.500	0.000	0.00
L35	22.75-17.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L36	17.75-12.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L37	12.75-7.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L38	7.75-2.75	A	0.000	0.000	10.000	0.000	0.00
		B	0.000	0.000	11.380	0.000	0.05
		C	0.000	0.000	10.000	0.000	0.02
L39	2.75-0.00	A	0.000	0.000	5.500	0.000	0.00
		B	0.000	0.000	6.259	0.000	0.03
		C	0.000	0.000	5.500	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	140.00-135.00	A	0.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.950	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L2	135.00-130.00	A	0.977	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.946	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L3	130.00-125.00	A	0.973	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.941	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L4	125.00-120.00	A	0.969	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.936	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.00
L5	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.931	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.01
L6	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.926	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L7	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.921	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L8	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.915	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L9	100.00-95.00	A	0.947	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.909	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L10	95.00-89.08	A	0.942	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	3.436	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L11	89.08-88.33	A	0.938	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.435	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L12	88.33-85.08	A	0.936	0.000	0.000	1.220	0.000	0.01
		B		0.000	0.000	3.102	0.000	0.05
		C		0.000	0.000	1.220	0.000	0.02
L13	85.08-84.83	A	0.934	0.000	0.000	0.203	0.000	0.00
		B		0.000	0.000	0.348	0.000	0.00
		C		0.000	0.000	0.203	0.000	0.00
L14	84.83-79.83	A	0.931	0.000	0.000	4.064	0.000	0.02
		B		0.000	0.000	6.953	0.000	0.09
		C		0.000	0.000	4.064	0.000	0.04
L15	79.83-74.83	A	0.926	0.000	0.000	4.684	0.000	0.03
		B		0.000	0.000	7.566	0.000	0.09
		C		0.000	0.000	4.684	0.000	0.05
L16	74.83-74.00	A	0.922	0.000	0.000	0.983	0.000	0.01
		B		0.000	0.000	1.461	0.000	0.02
		C		0.000	0.000	0.983	0.000	0.01
L17	74.00-73.75	A	0.921	0.000	0.000	0.296	0.000	0.00
		B		0.000	0.000	0.440	0.000	0.00
		C		0.000	0.000	0.296	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L18	73.75-68.75	A	0.918	0.000	0.000	5.918	0.000	0.03
		B		0.000	0.000	8.790	0.000	0.10
		C		0.000	0.000	5.918	0.000	0.05
L19	68.75-63.75	A	0.911	0.000	0.000	5.911	0.000	0.03
		B		0.000	0.000	8.776	0.000	0.10
		C		0.000	0.000	5.911	0.000	0.05
L20	63.75-58.75	A	0.904	0.000	0.000	5.904	0.000	0.03
		B		0.000	0.000	8.759	0.000	0.10
		C		0.000	0.000	5.904	0.000	0.05
L21	58.75-53.75	A	0.897	0.000	0.000	7.465	0.000	0.04
		B		0.000	0.000	10.311	0.000	0.10
		C		0.000	0.000	7.465	0.000	0.06
L22	53.75-53.08	A	0.892	0.000	0.000	1.579	0.000	0.01
		B		0.000	0.000	1.960	0.000	0.02
		C		0.000	0.000	1.579	0.000	0.01
L23	53.08-52.83	A	0.891	0.000	0.000	0.589	0.000	0.00
		B		0.000	0.000	0.731	0.000	0.01
		C		0.000	0.000	0.589	0.000	0.00
L24	52.83-45.91	A	0.885	0.000	0.000	15.595	0.000	0.08
		B		0.000	0.000	19.513	0.000	0.17
		C		0.000	0.000	15.595	0.000	0.11
L25	45.91-44.91	A	0.878	0.000	0.000	1.177	0.000	0.01
		B		0.000	0.000	1.743	0.000	0.02
		C		0.000	0.000	1.177	0.000	0.01
L26	44.91-39.91	A	0.872	0.000	0.000	6.015	0.000	0.03
		B		0.000	0.000	8.829	0.000	0.09
		C		0.000	0.000	6.015	0.000	0.05
L27	39.91-38.58	A	0.865	0.000	0.000	2.677	0.000	0.01
		B		0.000	0.000	3.423	0.000	0.03
		C		0.000	0.000	2.677	0.000	0.02
L28	38.58-38.33	A	0.863	0.000	0.000	0.503	0.000	0.00
		B		0.000	0.000	0.643	0.000	0.01
		C		0.000	0.000	0.503	0.000	0.00
L29	38.33-33.33	A	0.857	0.000	0.000	10.047	0.000	0.05
		B		0.000	0.000	12.844	0.000	0.12
		C		0.000	0.000	10.047	0.000	0.07
L30	33.33-33.00	A	0.850	0.000	0.000	0.662	0.000	0.00
		B		0.000	0.000	0.846	0.000	0.01
		C		0.000	0.000	0.662	0.000	0.00
L31	33.00-32.75	A	0.850	0.000	0.000	0.502	0.000	0.00
		B		0.000	0.000	0.641	0.000	0.01
		C		0.000	0.000	0.502	0.000	0.00
L32	32.75-27.75	A	0.843	0.000	0.000	10.019	0.000	0.05
		B		0.000	0.000	12.797	0.000	0.11
		C		0.000	0.000	10.019	0.000	0.07
L33	27.75-23.00	A	0.828	0.000	0.000	10.156	0.000	0.05
		B		0.000	0.000	12.778	0.000	0.11
		C		0.000	0.000	10.156	0.000	0.07
L34	23.00-22.75	A	0.819	0.000	0.000	0.582	0.000	0.00
		B		0.000	0.000	0.719	0.000	0.01
		C		0.000	0.000	0.582	0.000	0.00
L35	22.75-17.75	A	0.809	0.000	0.000	11.619	0.000	0.05
		B		0.000	0.000	14.356	0.000	0.12
		C		0.000	0.000	11.619	0.000	0.07
L36	17.75-12.75	A	0.787	0.000	0.000	11.574	0.000	0.05
		B		0.000	0.000	14.282	0.000	0.11
		C		0.000	0.000	11.574	0.000	0.07
L37	12.75-7.75	A	0.756	0.000	0.000	11.512	0.000	0.05
		B		0.000	0.000	14.182	0.000	0.11
		C		0.000	0.000	11.512	0.000	0.07
L38	7.75-2.75	A	0.707	0.000	0.000	11.414	0.000	0.05
		B		0.000	0.000	14.023	0.000	0.11
		C		0.000	0.000	11.414	0.000	0.07
L39	2.75-0.00	A	0.618	0.000	0.000	6.180	0.000	0.02
		B		0.000	0.000	7.554	0.000	0.05
		C		0.000	0.000	6.180	0.000	0.03

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	140.00-135.00	1.5290	-1.1860	1.5032	-1.1660
L2	135.00-130.00	1.5376	-1.1927	1.5238	-1.1820
L3	130.00-125.00	1.5455	-1.1988	1.5432	-1.1970
L4	125.00-120.00	1.5529	-1.2045	1.5613	-1.2111
L5	120.00-115.00	1.5598	-1.2099	1.5784	-1.2243
L6	115.00-110.00	1.5662	-1.2149	1.5943	-1.2367
L7	110.00-105.00	1.5723	-1.2196	1.6092	-1.2483
L8	105.00-100.00	1.5780	-1.2241	1.6232	-1.2591
L9	100.00-95.00	1.5834	-1.2282	1.6363	-1.2692
L10	95.00-89.08	1.5890	-1.2325	1.6495	-1.2795
L11	89.08-88.33	1.5903	-1.2336	1.6532	-1.2823
L12	88.33-85.08	1.0763	-0.8349	1.2838	-0.9958
L13	85.08-84.83	0.7860	-0.6097	1.0230	-0.7935
L14	84.83-79.83	0.7928	-0.6150	1.0309	-0.7996
L15	79.83-74.83	0.7438	-0.5770	0.9884	-0.7667
L16	74.83-74.00	0.6520	-0.5058	0.8995	-0.6977
L17	74.00-73.75	0.6534	-0.5068	0.9011	-0.6990
L18	73.75-68.75	0.6594	-0.5115	0.9082	-0.7045
L19	68.75-63.75	0.6708	-0.5203	0.9214	-0.7147
L20	63.75-58.75	0.6819	-0.5289	0.9340	-0.7245
L21	58.75-53.75	0.6013	-0.4664	0.8456	-0.6559
L22	53.75-53.08	0.4455	-0.3456	0.6598	-0.5118
L23	53.08-52.83	0.4464	-0.3462	0.6609	-0.5126
L24	52.83-45.91	0.4667	-0.3620	0.6859	-0.5320
L25	45.91-44.91	0.7104	-0.5510	0.9657	-0.7491
L26	44.91-39.91	0.7076	-0.5489	0.9597	-0.7444
L27	39.91-38.58	0.5276	-0.4093	0.7453	-0.5781
L28	38.58-38.33	0.5291	-0.4104	0.7470	-0.5794
L29	38.33-33.33	0.5337	-0.4140	0.7518	-0.5832
L30	33.33-33.00	0.5384	-0.4176	0.7566	-0.5869
L31	33.00-32.75	0.5389	-0.4180	0.7571	-0.5873
L32	32.75-27.75	0.5434	-0.4215	0.7617	-0.5908
L33	27.75-23.00	0.5226	-0.4053	0.7406	-0.5745
L34	23.00-22.75	0.4911	-0.3810	0.7079	-0.5491
L35	22.75-17.75	0.4952	-0.3841	0.7113	-0.5517
L36	17.75-12.75	0.5030	-0.3902	0.7167	-0.5559
L37	12.75-7.75	0.5106	-0.3961	0.7200	-0.5585
L38	7.75-2.75	0.5182	-0.4020	0.7186	-0.5574
L39	2.75-0.00	0.5240	-0.4065	0.7050	-0.5468

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_a No Ice	K_a Ice
L1	4	HCS 6X12 6AWG(1-3/8)	135.00 - 140.00	1.0000	1.0000
L2	4	HCS 6X12 6AWG(1-3/8)	130.00 - 135.00	1.0000	1.0000
L3	4	HCS 6X12 6AWG(1-3/8)	125.00 - 130.00	1.0000	1.0000
L4	4	HCS 6X12 6AWG(1-3/8)	120.00 - 125.00	1.0000	1.0000
L5	4	HCS 6X12 6AWG(1-3/8)	115.00 - 120.00	1.0000	1.0000
L6	4	HCS 6X12 6AWG(1-3/8)	110.00 - 115.00	1.0000	1.0000
L7	4	HCS 6X12 6AWG(1-3/8)	105.00 - 110.00	1.0000	1.0000
L8	4	HCS 6X12 6AWG(1-3/8)	100.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.00		
L9	4	HCS 6X12 6AWG(1-3/8)	95.00 - 100.00	1.0000	1.0000
L10	4	HCS 6X12 6AWG(1-3/8)	89.08 - 95.00	1.0000	1.0000
L11	4	HCS 6X12 6AWG(1-3/8)	88.33 - 89.08	1.0000	1.0000
L12	4	HCS 6X12 6AWG(1-3/8)	85.08 - 88.33	1.0000	1.0000
L12	27	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	1.0000	1.0000
L13	4	HCS 6X12 6AWG(1-3/8)	84.83 - 85.08	1.0000	1.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	1.0000	1.0000
L14	4	HCS 6X12 6AWG(1-3/8)	79.83 - 84.83	1.0000	1.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	1.0000	1.0000
L15	4	HCS 6X12 6AWG(1-3/8)	74.83 - 79.83	1.0000	1.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	15	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	16	CCI-AFP-060100	74.83 - 76.50	1.0000	1.0000
L15	27	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	1.0000	1.0000
L16	4	HCS 6X12 6AWG(1-3/8)	74.00 - 74.83	1.0000	1.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	15	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L16	16	CCI-AFP-060100	74.00 - 74.83	1.0000	1.0000
L17	4	HCS 6X12 6AWG(1-3/8)	73.75 - 74.00	1.0000	1.0000
L17	14	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	15	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L17	16	CCI-AFP-060100	73.75 - 74.00	1.0000	1.0000
L18	4	HCS 6X12 6AWG(1-3/8)	68.75 - 73.75	1.0000	1.0000
L18	14	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	15	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000
L18	16	CCI-AFP-060100	68.75 - 73.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	4	HCS 6X12 6AWG(1-3/8)	63.75 - 68.75	1.0000	1.0000
L19	14	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	15	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L19	16	CCI-AFP-060100	63.75 - 68.75	1.0000	1.0000
L20	4	HCS 6X12 6AWG(1-3/8)	58.75 - 63.75	1.0000	1.0000
L20	14	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	15	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L20	16	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L21	4	HCS 6X12 6AWG(1-3/8)	53.75 - 58.75	1.0000	1.0000
L21	14	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	15	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	16	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L21	21	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	22	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L21	23	CCI-SFP-060100	53.75 - 55.08	1.0000	1.0000
L22	4	HCS 6X12 6AWG(1-3/8)	53.08 - 53.75	1.0000	1.0000
L22	14	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	15	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	16	CCI-AFP-060100	53.08 - 53.75	1.0000	1.0000
L22	21	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	22	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L22	23	CCI-SFP-060100	53.08 - 53.75	1.0000	1.0000
L23	4	HCS 6X12 6AWG(1-3/8)	52.83 - 53.08	1.0000	1.0000
L23	14	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	15	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	16	CCI-AFP-060100	52.83 - 53.08	1.0000	1.0000
L23	21	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	22	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L23	23	CCI-SFP-060100	52.83 - 53.08	1.0000	1.0000
L24	4	HCS 6X12 6AWG(1-3/8)	45.91 - 52.83	1.0000	1.0000
L24	14	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	15	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	16	CCI-AFP-060100	46.50 - 52.83	1.0000	1.0000
L24	21	CCI-SFP-060100	45.91 - 52.83	1.0000	1.0000
L24	22	CCI-SFP-060100	45.91 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	23	CCI-SFP-060100	52.83 45.91 -	1.0000	1.0000
L25	4	HCS 6X12 6AWG(1-3/8)	52.83 44.91 -	1.0000	1.0000
L25	21	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	22	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L25	23	CCI-SFP-060100	45.91 44.91 -	1.0000	1.0000
L26	4	HCS 6X12 6AWG(1-3/8)	45.91 39.91 -	1.0000	1.0000
L26	21	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	22	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	23	CCI-SFP-060100	44.91 39.91 -	1.0000	1.0000
L26	24	CCI-SFP-45100	44.91 39.91 -	1.0000	1.0000
L26	25	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L26	26	CCI-SFP-45100	40.08 39.91 -	1.0000	1.0000
L27	4	HCS 6X12 6AWG(1-3/8)	40.08 38.58 -	1.0000	1.0000
L27	21	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	22	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	23	CCI-SFP-060100	39.91 38.58 -	1.0000	1.0000
L27	24	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	25	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	1.0000	1.0000
L28	4	HCS 6X12 6AWG(1-3/8)	39.91 38.33 -	1.0000	1.0000
L28	21	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	22	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	23	CCI-SFP-060100	38.58 38.33 -	1.0000	1.0000
L28	24	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	1.0000	1.0000
L29	4	HCS 6X12 6AWG(1-3/8)	38.58 33.33 -	1.0000	1.0000
L29	18	CCI-WSFP-060100	38.33 33.33 -	1.0000	1.0000
L29	19	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	20	CCI-WSFP-060100	35.00 33.33 -	1.0000	1.0000
L29	21	CCI-SFP-060100	35.00 35.00 -	1.0000	1.0000
L29	22	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	23	CCI-SFP-060100	38.33 35.00 -	1.0000	1.0000
L29	24	CCI-SFP-45100	38.33 33.33 -	1.0000	1.0000
			38.33		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	25	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L29	26	CCI-SFP-45100	33.33 - 38.33	1.0000	1.0000
L30	4	HCS 6X12 6AWG(1-3/8)	33.00 - 33.33	1.0000	1.0000
L30	18	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	19	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	20	CCI-WSFP-060100	33.00 - 33.33	1.0000	1.0000
L30	24	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	25	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L30	26	CCI-SFP-45100	33.00 - 33.33	1.0000	1.0000
L31	4	HCS 6X12 6AWG(1-3/8)	32.75 - 33.00	1.0000	1.0000
L31	18	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	19	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	20	CCI-WSFP-060100	32.75 - 33.00	1.0000	1.0000
L31	24	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	25	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L31	26	CCI-SFP-45100	32.75 - 33.00	1.0000	1.0000
L32	4	HCS 6X12 6AWG(1-3/8)	27.75 - 32.75	1.0000	1.0000
L32	18	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	19	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	20	CCI-WSFP-060100	27.75 - 32.75	1.0000	1.0000
L32	24	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	25	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L32	26	CCI-SFP-45100	27.75 - 32.75	1.0000	1.0000
L33	4	HCS 6X12 6AWG(1-3/8)	23.00 - 27.75	1.0000	1.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	12	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	13	CCI-WSFP-060100	23.00 - 25.00	1.0000	1.0000
L33	18	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	19	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	20	CCI-WSFP-060100	23.00 - 27.75	1.0000	1.0000
L33	24	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	1.0000	1.0000
L34	4	HCS 6X12 6AWG(1-3/8)	22.75 - 23.00	1.0000	1.0000
L34	11	CCI-WSFP-060100	22.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	12	CCI-WSFP-060100	23.00 22.75 - 23.00	1.0000	1.0000
L34	13	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	18	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	19	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L34	20	CCI-WSFP-060100	22.75 - 23.00	1.0000	1.0000
L35	4	HCS 6X12 6AWG(1-3/8)	17.75 - 22.75	1.0000	1.0000
L35	11	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	12	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	13	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	18	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	19	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L35	20	CCI-WSFP-060100	17.75 - 22.75	1.0000	1.0000
L36	4	HCS 6X12 6AWG(1-3/8)	12.75 - 17.75	1.0000	1.0000
L36	11	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	12	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	13	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	18	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	19	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L36	20	CCI-WSFP-060100	12.75 - 17.75	1.0000	1.0000
L37	4	HCS 6X12 6AWG(1-3/8)	7.75 - 12.75	1.0000	1.0000
L37	11	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	12	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	13	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	18	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	19	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L37	20	CCI-WSFP-060100	7.75 - 12.75	1.0000	1.0000
L38	4	HCS 6X12 6AWG(1-3/8)	2.75 - 7.75	1.0000	1.0000
L38	11	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L38	20	CCI-WSFP-060100	2.75 - 7.75	1.0000	1.0000
L39	4	HCS 6X12 6AWG(1-3/8)	0.00 - 2.75	1.0000	1.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L12	27	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	28	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L12	29	CCI-SFP-45100	85.08 - 86.58	Auto	0.0000
L13	27	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	28	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L13	29	CCI-SFP-45100	84.83 - 85.08	Auto	0.0000
L14	27	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	28	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L14	29	CCI-SFP-45100	79.83 - 84.83	Auto	0.0000
L15	14	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	15	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	16	CCI-AFP-060100	74.83 - 76.50	Auto	0.2739
L15	27	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	28	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L15	29	CCI-SFP-45100	76.50 - 79.83	Auto	0.0000
L16	14	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	15	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L16	16	CCI-AFP-060100	74.00 - 74.83	Auto	0.2677
L17	14	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	15	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L17	16	CCI-AFP-060100	73.75 - 74.00	Auto	0.2815
L18	14	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	15	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L18	16	CCI-AFP-060100	68.75 - 73.75	Auto	0.2665
L19	14	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	15	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L19	16	CCI-AFP-060100	63.75 - 68.75	Auto	0.2396
L20	14	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	15	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L20	16	CCI-AFP-060100	58.75 - 63.75	Auto	0.2108
L21	14	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	15	CCI-AFP-060100	53.75 - 58.75	Auto	0.1857
L21	16	CCI-AFP-060100	53.75 -	Auto	0.1857

