



Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

July 5, 2022

Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

RE: **Notice of Exempt Modification for T-Mobile: CT11251A**  
**Crown Site ID#806366**  
**73 North Main Street, Marlborough, CT 06447**  
**Latitude: 41° 37' 47.30" / Longitude: -72° 27' 59.40"**

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 102-foot mount on the existing 155-foot monopole tower located at 73 North Main Street, Marlborough, CT. The property and tower are owned by Crown Castle. T-Mobile now intends to add three (3) new antennas, replace three (3) antennas and ancillary equipment at the 102ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

**Panned Modification:**

**Tower:**

Installed New:

- (3) Ericsson AIR449 B41 Antennas
- (3) Commscope - W-65-R1 Antennas
- (3) Ericsson-Radio 4460 B25+ B66 RRU
- (2) Hybrid Cable (6x24)
- (1) Site Pro Antenna Mount Replacement w/Handrail Kits

Remove:

- (3) Commscope-LNX-6515DS-A1M Antennas
- (3) Generic Twin Style 1A PCS TMA
- (3) Ericsson KRY 112 144/2 TMAs
- (3) Ericsson 4415 B66A RRU
- (3) Antenna Mounts

**Ground:**

Install New:

- (1) B160 Battery Cabinet
- (2) PSU 4813 Voltage Booster
- (1.) 6160 Cabinet
- (1.) CSR IXRe Router
- (1^) RP 6651

The Foundation for a Wireless World.

CrownCastle.com

The facility was approved by the Connecticut Siting Council in Docket No. 169 on October 25, 1995.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Greg Lowrey, First Selectman, Town of Marlborough, Peter Hughes, Director of Planning & Development, Town of Marlborough. Crown Castle is both the tower and landowner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,



Jeffrey Barbadora  
Site Acquisition Specialist  
1800 W. Park Drive  
Westborough, MA 01581  
(781) 970-0053  
Jeff.Barbadora@crowncastle.com

Melanie A. Bachman

Page 3

Attachments

cc:

Greg Lowrey, First Selectman  
Town of Marlborough  
26 North Main Street  
Marlborough, CT 06447  
860-295-6200

Peter Hughes, Director of Planning & Development  
Town of Marlborough  
26 North Main Street  
Marlborough, CT 06447  
860-295-6200

Crown Castle – Property & Tower Owner



# CONNECTICUT SITING COUNCIL

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**DOCKET NO. 169** - An application of Bell Atlantic NYNEX Mobile, for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications tower and associated equipment located within a 56+/- acre parcel at 56 East Hampton Road, in Marlborough, Connecticut. The proposed alternatives are located within a 21.7+/- acre parcel at North Main Street and within a 2.5+/- acre parcel at 9-11 South Main Street, in Marlborough, Connecticut.

## Connecticut Siting Council

October 25, 1995

### DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications tower and equipment building at the proposed first alternate site in Marlborough, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic NYNEX Mobile, Inc. (BANM) for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed first alternate site, located within a 21.7+/- acre parcel at North Main Street, Marlborough, Connecticut. We find the effects on scenic resources and adjacent land uses of the prime site and second alternate site to be significant, and therefore deny certification of these sites.

The facility shall be constructed, operated, and maintained as a monopole substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed communications service, sufficient to accommodate the antennas of Springwich Cellular Limited Partnership and the Town of Marlborough, and not to exceed a total height of 160 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include placement of utilities underground, relocation of the tower within the leased parcel to provide the maximum practicable buffer of the tower from adjacent land owners; plans for the tower foundation; specifications for the placement of all antennas to be attached to this tower; plans for the equipment building and security fence; plans for the access road and utility line installation from North Main Street; plans for site clearing and tree trimming; and plans for water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.
7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.
8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.



Melanie Bachman,  
Executive Director

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Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and the Middletown Press.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

**APPLICANT**

Bell Atlantic NYNEX Mobile, Inc.

-

**ITS REPRESENTATIVE**

Brian C. S. Freeman, Esq.

Kenneth C. Baldwin, Esq.

Robinson & Cole

One Commercial Plaza

Hartford, CT 06103-3597

-

David S. Malko

General Manager - Engineering

Sandy M. Ranciato

Regulatory Services

Bell Atlantic NYNEX Mobile, Inc.

20 Alexander Drive

Wallingford, CT 06492

**INTERVENOR**

Springwich Cellular Limited Partnership

**ITS REPRESENTATIVE**

Peter J. Tyrrell, Esq.

Springwich Cellular Limited Partnership

227 Church Street

New Haven, CT 06510

**PARTY**

Town of Marlborough

**ITS REPRESENTATIVE**

William S. Fish, Jr.

Tyler, Cooper & Alcorn

CityPlace, 35th Floor

Hartford, CT 06103-3488

**PARTY**

Neighbors Endorsing an Appropriate Tower  
(NEAT)

**ITS REPRESENTATIVE**

Barry S. Zitser

Perakos, Kindl & Zitser

207 Main Street

Hartford, CT 06106

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Ten Franklin Square New Britain, CT 06051 / 860- 827-2935

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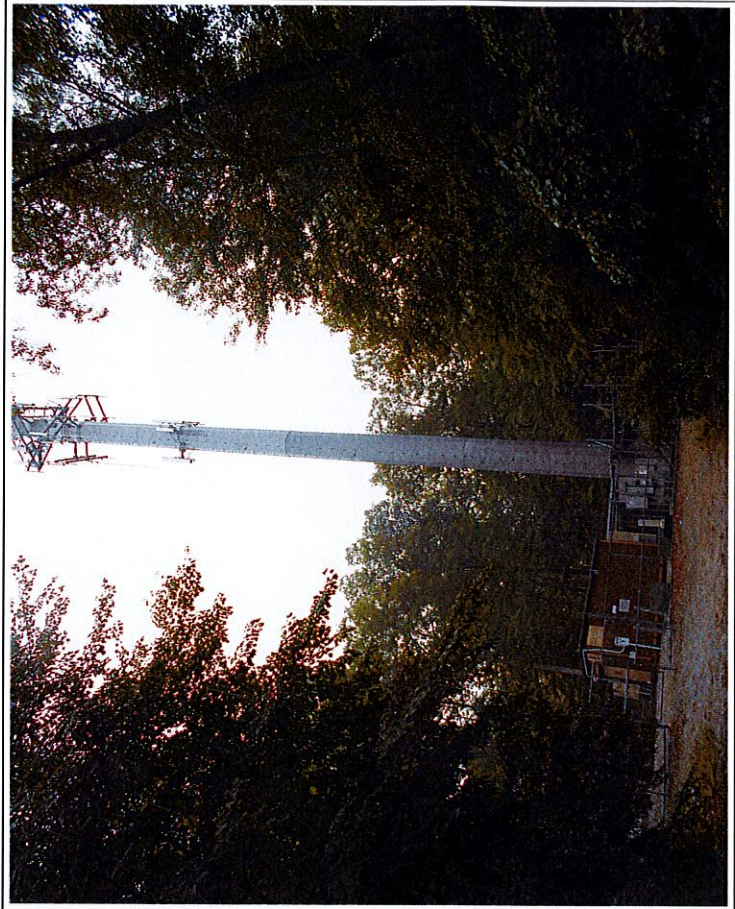
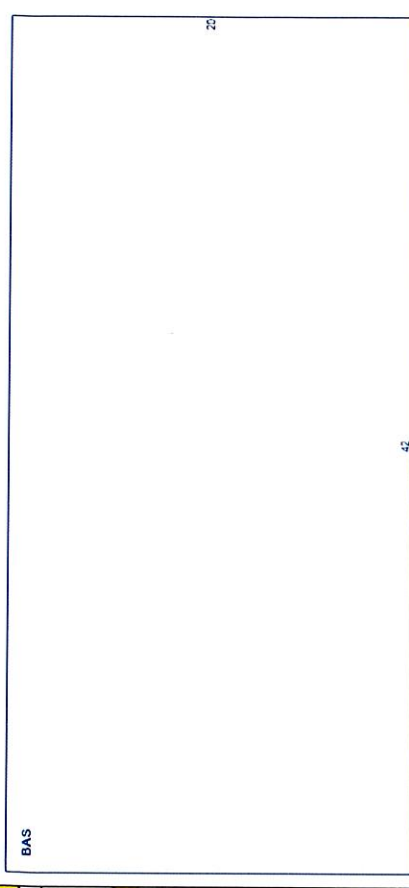




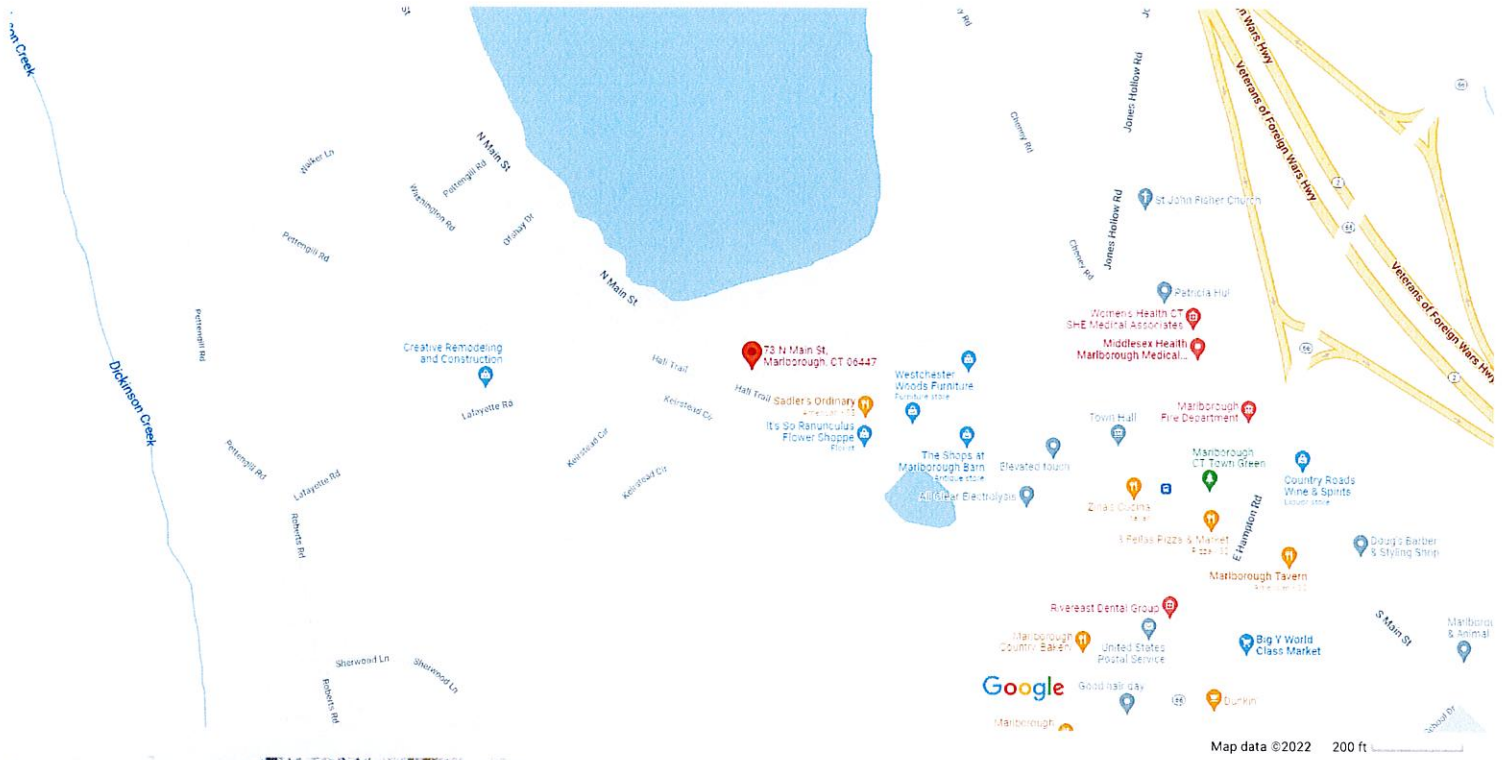
CONSTRUCTION DETAIL		CONSTRUCTION DETAIL (CONTINUED)	
Element	Description	Element	Description
91	Support Shed		
94	Commercial		
03	Average		
1	1 Story		
24	Reinforc Concr		
01	Flat		
04	T&G/Rubber		
01	Minimum		
03	Concrete		
01	Coal or Wood		
01	None		
03	Central		
200	Commercial		
02	HEAT/AC SPLIT		
04	Reinforced Cnc		
00	None		
00	None		
01	Light		
8.00	Wall Height		
	% Conn Wall		
	1st Floor Use:		

OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)										
Code	Description	L/B	Units	Unit Price	Yr Bilt	Cond. Cd	% Good	Grade	Grade Adj	Appr. Value
SHD1	Shed	L	360	20.00	1999	5	60		0.00	4,300
FN4	Fence 8'	L	322	20.00	2000	5	60		0.00	3,900
PAT1	Patio	L	192	3.50	2000	00	60		0.00	400
CELL	Cell Tower	L	4	163600.0	2011		100		0.00	654,400

BUILDING SUB-AREA SUMMARY SECTION						
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value
BAS	First Floor	840	840	840	110.32	92,669
Ttl Gross Liv/ Lease Area		840	840	840		92,669



Google Maps 73 N Main St



73 N Main St

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Directions
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 73 N Main St, Marlborough, CT 06447

JGMM+78 Marlborough, Connecticut

Photos



**Barbadora, Jeff**

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**OBTAIN PROOF OF DELIVERY**

TRACKING NUMBER [777305837260](#)

<b>FROM</b>	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
<b>TO</b>	Town of Marlborough Greg Lowrey, First Selectman 26 North Main Street MARLBOROUGH, CT, US, 06447
<b>REFERENCE</b>	799001.7680
<b>SHIPPER REFERENCE</b>	799001.7680
<b>SHIP DATE</b>	Tue 7/05/2022 05:06 PM
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<b>PACKAGING TYPE</b>	FedEx Envelope
<b>ORIGIN</b>	WESTBOROUGH, MA, US, 01581
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<b>SPECIAL HANDLING</b>	Deliver Weekday
<b>NUMBER OF PIECES</b>	1
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**Barbadora, Jeff**

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TRACKING NUMBER [777305853750](#)

<b>FROM</b>	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
<b>TO</b>	Town of Marlborough Peter Hughes, Director of Planning 26 North Main Street MARLBOROUGH, CT, US, 06447
<b>REFERENCE</b>	799001.7680
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<b>NUMBER OF PIECES</b>	1
<b>TOTAL SHIPMENT WEIGHT</b>	0.50 LB
<b>SERVICE TYPE</b>	FedEx Priority Overnight

Date: **May 27, 2022**



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

**Subject: Structural Analysis Report**

**Carrier Designation:** *T-Mobile Co-Locate*  
**Site Number:** CT11251A  
**Site Name:** East Hampton-2\_1

**Crown Castle Designation:** **BU Number:** 806366  
**Site Name:** HRT 107(C) 943204  
**JDE Job Number:** 700675  
**Work Order Number:** 2115537  
**Order Number:** 599893 Rev. 0

**Engineering Firm Designation:** **TEP Project Number:** 217470.704661

**Site Data:** **73 North Main Street, Marlborough, Hartford County, CT 06447**  
**Latitude 41° 37' 47.30", Longitude -72° 27' 59.40"**  
**155.5 Foot - Monopole Tower**

*Tower Engineering Professionals* is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

**Sufficient Capacity - 56.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Gautam Sopal, E.I. / PHX

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

05/27/2022

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

Table 2 - Other Considered Equipment

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 - Tower Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Base Level Drawing

### 7) APPENDIX C

Additional Calculations

## 1) INTRODUCTION

This tower is a 155.5-ft monopole tower designed by FWT, Inc.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	130 mph
<b>Exposure Category:</b>	B
<b>Topographic Factor:</b>	1.0
<b>Ice Thickness:</b>	1.0 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	60 mph

**Table 1 - Proposed Equipment Configuration**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	102.0	3	Ericsson	AIR 6419 B41_TMO w/ Mount Pipe	3	1-5/8
		3	Commscope	VV-65A-R1_TMO w/ Mount Pipe		
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
	100.0	3	Ericsson	RADIO 4449 B71/B85A		
		1	Site Pro 1	RMQP-396 Platform Mount w/ HRK12		

**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)
156.0	159.0	1	Commscope	LNx-8513DS-VTM w/ Mount Pipe	14	1-5/8
		3	Commscope	NHHSS-65B-R2B w/ Mount Pipe		
		3	Commscope	NHH-65B-R2B w/ Mount Pipe		
		3	Samsung Telecom.	MT6407-77A w/ Mount Pipe		
		2	Commscope	LNx-6514DS-A1M w/ Mount Pipe		
		2	Raycap	RRFDC-3315-PF-48		
		3	Samsung Telecom.	CBRS RT4401-48A		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	RFV01U-D2A		
	3	Commscope	BSAMNT-SBS-1-2			
	156.0	1	Tower Mounts	Platform Mount [16' LP 603-1]		
156.0	159.0	3	Decibel	DB809K-Y	3	1-5/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
144.0	144.0	3	Powerwave Tech.	7770.00 w/ Mount Pipe	12 6 2	1-1/4 3/4 3/8
		3	CCI Antennas	HPA65R-BU6A w/ Mount Pipe		
		3	CCI Antennas	OPA65R-BU6D w/ Mount Pipe		
		3	Kathrein	80010965 w/ Mount Pipe		
		6	Powerwave Tech.	LGP 17201		
		3	Powerwave Tech.	1001940		
		3	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 32 B30		
		1	Tower Mounts	Platform Mount [16' LP 603-1]		
135.0	135.0	3	Kathrein	742 213 w/ Mount Pipe	6	1-1/4
128.0	128.0	3	Commscope	NNVV-65B-R4 w/ Mount Pipe	3 1	1-1/4 7/8
		3	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		6	Alcatel Lucent	RRH2X50-800		
		3	Alcatel Lucent	TD-RRH8x20-25		
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		2	Tower Mounts	T-Arm Mount [TA 602-3]		
116.0	116.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Tower Mounts	Commscope MC-PK8-DSH		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
Geotechnical Report	2208816	CCISites
Tower Foundation Drawings	823125	CCISites
Tower Manufacturer Drawings	823126	CCISites



### 3.1) Analysis Method

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

### 3.2) Assumptions

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

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

## 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	$\phi P_{allow}$ (k)	% Capacity	Pass / Fail
L1	155.5 - 110	Pole	TP64.606x58.6x0.375	1	-26.61	4083.22	13.5	Pass
L2	110 - 72.5	Pole	TP68.805x62.8x0.438	2	-51.76	5456.99	27.8	Pass
L3	72.5 - 36	Pole	TP72.748x66.808x0.5	3	-73.65	6956.40	37.5	Pass
L4	36 - 0	Pole	TP76.5x70.56x0.5	4	-102.76	7106.06	56.5	Pass
							<b>Summary</b>	
						Pole (L4)	56.5	Pass
						<b>RATING =</b>	<b>56.5</b>	<b>Pass</b>

**Table 5 - Tower Component Stresses vs. Capacity - LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	54.2	Pass
1,2	Base Plate	-	25.1	Pass
1,2	Base Foundation Structural	-	32.2	Pass
1,2	Base Foundation Soil Interaction	-	36.6	Pass

<b>Structure Rating (max from all components) =</b>	<b>56.5%</b>
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Notes:

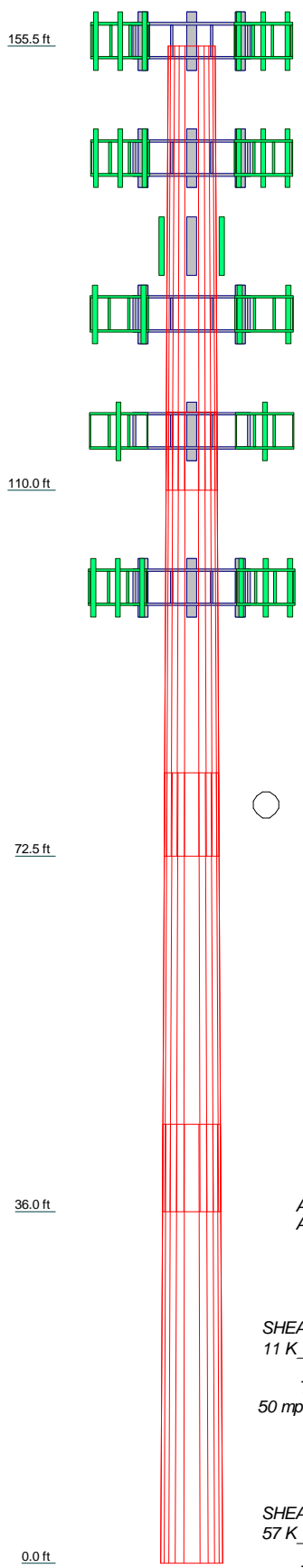
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5

### 4.1) Recommendations

- 1) 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	
Length (ft)	45.50	45.50	45.00	45.00	
Number of Sides	12	12	12	12	
Thickness (in)	0.375	0.438	0.500	0.500	
Socket Length (ft)	8.00	8.50	9.00	70.560	
Top Dia (in)	58.600	62.800	66.808	76.500	
Bot Dia (in)	64.606	68.805	72.748		
Grade		A572-65			
Weight (K)	11.4	14.3	17.1	18.0	60.8

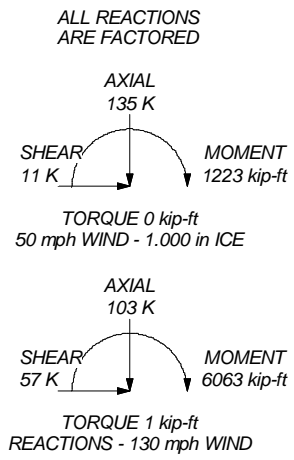



**MATERIAL STRENGTH**

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

**TOWER DESIGN NOTES**

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 56.5%



 TEP	<b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360		Job: <b>HRT 107 (C) 943204 (BU 806366)</b> Project: <b>TEP No. 217470.704661</b>
	Client: Crown Castle Code: TIA-222-H Path:	Drawn by: awang Date: 05/27/22	App'd: Scale: NTS Dwg No. E-1

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 1 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Tower base elevation above sea level: 578.00 ft.

Basic wind speed of 130 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

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

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

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

Maximum demand-capacity ratio is: 1.05.

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

## Options

<ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>Use Clear Spans For KL/r</li> <li>Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>√ Sort Capacity Reports By Component</li> <li>Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>Ignore KL/ry For 60 Deg. Angle Legs</li> </ul>	<ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>Include Angle Block Shear Check</li> <li>Use TIA-222-H Bracing Resist. Exemption</li> <li>Use TIA-222-H Tension Splice Exemption</li> <li style="text-align: center;">Poles</li> <li>√ Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are Known</li> </ul>
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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 2 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

### 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	155.50-110.00	45.50	8.000	12	58.600	64.606	0.375	1.500	A572-65 (65 ksi)
L2	110.00-72.50	45.50	8.500	12	62.800	68.805	0.438	1.750	A572-65 (65 ksi)
L3	72.50-36.00	45.00	9.000	12	66.808	72.748	0.500	2.000	A572-65 (65 ksi)
L4	36.00-0.00	45.00		12	70.560	76.500	0.500	2.000	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I <sup>2</sup> /Q in <sup>2</sup>	w in	w/t
L1	60.535	70.307	30422.968	20.845	30.355	1002.246	61645.181	34.603	14.700	39.199
	66.753	77.559	40842.013	22.995	33.466	1220.407	82756.991	38.172	16.309	43.492
L2	65.954	87.853	43610.436	22.326	32.530	1340.606	88366.567	43.239	15.658	35.789
	71.078	96.313	57460.444	24.476	35.641	1612.201	116430.438	47.402	17.267	39.468
L3	70.150	106.756	59911.927	23.738	34.607	1731.226	121397.807	52.542	16.565	33.129
	75.138	116.319	77497.789	25.865	37.683	2056.546	157031.532	57.249	18.156	36.313
L4	74.103	112.797	70668.018	25.081	36.550	1933.456	143192.564	55.515	17.570	35.14
	79.022	122.360	90209.568	27.208	39.627	2276.467	182789.042	60.222	19.162	38.324

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 155.50-110.00				1	1	1			
L2 110.00-72.50				1	1	1			
L3 72.50-36.00				1	1	1			
L4 36.00-0.00				1	1	1			

### 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
Safety Line 3/8	A	No	Surface Ar (CaAa)	155.50 - 8.00	1	1	0.500 - 0.500	0.375		0.220
***128***										
HB114-1-08U4-M5F(1-1/4)	C	No	Surface Ar (CaAa)	128.00 - 0.00	3	3	0.375 - 0.375	1.540		1.300
HB114-08U3M12-XXX F(7/8)	C	No	Surface Ar (CaAa)	128.00 - 0.00	1	1	0.500 - 0.500	1.110		0.683
***116***										
CU12PSM9P6XXX(1-1/4)	C	No	Surface Ar	116.00 - 0.00	1	1	0.250 - 0.250	1.600		2.350



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	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
L1	155.50-110.00	A	0.000	0.000	1.706	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.38
		C	0.000	0.000	11.274	0.000	1.02
L2	110.00-72.50	A	0.000	0.000	1.406	0.000	0.30
		B	0.000	0.000	0.000	0.000	0.42
		C	0.000	0.000	27.487	0.000	1.07
L3	72.50-36.00	A	0.000	0.000	1.369	0.000	0.37
		B	0.000	0.000	0.000	0.000	0.41
		C	0.000	0.000	26.755	0.000	1.04
L4	36.00-0.00	A	0.000	0.000	1.050	0.000	0.36
		B	0.000	0.000	0.000	0.000	0.40
		C	0.000	0.000	26.388	0.000	1.03

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

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
L1	155.50-110.00	A	0.977	0.000	0.000	10.596	0.000	0.20
		B		0.000	0.000	0.000	0.000	0.38
		C		0.000	0.000	22.438	0.000	1.19
L2	110.00-72.50	A	0.941	0.000	0.000	8.733	0.000	0.36
		B		0.000	0.000	0.000	0.000	0.42
		C		0.000	0.000	55.630	0.000	1.49
L3	72.50-36.00	A	0.894	0.000	0.000	8.238	0.000	0.42
		B		0.000	0.000	0.000	0.000	0.41
		C		0.000	0.000	53.297	0.000	1.43
L4	36.00-0.00	A	0.799	0.000	0.000	6.055	0.000	0.40
		B		0.000	0.000	0.000	0.000	0.40
		C		0.000	0.000	51.459	0.000	1.39

### Feed Line Center of Pressure

Section	Elevation ft	$CP_X$ in	$CP_Z$ in	$CP_X$ Ice in	$CP_Z$ Ice in
L1	155.50-110.00	-1.084	0.816	-1.558	0.475
L2	110.00-72.50	-2.752	2.650	-3.775	2.999
L3	72.50-36.00	-2.768	2.665	-3.785	3.020
L4	36.00-0.00	-2.785	2.728	-3.792	3.231

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

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	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	1	Safety Line 3/8	110.00 - 155.50	1.0000	1.0000
L1	17	HB114-1-08U4-M5F(1-1/4)	110.00 - 128.00	1.0000	1.0000
L1	18	HB114-08U3M12-XXXX(7/8)	110.00 - 128.00	1.0000	1.0000
L1	20	CU12PSM9P6XXX(1-1/2)	110.00 - 116.00	1.0000	1.0000
L2	1	Safety Line 3/8	72.50 - 110.00	1.0000	1.0000
L2	17	HB114-1-08U4-M5F(1-1/4)	72.50 - 110.00	1.0000	1.0000
L2	18	HB114-08U3M12-XXXX(7/8)	72.50 - 110.00	1.0000	1.0000
L2	20	CU12PSM9P6XXX(1-1/2)	72.50 - 110.00	1.0000	1.0000
L3	1	Safety Line 3/8	36.00 - 72.50	1.0000	1.0000
L3	17	HB114-1-08U4-M5F(1-1/4)	36.00 - 72.50	1.0000	1.0000
L3	18	HB114-08U3M12-XXXX(7/8)	36.00 - 72.50	1.0000	1.0000
L3	20	CU12PSM9P6XXX(1-1/2)	36.00 - 72.50	1.0000	1.0000
L4	1	Safety Line 3/8	8.00 - 36.00	1.0000	1.0000
L4	17	HB114-1-08U4-M5F(1-1/4)	0.00 - 36.00	1.0000	1.0000
L4	18	HB114-08U3M12-XXXX(7/8)	0.00 - 36.00	1.0000	1.0000
L4	20	CU12PSM9P6XXX(1-1/2)	0.00 - 36.00	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
***156***								
LNx-8513DS-VTM w/ Mount Pipe	A	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 4.09 1/2" Ice 4.49 1" Ice 4.89	3.30 3.68 4.06	0.07 0.13 0.20
NHHSS-65B-R2B w/ Mount Pipe	A	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 3.89 1/2" Ice 4.27 1" Ice 4.65	3.14 3.50 3.87	0.09 0.15 0.23
NHHSS-65B-R2B w/ Mount Pipe	B	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 3.89 1/2" Ice 4.27 1" Ice 4.65	3.14 3.50 3.87	0.09 0.15 0.23
NHHSS-65B-R2B w/ Mount Pipe	C	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 3.89 1/2" Ice 4.27 1" Ice 4.65	3.14 3.50 3.87	0.09 0.15 0.23
NHH-65B-R2B w/ Mount Pipe	A	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 4.09 1/2" Ice 4.48 1" Ice 4.88	3.29 3.67 4.06	0.07 0.13 0.21
NHH-65B-R2B w/ Mount Pipe	B	From Centroid-Le	4.00 0.000 g 3.000	0.000	156.00	No Ice 4.09 1/2" Ice 4.48 1" Ice 4.88	3.29 3.67 4.06	0.07 0.13 0.21



