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

November 11, 2021

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

RE: **Notice of Exempt Modification for T-Mobile: CTHA701A**
Crown Site ID: 876352
94 East High Street, East Hampton, CT 06424
Latitude: 41° 35" 14.20" / Longitude: -72° 29' 19.60"

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 118-foot mount on the existing 118-foot monopole tower located at 94 East High Street, East Hampton, CT. The property is owned by Paul & Sandys Too, Inc and the tower is owned by Crown Castle. T-Mobile now intends to replace six (6) antennas and ancillary equipment at the 118ft 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) RFS – APXVAALL24_43-U-NA20 Antenna
(3) Ericsson- AIR6449 B41 Antenna
(3) Ericsson Radio 4460 B25 + B66 Remote Radios
(3) Ericsson – Radio 4480 B71+B85
(4) Ericsson Hybrid Cables 6X24
Relocate (3) Dishes and Dipole Antennas
Modify Existing Antenna Platform

Remove:
(3) RFS/Celwave – APXVSPP18-C-A20 Antennas
(3) RFS/Celwave – APXTM14-C-120
(3) PCS 1900MHZ 4x45W-65MHZ RRH
(6) 800MHZ 2X250W RRH
(4) Sprint Cables

Ground:

Install New:
(1) 6160 Cabinet
(1) B160 Battery Cabinet
(3.) RBS 6601 IN 6160 Cabinet
(1.) CSR IXRE V2 Transport System

(1) PSU4813 Voltage Booster
(1) DUG20
(3) BB6648

Remove:
(2) Sprint Cabinets

The facility was approved by the Town of East Hampton Planning and Zoning Commission on May 7, 1997 via grant of Special Permit. The approval was given with Conditions which this exempt modification follows.

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 Mr. David Cox, Town Manager, Town of East Hampton, Mr. Jeremy DeCarli, Planning & Zoning Official, Town of East Hampton and Paul & Sandys Too, Inc, Property Owner. Crown Castle is the tower owner.

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

Attachments
cc:

David Cox, Town Manager
Town of East Hampton
1 Community Drive
East Hampton, CT 06424
860.267.4468

Jeremy DeCarli, Planning & Zoning Official
Town of East Hampton
1 Community Drive
East Hampton, CT 06424
860.267.7450

Paul & Sandys Too, Inc, Property Owner
93 East High Street
East Hampton, CT 06424

Crown Castle, Tower Owner

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SPECIAL PERMIT

Applicant:	Sprint Spectrum, L.P.
Owner:	Richard Wall, et al
Location:	94 East High Street (Map 26,Block 05, Lot 16)
Date Granted:	May 7, 1997
Nature of Permit:	Section 7.6.1.E - Public Utility Structure Section 7.9.1.G - Retail/Commercial Use Section 7.12 - Lake Pocotopaug Protection Area
Action:	Subject to the provisions of the relevant regulations and written, oral and graphic testimony, the permit is approved with the following:
Conditions:	1. IWWCA Approval A. All E&S controls shall be in place prior to start of any work B. E&S controls will be monitored by Town Hall C. Bonding will be determined by Town Engineer D. The surface of the lower portion of the access drive shall be restored consistent with new construction as well as noted on the plans. 2. The tower shall be disassembled and removed upon cessation of use.

Carol Micek

Carol Micek, Clerk
East Hampton Planning & Zoning
Commission

May 13, 1997
Date

RECEIVED FOR RECORD AT E. HAMPTON, CT
ON 5/28/97 AT 11:30 A.M.
Attest: PAULINE L. MARKHAM, Town Clerk
MaryAnn Wall, Asst.

94 EAST HIGH ST #CELL

Location	94 EAST HIGH ST #CELL	**Mblu**	26/ 85/ 16/ /
Acct#	R07038	**Owner**	PAULS + SANDYS TOO INC
Assessment	$238,530	**Appraisal**	$340,760
PID	5476	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$140,760	$200,000	$340,760
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$98,530	$140,000	$238,530

Owner of Record

Owner	PAULS + SANDYS TOO INC
Co-Owner	
Address	93 EAST HIGH ST EAST HAMPTON, CT 06424

Sale Price	$0
Certificate	
Book & Page	0344/0096
Sale Date	01/28/2002
Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
PAULS + SANDYS TOO INC	$0		0344/0096	29	01/28/2002

Building Information

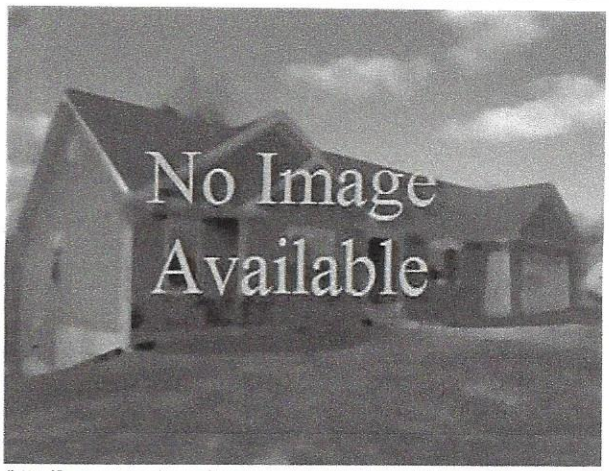
Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Story Height	
Foundation	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
# Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplace	
Cndtn	
Usrfld 103	
Usrfld 104	
Fin Basement	
Fin Bsmt Qual	
Bsmt. Garages	
Num Park	
Fireplaces	
Usrfld 108	
Solar	
Gas Fireplace	
Usrfld 100	
Usrfld 300	
Usrfld 301	

Building Photo



(http://images.vgsi.com/photos/EastHamptonCTPhotos//default.jpg)

Building Layout

Building Layout

(http://images.vgsi.com/photos/EastHamptonCTPhotos//Sketches/5476_54

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	202
Description	Commercial Land & OB
Zone	C
Neighborhood	COM
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1
Frontage	
Depth	
Assessed Value	$140,000
Appraised Value	$200,000

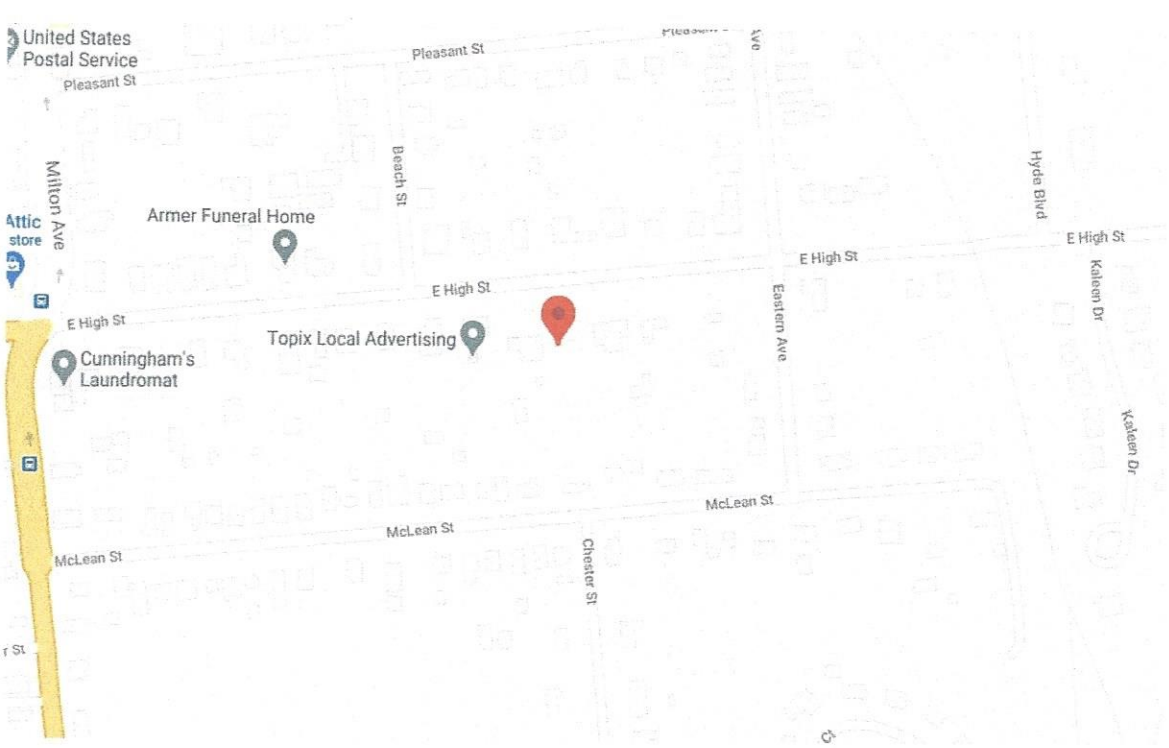
Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
BLD	Building			360.00 SF	$48,600	1
SHD1	Shed	FR	Frame	120.00 S.F.	$2,160	1
CEL	Cell Tower			1.00 UNITS	$90,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$156,400	$200,000	$356,400
2018	$156,400	$200,000	$356,400
2016	$156,400	$200,000	$356,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$109,480	$140,000	$249,480
2018	$109,480	$140,000	$249,480
2016	$109,480	$140,000	$249,480


United States Postal Service
Pleasant St
Pleasant St
Milton Ave
Beach St
Armer Funeral Home
Attic store
E High St
E High St
E High St
Topix Local Advertising
Cunningham's Laundromat
Eastern Ave
Hyde Blvd
E High St
Kaleen Dr
Kaleen Dr
McLean St
McLean St
McLean St
Chester St

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 12, 2021 11:08 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775188374410: Your package has been delivered

Hi. Your package was delivered Fri, 11/12/2021 at 11:06am.