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	21	CCI-SFP-060100	58.75 53.75 - 55.08	Auto	0.1765
L21	22	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L21	23	CCI-SFP-060100	53.75 - 55.08	Auto	0.1765
L22	14	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	15	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	16	CCI-AFP-060100	53.08 - 53.75	Auto	0.1715
L22	21	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	22	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L22	23	CCI-SFP-060100	53.08 - 53.75	Auto	0.1715
L23	14	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	15	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	16	CCI-AFP-060100	52.83 - 53.08	Auto	0.2022
L23	21	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	22	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L23	23	CCI-SFP-060100	52.83 - 53.08	Auto	0.2022
L24	14	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	15	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	16	CCI-AFP-060100	46.50 - 52.83	Auto	0.1857
L24	21	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	22	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L24	23	CCI-SFP-060100	45.91 - 52.83	Auto	0.1842
L25	21	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	22	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L25	23	CCI-SFP-060100	44.91 - 45.91	Auto	0.1387
L26	21	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	22	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	23	CCI-SFP-060100	39.91 - 44.91	Auto	0.1236
L26	24	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	25	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L26	26	CCI-SFP-45100	39.91 - 40.08	Auto	0.0000
L27	21	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	22	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	23	CCI-SFP-060100	38.58 - 39.91	Auto	0.1059
L27	24	CCI-SFP-45100	38.58 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	25	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L27	26	CCI-SFP-45100	39.91 38.58 -	Auto	0.0000
L28	21	CCI-SFP-060100	39.91 38.33 -	Auto	0.1496
L28	22	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	23	CCI-SFP-060100	38.58 38.33 -	Auto	0.1496
L28	24	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	25	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L28	26	CCI-SFP-45100	38.58 38.33 -	Auto	0.0000
L29	18	CCI-WSFP-060100	38.58 33.33 -	Auto	0.1244
L29	19	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	20	CCI-WSFP-060100	35.00 33.33 -	Auto	0.1244
L29	21	CCI-SFP-060100	35.00 35.00 -	Auto	0.1370
L29	22	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	23	CCI-SFP-060100	38.33 35.00 -	Auto	0.1370
L29	24	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	25	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L29	26	CCI-SFP-45100	38.33 33.33 -	Auto	0.0000
L30	18	CCI-WSFP-060100	38.33 33.00 -	Auto	0.1194
L30	19	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	20	CCI-WSFP-060100	33.33 33.00 -	Auto	0.1194
L30	24	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	25	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L30	26	CCI-SFP-45100	33.33 33.00 -	Auto	0.0000
L31	18	CCI-WSFP-060100	33.33 32.75 -	Auto	0.1180
L31	19	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	20	CCI-WSFP-060100	33.00 32.75 -	Auto	0.1180
L31	24	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	25	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L31	26	CCI-SFP-45100	33.00 32.75 -	Auto	0.0000
L32	18	CCI-WSFP-060100	33.00 27.75 -	Auto	0.1048
L32	19	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	20	CCI-WSFP-060100	32.75 27.75 -	Auto	0.1048
L32	24	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000
L32	25	CCI-SFP-45100	32.75 27.75 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L32	26	CCI-SFP-45100	32.75 27.75 - 32.75	Auto	0.0000
L33	11	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	12	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	13	CCI-WSFP-060100	23.00 - 25.00	Auto	0.0698
L33	18	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	19	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	20	CCI-WSFP-060100	23.00 - 27.75	Auto	0.0767
L33	24	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	25	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L33	26	CCI-SFP-45100	25.00 - 27.75	Auto	0.0000
L34	11	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	12	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	13	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	18	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	19	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L34	20	CCI-WSFP-060100	22.75 - 23.00	Auto	0.0788
L35	11	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	12	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	13	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	18	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	19	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L35	20	CCI-WSFP-060100	17.75 - 22.75	Auto	0.0656
L36	11	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	12	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	13	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	18	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	19	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L36	20	CCI-WSFP-060100	12.75 - 17.75	Auto	0.0369
L37	11	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	12	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	13	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	18	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	19	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L37	20	CCI-WSFP-060100	7.75 - 12.75	Auto	0.0118
L38	11	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	12	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	13	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	18	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L38	19	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L38	20	CCI-WSFP-060100	2.75 - 7.75	Auto	0.0000
L39	11	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	12	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	13	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	18	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	19	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000
L39	20	CCI-WSFP-060100	0.00 - 2.75	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
(2) AIR 32 B2A/B66AA w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.75 7.20 7.65	6.07 6.87 7.58	0.15 0.21 0.28
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.87 6.23 6.61	3.27 3.73 4.20	0.13 0.18 0.23
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
RRUS 4415 B25_CCIV2	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08
RRUS 4415 B25_CCIV2	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	0.05 0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RADIO 4449 B12/B71	A	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Face	4.00 0.00 1.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
T-Arm Mount [TA 701-3]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	23.94 30.04 36.16	23.94 30.04 36.16	1.09 1.48 1.95
Miscellaneous [NA 507-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
***									
T-Arm Mount [TA 602-3]	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice	13.40 16.44 19.70	13.40 16.44 19.70	0.77 1.00 1.29
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	A	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	B	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
5' x 2" Pipe Mount	C	From Face	4.00 0.00 2.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
***									
(2) MX06FRO840-02 w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
(2) MX06FRO840-02 w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	10.01 10.61 11.22	6.39 6.95 7.53	0.13 0.25 0.38
AIRSCALE DUAL RRH 4T4R B2/66A 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
AIRSCALE DUAL RRH 4T4R B2/66A 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B2/66A 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.34 1.50 1.67	0.08 0.10 0.12
AIRSCALE DUAL RRH 4T4R B5/13 320W	A	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
AIRSCALE DUAL RRH 4T4R B5/13 320W	C	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.23 2.42 2.62	1.39 1.55 1.72	0.07 0.09 0.11
RVZDC-6627-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
RRFDC-3315-PF-48	B	From Face	4.00 0.00 2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.36 3.60 3.84	2.19 2.39 2.61	0.03 0.06 0.09
Platform Mount [14' LP 404-1_KCKR]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	33.43 42.79 52.04	33.43 42.79 52.04	2.16 2.82 3.63
2' horizontal 2 1/2"x2 1/2" angle	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
2' horizontal 2 1/2"x2 1/2" angle	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	0.69 0.79 0.91	0.01 0.03 0.07	0.01 0.01 0.02
(2) 3' Vertical x 3"x 3" Angle Mount	A	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	B	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
(2) 3' Vertical x 3"x 3" Angle Mount	C	From Leg	2.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.18 1.40 1.63	1.18 1.40 1.63	0.06 0.07 0.08
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
***									

Load Combinations

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

Comb. No.	Description
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	140 - 135	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-7.11	-1.33	0.77
			Max. Mx	8	-3.56	-27.95	0.44
			Max. My	2	-3.56	-0.72	27.55
			Max. Vy	8	5.26	-27.95	0.44
			Max. Vx	2	-5.24	-0.72	27.55
			Max. Torque	12			1.22
L2	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.54	-1.39	0.80
			Max. Mx	8	-3.82	-54.95	0.53
			Max. My	2	-3.83	-0.82	54.47
			Max. Vy	8	5.54	-54.95	0.53
			Max. Vx	2	-5.53	-0.82	54.47
			Max. Torque	12			1.22
L3	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.68	-1.45	0.84
			Max. Mx	8	-5.07	-85.74	0.62
			Max. My	2	-5.08	-0.93	85.18
			Max. Vy	8	6.76	-85.74	0.62
			Max. Vx	2	-6.75	-0.93	85.18
			Max. Torque	12			1.22
L4	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.14	-1.51	0.87
			Max. Mx	8	-5.37	-120.29	0.71
			Max. My	2	-5.38	-1.03	119.64
			Max. Vy	8	7.05	-120.29	0.71
			Max. Vx	2	-7.04	-1.03	119.64
			Max. Torque	12			1.22
L5	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.01	-2.44	1.41
			Max. Mx	8	-9.99	-175.49	1.12
			Max. My	2	-10.01	-1.56	174.41
			Max. Vy	8	12.14	-175.49	1.12
			Max. Vx	2	-12.08	-1.56	174.41
			Max. Torque	12			2.03
L6	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.53	-2.52	1.45
			Max. Mx	8	-10.39	-236.87	1.41
			Max. My	2	-10.40	-1.87	235.48
			Max. Vy	8	12.41	-236.87	1.41
			Max. Vx	2	-12.35	-1.87	235.48
			Max. Torque	12			2.03
L7	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.06	-2.60	1.50
			Max. Mx	8	-10.81	-299.57	1.69
			Max. My	2	-10.82	-2.17	297.87
			Max. Vy	8	12.67	-299.57	1.69
			Max. Vx	2	-12.61	-2.17	297.87
			Max. Torque	12			2.03
L8	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.60	-2.67	1.54

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-11.25	-363.56	1.97
			Max. My	2	-11.26	-2.47	361.56
			Max. Vy	8	12.93	-363.56	1.97
			Max. Vx	2	-12.87	-2.47	361.56
			Max. Torque	12			2.03
L9	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.16	-2.74	1.58
			Max. Mx	8	-11.71	-428.81	2.24
			Max. My	2	-11.72	-2.76	426.51
			Max. Vy	8	13.18	-428.81	2.24
			Max. Vx	2	-13.12	-2.76	426.51
			Max. Torque	12			2.03
L10	95 - 89.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.35	-2.77	1.60
			Max. Mx	8	-11.87	-450.88	2.33
			Max. My	2	-11.88	-2.85	448.48
			Max. Vy	8	13.27	-450.88	2.33
			Max. Vx	2	-13.21	-2.85	448.48
			Max. Torque	12			2.03
L11	89.08 - 88.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.38	-2.83	1.64
			Max. Mx	8	-12.63	-517.99	2.61
			Max. My	2	-12.64	-3.14	515.29
			Max. Vy	8	13.58	-517.99	2.61
			Max. Vx	2	-13.52	-3.14	515.29
			Max. Torque	12			2.02
L12	88.33 - 85.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.81	-2.88	1.66
			Max. Mx	8	-12.98	-562.38	2.78
			Max. My	2	-12.99	-3.33	559.48
			Max. Vy	8	13.75	-562.38	2.78
			Max. Vx	2	-13.69	-3.33	559.48
			Max. Torque	12			2.02
L13	85.08 - 84.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.86	-2.88	1.66
			Max. Mx	8	-13.03	-565.82	2.80
			Max. My	2	-13.04	-3.34	562.90
			Max. Vy	8	13.75	-565.82	2.80
			Max. Vx	2	-13.69	-3.34	562.90
			Max. Torque	12			2.02
L14	84.83 - 79.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.86	-2.94	1.70
			Max. Mx	8	-13.81	-635.37	3.07
			Max. My	2	-13.82	-3.63	632.16
			Max. Vy	8	14.07	-635.37	3.07
			Max. Vx	2	-14.01	-3.63	632.16
			Max. Torque	12			2.02
L15	79.83 - 74.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.88	-3.01	1.74
			Max. Mx	8	-14.61	-706.49	3.34
			Max. My	2	-14.62	-3.91	702.97
			Max. Vy	8	14.38	-706.49	3.34
			Max. Vx	2	-14.32	-3.91	702.97
			Max. Torque	12			2.02
L16	74.83 - 74	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.05	-3.02	1.74
			Max. Mx	8	-14.75	-718.44	3.38
			Max. My	2	-14.75	-3.96	714.88
			Max. Vy	8	14.43	-718.44	3.38
			Max. Vx	2	-14.37	-3.96	714.88
			Max. Torque	12			2.02
L17	74 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.11	-3.02	1.74
			Max. Mx	8	-14.79	-722.05	3.40

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-14.80	-3.97	718.47
			Max. Vy	8	14.44	-722.05	3.40
			Max. Vx	2	-14.38	-3.97	718.47
			Max. Torque	12			2.02
L18	73.75 - 68.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.25	-3.08	1.78
			Max. Mx	8	-15.69	-795.08	3.67
			Max. My	2	-15.70	-4.26	791.20
			Max. Vy	8	14.77	-795.08	3.67
			Max. Vx	2	-14.71	-4.26	791.20
			Max. Torque	12			2.02
L19	68.75 - 63.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.40	-3.15	1.82
			Max. Mx	8	-16.61	-869.70	3.94
			Max. My	2	-16.61	-4.54	865.52
			Max. Vy	8	15.09	-869.70	3.94
			Max. Vx	2	-15.03	-4.54	865.52
			Max. Torque	12			2.02
L20	63.75 - 58.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.57	-3.21	1.85
			Max. Mx	8	-17.54	-945.89	4.20
			Max. My	2	-17.55	-4.82	941.41
			Max. Vy	8	15.40	-945.89	4.20
			Max. Vx	2	-15.34	-4.82	941.41
			Max. Torque	12			2.02
L21	58.75 - 53.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.78	-3.27	1.89
			Max. Mx	8	-18.49	-1023.62	4.47
			Max. My	2	-18.50	-5.10	1018.84
			Max. Vy	8	15.70	-1023.62	4.47
			Max. Vx	2	-15.65	-5.10	1018.84
			Max. Torque	12			2.02
L22	53.75 - 53.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.95	-3.28	1.89
			Max. Mx	8	-18.63	-1034.16	4.51
			Max. My	2	-18.63	-5.14	1029.33
			Max. Vy	8	15.74	-1034.16	4.51
			Max. Vx	2	-15.68	-5.14	1029.33
			Max. Torque	12			2.02
L23	53.08 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.04	-3.28	1.89
			Max. Mx	8	-18.69	-1038.09	4.52
			Max. My	2	-18.70	-5.15	1033.26
			Max. Vy	20	-15.75	1035.06	-2.79
			Max. Vx	2	-15.70	-5.15	1033.26
			Max. Torque	12			2.02
L24	52.83 - 45.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.64	-3.30	1.91
			Max. Mx	8	-19.17	-1067.20	4.62
			Max. My	2	-19.17	-5.26	1062.25
			Max. Vy	8	15.89	-1067.20	4.62
			Max. Vx	2	-15.83	-5.26	1062.25
			Max. Torque	12			2.02
L25	45.91 - 44.91	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.77	-3.36	1.94
			Max. Mx	8	-21.70	-1165.18	4.94
			Max. My	2	-21.71	-5.60	1159.87
			Max. Vy	8	16.34	-1165.18	4.94
			Max. Vx	2	-16.28	-5.60	1159.87
			Max. Torque	12			2.02
L26	44.91 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	39.91						
			Max. Compression	26	-35.12	-3.41	1.97
			Max. Mx	8	-22.83	-1247.53	5.21
			Max. My	2	-22.83	-5.88	1241.93
			Max. Vy	8	16.61	-1247.53	5.21
			Max. Vx	2	-16.56	-5.88	1241.93
			Max. Torque	12			2.02
L27	39.91 - 38.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.50	-3.42	1.98
			Max. Mx	8	-23.13	-1269.67	5.28
			Max. My	2	-23.13	-5.95	1263.98
			Max. Vy	8	16.69	-1269.67	5.28
			Max. Vx	2	-16.63	-5.95	1263.98
			Max. Torque	12			2.02
L28	38.58 - 38.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.58	-3.42	1.98
			Max. Mx	8	-23.21	-1273.84	5.29
			Max. My	2	-23.21	-5.96	1268.14
			Max. Vy	20	-16.69	1270.64	-3.46
			Max. Vx	2	-16.63	-5.96	1268.14
			Max. Torque	12			2.02
L29	38.33 - 33.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.29	-3.47	2.01
			Max. Mx	8	-24.61	-1358.06	5.56
			Max. My	2	-24.61	-6.24	1352.06
			Max. Vy	8	17.00	-1358.06	5.56
			Max. Vx	2	-16.94	-6.24	1352.06
			Max. Torque	12			2.02
L30	33.33 - 33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.40	-3.48	2.01
			Max. Mx	8	-24.70	-1363.67	5.57
			Max. My	2	-24.71	-6.26	1357.65
			Max. Vy	8	17.01	-1363.67	5.57
			Max. Vx	2	-16.95	-6.26	1357.65
			Max. Torque	12			2.02
L31	33 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.49	-3.48	2.01
			Max. Mx	8	-24.78	-1367.92	5.59
			Max. My	2	-24.78	-6.27	1361.89
			Max. Vy	20	-17.02	1364.65	-3.71
			Max. Vx	2	-16.97	-6.27	1361.89
			Max. Torque	12			2.02
L32	32.75 - 27.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.22	-3.53	2.04
			Max. Mx	8	-26.19	-1453.77	5.85
			Max. My	2	-26.20	-6.55	1447.44
			Max. Vy	8	17.32	-1453.77	5.85
			Max. Vx	2	-17.26	-6.55	1447.44
			Max. Torque	12			2.02
L33	27.75 - 23	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.87	-3.58	2.07
			Max. Mx	8	-27.56	-1536.61	6.10
			Max. My	2	-27.56	-6.81	1530.00
			Max. Vy	8	17.57	-1536.61	6.10
			Max. Vx	2	-17.52	-6.81	1530.00
			Max. Torque	12			2.01
L34	23 - 22.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.97	-3.58	2.07
			Max. Mx	8	-27.64	-1541.00	6.11
			Max. My	2	-27.65	-6.82	1534.38
			Max. Vy	20	-17.58	1537.61	-4.17
			Max. Vx	2	-17.52	-6.82	1534.38
			Max. Torque	12			2.01
L35	22.75 - 17.75	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-42.82	-3.63	2.10
			Max. Mx	8	-29.18	-1629.57	6.37
			Max. My	2	-29.18	-7.09	1622.65
			Max. Vy	8	17.85	-1629.57	6.37
			Max. Vx	2	-17.79	-7.09	1622.65
			Max. Torque	12			2.01
L36	17.75 - 12.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.69	-3.68	2.13
			Max. Mx	8	-30.74	-1719.38	6.63
			Max. My	2	-30.74	-7.37	1712.18
			Max. Vy	8	18.09	-1719.38	6.63
			Max. Vx	2	-18.03	-7.37	1712.18
			Max. Torque	12			2.01
L37	12.75 - 7.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.56	-3.73	2.16
			Max. Mx	8	-32.32	-1810.39	6.89
			Max. My	2	-32.32	-7.64	1802.89
			Max. Vy	8	18.32	-1810.39	6.89
			Max. Vx	2	-18.27	-7.64	1802.89
			Max. Torque	12			2.01
L38	7.75 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.43	-3.79	2.19
			Max. Mx	8	-33.92	-1902.57	7.14
			Max. My	2	-33.92	-7.90	1894.79
			Max. Vy	8	18.56	-1902.57	7.14
			Max. Vx	2	-18.50	-7.90	1894.79
			Max. Torque	12			2.01
L39	2.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.44	-3.81	2.20
			Max. Mx	8	-34.80	-1953.77	7.28
			Max. My	2	-34.80	-8.05	1945.83
			Max. Vy	8	18.69	-1953.77	7.28
			Max. Vx	2	-18.64	-8.05	1945.83
			Max. Torque	12			2.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	49.44	-0.00	0.00
	Max. H_x	20	34.81	18.67	-0.05
	Max. H_z	3	26.11	-0.05	18.62
	Max. M_x	2	1945.83	-0.05	18.62
	Max. M_z	8	1953.77	-18.67	0.05
	Max. Torsion	12	2.01	-9.30	-16.10
	Min. Vert	13	26.11	-9.30	-16.10
	Min. H_x	9	26.11	-18.67	0.05
	Min. H_z	15	26.11	0.05	-18.62
	Min. M_x	14	-1943.71	0.05	-18.62
	Min. M_z	20	-1950.10	18.67	-0.05
	Min. Torsion	24	-2.01	9.30	16.10