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	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
NHH-65B-R2B w/ Mount Pipe	C	From	4.00	0.000	0.000	156.00	No Ice	4.09	3.29	0.07
		Centroid-Le	0.000				1/2" Ice	4.48	3.67	0.13
		g	3.000				1" Ice	4.88	4.06	0.21
MT6407-77A w/ Mount Pipe	A	From	4.00	0.000	0.000	156.00	No Ice	4.91	2.68	0.10
		Centroid-Le	0.000				1/2" Ice	5.26	3.14	0.14
		g	3.000				1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	B	From	4.00	0.000	0.000	156.00	No Ice	4.91	2.68	0.10
		Centroid-Le	0.000				1/2" Ice	5.26	3.14	0.14
		g	3.000				1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	C	From	4.00	0.000	0.000	156.00	No Ice	4.91	2.68	0.10
		Centroid-Le	0.000				1/2" Ice	5.26	3.14	0.14
		g	3.000				1" Ice	5.61	3.62	0.18
LNX-6514DS-A1M w/ Mount Pipe	B	From	4.00	0.000	0.000	156.00	No Ice	4.09	3.30	0.06
		Centroid-Le	0.000				1/2" Ice	4.49	3.68	0.13
		g	3.000				1" Ice	4.89	4.06	0.20
LNX-6514DS-A1M w/ Mount Pipe	C	From	4.00	0.000	0.000	156.00	No Ice	4.09	3.30	0.06
		Centroid-Le	0.000				1/2" Ice	4.49	3.68	0.13
		g	3.000				1" Ice	4.89	4.06	0.20
DB809K-Y	A	From	4.00	0.000	0.000	156.00	No Ice	2.85	2.85	0.03
		Centroid-Le	0.000				1/2" Ice	4.03	4.03	0.05
		g	3.000				1" Ice	5.21	5.21	0.08
DB809K-Y	B	From	4.00	0.000	0.000	156.00	No Ice	2.85	2.85	0.03
		Centroid-Le	0.000				1/2" Ice	4.03	4.03	0.05
		g	3.000				1" Ice	5.21	5.21	0.08
DB809K-Y	C	From	4.00	0.000	0.000	156.00	No Ice	2.85	2.85	0.03
		Centroid-Le	0.000				1/2" Ice	4.03	4.03	0.05
		g	3.000				1" Ice	5.21	5.21	0.08
(2) RRFD-3315-PF-48	A	From	4.00	0.000	0.000	156.00	No Ice	3.36	2.19	0.03
		Centroid-Le	0.000				1/2" Ice	3.60	2.39	0.06
		g	3.000				1" Ice	3.84	2.61	0.09
CBRS RT4401-48A	A	From	4.00	0.000	0.000	156.00	No Ice	0.99	0.50	0.02
		Centroid-Le	0.000				1/2" Ice	1.12	0.60	0.03
		g	3.000				1" Ice	1.26	0.70	0.04
(2) CBRS RT4401-48A	C	From	4.00	0.000	0.000	156.00	No Ice	0.99	0.50	0.02
		Centroid-Le	0.000				1/2" Ice	1.12	0.60	0.03
		g	3.000				1" Ice	1.26	0.70	0.04
RFV01U-D1A	A	From	4.00	0.000	0.000	156.00	No Ice	1.88	1.25	0.08
		Centroid-Le	0.000				1/2" Ice	2.05	1.39	0.10
		g	3.000				1" Ice	2.22	1.54	0.12
(2) RFV01U-D1A	B	From	4.00	0.000	0.000	156.00	No Ice	1.88	1.25	0.08
		Centroid-Le	0.000				1/2" Ice	2.05	1.39	0.10
		g	3.000				1" Ice	2.22	1.54	0.12
(2) RFV01U-D2A	B	From	4.00	0.000	0.000	156.00	No Ice	1.88	1.01	0.07
		Centroid-Le	0.000				1/2" Ice	2.05	1.14	0.09
		g	3.000				1" Ice	2.22	1.28	0.11
RFV01U-D2A	C	From	4.00	0.000	0.000	156.00	No Ice	1.88	1.01	0.07
		Centroid-Le	0.000				1/2" Ice	2.05	1.14	0.09
		g	3.000				1" Ice	2.22	1.28	0.11
(2) 2.4" Dia x 6-ft Pipe	A	From	4.00	0.000	0.000	156.00	No Ice	1.43	1.43	0.02
		Centroid-Le	0.000				1/2" Ice	1.93	1.93	0.03
		g	3.000				1" Ice	2.30	2.30	0.05
(2) 2.4" Dia x 6-ft Pipe	B	From	4.00	0.000	0.000	156.00	No Ice	1.43	1.43	0.02
		Centroid-Le	0.000				1/2" Ice	1.93	1.93	0.03
		g	3.000				1" Ice	2.30	2.30	0.05
(2) 2.4" Dia x 6-ft Pipe	C	From	4.00	0.000	0.000	156.00	No Ice	1.43	1.43	0.02
		Centroid-Le	0.000				1/2" Ice	1.93	1.93	0.03
		g	3.000				1" Ice	2.30	2.30	0.05

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	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
BSAMNT-SBS-1-2	A	From	4.00		0.000	156.00	No Ice	0.00	0.00	0.03
		Centroid-Le	0.000				1/2" Ice	0.00	0.00	0.03
		g	3.000				1" Ice	0.00	0.00	0.04
BSAMNT-SBS-1-2	B	From	4.00		0.000	156.00	No Ice	0.00	0.00	0.03
		Centroid-Le	0.000				1/2" Ice	0.00	0.00	0.03
		g	3.000				1" Ice	0.00	0.00	0.04
BSAMNT-SBS-1-2	C	From	4.00		0.000	156.00	No Ice	0.00	0.00	0.03
		Centroid-Le	0.000				1/2" Ice	0.00	0.00	0.03
		g	3.000				1" Ice	0.00	0.00	0.04
Platform Mount [LP 603-1] (16-ft)	C	None			0.000	156.00	No Ice	46.42	46.42	2.35
							1/2" Ice	54.03	54.03	3.19
							1" Ice	62.40	62.40	4.17
Mount Reinforcement Specifications	C	None			0.000	156.00	No Ice	28.63	28.63	0.28
							1/2" Ice	37.31	37.31	0.67
							1" Ice	45.80	45.80	0.94
***144***										
7770.00 w/ Mount Pipe	A	From	4.00		0.000	144.00	No Ice	3.39	2.32	0.06
		Centroid-Le	0.000				1/2" Ice	3.75	2.66	0.10
		g	0.000				1" Ice	4.12	3.02	0.15
7770.00 w/ Mount Pipe	B	From	4.00		0.000	144.00	No Ice	3.39	2.32	0.06
		Centroid-Le	0.000				1/2" Ice	3.75	2.66	0.10
		g	0.000				1" Ice	4.12	3.02	0.15
7770.00 w/ Mount Pipe	C	From	4.00		0.000	144.00	No Ice	3.39	2.32	0.06
		Centroid-Le	0.000				1/2" Ice	3.75	2.66	0.10
		g	0.000				1" Ice	4.12	3.02	0.15
HPA65R-BU6A w/ Mount Pipe	A	From	4.00		0.000	144.00	No Ice	5.83	5.00	0.08
		Centroid-Le	0.000				1/2" Ice	6.40	5.56	0.14
		g	0.000				1" Ice	6.99	6.13	0.22
HPA65R-BU6A w/ Mount Pipe	B	From	4.00		0.000	144.00	No Ice	5.83	5.00	0.08
		Centroid-Le	0.000				1/2" Ice	6.40	5.56	0.14
		g	0.000				1" Ice	6.99	6.13	0.22
HPA65R-BU6A w/ Mount Pipe	C	From	4.00		0.000	144.00	No Ice	5.83	5.00	0.08
		Centroid-Le	0.000				1/2" Ice	6.40	5.56	0.14
		g	0.000				1" Ice	6.99	6.13	0.22
OPA65R-BU6D w/ Mount Pipe	A	From	4.00		0.000	144.00	No Ice	12.25	6.05	0.09
		Centroid-Le	0.000				1/2" Ice	13.00	6.71	0.18
		g	0.000				1" Ice	13.76	7.39	0.27
OPA65R-BU6D w/ Mount Pipe	B	From	4.00		0.000	144.00	No Ice	12.25	6.05	0.09
		Centroid-Le	0.000				1/2" Ice	13.00	6.71	0.18
		g	0.000				1" Ice	13.76	7.39	0.27
OPA65R-BU6D w/ Mount Pipe	C	From	4.00		0.000	144.00	No Ice	12.25	6.05	0.09
		Centroid-Le	0.000				1/2" Ice	13.00	6.71	0.18
		g	0.000				1" Ice	13.76	7.39	0.27
80010965 w/ Mount Pipe	A	From	4.00		0.000	144.00	No Ice	12.26	5.79	0.14
		Centroid-Le	0.000				1/2" Ice	13.03	6.47	0.23
		g	0.000				1" Ice	13.80	7.17	0.33
80010965 w/ Mount Pipe	B	From	4.00		0.000	144.00	No Ice	12.26	5.79	0.14
		Centroid-Le	0.000				1/2" Ice	13.03	6.47	0.23
		g	0.000				1" Ice	13.80	7.17	0.33
80010965 w/ Mount Pipe	C	From	4.00		0.000	144.00	No Ice	12.26	5.79	0.14
		Centroid-Le	0.000				1/2" Ice	13.03	6.47	0.23
		g	0.000				1" Ice	13.80	7.17	0.33
(2) LGP 17201	A	From	4.00		0.000	144.00	No Ice	1.67	0.47	0.03
		Centroid-Le	0.000				1/2" Ice	1.83	0.57	0.04
		g	0.000				1" Ice	2.00	0.68	0.06
(2) LGP 17201	B	From	4.00		0.000	144.00	No Ice	1.67	0.47	0.03
		Centroid-Le	0.000				1/2" Ice	1.83	0.57	0.04

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b>	HRT 107 (C) 943204 (BU 806366)	<b>Page</b>	8 of 19
	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
(2) LGP 17201	C	g	0.000			1" Ice	2.00	0.68	0.06	
		From	4.00		0.000	144.00	No Ice	1.67	0.47	0.03
		Centroid-Le	0.000				1/2" Ice	1.83	0.57	0.04
1001940	A	g	0.000			1" Ice	2.00	0.68	0.06	
		From	4.00		0.000	144.00	No Ice	0.18	0.08	0.00
		Centroid-Le	0.000				1/2" Ice	0.23	0.13	0.00
1001940	B	g	0.000			1" Ice	0.30	0.18	0.01	
		From	4.00		0.000	144.00	No Ice	0.18	0.08	0.00
		Centroid-Le	0.000				1/2" Ice	0.23	0.13	0.00
1001940	C	g	0.000			1" Ice	0.30	0.18	0.01	
		From	4.00		0.000	144.00	No Ice	0.18	0.08	0.00
		Centroid-Le	0.000				1/2" Ice	0.23	0.13	0.00
DC6-48-60-18-8F	A	g	0.000			1" Ice	0.30	0.18	0.01	
		From	4.00		0.000	144.00	No Ice	2.04	2.04	0.02
		Centroid-Le	0.000				1/2" Ice	2.23	2.23	0.04
DC6-48-60-18-8F	B	g	0.000			1" Ice	2.42	2.42	0.06	
		From	4.00		0.000	144.00	No Ice	2.04	2.04	0.02
		Centroid-Le	0.000				1/2" Ice	2.23	2.23	0.04
DC6-48-60-18-8F	C	g	0.000			1" Ice	2.42	2.42	0.06	
		From	4.00		0.000	144.00	No Ice	2.04	2.04	0.02
		Centroid-Le	0.000				1/2" Ice	2.23	2.23	0.04
RRUS 4478 B14	A	g	0.000			1" Ice	2.42	2.42	0.06	
		From	4.00		0.000	144.00	No Ice	1.84	1.06	0.06
		Centroid-Le	0.000				1/2" Ice	2.01	1.20	0.08
RRUS 4478 B14	B	g	0.000			1" Ice	2.19	1.34	0.09	
		From	4.00		0.000	144.00	No Ice	1.84	1.06	0.06
		Centroid-Le	0.000				1/2" Ice	2.01	1.20	0.08
RRUS 4478 B14	C	g	0.000			1" Ice	2.19	1.34	0.09	
		From	4.00		0.000	144.00	No Ice	1.84	1.06	0.06
		Centroid-Le	0.000				1/2" Ice	2.01	1.20	0.08
RRUS 8843 B2/B66A	A	g	0.000			1" Ice	2.19	1.34	0.09	
		From	4.00		0.000	144.00	No Ice	1.64	1.35	0.07
		Centroid-Le	0.000				1/2" Ice	1.80	1.50	0.09
RRUS 8843 B2/B66A	B	g	0.000			1" Ice	1.97	1.65	0.11	
		From	4.00		0.000	144.00	No Ice	1.64	1.35	0.07
		Centroid-Le	0.000				1/2" Ice	1.80	1.50	0.09
RRUS 8843 B2/B66A	C	g	0.000			1" Ice	1.97	1.65	0.11	
		From	4.00		0.000	144.00	No Ice	1.64	1.35	0.07
		Centroid-Le	0.000				1/2" Ice	1.80	1.50	0.09
RRUS 4449 B5/B12	A	g	0.000			1" Ice	1.97	1.65	0.11	
		From	4.00		0.000	144.00	No Ice	1.97	1.41	0.07
		Centroid-Le	0.000				1/2" Ice	2.14	1.56	0.09
RRUS 4449 B5/B12	B	g	0.000			1" Ice	2.33	1.73	0.11	
		From	4.00		0.000	144.00	No Ice	1.97	1.41	0.07
		Centroid-Le	0.000				1/2" Ice	2.14	1.56	0.09
RRUS 4449 B5/B12	C	g	0.000			1" Ice	2.33	1.73	0.11	
		From	4.00		0.000	144.00	No Ice	1.97	1.41	0.07
		Centroid-Le	0.000				1/2" Ice	2.14	1.56	0.09
RRUS 32 B30	A	g	0.000			1" Ice	2.33	1.73	0.11	
		From	4.00		0.000	144.00	No Ice	2.73	1.67	0.05
		Centroid-Le	0.000				1/2" Ice	2.95	1.86	0.07
RRUS 32 B30	B	g	0.000			1" Ice	3.18	2.05	0.10	
		From	4.00		0.000	144.00	No Ice	2.73	1.67	0.05
		Centroid-Le	0.000				1/2" Ice	2.95	1.86	0.07
RRUS 32 B30	C	g	0.000			1" Ice	3.18	2.05	0.10	
		From	4.00		0.000	144.00	No Ice	2.73	1.67	0.05
		Centroid-Le	0.000				1/2" Ice	2.95	1.86	0.07

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b>	HRT 107 (C) 943204 (BU 806366)	<b>Page</b>	9 of 19
	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA		Weight	
			Horz	Vert			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
2.4" Dia x 6-ft Pipe	A	g From Centroid-Le	0.000	0.000	0.000	144.00	1" Ice	3.18	2.05	0.10
			4.00	4.00			No Ice	1.43	1.43	0.02
			0.000	0.000			1/2" Ice	1.93	1.93	0.03
2.4" Dia x 6-ft Pipe	B	g From Centroid-Le	0.000	0.000	0.000	144.00	1" Ice	2.30	2.30	0.05
			4.00	4.00			No Ice	1.43	1.43	0.02
			0.000	0.000			1/2" Ice	1.93	1.93	0.03
2.4" Dia x 6-ft Pipe	C	g From Centroid-Le	0.000	0.000	0.000	144.00	1" Ice	2.30	2.30	0.05
			4.00	4.00			No Ice	1.43	1.43	0.02
			0.000	0.000			1/2" Ice	1.93	1.93	0.03
Platform Mount [LP 603-1] (16-ft)	C	g None	0.000	0.000	0.000	144.00	1" Ice	2.30	2.30	0.05
			0.000	0.000			No Ice	46.42	46.42	2.35
			0.000	0.000			1/2" Ice	54.03	54.03	3.19
***135***										
742 213 w/ Mount Pipe	A	From Leg	1.00	0.000	0.000	135.00	No Ice	3.54	2.98	0.05
			0.000	0.000			1/2" Ice	4.13	3.57	0.09
			0.000	0.000			1" Ice	4.74	4.17	0.14
742 213 w/ Mount Pipe	B	From Leg	1.00	0.000	0.000	135.00	No Ice	3.54	2.98	0.05
			0.000	0.000			1/2" Ice	4.13	3.57	0.09
			0.000	0.000			1" Ice	4.74	4.17	0.14
742 213 w/ Mount Pipe	C	From Leg	1.00	0.000	0.000	135.00	No Ice	3.54	2.98	0.05
			0.000	0.000			1/2" Ice	4.13	3.57	0.09
			0.000	0.000			1" Ice	4.74	4.17	0.14
***128***										
NNVV-65B-R4 w/ Mount Pipe	A	From Face	4.00	0.000	0.000	128.00	No Ice	7.55	4.23	0.11
			0.000	0.000			1/2" Ice	8.04	4.67	0.20
			0.000	0.000			1" Ice	8.53	5.12	0.30
NNVV-65B-R4 w/ Mount Pipe	B	From Face	4.00	0.000	0.000	128.00	No Ice	7.55	4.23	0.11
			0.000	0.000			1/2" Ice	8.04	4.67	0.20
			0.000	0.000			1" Ice	8.53	5.12	0.30
NNVV-65B-R4 w/ Mount Pipe	C	From Face	4.00	0.000	0.000	128.00	No Ice	7.55	4.23	0.11
			0.000	0.000			1/2" Ice	8.04	4.67	0.20
			0.000	0.000			1" Ice	8.53	5.12	0.30
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Face	4.00	0.000	0.000	128.00	No Ice	4.09	2.86	0.08
			0.000	0.000			1/2" Ice	4.48	3.23	0.13
			0.000	0.000			1" Ice	4.88	3.61	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Face	4.00	0.000	0.000	128.00	No Ice	4.09	2.86	0.08
			0.000	0.000			1/2" Ice	4.48	3.23	0.13
			0.000	0.000			1" Ice	4.88	3.61	0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Face	4.00	0.000	0.000	128.00	No Ice	4.09	2.86	0.08
			0.000	0.000			1/2" Ice	4.48	3.23	0.13
			0.000	0.000			1" Ice	4.88	3.61	0.19
RRH2X50-800	A	From Face	4.00	0.000	0.000	128.00	No Ice	2.13	1.77	0.05
			0.000	0.000			1/2" Ice	2.32	1.95	0.07
			0.000	0.000			1" Ice	2.51	2.13	0.10
(4) RRH2X50-800	B	From Face	4.00	0.000	0.000	128.00	No Ice	2.13	1.77	0.05
			0.000	0.000			1/2" Ice	2.32	1.95	0.07
			0.000	0.000			1" Ice	2.51	2.13	0.10
RRH2X50-800	C	From Face	4.00	0.000	0.000	128.00	No Ice	2.13	1.77	0.05
			0.000	0.000			1/2" Ice	2.32	1.95	0.07
			0.000	0.000			1" Ice	2.51	2.13	0.10
(3) TD-RRH8x20-25	C	From Face	4.00	0.000	0.000	128.00	No Ice	3.70	1.29	0.07
			0.000	0.000			1/2" Ice	3.95	1.46	0.09
			0.000	0.000			1" Ice	4.20	1.64	0.12
(3) PCS 1900MHz 4x45W-65MHz	A	From Face	4.00	0.000	0.000	128.00	No Ice	2.32	2.24	0.06
			0.000	0.000			1/2" Ice	2.53	2.44	0.08
			0.000	0.000			1" Ice	2.74	2.65	0.11

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b>	HRT 107 (C) 943204 (BU 806366)	<b>Page</b>	10 of 19
	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft <sup>2</sup>	CAAA Side ft <sup>2</sup>	Weight K	
(3) 2.4" Dia x 6-ft Pipe	A	From Face	4.00 0.000 0.000	0.000	128.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30	1.43 1.93 2.30	0.02 0.03 0.05	
(3) 2.4" Dia x 6-ft Pipe	B	From Face	4.00 0.000 0.000	0.000	128.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30	1.43 1.93 2.30	0.02 0.03 0.05	
(3) 2.4" Dia x 6-ft Pipe	C	From Face	4.00 0.000 0.000	0.000	128.00	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30	1.43 1.93 2.30	0.02 0.03 0.05	
(2) T-Arm Mount [TA 602-3]	C	None		0.000	128.00	No Ice 13.40 1/2" Ice 16.44 1" Ice 19.70	13.40 16.44 19.70	0.77 1.00 1.29	
***116***									
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29	
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29	
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 8.01 1/2" Ice 8.52 1" Ice 9.04	4.23 4.69 5.16	0.11 0.19 0.29	
TA08025-B604	A	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10	
TA08025-B604	B	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10	
TA08025-B604	C	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	0.98 1.11 1.25	0.06 0.08 0.10	
TA08025-B605	A	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11	
TA08025-B605	B	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11	
TA08025-B605	C	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.96 1/2" Ice 2.14 1" Ice 2.32	1.13 1.27 1.41	0.08 0.09 0.11	
RDIDC-9181-PF-48	A	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 2.01 1/2" Ice 2.19 1" Ice 2.37	1.17 1.31 1.46	0.02 0.04 0.06	
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06	
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06	
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Centroid-Le g	4.00 0.000 0.000	0.000	116.00	No Ice 1.90 1/2" Ice 2.73 1" Ice 3.40	1.90 2.73 3.40	0.03 0.04 0.06	
Commscope MC-PK8-DSH	C	None		0.000	116.00	No Ice 34.24 1/2" Ice 62.95 1" Ice 91.66	34.24 62.95 91.66	1.75 2.10 2.45	
***100***									
AIR 6419 B41_TMO w/	A	From	4.00	0.000	100.00	No Ice	6.58	3.50	0.11

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b>	HRT 107 (C) 943204 (BU 806366)	<b>Page</b>	11 of 19
	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub>		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
Mount Pipe		Centroid-Le	0.000			1/2" Ice	7.06	3.90	0.16
		g	2.000			1" Ice	7.57	4.32	0.22
AIR 6419 B41_TMO w/ Mount Pipe	B	From	4.00	0.000	100.00	No Ice	6.58	3.50	0.11
		Centroid-Le	0.000			1/2" Ice	7.06	3.90	0.16
		g	2.000			1" Ice	7.57	4.32	0.22
AIR 6419 B41_TMO w/ Mount Pipe	C	From	4.00	0.000	100.00	No Ice	6.58	3.50	0.11
		Centroid-Le	0.000			1/2" Ice	7.06	3.90	0.16
		g	2.000			1" Ice	7.57	4.32	0.22
VV-65A-R1_TMO w/ Mount Pipe	A	From	4.00	0.000	100.00	No Ice	4.46	2.69	0.05
		Centroid-Le	0.000			1/2" Ice	4.91	3.10	0.10
		g	2.000			1" Ice	5.36	3.52	0.15
VV-65A-R1_TMO w/ Mount Pipe	B	From	4.00	0.000	100.00	No Ice	4.46	2.69	0.05
		Centroid-Le	0.000			1/2" Ice	4.91	3.10	0.10
		g	2.000			1" Ice	5.36	3.52	0.15
VV-65A-R1_TMO w/ Mount Pipe	C	From	4.00	0.000	100.00	No Ice	4.46	2.69	0.05
		Centroid-Le	0.000			1/2" Ice	4.91	3.10	0.10
		g	2.000			1" Ice	5.36	3.52	0.15
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From	4.00	0.000	100.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.000			1/2" Ice	15.46	7.55	0.31
		g	2.000			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From	4.00	0.000	100.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.000			1/2" Ice	15.46	7.55	0.31
		g	2.000			1" Ice	16.23	8.25	0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From	4.00	0.000	100.00	No Ice	14.69	6.87	0.19
		Centroid-Le	0.000			1/2" Ice	15.46	7.55	0.31
		g	2.000			1" Ice	16.23	8.25	0.46
RADIO 4449 B71/B85A	A	From	4.00	0.000	100.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.000			1/2" Ice	1.80	1.46	0.09
		g	0.000			1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	B	From	4.00	0.000	100.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.000			1/2" Ice	1.80	1.46	0.09
		g	0.000			1" Ice	1.97	1.61	0.11
RADIO 4449 B71/B85A	C	From	4.00	0.000	100.00	No Ice	1.64	1.31	0.07
		Centroid-Le	0.000			1/2" Ice	1.80	1.46	0.09
		g	0.000			1" Ice	1.97	1.61	0.11
RADIO 4460 B2/B25 B66_TMO	A	From	4.00	0.000	100.00	No Ice	2.14	1.69	0.11
		Centroid-Le	0.000			1/2" Ice	2.32	1.85	0.13
		g	2.000			1" Ice	2.51	2.02	0.16
RADIO 4460 B2/B25 B66_TMO	B	From	4.00	0.000	100.00	No Ice	2.14	1.69	0.11
		Centroid-Le	0.000			1/2" Ice	2.32	1.85	0.13
		g	2.000			1" Ice	2.51	2.02	0.16
RADIO 4460 B2/B25 B66_TMO	C	From	4.00	0.000	100.00	No Ice	2.14	1.69	0.11
		Centroid-Le	0.000			1/2" Ice	2.32	1.85	0.13
		g	2.000			1" Ice	2.51	2.02	0.16
2.4" Dia x 8-ft Mount Pipe	A	From	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
		Centroid-Le	0.000			1/2" Ice	2.73	2.73	0.04
		g	0.000			1" Ice	3.40	3.40	0.06
2.4" Dia x 8-ft Mount Pipe	B	From	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
		Centroid-Le	0.000			1/2" Ice	2.73	2.73	0.04
		g	0.000			1" Ice	3.40	3.40	0.06
2.4" Dia x 8-ft Mount Pipe	C	From	4.00	0.000	100.00	No Ice	1.90	1.90	0.03
		Centroid-Le	0.000			1/2" Ice	2.73	2.73	0.04
		g	0.000			1" Ice	3.40	3.40	0.06
Site Pro 1 RMQP-xxx + HK12	C	None		0.000	100.00	No Ice	31.60	29.33	1.49
						1/2" Ice	38.57	36.09	1.83
						1" Ice	45.53	42.97	2.29

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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 12 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	CAA Front	CAA Side	Weight
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
*****								

## Load Combinations

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

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 13 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

Comb. No.	Description
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	155.5 - 110	Pole	Max Tension	26	0.00	0.00	0.00
			Max. Compression	26	-42.35	-0.72	-0.79
			Max. Mx	8	-26.62	-667.80	-1.67
			Max. My	14	-26.61	-1.39	-672.55
			Max. Vy	8	26.62	-667.80	-1.67
			Max. Vx	14	26.90	-1.39	-672.55
			Max. Torque	21			-1.04
L2	110 - 72.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-75.73	-0.56	-2.19
			Max. Mx	8	-51.77	-1991.98	-2.70
			Max. My	14	-51.76	-1.76	-2009.17
			Max. Vy	8	41.84	-1991.98	-2.70
			Max. Vx	14	42.16	-1.76	-2009.17
			Max. Torque	21			-1.20
L3	72.5 - 36	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.42	-0.40	-4.14
			Max. Mx	8	-73.65	-3634.86	-3.97
			Max. My	14	-73.65	-2.13	-3664.52
			Max. Vy	8	49.16	-3634.86	-3.97
			Max. Vx	14	49.48	-2.13	-3664.52
			Max. Torque	21			-1.20
L4	36 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-134.56	-0.23	-6.65
			Max. Mx	8	-102.76	-6017.65	-5.61
			Max. My	14	-102.76	-2.57	-6062.78
			Max. Vy	8	56.46	-6017.65	-5.61
			Max. Vx	14	56.77	-2.57	-6062.78
			Max. Torque	21			-1.20

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	134.56	0.00	0.00
	Max. H <sub>x</sub>	20	102.78	56.42	0.01
	Max. H <sub>z</sub>	2	102.78	0.01	56.74
	Max. M <sub>x</sub>	2	6055.70	0.01	56.74
	Max. M <sub>z</sub>	8	6017.65	-56.42	-0.01
	Max. Torsion	9	1.20	-56.42	-0.01
	Min. Vert	7	77.09	-48.86	28.36
	Min. H <sub>x</sub>	8	102.78	-56.42	-0.01
	Min. H <sub>z</sub>	14	102.78	-0.01	-56.74
	Min. M <sub>x</sub>	14	-6062.78	-0.01	-56.74



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	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M <sub>z</sub>	20	-6016.64	56.42	0.01
	Min. Torsion	21	-1.20	56.42	0.01

## Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	85.65	0.00	0.00	2.89	-0.41	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	102.78	-0.01	-56.74	-6055.70	1.56	0.14
0.9 Dead+1.0 Wind 0 deg - No Ice	77.09	-0.01	-56.74	-6028.17	1.68	0.14
1.2 Dead+1.0 Wind 30 deg - No Ice	102.78	28.20	-49.13	-5242.89	-3007.28	-0.47
0.9 Dead+1.0 Wind 30 deg - No Ice	77.09	28.20	-49.13	-5219.17	-2993.05	-0.48
1.2 Dead+1.0 Wind 60 deg - No Ice	102.78	48.86	-28.36	-3024.29	-5210.47	-0.96
0.9 Dead+1.0 Wind 60 deg - No Ice	77.09	48.86	-28.36	-3010.99	-5185.91	-0.97
1.2 Dead+1.0 Wind 90 deg - No Ice	102.78	56.42	0.01	5.61	-6017.65	-1.19
0.9 Dead+1.0 Wind 90 deg - No Ice	77.09	56.42	0.01	4.70	-5989.30	-1.20
1.2 Dead+1.0 Wind 120 deg - No Ice	102.78	48.87	28.38	3034.96	-5212.53	-1.11
0.9 Dead+1.0 Wind 120 deg - No Ice	77.09	48.87	28.38	3019.83	-5187.96	-1.11
1.2 Dead+1.0 Wind 150 deg - No Ice	102.78	28.22	49.14	5252.03	-3010.86	-0.73
0.9 Dead+1.0 Wind 150 deg - No Ice	77.09	28.22	49.14	5226.51	-2996.61	-0.72
1.2 Dead+1.0 Wind 180 deg - No Ice	102.78	0.01	56.74	6062.78	-2.57	-0.15
0.9 Dead+1.0 Wind 180 deg - No Ice	77.09	0.01	56.74	6033.45	-2.43	-0.14
1.2 Dead+1.0 Wind 210 deg - No Ice	102.78	-28.20	49.13	5249.96	3006.27	0.47
0.9 Dead+1.0 Wind 210 deg - No Ice	77.09	-28.20	49.13	5224.45	2992.30	0.47
1.2 Dead+1.0 Wind 240 deg - No Ice	102.78	-48.86	28.36	3031.37	5209.46	0.96
0.9 Dead+1.0 Wind 240 deg - No Ice	77.09	-48.86	28.36	3016.27	5185.15	0.97
1.2 Dead+1.0 Wind 270 deg - No Ice	102.78	-56.42	-0.01	1.47	6016.64	1.20
0.9 Dead+1.0 Wind 270 deg - No Ice	77.09	-56.42	-0.01	0.58	5988.55	1.20
1.2 Dead+1.0 Wind 300 deg - No Ice	102.78	-48.87	-28.38	-3027.88	5211.53	1.11
0.9 Dead+1.0 Wind 300 deg - No Ice	77.09	-48.87	-28.38	-3014.55	5187.21	1.11
1.2 Dead+1.0 Wind 330 deg - No Ice	102.78	-28.22	-49.14	-5244.95	3009.85	0.72
0.9 Dead+1.0 Wind 330 deg - No Ice	77.09	-28.22	-49.14	-5221.23	2995.86	0.72

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	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>		Overturning Moment, M <sub>z</sub>		Torque
	K	K	K	kip-ft		kip-ft		kip-ft
1.2 Dead+1.0 Ice+1.0 Temp	134.56	0.00	0.00	6.65	-1209.52	-0.23	0.00	
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	134.56	-0.00	-11.23	-1209.52	0.08	0.00	0.03	
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	134.56	5.59	-9.72	-1046.40	-604.84	-0.07	-0.07	
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	134.56	9.68	-5.61	-601.06	-1047.77	-0.16	-0.16	
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	134.56	11.18	0.00	7.16	-1210.01	-0.20	-0.20	
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	134.56	9.68	5.61	615.29	-1048.09	-0.19	-0.19	
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	134.56	5.59	9.72	1060.38	-605.41	-0.13	-0.13	
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	134.56	0.00	11.23	1223.18	-0.58	-0.03	-0.03	
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	134.56	-5.59	9.72	1060.05	604.34	0.07	0.07	
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	134.56	-9.68	5.61	614.72	1047.26	0.16	0.16	
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	134.56	-11.18	-0.00	6.50	1209.50	0.20	0.20	
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	134.56	-9.68	-5.61	-601.63	1047.59	0.19	0.19	
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	134.56	-5.59	-9.72	-1046.72	604.91	0.13	0.13	
Dead+Wind 0 deg - Service	85.65	0.02	-11.38	-1209.03	-0.03	0.03	0.03	
Dead+Wind 30 deg - Service	85.65	5.66	-9.86	-1046.45	-601.84	-0.10	-0.10	
Dead+Wind 60 deg - Service	85.65	9.80	-5.69	-602.69	-1042.52	-0.19	-0.19	
Dead+Wind 90 deg - Service	85.65	11.32	0.00	3.35	-1203.97	-0.24	-0.24	
Dead+Wind 120 deg - Service	85.65	9.80	5.69	609.28	-1042.93	-0.22	-0.22	
Dead+Wind 150 deg - Service	85.65	5.66	9.86	1052.75	-602.55	-0.15	-0.15	
Dead+Wind 180 deg - Service	85.65	0.00	11.38	1214.91	-0.83	-0.03	-0.03	
Dead+Wind 210 deg - Service	85.65	-5.66	9.86	1052.33	601.00	0.10	0.10	
Dead+Wind 240 deg - Service	85.65	-9.80	5.69	608.57	1041.68	0.19	0.19	
Dead+Wind 270 deg - Service	85.65	-11.32	-0.00	2.53	1203.13	0.24	0.24	
Dead+Wind 300 deg - Service	85.65	-9.80	-5.69	-603.41	1042.10	0.22	0.22	
Dead+Wind 330 deg - Service	85.65	-5.66	-9.86	-1046.87	601.72	0.15	0.15	

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-85.65	0.00	0.00	85.65	0.00	0.000%
2	-0.01	-102.78	-56.74	0.01	102.78	56.74	0.000%
3	-0.01	-77.09	-56.74	0.01	77.09	56.74	0.000%
4	28.20	-102.78	-49.13	-28.20	102.78	49.13	0.000%
5	28.20	-77.09	-49.13	-28.20	77.09	49.13	0.000%
6	48.86	-102.78	-28.36	-48.86	102.78	28.36	0.000%
7	48.86	-77.09	-28.36	-48.86	77.09	28.36	0.000%
8	56.42	-102.78	0.01	-56.42	102.78	-0.01	0.000%
9	56.42	-77.09	0.01	-56.42	77.09	-0.01	0.000%
10	48.87	-102.78	28.38	-48.87	102.78	-28.38	0.000%
11	48.87	-77.09	28.38	-48.87	77.09	-28.38	0.000%
12	28.22	-102.78	49.14	-28.22	102.78	-49.14	0.000%
13	28.22	-77.09	49.14	-28.22	77.09	-49.14	0.000%
14	0.01	-102.78	56.74	-0.01	102.78	-56.74	0.000%
15	0.01	-77.09	56.74	-0.01	77.09	-56.74	0.000%

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	<b>Project</b>	TEP No. 217470.704661	<b>Date</b>	12:11:55 05/27/22
	<b>Client</b>	Crown Castle	<b>Designed by</b>	awang

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
16	-28.20	-102.78	49.13	28.20	102.78	-49.13	0.000%
17	-28.20	-77.09	49.13	28.20	77.09	-49.13	0.000%
18	-48.86	-102.78	28.36	48.86	102.78	-28.36	0.000%
19	-48.86	-77.09	28.36	48.86	77.09	-28.36	0.000%
20	-56.42	-102.78	-0.01	56.42	102.78	0.01	0.000%
21	-56.42	-77.09	-0.01	56.42	77.09	0.01	0.000%
22	-48.87	-102.78	-28.38	48.87	102.78	28.38	0.000%
23	-48.87	-77.09	-28.38	48.87	77.09	28.38	0.000%
24	-28.22	-102.78	-49.14	28.22	102.78	49.14	0.000%
25	-28.22	-77.09	-49.14	28.22	77.09	49.14	0.000%
26	0.00	-134.56	0.00	0.00	134.56	0.00	0.000%
27	-0.00	-134.56	-11.23	0.00	134.56	11.23	0.000%
28	5.59	-134.56	-9.72	-5.59	134.56	9.72	0.000%
29	9.68	-134.56	-5.61	-9.68	134.56	5.61	0.000%
30	11.18	-134.56	0.00	-11.18	134.56	-0.00	0.000%
31	9.68	-134.56	5.61	-9.68	134.56	-5.61	0.000%
32	5.59	-134.56	9.72	-5.59	134.56	-9.72	0.000%
33	0.00	-134.56	11.23	-0.00	134.56	-11.23	0.000%
34	-5.59	-134.56	9.72	5.59	134.56	-9.72	0.000%
35	-9.68	-134.56	5.61	9.68	134.56	-5.61	0.000%
36	-11.18	-134.56	-0.00	11.18	134.56	0.00	0.000%
37	-9.68	-134.56	-5.61	9.68	134.56	5.61	0.000%
38	-5.59	-134.56	-9.72	5.59	134.56	9.72	0.000%
39	-0.00	-85.65	-11.38	-0.02	85.65	11.38	0.025%
40	5.66	-85.65	-9.86	-5.66	85.65	9.86	0.000%
41	9.80	-85.65	-5.69	-9.80	85.65	5.69	0.000%
42	11.32	-85.65	0.00	-11.32	85.65	-0.00	0.000%
43	9.80	-85.65	5.69	-9.80	85.65	-5.69	0.000%
44	5.66	-85.65	9.86	-5.66	85.65	-9.86	0.000%
45	0.00	-85.65	11.38	-0.00	85.65	-11.38	0.000%
46	-5.66	-85.65	9.86	5.66	85.65	-9.86	0.000%
47	-9.80	-85.65	5.69	9.80	85.65	-5.69	0.000%
48	-11.32	-85.65	-0.00	11.32	85.65	0.00	0.000%
49	-9.80	-85.65	-5.69	9.80	85.65	5.69	0.000%
50	-5.66	-85.65	-9.86	5.66	85.65	9.86	0.000%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00008119
3	Yes	4	0.00000001	0.00004105
4	Yes	4	0.00000001	0.00083009
5	Yes	4	0.00000001	0.00054272
6	Yes	4	0.00000001	0.00085107
7	Yes	4	0.00000001	0.00055762
8	Yes	4	0.00000001	0.00008977
9	Yes	4	0.00000001	0.00004882
10	Yes	4	0.00000001	0.00082294
11	Yes	4	0.00000001	0.00053756
12	Yes	4	0.00000001	0.00085408
13	Yes	4	0.00000001	0.00055878
14	Yes	4	0.00000001	0.00008141
15	Yes	4	0.00000001	0.00004119
16	Yes	4	0.00000001	0.00084653

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 17 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

17	Yes	4	0.00000001	0.00055388
18	Yes	4	0.00000001	0.00082260
19	Yes	4	0.00000001	0.00053749
20	Yes	4	0.00000001	0.00009043
21	Yes	4	0.00000001	0.00004939
22	Yes	4	0.00000001	0.00085539
23	Yes	4	0.00000001	0.00056056
24	Yes	4	0.00000001	0.00082724
25	Yes	4	0.00000001	0.00054085
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00060251
28	Yes	4	0.00000001	0.00061144
29	Yes	4	0.00000001	0.00061105
30	Yes	4	0.00000001	0.00060291
31	Yes	4	0.00000001	0.00061523
32	Yes	4	0.00000001	0.00061797
33	Yes	4	0.00000001	0.00060938
34	Yes	4	0.00000001	0.00061711
35	Yes	4	0.00000001	0.00061410
36	Yes	4	0.00000001	0.00060207
37	Yes	4	0.00000001	0.00061071
38	Yes	4	0.00000001	0.00061136
39	Yes	4	0.00000001	0.00009475
40	Yes	4	0.00000001	0.00001859
41	Yes	4	0.00000001	0.00001891
42	Yes	4	0.00000001	0.00001378
43	Yes	4	0.00000001	0.00001859
44	Yes	4	0.00000001	0.00001903
45	Yes	4	0.00000001	0.00001381
46	Yes	4	0.00000001	0.00001889
47	Yes	4	0.00000001	0.00001856
48	Yes	4	0.00000001	0.00001376
49	Yes	4	0.00000001	0.00001896
50	Yes	4	0.00000001	0.00001854

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155.5 - 110	6.260	45	0.285	0.000
L2	118 - 72.5	4.061	45	0.269	0.000
L3	81 - 36	2.136	45	0.218	0.000
L4	45 - 0	0.743	45	0.140	0.000

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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.00	LNx-8513DS-VTM w/ Mount Pipe	45	6.260	0.285	0.000	480322
144.00	7770.00 w/ Mount Pipe	45	5.574	0.282	0.000	208837
135.00	742 213 w/ Mount Pipe	45	5.041	0.279	0.000	117152
128.00	NNVV-65B-R4 w/ Mount Pipe	45	4.633	0.276	0.000	87332
116.00	MX08FRO665-21 w/ Mount Pipe	45	3.949	0.267	0.000	61836

<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 18 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	AIR 6419 B41_TMO w/ Mount Pipe	45	3.081	0.248	0.000	47980

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155.5 - 110	31.248	14	1.423	0.001
L2	118 - 72.5	20.273	14	1.342	0.001
L3	81 - 36	10.660	14	1.087	0.000
L4	45 - 0	3.709	14	0.698	0.000

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

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.00	LNx-8513DS-VTM w/ Mount Pipe	14	31.248	1.423	0.001	96665
144.00	7770.00 w/ Mount Pipe	14	27.822	1.409	0.001	42028
135.00	742 213 w/ Mount Pipe	14	25.165	1.394	0.001	23576
128.00	NNVV-65B-R4 w/ Mount Pipe	14	23.126	1.377	0.001	17574
116.00	MX08FRO665-21 w/ Mount Pipe	14	19.713	1.333	0.001	12437
100.00	AIR 6419 B41_TMO w/ Mount Pipe	14	15.382	1.239	0.001	9626

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A in <sup>2</sup>	$P_u$ K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	45.50	0.00	0.0	76.284	-26.61	3888.78	0.007
L2	110 - 72.5 (2)	TP68.805x62.8x0.438	45.50	0.00	0.0	94.732	-51.76	5197.13	0.010
L3	72.5 - 36 (3)	TP72.748x66.808x0.5	45.00	0.00	0.0	114.407	-73.65	6625.14	0.011
L4	36 - 0 (4)	TP76.5x70.56x0.5	45.00	0.00	0.0	122.360	-102.76	6767.68	0.015

### Pole Bending Design Data

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
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<b>tnxTower</b>  <b>Tower Engineering Professionals, Inc.</b> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6360	<b>Job</b> HRT 107 (C) 943204 (BU 806366)	<b>Page</b> 19 of 19
	<b>Project</b> TEP No. 217470.704661	<b>Date</b> 12:11:55 05/27/22
	<b>Client</b> Crown Castle	<b>Designed by</b> awang

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	672.55	5014.91	0.134	0.00	5014.91	0.000
L2	110 - 72.5 (2)	TP68.805x62.8x0.438	2009.18	7129.95	0.282	0.00	7129.95	0.000
L3	72.5 - 36 (3)	TP72.748x66.808x0.5	3664.52	9599.50	0.382	0.00	9599.50	0.000
L4	36 - 0 (4)	TP76.5x70.56x0.5	6062.78	10492.50	0.578	0.00	10492.50	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	26.90	1338.78	0.020	0.15	7439.68	0.000
L2	110 - 72.5 (2)	TP68.805x62.8x0.438	42.16	1662.55	0.025	0.15	9834.25	0.000
L3	72.5 - 36 (3)	TP72.748x66.808x0.5	49.48	2007.84	0.025	0.15	12550.25	0.000
L4	36 - 0 (4)	TP76.5x70.56x0.5	56.77	2147.42	0.026	0.15	14355.92	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	155.5 - 110 (1)	0.007	0.134	0.000	0.020	0.000	0.141	1.050	4.8.2
L2	110 - 72.5 (2)	0.010	0.282	0.000	0.025	0.000	0.292	1.050	4.8.2
L3	72.5 - 36 (3)	0.011	0.382	0.000	0.025	0.000	0.393	1.050	4.8.2
L4	36 - 0 (4)	0.015	0.578	0.000	0.026	0.000	0.594	1.050	4.8.2

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	155.5 - 110	Pole	TP64.606x58.6x0.375	1	-26.61	4083.22	13.5	Pass
L2	110 - 72.5	Pole	TP68.805x62.8x0.438	2	-51.76	5456.99	27.8	Pass
L3	72.5 - 36	Pole	TP72.748x66.808x0.5	3	-73.65	6956.40	37.5	Pass
L4	36 - 0	Pole	TP76.5x70.56x0.5	4	-102.76	7106.06	56.5	Pass
<b>Summary</b>								
Pole (L4)							56.5	Pass
<b>RATING =</b>							<b>56.5</b>	<b>Pass</b>

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



(PROPOSED EQUIPMENT CONFIGURATION)  
(3) 1-5/8" TO 100 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(6) 1-1/4" TO 135 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(3) 1-5/8" TO 156 FT LEVEL

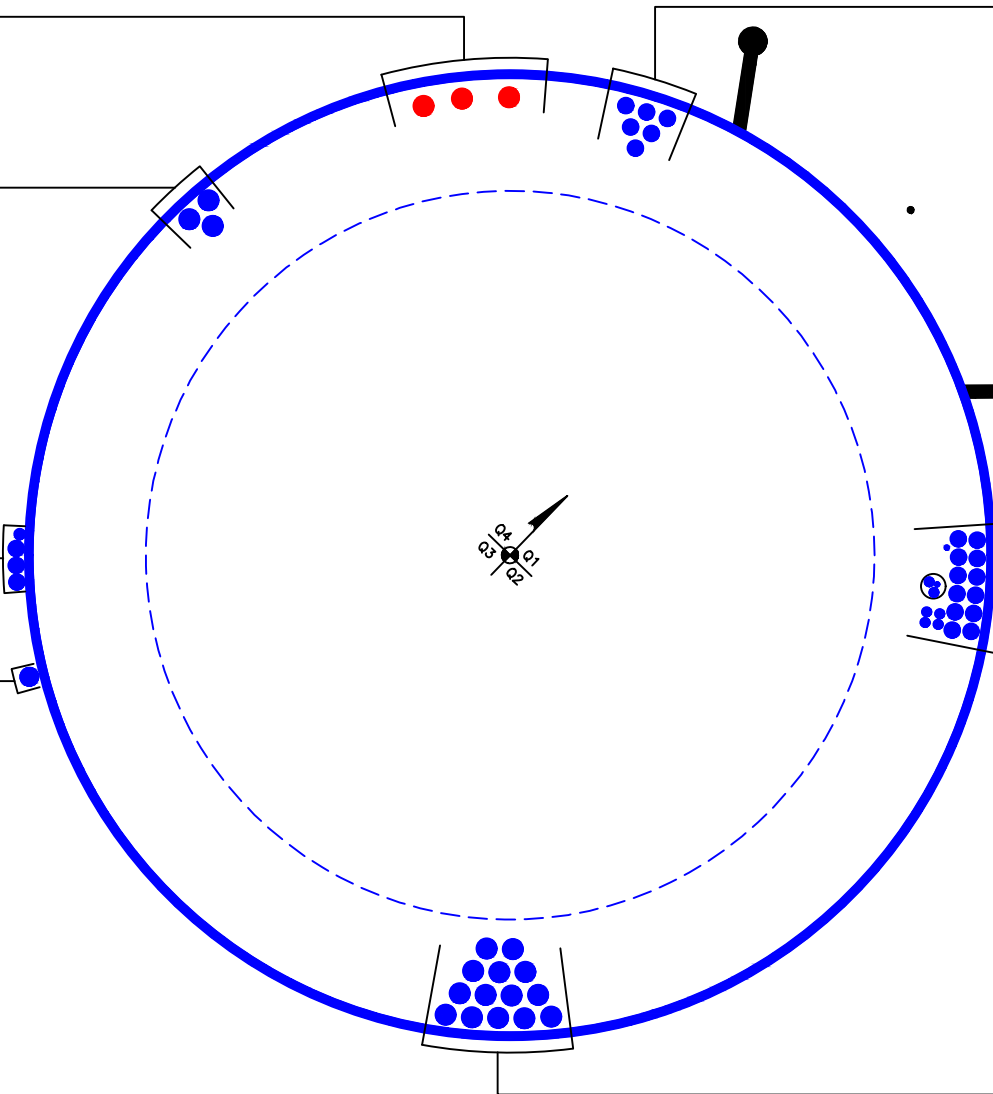
(OTHER CONSIDERED EQUIPMENT)  
(1) 7/8" TO 128 FT LEVEL  
(3) 1-1/4" TO 128 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(1) 1-1/2" TO 116 FT LEVEL

CLIMBING PEGS  
W/ SAFETY CLIMB

(OTHER CONSIDERED EQUIPMENT—IN CONDUIT)  
(1) 3/8" TO 144 FT LEVEL  
(2) 3/4" TO 144 FT LEVEL  
(OTHER CONSIDERED EQUIPMENT)  
(1) 3/8" TO 144 FT LEVEL  
(4) 3/4" TO 144 FT LEVEL  
(12) 1-1/4" TO 144 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(14) 1-5/8" TO 156 FT LEVEL





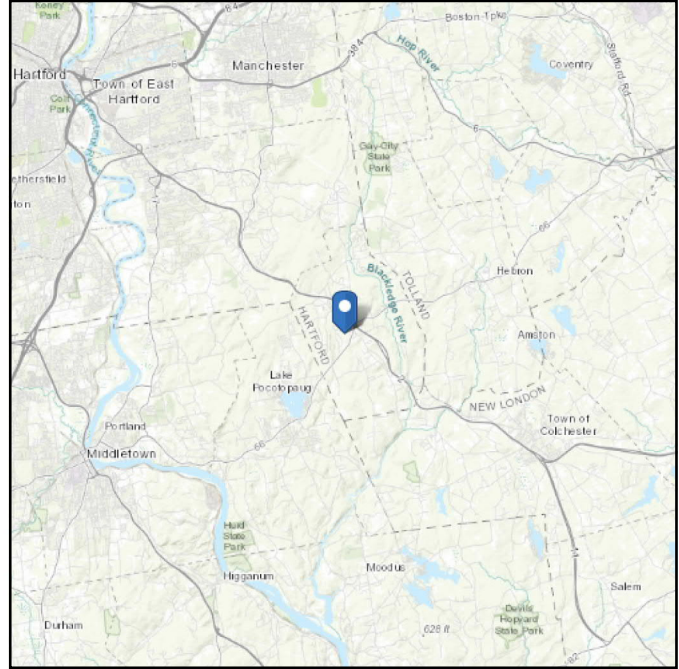
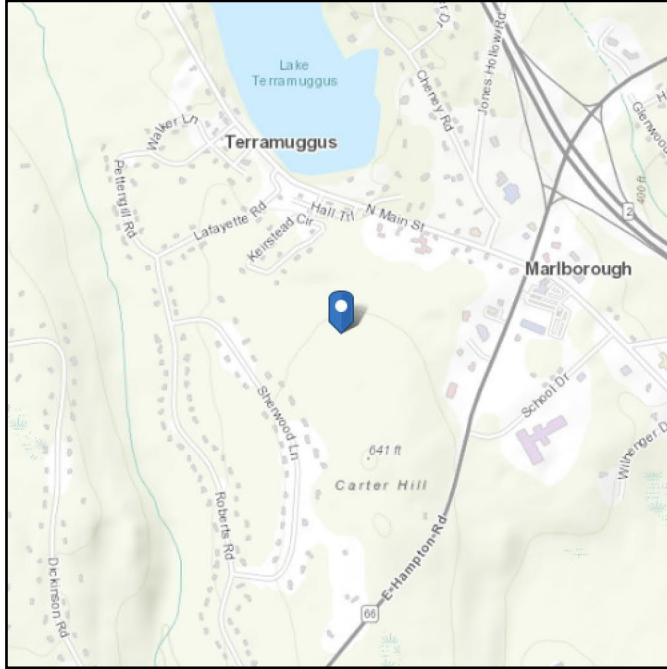
**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# 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:** 577.55 ft (NAVD 88)  
**Latitude:** 41.629806  
**Longitude:** -72.4665



## Wind

### Results:

Wind Speed	120 Vmph	130 Vmph per Jurisdiction
10-year MRI	75 Vmph	
25-year MRI	84 Vmph	
50-year MRI	92 Vmph	
100-year MRI	99 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue May 24 2022

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

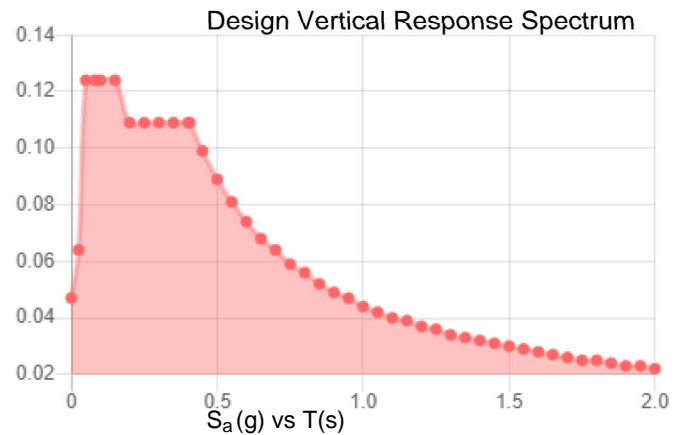
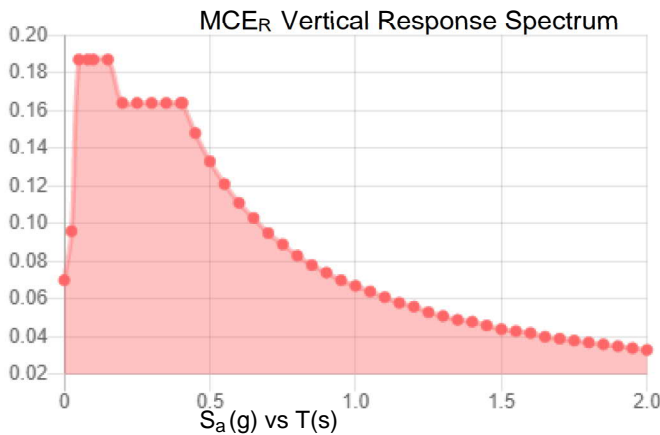
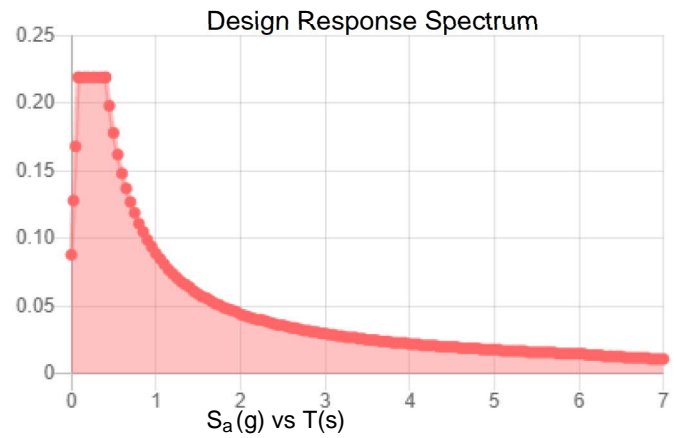
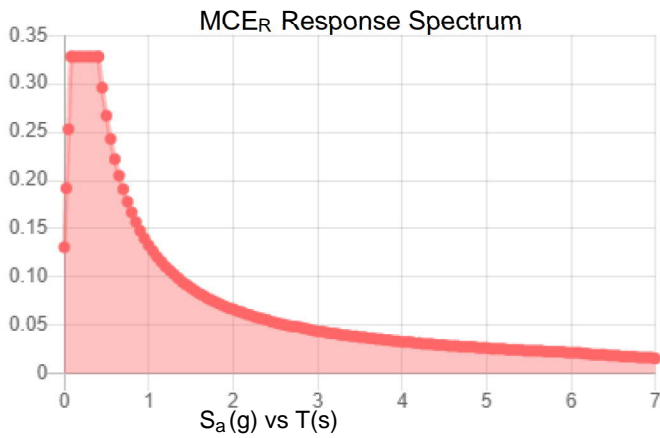
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

**Results:**

$S_s$ :	0.205	$S_{D1}$ :	0.089
$S_1$ :	0.056	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.113
$F_v$ :	2.4	PGA <sub>M</sub> :	0.178
$S_{MS}$ :	0.328	$F_{PGA}$ :	1.573
$S_{M1}$ :	0.133	$I_e$ :	1
$S_{DS}$ :	0.219	$C_v$ :	0.71

**Seismic Design Category** B



**Data Accessed:** Tue May 24 2022

**Date Source:**

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

## Ice

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### Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed 50 mph

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

**Date Accessed:** Tue May 24 2022

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

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

---

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

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

# Monopole Base Plate Connection

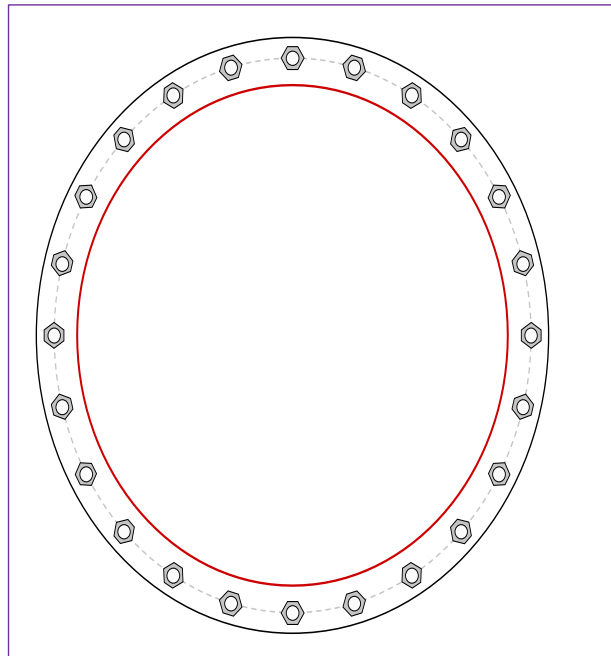


Site Info	
BU #	806366
Site Name	HRT 107(C) 943204
Order #	599893 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{ar}$ (in)	1.875