Delivered to 93 E HIGH ST, EAST HAMPTON, CT 06424
Received by M.NAHLMARKAM

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775188374410

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Paul & Sandys Too, Inc Paul & Sandys Too, Inc 93 East High Street EAST HAMPTON, CT, US, 06424
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/11/2021 06:01 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	EAST HAMPTON, CT, US, 06424
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 12, 2021 11:20 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775188334120: Your package has been delivered

Hi. Your package was delivered Fri, 11/12/2021 at 11:18am.

Delivered to 20 E HIGH ST, EAST HAMPTON, CT 06424
Received by D.GIULIANO

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775188334120

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of East Hampton Jeremy Decarli, Planning Dept 1 Community Drive EAST HAMPTON, CT, US, 06424
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/11/2021 06:01 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	EAST HAMPTON, CT, US, 06424
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 12, 2021 11:20 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775188292726: Your package has been delivered

Hi. Your package was delivered Fri, 11/12/2021 at 11:18am.

Delivered to 20 E HIGH ST, EAST HAMPTON, CT 06424
Received by D.GIULIANO

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775188292726

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of East Hampton David Cox - Town Manager 1 Community Drive EAST HAMPTON, CT, US, 06424
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/11/2021 06:01 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	EAST HAMPTON, CT, US, 06424
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **October 4, 2021**

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

Subject: Structural Analysis Report

Carrier Designation:	**Site Number:**	CTHA701A
	Site Name:	CTHA701A
Crown Castle Designation:	**BU Number:**	876352
	Site Name:	Richard Wall
	JDE Job Number:	684633
	Work Order Number:	2025314
	Order Number:	584621 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	25645.608781
Site Data:	**94 East Hight Street, East Hampton, Middlesex County, CT 06424** **Latitude *41° 35' 14.20"*, Longitude *-72° 29' 19.60"*** **117.5 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:

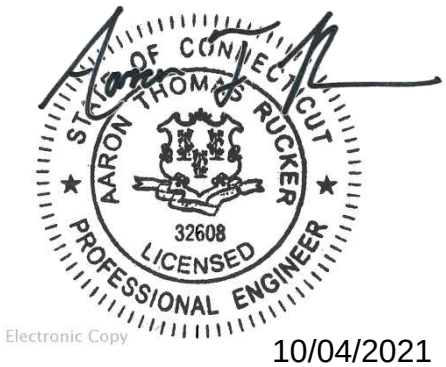
LC7: Proposed Equipment Configuration **Sufficient Capacity - 74.0%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

10/04/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 117.5-ft monopole tower designed by Engineered Endeavors, Inc. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	119.0	3	RFS Celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	3	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	Ericsson	Radio 4480_TMOV2		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
	118.0	1	Site Pro 1	HRK 12-3HD		
		1	Tower Mounts	Platform Mount [LP 602-1]		
75.0	76.0	1	Lucent	KS24019-L112A	1	1/2
	75.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	130.0	1	Decibel	DB420-A	1 1 2	3/8 1/2 7/8
		1	Decibel	DB264-A		
	126.0	1	Decibel	ASP-2011		
	119.0	1	Gabriel Electronics	GHF3W-23		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
105.0	108.0	3	Andrew	LNX-6514DS-A1M w/ Mount Pipe	12 2	1-1/4 1-5/8
		6	Commscope	JAHH-65B-R3B w/ Mount Pipe		
		3	VZW	Sub6 Antenna - VZS01 w/ Mount Pipe		
		2	RFS Celwave	DB-B1-6C-12AB-0Z		
		3	Commscope	CBC78T-DS-43-2X		
		3	Samsung Telecom.	RFV01U-D2A		
		3	Samsung Telecom.	RFV01U-D1A		
	105.0	1	Tower Mounts	Miscellaneous [NA 507-1]		
		1	Tower Mounts	Platform Mount [LP 1201-1]		
91.0	93.0	3	Powerwave Technologies	7770.00 w/ Mount Pipe	6 4 2	1-5/8 3/4 3/8
		3	CCI Antennas	HPA65R-BU6A w/ Mount Pipe		
		3	CCI Antennas	OPA65R-BU6BA-K w/ Mount Pipe		
		3	CCI Antennas	DMP65R-BU6D w/ Mount Pipe		
		2	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RADIO 4415 B30		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RADIO 4449 B5/B12		
		3	Ericsson	RRUS 8843 B2/B66A		
	91.0	6	Powerwave Technologies	LGP 17201		
		1	Site Pro 1	RMQLP-4120-H10		
82.0	83.0	1	Commscope	SHPX3-11W	4 2 1	1-1/4 1/2 7/8
		4	Ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		4	RFS Celwave	APXVAA24_43-U-A20 w/ Mount Pipe		
		4	RFS Celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		1	GPS	GPS_A		
		8	Andrew	641280-DF-2X		
		4	Ericsson	RRUS 11 B12		
		4	Ericsson	RADIO 4478		
		4	Ericsson	RRUS 11 B4		
	82.0	1	Tower Mounts	Platform Mount [LP 701-1]		
	72.0	1	Commscope	DB224-A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1532964	CCISites
Tower Foundation Drawings	2122776	CCISites
Tower Manufacturer Drawings	2122777	CCISites
Post-Modification Inspection	1956331	CCISites
Tower Reinforcement Drawings	3250765	CCISites
Post-Modification Inspection	3404046	CCISites
Tower Reinforcement Drawings	8034413	CCISites
Post-Modification Inspection	8406841	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.

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

3.2) Assumptions

1) The tower and 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)[1,2]

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
117.5 - 112.5	Pole	TP16.266x15x0.1875	Pole	16.7%	Pass
112.5 - 107.5	Pole	TP17.531x16.266x0.1875	Pole	25.4%	Pass
107.5 - 102.5	Pole	TP18.797x17.531x0.1875	Pole	38.7%	Pass
102.5 - 97.5	Pole	TP20.062x18.797x0.1875	Pole	49.4%	Pass
97.5 - 92.5	Pole	TP21.328x20.062x0.1875	Pole	58.1%	Pass
92.5 - 89.71	Pole	TP22.9x21.328x0.1875	Pole	66.9%	Pass
89.71 - 84.71	Pole	TP22.913x21.659x0.3125	Pole	46.5%	Pass
84.71 - 79.71	Pole	TP24.166x22.913x0.3125	Pole	54.6%	Pass
79.71 - 74.71	Pole	TP25.419x24.166x0.3125	Pole	62.0%	Pass
74.71 - 69.71	Pole	TP26.672x25.419x0.3125	Pole	67.8%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
69.71 - 64.71	Pole	TP27.926x26.672x0.3125	Pole	72.5%	Pass
64.71 - 62.83	Pole	TP28.397x27.926x0.3125	Pole	74.0%	Pass
62.83 - 62.58	Pole + Reinf.	TP28.459x28.397x0.7375	Reinf. 2 Tension Rupture	50.4%	Pass
62.58 - 57.58	Pole + Reinf.	TP29.713x28.459x0.7125	Reinf. 2 Tension Rupture	54.0%	Pass
57.58 - 52.58	Pole + Reinf.	TP30.966x29.713x0.7	Reinf. 2 Tension Rupture	57.3%	Pass
52.58 - 47.58	Pole + Reinf.	TP32.219x30.966x0.675	Reinf. 2 Tension Rupture	60.2%	Pass
47.58 - 47.38	Pole + Reinf.	TP33.46x32.219x0.675	Reinf. 2 Tension Rupture	60.3%	Pass
47.38 - 42.38	Pole + Reinf.	TP32.896x31.644x0.675	Reinf. 2 Tension Rupture	64.6%	Pass
42.38 - 37.38	Pole + Reinf.	TP34.147x32.896x0.65	Reinf. 2 Tension Rupture	66.9%	Pass
37.38 - 32.38	Pole + Reinf.	TP35.398x34.147x0.6375	Reinf. 2 Tension Rupture	68.9%	Pass
32.38 - 31.75	Pole + Reinf.	TP35.555x35.398x0.6375	Reinf. 2 Tension Rupture	69.2%	Pass
31.75 - 31.5	Pole + Reinf.	TP35.618x35.555x0.7375	Reinf. 1 Bolt Shear	59.0%	Pass
31.5 - 26.5	Pole + Reinf.	TP36.869x35.618x0.725	Reinf. 1 Compression	58.4%	Pass
26.5 - 21.5	Pole + Reinf.	TP38.12x36.869x0.7125	Reinf. 1 Compression	59.8%	Pass
21.5 - 16.5	Pole + Reinf.	TP39.371x38.12x0.6875	Reinf. 1 Compression	61.1%	Pass
16.5 - 11.5	Pole + Reinf.	TP40.622x39.371x0.675	Reinf. 1 Compression	62.3%	Pass
11.5 - 6.5	Pole + Reinf.	TP41.874x40.622x0.6625	Reinf. 1 Compression	63.3%	Pass
6.5 - 1.5	Pole + Reinf.	TP43.125x41.874x0.65	Reinf. 1 Compression	64.2%	Pass
1.5 - 0	Pole + Reinf.	TP43.5x43.125x0.65	Reinf. 1 Bolt Shear	67.0%	Pass
				Summary	
			Pole	74.0%	Pass
			Reinforcement	69.2%	Pass
			Overall	**74.0%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	64.6	Pass
1,2	Base Plate	-	61.0	Pass
1,2	Base Foundation Structural	-	66.9	Pass
1,2	Base Foundation Soil Interaction	-	57.1	Pass