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	29.01	0.00	0.00	-0.85	-1.47	0.00
1.2 Dead+1.0 Wind 0 deg -	34.81	0.05	-18.62	-1945.83	-8.05	1.75

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
No Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	26.11	0.05	-18.62	-1919.39	-7.47	1.72
1.2 Dead+1.0 Wind 30 deg - No Ice	34.81	9.38	-16.15	-1688.37	-983.19	1.01
0.9 Dead+1.0 Wind 30 deg - No Ice	26.11	9.38	-16.15	-1665.40	-969.50	0.99
1.2 Dead+1.0 Wind 60 deg - No Ice	34.81	16.20	-9.35	-978.82	-1695.36	-0.00
0.9 Dead+1.0 Wind 60 deg - No Ice	26.11	16.20	-9.35	-965.38	-1672.09	-0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	34.81	18.67	-0.05	-7.28	-1953.77	-1.01
0.9 Dead+1.0 Wind 90 deg - No Ice	26.11	18.67	-0.05	-6.91	-1927.02	-0.99
1.2 Dead+1.0 Wind 120 deg - No Ice	34.81	16.15	9.27	965.94	-1689.16	-1.75
0.9 Dead+1.0 Wind 120 deg - No Ice	26.11	16.15	9.27	953.22	-1665.98	-1.72
1.2 Dead+1.0 Wind 150 deg - No Ice	34.81	9.30	16.10	1680.08	-972.42	-2.01
0.9 Dead+1.0 Wind 150 deg - No Ice	26.11	9.30	16.10	1657.76	-958.88	-1.98
1.2 Dead+1.0 Wind 180 deg - No Ice	34.81	-0.05	18.62	1943.71	4.41	-1.74
0.9 Dead+1.0 Wind 180 deg - No Ice	26.11	-0.05	18.62	1917.84	4.81	-1.71
1.2 Dead+1.0 Wind 210 deg - No Ice	34.81	-9.38	16.15	1686.24	979.53	-1.00
0.9 Dead+1.0 Wind 210 deg - No Ice	26.11	-9.38	16.15	1663.84	966.82	-0.98
1.2 Dead+1.0 Wind 240 deg - No Ice	34.81	-16.20	9.35	976.70	1691.69	-0.00
0.9 Dead+1.0 Wind 240 deg - No Ice	26.11	-16.20	9.35	963.83	1669.40	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	34.81	-18.67	0.05	5.18	1950.10	1.00
0.9 Dead+1.0 Wind 270 deg - No Ice	26.11	-18.67	0.05	5.37	1924.33	0.98
1.2 Dead+1.0 Wind 300 deg - No Ice	34.81	-16.15	-9.27	-968.04	1685.51	1.74
0.9 Dead+1.0 Wind 300 deg - No Ice	26.11	-16.15	-9.27	-954.76	1663.30	1.71
1.2 Dead+1.0 Wind 330 deg - No Ice	34.81	-9.30	-16.10	-1682.18	968.78	2.01
0.9 Dead+1.0 Wind 330 deg - No Ice	26.11	-9.30	-16.10	-1659.30	956.22	1.98
1.2 Dead+1.0 Ice+1.0 Temp	49.44	0.00	-0.00	-2.20	-3.81	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	49.44	0.00	-3.56	-371.44	-4.53	0.30
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	49.44	1.79	-3.09	-322.30	-189.42	0.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	49.44	3.09	-1.79	-187.40	-324.59	-0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	49.44	3.57	-0.00	-2.89	-373.83	-0.17
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	49.44	3.09	1.78	181.79	-323.94	-0.30
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	49.44	1.78	3.08	317.16	-188.30	-0.34
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	49.44	-0.00	3.56	366.95	-3.24	-0.30
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	49.44	-1.79	3.09	317.81	181.64	-0.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	49.44	-3.09	1.79	182.91	316.81	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	49.44	-3.57	0.00	-1.60	366.05	0.17
1.2 Dead+1.0 Wind 300	49.44	-3.09	-1.78	-186.28	316.16	0.30

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	49.44	-1.78	-3.08	-321.65	180.52	0.34
Dead+Wind 0 deg - Service	29.01	0.01	-4.94	-513.47	-3.16	0.47
Dead+Wind 30 deg - Service	29.01	2.49	-4.29	-445.61	-260.18	0.27
Dead+Wind 60 deg - Service	29.01	4.30	-2.48	-258.59	-447.90	-0.00
Dead+Wind 90 deg - Service	29.01	4.96	-0.01	-2.52	-516.01	-0.27
Dead+Wind 120 deg - Service	29.01	4.29	2.46	254.00	-446.26	-0.47
Dead+Wind 150 deg - Service	29.01	2.47	4.28	442.23	-257.34	-0.54
Dead+Wind 180 deg - Service	29.01	-0.01	4.94	511.72	0.12	-0.46
Dead+Wind 210 deg - Service	29.01	-2.49	4.29	443.86	257.15	-0.27
Dead+Wind 240 deg - Service	29.01	-4.30	2.48	256.84	444.86	-0.00
Dead+Wind 270 deg - Service	29.01	-4.96	0.01	0.77	512.97	0.27
Dead+Wind 300 deg - Service	29.01	-4.29	-2.46	-255.75	443.22	0.46
Dead+Wind 330 deg - Service	29.01	-2.47	-4.28	-443.98	254.31	0.54

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-29.01	0.00	-0.00	29.01	0.00	0.000%
2	0.05	-34.81	-18.62	-0.05	34.81	18.62	0.000%
3	0.05	-26.11	-18.62	-0.05	26.11	18.62	0.000%
4	9.38	-34.81	-16.15	-9.38	34.81	16.15	0.000%
5	9.38	-26.11	-16.15	-9.38	26.11	16.15	0.000%
6	16.20	-34.81	-9.35	-16.20	34.81	9.35	0.000%
7	16.20	-26.11	-9.35	-16.20	26.11	9.35	0.000%
8	18.67	-34.81	-0.05	-18.67	34.81	0.05	0.000%
9	18.67	-26.11	-0.05	-18.67	26.11	0.05	0.000%
10	16.15	-34.81	9.27	-16.15	34.81	-9.27	0.000%
11	16.15	-26.11	9.27	-16.15	26.11	-9.27	0.000%
12	9.30	-34.81	16.10	-9.30	34.81	-16.10	0.000%
13	9.30	-26.11	16.10	-9.30	26.11	-16.10	0.000%
14	-0.05	-34.81	18.62	0.05	34.81	-18.62	0.000%
15	-0.05	-26.11	18.62	0.05	26.11	-18.62	0.000%
16	-9.38	-34.81	16.15	9.38	34.81	-16.15	0.000%
17	-9.38	-26.11	16.15	9.38	26.11	-16.15	0.000%
18	-16.20	-34.81	9.35	16.20	34.81	-9.35	0.000%
19	-16.20	-26.11	9.35	16.20	26.11	-9.35	0.000%
20	-18.67	-34.81	0.05	18.67	34.81	-0.05	0.000%
21	-18.67	-26.11	0.05	18.67	26.11	-0.05	0.000%
22	-16.15	-34.81	-9.27	16.15	34.81	9.27	0.000%
23	-16.15	-26.11	-9.27	16.15	26.11	9.27	0.000%
24	-9.30	-34.81	-16.10	9.30	34.81	16.10	0.000%
25	-9.30	-26.11	-16.10	9.30	26.11	16.10	0.000%
26	0.00	-49.44	0.00	-0.00	49.44	0.00	0.000%
27	0.00	-49.44	-3.56	-0.00	49.44	3.56	0.000%
28	1.79	-49.44	-3.09	-1.79	49.44	3.09	0.000%
29	3.09	-49.44	-1.79	-3.09	49.44	1.79	0.000%
30	3.57	-49.44	-0.00	-3.57	49.44	0.00	0.000%
31	3.09	-49.44	1.78	-3.09	49.44	-1.78	0.000%
32	1.78	-49.44	3.08	-1.78	49.44	-3.08	0.000%
33	-0.00	-49.44	3.56	0.00	49.44	-3.56	0.000%
34	-1.79	-49.44	3.09	1.79	49.44	-3.09	0.000%
35	-3.09	-49.44	1.79	3.09	49.44	-1.79	0.000%
36	-3.57	-49.44	0.00	3.57	49.44	-0.00	0.000%
37	-3.09	-49.44	-1.78	3.09	49.44	1.78	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-1.78	-49.44	-3.08	1.78	49.44	3.08	0.000%
39	0.01	-29.01	-4.94	-0.01	29.01	4.94	0.000%
40	2.49	-29.01	-4.29	-2.49	29.01	4.29	0.000%
41	4.30	-29.01	-2.48	-4.30	29.01	2.48	0.000%
42	4.96	-29.01	-0.01	-4.96	29.01	0.01	0.000%
43	4.29	-29.01	2.46	-4.29	29.01	-2.46	0.000%
44	2.47	-29.01	4.28	-2.47	29.01	-4.28	0.000%
45	-0.01	-29.01	4.94	0.01	29.01	-4.94	0.000%
46	-2.49	-29.01	4.29	2.49	29.01	-4.29	0.000%
47	-4.30	-29.01	2.48	4.30	29.01	-2.48	0.000%
48	-4.96	-29.01	0.01	4.96	29.01	-0.01	0.000%
49	-4.29	-29.01	-2.46	4.29	29.01	2.46	0.000%
50	-2.47	-29.01	-4.28	2.47	29.01	4.28	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000489
2	Yes	6	0.00000001	0.00013823
3	Yes	5	0.00000001	0.00094968
4	Yes	7	0.00000001	0.00009173
5	Yes	6	0.00000001	0.00045620
6	Yes	7	0.00000001	0.00008891
7	Yes	6	0.00000001	0.00044174
8	Yes	6	0.00000001	0.00008609
9	Yes	5	0.00000001	0.00058795
10	Yes	7	0.00000001	0.00008313
11	Yes	6	0.00000001	0.00041322
12	Yes	7	0.00000001	0.00009353
13	Yes	6	0.00000001	0.00046618
14	Yes	6	0.00000001	0.00011448
15	Yes	5	0.00000001	0.00078708
16	Yes	7	0.00000001	0.00008558
17	Yes	6	0.00000001	0.00042589
18	Yes	7	0.00000001	0.00008824
19	Yes	6	0.00000001	0.00043921
20	Yes	5	0.00000001	0.00092235
21	Yes	5	0.00000001	0.00042647
22	Yes	7	0.00000001	0.00009258
23	Yes	6	0.00000001	0.00046145
24	Yes	7	0.00000001	0.00008236
25	Yes	6	0.00000001	0.00040970
26	Yes	5	0.00000001	0.00011514
27	Yes	6	0.00000001	0.00059209
28	Yes	6	0.00000001	0.00065134
29	Yes	6	0.00000001	0.00065211
30	Yes	6	0.00000001	0.00059825
31	Yes	6	0.00000001	0.00063742
32	Yes	6	0.00000001	0.00063525
33	Yes	6	0.00000001	0.00057656
34	Yes	6	0.00000001	0.00061529
35	Yes	6	0.00000001	0.00061511
36	Yes	6	0.00000001	0.00057150
37	Yes	6	0.00000001	0.00062577
38	Yes	6	0.00000001	0.00062735
39	Yes	5	0.00000001	0.00014420
40	Yes	5	0.00000001	0.00048765
41	Yes	5	0.00000001	0.00045134
42	Yes	5	0.00000001	0.00009694
43	Yes	5	0.00000001	0.00039390
44	Yes	5	0.00000001	0.00051698
45	Yes	5	0.00000001	0.00013725
46	Yes	5	0.00000001	0.00040789
47	Yes	5	0.00000001	0.00043623
48	Yes	5	0.00000001	0.00009058

49	Yes	5	0.00000001	0.00050181
50	Yes	5	0.00000001	0.00038693

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	26.230	41	1.8761	0.0126
L2	135 - 130	24.272	41	1.8624	0.0114
L3	130 - 125	22.337	41	1.8315	0.0103
L4	125 - 120	20.442	41	1.7867	0.0093
L5	120 - 115	18.601	41	1.7288	0.0085
L6	115 - 110	16.827	41	1.6565	0.0075
L7	110 - 105	15.139	41	1.5655	0.0063
L8	105 - 100	13.554	41	1.4598	0.0053
L9	100 - 95	12.086	41	1.3428	0.0044
L10	95 - 89.08	10.745	41	1.2169	0.0036
L11	93.33 - 88.33	10.327	41	1.1733	0.0033
L12	88.33 - 85.08	9.132	41	1.1009	0.0030
L13	85.08 - 84.83	8.410	41	1.0201	0.0026
L14	84.83 - 79.83	8.357	41	1.0166	0.0026
L15	79.83 - 74.83	7.330	41	0.9446	0.0023
L16	74.83 - 74	6.379	41	0.8703	0.0020
L17	74 - 73.75	6.229	41	0.8579	0.0019
L18	73.75 - 68.75	6.184	41	0.8546	0.0019
L19	68.75 - 63.75	5.325	41	0.7876	0.0017
L20	63.75 - 58.75	4.536	41	0.7192	0.0015
L21	58.75 - 53.75	3.819	41	0.6488	0.0013
L22	53.75 - 53.08	3.177	41	0.5784	0.0011
L23	53.08 - 52.83	3.096	41	0.5690	0.0010
L24	52.83 - 45.91	3.067	41	0.5663	0.0010
L25	50.99 - 44.91	2.852	41	0.5457	0.0010
L26	44.91 - 39.91	2.183	41	0.4979	0.0009
L27	39.91 - 38.58	1.701	41	0.4225	0.0007
L28	38.58 - 38.33	1.586	41	0.4025	0.0007
L29	38.33 - 33.33	1.565	41	0.3997	0.0007
L30	33.33 - 33	1.176	41	0.3443	0.0006
L31	33 - 32.75	1.152	41	0.3406	0.0005
L32	32.75 - 27.75	1.134	41	0.3379	0.0005
L33	27.75 - 23	0.809	41	0.2831	0.0004
L34	23 - 22.75	0.554	41	0.2305	0.0003
L35	22.75 - 17.75	0.542	41	0.2280	0.0003
L36	17.75 - 12.75	0.329	41	0.1778	0.0003
L37	12.75 - 7.75	0.170	41	0.1273	0.0002
L38	7.75 - 2.75	0.063	41	0.0774	0.0001
L39	2.75 - 0	0.008	41	0.0273	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	41	26.230	1.8761	0.0126	12694
127.00	T-Arm Mount [TA 602-3]	41	21.194	1.8062	0.0097	6209
118.00	(2) MX06FRO840-02 w/ Mount Pipe	41	17.882	1.7019	0.0081	4040

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 135	99.045	6	7.0782	0.0474
L2	135 - 130	91.683	6	7.0318	0.0427
L3	130 - 125	84.404	6	6.9197	0.0386
L4	125 - 120	77.270	6	6.7539	0.0351
L5	120 - 115	70.334	6	6.5378	0.0319
L6	115 - 110	63.647	6	6.2673	0.0280
L7	110 - 105	57.278	6	5.9255	0.0238
L8	105 - 100	51.294	6	5.5277	0.0200
L9	100 - 95	45.748	6	5.0859	0.0166
L10	95 - 89.08	40.679	6	4.6101	0.0135
L11	93.33 - 88.33	39.098	6	4.4450	0.0126
L12	88.33 - 85.08	34.577	6	4.1711	0.0111
L13	85.08 - 84.83	31.846	6	3.8652	0.0097
L14	84.83 - 79.83	31.644	6	3.8520	0.0096
L15	79.83 - 74.83	27.757	6	3.5794	0.0084
L16	74.83 - 74	24.160	6	3.2977	0.0074
L17	74 - 73.75	23.591	6	3.2510	0.0072
L18	73.75 - 68.75	23.421	6	3.2385	0.0071
L19	68.75 - 63.75	20.165	6	2.9844	0.0063
L20	63.75 - 58.75	17.178	6	2.7253	0.0055
L21	58.75 - 53.75	14.465	6	2.4583	0.0047
L22	53.75 - 53.08	12.032	6	2.1916	0.0040
L23	53.08 - 52.83	11.727	6	2.1561	0.0039
L24	52.83 - 45.91	11.614	6	2.1455	0.0039
L25	50.99 - 44.91	10.803	6	2.0676	0.0037
L26	44.91 - 39.91	8.268	6	1.8864	0.0033
L27	39.91 - 38.58	6.443	6	1.6007	0.0027
L28	38.58 - 38.33	6.007	6	1.5247	0.0025
L29	38.33 - 33.33	5.928	6	1.5144	0.0025
L30	33.33 - 33	4.453	6	1.3041	0.0021
L31	33 - 32.75	4.363	6	1.2903	0.0021
L32	32.75 - 27.75	4.296	6	1.2799	0.0020
L33	27.75 - 23	3.064	6	1.0722	0.0017
L34	23 - 22.75	2.097	6	0.8729	0.0013
L35	22.75 - 17.75	2.052	6	0.8633	0.0013
L36	17.75 - 12.75	1.247	6	0.6733	0.0010
L37	12.75 - 7.75	0.643	6	0.4819	0.0007
L38	7.75 - 2.75	0.237	6	0.2932	0.0004
L39	2.75 - 0	0.030	6	0.1032	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	AIR 32 B2A/B66AA w/ Mount Pipe	6	99.045	7.0782	0.0474	3687
127.00	T-Arm Mount [TA 602-3]	6	80.103	6.8262	0.0364	1724
118.00	(2) MX06FRO840-02 w/ Mount Pipe	6	67.625	6.4373	0.0304	1107