Applied Loads	
Moment (kip-ft)	6062.78
Axial Force (kips)	102.78
Shear Force (kips)	56.74

\*TIA-222-H Section 15.5 Applied



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

**Anchor Rod Data**  
 (24) 2-1/4"  $\phi$  bolts (A615-75 N;  $F_y=75$  ksi,  $F_u=100$  ksi) on 84.75" BC

**Base Plate Data**  
 91" OD x 3.25" Plate (A633 Gr. E;  $F_y=60$  ksi,  $F_u=80$  ksi)

**Stiffener Data**  
 N/A

**Pole Data**  
 76.5" x 0.5" 12-sided pole (A572-65;  $F_y=65$  ksi,  $F_u=80$  ksi)

Anchor Rod Summary		<i>(units of kips, kip-in)</i>	
$P_{u,t} = 138.75$	$\phi P_{n,t} = 243.75$	<b>Stress Rating</b>	
$V_u = 2.36$	$\phi V_n = 149.1$		<b>54.2%</b>
$M_u = n/a$	$\phi M_n = n/a$		<b>Pass</b>

Base Plate Summary		
Max Stress (ksi):	14.24	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	<b>25.1%</b>	<b>Pass</b>

# Pier and Pad Foundation



BU #: 806366  
 Site Name: HRT 107(C) 94320  
 App. Number: 599893 Rev. 0

TIA-222 Revision: H  
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, $P_{comp}$ :	102.78	kips
Base Shear, $V_{u\_comp}$ :	56.74	kips
Moment, $M_u$ :	6062.78	ft-kips
Tower Height, $H$ :	155.5	ft
BP Dist. Above Fdn, $bp_{dist}$ :	4.125	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	612.35	56.74	8.8%	Pass
<i>Bearing Pressure (ksf)</i>	15.75	2.13	12.9%	Pass
<i>Overtuning (kip*ft)</i>	17865.63	6536.20	36.6%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	18546.69	6261.37	32.2%	Pass
<i>Pier Compression (kip)</i>	51554.88	153.81	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	8427.96	2229.84	25.2%	Pass
<i>Pad Shear - 1-way (kips)</i>	1850.42	244.51	12.6%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.190	0.023	11.4%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	11161.59	3756.82	32.1%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, $dpier$ :	9	ft
Ext. Above Grade, $E$ :	0.5	ft
Pier Rebar Size, $Sc$ :	11	
Pier Rebar Quantity, $mc$ :	59	
Pier Tie/Spiral Size, $St$ :	5	
Pier Tie/Spiral Quantity, $mt$ :	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, $cc_{pier}$ :	3	in

\*Rating per TIA-222-H Section 15.5

Structural Rating*:	32.2%
Soil Rating*:	36.6%

Pad Properties		
Depth, $D$ :	7.5	ft
Pad Width, $W_1$ :	33.25	ft
Pad Thickness, $T$ :	4.5	ft
Pad Rebar Size (Bottom dir. 2), $Sp_2$ :	11	
Pad Rebar Quantity (Bottom dir. 2), $mp_2$ :	25	
Pad Clear Cover, $cc_{pad}$ :	3	in

Material Properties		
Rebar Grade, $F_y$ :	60	ksi
Concrete Compressive Strength, $F'_c$ :	4	ksi
Dry Concrete Density, $\delta_c$ :	150	pcf

Soil Properties		
Total Soil Unit Weight, $\gamma$ :	130	pcf
Ultimate Gross Bearing, $Q_{ult}$ :	21.000	ksf
Cohesion, $C_u$ :	0.000	ksf
Friction Angle, $\phi$ :	40	degrees
SPT Blow Count, $N_{blows}$ :	60	
Base Friction, $\mu$ :	0.4	
Neglected Depth, $N$ :	4.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, $gw$ :	14.5	ft

<--Toggle between Gross and Net

Date: **May 19, 2022**



Trylon  
1825 W. Walnut Hill Lane,  
Suite 302  
Irving, TX 75038  
214-930-1730

**Subject:** **Mount Replacement Analysis Report**

**Carrier Designation:** **T-Mobile Anchor**  
**Carrier Site Number:** CT11251A  
**Carrier Site Name:** East Hampton-2\_1

**Crown Castle Designation:** **BU Number:** 806366  
**Site Name:** HRT 107(C) 943204  
**JDE Job Number:** 700675  
**Order Number:** 599893 Rev. 0

**Engineering Firm Designation:** **Trylon Report Designation:** 210147

**Site Data:** **73 North Main Street, Marlborough, Hartford County, CT, 06447**  
**Latitude 41°37'47.30" Longitude -72°27'59.40"**

**Structure Information:** **Tower Height & Type:** **155.5 ft Monopole**  
**Mount Elevation:** **100.0 ft**  
**Mount Width & Type:** **12.5 ft Platform**

Trylon is pleased to submit this “**Mount Replacement Analysis Report**” to determine the structural integrity of T-Mobile’s antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

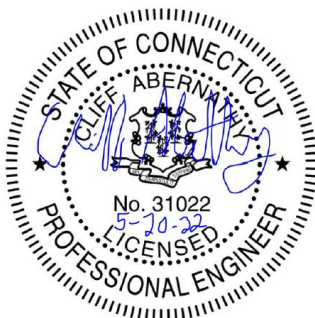
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

**Platform** **Sufficient\***  
**\*Sufficient upon completion of the changes listed in the ‘Recommendations’ section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Arienna Lee Wilson-Muller, E.I.

Respectfully Submitted by:  
Cliff Abernathy, P.E.



## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

### 3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

Wire Frame and Rendered Models

### 6) APPENDIX B

Software Input Calculations

### 7) APPENDIX C

Software Analysis Output

### 8) APPENDIX D

Additional Calculations

### 9) APPENDIX E

Supplemental Drawings



**1) INTRODUCTION**

This is an proposed 3 sector 12.5 ft Platform, designed by Site Pro 1.

**2) ANALYSIS CRITERIA**

**Building Code:** 2015 IBC / 2018 Connecticut State Building Code  
**TIA-222 Revision:** TIA-222-H  
**Risk Category:** II  
**Ultimate Wind Speed:** 130 mph  
**Exposure Category:** B  
**Topographic Factor at Base:** 1.0  
**Topographic Factor at Mount:** 1.0  
**Ice Thickness:** 1.5 in  
**Wind Speed with Ice:** 50 mph  
**Seismic S<sub>s</sub>:** 0.177  
**Seismic S<sub>1</sub>:** 0.062  
**Live Loading Wind Speed:** 30 mph  
**Man Live Load at Mid/End-Points:** 250 lb  
**Man Live Load at Mount Pipes:** 500 lb

**Table 1 - Proposed Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
100.0	102.0	3	Commscope	VV-65A-R1_TMO	12.5 ft Platform [Site Pro 1 RMQP-396 w/ HRK12]
		3	Ericsson	AIR 6419 B41_TMO	
		3	RFS/Celwave	APXVAARR24_43-UNA20	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
	100.0	3	Ericsson	RADIO 4449 B71/B85A	

### 3) ANALYSIS PROCEDURE

**Table 2 - Documents Provided**

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	599893, Rev. 0	CCI Sites
RFDS	T-Mobile	Site ID: CT11251A	TSA
Mount Manufacturer Drawings	Site Pro 1	RMQP-396	On File
Mount Manufacturer Drawings	Site Pro 1	HRK12	On File

#### 3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Tylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision E). In addition, this analysis is in accordance with AT&T's Mount Technical Directive.

#### 3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:
 

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

**4) ANALYSIS RESULTS**

**Table 3 - Mount Component Stresses vs. Capacity (Platform, All Sectors)**

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP5	100.0	53.4	Pass
	Horizontal(s)	H1		20.2	Pass
	Handrail(s)	HR2		34.3	Pass
	Standoff(s)	M1		52.9	Pass
	Bracing(s)	M4		20.1	Pass
	Mount Connection(s)	--		24.4	Pass

<b>Structure Rating (max from all components) =</b>	<b>53.4%</b>
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) See additional documentation in "Appendix D – Additional Calculations" for detailed mount connection calculations.
- 3) Rating per TIA-222-H, Section 15.5

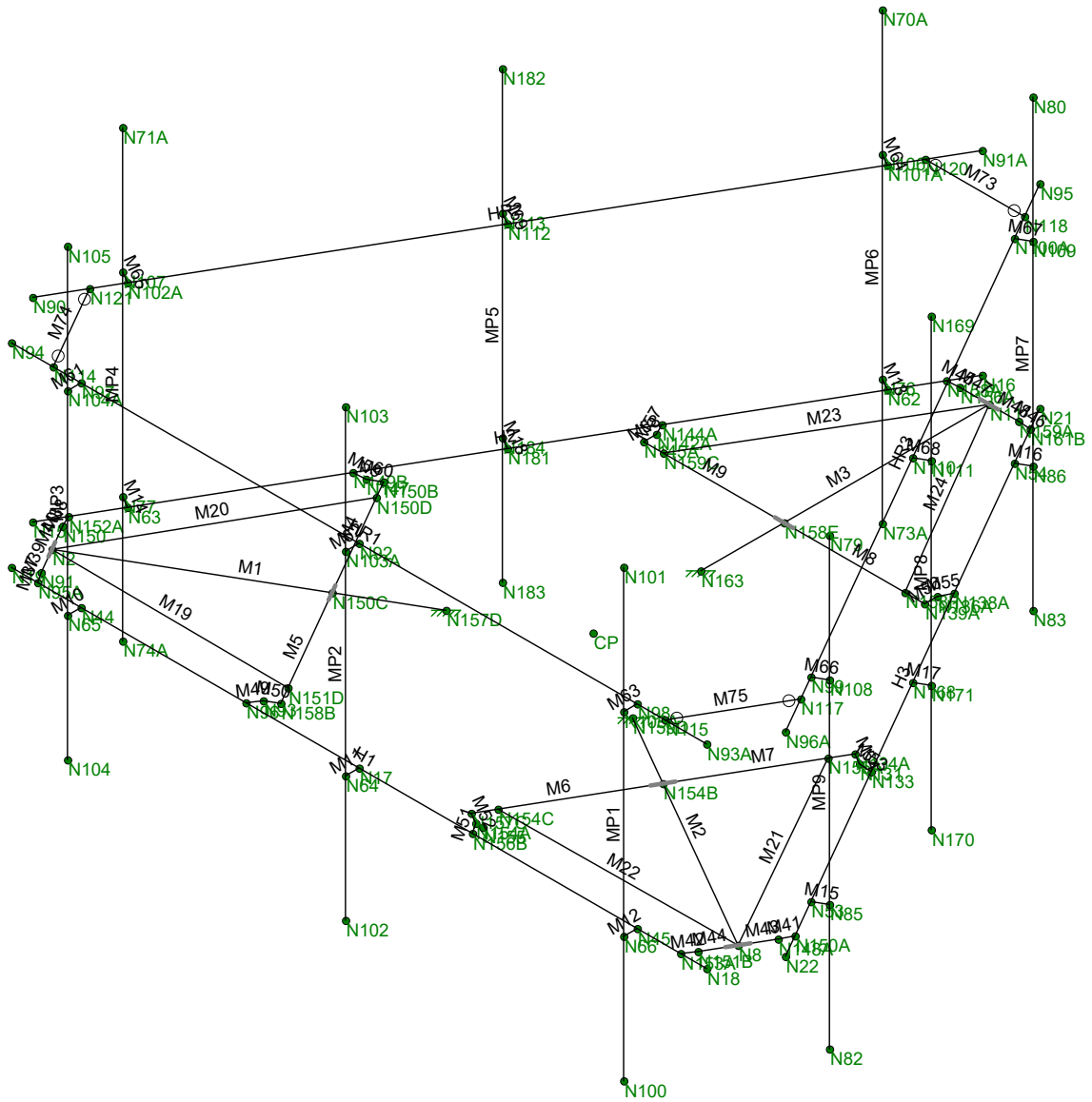
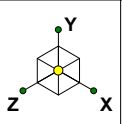
**4.1) Recommendations**

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Site Pro 1 RMQP-396 with Site Pro 1 HRK12. Install handrail kit approximately 42" above platform horizontals.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**



Envelope Only Solution

Trylon

ALWM

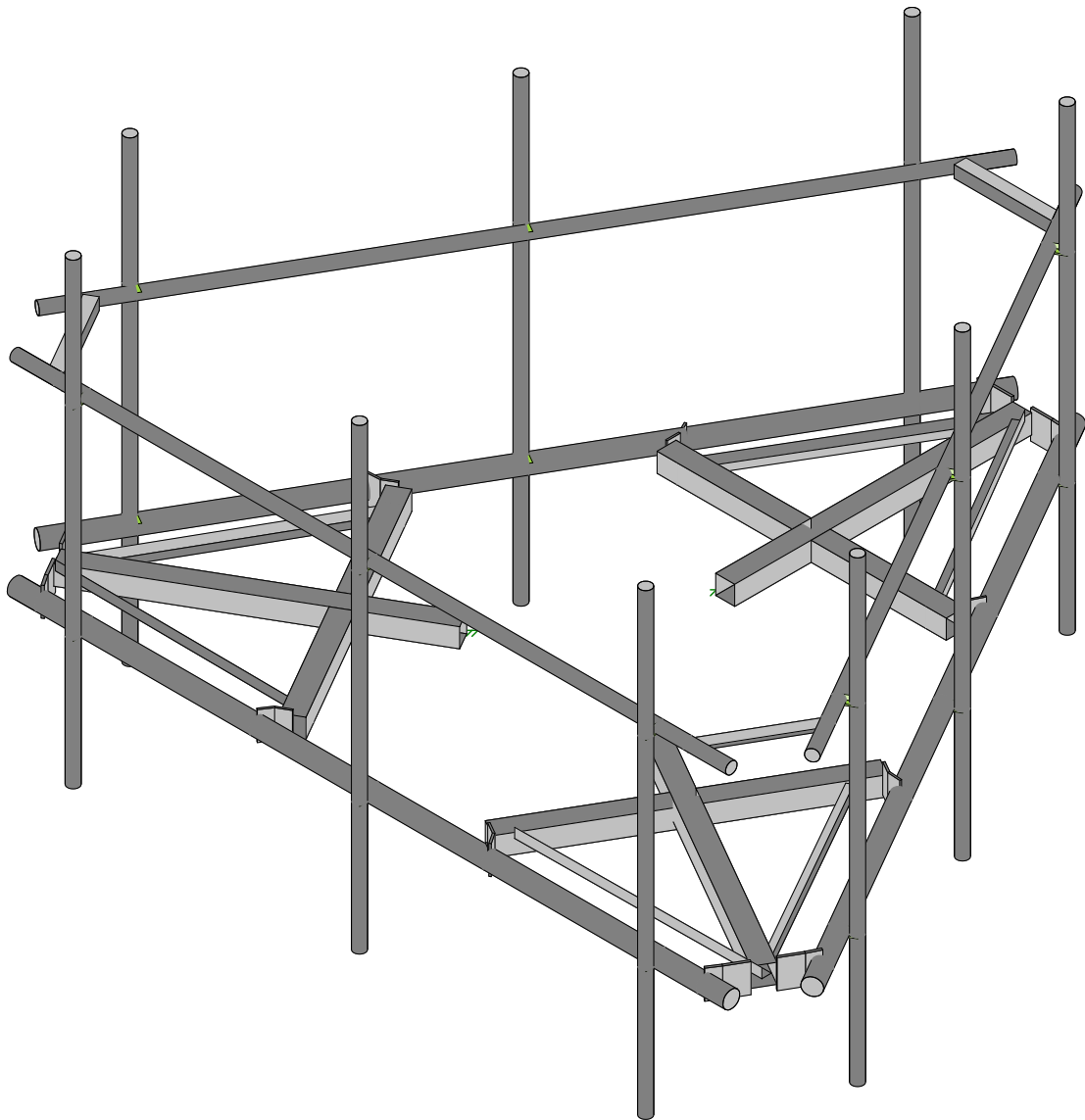
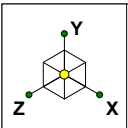
210147

806366

Wireframe

May 19, 2022 at 5:48 PM

RMQP-396\_loaded\_loaded.r3d



Envelope Only Solution

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ALWM		May 19, 2022 at 5:48 PM
210147		RMQP-396_loaded_loaded.r3d

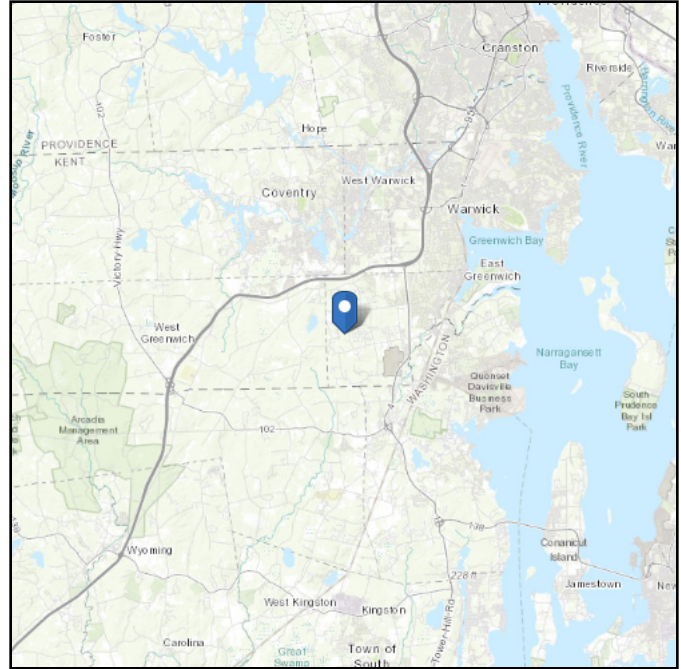
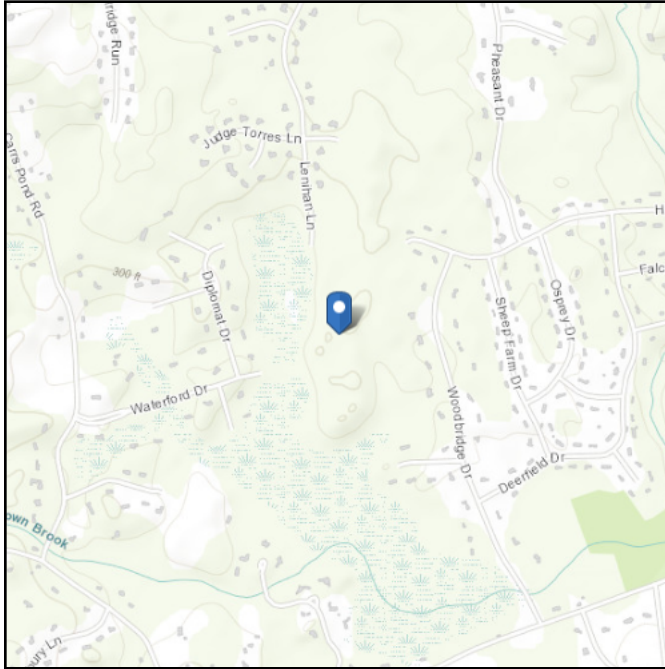
**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 294.56 ft (NAVD 88)  
**Latitude:** 41.629806  
**Longitude:** -71.5335





## Ice

---

### Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed 50 mph

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

**Date Accessed:** Thu May 19 2022

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

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

---

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

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# Trylon

1825 W. Walnut Hill Lane Suite 120  
Irving, TX 75038

## TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	210147
Carrier Site ID:	CT11251A
Carrier Site Name:	East Hampton-2_1

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	100.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	155.5	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	294.56	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor ( $K_{zt}$ ):	1.00	--
Mount Topo Factor ( $K_{zt}$ ):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	130	mph
Wind Escalation Factor ( $K_s$ ):	1.00	--
Velocity Coefficient ( $K_z$ ):	0.99	--
Directionality Factor ( $K_d$ ):	0.95	--
Gust Effect Factor (G <sub>h</sub> ):	1.00	--
Shielding Factor ( $K_a$ ):	0.90	--
Velocity Pressure ( $q_z$ ):	40.19	psf
Ground Elevation Factor ( $K_g$ ):	0.99	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness ( $t_i$ ):	1.50	in
Importance Factor ( $I_i$ ):	1.00	--
Ice Velocity Pressure ( $q_{zi}$ ):	6.72	psf
Mount Ice Thickness ( $t_{iz}$ ):	1.68	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	72.34	psf
Round Member Pressure:	43.40	psf
Ice Wind Pressure:	7.26	psf

SEISMIC PARAMETERS		
Importance Factor ( $I_e$ ):	1.00	--
Short Period Accel. ( $S_s$ ):	0.18	g
1 Second Accel. ( $S_1$ ):	0.06	g
Short Period Des. ( $S_{DS}$ ):	0.19	g
1 Second Des. ( $S_{D1}$ ):	0.10	g
Short Period Coeff. ( $F_a$ ):	1.60	--
1 Second Coeff. ( $F_v$ ):	2.40	--
Response Coefficient ( $C_s$ ):	0.09	--
Amplification Factor ( $A_S$ ):	1.20	--

## LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

\*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site



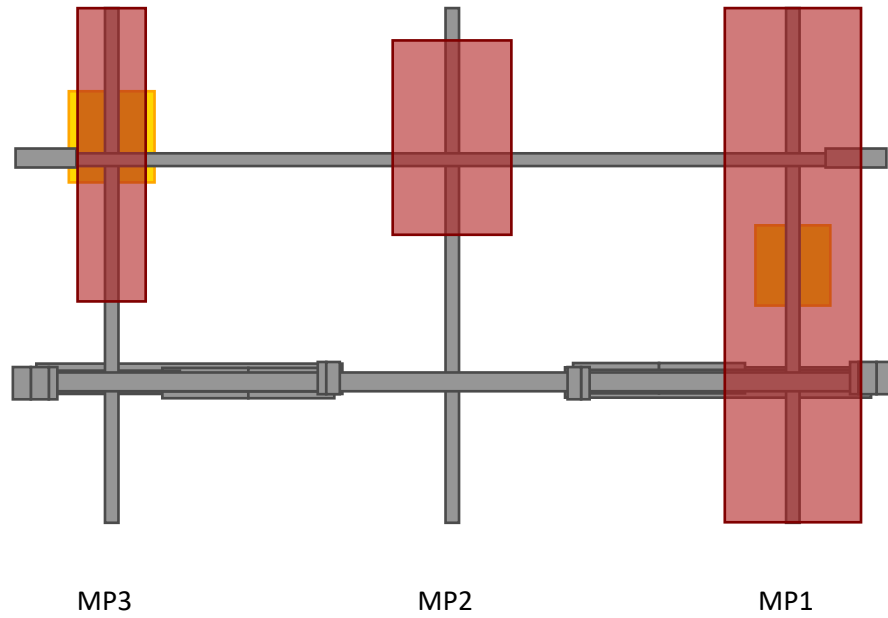








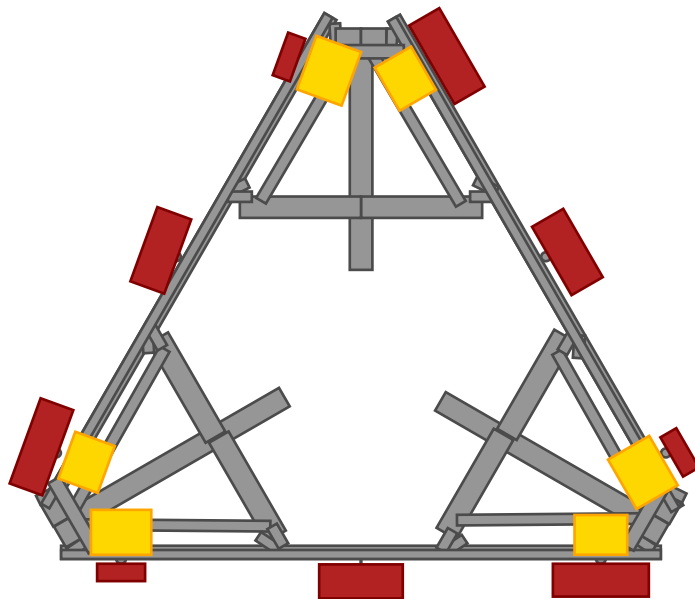
### ELEVATION VIEW



\*these drawings are intended to show approximate locations of equipment on the mount and should not be used to determine exact placement of equipment or additional hardware

\*\*Elevation View Shows Only One Sector

### PLAN VIEW





**APPENDIX C**  
**SOFTWARE ANALYSIS OUTPUT**

**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION CODE	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-18: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...Density[k/...	Yield[psi]	Ry	Fu[psi]	Rt
1	A992	29000	11154	.3	.65 .49	50000	1.1	65000	1.1
2	A36 Gr.36	29000	11154	.3	.65 .49	36000	1.5	58000	1.2
3	A572 Gr.50	29000	11154	.3	.65 .49	50000	1.1	65000	1.1
4	A500 Gr.B RND	29000	11154	.3	.65 .527	42000	1.4	58000	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65 .527	46000	1.4	58000	1.3
6	A53 Gr.B	29000	11154	.3	.65 .49	35000	1.6	60000	1.2
7	A1085	29000	11154	.3	.65 .49	50000	1.4	65000	1.3
8	Q235-GB	29000	11154	.3	.65 .49	35000	1.5	58000	1.2
9	Q345	29000	11154	.3	.65 .49	36000	1.1	58000	1.1

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design ...	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	Standoffs	HSS4X4X4	Beam	None	Q235-GB	Typical	3.37	7.8	7.8	12.8
2	Horizontals	PIPE_3.0	Beam	None	Q235-GB	Typical	2.07	2.85	2.85	5.69
3	Platform Angle	L2x2x3	Beam	None	Q345	Typical	.722	.271	.271	.009
4	Mount Pipe	PIPE_2.0	Column	None	Q235-GB	Typical	1.02	.627	.627	1.25
5	Corner Plate	6"x1/2" Plate	Beam	None	Q345	Typical	3	.063	9	.237
6	Handrail Horizontal	PIPE_2.0	Beam	None	Q235-GB	Typical	1.02	.627	.627	1.25
7	Angle Handrail Cor...	L2.5x2.5x4	Beam	None	Q345	Typical	1.19	.692	.692	.026
8	Platform Braces	HSS4X4X4	Beam	None	Q235-GB	Typical	3.37	7.8	7.8	12.8
9	Connection Plates	PL6x.375	Beam	None	Q345	Typical	2.25	.026	6.75	.101

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N163	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N157D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N159D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N157D	N2			Standoffs	Beam	None	Q235-GB	Typical
2	M2	N159D	N8			Standoffs	Beam	None	Q235-GB	Typical
3	M3	N163	N11			Standoffs	Beam	None	Q235-GB	Typical
4	M4	N150B	N150C			Standoffs	Beam	None	Q235-GB	Typical
5	M5	N150C	N158B			Standoffs	Beam	None	Q235-GB	Typical
6	M6	N157C	N154B			Standoffs	Beam	None	Q235-GB	Typical
7	M7	N154B	N134A			Standoffs	Beam	None	Q235-GB	Typical
8	M8	N139A	N158E			Standoffs	Beam	None	Q235-GB	Typical
9	M9	N158E	N145A			Standoffs	Beam	None	Q235-GB	Typical
10	M10	N44	N65			RIGID	None	None	RIGID	Typical
11	M11	N17	N64			RIGID	None	None	RIGID	Typical
12	M12	N45	N66			RIGID	None	None	RIGID	Typical
13	M13	N62	N76			RIGID	None	None	RIGID	Typical
14	M14	N63	N77			RIGID	None	None	RIGID	Typical
15	M15	N53	N85			RIGID	None	None	RIGID	Typical
16	M16	N54	N86			RIGID	None	None	RIGID	Typical
17	M17	N168	N171			RIGID	None	None	RIGID	Typical
18	M18	N181	N184			RIGID	None	None	RIGID	Typical
19	M19	N2	N151D		270	Platform Angle	Beam	None	Q345	Typical
20	M20	N2	N150D			Platform Angle	Beam	None	Q345	Typical
21	M21	N8	N155A		270	Platform Angle	Beam	None	Q345	Typical
22	M22	N8	N154C			Platform Angle	Beam	None	Q345	Typical
23	M23	N11	N159C		270	Platform Angle	Beam	None	Q345	Typical
24	M24	N11	N158F			Platform Angle	Beam	None	Q345	Typical
25	MP1	N101	N100			Mount Pipe	Column	None	Q235-GB	Typical
26	MP2	N103	N102			Mount Pipe	Column	None	Q235-GB	Typical
27	MP3	N105	N104			Mount Pipe	Column	None	Q235-GB	Typical
28	MP4	N71A	N74A			Mount Pipe	Column	None	Q235-GB	Typical
29	MP6	N70A	N73A			Mount Pipe	Column	None	Q235-GB	Typical
30	MP7	N80	N83			Mount Pipe	Column	None	Q235-GB	Typical
31	MP9	N79	N82			Mount Pipe	Column	None	Q235-GB	Typical
32	MP8	N169	N170			Mount Pipe	Column	None	Q235-GB	Typical
33	MP5	N182	N183			Mount Pipe	Column	None	Q235-GB	Typical
34	H2	N16	N15			Horizontals	Beam	None	Q235-GB	Typical
35	H1	N19	N18			Horizontals	Beam	None	Q235-GB	Typical
36	H3	N22	N21			Horizontals	Beam	None	Q235-GB	Typical
37	M37	N91	N95A			Corner Plate	Beam	None	Q345	Typical
38	M38	N150	N152A			Corner Plate	Beam	None	Q345	Typical
39	M39	N91	N2			Corner Plate	Beam	None	Q345	Typical
40	M40	N2	N150			Corner Plate	Beam	None	Q345	Typical
41	M41	N148A	N150A			Corner Plate	Beam	None	Q345	Typical
42	M42	N151B	N153A			Corner Plate	Beam	None	Q345	Typical
43	M43	N148A	N8			Corner Plate	Beam	None	Q345	Typical
44	M44	N8	N151B			Corner Plate	Beam	None	Q345	Typical
45	M45	N156A	N158A			Corner Plate	Beam	None	Q345	Typical
46	M46	N159A	N161B			Corner Plate	Beam	None	Q345	Typical
47	M47	N156A	N11			Corner Plate	Beam	None	Q345	Typical
48	M48	N11	N159A			Corner Plate	Beam	None	Q345	Typical
49	M49	N93	N96			Connection Pl...	Beam	None	Q345	Typical
50	M50	N93	N158B			Connection Pl...	Beam	None	Q345	Typical
51	M51	N154A	N156B			Connection Pl...	Beam	None	Q345	Typical
52	M52	N154A	N157C			Connection Pl...	Beam	None	Q345	Typical
53	M53	N131	N133			Connection Pl...	Beam	None	Q345	Typical
54	M54	N131	N134A			Connection Pl...	Beam	None	Q345	Typical
55	M55	N136A	N138A			Connection Pl...	Beam	None	Q345	Typical
56	M56	N136A	N139A			Connection Pl...	Beam	None	Q345	Typical



Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
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**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N142A	N144A			Connection Pl...	Beam	None	Q345	Typical
58	M58	N142A	N145A			Connection Pl...	Beam	None	Q345	Typical
59	M59	N147	N149B			Connection Pl...	Beam	None	Q345	Typical
60	M60	N147	N150B			Connection Pl...	Beam	None	Q345	Typical
61	M61	N97	N104A			RIGID	None	None	RIGID	Typical
62	M62	N92	N103A			RIGID	None	None	RIGID	Typical
63	M63	N98	N105A			RIGID	None	None	RIGID	Typical
64	M64	N101A	N106			RIGID	None	None	RIGID	Typical
65	M65	N102A	N107			RIGID	None	None	RIGID	Typical
66	M66	N99	N108			RIGID	None	None	RIGID	Typical
67	M67	N100A	N109			RIGID	None	None	RIGID	Typical
68	M68	N110	N111			RIGID	None	None	RIGID	Typical
69	M69	N112	N113			RIGID	None	None	RIGID	Typical
70	HR2	N91A	N90			Handrail Horiz...	Beam	None	Q235-GB	Typical
71	HR1	N94	N93A			Handrail Horiz...	Beam	None	Q235-GB	Typical
72	HR3	N96A	N95			Handrail Horiz...	Beam	None	Q235-GB	Typical
73	M73	N118	N120		90	Angle Handrail...	Beam	None	Q345	Typical
74	M74	N121	N114		90	Angle Handrail...	Beam	None	Q345	Typical
75	M75	N115	N117		90	Angle Handrail...	Beam	None	Q345	Typical

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	Standoffs	62.255	43.75	43.75	43.75	43.75	43.75				Lateral
2	M2	Standoffs	62.255	43.75	43.75	43.75	43.75	43.75				Lateral
3	M3	Standoffs	62.255	43.75	43.75	43.75	43.75	43.75				Lateral
4	M4	Standoffs	30.301			Lbyy						Lateral
5	M5	Standoffs	30.301			Lbyy						Lateral
6	M6	Standoffs	30.301			Lbyy						Lateral
7	M7	Standoffs	30.301			Lbyy						Lateral
8	M8	Standoffs	30.3			Lbyy						Lateral
9	M9	Standoffs	30.301			Lbyy						Lateral
10	M19	Platform An...	51.353			Lbyy						Lateral
11	M20	Platform An...	51.353			Lbyy						Lateral
12	M21	Platform An...	51.353			Lbyy						Lateral
13	M22	Platform An...	51.353			Lbyy						Lateral
14	M23	Platform An...	51.353			Lbyy						Lateral
15	M24	Platform An...	51.353			Lbyy						Lateral
16	MP1	Mount Pipe	96			Lbyy						Lateral
17	MP2	Mount Pipe	96			Lbyy						Lateral
18	MP3	Mount Pipe	96			Lbyy						Lateral
19	MP4	Mount Pipe	96			Lbyy						Lateral
20	MP6	Mount Pipe	96			Lbyy						Lateral
21	MP7	Mount Pipe	96			Lbyy						Lateral
22	MP9	Mount Pipe	96			Lbyy						Lateral
23	MP8	Mount Pipe	96			Lbyy						Lateral
24	MP5	Mount Pipe	96			Lbyy						Lateral
25	H2	Horizontals	150	50.52	50.52	50.52	50.52	50.52				Lateral
26	H1	Horizontals	150	50.52	50.52	50.52	50.52	50.52				Lateral
27	H3	Horizontals	150	50.52	50.52	50.52	50.52	50.52				Lateral
28	M37	Corner Plate	2.704			Lbyy						Lateral
29	M38	Corner Plate	2.704			Lbyy						Lateral
30	M39	Corner Plate	6.338			Lbyy						Lateral
31	M40	Corner Plate	6.338			Lbyy						Lateral
32	M41	Corner Plate	2.704			Lbyy						Lateral
33	M42	Corner Plate	2.704			Lbyy						Lateral



Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
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**Hot Rolled Steel Design Parameters (Continued)**

Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torg...	Kyy	Kzz	Cb	Function
34	M43	Corner Plate	6.338			Lbyy					Lateral
35	M44	Corner Plate	6.338			Lbyy					Lateral
36	M45	Corner Plate	2.704			Lbyy					Lateral
37	M46	Corner Plate	2.704			Lbyy					Lateral
38	M47	Corner Plate	6.338			Lbyy					Lateral
39	M48	Corner Plate	6.338			Lbyy					Lateral
40	M49	Connection ...	2.704								Lateral
41	M50	Connection ...	2.75			Lbyy					Lateral
42	M51	Connection ...	2.704								Lateral
43	M52	Connection ...	2.75			Lbyy					Lateral
44	M53	Connection ...	2.704								Lateral
45	M54	Connection ...	2.75			Lbyy					Lateral
46	M55	Connection ...	2.704								Lateral
47	M56	Connection ...	2.75			Lbyy					Lateral
48	M57	Connection ...	2.704								Lateral
49	M58	Connection ...	2.75			Lbyy					Lateral
50	M59	Connection ...	2.704								Lateral
51	M60	Connection ...	2.75			Lbyy					Lateral
52	HR2	Handrail Ho...	150	50.52	50.52	50.52	50.52	50.52			Lateral
53	HR1	Handrail Ho...	150	50.52	50.52	50.52	50.52	50.52			Lateral
54	HR3	Handrail Ho...	150	50.52	50.52	50.52	50.52	50.52			Lateral
55	M73	Angle Hand...	21.425			Lbyy					Lateral
56	M74	Angle Hand...	21.425			Lbyy					Lateral
57	M75	Angle Hand...	21.425			Lbyy					Lateral

**Basic Load Cases**

BLC	Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1			24		3	
2	Structure Wind Z	WLZ						75		
3	Structure Wind X	WLX						75		
4	Wind Load 0 AZI	WLZ					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLX					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	75	3	
13	Ice Structure Wind Z	OL2						75		
14	Ice Structure Wind X	OL3						75		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load Z	ELZ			-.113		24			
24	Seismic Load X	ELX	-.113				24			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			





Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
 Checked By: \_\_\_\_\_

**Basic Load Cases (Continued)**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (Lm)	None					1			
35	Maintenance Load 2 (Lm)	None					1			
36	Maintenance Load 3 (Lm)	None					1			
37	Maintenance Load 4 (Lm)	None					1			
38	Maintenance Load 5 (Lm)	None					1			
39	Maintenance Load 6 (Lm)	None					1			
40	Maintenance Load 7 (Lm)	None					1			
41	Maintenance Load 8 (Lm)	None					1			
42	Maintenance Load 9 (Lm)	None					1			
43	BLC 1 Transient Area Loads	None						21		
44	BLC 12 Transient Area Loads	None						21		

**Load Combinations**

	Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	
1	1.4DL	Yes	Y	DL	1.4																
2	1.2DL + 1WL 0 AZI	Yes	Y	DL	1.2	2	1	3	4	1											
3	1.2DL + 1WL 30 AZI	Yes	Y	DL	1.2	2	.866	3	.5	5	1										
4	1.2DL + 1WL 45 AZI	Yes	Y	DL	1.2	2	.707	3	.707	6	1										
5	1.2DL + 1WL 60 AZI	Yes	Y	DL	1.2	2	.5	3	.866	7	1										
6	1.2DL + 1WL 90 AZI	Yes	Y	DL	1.2	2		3	1	8	1										
7	1.2DL + 1WL 120 AZI	Yes	Y	DL	1.2	2	-.5	3	.866	9	1										
8	1.2DL + 1WL 135 AZI	Yes	Y	DL	1.2	2	-.707	3	.707	10	1										
9	1.2DL + 1WL 150 AZI	Yes	Y	DL	1.2	2	-.866	3	.5	11	1										
10	1.2DL + 1WL 180 AZI	Yes	Y	DL	1.2	2	-1	3		4	-1										
11	1.2DL + 1WL 210 AZI	Yes	Y	DL	1.2	2	-.866	3	-.5	5	-1										
12	1.2DL + 1WL 225 AZI	Yes	Y	DL	1.2	2	-.707	3	-.707	6	-1										
13	1.2DL + 1WL 240 AZI	Yes	Y	DL	1.2	2	-.5	3	-.866	7	-1										
14	1.2DL + 1WL 270 AZI	Yes	Y	DL	1.2	2		3	-1	8	-1										
15	1.2DL + 1WL 300 AZI	Yes	Y	DL	1.2	2	.5	3	-.866	9	-1										
16	1.2DL + 1WL 315 AZI	Yes	Y	DL	1.2	2	.707	3	-.707	10	-1										
17	1.2DL + 1WL 330 AZI	Yes	Y	DL	1.2	2	.866	3	-.5	11	-1										
18	0.9DL + 1WL 0 AZI	Yes	Y	DL	.9	2	1	3	4	1											
19	0.9DL + 1WL 30 AZI	Yes	Y	DL	.9	2	.866	3	.5	5	1										
20	0.9DL + 1WL 45 AZI	Yes	Y	DL	.9	2	.707	3	.707	6	1										
21	0.9DL + 1WL 60 AZI	Yes	Y	DL	.9	2	.5	3	.866	7	1										
22	0.9DL + 1WL 90 AZI	Yes	Y	DL	.9	2		3	1	8	1										
23	0.9DL + 1WL 120 AZI	Yes	Y	DL	.9	2	-.5	3	.866	9	1										
24	0.9DL + 1WL 135 AZI	Yes	Y	DL	.9	2	-.707	3	.707	10	1										
25	0.9DL + 1WL 150 AZI	Yes	Y	DL	.9	2	-.866	3	.5	11	1										
26	0.9DL + 1WL 180 AZI	Yes	Y	DL	.9	2	-1	3		4	-1										
27	0.9DL + 1WL 210 AZI	Yes	Y	DL	.9	2	-.866	3	-.5	5	-1										
28	0.9DL + 1WL 225 AZI	Yes	Y	DL	.9	2	-.707	3	-.707	6	-1										
29	0.9DL + 1WL 240 AZI	Yes	Y	DL	.9	2	-.5	3	-.866	7	-1										
30	0.9DL + 1WL 270 AZI	Yes	Y	DL	.9	2		3	-1	8	-1										
31	0.9DL + 1WL 300 AZI	Yes	Y	DL	.9	2	.5	3	-.866	9	-1										
32	0.9DL + 1WL 315 AZI	Yes	Y	DL	.9	2	.707	3	-.707	10	-1										
33	0.9DL + 1WL 330 AZI	Yes	Y	DL	.9	2	.866	3	-.5	11	-1										
34	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	1	14	15	1									
35	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.866	14	.5	16	1								
36	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.707	14	.707	17	1								



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 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
 Checked By: \_\_\_\_\_

**Load Combinations (Continued)**

Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
37	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.5	14	.866	18	1	
38	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13		14	1	19	1	
39	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.5	14	.866	20	1	
40	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.707	14	.707	21	1	
41	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.866	14	.5	22	1	
42	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-1	14		15	-1	
43	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.866	14	-.5	16	-1	
44	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.707	14	-.707	17	-1	
45	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	-.5	14	-.866	18	-1	
46	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13		14	-1	19	-1	
47	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.5	14	-.866	20	-1	
48	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.707	14	-.707	21	-1	
49	1.2DL + 1DLi + 1WLi ...	Yes	Y	DL	1.2	OL1	1	13	.866	14	-.5	22	-1	
50	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	1	24						
51	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.866	24	.5					
52	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.707	24	.707					
53	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.5	24	.866					
54	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23		24	1					
55	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.5	24	.866					
56	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.707	24	.707					
57	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.866	24	.5					
58	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-1	24						
59	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.866	24	-.5					
60	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.707	24	-.707					
61	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	-.5	24	-.866					
62	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23		24	-1					
63	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.5	24	-.866					
64	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.707	24	-.707					
65	(1.2+0.2Sds)DL + 1E ...	Yes	Y	DL	1.2...	23	.866	24	-.5					
66	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	1	24						
67	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.866	24	.5					
68	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.707	24	.707					
69	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.5	24	.866					
70	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23		24	1					
71	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.5	24	.866					
72	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.707	24	.707					
73	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.866	24	.5					
74	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-1	24						
75	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.866	24	-.5					
76	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.707	24	-.707					
77	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	-.5	24	-.866					
78	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23		24	-1					
79	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.5	24	-.866					
80	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.707	24	-.707					
81	(0.9-0.2Sds)DL + 1E ...	Yes	Y	DL	.862	23	.866	24	-.5					
82	1.2DL + 1Lv1	Yes	Y	DL	1.2	25	1.5							
83	1.2DL + 1Lv2	Yes	Y	DL	1.2	26	1.5							
84	1.2DL + 1Lv3	Yes	Y	DL	1.2	27	1.5							
85	1.2DL + 1Lv4	Yes	Y	DL	1.2	28	1.5							
86	1.2DL + 1Lv5	Yes	Y	DL	1.2	29	1.5							
87	1.2DL + 1Lv6	Yes	Y	DL	1.2	30	1.5							
88	1.2DL + 1Lv7	Yes	Y	DL	1.2	31	1.5							
89	1.2DL + 1Lv8	Yes	Y	DL	1.2	32	1.5							
90	1.2DL + 1Lv9	Yes	Y	DL	1.2	33	1.5							
91	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	34	1.5	2	.053	3		4	.053	
92	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	34	1.5	2	.046	3	.027	5	.053	
93	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	34	1.5	2	.038	3	.038	6	.053	



Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
 Checked By: \_\_\_\_\_

**Load Combinations (Continued)**

	Description	So..	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
94	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.027	3	.046	7	.053	
95	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2		3	.053	8	.053	
96	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	.046	9	.053	
97	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	.038	10	.053	
98	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	.027	11	.053	
99	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.053	3		4	-.053	
100	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	-.027	5	-.053	
101	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	-.038	6	-.053	
102	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	-.046	7	-.053	
103	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2		3	-.053	8	-.053	
104	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.027	3	-.046	9	-.053	
105	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.038	3	-.038	10	-.053	
106	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	34	1.5	2	.046	3	-.027	11	-.053	
107	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.053	3		4	.053	
108	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.046	3	.027	5	.053	
109	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.038	3	.038	6	.053	
110	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.027	3	.046	7	.053	
111	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2		3	.053	8	.053	
112	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	.046	9	.053	
113	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	.038	10	.053	
114	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	.027	11	.053	
115	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.053	3		4	-.053	
116	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	-.027	5	-.053	
117	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	-.038	6	-.053	
118	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	-.046	7	-.053	
119	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2		3	-.053	8	-.053	
120	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.027	3	-.046	9	-.053	
121	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.038	3	-.038	10	-.053	
122	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	35	1.5	2	.046	3	-.027	11	-.053	
123	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.053	3		4	.053	
124	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.046	3	.027	5	.053	
125	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.038	3	.038	6	.053	
126	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.027	3	.046	7	.053	
127	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2		3	.053	8	.053	
128	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	.046	9	.053	
129	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	.038	10	.053	
130	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	.027	11	.053	
131	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.053	3		4	-.053	
132	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	-.027	5	-.053	
133	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	-.038	6	-.053	
134	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	-.046	7	-.053	
135	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2		3	-.053	8	-.053	
136	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.027	3	-.046	9	-.053	
137	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.038	3	-.038	10	-.053	
138	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	36	1.5	2	.046	3	-.027	11	-.053	
139	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.053	3		4	.053	
140	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.046	3	.027	5	.053	
141	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.038	3	.038	6	.053	
142	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.027	3	.046	7	.053	
143	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2		3	.053	8	.053	
144	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	.046	9	.053	
145	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	.038	10	.053	
146	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	.027	11	.053	
147	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.053	3		4	-.053	
148	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	-.027	5	-.053	
149	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	-.038	6	-.053	
150	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	-.046	7	-.053	



Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
 Checked By: \_\_\_\_\_

**Load Combinations (Continued)**

	Description	So..	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
151	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2		3	-.053	8	-.053	
152	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.027	3	-.046	9	-.053	
153	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.038	3	-.038	10	-.053	
154	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	37	1.5	2	.046	3	-.027	11	-.053	
155	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.053	3		4	.053	
156	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.046	3	.027	5	.053	
157	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.038	3	.038	6	.053	
158	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.027	3	.046	7	.053	
159	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2		3	.053	8	.053	
160	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	.046	9	.053	
161	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	.038	10	.053	
162	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	.027	11	.053	
163	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.053	3		4	-.053	
164	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	-.027	5	-.053	
165	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	-.038	6	-.053	
166	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	-.046	7	-.053	
167	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2		3	-.053	8	-.053	
168	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.027	3	-.046	9	-.053	
169	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.038	3	-.038	10	-.053	
170	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	38	1.5	2	.046	3	-.027	11	-.053	
171	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.053	3		4	.053	
172	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.046	3	.027	5	.053	
173	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.038	3	.038	6	.053	
174	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.027	3	.046	7	.053	
175	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2		3	.053	8	.053	
176	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	.046	9	.053	
177	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	.038	10	.053	
178	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	.027	11	.053	
179	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.053	3		4	-.053	
180	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	-.027	5	-.053	
181	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	-.038	6	-.053	
182	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	-.046	7	-.053	
183	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2		3	-.053	8	-.053	
184	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.027	3	-.046	9	-.053	
185	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.038	3	-.038	10	-.053	
186	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	39	1.5	2	.046	3	-.027	11	-.053	
187	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.053	3		4	.053	
188	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.046	3	.027	5	.053	
189	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.038	3	.038	6	.053	
190	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.027	3	.046	7	.053	
191	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2		3	.053	8	.053	
192	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	.046	9	.053	
193	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	.038	10	.053	
194	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	.027	11	.053	
195	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.053	3		4	-.053	
196	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	-.027	5	-.053	
197	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	-.038	6	-.053	
198	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	-.046	7	-.053	
199	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2		3	-.053	8	-.053	
200	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.027	3	-.046	9	-.053	
201	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.038	3	-.038	10	-.053	
202	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	40	1.5	2	.046	3	-.027	11	-.053	
203	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.053	3		4	.053	
204	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.046	3	.027	5	.053	
205	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.038	3	.038	6	.053	
206	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2	.027	3	.046	7	.053	
207	1.2DL + 1.5Lm + 1W...	Yes	Y		DL	1.2	41	1.5	2		3	.053	8	.053	



**Load Combinations (Continued)**

Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
208	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.027	3	.046	9	.053	
209	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.038	3	.038	10	.053	
210	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.046	3	.027	11	.053	
211	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.053	3		4	-.053	
212	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.046	3	-.027	5	-.053	
213	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.038	3	-.038	6	-.053	
214	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	-.027	3	-.046	7	-.053	
215	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2		3	-.053	8	-.053	
216	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	.027	3	-.046	9	-.053	
217	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	.038	3	-.038	10	-.053	
218	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	41	1.5	2	.046	3	-.027	11	-.053	
219	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.053	3		4	.053	
220	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.046	3	.027	5	.053	
221	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.038	3	.038	6	.053	
222	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.027	3	.046	7	.053	
223	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2		3	.053	8	.053	
224	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.027	3	.046	9	.053	
225	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.038	3	.038	10	.053	
226	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.046	3	.027	11	.053	
227	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.053	3		4	-.053	
228	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.046	3	-.027	5	-.053	
229	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.038	3	-.038	6	-.053	
230	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	-.027	3	-.046	7	-.053	
231	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2		3	-.053	8	-.053	
232	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.027	3	-.046	9	-.053	
233	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.038	3	-.038	10	-.053	
234	1.2DL + 1.5Lm + 1W...	Yes	Y	DL	1.2	42	1.5	2	.046	3	-.027	11	-.053	

**Envelope Joint Reactions**

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC	
1	N163	max	1071.542	22	2980.586	34	1887.615	18	6722.349	34	1362.449	30	709.462	215
2		min	-1071.982	30	-203.216	26	-1953.466	10	-1032.781	26	-1360.656	22	-653.362	223
3	N157D	max	1716.573	23	2986.487	39	1143.973	16	678.627	33	1021.663	19	1073.762	31
4		min	-1773.693	15	-257.827	31	-1110.845	24	-3279.03	41	-1020.176	27	-5911.438	39
5	N159D	max	1721.785	5	2979.68	45	1348.116	2	697.122	19	1098.873	25	5752.589	45
6		min	-1664.726	29	-214.636	21	-1315.672	26	-3513.302	43	-1097.688	33	-912.507	21
7	Totals:	max	4306.463	6	8226.114	47	4252.816	2						
8		min	-4306.462	30	2238.279	71	-4252.814	26						

**Envelope AISC 15th(360-16): LRFD Steel Code Checks**

Member	Shape	Code Check	Lo...	LC	Sh...	Lo.....	LC	phi*...	phi*...	phi*...	phi*...	Eqn	
1	MP5 PIPE 2.0	.561	69	14	.058	69	15	1491..	32130	1871..	1871..	H1-..	
2	M1 HSS4X4X4	.555	0	39	.126	0	y	37	1017..	1061..	1231..	1231..1	H1-..
3	M2 HSS4X4X4	.552	0	45	.126	0	y	42	1017..	1061..	1231..	1231..1	H1-..
4	M3 HSS4X4X4	.550	0	34	.126	0	y	47	1017..	1061..	1231..	1231..1	H1-..
5	MP8 PIPE 2.0	.529	69	9	.057	69	14	1491..	32130	1871..	1871..	H1-..	
6	MP2 PIPE 2.0	.528	69	2	.053	69	9	1491..	32130	1871..	1871..	H1-..	
7	MP6 PIPE 2.0	.498	69	7	.176	69	6	1491..	32130	1871..	1871..	H1-..	
8	MP9 PIPE 2.0	.477	69	2	.173	69	16	1491..	32130	1871..	1871..	H1-..	
9	MP3 PIPE 2.0	.466	69	13	.167	27	10	1491..	32130	1871..	1871..	H1-..	
10	MP1 PIPE 2.0	.440	69	8	.198	27	10	1491..	32130	1871..	1871..	H1-..	
11	MP7 PIPE 2.0	.435	69	13	.195	27	15	1491..	32130	1871..	1871..	H1-..	
12	MP4 PIPE 2.0	.421	69	2	.193	27	5	1491..	32130	1871..	1871..	H1-..	
13	HR2 PIPE 2.0	.360	13..	15	.209	14..	12	2597..	32130	1871..	1871..	1	H1-..



Company : Trylon  
 Designer : ALWM  
 Job Number : 210147  
 Model Name : 806366

May 19, 2022  
 5:48 PM  
 Checked By: \_\_\_\_\_

**Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)**

Member	Shape	Code Check	Lo...	LC	Sh...	Lo.....	LC	phi*...	phi*...	phi*...	phi*...	Egn	
14	HR3	PIPE 2.0	.329	13..	10	.215	14..	6	2597..	32130	1871..	1871..	1 H1..
15	HR1	PIPE 2.0	.318	13..	5	.212	14..	17	2597..	32130	1871..	1871..	1 H1..
16	H1	PIPE 3.0	.212	51..	39	.111	98..	2	5930..	65205	5748..	5748..	1 H1..
17	H2	PIPE 3.0	.212	51..	49	.108	98..	12	5930..	65205	5748..	5748..	1 H1..
18	H3	PIPE 3.0	.212	51..	44	.111	98..	7	5930..	65205	5748..	5748..	1 H1..
19	M4	HSS4X4X4	.211	28..	38	.069	28..y	37	1042..	1061..	1231..	1231..	H1..
20	M8	HSS4X4X4	.210	28.3	49	.070	4....z	15	1042..	1061..	1231..	1231..	H1..
21	M6	HSS4X4X4	.210	28..	44	.069	4....z	10	1042..	1061..	1231..	1231..	H1..
22	M7	HSS4X4X4	.208	0	46	.067	0 y	15	1042..	1061..	1231..	1231..	H1..
23	M5	HSS4X4X4	.207	0	40	.067	0 y	10	1042..	1061..	1231..	1231..	H1..
24	M9	HSS4X4X4	.206	0	35	.066	0 y	5	1042..	1061..	1231..	1231..	H1..
25	M73	L2.5x2.5x4	.190	0	6	.081	21..y	15	3474..	38556	1113..	2537..	H2-1
26	M75	L2.5x2.5x4	.187	0	17	.080	21..y	10	3474..	38556	1113..	2537..	H2-1
27	M59	PL6x.375	.186	2....	14	.150	0 y	10	7054..	72900	569...	9000...	H1..
28	M74	L2.5x2.5x4	.182	0	11	.081	21..y	5	3474..	38556	1113..	2537..	H2-1
29	M53	PL6x.375	.178	2....	6	.173	0 y	9	7054..	72900	569...	9112...	H1..
30	M55	PL6x.375	.163	2....	9	.155	0 y	6	7054..	72900	569...	9008...	H1..
31	M49	PL6x.375	.154	2....	17	.173	0 y	4	7054..	72900	569...	9112...	H1..
32	M51	PL6x.375	.153	2....	3	.156	0 y	16	7054..	72900	569...	9043...	H1..
33	M22	L2x2x3	.153	51..	11	.010	51..y	48	9346..	2339..	557...	1064...	H2-1
34	M20	L2x2x3	.152	51..	6	.010	51..y	43	9346..	2339..	557...	1061...	H2-1
35	M24	L2x2x3	.150	51..	17	.010	51..y	38	9346..	2339..	557...	1049...	H2-1
36	M57	PL6x.375	.147	2....	11	.176	0 y	14	7054..	72900	569...	9112...	H1..
37	M40	6"x1/2" Plate	.147	0	7	.087	0 y	42	9268..	97200	1012..	12150...	H1..
38	M43	6"x1/2" Plate	.147	4....	14	.082	0 y	7	9268..	97200	1012..	12150...	H1..
39	M19	L2x2x3	.147	51..	8	.011	51..z	35	9346..	2339..	557...	1048...	H2-1
40	M39	6"x1/2" Plate	.143	4....	8	.081	0 y	2	9268..	97200	1012..	12150...	H1..
41	M48	6"x1/2" Plate	.142	0	2	.087	0 y	37	9268..	97200	1012..	12150...	H1..
42	M21	L2x2x3	.139	51..	14	.011	51..z	41	9346..	2339..	557...	1061...	H2-1
43	M47	6"x1/2" Plate	.139	4....	3	.080	4....y	46	9268..	97200	1012..	12150...	H1..
44	M44	6"x1/2" Plate	.138	0	12	.087	0 y	48	9268..	97200	1012..	12150...	H1..
45	M23	L2x2x3	.136	51..	35	.011	51..z	46	9346..	2339..	557...	1184...	H2-1
46	M56	PL6x.375	.135	2.75	14	.357	2.75y	6	7046..	72900	569...	9112...	H1..
47	M58	PL6x.375	.133	2.75	6	.393	2.75y	14	7046..	72900	569...	9112...	H1..
48	M37	6"x1/2" Plate	.125	2....	8	.115	2....y	2	9542..	97200	1012..	12150...	H1..
49	M41	6"x1/2" Plate	.125	2....	14	.118	2....y	7	9542..	97200	1012..	12150...	H1..
50	M38	6"x1/2" Plate	.122	2....	7	.078	0 y	10	9542..	97200	1012..	12150...	H1..
51	M45	6"x1/2" Plate	.119	2....	3	.116	2....y	13	9542..	97200	1012..	12150...	H1..
52	M46	6"x1/2" Plate	.119	2....	2	.079	0 y	5	9542..	97200	1012..	12150...	H1..
53	M42	6"x1/2" Plate	.115	2....	13	.083	0 y	16	9542..	97200	1012..	12150...	H1..
54	M52	PL6x.375	.114	2.75	9	.354	2.75y	17	7046..	72900	569...	9112...	H1..
55	M54	PL6x.375	.108	2.75	14	.400	2.75y	8	7046..	72900	569...	9112...	H1..
56	M50	PL6x.375	.104	2.75	11	.385	2.75y	2	7046..	72900	569...	9112...	H1..
57	M60	PL6x.375	.103	2.75	6	.341	2.75y	12	7046..	72900	569...	9112...	H1..