Structure Rating (max from all components) =	**74.0%**

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

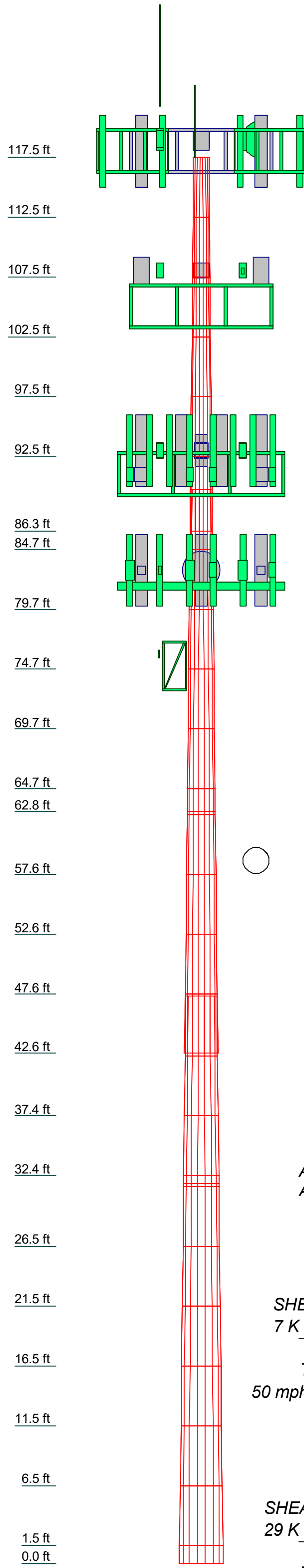
4.1) Recommendations

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875		15.0000	16.2656		0.2
2	5.00	18	0.1875		16.2656	17.5312		0.2
3	5.00	18	0.1875		17.5312	18.7969		0.2
4	5.00	18	0.1875		18.7969	20.0625		0.2
5	5.00	18	0.1875		20.0625	21.3281		0.2
6	5.00	18	0.1875	3.42	21.3281	22.9000		0.3
7	6.21	18	0.3125	[illegible]	21.6593	22.9128		0.4
8	5.00	18	0.3125		22.9128	24.1658		0.4
9	5.00	18	0.3125		24.1658	25.4191		0.4
10	5.00	18	0.3125		25.4191	26.6724		0.4
11	5.00	18	0.3125		26.6724	27.9256		0.5
12	[illegible]	18	[illegible]		[illegible]	[illegible]		0.2
13	[illegible]	18	[illegible]		[illegible]	[illegible]		0.0
14	5.00	18	0.7125		28.4596	29.7128		1.0
15	5.00	18	0.7000		29.7128	30.9660	A572-65	1.0
16	5.00	18	0.6750		30.9660	32.2193		1.1
17	[illegible]	18	0.6750	4.75	32.2193	33.4600		1.1
18	[illegible]	18	0.6750		[illegible]	[illegible]		1.1
19	5.00	18	0.6500		32.8955	34.1466		1.1
20	5.00	18	0.6375		34.1466	35.3978		1.1
21	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
22	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
23	5.00	18	0.7250		35.6180	36.8691		1.3
24	5.00	18	0.7125		36.8691	38.1202		1.3
25	5.00	18	0.6875		38.1202	39.3713		1.4
26	5.00	18	0.6750		39.3713	40.6224		1.4
27	5.00	18	0.6625		40.6224	41.8735		1.4
28	5.00	18	0.6500		41.8735	43.1247		1.4
29	1.50	18	0.6500		43.1247	43.5000		0.4
								19.9



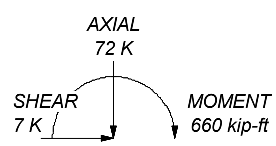
MATERIAL STRENGTH

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

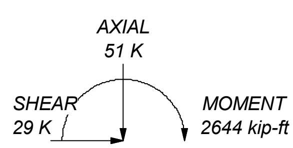
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 74.0%

ALL REACTIONS ARE FACTORED



50 mph WIND - 1.0000 in ICE



REACTIONS - 120 mph WIND

Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 Tower Engineering Professionals	Job: **Richard Wall (BU 876352)** Project: **TEP No. 25645.608781** Client: Crown Castle — Drawn by: adare — App'd: Code: TIA-222-H — Date: 10/04/21 — Scale: NTS Path: G:\Shared drives\25000 - 25659\25645\P-295570_L-608781_876352_RICHARD WALL_Structural Analysis\tnxTower\876352_2025314_LC7.eri — Dwg No. E-1