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.00	0.00	0.0	11.1095	-3.55	649.91	0.005
L2	135 - 130 (2)	TP19.7101x18.8551x0.1875	5.00	0.00	0.0	11.6184	-3.82	679.68	0.006
L3	130 - 125 (3)	TP20.5652x19.7101x0.1875	5.00	0.00	0.0	12.1273	-5.07	709.45	0.007
L4	125 - 120 (4)	TP21.4203x20.5652x0.1875	5.00	0.00	0.0	12.6362	-5.37	739.22	0.007
L5	120 - 115 (5)	TP22.2753x21.4203x0.1875	5.00	0.00	0.0	13.1450	-9.99	768.98	0.013
L6	115 - 110 (6)	TP23.1304x22.2753x0.1875	5.00	0.00	0.0	13.6539	-10.38	798.75	0.013
L7	110 - 105 (7)	TP23.9855x23.1304x0.1875	5.00	0.00	0.0	14.1628	-10.80	828.52	0.013
L8	105 - 100 (8)	TP24.8405x23.9855x0.1875	5.00	0.00	0.0	14.6716	-11.24	858.29	0.013
L9	100 - 95 (9)	TP25.6956x24.8405x0.1875	5.00	0.00	0.0	15.1805	-11.71	888.06	0.013
L10	95 - 89.08 (10)	TP26.708x25.6956x0.1875	5.92	0.00	0.0	15.3505	-11.86	898.00	0.013
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.2188	5.00	0.00	0.0	18.2205	-12.63	1065.90	0.012
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.2188	3.25	0.00	0.0	18.6063	-12.98	1088.47	0.012
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	0.25	0.00	0.0	33.8471	-13.03	1980.06	0.007
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	5.00	0.00	0.0	34.3946	-13.81	2012.09	0.007
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	5.00	0.00	0.0	34.9080	-14.61	2042.12	0.007
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	0.83	0.00	0.0	35.0825	-14.74	2052.33	0.007
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	0.25	0.00	0.0	40.1561	-14.79	2349.13	0.006
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	5.00	0.00	0.0	40.7865	-15.69	2386.01	0.007
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	5.00	0.00	0.0	41.3827	-16.61	2420.89	0.007
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	5.00	0.00	0.0	41.3362	-17.54	2418.17	0.007
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	5.00	0.00	0.0	42.4726	-18.49	2484.65	0.007
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	0.67	0.00	0.0	42.6249	-18.62	2493.56	0.007
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	0.25	0.00	0.0	53.9587	-18.69	3156.59	0.006
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	6.92	0.00	0.0	54.4893	-19.17	3187.62	0.006
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	6.08	0.00	0.0	41.9587	-21.70	2454.58	0.009
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	5.00	0.00	0.0	43.0444	-22.83	2518.10	0.009
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	1.33	0.00	0.0	42.6639	-23.13	2495.84	0.009
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	0.25	0.00	0.0	60.0599	-23.21	3513.50	0.007
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	5.00	0.00	0.0	60.2077	-24.61	3522.15	0.007
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	0.33	0.00	0.0	60.3051	-24.70	3527.85	0.007
L31	33 - 32.75	TP35.5285x35.4858x0.54	0.25	0.00	0.0	60.378	-24.77	3532.17	0.007

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(31)	38				9			
L32	32.75 - 27.75	TP36.3837x35.5285x0.54	5.00	0.00	0.0	61.854	-26.19	3618.51	0.007
	(32)	38				9			
L33	27.75 - 23	TP37.1961x36.3837x0.53	4.75	0.00	0.0	61.823	-27.56	3616.70	0.008
	(33)	13				9			
L34	23 - 22.75	TP37.2389x37.1961x0.58	0.25	0.00	0.0	67.629	-27.64	3956.31	0.007
	(34)	13				3			
L35	22.75 - 17.75	TP38.0941x37.2389x0.58	5.00	0.00	0.0	69.207	-29.18	4048.61	0.007
	(35)	13				0			
L36	17.75 - 12.75	TP38.9493x38.0941x0.56	5.00	0.00	0.0	69.285	-30.74	4053.17	0.008
	(36)	88				0			
L37	12.75 - 7.75	TP39.8045x38.9493x0.56	5.00	0.00	0.0	70.828	-32.32	4143.48	0.008
	(37)	88				8			
L38	7.75 - 2.75	TP40.6596x39.8045x0.55	5.00	0.00	0.0	70.804	-33.92	4142.04	0.008
	(38)	63				1			
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	2.75	0.00	0.0	71.634	-34.80	4190.62	0.008
						5			

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	28.10	312.58	0.090	0.00	312.58	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18	55.15	338.07	0.163	0.00	338.07	0.000
		75						
L3	130 - 125 (3)	TP20.5652x19.7101x0.18	85.98	364.17	0.236	0.00	364.17	0.000
		75						
L4	125 - 120 (4)	TP21.4203x20.5652x0.18	120.57	390.83	0.308	0.00	390.83	0.000
		75						
L5	120 - 115 (5)	TP22.2753x21.4203x0.18	175.97	418.02	0.421	0.00	418.02	0.000
		75						
L6	115 - 110 (6)	TP23.1304x22.2753x0.18	237.50	445.68	0.533	0.00	445.68	0.000
		75						
L7	110 - 105 (7)	TP23.9855x23.1304x0.18	300.35	473.77	0.634	0.00	473.77	0.000
		75						
L8	105 - 100 (8)	TP24.8405x23.9855x0.18	364.49	502.25	0.726	0.00	502.25	0.000
		75						
L9	100 - 95 (9)	TP25.6956x24.8405x0.18	429.89	531.06	0.809	0.00	531.06	0.000
		75						
L10	95 - 89.08	TP26.708x25.6956x0.187	452.01	540.75	0.836	0.00	540.75	0.000
	(10)	5						
L11	89.08 - 88.33	TP26.4612x25.6062x0.21	519.27	684.55	0.759	0.00	684.55	0.000
	(11)	88						
L12	88.33 - 85.08	TP27.0169x26.4612x0.21	563.76	709.12	0.795	0.00	709.12	0.000
	(12)	88						
L13	85.08 - 84.83	TP27.0597x27.0169x0.4	567.20	1368.87	0.414	0.00	1368.87	0.000
	(13)							
L14	84.83 - 79.83	TP27.9147x27.0597x0.39	636.90	1436.93	0.443	0.00	1436.93	0.000
	(14)	38						
L15	79.83 - 74.83	TP28.7697x27.9147x0.38	708.17	1504.99	0.471	0.00	1504.99	0.000
	(15)	75						
L16	74.83 - 74	TP28.9116x28.7697x0.38	720.15	1520.18	0.474	0.00	1520.18	0.000
	(16)	75						
L17	74 - 73.75	TP28.9544x28.9116x0.44	723.76	1735.82	0.417	0.00	1735.82	0.000
	(17)	38						
L18	73.75 - 68.75	TP29.8094x28.9544x0.43	796.94	1817.52	0.438	0.00	1817.52	0.000
	(18)	75						
L19	68.75 - 63.75	TP30.6644x29.8094x0.43	871.72	1899.34	0.459	0.00	1899.34	0.000
	(19)	13						
L20	63.75 - 58.75	TP31.5194x30.6644x0.41	948.05	1953.18	0.485	0.00	1953.18	0.000
	(20)	88						
L21	58.75 - 53.75	TP32.3744x31.5194x0.41	1025.93	2062.78	0.497	0.00	2062.78	0.000
	(21)	88						
L22	53.75 - 53.08	TP32.4889x32.3744x0.41	1036.48	2077.70	0.499	0.00	2077.70	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	(22)	88						
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.53 13	1040.43	2615.28	0.398	0.00	2615.28	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.531 3	1069.58	2667.39	0.401	0.00	2667.39	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	1167.74	2109.62	0.554	0.00	2109.62	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	1250.25	2220.88	0.563	0.00	2220.88	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.39 38	1272.43	2217.00	0.574	0.00	2217.00	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.55 63	1276.60	3095.28	0.412	0.00	3095.28	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.54 38	1360.97	3184.44	0.427	0.00	3184.44	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.54 38	1366.58	3194.83	0.428	0.00	3194.83	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.54 38	1370.85	3202.72	0.428	0.00	3202.72	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.54 38	1456.84	3362.43	0.433	0.00	3362.43	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.53 13	1539.82	3440.42	0.448	0.00	3440.42	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.58 13	1544.22	3757.68	0.411	0.00	3757.68	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.58 13	1632.93	3936.44	0.415	0.00	3936.44	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.56 88	1722.88	4034.72	0.427	0.00	4034.72	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.56 88	1814.03	4217.88	0.430	0.00	4217.88	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.55 63	1906.36	4312.30	0.442	0.00	4312.30	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	1957.63	4414.75	0.443	0.00	4414.75	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	140 - 135 (1)	TP18.8551x18x0.1875	5.27	194.97	0.027	0.00	318.74	0.000
L2	135 - 130 (2)	TP19.7101x18.8551x0.18 75	5.55	203.90	0.027	0.00	348.61	0.000
L3	130 - 125 (3)	TP20.5652x19.7101x0.18 75	6.77	212.83	0.032	0.00	379.82	0.000
L4	125 - 120 (4)	TP21.4203x20.5652x0.18 75	7.06	221.76	0.032	0.00	412.36	0.000
L5	120 - 115 (5)	TP22.2753x21.4203x0.18 75	12.17	230.69	0.053	0.00	446.24	0.000
L6	115 - 110 (6)	TP23.1304x22.2753x0.18 75	12.44	239.63	0.052	0.00	481.46	0.000
L7	110 - 105 (7)	TP23.9855x23.1304x0.18 75	12.70	248.56	0.051	0.00	518.02	0.000
L8	105 - 100 (8)	TP24.8405x23.9855x0.18 75	12.96	257.49	0.050	0.00	555.91	0.000
L9	100 - 95 (9)	TP25.6956x24.8405x0.18 75	13.21	266.42	0.050	0.00	595.14	0.000
L10	95 - 89.08 (10)	TP26.708x25.6956x0.187 5	13.30	269.40	0.049	0.00	608.54	0.000
L11	89.08 - 88.33 (11)	TP26.4612x25.6062x0.21 88	13.61	319.77	0.043	0.00	734.89	0.000
L12	88.33 - 85.08 (12)	TP27.0169x26.4612x0.21 88	13.78	326.54	0.042	0.00	766.34	0.000
L13	85.08 - 84.83 (13)	TP27.0597x27.0169x0.4	13.78	594.02	0.023	0.00	1386.87	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	84.83 - 79.83 (14)	TP27.9147x27.0597x0.3938	14.10	603.63	0.023	0.00	1454.83	0.000
L15	79.83 - 74.83 (15)	TP28.7697x27.9147x0.3875	14.41	612.63	0.024	0.00	1522.75	0.000
L16	74.83 - 74 (16)	TP28.9116x28.7697x0.3875	14.46	615.70	0.023	0.00	1538.02	0.000
L17	74 - 73.75 (17)	TP28.9544x28.9116x0.4438	14.47	704.74	0.021	0.00	1759.61	0.000
L18	73.75 - 68.75 (18)	TP29.8094x28.9544x0.4375	14.80	715.80	0.021	0.00	1841.22	0.000
L19	68.75 - 63.75 (19)	TP30.6644x29.8094x0.4313	15.11	726.27	0.021	0.00	1922.91	0.000
L20	63.75 - 58.75 (20)	TP31.5194x30.6644x0.4188	15.43	725.45	0.021	0.00	1975.87	0.000
L21	58.75 - 53.75 (21)	TP32.3744x31.5194x0.4188	15.73	745.39	0.021	0.00	2085.99	0.000
L22	53.75 - 53.08 (22)	TP32.4889x32.3744x0.4188	15.77	748.07	0.021	0.00	2100.97	0.000
L23	53.08 - 52.83 (23)	TP32.5317x32.4889x0.5313	15.78	946.98	0.017	0.00	2653.84	0.000
L24	52.83 - 45.91 (24)	TP33.715x32.5317x0.5313	15.91	956.29	0.017	0.00	2706.28	0.000
L25	45.91 - 44.91 (25)	TP33.4487x32.4088x0.4	16.37	736.38	0.022	0.00	2131.24	0.000
L26	44.91 - 39.91 (26)	TP34.3039x33.4487x0.4	16.64	755.43	0.022	0.00	2242.97	0.000
L27	39.91 - 38.58 (27)	TP34.5314x34.3039x0.3938	16.72	748.75	0.022	0.00	2238.47	0.000
L28	38.58 - 38.33 (28)	TP34.5742x34.5314x0.5563	16.72	1054.05	0.016	0.00	3140.14	0.000
L29	38.33 - 33.33 (29)	TP35.4293x34.5742x0.5438	17.02	1056.65	0.016	0.00	3228.16	0.000
L30	33.33 - 33 (30)	TP35.4858x35.4293x0.5438	17.04	1058.36	0.016	0.00	3238.62	0.000
L31	33 - 32.75 (31)	TP35.5285x35.4858x0.5438	17.05	1059.65	0.016	0.00	3246.55	0.000
L32	32.75 - 27.75 (32)	TP36.3837x35.5285x0.5438	17.34	1085.55	0.016	0.00	3407.21	0.000
L33	27.75 - 23 (33)	TP37.1961x36.3837x0.5313	17.60	1085.01	0.016	0.00	3483.88	0.000
L34	23 - 22.75 (34)	TP37.2389x37.1961x0.5813	17.61	1186.89	0.015	0.00	3810.28	0.000
L35	22.75 - 17.75 (35)	TP38.0941x37.2389x0.5813	17.88	1214.58	0.015	0.00	3990.13	0.000
L36	17.75 - 12.75 (36)	TP38.9493x38.0941x0.5688	18.11	1215.95	0.015	0.00	4087.03	0.000
L37	12.75 - 7.75 (37)	TP39.8045x38.9493x0.5688	18.35	1243.05	0.015	0.00	4271.18	0.000
L38	7.75 - 2.75 (38)	TP40.6596x39.8045x0.5563	18.59	1242.61	0.015	0.00	4364.12	0.000
L39	2.75 - 0 (39)	TP41.13x40.6596x0.5563	18.72	1257.19	0.015	0.00	4467.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 135 (1)	0.005	0.090	0.000	0.027	0.000	0.096	1.050	4.8.2
L2	135 - 130 (2)	0.006	0.163	0.000	0.027	0.000	0.169	1.050	4.8.2
L3	130 - 125 (3)	0.007	0.236	0.000	0.032	0.000	0.244	1.050	4.8.2
L4	125 - 120 (4)	0.007	0.308	0.000	0.032	0.000	0.317	1.050	4.8.2
L5	120 - 115 (5)	0.013	0.421	0.000	0.053	0.000	0.437	1.050	4.8.2
L6	115 - 110 (6)	0.013	0.533	0.000	0.052	0.000	0.549	1.050	4.8.2
L7	110 - 105 (7)	0.013	0.634	0.000	0.051	0.000	0.650	1.050	4.8.2
L8	105 - 100 (8)	0.013	0.726	0.000	0.050	0.000	0.741	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L9	100 - 95 (9)	0.013	0.809	0.000	0.050	0.000	0.825	1.050	4.8.2
L10	95 - 89.08 (10)	0.013	0.836	0.000	0.049	0.000	0.852	1.050	4.8.2
L11	89.08 - 88.33 (11)	0.012	0.759	0.000	0.043	0.000	0.772	1.050	4.8.2
L12	88.33 - 85.08 (12)	0.012	0.795	0.000	0.042	0.000	0.809	1.050	4.8.2
L13	85.08 - 84.83 (13)	0.007	0.414	0.000	0.023	0.000	0.421	1.050	4.8.2
L14	84.83 - 79.83 (14)	0.007	0.443	0.000	0.023	0.000	0.451	1.050	4.8.2
L15	79.83 - 74.83 (15)	0.007	0.471	0.000	0.024	0.000	0.478	1.050	4.8.2
L16	74.83 - 74 (16)	0.007	0.474	0.000	0.023	0.000	0.481	1.050	4.8.2
L17	74 - 73.75 (17)	0.006	0.417	0.000	0.021	0.000	0.424	1.050	4.8.2
L18	73.75 - 68.75 (18)	0.007	0.438	0.000	0.021	0.000	0.445	1.050	4.8.2
L19	68.75 - 63.75 (19)	0.007	0.459	0.000	0.021	0.000	0.466	1.050	4.8.2
L20	63.75 - 58.75 (20)	0.007	0.485	0.000	0.021	0.000	0.493	1.050	4.8.2
L21	58.75 - 53.75 (21)	0.007	0.497	0.000	0.021	0.000	0.505	1.050	4.8.2
L22	53.75 - 53.08 (22)	0.007	0.499	0.000	0.021	0.000	0.507	1.050	4.8.2
L23	53.08 - 52.83 (23)	0.006	0.398	0.000	0.017	0.000	0.404	1.050	4.8.2
L24	52.83 - 45.91 (24)	0.006	0.401	0.000	0.017	0.000	0.407	1.050	4.8.2
L25	45.91 - 44.91 (25)	0.009	0.554	0.000	0.022	0.000	0.563	1.050	4.8.2
L26	44.91 - 39.91 (26)	0.009	0.563	0.000	0.022	0.000	0.573	1.050	4.8.2
L27	39.91 - 38.58 (27)	0.009	0.574	0.000	0.022	0.000	0.584	1.050	4.8.2
L28	38.58 - 38.33 (28)	0.007	0.412	0.000	0.016	0.000	0.419	1.050	4.8.2
L29	38.33 - 33.33 (29)	0.007	0.427	0.000	0.016	0.000	0.435	1.050	4.8.2
L30	33.33 - 33 (30)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L31	33 - 32.75 (31)	0.007	0.428	0.000	0.016	0.000	0.435	1.050	4.8.2
L32	32.75 - 27.75 (32)	0.007	0.433	0.000	0.016	0.000	0.441	1.050	4.8.2
L33	27.75 - 23 (33)	0.008	0.448	0.000	0.016	0.000	0.455	1.050	4.8.2
L34	23 - 22.75 (34)	0.007	0.411	0.000	0.015	0.000	0.418	1.050	4.8.2
L35	22.75 - 17.75 (35)	0.007	0.415	0.000	0.015	0.000	0.422	1.050	4.8.2
L36	17.75 - 12.75 (36)	0.008	0.427	0.000	0.015	0.000	0.435	1.050	4.8.2
L37	12.75 - 7.75 (37)	0.008	0.430	0.000	0.015	0.000	0.438	1.050	4.8.2
L38	7.75 - 2.75 (38)	0.008	0.442	0.000	0.015	0.000	0.450	1.050	4.8.2
L39	2.75 - 0 (39)	0.008	0.443	0.000	0.015	0.000	0.452	1.050	4.8.2