**APPENDIX D**  
**ADDITIONAL CALCULATIONS**

**BOLT TOOL 1.5.2**

Project Data	
Job Code:	210147
Carrier Site ID:	CT11251A
Carrier Site Name:	East Hampton-2_1

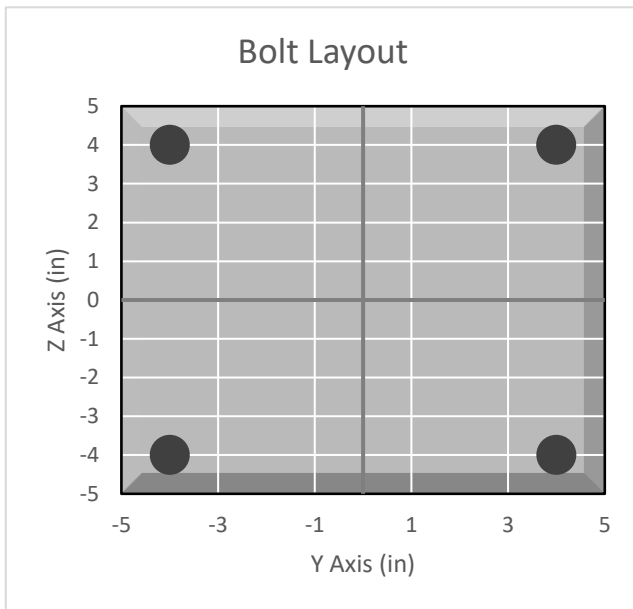
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description
Mount to Collar Connection

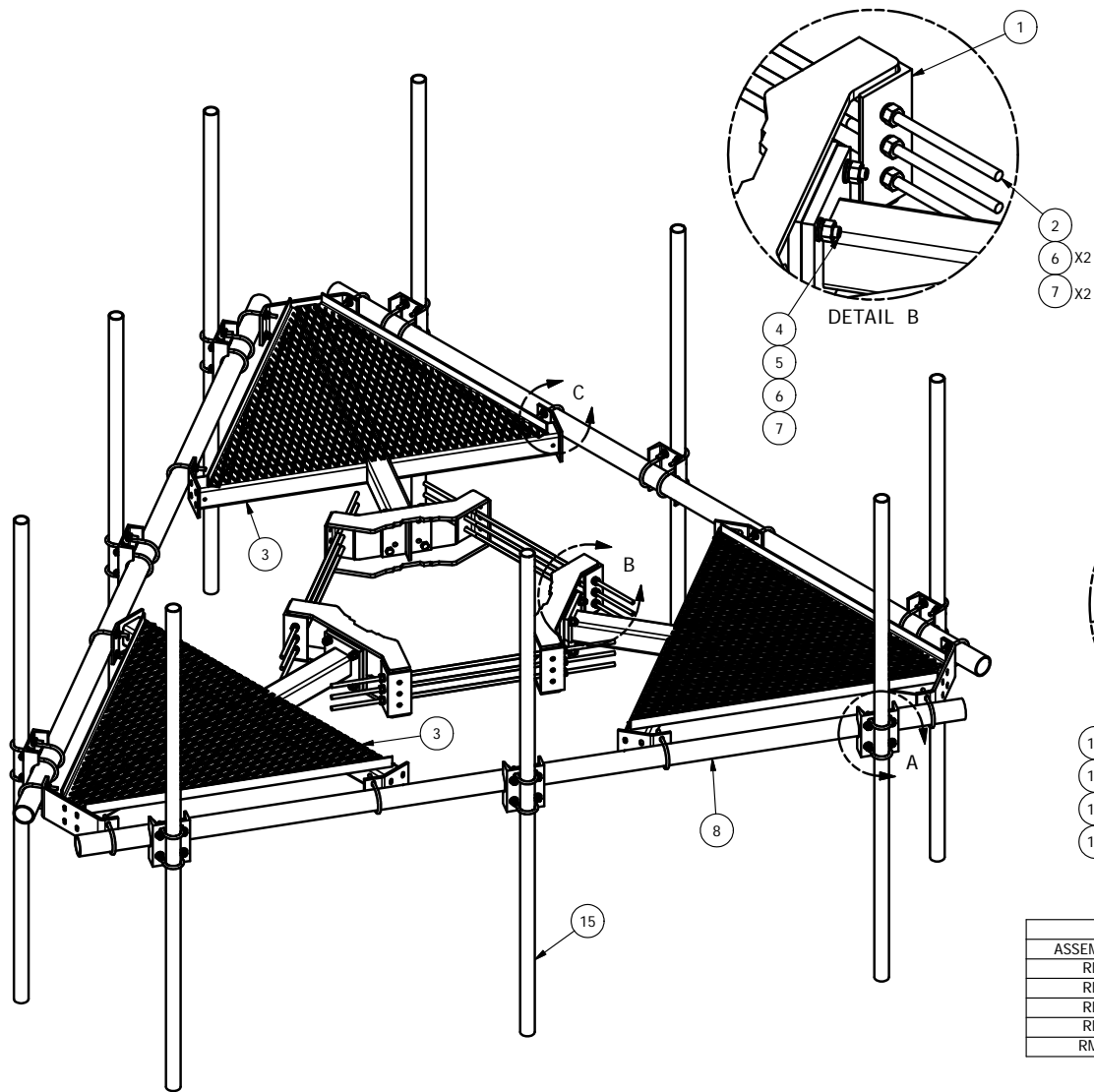
Bolt Check*		
Tensile Capacity ( $\phi T_n$ ):	20340.1	lbs
Shear Capacity ( $\phi V_n$ ):	13805.8	lbs
Tension Force ( $T_u$ ):	5206.7	lbs
Shear Force ( $V_u$ ):	805.1	lbs
Tension Usage:	24.4%	--
Shear Usage:	5.6%	--
Interaction:	24.4%	Pass
Controlling Member:	M1	--
Controlling LC:	39	--

\*Rating per TIA-222-H Section 15.5

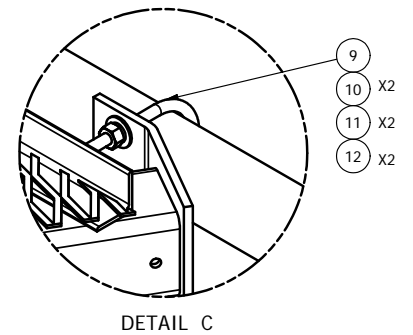
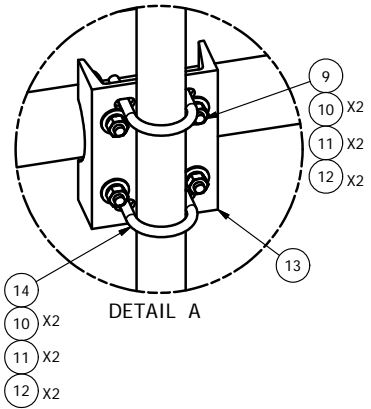




**APPENDIX E**  
**SUPPLEMENTAL DRAWINGS**



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	30	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	7.71
10	96	G12FW	1/2" HDG USS FLATWASHER		0.03	3.27
11	96	G12LW	1/2" HDG LOCKWASHER		0.01	1.33
12	96	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	6.88
13	9	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	77.50
14	18	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	4.63
15	9	B	ANTENNA MOUNTING PIPE	C	D	E



2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-363	P263	63"	20.18	181.62	1494.37
RMQP-372	P272	72"	23.07	207.63	1520.38
RMQP-384	P284	84"	26.91	242.19	1554.94
RMQP-396	P296	96"	30.76	276.84	1589.59
RMQP-3126	P2126	126"	40.75	366.75	1679.50

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES	CEK		7/7/2015
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				

**TOLERANCE NOTE**  
**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: SAWED, SHEARED AND GAS CUT EDGES (± 0.030")**  
**DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES**  
**LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES**  
**BENDS ARE ± 1/2 DEGREE - ALL OTHER MACHINING (± 0.030")**  
**ALL OTHER ASSEMBLY (± 0.060")**

**PROPRIETARY NOTE**  
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

**DESCRIPTION**  
 LOW PROFILE CO-LOCATION PLATFORM  
 FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH  
 FOR 12" - 38" DIAMETER POLES

**DRAWN BY**  
 CEK 1/19/2012

**CPD NO.**  
 semb

**DRAWING USAGE**  
 CUSTOMER

**ENG. APPROVAL**  
 BMC

**CHECKED BY**  
 1/23/2012

**A valmont COMPANY**

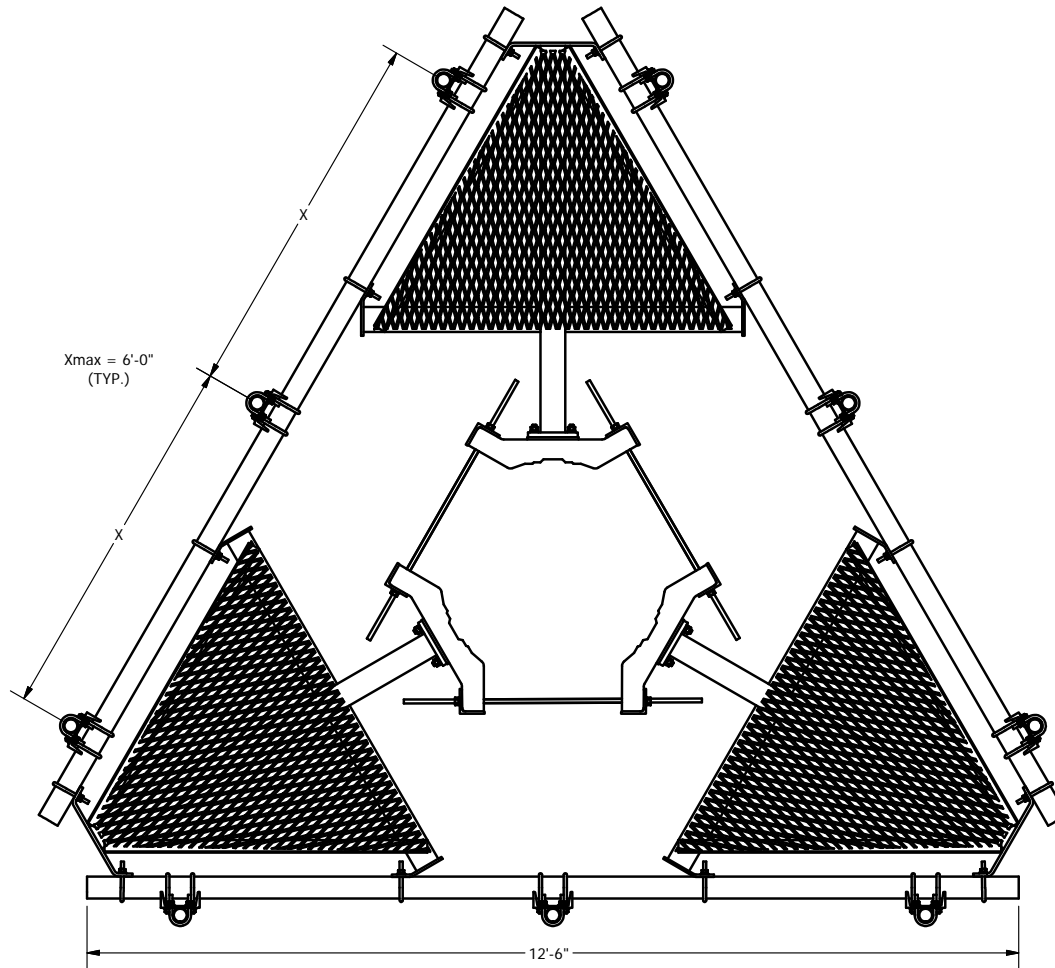
Locations:  
 New York, NY  
 Atlanta, GA  
 Los Angeles, CA  
 Plymouth, IN  
 Salem, OR  
 Dallas, TX

Engineering Support Team:  
 1-888-753-7446

**PART NO.** SEE ASSEMBLY NO. "A"

**DWG. NO.** RMQP-3XX

PAGE 2  
1 OF 2



**TOLERANCE NOTE**

**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:  
 SAWED, SHEARED AND GAS CUT EDGES ( $\pm 0.030$ " )  
 DRILLED AND GAS CUT HOLES ( $\pm 0.030$ " ) - NO CONING OF HOLES  
 LASER CUT EDGES AND HOLES ( $\pm 0.010$ " ) - NO CONING OF HOLES  
 BENDS ARE  $\pm 1/2$  DEGREE - ALL OTHER MACHINING ( $\pm 0.030$ " )  
 ALL OTHER ASSEMBLY ( $\pm 0.060$ " )**

**PROPRIETARY NOTE**

**THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.**

**DESCRIPTION**

**LOW PROFILE CO-LOCATION PLATFORM  
 FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH  
 FOR 12" - 38" DIAMETER POLES**



**A valmont COMPANY**

Engineering  
 Support Team:  
 1-888-753-7446

Locations:  
 New York, NY  
 Atlanta, GA  
 Los Angeles, CA  
 Plymouth, IN  
 Salem, OR  
 Dallas, TX

**DRAWN BY**

**CEK 1/19/2012**

**CPD NO.**

**semb**

**DRAWING USAGE**

**CUSTOMER**

**ENG. APPROVAL**

**BMC**

**1/23/2012**

**PART NO.**

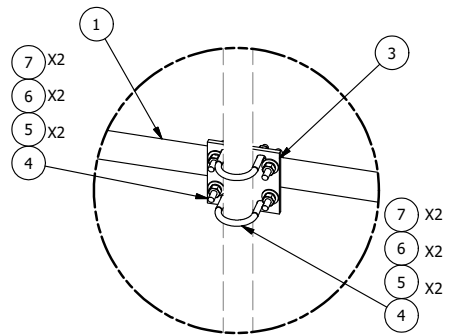
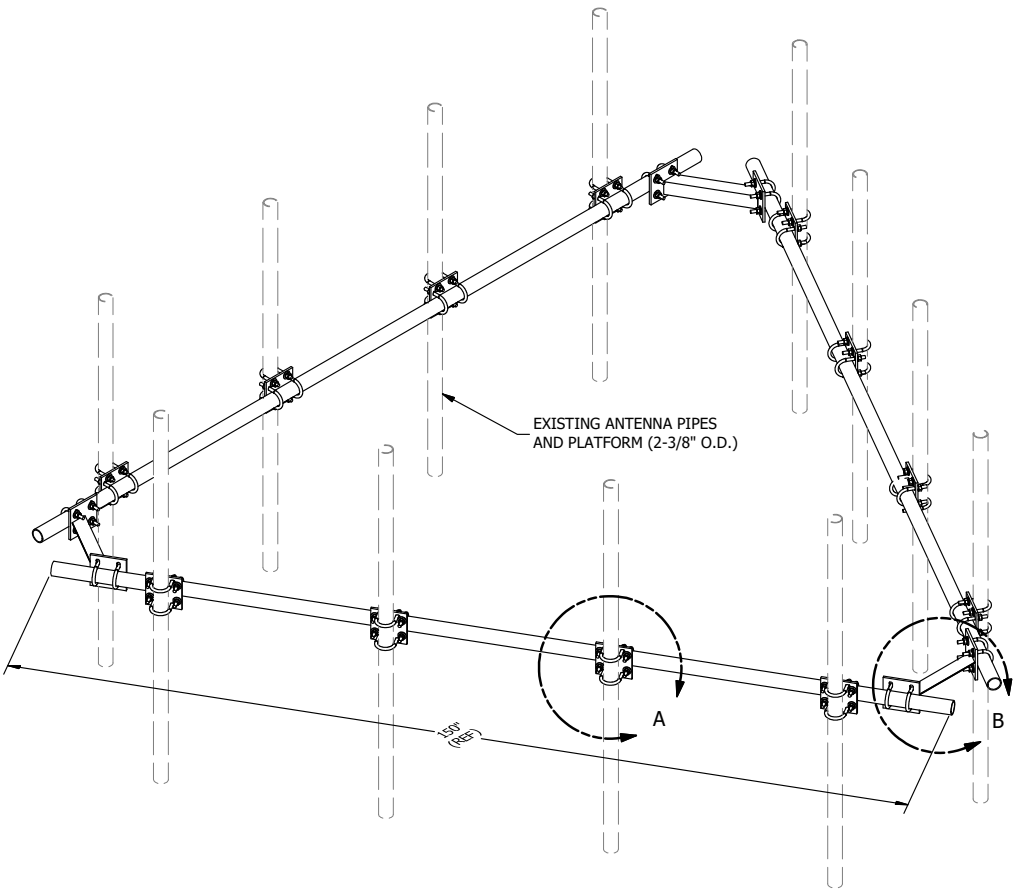
**SEE ASSEMBLY NO. "A"**

**DWG. NO.**

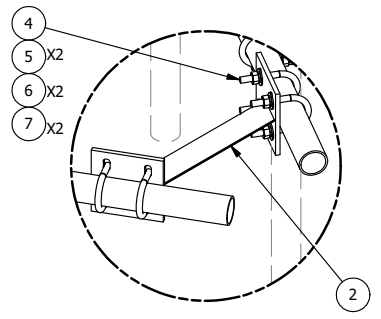
**RMQP-3XX**

A	ADDED 10' 6" ANTENNA MOUNTING PIPES	CEK	7/7/2015
REV	DESCRIPTION OF REVISIONS	CPD	BY DATE
REVISION HISTORY			

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
TOTAL WT. #						272.43



DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	CEK		7/10/2014
REVISION HISTORY				

**TOLERANCE NOTES**  
**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:**  
**SAWED, SHEARED AND GAS CUT EDGES ( $\pm 0.030"$ )**  
**DRILLED AND GAS CUT HOLES ( $\pm 0.030"$ ) - NO CONING OF HOLES**  
**LASER CUT EDGES AND HOLES ( $\pm 0.010"$ ) - NO CONING OF HOLES**  
**BENDS ARE  $\pm 1/2$  DEGREE**  
**ALL OTHER MACHINING ( $\pm 0.030"$ )**  
**ALL OTHER ASSEMBLY ( $\pm 0.060"$ )**

PROPRIETARY NOTE:  
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION			
<b>HANDRAIL KIT FOR 12'-6" FACE</b>			
CPD NO.	DRAWN BY	ENG. APPROVAL	
	KC8 5/30/2012		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER	BMC 7/13/2014

<b>SITE PRO 1</b> A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	<b>HRK12</b>
DWG. NO.	<b>HRK12</b>

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11248A

Glastonbury  
374 Three Mile Road  
Glastonbury, Connecticut 06033

**May 30, 2022**

**EBI Project Number: 6222003479**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>51.68%</b>

May 30, 2022

T-Mobile

Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11248A - Glastonbury

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **374 Three Mile Road in Glastonbury, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 population 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 population 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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$ , respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is  $1000 \mu\text{W}/\text{cm}^2$ . 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.

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 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 and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 374 Three Mile Road in Glastonbury, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) 1 LTE Traffic channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.
- 9) 1 LTE Broadcast channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.
- 10) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 11) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 12) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 13) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 14) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain





values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 15) The antenna mounting height centerline of the proposed antennas is 116 feet above ground level (AGL).
- 16) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 17) All calculations were done with respect to uncontrolled / general population threshold limits.

## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	116 feet	Height (AGL):	116 feet	Height (AGL):	116 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A1 MPE %:	<b>3.82%</b>	Antenna B1 MPE %:	<b>3.82%</b>	Antenna C1 MPE %:	<b>3.82%</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	116 feet	Height (AGL):	116 feet	Height (AGL):	116 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380.00 Watts	Total TX Power (W):	380.00 Watts	Total TX Power (W):	380.00 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A2 MPE %:	<b>4.96%</b>	Antenna B2 MPE %:	<b>4.96%</b>	Antenna C2 MPE %:	<b>4.96%</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	116 feet	Height (AGL):	116 feet	Height (AGL):	116 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	31,011.95	ERP (W):	31,011.95	ERP (W):	31,011.95
Antenna A3 MPE %:	<b>9.21%</b>	Antenna B3 MPE %:	<b>9.21%</b>	Antenna C3 MPE %:	<b>9.21%</b>

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	17.99%
SIGFOX	0.03%
Nextel	0.4%
Verizon	9.26%
AT&T	19.56%
Sprint	0.65%
XM Sat Radio	3.79%
<b>Site Total MPE % :</b>	<b>51.68%</b>

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	17.99%
T-Mobile Sector B Total:	17.99%
T-Mobile Sector C Total:	17.99%
<b>Site Total MPE % :</b>	<b>51.68%</b>

### T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1028.30	116.0	12.22	1900 MHz GSM	1000	1.22%
T-Mobile 1900 MHz LTE	2	2056.61	116.0	12.22	1900 MHz LTE	1000	1.22%
T-Mobile 2100 MHz LTE	2	2307.55	116.0	13.71	2100 MHz LTE	1000	1.37%
T-Mobile 600 MHz LTE	2	591.73	116.0	3.52	600 MHz LTE	400	0.88%
T-Mobile 600 MHz NR	1	1577.94	116.0	4.69	600 MHz NR	400	1.17%
T-Mobile 700 MHz LTE	2	648.82	116.0	3.86	700 MHz LTE	467	0.83%
T-Mobile 1900 MHz LTE	2	2203.69	116.0	13.10	1900 MHz LTE	1000	1.31%
T-Mobile 2100 MHz UMTS	2	1294.56	116.0	7.69	2100 MHz UMTS	1000	0.77%
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	9619.47	116.0	28.58	2500 MHz LTE IC & 2C Traffic	1000	2.86%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	717.84	116.0	2.13	2500 MHz LTE IC & 2C Broadcast	1000	0.21%
T-Mobile 2500 MHz NR Traffic	1	19238.94	116.0	57.16	2500 MHz NR Traffic	1000	5.72%
T-Mobile 2500 MHz NR Broadcast	1	1435.69	116.0	4.27	2500 MHz NR Broadcast	1000	0.43%
						<b>Total:</b>	<b>17.99%</b>

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	17.99%
Sector B:	17.99%
Sector C:	17.99%
T-Mobile Maximum MPE % (Sector A):	17.99%
Site Total:	51.68%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **51.68%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

# T-Mobile

**T-MOBILE SITE NUMBER:** CT11251A  
**T-MOBILE SITE NAME:** EAST HAMPTON-2\_1  
**SITE TYPE:** MONOPOLE  
**TOWER HEIGHT:** 155'-6"

**BUSINESS UNIT #:** 806366  
**SITE ADDRESS:** 73 NORTH MAIN STREET  
 MARLBOROUGH, CT 06447  
**COUNTY:** HARTFORD  
**JURISDICTION:** HARTFORD COUNTY

**T-MOBILE ANCHOR SITE CONFIGURATION:** 67D5998E\_1xAIR+1OP+1QP

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

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

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 500 West Office Center Dr.  
 Suite 150 | Fort Washington, PA 19034  
 www.infinigy.com

**T-MOBILE SITE NUMBER:**  
 CT11251A  
**BU #:** 806366  
**HRT 107(C) 943204**  
 73 NORTH MAIN STREET  
 MARLBOROUGH, CT 06447  
 EXISTING 155'-6" MONOPOLE

**ISSUED FOR:**

REV	DATE	DRWN	DESCRIPTION	DES/QA
A	06/08/22	RCD	PRELIMINARY	SS
0	06/28/22	RCD	PRELIMINARY	SS

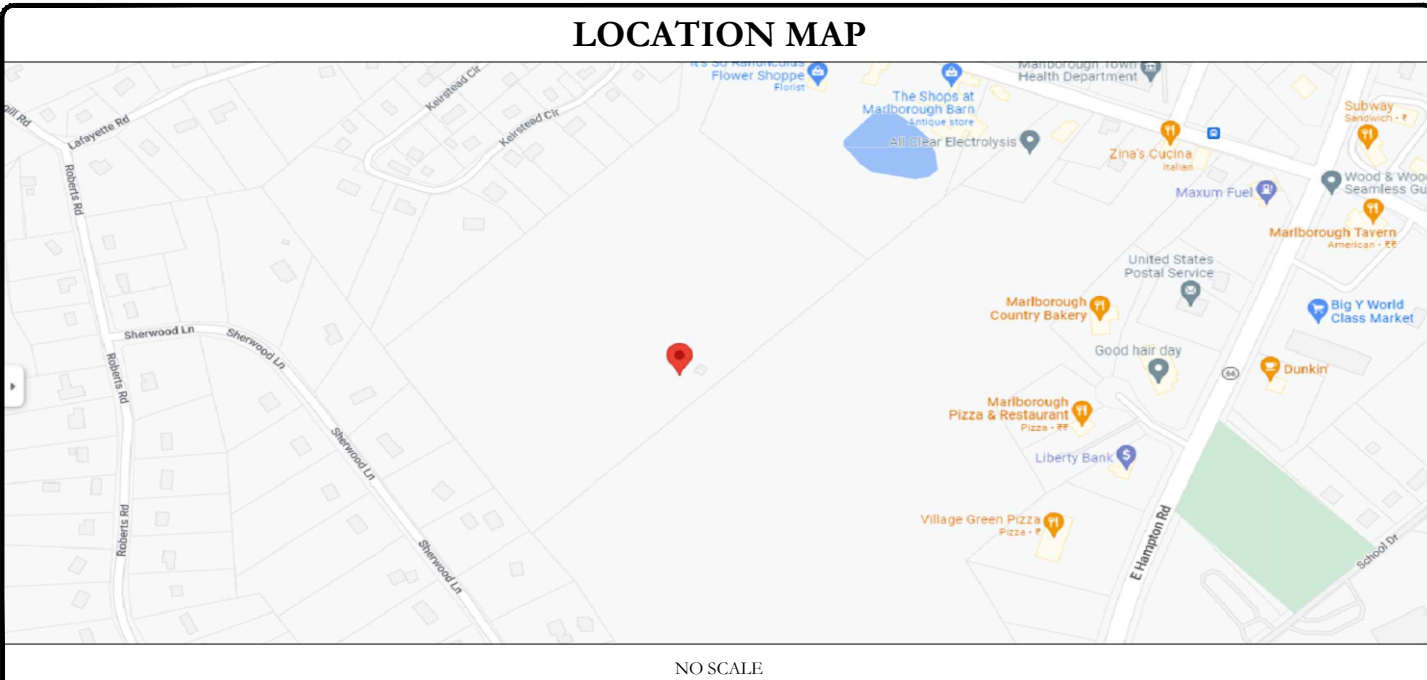
**SITE INFORMATION**

CROWN CASTLE USA INC. SITE NAME:	HRT 107(C) 943204
SITE ADDRESS:	73 NORTH MAIN STREET MARLBOROUGH, CT 06447
COUNTY:	HARTFORD
MAP/PARCEL #:	VERIFY
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.62977400° (41° 37' 47.30")
LONGITUDE:	-72.46655200° (-72° 27' 59.40")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	±684 FT
CURRENT ZONING:	TBD
JURISDICTION:	HARTFORD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TBD
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

**DRAWING INDEX**

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

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.



**PROJECT TEAM**

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DR. SUITE 150, FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065  PATRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCastle.COM  JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCastle.COM

**PROJECT DESCRIPTION**

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

**TOWER SCOPE OF WORK:**

- REMOVE (3) ANTENNAS
- REMOVE (6) TMAS
- REMOVE (3) RRHS
- REMOVE (3) ANTENNA MOUNTS
- INSTALL (6) ANTENNAS
- INSTALL (3) RRHS
- INSTALL (2) HYBRID CABLES
- INSTALL (1) SITE PRO 1 RMQP-396
- INSTALL (3) SITE PRO 1 HRK12 HANDRAIL KIT

**GROUND SCOPE OF WORK:**

- INSTALL (1) 6160 & (1) B160 BATTERY CABINET
- INSTALL (1) PSU4813 VOLTAGE BOOSTER IN (P) CABINET
- INSTALL (1) CSR IXRE ROUTER IN (P) CABINET
- INSTALL (1) RP 6651 IN (P) CABINET
- INSTALL 3'x6' CONCRETE PAD (18 SQ FT)

**NOTE:**  
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

**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	2015 IMC
ELECTRICAL	2017 NEC

**REFERENCE DOCUMENTS:**

STRUCTURAL ANALYSIS:	TOWER ENGINEERING
DATED:	05/27/2022
MOUNT ANALYSIS:	TRYLON
DATED:	05/19/2022
RFDS REVISION:	3
DATED:	4/27/2022
ORDER ID:	599893
REVISION:	0

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**APPROVALS**

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.	_____	_____
LAND USE PLANNER	_____	_____
T-MOBILE	_____	_____
OPERATIONS	_____	_____
RF	_____	_____
NETWORK	_____	_____
BACKHAUL	_____	_____
CONSTRUCTION MANAGER	_____	_____

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

**SHUHEI SAKANoue**  
 STATE OF CONNECTICUT  
 LICENSED PROFESSIONAL ENGINEER  
 34916  
 06/28/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

<b>SHEET NUMBER:</b> T-1	<b>REVISION:</b> 0
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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.
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.
5. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED-STD-10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," 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.