Tower Input Data

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

Tower is located in Middlesex County, Connecticut.
Tower base elevation above sea level: 665.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Tower Rating: 82.6%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	117.50-112.50	5.00	0.00	18	15.0000	16.2656	0.1875	0.7500	A572-65 (65 ksi)
L2	112.50-107.50	5.00	0.00	18	16.2656	17.5312	0.1875	0.7500	A572-65 (65 ksi)
L3	107.50-102.50	5.00	0.00	18	17.5312	18.7969	0.1875	0.7500	A572-65 (65 ksi)
L4	102.50-97.50	5.00	0.00	18	18.7969	20.0625	0.1875	0.7500	A572-65 (65 ksi)
L5	97.50-92.50	5.00	0.00	18	20.0625	21.3281	0.1875	0.7500	A572-65 (65 ksi)
L6	92.50-86.29	6.21	3.42	18	21.3281	22.9000	0.1875	0.7500	A572-65 (65 ksi)
L7	86.29-84.71	5.00	0.00	18	21.6593	22.9126	0.3125	1.2500	A572-65 (65 ksi)
L8	84.71-79.71	5.00	0.00	18	22.9126	24.1658	0.3125	1.2500	A572-65 (65 ksi)
L9	79.71-74.71	5.00	0.00	18	24.1658	25.4191	0.3125	1.2500	A572-65 (65 ksi)
L10	74.71-69.71	5.00	0.00	18	25.4191	26.6724	0.3125	1.2500	A572-65 (65 ksi)
L11	69.71-64.71	5.00	0.00	18	26.6724	27.9256	0.3125	1.2500	A572-65 (65 ksi)
L12	64.71-62.83	1.88	0.00	18	27.9256	28.3968	0.3125	1.2500	A572-65 (65 ksi)
L13	62.83-62.58	0.25	0.00	18	28.3968	28.4595	0.7375	2.9500	A572-65 (65 ksi)
L14	62.58-57.58	5.00	0.00	18	28.4595	29.7128	0.7125	2.8500	A572-65 (65 ksi)
L15	57.58-52.58	5.00	0.00	18	29.7128	30.9660	0.7000	2.8000	A572-65 (65 ksi)
L16	52.58-47.58	5.00	0.00	18	30.9660	32.2193	0.6750	2.7000	A572-65 (65 ksi)
L17	47.58-42.63	4.95	4.75	18	32.2193	33.4600	0.6750	2.7000	A572-65 (65 ksi)
L18	42.63-42.38	5.00	0.00	18	31.6444	32.8955	0.6750	2.7000	A572-65 (65 ksi)
L19	42.38-37.38	5.00	0.00	18	32.8955	34.1466	0.6500	2.6000	A572-65 (65 ksi)
L20	37.38-32.38	5.00	0.00	18	34.1466	35.3978	0.6375	2.5500	A572-65 (65 ksi)
L21	32.38-31.75	0.63	0.00	18	35.3978	35.5554	0.6375	2.5500	A572-65 (65 ksi)
L22	31.75-31.50	0.25	0.00	18	35.5554	35.6180	0.7375	2.9500	A572-65 (65 ksi)
L23	31.50-26.50	5.00	0.00	18	35.6180	36.8691	0.7250	2.9000	A572-65 (65 ksi)
L24	26.50-21.50	5.00	0.00	18	36.8691	38.1202	0.7125	2.8500	A572-65 (65 ksi)
L25	21.50-16.50	5.00	0.00	18	38.1202	39.3713	0.6875	2.7500	A572-65 (65 ksi)
L26	16.50-11.50	5.00	0.00	18	39.3713	40.6224	0.6750	2.7000	A572-65 (65 ksi)
L27	11.50-6.50	5.00	0.00	18	40.6224	41.8735	0.6625	2.6500	A572-65 (65 ksi)
L28	6.50-1.50	5.00	0.00	18	41.8735	43.1247	0.6500	2.6000	A572-65 (65 ksi)
L29	1.50-0.00	1.50		18	43.1247	43.5000	0.6500	2.6000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.2025	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	16.4876	9.5685	312.5010	5.7077	8.2629	37.8196	625.4132	4.7852	2.5327	13.508
L2	16.4876	9.5685	312.5010	5.7077	8.2629	37.8196	625.4132	4.7852	2.5327	13.508
	17.7728	10.3217	392.2599	6.1570	8.9059	44.0451	785.0359	5.1618	2.7555	14.696
L3	17.7728	10.3217	392.2599	6.1570	8.9059	44.0451	785.0359	5.1618	2.7555	14.696
	19.0579	11.0749	484.5515	6.6063	9.5488	50.7447	969.7406	5.5385	2.9782	15.884
L4	19.0579	11.0749	484.5515	6.6063	9.5488	50.7447	969.7406	5.5385	2.9782	15.884
	20.3431	11.8281	590.2904	7.0556	10.1917	57.9185	1181.3576	5.9152	3.2010	17.072
L5	20.3431	11.8281	590.2904	7.0556	10.1917	57.9185	1181.3576	5.9152	3.2010	17.072
	21.6282	12.5813	710.3912	7.5049	10.8347	65.5665	1421.7171	6.2918	3.4237	18.26
L6	21.6282	12.5813	710.3912	7.5049	10.8347	65.5665	1421.7171	6.2918	3.4237	18.26
	23.2243	13.5168	880.9281	8.0629	11.6332	75.7253	1763.0154	6.7597	3.7004	19.735
L7	22.8157	21.1734	1218.9720	7.5781	11.0029	110.7861	2439.5479	10.5887	3.2620	10.439
	23.2178	22.4164	1446.5186	8.0230	11.6396	124.2758	2894.9407	11.2104	3.4826	11.144
L8	23.2178	22.4164	1446.5186	8.0230	11.6396	124.2758	2894.9407	11.2104	3.4826	11.144
	24.4904	23.6595	1700.7544	8.4679	12.2762	138.5403	3403.7467	11.8320	3.7032	11.85
L9	24.4904	23.6595	1700.7544	8.4679	12.2762	138.5403	3403.7467	11.8320	3.7032	11.85
	25.7630	24.9026	1983.1597	8.9128	12.9129	153.5797	3968.9289	12.4537	3.9238	12.556
L10	25.7630	24.9026	1983.1597	8.9128	12.9129	153.5797	3968.9289	12.4537	3.9238	12.556
	27.0356	26.1457	2295.2143	9.3577	13.5496	169.3941	4593.4488	13.0753	4.1443	13.262
L11	27.0356	26.1457	2295.2143	9.3577	13.5496	169.3941	4593.4488	13.0753	4.1443	13.262
	28.3082	27.3888	2638.3983	9.8027	14.1862	185.9833	5280.2683	13.6970	4.3649	13.968
L12	28.3082	27.3888	2638.3983	9.8027	14.1862	185.9833	5280.2683	13.6970	4.3649	13.968
	28.7867	27.8561	2775.7914	9.9699	14.4256	192.4213	5555.2353	13.9307	4.4478	14.233
L13	28.7211	64.7457	6257.9430	9.8191	14.4256	433.8084	12524.1203	32.3790	3.6998	5.017
	28.7848	64.8923	6300.5720	9.8413	14.4574	435.8018	12609.4345	32.4523	3.7109	5.032
L14	28.7886	62.7491	6103.4761	9.8502	14.4574	422.1690	12214.9834	31.3805	3.7549	5.27
	30.0612	65.5834	6968.4267	10.2951	15.0941	461.6662	13946.0226	32.7979	3.9754	5.58
L15	30.0631	64.4605	6855.0302	10.2995	15.0941	454.1536	13719.0803	32.2364	3.9974	5.711
	31.3357	67.2450	7782.3031	10.7444	15.7307	494.7196	15574.8464	33.6289	4.2180	6.026
L16	31.3396	64.8970	7522.9751	10.7533	15.7307	478.2342	15055.8491	32.4547	4.2620	6.314
	32.6122	67.5820	8495.9071	11.1982	16.3674	519.0752	17002.9933	33.7974	4.4826	6.641
L17	32.6122	67.5820	8495.9071	11.1982	16.3674	519.0752	17002.9933	33.7974	4.4826	6.641
	33.8720	70.2402	9538.3600	11.6387	16.9977	561.1566	19089.2708	35.1268	4.7010	6.964
L18	33.2353	66.3504	8039.8267	10.9941	16.0754	500.1336	16090.2324	33.1815	4.3814	6.491
	33.2989	69.0309	9054.1120	11.4383	16.7109	541.8079	18120.1376	34.5220	4.6016	6.817
L19	33.3027	66.5257	8739.0850	11.4472	16.7109	522.9564	17489.6692	33.2692	4.6456	7.147
	34.5731	69.1069	9796.2871	11.8913	17.3465	564.7416	19605.4644	34.5600	4.8658	7.486
L20	34.5751	67.8032	9618.6572	11.8957	17.3465	554.5015	19249.9708	33.9081	4.8878	7.667
	35.8455	70.3348	10736.7681	12.3399	17.9821	597.0822	21487.6639	35.1741	5.1080	8.013
L21	35.8455	70.3348	10736.7681	12.3399	17.9821	597.0822	21487.6639	35.1741	5.1080	8.013
	36.0056	70.6538	10883.5083	12.3959	18.0621	602.5591	21781.3374	35.3336	5.1358	8.056
L22	35.9901	81.5026	12482.8605	12.3604	18.0621	691.1063	24982.1463	40.7590	4.9598	6.725
	36.0536	81.6490	12550.2639	12.3826	18.0939	693.6177	25117.0418	40.8323	4.9708	6.74
L23	36.0556	80.2939	12350.8165	12.3870	18.0939	682.5948	24717.8844	40.1546	4.9928	6.887
	37.3260	83.1729	13727.5706	12.8311	18.7295	732.9389	27473.2044	41.5944	5.2130	7.19
L24	37.3279	81.7672	13504.8902	12.8356	18.7295	721.0496	27027.5505	40.8914	5.2350	7.347
	38.5983	84.5966	14955.8804	13.2797	19.3651	772.3127	29931.4401	42.3063	5.4552	7.656
L25	38.6022	81.6828	14460.0654	13.2886	19.3651	746.7091	28939.1578	40.8492	5.4992	7.999
	39.8726	84.4129	15958.9678	13.7328	20.0006	797.9234	31938.9349	42.2145	5.7194	8.319
L26	39.8745	82.9049	15683.9990	13.7372	20.0006	784.1754	31388.6354	41.4603	5.7414	8.506
	41.1450	85.5854	17254.9861	14.1813	20.6362	836.1516	34532.6767	42.8008	5.9615	8.832
L27	41.1469	84.0267	16951.3522	14.1858	20.6362	821.4379	33925.0093	42.0214	5.9835	9.032
	42.4173	86.6576	18593.9290	14.6299	21.2718	874.1133	37212.3244	43.3370	6.2037	9.364
L28	42.4192	85.0483	18259.7055	14.6344	21.2718	858.4012	36543.4376	42.5322	6.2257	9.578

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	43.6897	87.6295	19973.1984	15.0785	21.9073	911.7130	39972.6780	43.8231	6.4459	9.917
L29	43.6897	87.6295	19973.1984	15.0785	21.9073	911.7130	39972.6780	43.8231	6.4459	9.917
	44.0708	88.4038	20507.3814	15.2118	22.0980	928.0198	41041.7469	44.2103	6.5120	10.018