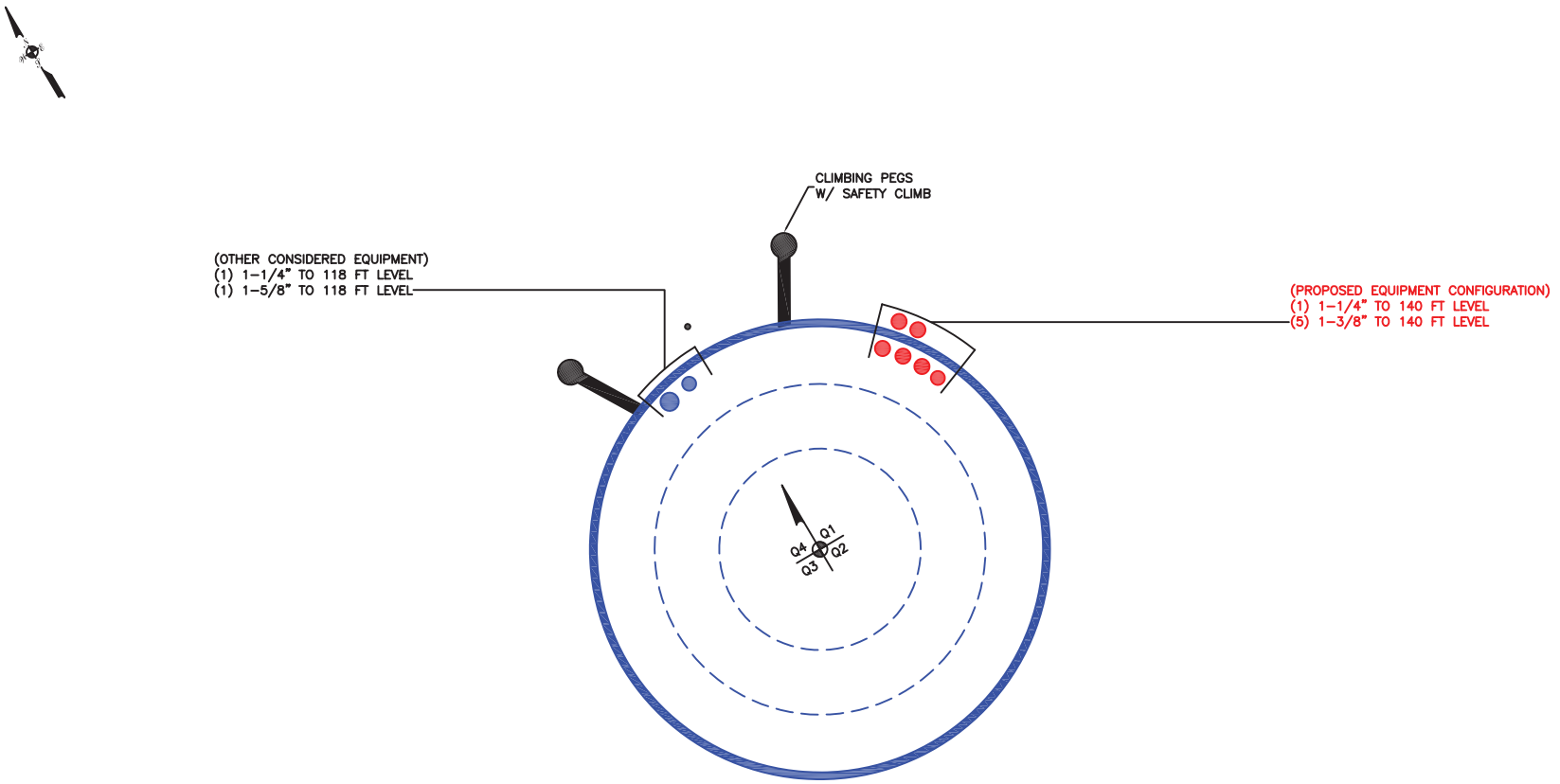
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	140 - 135	Pole	TP18.8551x18x0.1875	1	-3.55	682.40	9.2	Pass
L2	135 - 130	Pole	TP19.7101x18.8551x0.1875	2	-3.82	713.66	16.1	Pass
L3	130 - 125	Pole	TP20.5652x19.7101x0.1875	3	-5.07	744.92	23.3	Pass
L4	125 - 120	Pole	TP21.4203x20.5652x0.1875	4	-5.37	776.18	30.2	Pass
L5	120 - 115	Pole	TP22.2753x21.4203x0.1875	5	-9.99	807.43	41.6	Pass
L6	115 - 110	Pole	TP23.1304x22.2753x0.1875	6	-10.38	838.69	52.2	Pass
L7	110 - 105	Pole	TP23.9855x23.1304x0.1875	7	-10.80	869.95	61.9	Pass
L8	105 - 100	Pole	TP24.8405x23.9855x0.1875	8	-11.24	901.21	70.6	Pass
L9	100 - 95	Pole	TP25.6956x24.8405x0.1875	9	-11.71	932.46	78.6	Pass
L10	95 - 89.08	Pole	TP26.708x25.6956x0.1875	10	-11.86	942.90	81.1	Pass
L11	89.08 - 88.33	Pole	TP26.4612x25.6062x0.2188	11	-12.63	1119.19	73.5	Pass
L12	88.33 - 85.08	Pole	TP27.0169x26.4612x0.2188	12	-12.98	1142.89	77.0	Pass
L13	85.08 - 84.83	Pole	TP27.0597x27.0169x0.4	13	-13.03	2079.06	40.1	Pass
L14	84.83 - 79.83	Pole	TP27.9147x27.0597x0.3938	14	-13.81	2112.69	42.9	Pass
L15	79.83 - 74.83	Pole	TP28.7697x27.9147x0.3875	15	-14.61	2144.23	45.5	Pass
L16	74.83 - 74	Pole	TP28.9116x28.7697x0.3875	16	-14.74	2154.95	45.9	Pass
L17	74 - 73.75	Pole	TP28.9544x28.9116x0.4438	17	-14.79	2466.59	40.4	Pass
L18	73.75 - 68.75	Pole	TP29.8094x28.9544x0.4375	18	-15.69	2505.31	42.4	Pass
L19	68.75 - 63.75	Pole	TP30.6644x29.8094x0.4313	19	-16.61	2541.93	44.4	Pass
L20	63.75 - 58.75	Pole	TP31.5194x30.6644x0.4188	20	-17.54	2539.08	47.0	Pass
L21	58.75 - 53.75	Pole	TP32.3744x31.5194x0.4188	21	-18.49	2608.88	48.1	Pass
L22	53.75 - 53.08	Pole	TP32.4889x32.3744x0.4188	22	-18.62	2618.24	48.3	Pass
L23	53.08 - 52.83	Pole	TP32.5317x32.4889x0.5313	23	-18.69	3314.42	38.5	Pass
L24	52.83 - 45.91	Pole	TP33.715x32.5317x0.5313	24	-19.17	3347.00	38.8	Pass
L25	45.91 - 44.91	Pole	TP33.4487x32.4088x0.4	25	-21.70	2577.31	53.6	Pass
L26	44.91 - 39.91	Pole	TP34.3039x33.4487x0.4	26	-22.83	2644.00	54.5	Pass
L27	39.91 - 38.58	Pole	TP34.5314x34.3039x0.3938	27	-23.13	2620.63	55.6	Pass
L28	38.58 - 38.33	Pole	TP34.5742x34.5314x0.5563	28	-23.21	3689.17	39.9	Pass
L29	38.33 - 33.33	Pole	TP35.4293x34.5742x0.5438	29	-24.61	3698.26	41.4	Pass
L30	33.33 - 33	Pole	TP35.4858x35.4293x0.5438	30	-24.70	3704.24	41.4	Pass
L31	33 - 32.75	Pole	TP35.5285x35.4858x0.5438	31	-24.77	3708.78	41.5	Pass
L32	32.75 - 27.75	Pole	TP36.3837x35.5285x0.5438	32	-26.19	3799.44	42.0	Pass
L33	27.75 - 23	Pole	TP37.1961x36.3837x0.5313	33	-27.56	3797.53	43.4	Pass
L34	23 - 22.75	Pole	TP37.2389x37.1961x0.5813	34	-27.64	4154.13	39.8	Pass
L35	22.75 - 17.75	Pole	TP38.0941x37.2389x0.5813	35	-29.18	4251.04	40.2	Pass
L36	17.75 - 12.75	Pole	TP38.9493x38.0941x0.5688	36	-30.74	4255.83	41.4	Pass
L37	12.75 - 7.75	Pole	TP39.8045x38.9493x0.5688	37	-32.32	4350.65	41.7	Pass
L38	7.75 - 2.75	Pole	TP40.6596x39.8045x0.5563	38	-33.92	4349.14	42.9	Pass
L39	2.75 - 0	Pole	TP41.13x40.6596x0.5563	39	-34.80	4400.15	43.0	Pass
							Summary	
						Pole (L10)	81.1	Pass
						RATING =	**81.1**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 118 FT LEVEL
(1) 1-5/8" TO 118 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/4" TO 140 FT LEVEL
(5) 1-3/8" TO 140 FT LEVEL
Q1
Q2
Q3
Q4

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 826848

Work Order: 1887883

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	140	50.92	4.25	18	18	26.708	0.1875	Auto	A572-65
2	93.33	47.42	5.08	18	25.61	33.715	0.21875	Auto	A572-65
3	50.99	50.99	0	18	32.41	41.13	0.28125	Auto	A572-65

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	13	14	15	16	17	18
1	0	23	plate	CI-65FP-060100 (Welde	3																		
2	49	74	plate	CCI-65FP-060100	3																		
3	0	33	plate	CCI-WSFP-060100	3																		
4	33	53.08	plate	CCI-SFP-060100	3																		
5	23	38.58	plate	CCI-SFP-045100	3																		
6	74	85.08	plate	CCI-SFP-045100	3																		
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	n/a	24.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
5	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
6	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	140 - 135	5		18	18.000	18.855	0.1875	A572-65	1.000
2	135 - 130	5		18	18.855	19.710	0.1875	A572-65	1.000
3	130 - 125	5		18	19.710	20.565	0.1875	A572-65	1.000
4	125 - 120	5		18	20.565	21.420	0.1875	A572-65	1.000
5	120 - 115	5		18	21.420	22.275	0.1875	A572-65	1.000
6	115 - 110	5		18	22.275	23.130	0.1875	A572-65	1.000
7	110 - 105	5		18	23.130	23.985	0.1875	A572-65	1.000
8	105 - 100	5		18	23.985	24.841	0.1875	A572-65	1.000
9	100 - 95	5		18	24.841	25.696	0.1875	A572-65	1.000
10	95 - 93.33	5.92	4.25	18	25.696	26.708	0.1875	A572-65	1.000
11	93.33 - 88.33	5		18	25.606	26.461	0.21875	A572-65	1.000
12	88.33 - 85.08	3.25		18	26.461	27.017	0.21875	A572-65	1.000
13	85.08 - 84.83	0.25		18	27.017	27.060	0.4	A572-65	0.949
14	84.83 - 79.83	5		18	27.060	27.915	0.39375	A572-65	0.952
15	79.83 - 74.83	5		18	27.915	28.770	0.3875	A572-65	0.955
16	74.83 - 74	0.83		18	28.770	28.912	0.3875	A572-65	0.953
17	74 - 73.75	0.25		18	28.912	28.954	0.44375	A572-65	0.945
18	73.75 - 68.75	5		18	28.954	29.809	0.4375	A572-65	0.945
19	68.75 - 63.75	5		18	29.809	30.664	0.43125	A572-65	0.946
20	63.75 - 58.75	5		18	30.664	31.519	0.41875	A572-65	0.961
21	58.75 - 53.75	5		18	31.519	32.374	0.41875	A572-65	0.949
22	53.75 - 53.08	0.67		18	32.374	32.489	0.41875	A572-65	0.948
23	53.08 - 52.83	0.25		18	32.489	32.532	0.53125	A572-65	1.083
24	52.83 - 50.99	6.92	5.08	18	32.532	33.715	0.53125	A572-65	1.076
25	50.99 - 44.91	6.08		18	32.409	33.449	0.4	A572-65	1.135
26	44.91 - 39.91	5		18	33.449	34.304	0.4	A572-65	1.124
27	39.91 - 38.58	1.33		18	34.304	34.531	0.39375	A572-65	1.139
28	38.58 - 38.33	0.25		18	34.531	34.574	0.55625	A572-65	1.034
29	38.33 - 33.33	5		18	34.574	35.429	0.54375	A572-65	1.044
30	33.33 - 33	0.33		18	35.429	35.486	0.54375	A572-65	1.043
31	33 - 32.75	0.25		18	35.486	35.529	0.54375	A572-65	1.043
32	32.75 - 27.75	5		18	35.529	36.384	0.54375	A572-65	1.030
33	27.75 - 23	4.75		18	36.384	37.196	0.53125	A572-65	1.043
34	23 - 22.75	0.25		18	37.196	37.239	0.58125	A572-65	1.020
35	22.75 - 17.75	5		18	37.239	38.094	0.58125	A572-65	1.008
36	17.75 - 12.75	5		18	38.094	38.949	0.56875	A572-65	1.018
37	12.75 - 7.75	5		18	38.949	39.804	0.56875	A572-65	1.006
38	7.75 - 2.75	5		18	39.804	40.660	0.55625	A572-65	1.018
39	2.75 - 0	2.75		18	40.660	41.130	0.55625	A572-65	1.012

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	140 - 135	3.55	28.10	5.27
2	135 - 130	3.82	55.15	5.55
3	130 - 125	5.07	85.98	6.77
4	125 - 120	5.37	120.57	7.06
5	120 - 115	9.99	175.97	12.17
6	115 - 110	10.38	237.50	12.44
7	110 - 105	10.80	300.35	12.70
8	105 - 100	11.24	364.48	12.96
9	100 - 95	11.71	429.89	13.21
10	95 - 93.33	11.86	452.01	13.30
11	93.33 - 88.33	12.63	519.27	13.61
12	88.33 - 85.08	12.98	563.76	13.78
13	85.08 - 84.83	13.03	567.20	13.78
14	84.83 - 79.83	13.81	636.90	14.10
15	79.83 - 74.83	14.61	708.17	14.41
16	74.83 - 74	14.74	720.15	14.46
17	74 - 73.75	14.79	723.77	14.47
18	73.75 - 68.75	15.69	796.94	14.80
19	68.75 - 63.75	16.61	871.71	15.11
20	63.75 - 58.75	17.54	948.05	15.43
21	58.75 - 53.75	18.49	1025.93	15.73
22	53.75 - 53.08	18.62	1036.48	15.77
23	53.08 - 52.83	18.69	1040.42	15.78
24	52.83 - 50.99	19.17	1069.58	15.91
25	50.99 - 44.91	21.70	1167.74	16.37
26	44.91 - 39.91	22.83	1250.25	16.64
27	39.91 - 38.58	23.13	1272.42	16.72
28	38.58 - 38.33	23.21	1276.60	16.72
29	38.33 - 33.33	24.61	1360.97	17.02
30	33.33 - 33	24.70	1366.59	17.04
31	33 - 32.75	24.77	1370.85	17.05
32	32.75 - 27.75	26.19	1456.84	17.34
33	27.75 - 23	27.56	1539.82	17.60
34	23 - 22.75	27.64	1544.22	17.61
35	22.75 - 17.75	29.18	1632.92	17.88
36	17.75 - 12.75	30.74	1722.88	18.11
37	12.75 - 7.75	32.32	1814.04	18.35
38	7.75 - 2.75	33.92	1906.36	18.59
39	2.75 - 0	34.80	1957.64	18.72