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-OFF-POTENTIAL 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 ANTI-OXIDANT 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).

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. 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.
13. 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° 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. VERIFY 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/IEEC 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/IEEC AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECIMATE WIREWAY).
22. SLOTTED WIRING CUP 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 table with columns for SYSTEM, CONDUCTOR, and COLOR. Rows include 120/240V, 10; 120/208V, 30; 277/480V, 30; and DC VOLTAGE.

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

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

ABBREVIATIONS:

- ANT ANTENNA
(E) EXISTING
FIF FACILITY INTERFACE FRAME
GEN GENERATOR
GPS GLOBAL POSITIONING SYSTEM
GSM GLOBAL SYSTEM FOR MOBILE LONG TERM EVOLUTION
LTE 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



T-MOBILE SITE NUMBER: CT11251A

BU #: 806366 HRT 107(C) 943204

73 NORTH MAIN STREET MARLBOROUGH, CT 06447

EXISTING 155'-6" MONOPOLE

ISSUED FOR table with columns: REV, DATE, DRWN, DESCRIPTION, DES/QA. Shows two revisions for PRELIMINARY SS.

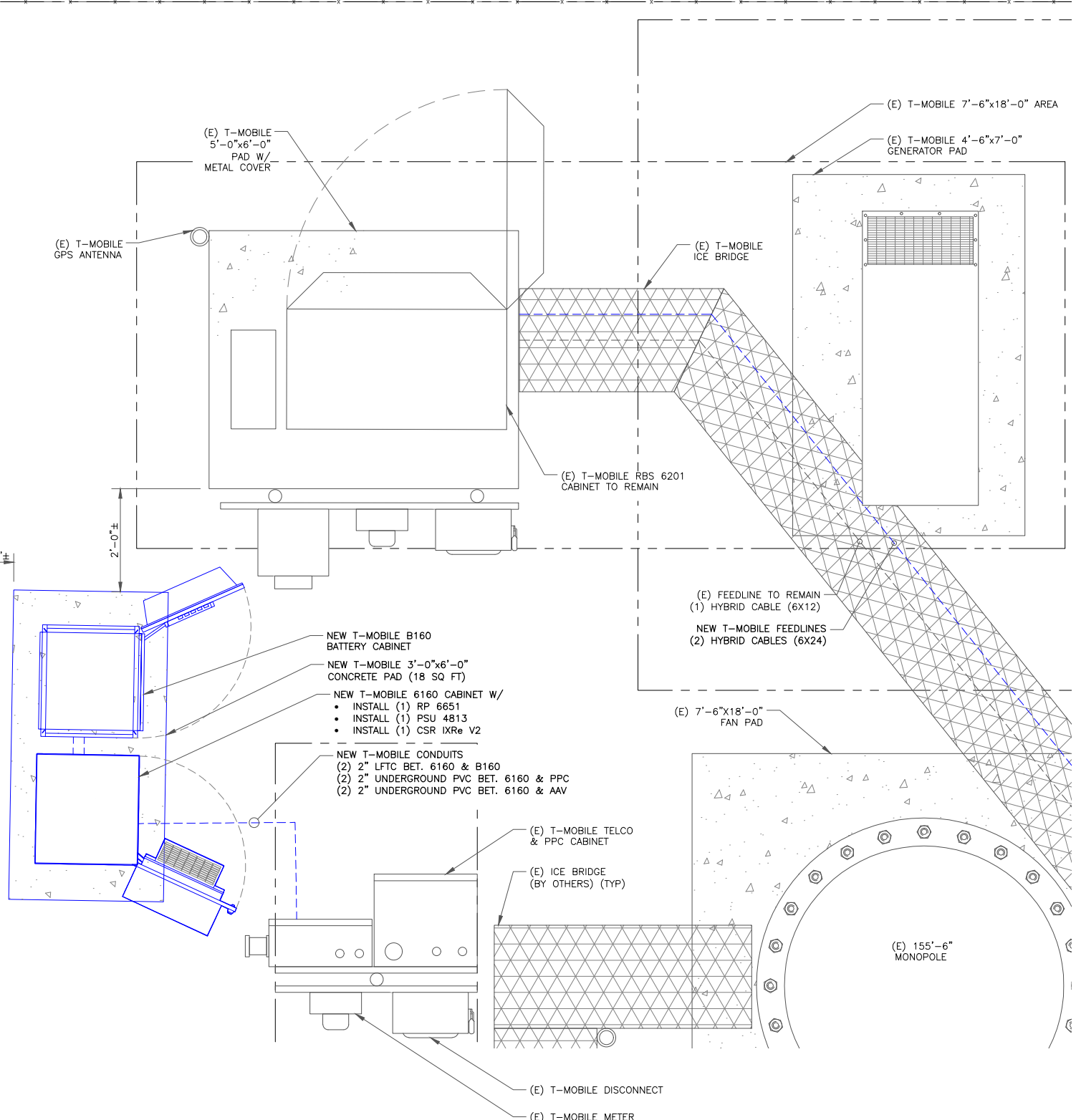
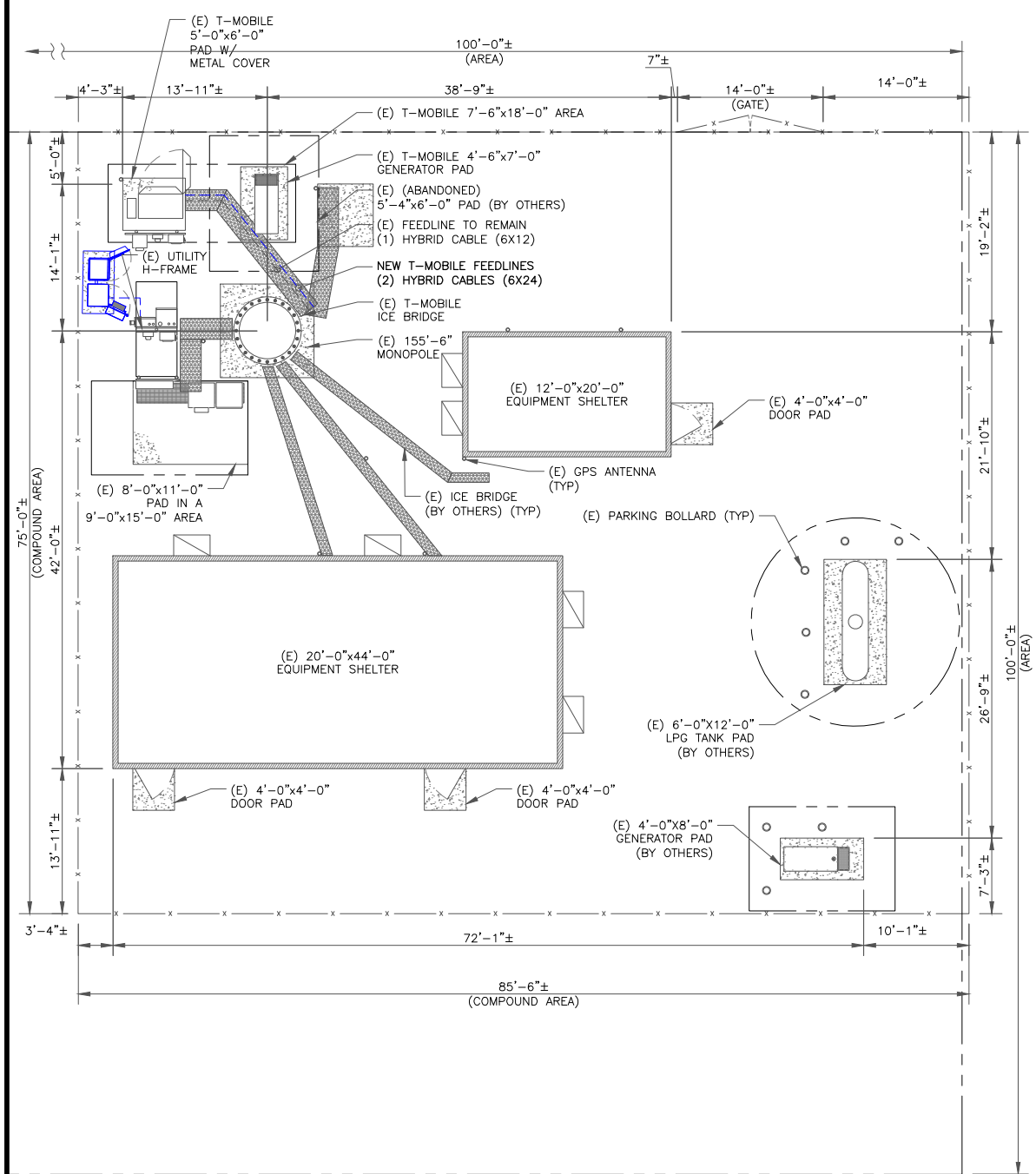


06/28/22

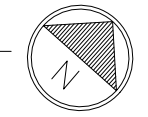
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2 REVISION: 0

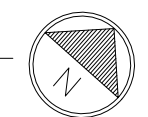
**NOTE:**  
 1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T-MOBILE EQUIPMENT.



1 SITE PLAN  
 SCALE: 1/8"=1'-0" (FULL SIZE)  
 1/16"=1'-0" (11x17)



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



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

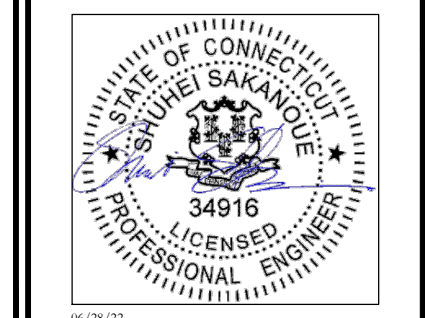
**CROWN CASTLE**  
 3 CORPORATE PARK DRIVE, SUITE 101  
 CLIFTON PARK, NY 12065

**INFINIGY**  
 FROM ZERO TO INFINIGY  
 the solutions are endless  
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T-MOBILE SITE NUMBER:  
**CT11251A**  
 BU #: 806366  
 HRT 107(C) 943204  
 73 NORTH MAIN STREET  
 MARLBOROUGH, CT 06447  
 EXISTING 155'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/08/22	RCD	PRELIMINARY	SS
0	06/28/22	RCD	PRELIMINARY	SS



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SHEET NUMBER: **C-1** REVISION: **0**

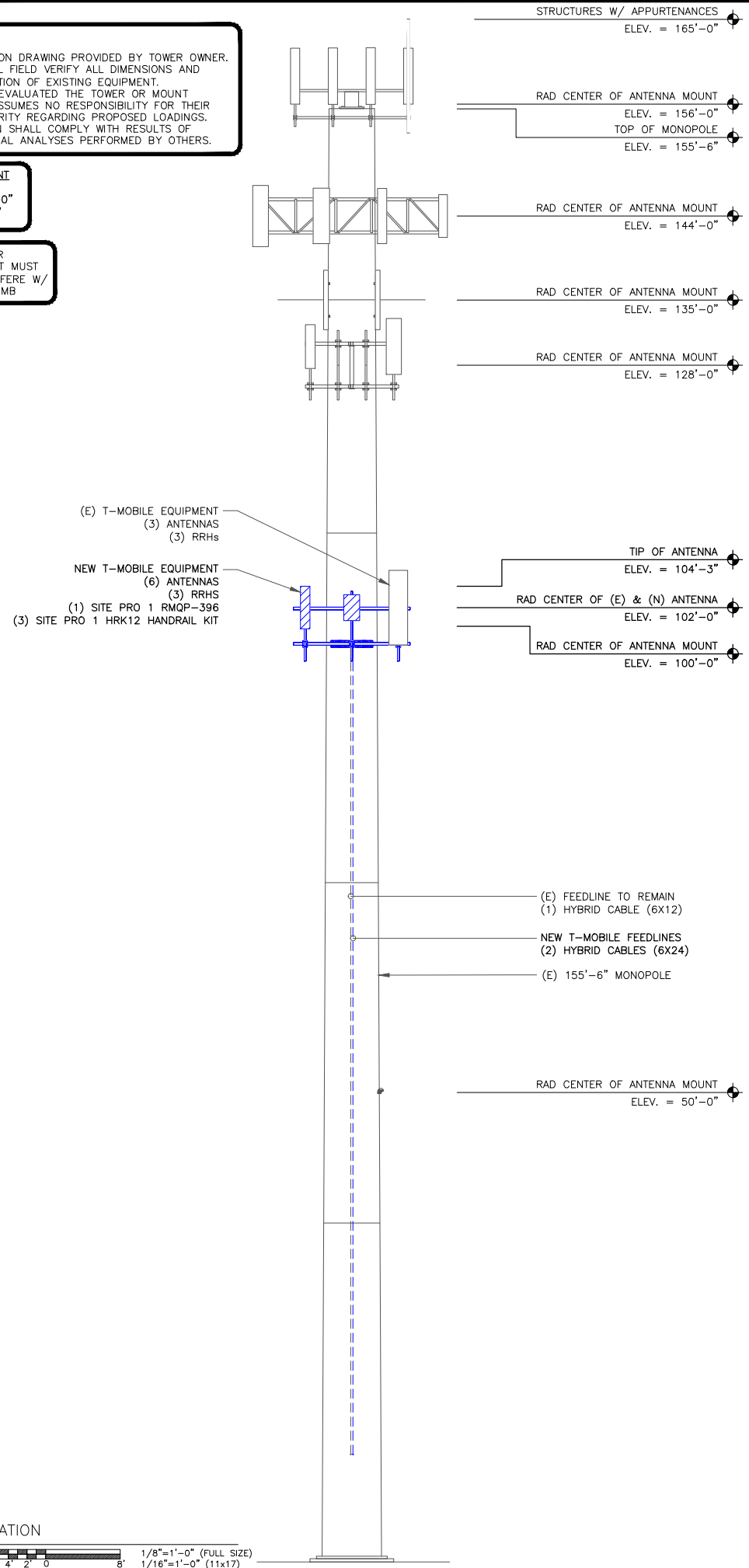
**NOTES:**

- ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
- INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

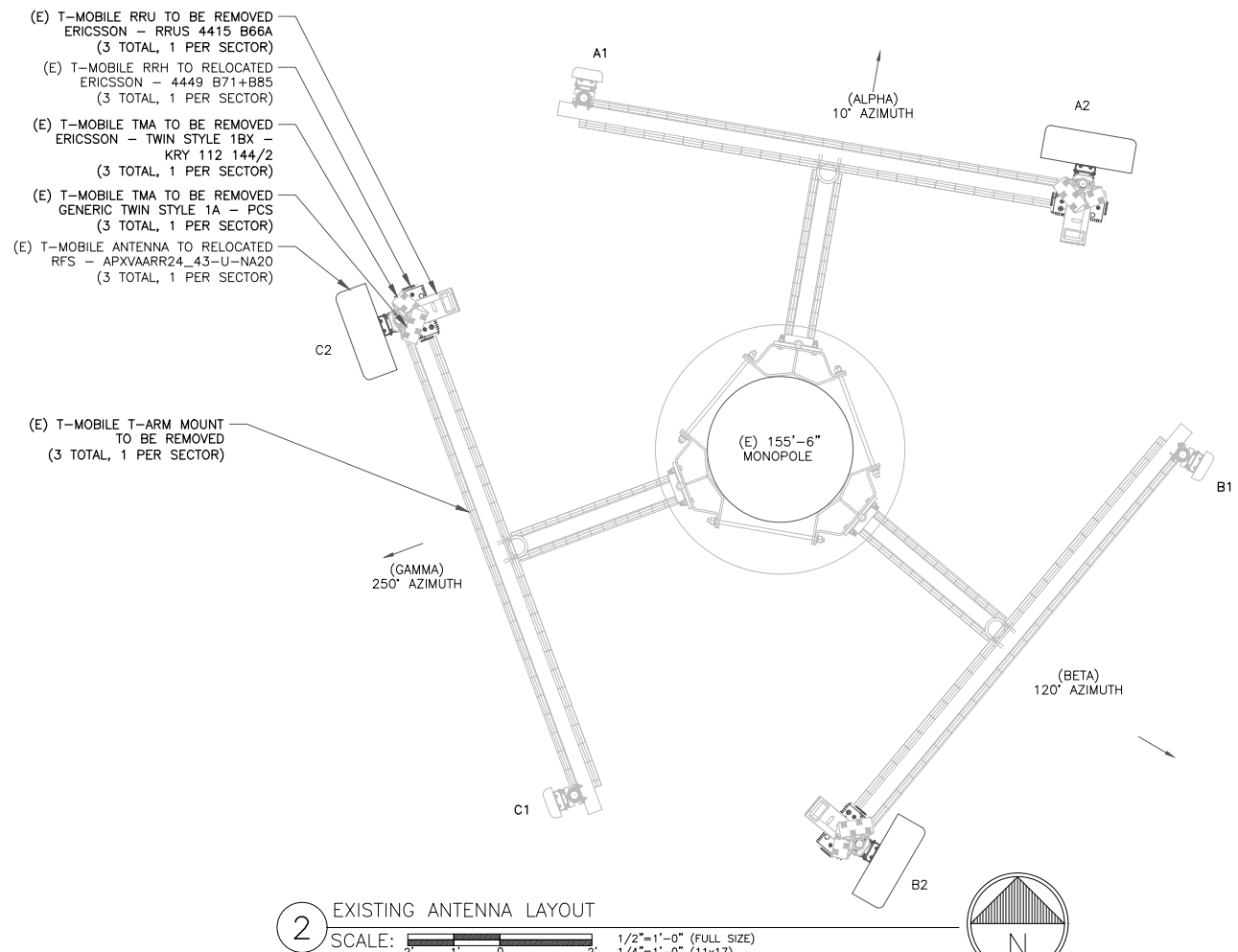
**T-MOBILE EQUIPMENT**

ANTENNA CL: 102'-0"  
MOUNT CL: 100'-0"

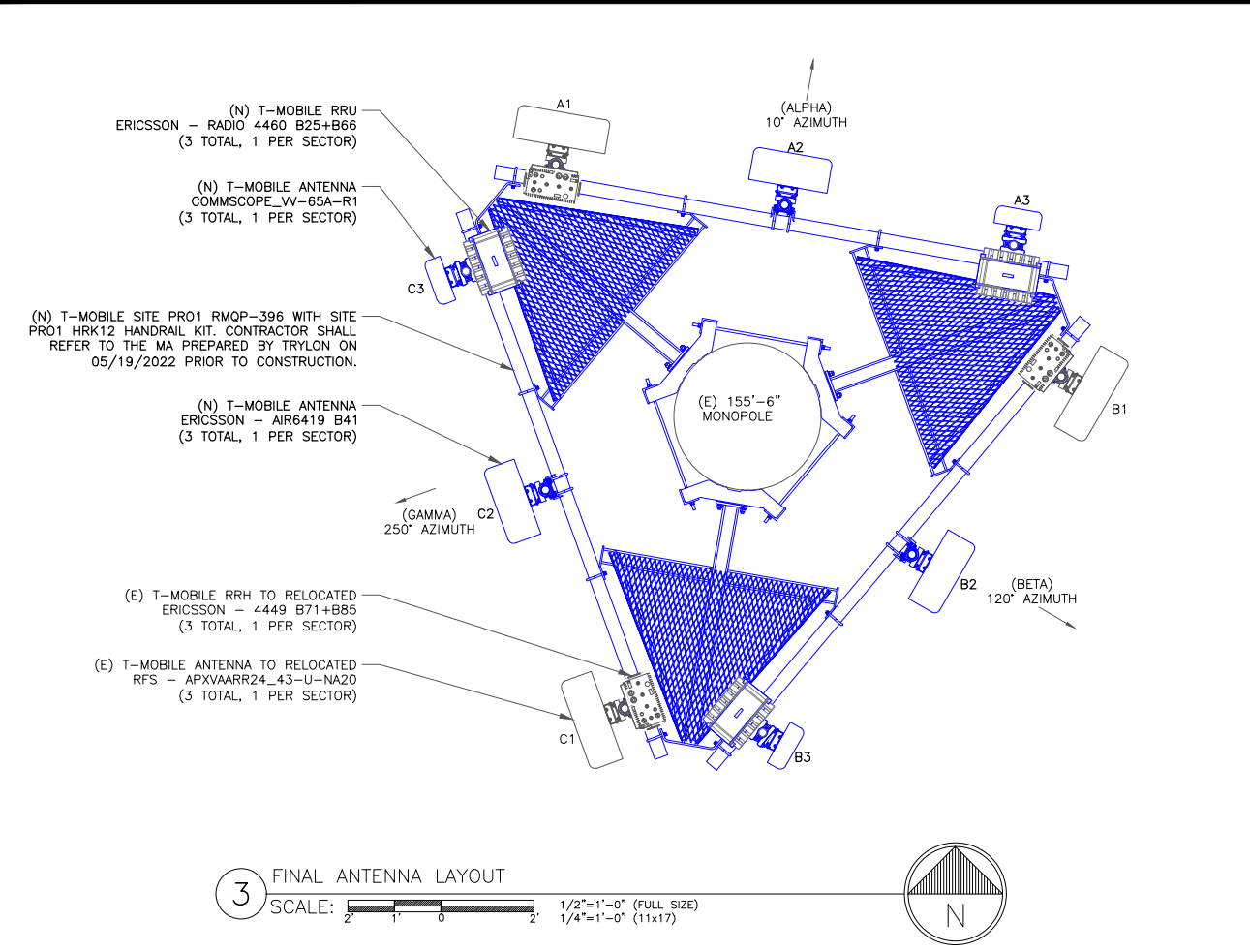
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



**1 FINAL ELEVATION**  
SCALE: 1/8"=1'-0" (FULL SIZE)  
1/16"=1'-0" (11x17)



**2 EXISTING ANTENNA LAYOUT**  
SCALE: 1/2"=1'-0" (FULL SIZE)  
1/4"=1'-0" (11x17)



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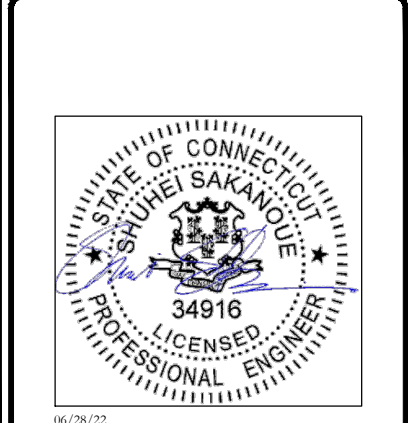
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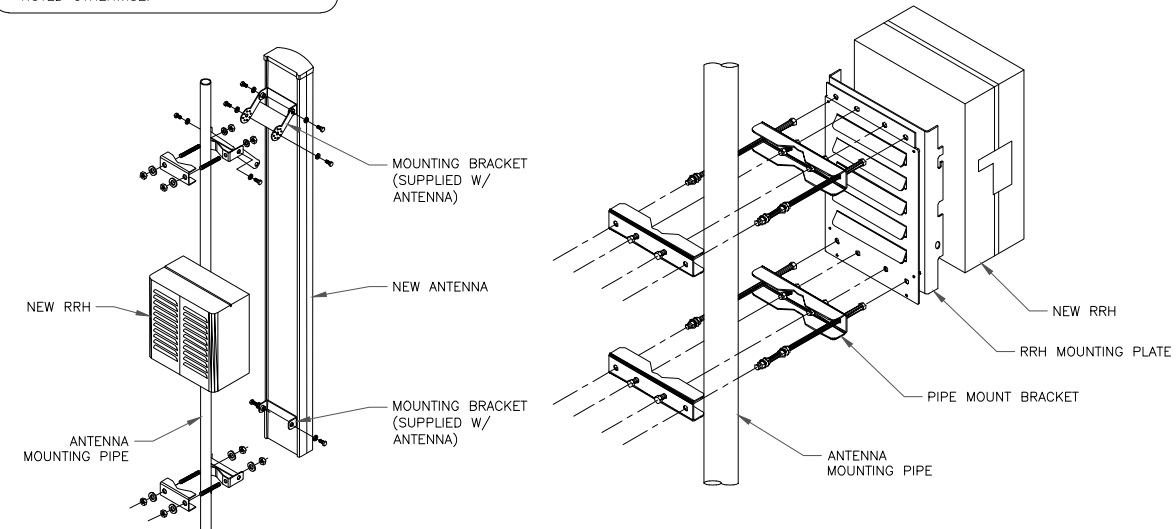
SHEET NUMBER: **C-2** REVISION: **0**



ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L700, L600, N600	102'-0"	10'	RFS	RFS - APXVAARR24_43-UNA20	0	2/2	(1) ERICSSON - RRUS 4449 B71+B85	(1) 6X12 HYBRID
ALPHA	A2	L2500, N2500	102'-0"	10'	ERICSSON	ERICSSON - AIR6419 B41	0	2/2	-	-
ALPHA	A3	L2100, L1900, G1900	102'-0"	10'	COMMSCOPE	COMMSCOPE - W-65A-R1	0	2/2	(1) ERICSSON - RRUS 4460 B25+B66	(2) 6X24 HYBRID 100M IN LENGTH
BETA	B1	L700, L600, N600	102'-0"	120'	RFS	RFS - APXVAARR24_43-UNA20	0	2/2	(1) ERICSSON - RRUS 4449 B71+B85	-
BETA	B2	L2500, N2500	102'-0"	120'	ERICSSON	ERICSSON - AIR6419 B41	0	2/2	-	-
BETA	B3	L2100, L1900, G1900	102'-0"	120'	COMMSCOPE	COMMSCOPE - W-65A-R1	0	2/2	(1) ERICSSON - RRUS 4460 B25+B66	-
GAMMA	C1	L700, L600, N600	102'-0"	250'	RFS	RFS - APXVAARR24_43-UNA20	0	2/2	(1) ERICSSON - RRUS 4449 B71+B85	-
GAMMA	C2	L2500, N2500	102'-0"	250'	ERICSSON	ERICSSON - AIR6419 B41	0	2/2	-	-
GAMMA	C3	L2100, L1900, G1900	102'-0"	250'	COMMSCOPE	COMMSCOPE - W-65A-R1	0	2/2	(1) ERICSSON - RRUS 4460 B25+B66	-

1 ANTENNA AND CABLE SCHEDULE  
SCALE: NOT TO SCALE

**INSTALLER NOTES:**  
 1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.  
 2. DO NOT OPEN RRH PACKAGES IN THE RAIN.  
 3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



**NOTE:**  
 1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

2 ANTENNA WITH RRH MOUNTING DETAIL  
SCALE: NOT TO SCALE

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EXISTING 155'-6" MONOPOLE

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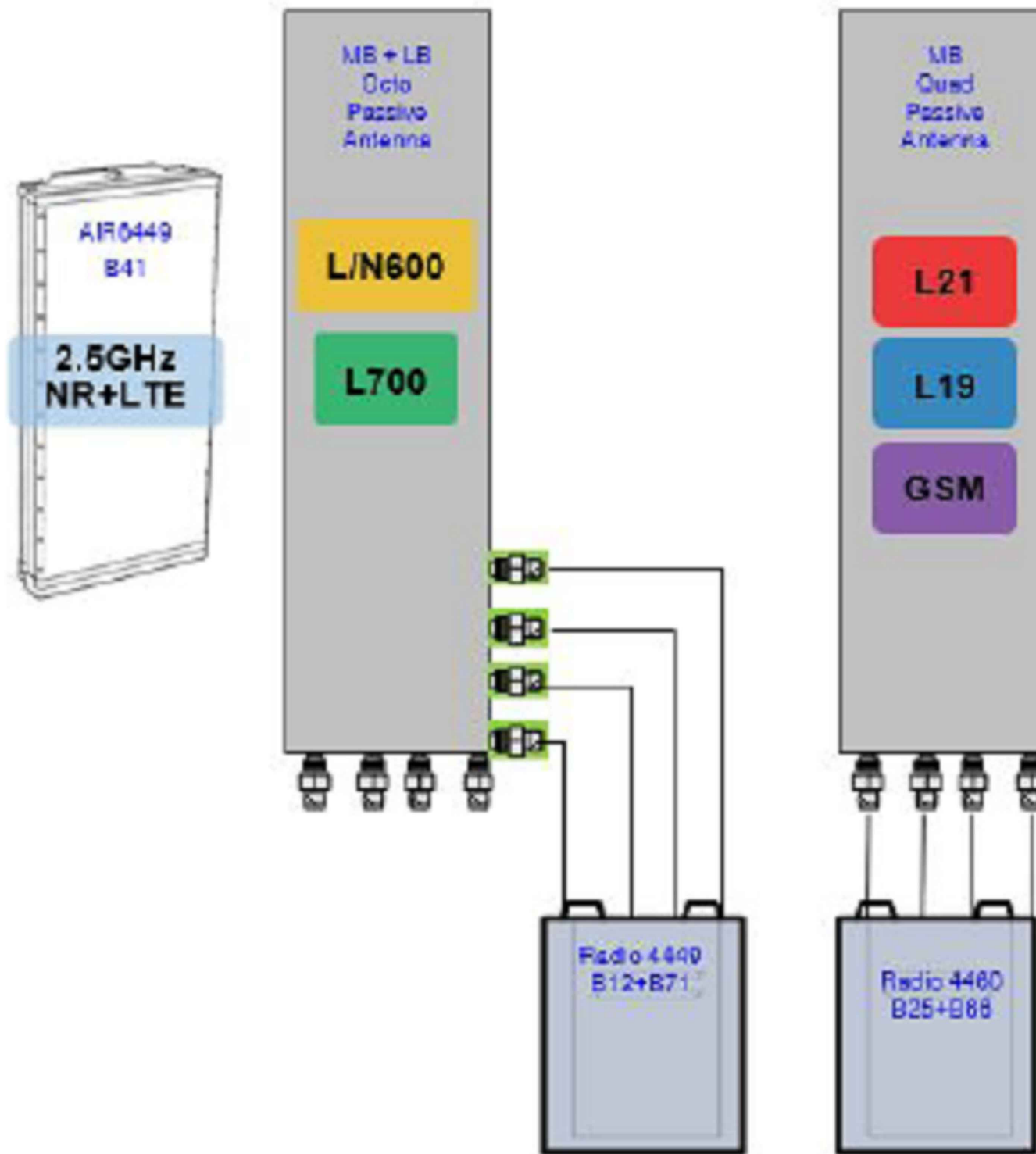
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STATE OF CONNECTICUT  
 SHUHEI SAKANQUE  
 34916  
 LICENSED PROFESSIONAL ENGINEER