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 117.50-112.50				1	1	1			
L2 112.50-107.50				1	1	1			
L3 107.50-102.50				1	1	1			
L4 102.50-97.50				1	1	1			
L5 97.50-92.50				1	1	1			
L6 92.50-86.29				1	1	1			
L7 86.29-84.71				1	1	1			
L8 84.71-79.71				1	1	1			
L9 79.71-74.71				1	1	1			
L10 74.71-69.71				1	1	1			
L11 69.71-64.71				1	1	1			
L12 64.71-62.83				1	1	1			
L13 62.83-62.58				1	1	0.931072			
L14 62.58-57.58				1	1	0.940216			
L15 57.58-52.58				1	1	0.935469			
L16 52.58-47.58				1	1	0.949198			
L17 47.58-42.63				1	1	0.948426			
L18 42.63-42.38				1	1	0.938992			
L19 42.38-37.38				1	1	0.955916			
L20 37.38-32.38				1	1	0.956872			
L21 32.38-31.75				1	1	0.954765			
L22 31.75-31.50				1	1	0.949431			
L23 31.50-26.50				1	1	0.946956			
L24 26.50-21.50				1	1	0.945689			
L25 21.50-16.50				1	1	0.962447			
L26 16.50-11.50				1	1	0.963762			
L27 11.50-6.50				1	1	0.966158			
L28 6.50-1.50				1	1	0.969603			
L29 1.50-0.00				1	1	0.965322			

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	B	No	Surface Ar (CaAa)	117.50 - 0.00	1	1	0.250 0.250	0.3750		0.22
HB158-1-08U8-S8F18(1-5/8)	A	No	Surface Ar (CaAa)	105.00 - 0.00	2	2	0.250 0.250	1.9800		1.70
LDF5-50A(7/8)	B	No	Surface Ar (CaAa)	82.00 - 0.00	1	1	0.000 0.000	1.0300		0.33
WR-VG86ST-BRD(3/4)	B	No	Surface Ar (CaAa)	91.00 - 0.00	2	2	0.500 0.500	0.7950		0.58
FB-L98B-002-75000(3/8)	B	No	Surface Ar (CaAa)	91.00 - 0.00	1	1	0.500 0.500	0.3937		0.06
75										
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	75.00 - 0.00	1	1	0.250 0.250	0.6250		0.15
*****										
(Area) CCI-65FP-085125 (H)	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.500 0.500	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.250 0.250	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	-0.250 -0.250	8.5000	19.5000	0.00
****										
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.500 0.500	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	B	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.250 0.250	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	65.58 - 35.50	1	1	0.000 0.000	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	65.58 - 35.50	1	1	-0.250 -0.250	6.5000	15.5000	0.00
*****										
Aero MP3-04	A	No	Surface Af (CaAa)	30.50 - 0.00	1	1	0.000 0.000	4.7800	12.7800	14.10
Aero MP3-04	B	No	Surface Af (CaAa)	7.50 - 0.00	1	1	0.000 0.000	4.7800	12.7800	14.10
Aero MP3-04	B	No	Surface Af (CaAa)	30.50 - 11.50	1	1	0.000 0.000	4.7800	12.7800	14.10
Aero MP3-03	A	No	Surface Af (CaAa)	47.00 - 27.00	1	1	0.000 0.000	4.0600	11.2600	9.90
Aero MP3-03	B	No	Surface Af (CaAa)	47.00 - 27.00	1	1	0.000 0.000	4.0600	11.2600	9.90
117										
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
118								

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB158-21U6S24-xx M_TMO(1-5/8)	A	No	No	Inside Pole	117.50 - 0.00	3	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
LDF2-50A(3/8)	A	No	No	Inside Pole	117.50 - 0.00	1	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
LDF4-50A(1/2)	A	No	No	Inside Pole	117.50 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
LDF5-50A(7/8)	A	No	No	Inside Pole	117.50 - 0.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
105									
LDF6-50A(1-1/4)	A	No	No	Inside Pole	105.00 - 0.00	12	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
82									
HB114-U6S12-xxx-LI(1-1/4)	B	No	No	Inside Pole	82.00 - 0.00	4	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
LDF4-50A(1/2)	B	No	No	Inside Pole	82.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
91									
2" Flex Conduit	C	No	No	Inside Pole	91.00 - 0.00	2	No Ice	0.00	0.36
							1/2" Ice	0.00	0.36
							1" Ice	0.00	0.36
LCF158-50A(1-5/8)	C	No	No	Inside Pole	91.00 - 0.00	6	No Ice	0.00	0.80
							1/2" Ice	0.00	0.80
							1" Ice	0.00	0.80
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	91.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
FB-L98B-002-75000 (3/8)	C	No	No	Inside Pole	91.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	117.50-112.50	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	112.50-107.50	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	107.50-102.50	A	0.000	0.000	0.990	0.000	0.07
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	102.50-97.50	A	0.000	0.000	1.980	0.000	0.09
		B	0.000	0.000	0.188	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.00
L5	97.50-92.50	A	0.000	0.000	1.980	0.000	0.09
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L6	92.50-86.29	A	0.000	0.000	2.459	0.000	0.12
		B	0.000	0.000	1.167	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.03
L7	86.29-84.71	A	0.000	0.000	0.626	0.000	0.03
		B	0.000	0.000	0.373	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L8	84.71-79.71	A	0.000	0.000	1.980	0.000	0.09
		B	0.000	0.000	1.415	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.03
L9	79.71-74.71	A	0.000	0.000	1.980	0.000	0.09
		B	0.000	0.000	1.694	0.000	0.04
		C	0.000	0.000	0.018	0.000	0.03
L10	74.71-69.71	A	0.000	0.000	1.980	0.000	0.09
		B	0.000	0.000	1.694	0.000	0.04
		C	0.000	0.000	0.313	0.000	0.03
L11	69.71-64.71	A	0.000	0.000	3.865	0.000	0.09
		B	0.000	0.000	2.637	0.000	0.04
		C	0.000	0.000	1.255	0.000	0.03
L12	64.71-62.83	A	0.000	0.000	4.818	0.000	0.04
		B	0.000	0.000	2.674	0.000	0.02
		C	0.000	0.000	2.154	0.000	0.01
L13	62.83-62.58	A	0.000	0.000	0.641	0.000	0.00
		B	0.000	0.000	0.356	0.000	0.00
		C	0.000	0.000	0.286	0.000	0.00
L14	62.58-57.58	A	0.000	0.000	12.813	0.000	0.09
		B	0.000	0.000	7.111	0.000	0.04
		C	0.000	0.000	5.729	0.000	0.03
L15	57.58-52.58	A	0.000	0.000	12.813	0.000	0.09
		B	0.000	0.000	7.111	0.000	0.04
		C	0.000	0.000	5.729	0.000	0.03
L16	52.58-47.58	A	0.000	0.000	12.813	0.000	0.09
		B	0.000	0.000	7.111	0.000	0.04
		C	0.000	0.000	5.729	0.000	0.03
L17	47.58-42.63	A	0.000	0.000	15.642	0.000	0.14
		B	0.000	0.000	9.997	0.000	0.09
		C	0.000	0.000	5.672	0.000	0.03
L18	42.63-42.38	A	0.000	0.000	0.810	0.000	0.01
		B	0.000	0.000	0.525	0.000	0.00
		C	0.000	0.000	0.286	0.000	0.00
L19	42.38-37.38	A	0.000	0.000	16.197	0.000	0.14
		B	0.000	0.000	10.494	0.000	0.09
		C	0.000	0.000	5.729	0.000	0.03
L20	37.38-32.38	A	0.000	0.000	18.277	0.000	0.14
		B	0.000	0.000	11.534	0.000	0.09
		C	0.000	0.000	6.769	0.000	0.03
L21	32.38-31.75	A	0.000	0.000	2.461	0.000	0.02
		B	0.000	0.000	1.532	0.000	0.01
		C	0.000	0.000	0.932	0.000	0.00
L22	31.75-31.50	A	0.000	0.000	0.977	0.000	0.01
		B	0.000	0.000	0.608	0.000	0.00
		C	0.000	0.000	0.370	0.000	0.00
L23	31.50-26.50	A	0.000	0.000	22.378	0.000	0.20
		B	0.000	0.000	15.009	0.000	0.15
		C	0.000	0.000	7.396	0.000	0.03
L24	26.50-21.50	A	0.000	0.000	20.130	0.000	0.17
		B	0.000	0.000	12.761	0.000	0.11
		C	0.000	0.000	7.396	0.000	0.03