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
140 - 135	Pole	TP18.855x18x0.1875	Pole	9.0%	Pass
135 - 130	Pole	TP19.71x18.855x0.1875	Pole	16.0%	Pass
130 - 125	Pole	TP20.565x19.71x0.1875	Pole	23.1%	Pass
125 - 120	Pole	TP21.42x20.565x0.1875	Pole	30.0%	Pass
120 - 115	Pole	TP22.275x21.42x0.1875	Pole	41.2%	Pass
115 - 110	Pole	TP23.13x22.275x0.1875	Pole	51.9%	Pass
110 - 105	Pole	TP23.985x23.13x0.1875	Pole	61.5%	Pass
105 - 100	Pole	TP24.841x23.985x0.1875	Pole	70.3%	Pass
100 - 95	Pole	TP25.696x24.841x0.1875	Pole	78.3%	Pass
95 - 93.33	Pole	TP26.708x25.696x0.1875	Pole	80.8%	Pass
93.33 - 88.33	Pole	TP26.461x25.606x0.2188	Pole	73.2%	Pass
88.33 - 85.08	Pole	TP27.017x26.461x0.2188	Pole	76.7%	Pass
85.08 - 84.83	Pole + Reinf.	TP27.06x27.017x0.4	Reinf. 6 Tension Rupture	69.8%	Pass
84.83 - 79.83	Pole + Reinf.	TP27.915x27.06x0.3938	Reinf. 6 Tension Rupture	74.6%	Pass
79.83 - 74.83	Pole + Reinf.	TP28.77x27.915x0.3875	Reinf. 6 Tension Rupture	79.1%	Pass
74.83 - 74	Pole + Reinf.	TP28.912x28.77x0.3875	Reinf. 6 Tension Rupture	79.8%	Pass
74 - 73.75	Pole + Reinf.	TP28.954x28.912x0.4438	Reinf. 2 Tension Rupture	63.8%	Pass
73.75 - 68.75	Pole + Reinf.	TP29.809x28.954x0.4375	Reinf. 2 Tension Rupture	67.3%	Pass
68.75 - 63.75	Pole + Reinf.	TP30.664x29.809x0.4313	Reinf. 2 Tension Rupture	70.5%	Pass
63.75 - 58.75	Pole + Reinf.	TP31.519x30.664x0.4188	Reinf. 2 Tension Rupture	73.5%	Pass
58.75 - 53.75	Pole + Reinf.	TP32.374x31.519x0.4188	Reinf. 2 Tension Rupture	76.4%	Pass
53.75 - 53.08	Pole + Reinf.	TP32.489x32.374x0.4188	Reinf. 2 Tension Rupture	76.7%	Pass
53.08 - 52.83	Pole + Reinf.	TP32.532x32.489x0.5313	Reinf. 2 Tension Rupture	63.6%	Pass
52.83 - 50.99	Pole + Reinf.	TP33.715x32.532x0.5313	Reinf. 2 Tension Rupture	64.5%	Pass
50.99 - 44.91	Pole + Reinf.	TP33.449x32.409x0.4	Reinf. 4 Tension Rupture	74.1%	Pass
44.91 - 39.91	Pole + Reinf.	TP34.304x33.449x0.4	Reinf. 4 Tension Rupture	76.0%	Pass
39.91 - 38.58	Pole + Reinf.	TP34.531x34.304x0.3938	Reinf. 4 Tension Rupture	76.5%	Pass
38.58 - 38.33	Pole + Reinf.	TP34.574x34.531x0.5563	Reinf. 5 Tension Rupture	65.8%	Pass
38.33 - 33.33	Pole + Reinf.	TP35.429x34.574x0.5438	Reinf. 5 Tension Rupture	67.6%	Pass
33.33 - 33	Pole + Reinf.	TP35.486x35.429x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
33 - 32.75	Pole + Reinf.	TP35.529x35.486x0.5438	Reinf. 5 Tension Rupture	67.8%	Pass
32.75 - 27.75	Pole + Reinf.	TP36.384x35.529x0.5438	Reinf. 5 Tension Rupture	69.6%	Pass
27.75 - 23	Pole + Reinf.	TP37.196x36.384x0.5313	Reinf. 5 Tension Rupture	71.1%	Pass
23 - 22.75	Pole + Reinf.	TP37.239x37.196x0.5813	Reinf. 1 Tension Rupture	59.9%	Pass
22.75 - 17.75	Pole + Reinf.	TP38.094x37.239x0.5813	Reinf. 1 Tension Rupture	61.2%	Pass
17.75 - 12.75	Pole + Reinf.	TP38.949x38.094x0.5688	Reinf. 1 Tension Rupture	62.5%	Pass
12.75 - 7.75	Pole + Reinf.	TP39.804x38.949x0.5688	Reinf. 1 Tension Rupture	63.7%	Pass
7.75 - 2.75	Pole + Reinf.	TP40.66x39.804x0.5563	Reinf. 1 Tension Rupture	64.9%	Pass
2.75 - 0	Pole + Reinf.	TP41.13x40.66x0.5563	Reinf. 1 Tension Rupture	65.5%	Pass
				Summary	
			Pole	80.8%	Pass
			Reinforcement	79.8%	Pass
			Overall	80.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
140 - 135	489	n/a	489	11.11	n/a	11.11	9.0%						
135 - 130	559	n/a	559	11.62	n/a	11.62	16.0%						
130 - 125	636	n/a	636	12.13	n/a	12.13	23.1%						
125 - 120	719	n/a	719	12.64	n/a	12.64	30.0%						
120 - 115	810	n/a	810	13.14	n/a	13.14	41.2%						
115 - 110	908	n/a	908	13.65	n/a	13.65	51.9%						
110 - 105	1013	n/a	1013	14.16	n/a	14.16	61.5%						
105 - 100	1126	n/a	1126	14.67	n/a	14.67	70.3%						
100 - 95	1247	n/a	1247	15.18	n/a	15.18	78.3%						
95 - 93.33	1290	n/a	1290	15.35	n/a	15.35	80.8%						
93.33 - 88.33	1585	n/a	1585	18.22	n/a	18.22	73.2%						
88.33 - 85.08	1688	n/a	1688	18.61	n/a	18.61	76.7%						
85.08 - 84.83	1696	1341	3036	18.64	13.50	32.14	42.5%						69.8%
84.83 - 79.83	1863	1423	3286	19.23	13.50	32.73	45.9%						74.6%
79.83 - 74.83	2041	1507	3548	19.82	13.50	33.32	49.2%						79.1%
74.83 - 74	2071	1522	3593	19.92	13.50	33.42	49.8%						79.8%
74 - 73.75	2081	2047	4127	19.95	18.00	37.95	43.6%		63.8%				
73.75 - 68.75	2272	2163	4435	20.54	18.00	38.54	46.5%		67.3%				
68.75 - 63.75	2475	2284	4758	21.14	18.00	39.14	49.3%		70.5%				
63.75 - 58.75	2689	2407	5096	21.73	18.00	39.73	52.1%		73.5%				
58.75 - 53.75	2915	2534	5449	22.33	18.00	40.33	54.7%		76.4%				
53.75 - 53.08	2947	2551	5498	22.40	18.00	40.40	55.1%		76.7%				
53.08 - 52.83	2979	4032	7011	22.43	36.00	58.43	46.4%		63.6%		54.7%		
52.83 - 50.99	3067	4107	7174	22.65	36.00	58.65	47.3%		64.5%		54.1%		
50.99 - 44.91	4167	1690	5857	29.61	18.00	47.61	60.2%				74.1%		
44.91 - 39.91	4496	1775	6271	30.37	18.00	48.37	62.1%				76.0%		
39.91 - 38.58	4586	1798	6384	30.57	18.00	48.57	62.6%				76.5%		
38.58 - 38.33	4555	4227	8782	30.61	31.50	62.11	44.0%				56.8%	65.8%	
38.33 - 33.33	4904	4431	9335	31.38	31.50	62.88	45.5%				58.4%	67.6%	
33.33 - 33	4927	4444	9372	31.43	31.50	62.93	45.6%				58.5%	67.8%	
33 - 32.75	4945	4455	9400	31.46	31.50	62.96	45.7%			58.6%		67.8%	
32.75 - 27.75	5314	4664	9978	32.23	31.50	63.73	47.3%			60.1%		69.6%	
27.75 - 23	5681	4867	10547	32.95	31.50	64.45	48.7%			61.5%		71.1%	
23 - 22.75	5696	5889	11584	32.99	36.00	68.99	44.2%	59.9%		58.5%			
22.75 - 17.75	6100	6152	12252	33.75	36.00	69.75	45.6%	61.2%		59.8%			
17.75 - 12.75	6523	6422	12945	34.52	36.00	70.52	46.9%	62.5%		61.1%			
12.75 - 7.75	6966	6697	13663	35.28	36.00	71.28	48.3%	63.7%		62.3%			
7.75 - 2.75	7427	6978	14406	36.04	36.00	72.04	49.6%	64.9%		63.4%			
2.75 - 0	7690	7135	14825	36.46	36.00	72.46	50.3%	65.5%		64.1%			

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

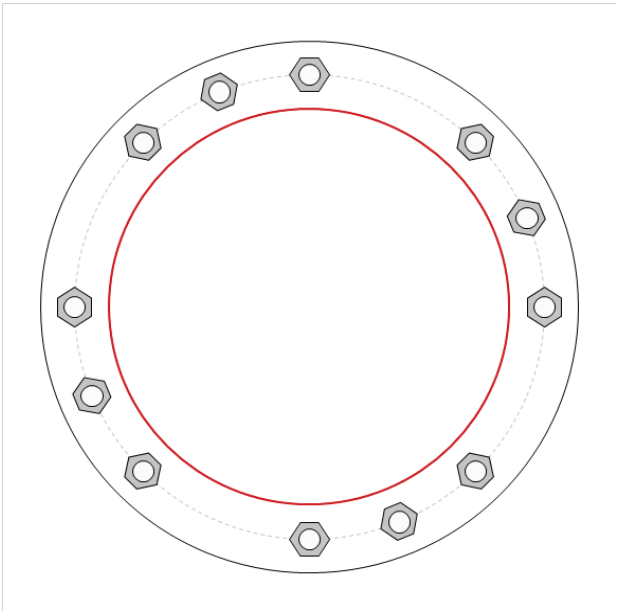
Monopole Base Plate Connection

Site Info	
BU #	826848
Site Name	ublic Storage-Briggs Ch
Order #	525942 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	1957.64
Axial Force (kips)	34.80
Shear Force (kips)	18.72

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 48.26" BC

GROUP 2: (4) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 48.26" BC

Base Plate Data

55.11" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

41.13" x 0.28125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 166.46	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.34	ϕVn = 120.77	**59.1%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 161.96	ϕPn_c = 375.74	**Stress Rating**
Vu = 0	ϕVn = 169.08	**41.1%**
Mu = 0	ϕMn = 179.4	**Pass**

Base Plate Summary

Max Stress (ksi):	27.92	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**59.1%**	**Pass**

Drilled Pier Foundation

BU # :	826848
Site Name:	Public Storage-Briggs (
Order Number:	525942 Rev 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1957.63	
Axial Force (kips)	34.81	
Shear Force (kips)	18.7	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	18	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 18' below grade		
Pier Diameter	6	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.27	-
Soil Safety Factor	1.66	-
Max Moment (kip-ft)	2043.29	-
Rating*	*76.5%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	219.13	-
End Bearing (kips)	382.34	-
Weight of Concrete (kips)	94.15	-
Total Capacity (kips)	601.47	-
Axial (kips)	128.96	-
Rating*	*20.4%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	4.93	-
Critical Moment (kip-ft)	2042.52	-
Critical Moment Capacity	3481.78	-
Rating*	*55.9%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.53	-
Critical Shear (kip)	356.27	-
Critical Shear Capacity	494.96	-
Rating*	*68.6%*	-

Soil Interaction Rating*	**76.5%**
Structural Foundation Rating*	**68.6%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	N/A	# of Layers	5

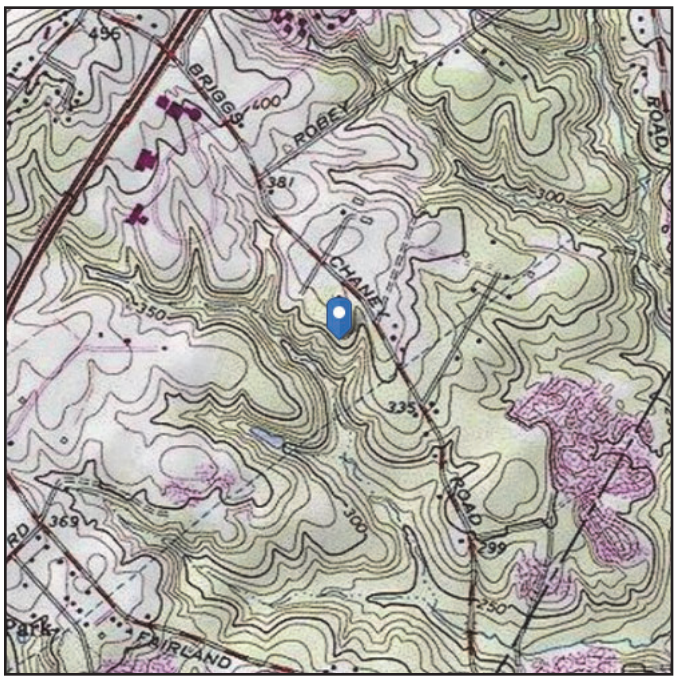
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	5	2	100	150	0	26	0.000	0.000	0.00	0.00			Cohesionless
3	5	8	3	110	150	0	30	0.000	0.000	0.00	0.00			Cohesionless
4	8	13	5	125	150	0	34	0.000	0.000	0.98	0.98			Cohesionless
5	13	18	5	135	150	0	40	0.000	0.000	2.12	2.12	18.03		Cohesionless

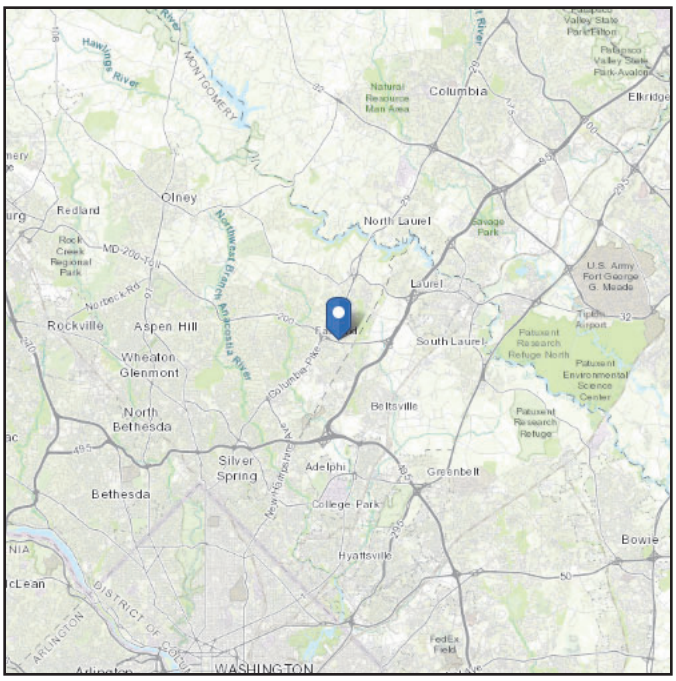
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 356.26 ft (NAVD 88)
Latitude: 39.074992
Longitude: -76.942228





Wind

Results:

Wind Speed:	113 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4

Date Accessed: Mon Oct 05 2020

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

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

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

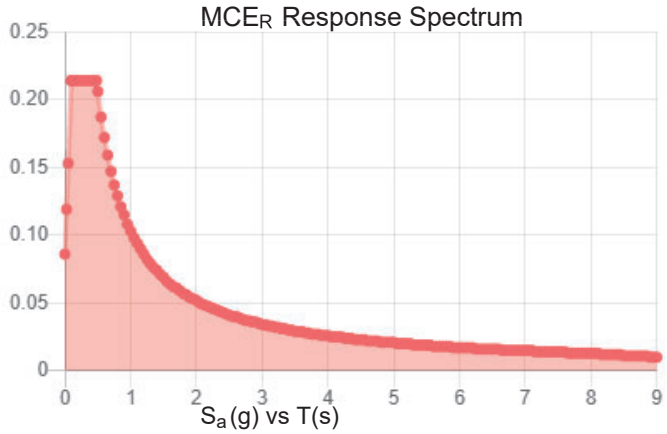
Seismic

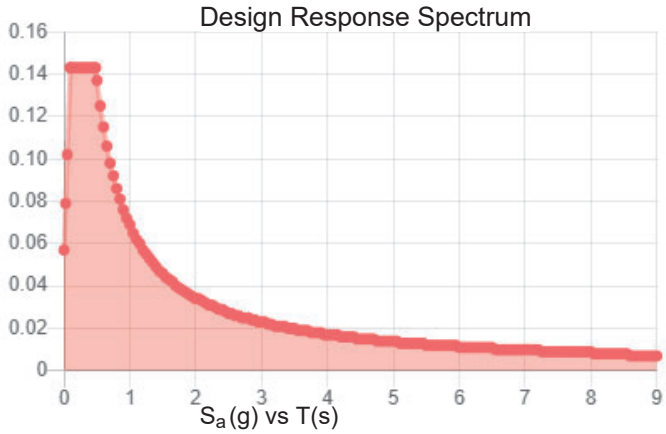
Site Soil Class: D - Default (see Section 11.4.3)

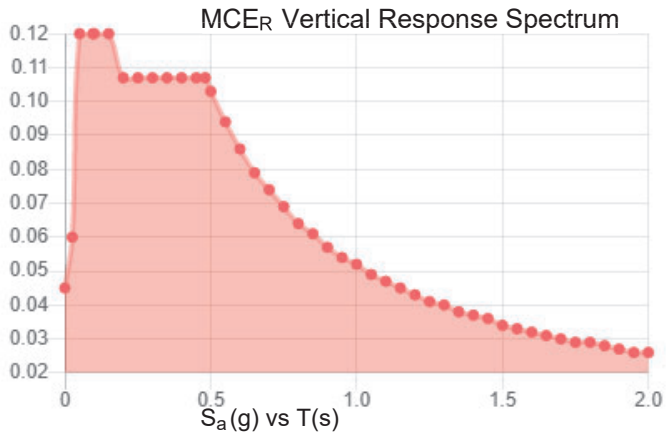
Results:

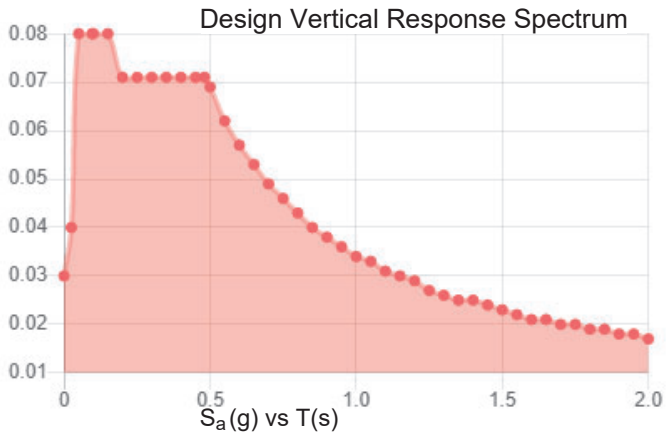
S_S :	0.134	S_{D1} :	0.069
S_1 :	0.043	T_L :	8
F_a :	1.6	PGA :	0.069
F_v :	2.4	PGA_M :	0.111
S_{MS} :	0.214	F_{PGA} :	1.6
S_{M1} :	0.103	I_e :	1
S_{DS} :	0.143	C_v :	0.7

Seismic Design Category B









Data Accessed: Mon Oct 05 2020

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Oct 05 2020

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

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

T-Mobile

T-MOBILE SITE NUMBER: 7WAN285K
T-MOBILE SITE NAME: PUBLIC STORAGE-BRIGGS CHA
T-MOBILE PROJECT: ANCHOR

BUSINESS UNIT #: 826848
SITE ADDRESS: 3351 BRIGGS CHANEY ROAD SILVER SPRING, MD 20904
COUNTY: MONTGOMERY
SITE TYPE: MONOPOLE
TOWER HEIGHT: 140'-0"