06/28/22

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SHEET NUMBER: **C-3** REVISION: **0**



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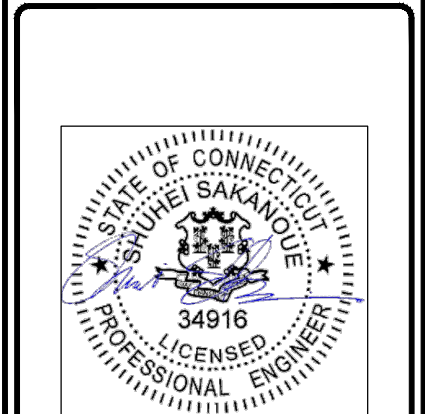
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 EXISTING 155'-6" MONOPOLE

**ISSUED FOR:**

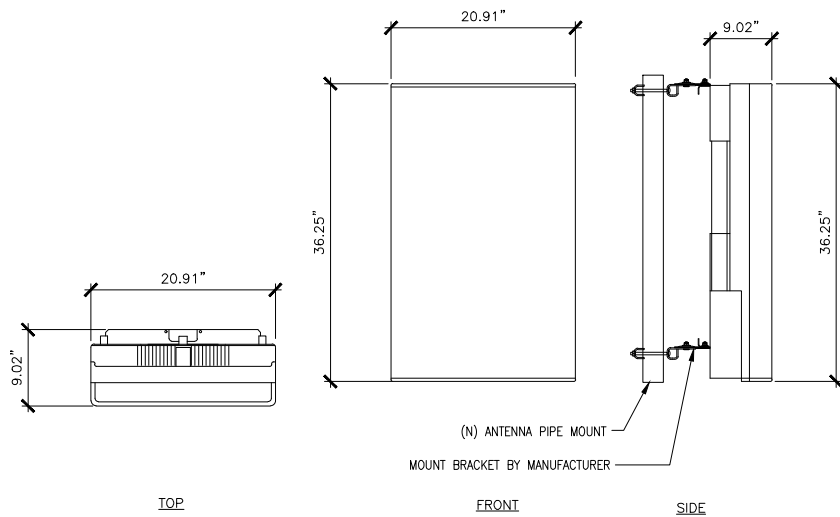
REV	DATE	DRWN	DESCRIPTION	DES/QA
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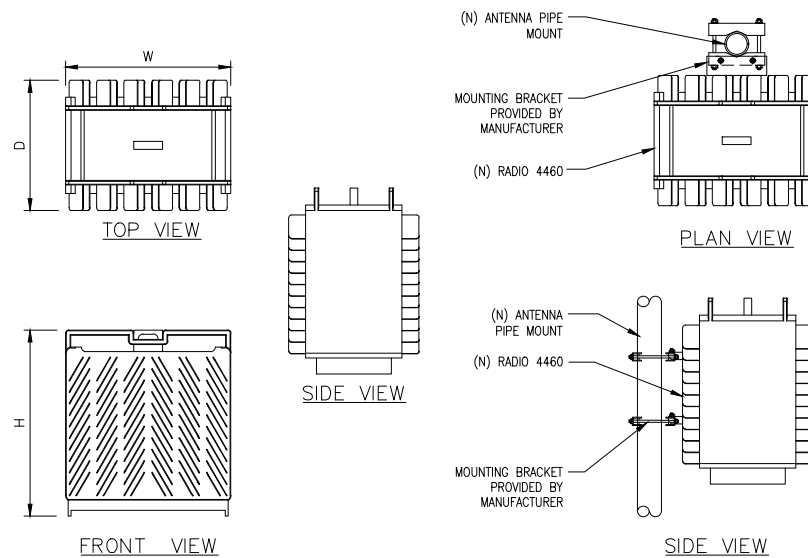
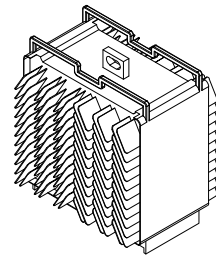
SHEET NUMBER: **C-4** REVISION: **0**

MANUFACTURER: ERICSSON  
 MODEL: AIR6419 B41  
 WEIGHT: 104 LBS (W/ MOUNT BRACKET 113)  
 DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.  
 FREQUENCY: REFER TO RF DATA SHEET

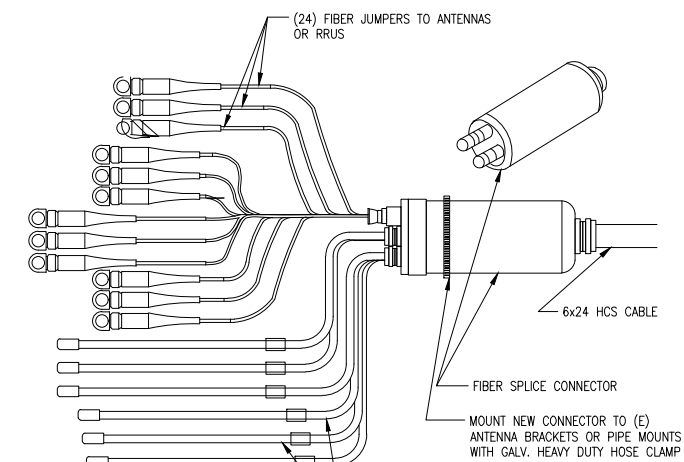


1 (N) AIR6419 B41 ANTENNA SPEC  
 SCALE: NOT TO SCALE

**ERICSSON RADIO-4460 B25 B66**  
 DIMENSIONS, WxDxH: 17.0"x15.1"x11.9"  
 MAX OUTPUT POWER: 4x80W (2x(2x80W))  
 TOTAL WEIGHT: 109 lbs  
 TEMPERATURE: -40° TO 55° C

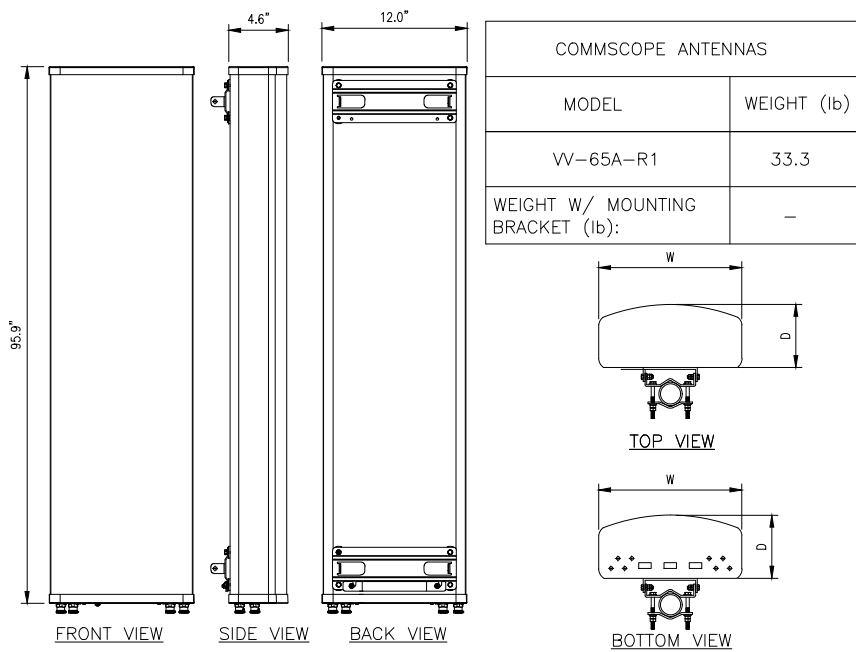


2 (N) RADIO 4460 SPEC  
 SCALE: NOT TO SCALE



NOTE:  
 NUMBER OF LINES SHOWN FOR REFERENCE ONLY.  
 ACTUAL # OF DC AND FIBER LINES SPECIFIC TO  
 MODEL OF HCS CABLES

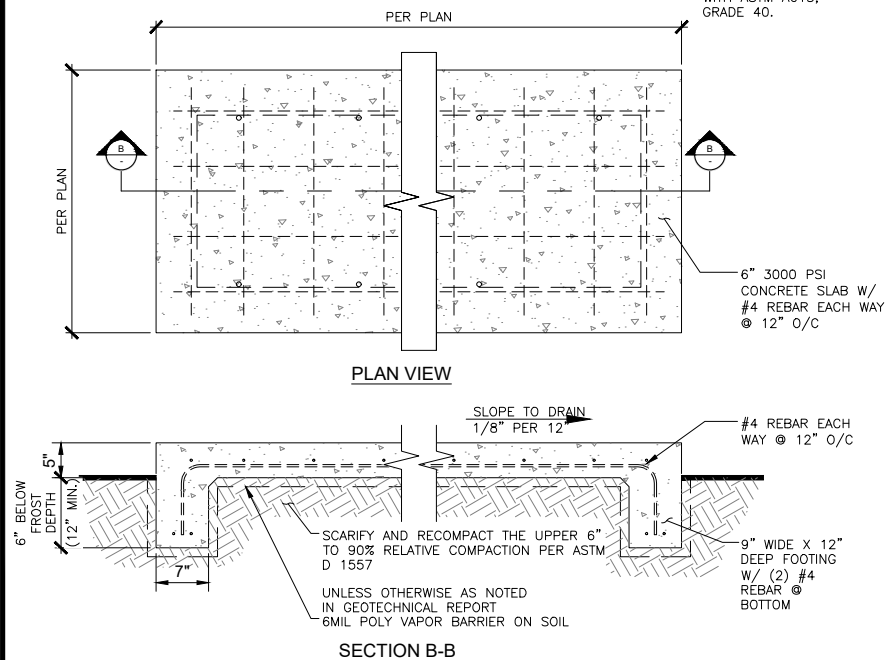
3 (N) 6X24 HCS CABLE DETAIL  
 SCALE: NOT TO SCALE



4 (N) COMMSCOPE - W-65A-R1 ANTENNA SPEC  
 SCALE: NOT TO SCALE

NOTES:

1. CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF  $f'_c=3,000$  PSI MINIMUM AT 28 DAYS.
2. ALL REINFORCING STEEL SHALL COMPLY WITH ASTM A615, GRADE 40.



5 (N) CONCRETE PAD DETAIL  
 SCALE: NOT TO SCALE

6 NOT USED  
 SCALE: NOT TO SCALE

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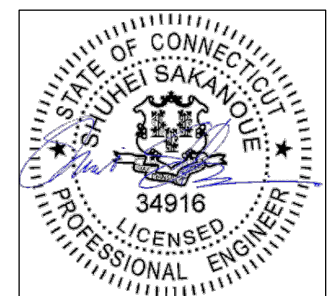
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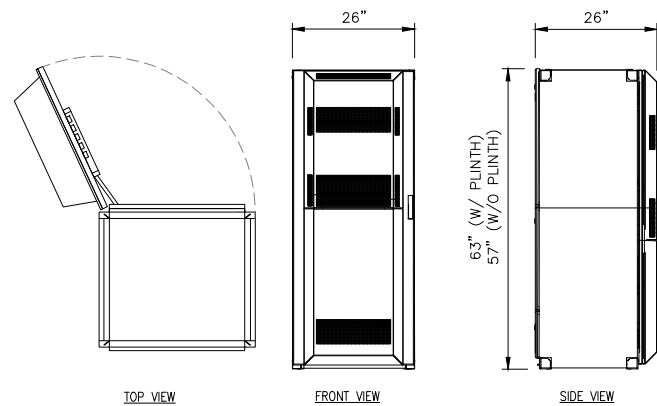
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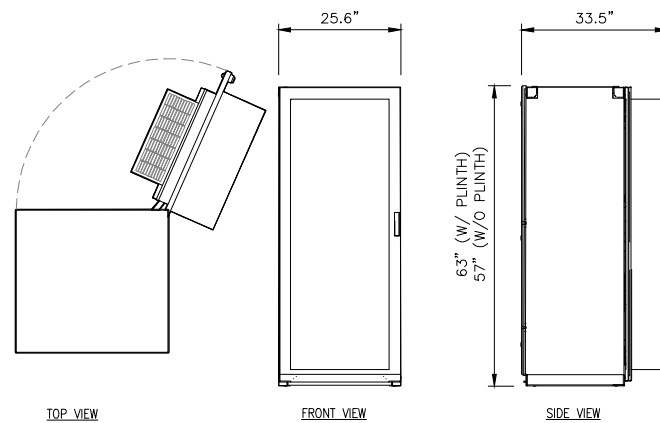
REVISION:

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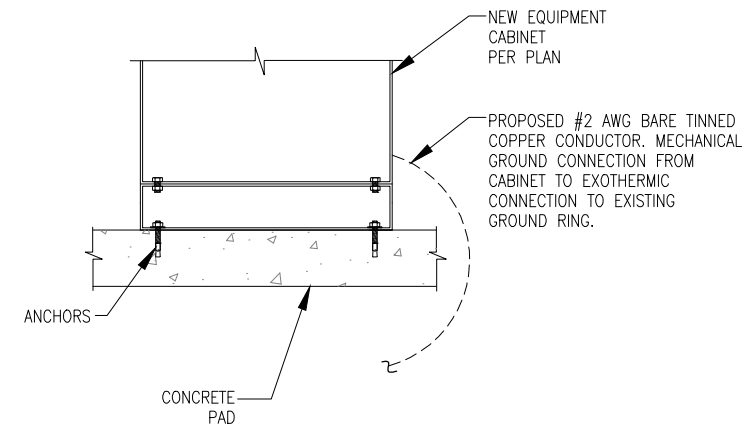
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

1 (N) B160 CABINET DETAIL  
SCALE: NOT TO SCALE

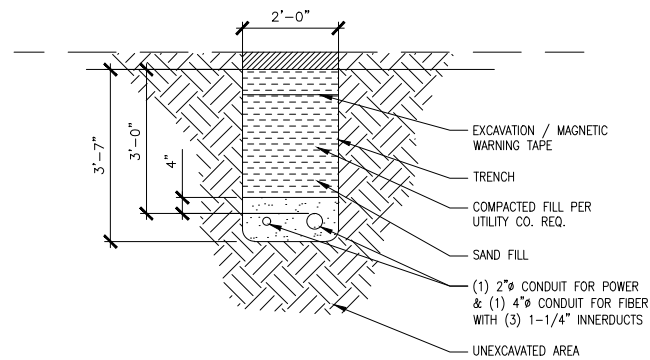


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

2 (N) 6160 CABINET DETAIL  
SCALE: NOT TO SCALE



3 (N) EQUIPMENT CABINET MOUNTING DETAIL  
SCALE: NOT TO SCALE



4 (N) CONDUIT TRENCH DETAIL  
SCALE: NOT TO SCALE

5 NOT USED  
SCALE: NOT TO SCALE

6 NOT USED  
SCALE: NOT TO SCALE

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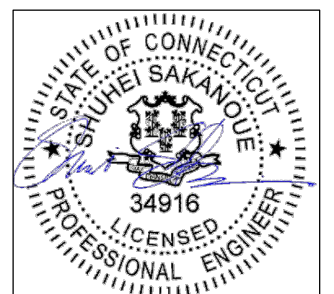
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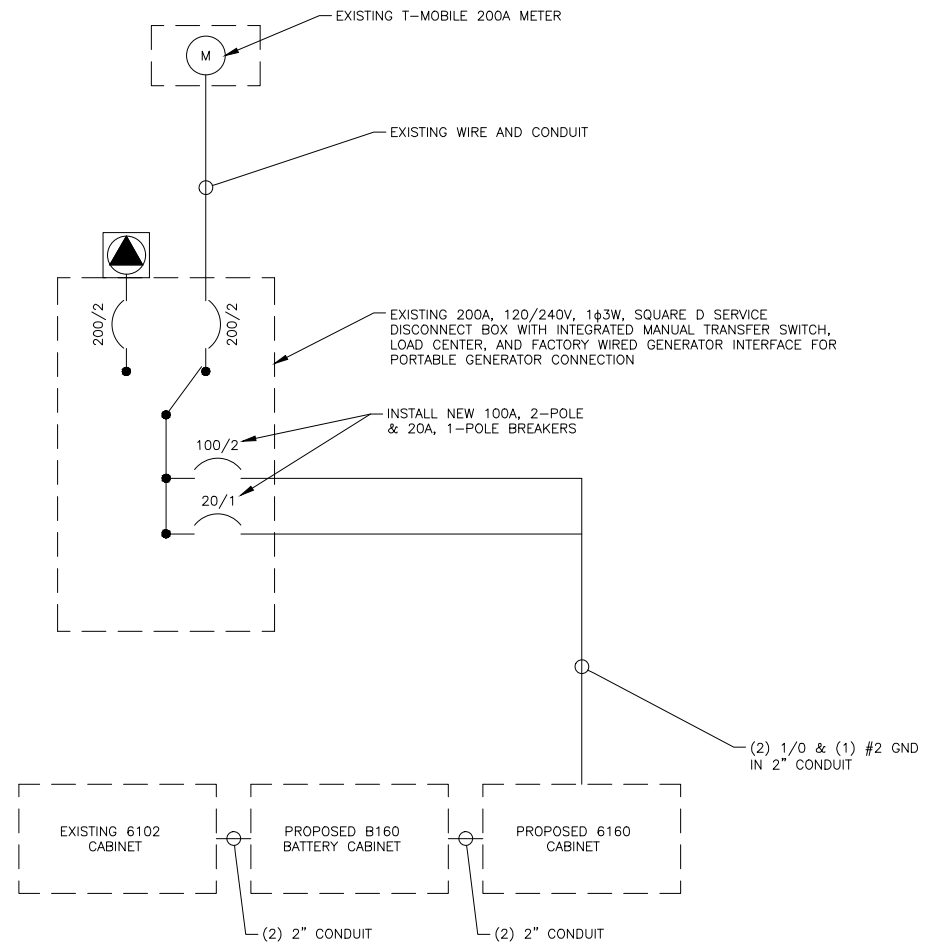
C-6

REVISION:

0

T-MOBILE PANEL SCHEDULE											
MAIN: 200A MAIN BREAKER			VOTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE				SHORT CIRCUIT CURRENT RATING: --				
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES				
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	PHASE LOADS (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
					A	B					
TVSS	0	NC	60	1	0		2	20	C	0	GFI
	0	NC		3		3500	4	100	C	3500	6160
6201	3500	C	50	5	7000		6			3500	
	3500	C		7		3680	8	150	NC	180	6160 GFI
EMERSON	200	C	20	9	200		10				
TELCO GFI	180	C	20	11		180	12				
				13	0		14				
				15	0		16				
				17	0		18				
				19	0		20				
				21	0		22				
				23	0		24				
BASE LOAD (VA) =					7200	7360	C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD				
25% OF CONTINUOUS LOAD (VA) =					1750	1800	NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.				
TOTAL LOAD (VA) =					8950	9160					
TOTAL LOAD (A) =					75	76					

- NOTES:
- ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
  - CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
  - ALL GROUNDING AND BONDING PER THE NEC.



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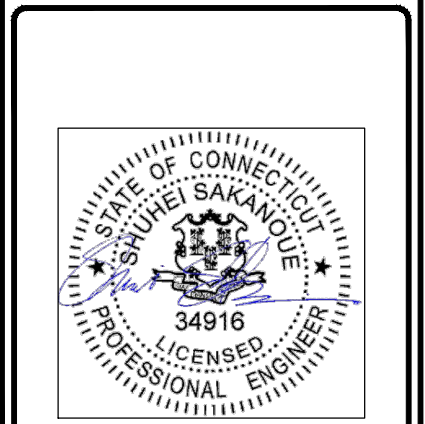
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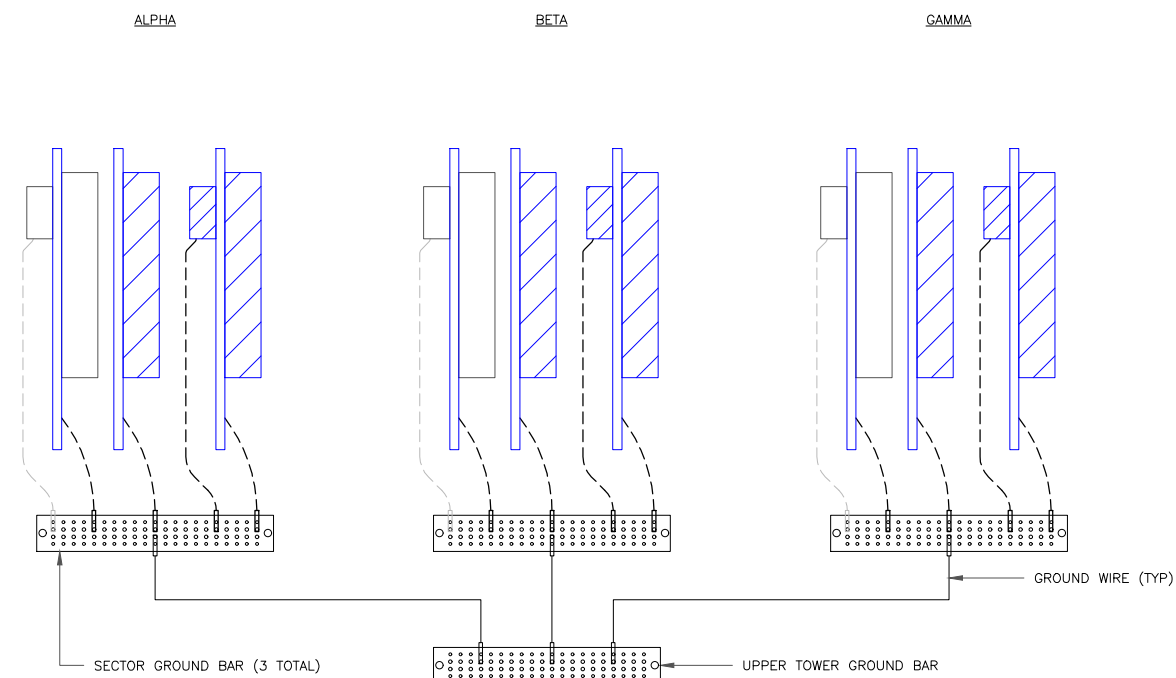
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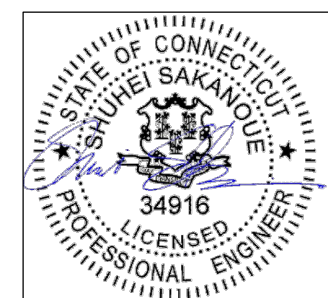
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**NOTE:**  
ALL NEW GROUNDS TO BE #6 STRANDED  
COPPER WITH GREEN INSULATION UNLESS  
NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM  
SCALE: NOT TO SCALE

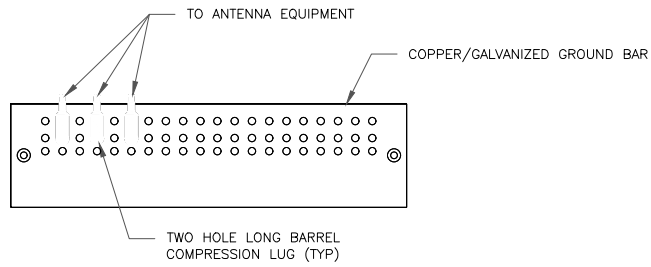


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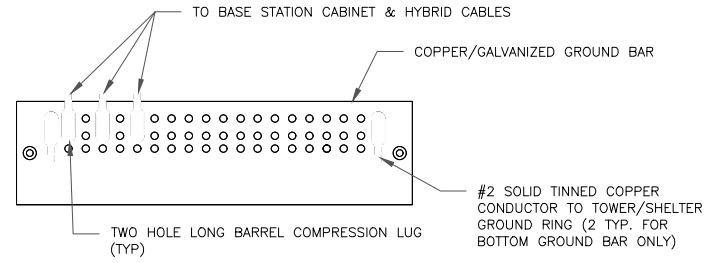
REVISION:  
**0**



NOTES:

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

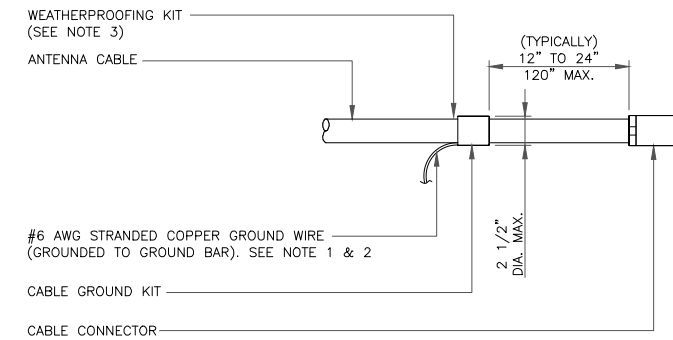
1 ANTENNA SECTOR GROUND BAR DETAIL  
SCALE: NOT TO SCALE



NOTES:

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

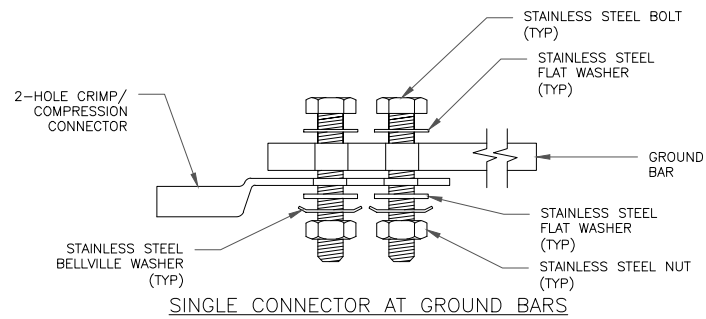
2 TOWER/SHELTER GROUND BAR DETAIL  
SCALE: NOT TO SCALE



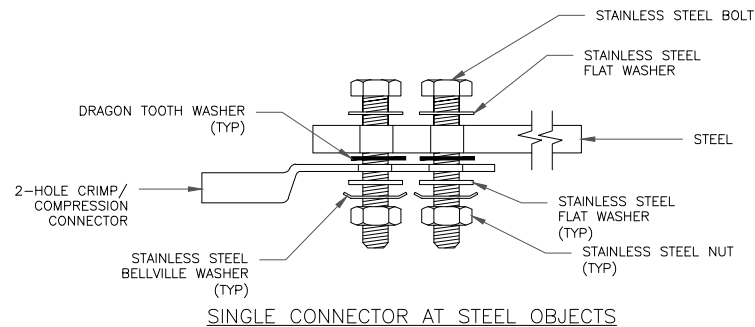
NOTES:

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

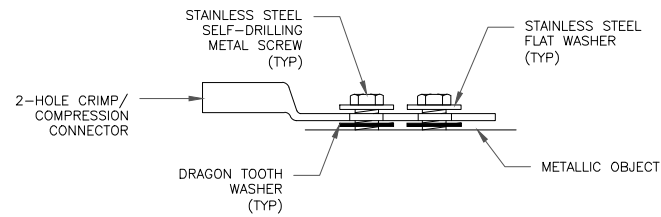
3 CABLE GROUND KIT CONNECTION  
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

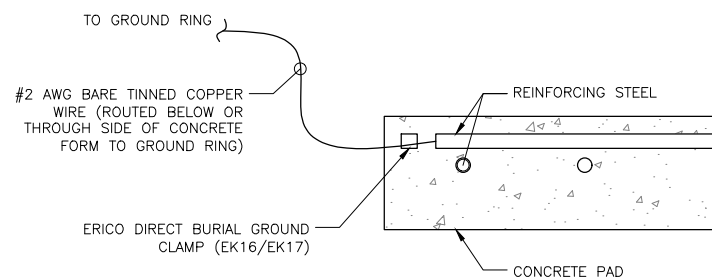


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS  
SCALE: NOT TO SCALE



5 REBAR GROUNDING DETAIL  
SCALE: NOT TO SCALE

6 NOT USED  
SCALE: NOT TO SCALE

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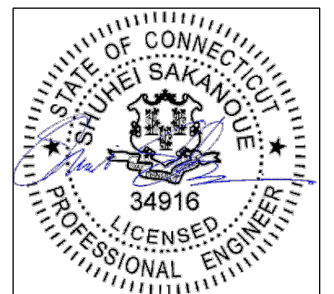
BU #: 806366  
HRT 107(C) 943204

73 NORTH MAIN STREET  
MARLBOROUGH, CT 06447

EXISTING 155'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	06/08/22	RCD	PRELIMINARY	SS
0	06/28/22	RCD	PRELIMINARY	SS



06/28/22

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

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