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L25	21.50-16.50	A	0.000	0.000	20.130	0.000	0.17
		B	0.000	0.000	12.761	0.000	0.11
		C	0.000	0.000	7.396	0.000	0.03
L26	16.50-11.50	A	0.000	0.000	20.130	0.000	0.17
		B	0.000	0.000	12.761	0.000	0.11
		C	0.000	0.000	7.396	0.000	0.03
L27	11.50-6.50	A	0.000	0.000	20.130	0.000	0.17
		B	0.000	0.000	9.479	0.000	0.06
		C	0.000	0.000	7.396	0.000	0.03
L28	6.50-1.50	A	0.000	0.000	20.130	0.000	0.17
		B	0.000	0.000	12.286	0.000	0.11
		C	0.000	0.000	7.396	0.000	0.03
L29	1.50-0.00	A	0.000	0.000	6.039	0.000	0.05
		B	0.000	0.000	3.686	0.000	0.03
		C	0.000	0.000	2.219	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	117.50-112.50	A	0.963	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.150	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L2	112.50-107.50	A	0.959	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.146	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L3	107.50-102.50	A	0.954	0.000	0.000	1.834	0.000	0.08
		B		0.000	0.000	1.142	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L4	102.50-97.50	A	0.950	0.000	0.000	3.662	0.000	0.12
		B		0.000	0.000	1.137	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L5	97.50-92.50	A	0.945	0.000	0.000	3.656	0.000	0.12
		B		0.000	0.000	1.132	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L6	92.50-86.29	A	0.939	0.000	0.000	4.532	0.000	0.15
		B		0.000	0.000	4.511	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.03
L7	86.29-84.71	A	0.935	0.000	0.000	1.153	0.000	0.04
		B		0.000	0.000	1.400	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L8	84.71-79.71	A	0.931	0.000	0.000	3.639	0.000	0.12
		B		0.000	0.000	5.067	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.03
L9	79.71-74.71	A	0.925	0.000	0.000	3.632	0.000	0.12
		B		0.000	0.000	5.826	0.000	0.08
		C		0.000	0.000	0.072	0.000	0.03
L10	74.71-69.71	A	0.919	0.000	0.000	3.624	0.000	0.12
		B		0.000	0.000	5.800	0.000	0.08
		C		0.000	0.000	1.232	0.000	0.04
L11	69.71-64.71	A	0.913	0.000	0.000	5.818	0.000	0.13
		B		0.000	0.000	6.873	0.000	0.09
		C		0.000	0.000	2.326	0.000	0.05
L12	64.71-62.83	A	0.908	0.000	0.000	6.113	0.000	0.07
		B		0.000	0.000	4.541	0.000	0.04
		C		0.000	0.000	2.837	0.000	0.03
L13	62.83-62.58	A	0.906	0.000	0.000	0.813	0.000	0.01

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.603	0.000	0.01
		C		0.000	0.000	0.377	0.000	0.00
L14	62.58-57.58	A	0.902	0.000	0.000	16.241	0.000	0.19
		B		0.000	0.000	12.048	0.000	0.11
		C		0.000	0.000	7.534	0.000	0.08
L15	57.58-52.58	A	0.895	0.000	0.000	16.216	0.000	0.18
		B		0.000	0.000	12.007	0.000	0.11
		C		0.000	0.000	7.518	0.000	0.08
L16	52.58-47.58	A	0.886	0.000	0.000	16.188	0.000	0.18
		B		0.000	0.000	11.962	0.000	0.11
		C		0.000	0.000	7.502	0.000	0.08
L17	47.58-42.63	A	0.877	0.000	0.000	19.720	0.000	0.25
		B		0.000	0.000	15.518	0.000	0.18
		C		0.000	0.000	7.408	0.000	0.07
L18	42.63-42.38	A	0.872	0.000	0.000	1.021	0.000	0.01
		B		0.000	0.000	0.809	0.000	0.01
		C		0.000	0.000	0.374	0.000	0.00
L19	42.38-37.38	A	0.866	0.000	0.000	20.373	0.000	0.26
		B		0.000	0.000	16.107	0.000	0.19
		C		0.000	0.000	7.462	0.000	0.07
L20	37.38-32.38	A	0.855	0.000	0.000	22.404	0.000	0.26
		B		0.000	0.000	17.075	0.000	0.19
		C		0.000	0.000	8.479	0.000	0.08
L21	32.38-31.75	A	0.848	0.000	0.000	2.977	0.000	0.03
		B		0.000	0.000	2.225	0.000	0.02
		C		0.000	0.000	1.145	0.000	0.01
L22	31.75-31.50	A	0.846	0.000	0.000	1.181	0.000	0.01
		B		0.000	0.000	0.882	0.000	0.01
		C		0.000	0.000	0.454	0.000	0.00
L23	31.50-26.50	A	0.839	0.000	0.000	27.027	0.000	0.33
		B		0.000	0.000	21.039	0.000	0.26
		C		0.000	0.000	9.074	0.000	0.08
L24	26.50-21.50	A	0.823	0.000	0.000	24.124	0.000	0.29
		B		0.000	0.000	18.105	0.000	0.21
		C		0.000	0.000	9.042	0.000	0.08
L25	21.50-16.50	A	0.804	0.000	0.000	24.043	0.000	0.28
		B		0.000	0.000	17.987	0.000	0.21
		C		0.000	0.000	9.004	0.000	0.08
L26	16.50-11.50	A	0.780	0.000	0.000	23.940	0.000	0.28
		B		0.000	0.000	17.835	0.000	0.20
		C		0.000	0.000	8.956	0.000	0.08
L27	11.50-6.50	A	0.746	0.000	0.000	23.797	0.000	0.27
		B		0.000	0.000	13.678	0.000	0.12
		C		0.000	0.000	8.888	0.000	0.07
L28	6.50-1.50	A	0.688	0.000	0.000	23.549	0.000	0.26
		B		0.000	0.000	16.476	0.000	0.19
		C		0.000	0.000	8.772	0.000	0.07
L29	1.50-0.00	A	0.582	0.000	0.000	6.930	0.000	0.07
		B		0.000	0.000	4.759	0.000	0.05
		C		0.000	0.000	2.568	0.000	0.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	117.50-112.50	0.2997	0.0000	0.9175	0.0000

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L2	112.50-107.50	0.3000	0.0000	0.9278	0.0000
L3	107.50-102.50	-0.4906	-1.2939	0.0838	-1.1320
L4	102.50-97.50	-1.0712	-2.2496	-0.4628	-1.8836
L5	97.50-92.50	-1.0817	-2.2736	-0.4718	-1.9254
L6	92.50-86.29	-0.2381	-1.6762	0.6750	-1.0249
L7	86.29-84.71	0.0004	-1.5120	0.9718	-0.8013
L8	84.71-79.71	0.2414	-1.6275	1.2382	-0.9545
L9	79.71-74.71	0.5031	-1.7423	1.5296	-1.0999
L10	74.71-69.71	0.3372	-1.4371	1.2328	-0.6147
L11	69.71-64.71	1.0744	-0.3040	1.5483	-0.0932
L12	64.71-62.83	2.3486	1.6802	2.3069	1.2723
L13	62.83-62.58	2.3680	1.6944	2.3239	1.2824
L14	62.58-57.58	2.4088	1.7245	2.3619	1.3051
L15	57.58-52.58	2.4853	1.7808	2.4328	1.3476
L16	52.58-47.58	2.5601	1.8358	2.5013	1.3891
L17	47.58-42.63	2.2562	0.3852	2.2679	0.2573
L18	42.63-42.38	2.2154	0.2204	2.2348	0.1245
L19	42.38-37.38	2.2491	0.2257	2.2635	0.1276
L20	37.38-32.38	2.4940	0.5999	2.4424	0.3848
L21	32.38-31.75	2.6259	0.8002	2.5422	0.5294
L22	31.75-31.50	2.6325	0.8025	2.5480	0.5310
L23	31.50-26.50	2.3985	-0.2331	2.3594	-0.3191
L24	26.50-21.50	2.6783	0.5930	2.5987	0.3905
L25	21.50-16.50	2.7474	0.6113	2.6555	0.4030
L26	16.50-11.50	2.8156	0.6293	2.7085	0.4152
L27	11.50-6.50	1.8510	1.3953	1.8870	1.0398
L28	6.50-1.50	2.8038	0.7696	2.6175	0.5596
L29	1.50-0.00	2.8443	0.7823	2.6095	0.5634