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	PUBLIC STORAGE-BRIGGS CHA
SITE ADDRESS:	3351 BRIGGS CHANEY ROAD SILVER SPRING, MD 20904
COUNTY:	MONTGOMERY
MAP/PARCEL #:	01831954
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	39° 4' 29.97" N
LONGITUDE:	76° 56' 32.02" W
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	354'
CURRENT ZONING:	EOF
JURISDICTION:	MONTGOMERY COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	SHURGARD MARYLAND PROPERTIES INC C/O SSC ACQ DEPT PT-MD-08080 PO BOX 25025 GLENDALE, CA 91020
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	BALTIMORE GAS AND ELECTRIC (410) 685-0123
TELCO PROVIDER:	VERIZON (800) 483-2000

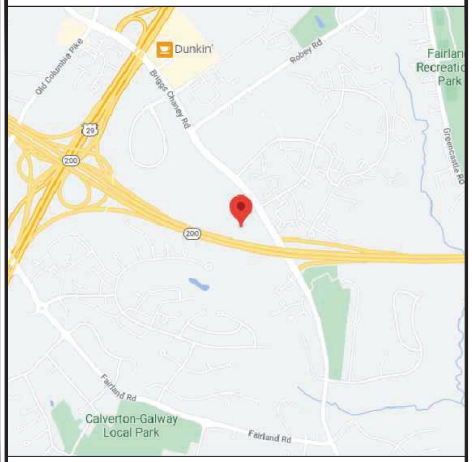
PROJECT TEAM

A&E FIRM:	KIMLEY-HORN & ASSOCIATES, INC. COA: 47923 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 KEVIN.CLEMENTS@KIMLEY-HORN.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 SHANNON CAMPBELL - PROJECT MANAGER SHANNON.CAMPBELL@CROWNCASTLE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	EXISTING EQUIPMENT PLAN
C-1.3	FINAL EQUIPMENT PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	FINAL EQUIPMENT SCHEDULE
C-4	EQUIPMENT SPECS
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	PANEL SCHEDULE & ONE-LINE DIAGRAM
E-2	PANEL SCHEDULE & PANEL PHOTO
G-1	GROUNDING DETAILS

LOCATION MAP



NO SCALE

SITE PHOTO

SCOPING NOTES

1. GROUND SCOPE OF WORK:
   - REMOVE (1) 2106 CABINET
   - INSTALL (1) 6160 SSC CABINET
   - INSTALL (1) B160 BATTERY CABINET
   - INSTALL (1) BB 6630 BASEBAND RADIOS
   - INSTALL (1) BB 6648 BASEBAND RADIO
   - INSTALL (1) XMU MULTIPLEXER
   - INSTALL (1) PSU 4813
   - INSTALL (2) 6x12 HCS (1-3/8")
2. TOWER SCOPE OF WORK:
   - REMOVE (3) ANTENNAS
   - REMOVE (3) TMAS
   - INSTALL (3) ANTENNAS
   - INSTALL (3) RRH'S
3. ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

CALL MARYLAND ONE CALL
(800) 282-8555
CALL 3 WORKING DAYS BEFORE YOU DIG!

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY CROWN CASTLE (1887883))
DATED:	10/08/20
MOUNT ANALYSIS:	BY TOWER ENGINEERING PROFESSIONALS (PROJECT #: 50342.447392)
DATED:	09/30/2020
RFDS REVISION:	7
DATED:	9/15/2020

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J. CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: T-1
REVISION: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE" AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR 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.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR 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.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER ... 40 ksi
   #5 BARS AND LARGER ... 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ... 3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER ... 2"
   #5 BARS AND SMALLER ... 1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS ... 3/4"
   BEAMS AND COLUMNS ... 1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

GREENFIELD GROUNDING NOTES:

1. 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.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

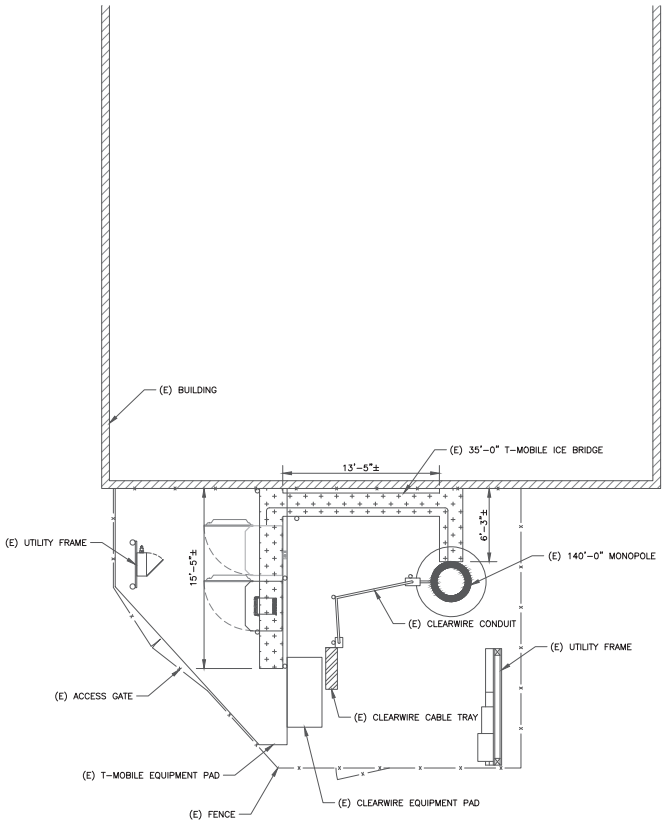
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: T-2
REVISION: 1



1 OVERALL SITE PLAN

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

N

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

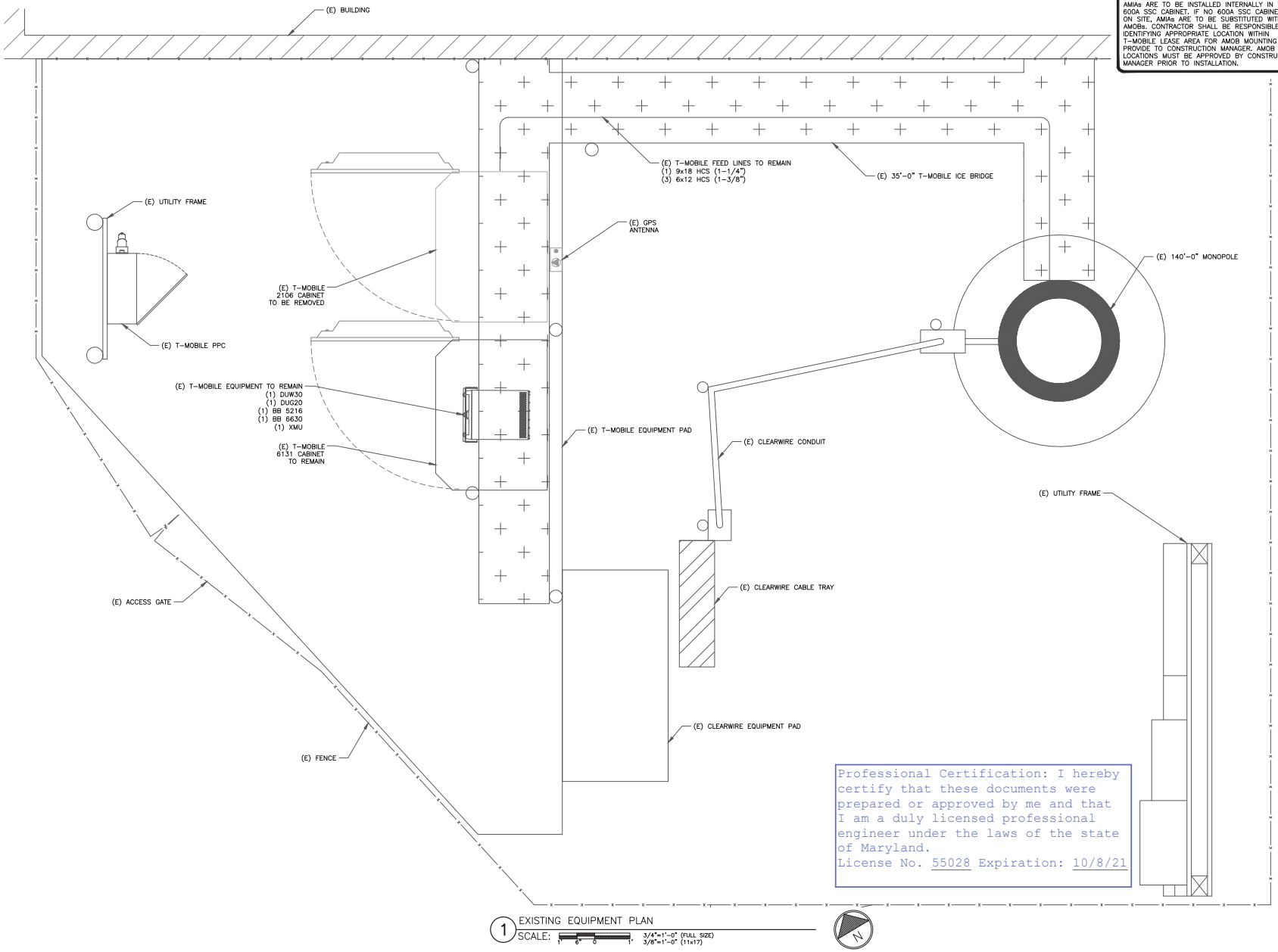
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
C-1.1	1



1 EXISTING EQUIPMENT PLAN

SCALE: 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

INSTALLER NOTE:

AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

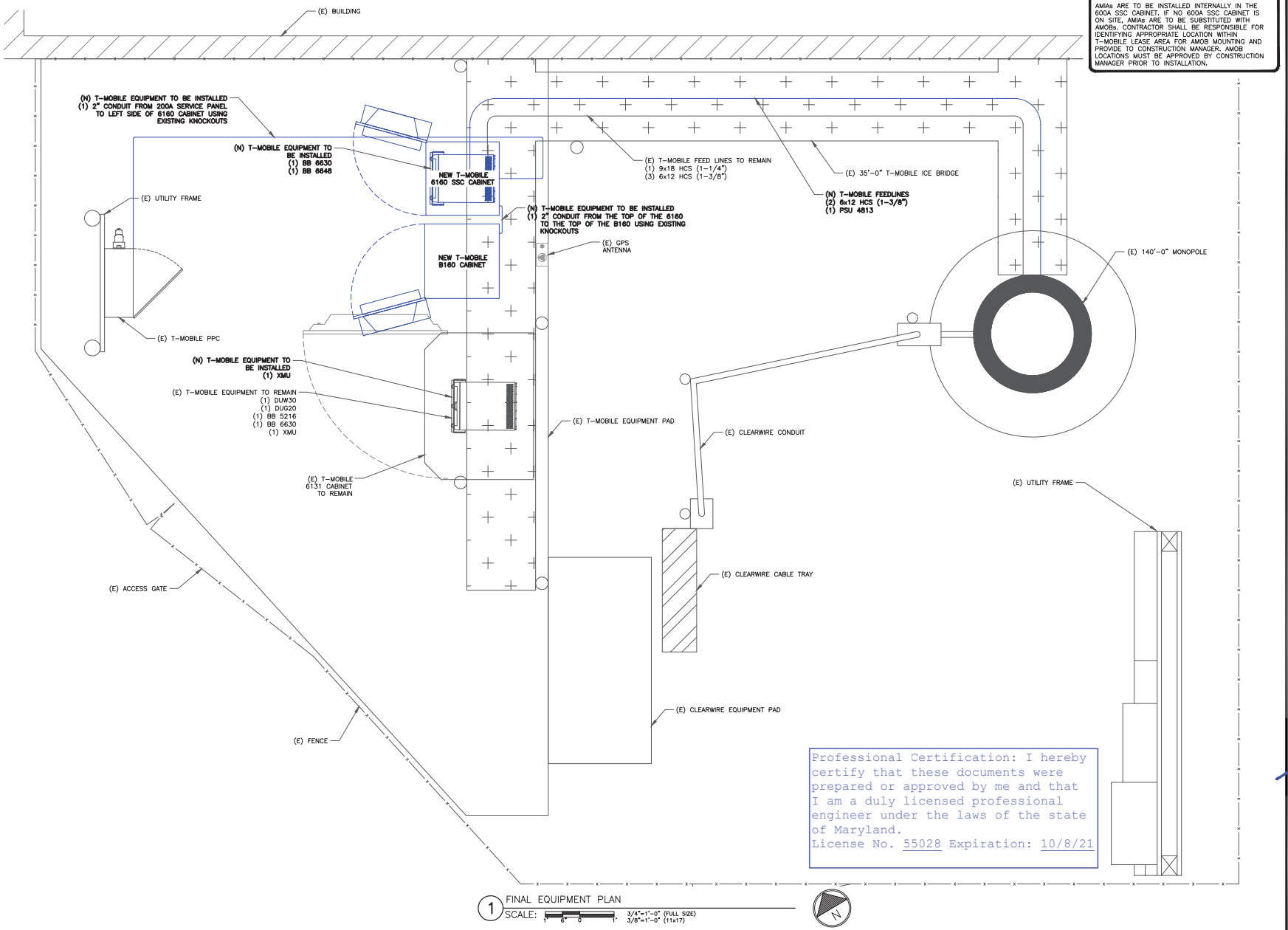
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-1.2
REVISION: 1



INSTALLER NOTE:

AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

1 FINAL EQUIPMENT PLAN
SCALE: 1" 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

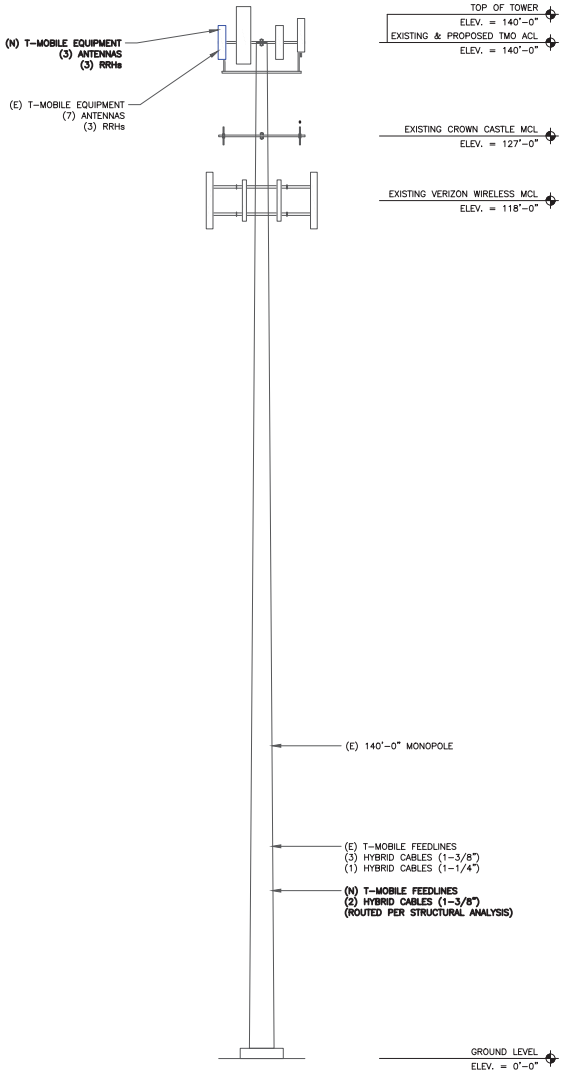
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

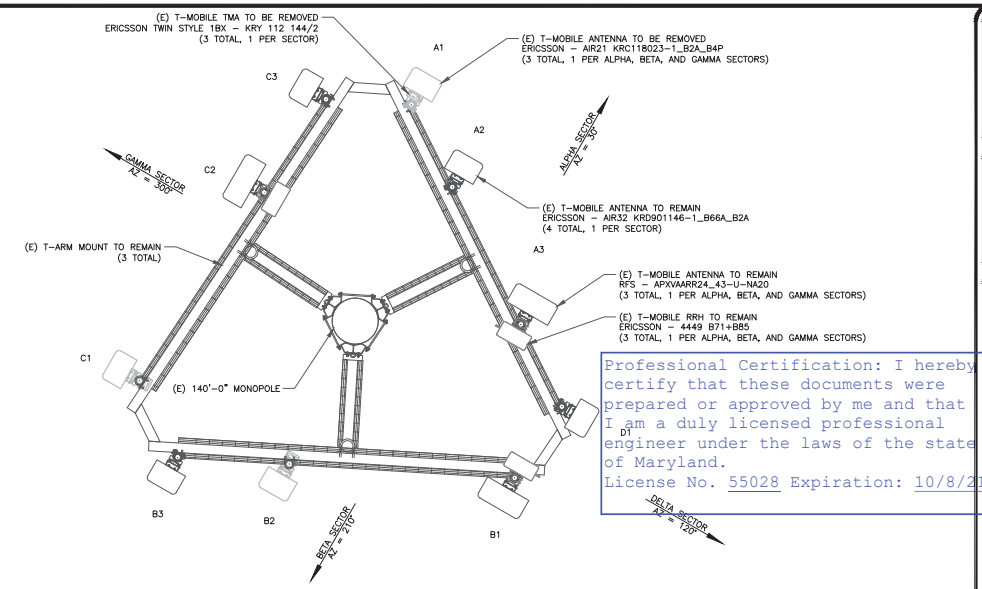
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

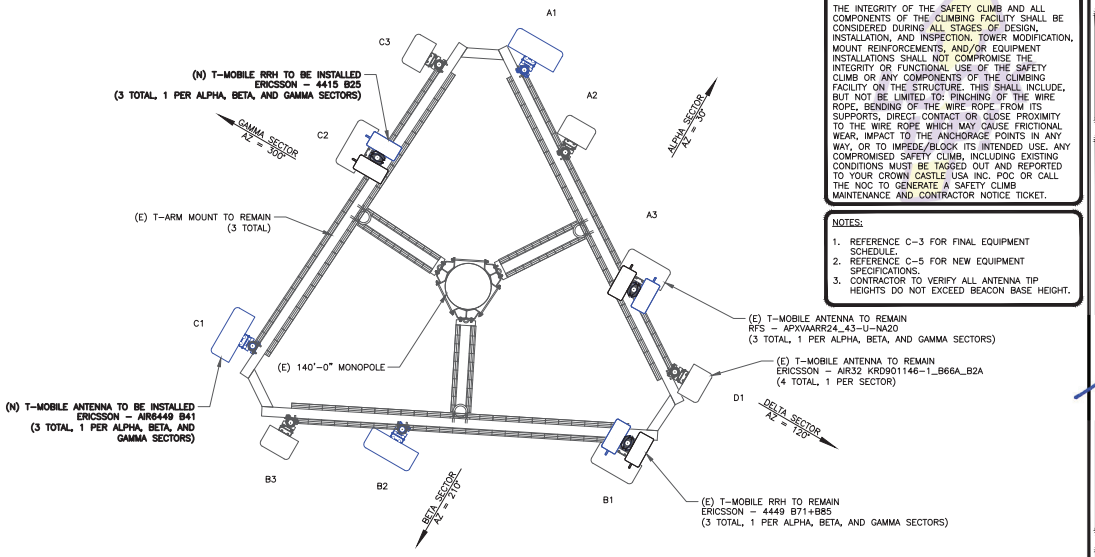
SHEET NUMBER: C-1.3
REVISION: 1



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

"LOOK UP" – CROWN CASTLE USA INC.
SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-5 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-2
REVISION: 1