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	112.50 - 117.50	1.0000	1.0000
L2	2	Safety Line 3/8	107.50 - 112.50	1.0000	1.0000
L3	2	Safety Line 3/8	102.50 - 107.50	1.0000	1.0000
L3	12	HB158-1-08U8-S8F18(1-5/8)	102.50 - 105.00	1.0000	1.0000
L4	2	Safety Line 3/8	97.50 - 102.50	1.0000	1.0000
L4	12	HB158-1-08U8-S8F18(1-5/8)	97.50 - 102.50	1.0000	1.0000
L5	2	Safety Line 3/8	92.50 - 97.50	1.0000	1.0000
L5	12	HB158-1-08U8-S8F18(1-5/8)	92.50 - 97.50	1.0000	1.0000
L6	2	Safety Line 3/8	86.29 - 92.50	1.0000	1.0000
L6	12	HB158-1-08U8-S8F18(1-5/8)	86.29 - 92.50	1.0000	1.0000
L6	20	WR-VG86ST-BRD(3/4)	86.29 - 91.00	1.0000	1.0000
L6	21	FB-L98B-002-75000(3/8)	86.29 - 91.00	1.0000	1.0000
L7	2	Safety Line 3/8	84.71 - 86.29	1.0000	1.0000
L7	12	HB158-1-08U8-S8F18(1-5/8)	84.71 - 86.29	1.0000	1.0000
L7	20	WR-VG86ST-BRD(3/4)	84.71 - 86.29	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L7	21	FB-L98B-002-75000(3/8)	84.71 - 86.29	1.0000	1.0000
L8	2	Safety Line 3/8	79.71 - 84.71	1.0000	1.0000
L8	12	HB158-1-08U8-S8F18(1-5/8)	79.71 - 84.71	1.0000	1.0000
L8	16	LDF5-50A(7/8)	79.71 - 82.00	1.0000	1.0000
L8	20	WR-VG86ST-BRD(3/4)	79.71 - 84.71	1.0000	1.0000
L8	21	FB-L98B-002-75000(3/8)	79.71 - 84.71	1.0000	1.0000
L9	2	Safety Line 3/8	74.71 - 79.71	1.0000	1.0000
L9	12	HB158-1-08U8-S8F18(1-5/8)	74.71 - 79.71	1.0000	1.0000
L9	16	LDF5-50A(7/8)	74.71 - 79.71	1.0000	1.0000
L9	20	WR-VG86ST-BRD(3/4)	74.71 - 79.71	1.0000	1.0000
L9	21	FB-L98B-002-75000(3/8)	74.71 - 79.71	1.0000	1.0000
L9	25	LDF4-50A(1/2)	74.71 - 75.00	1.0000	1.0000
L10	2	Safety Line 3/8	69.71 - 74.71	1.0000	1.0000
L10	12	HB158-1-08U8-S8F18(1-5/8)	69.71 - 74.71	1.0000	1.0000
L10	16	LDF5-50A(7/8)	69.71 - 74.71	1.0000	1.0000
L10	20	WR-VG86ST-BRD(3/4)	69.71 - 74.71	1.0000	1.0000
L10	21	FB-L98B-002-75000(3/8)	69.71 - 74.71	1.0000	1.0000
L10	25	LDF4-50A(1/2)	69.71 - 74.71	1.0000	1.0000
L11	2	Safety Line 3/8	64.71 - 69.71	1.0000	1.0000
L11	12	HB158-1-08U8-S8F18(1-5/8)	64.71 - 69.71	1.0000	1.0000
L11	16	LDF5-50A(7/8)	64.71 - 69.71	1.0000	1.0000
L11	20	WR-VG86ST-BRD(3/4)	64.71 - 69.71	1.0000	1.0000
L11	21	FB-L98B-002-75000(3/8)	64.71 - 69.71	1.0000	1.0000
L11	25	LDF4-50A(1/2)	64.71 - 69.71	1.0000	1.0000
L11	32	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	1.0000	1.0000
L11	33	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	1.0000	1.0000
L11	34	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	1.0000	1.0000
L11	35	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	1.0000	1.0000
L12	2	Safety Line 3/8	62.83 - 64.71	1.0000	1.0000
L12	12	HB158-1-08U8-S8F18(1-5/8)	62.83 - 64.71	1.0000	1.0000
L12	16	LDF5-50A(7/8)	62.83 - 64.71	1.0000	1.0000
L12	20	WR-VG86ST-BRD(3/4)	62.83 - 64.71	1.0000	1.0000
L12	21	FB-L98B-002-75000(3/8)	62.83 - 64.71	1.0000	1.0000
L12	25	LDF4-50A(1/2)	62.83 - 64.71	1.0000	1.0000
L12	32	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	1.0000	1.0000
L12	33	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	1.0000	1.0000
L12	34	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	1.0000	1.0000
L12	35	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	1.0000	1.0000
L13	2	Safety Line 3/8	62.58 - 62.83	1.0000	1.0000
L13	12	HB158-1-08U8-S8F18(1-5/8)	62.58 - 62.83	1.0000	1.0000
L13	16	LDF5-50A(7/8)	62.58 - 62.83	1.0000	1.0000
L13	20	WR-VG86ST-BRD(3/4)	62.58 - 62.83	1.0000	1.0000
L13	21	FB-L98B-002-75000(3/8)	62.58 - 62.83	1.0000	1.0000
L13	25	LDF4-50A(1/2)	62.58 - 62.83	1.0000	1.0000
L13	32	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	1.0000	1.0000
L13	33	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	1.0000	1.0000
L13	34	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	1.0000	1.0000
L13	35	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	1.0000	1.0000
L14	2	Safety Line 3/8	57.58 - 62.58	1.0000	1.0000
L14	12	HB158-1-08U8-S8F18(1-5/8)	57.58 - 62.58	1.0000	1.0000
L14	16	LDF5-50A(7/8)	57.58 - 62.58	1.0000	1.0000
L14	20	WR-VG86ST-BRD(3/4)	57.58 - 62.58	1.0000	1.0000
L14	21	FB-L98B-002-75000(3/8)	57.58 - 62.58	1.0000	1.0000
L14	25	LDF4-50A(1/2)	57.58 - 62.58	1.0000	1.0000
L14	32	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	1.0000	1.0000
L14	33	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	1.0000	1.0000
L14	34	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	1.0000	1.0000
L14	35	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	1.0000	1.0000
L15	2	Safety Line 3/8	52.58 - 57.58	1.0000	1.0000
L15	12	HB158-1-08U8-S8F18(1-5/8)	52.58 - 57.58	1.0000	1.0000
L15	16	LDF5-50A(7/8)	52.58 - 57.58	1.0000	1.0000
L15	20	WR-VG86ST-BRD(3/4)	52.58 - 57.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	21	FB-L98B-002-75000(3/8)	52.58 - 57.58	1.0000	1.0000
L15	25	LDF4-50A(1/2)	52.58 - 57.58	1.0000	1.0000
L15	32	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	1.0000	1.0000
L15	33	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	1.0000	1.0000
L15	34	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	1.0000	1.0000
L15	35	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	1.0000	1.0000
L16	2	Safety Line 3/8	47.58 - 52.58	1.0000	1.0000
L16	12	HB158-1-08U8-S8F18(1-5/8)	47.58 - 52.58	1.0000	1.0000
L16	16	LDF5-50A(7/8)	47.58 - 52.58	1.0000	1.0000
L16	20	WR-VG86ST-BRD(3/4)	47.58 - 52.58	1.0000	1.0000
L16	21	FB-L98B-002-75000(3/8)	47.58 - 52.58	1.0000	1.0000
L16	25	LDF4-50A(1/2)	47.58 - 52.58	1.0000	1.0000
L16	32	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	1.0000	1.0000
L16	33	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	1.0000	1.0000
L16	34	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	1.0000	1.0000
L16	35	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	1.0000	1.0000
L17	2	Safety Line 3/8	42.63 - 47.58	1.0000	1.0000
L17	12	HB158-1-08U8-S8F18(1-5/8)	42.63 - 47.58	1.0000	1.0000
L17	16	LDF5-50A(7/8)	42.63 - 47.58	1.0000	1.0000
L17	20	WR-VG86ST-BRD(3/4)	42.63 - 47.58	1.0000	1.0000
L17	21	FB-L98B-002-75000(3/8)	42.63 - 47.58	1.0000	1.0000
L17	25	LDF4-50A(1/2)	42.63 - 47.58	1.0000	1.0000
L17	32	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	1.0000	1.0000
L17	33	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	1.0000	1.0000
L17	34	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	1.0000	1.0000
L17	35	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	1.0000	1.0000
L17	40	Aero MP3-03	42.63 - 47.00	1.0000	1.0000
L17	41	Aero MP3-03	42.63 - 47.00	1.0000	1.0000
L18	2	Safety Line 3/8	42.38 - 42.63	1.0000	1.0000
L18	12	HB158-1-08U8-S8F18(1-5/8)	42.38 - 42.63	1.0000	1.0000
L18	16	LDF5-50A(7/8)	42.38 - 42.63	1.0000	1.0000
L18	20	WR-VG86ST-BRD(3/4)	42.38 - 42.63	1.0000	1.0000
L18	21	FB-L98B-002-75000(3/8)	42.38 - 42.63	1.0000	1.0000
L18	25	LDF4-50A(1/2)	42.38 - 42.63	1.0000	1.0000