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
ALPHA																		
A1	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	30°	140'-0"	–	–	–	–	–	–	–	–	–	–	**2**	**(N) HYBRID**	**1-3/8"**	**190'-0"**
A2	G1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	30°	140'-0"	–	–	–	–	–	–	–	–	–	–	3	(E) HYBRID	1-3/8"	190'-0"
A3	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	30°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	1	(E) HYBRID	1-1/4"	190'-0"
BETA																		
B2	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	210°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	–	SHARED	–	–
B3	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	210°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
B4	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	210°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
GAMMA																		
C1	**L2500, N2500**	**(N) ERICSSON AIR6449 B41**	300°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
C2	N600, L600, L700, L1900, U1900	(E) RFS APXVAARR24_43-U-NA20	300°	140'-0"	1 **1**	(E) ERICSSON 4449 B71+B85 **(N) ERICSSON 4415 B25**	TOWER	–	–	–	–	–	–	–	–	SHARED	–	–
C3	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	300°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
DELTA																		
D1	U1900, L1900, L2100	(E) ERICSSON AIR32 KRD901146-1_B66A_B2A	120°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	SHARED	–	–
															0	(E) UNUSED	–	–

NOTE:
(E) – EXISTING
(N) – NEW

1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

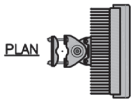
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

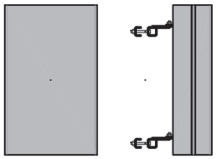
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: C-3
REVISION: 1

L25+N25 ANTENNA DIMENSIONS	
MODEL #	AIR 6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.5"
WEIGHT	103 LBS





1 ANTENNA SPECIFICATIONS
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

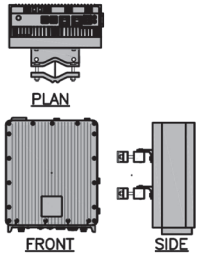
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
C-4	1

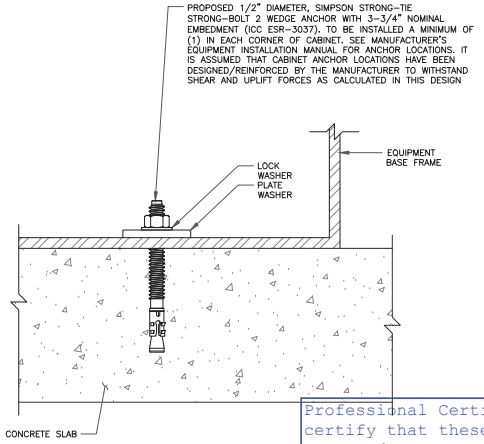
1 NOT USED
SCALE: NOT TO SCALE

RADIO 4415 DIMENSIONS	
MODEL #	RADIO 4415 B66A RADIO 4415 B25
MANUF.	ERICSSON
WIDTH	13.47"
DEPTH	6.30"
HEIGHT	16.54"
WEIGHT	49.6 LBS



2 RADIO 4415 B25 DETAIL
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE



4 CABINET ANCHOR DETAIL
SCALE: NOT TO SCALE

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

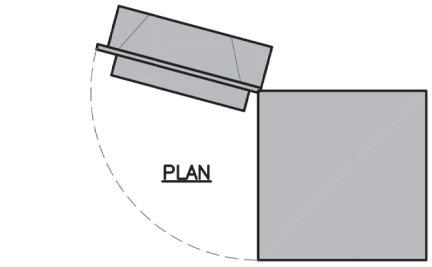
STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

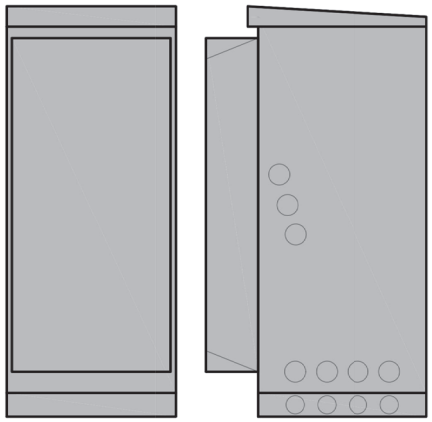
11/11/20
Exp. 10/08/21

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

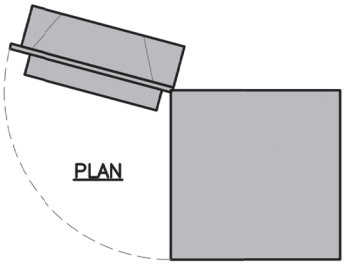
SHEET NUMBER:	REVISION:
C-5	1

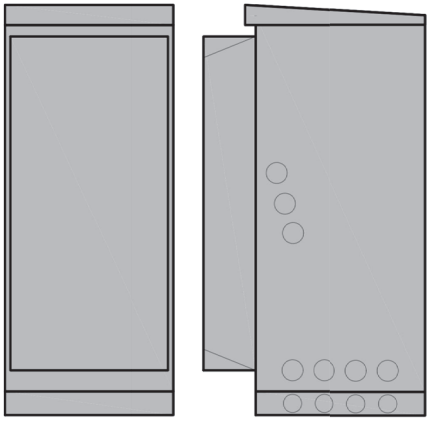
CABINET DIMENSIONS	
MODEL #	6160 SITE SUPPORT CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH (W/ DOOR)	33.5"
WEIGHT	1500 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	





CABINET DIMENSIONS	
MODEL #	B160 BATTERY CABINET
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH (W/ DOOR)	34"
WEIGHT	2000 LBS MAX
(INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	





Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

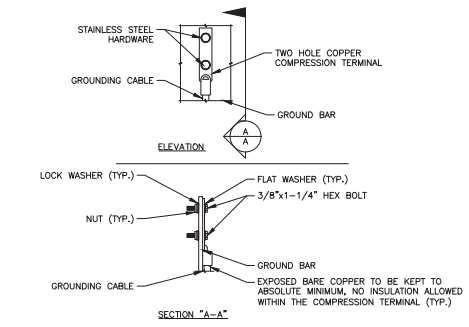
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

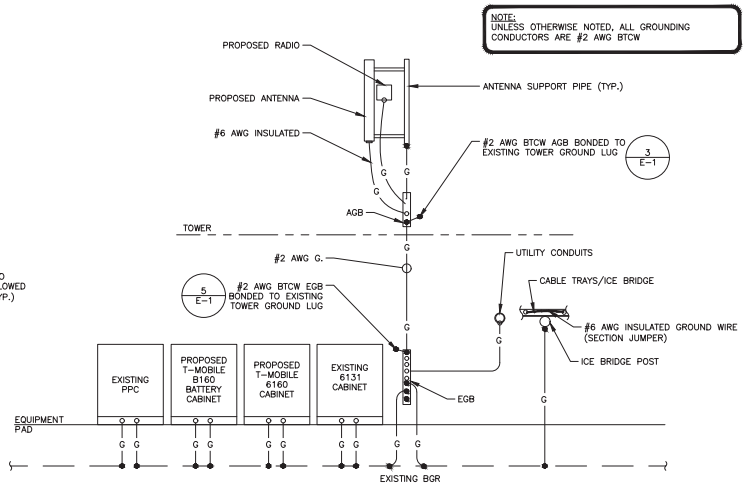
SHEET NUMBER:	REVISION:
C-6	1



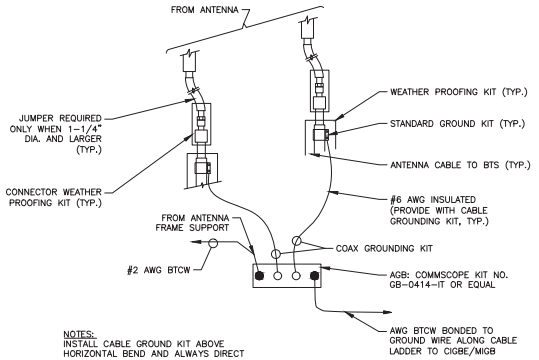
NOTES:

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.

1 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE

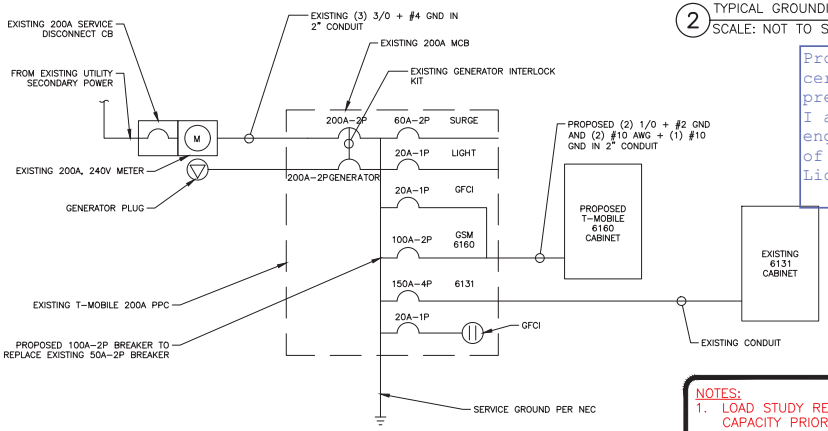


2 TYPICAL GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE



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

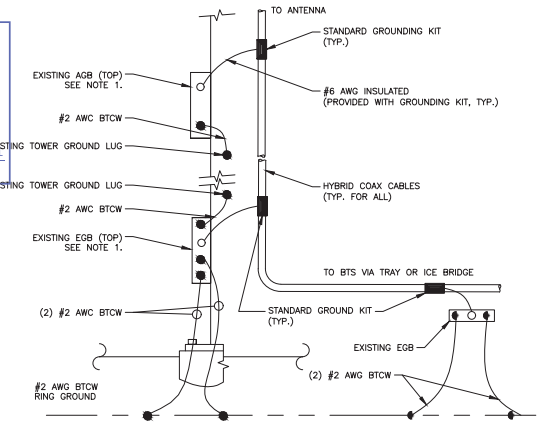
3 GROUND WIRE TO GROUND BAR CONNECTION DETAIL
SCALE: NOT TO SCALE



4 ONE LINE POWER DIAGRAM
SCALE: NOT TO SCALE

NOTES:
1. LOAD STUDY REQUIRED TO CONFIRM AVAILABLE CAPACITY PRIOR TO BREAKER UPGRADE
2. GC TO REPLACE LOSS OF COMMERCIAL POWER RELAY CURRENTLY INSTALLED

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21



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

5 TOWER BOTTOM CABLE GROUNDING DETAIL
SCALE: NOT TO SCALE

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
	GROUND
MGB	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
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"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	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.
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 CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CAD WELD 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 AT6" 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 CABLES 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
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

11/11/20
Exp. 10/08/21

SHEET NUMBER:	REVISION:
E-1	1

VOLTAGE	120/240V	AIC RATING	65,000 AMPS*
MAIN BREAKER	200 AMP	BUSS RATING	200 AMPS
MOUNT	INSIDE PPC ENCLOSURE	NEUTRAL BAR	YES
ENCLOSURE TYPE	NEMA 3R	GROUND BAR	YES
PANEL STATUS	EXISTING	N TO GROUND BOND	YES
PHASE, WIRES	SINGLE, 3	INTERNAL TVSS	TBD

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	SURGE	60	2	ON	0	1.00	180		1.00	180	ON	1	20	GFI RECEPTICALE	2
3		60	2	ON	0	1.00		560	1.00	560	ON	1	20	LIGHT	4
5	NEW 6160	100*	2	ON	4,800	1.25	12000		1.25	4,800	ON	2	150	6131	6
7		100*	2	ON	4,800	1.25		12000	1.25	4,800	ON	2	150		8
9	UNKNOWN	100	2	OFF	0	1.25	6000		1.25	4,800	ON	2	150	6131	10
11		100	2	OFF	0	1.25		6000	1.25	4,800	ON	2	150		12
13	---	---	1	N/A	0	1.25	225		1.25	180	ON	1	20	NEW GFCI	14
15	---	---	1	N/A	0	1.25		0	1.00	0	N/A	1	---	---	16
17	---	---	1	N/A	0	1.25	0		1.25	0	N/A	1	---	---	18
19	---	---	1	N/A	0	1.25		0	1.25	0	N/A	1	---	---	20
21	---	---	1	N/A	0	1.25	0		1.25	0	N/A	1	---	---	22
23	---	---	1	N/A	0	1.25		0	1.25	0	N/A	1	---	---	24
							18405	18560							

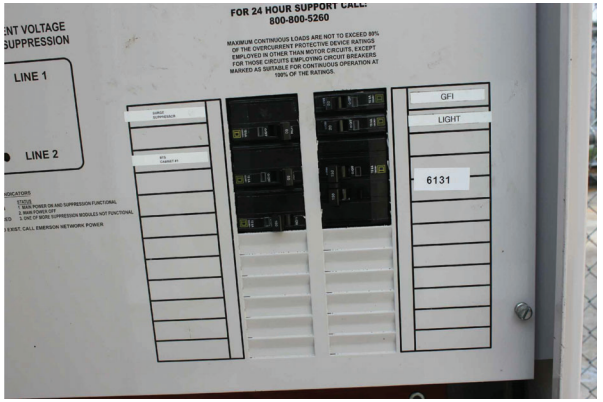
OVERALL LOAD SUMMARY	
TOTAL SERVICE LOAD kVA	36.97
AMPS	154.02

= Loading provided by CCI/TMO

* = PROPOSED BRANCH BREAKERS TYPE QO RATED 10-125A, 120/240V, 10kAIC

NOTES:
1. LOAD STUDY REQUIRED TO CONFIRM AVAILABLE CAPACITY PRIOR TO BREAKER UPGRADE
2. GC TO REPLACE LOSS OF COMMERCIAL POWER RELAY CURRENTLY INSTALLED

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



2 PANEL PHOTO
SCALE: NOT TO SCALE

Professional Certification: I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer under the laws of the state of Maryland.
License No. 55028 Expiration: 10/8/21

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

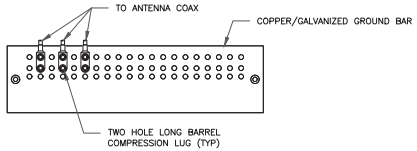
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

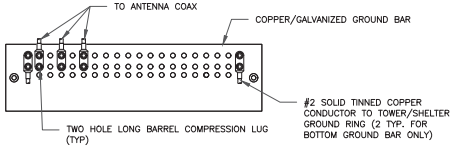
SHEET NUMBER:	REVISION:
E-2	1



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE

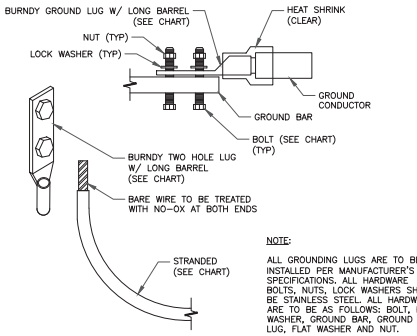


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

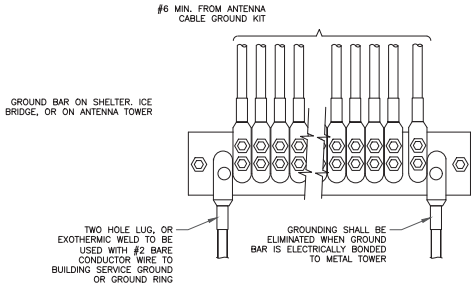
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



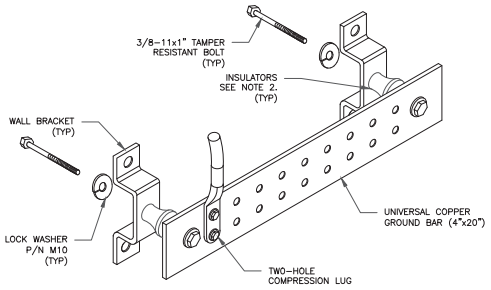
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

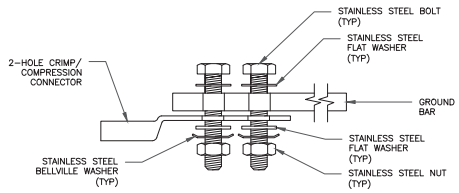


NOTES:

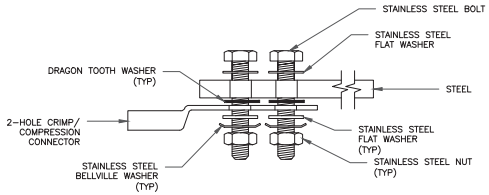
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAG-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

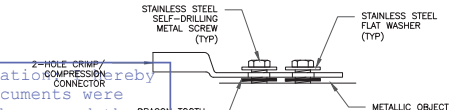
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

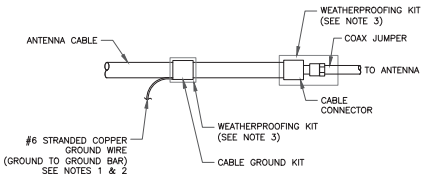


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

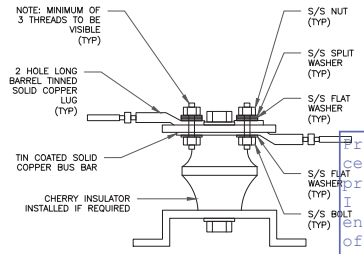
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

Kimley»Horn
COA #47923
421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

T-MOBILE SITE NUMBER:
7WAN285K

BU #: **826848**
PUBLIC STORAGE-BRIGGS CHA

3351 BRIGGS CHANEY ROAD
SILVER SPRING, MD 20904

EXISTING 140'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/02/20	WRS	ISSUED FOR CONSTR.	MCK
1	11/11/20	WRS	REVISED PER CLIENT	MCK

STATE OF MARYLAND
KEVIN J CLEMENTS
55028
PROFESSIONAL ENGINEER

11/11/20
Exp. 10/08/21

SHEET NUMBER: G-1
REVISION: 1