L18	32	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	1.0000	1.0000
L18	33	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	1.0000	1.0000
L18	34	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	1.0000	1.0000
L18	35	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	1.0000	1.0000
L18	40	Aero MP3-03	42.38 - 42.63	1.0000	1.0000
L18	41	Aero MP3-03	42.38 - 42.63	1.0000	1.0000
L19	2	Safety Line 3/8	37.38 - 42.38	1.0000	1.0000
L19	12	HB158-1-08U8-S8F18(1-5/8)	37.38 - 42.38	1.0000	1.0000
L19	16	LDF5-50A(7/8)	37.38 - 42.38	1.0000	1.0000
L19	20	WR-VG86ST-BRD(3/4)	37.38 - 42.38	1.0000	1.0000
L19	21	FB-L98B-002-75000(3/8)	37.38 - 42.38	1.0000	1.0000
L19	25	LDF4-50A(1/2)	37.38 - 42.38	1.0000	1.0000
L19	32	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	1.0000	1.0000
L19	33	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	1.0000	1.0000
L19	34	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	1.0000	1.0000
L19	35	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	1.0000	1.0000
L19	40	Aero MP3-03	37.38 - 42.38	1.0000	1.0000
L19	41	Aero MP3-03	37.38 - 42.38	1.0000	1.0000
L20	2	Safety Line 3/8	32.38 - 37.38	1.0000	1.0000
L20	12	HB158-1-08U8-S8F18(1-5/8)	32.38 - 37.38	1.0000	1.0000
L20	16	LDF5-50A(7/8)	32.38 - 37.38	1.0000	1.0000
L20	20	WR-VG86ST-BRD(3/4)	32.38 - 37.38	1.0000	1.0000
L20	21	FB-L98B-002-75000(3/8)	32.38 - 37.38	1.0000	1.0000
L20	25	LDF4-50A(1/2)	32.38 - 37.38	1.0000	1.0000
L20	27	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	1.0000	1.0000
L20	28	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	1.0000	1.0000
L20	29	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	1.0000	1.0000
L20	30	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L20	32	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	1.0000	1.0000
L20	33	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	1.0000	1.0000
L20	34	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	1.0000	1.0000
L20	35	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	1.0000	1.0000
L20	40	Aero MP3-03	32.38 - 37.38	1.0000	1.0000
L20	41	Aero MP3-03	32.38 - 37.38	1.0000	1.0000
L21	2	Safety Line 3/8	31.75 - 32.38	1.0000	1.0000
L21	12	HB158-1-08U8-S8F18(1-5/8)	31.75 - 32.38	1.0000	1.0000
L21	16	LDF5-50A(7/8)	31.75 - 32.38	1.0000	1.0000
L21	20	WR-VG86ST-BRD(3/4)	31.75 - 32.38	1.0000	1.0000
L21	21	FB-L98B-002-75000(3/8)	31.75 - 32.38	1.0000	1.0000
L21	25	LDF4-50A(1/2)	31.75 - 32.38	1.0000	1.0000
L21	27	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	1.0000	1.0000
L21	28	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	1.0000	1.0000
L21	29	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	1.0000	1.0000
L21	30	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	1.0000	1.0000
L21	40	Aero MP3-03	31.75 - 32.38	1.0000	1.0000
L21	41	Aero MP3-03	31.75 - 32.38	1.0000	1.0000
L22	2	Safety Line 3/8	31.50 - 31.75	1.0000	1.0000
L22	12	HB158-1-08U8-S8F18(1-5/8)	31.50 - 31.75	1.0000	1.0000
L22	16	LDF5-50A(7/8)	31.50 - 31.75	1.0000	1.0000
L22	20	WR-VG86ST-BRD(3/4)	31.50 - 31.75	1.0000	1.0000
L22	21	FB-L98B-002-75000(3/8)	31.50 - 31.75	1.0000	1.0000
L22	25	LDF4-50A(1/2)	31.50 - 31.75	1.0000	1.0000
L22	27	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	1.0000	1.0000
L22	28	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	1.0000	1.0000
L22	29	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	1.0000	1.0000
L22	30	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	1.0000	1.0000
L22	40	Aero MP3-03	31.50 - 31.75	1.0000	1.0000
L22	41	Aero MP3-03	31.50 - 31.75	1.0000	1.0000
L23	2	Safety Line 3/8	26.50 - 31.50	1.0000	1.0000
L23	12	HB158-1-08U8-S8F18(1-5/8)	26.50 - 31.50	1.0000	1.0000
L23	16	LDF5-50A(7/8)	26.50 - 31.50	1.0000	1.0000
L23	20	WR-VG86ST-BRD(3/4)	26.50 - 31.50	1.0000	1.0000
L23	21	FB-L98B-002-75000(3/8)	26.50 - 31.50	1.0000	1.0000
L23	25	LDF4-50A(1/2)	26.50 - 31.50	1.0000	1.0000
L23	27	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	1.0000	1.0000
L23	28	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	1.0000	1.0000
L23	29	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	1.0000	1.0000
L23	30	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	1.0000	1.0000
L23	37	Aero MP3-04	26.50 - 30.50	1.0000	1.0000
L23	39	Aero MP3-04	26.50 - 30.50	1.0000	1.0000
L23	40	Aero MP3-03	27.00 - 31.50	1.0000	1.0000
L23	41	Aero MP3-03	27.00 - 31.50	1.0000	1.0000
L24	2	Safety Line 3/8	21.50 - 26.50	1.0000	1.0000
L24	12	HB158-1-08U8-S8F18(1-5/8)	21.50 - 26.50	1.0000	1.0000
L24	16	LDF5-50A(7/8)	21.50 - 26.50	1.0000	1.0000
L24	20	WR-VG86ST-BRD(3/4)	21.50 - 26.50	1.0000	1.0000
L24	21	FB-L98B-002-75000(3/8)	21.50 - 26.50	1.0000	1.0000
L24	25	LDF4-50A(1/2)	21.50 - 26.50	1.0000	1.0000
L24	27	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	1.0000	1.0000
L24	28	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	1.0000	1.0000
L24	29	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	1.0000	1.0000
L24	30	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	1.0000	1.0000
L24	37	Aero MP3-04	21.50 - 26.50	1.0000	1.0000
L24	39	Aero MP3-04	21.50 - 26.50	1.0000	1.0000
L25	2	Safety Line 3/8	16.50 - 21.50	1.0000	1.0000
L25	12	HB158-1-08U8-S8F18(1-5/8)	16.50 - 21.50	1.0000	1.0000
L25	16	LDF5-50A(7/8)	16.50 - 21.50	1.0000	1.0000
L25	20	WR-VG86ST-BRD(3/4)	16.50 - 21.50	1.0000	1.0000
L25	21	FB-L98B-002-75000(3/8)	16.50 - 21.50	1.0000	1.0000
L25	25	LDF4-50A(1/2)	16.50 - 21.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	27	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	1.0000	1.0000
L25	28	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	1.0000	1.0000
L25	29	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	1.0000	1.0000
L25	30	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	1.0000	1.0000
L25	37	Aero MP3-04	16.50 - 21.50	1.0000	1.0000
L25	39	Aero MP3-04	16.50 - 21.50	1.0000	1.0000
L26	2	Safety Line 3/8	11.50 - 16.50	1.0000	1.0000
L26	12	HB158-1-08U8-S8F18(1-5/8)	11.50 - 16.50	1.0000	1.0000
L26	16	LDF5-50A(7/8)	11.50 - 16.50	1.0000	1.0000
L26	20	WR-VG86ST-BRD(3/4)	11.50 - 16.50	1.0000	1.0000
L26	21	FB-L98B-002-75000(3/8)	11.50 - 16.50	1.0000	1.0000
L26	25	LDF4-50A(1/2)	11.50 - 16.50	1.0000	1.0000
L26	27	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	1.0000	1.0000
L26	28	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	1.0000	1.0000
L26	29	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	1.0000	1.0000
L26	30	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	1.0000	1.0000
L26	37	Aero MP3-04	11.50 - 16.50	1.0000	1.0000
L26	39	Aero MP3-04	11.50 - 16.50	1.0000	1.0000
L27	2	Safety Line 3/8	6.50 - 11.50	1.0000	1.0000
L27	12	HB158-1-08U8-S8F18(1-5/8)	6.50 - 11.50	1.0000	1.0000
L27	16	LDF5-50A(7/8)	6.50 - 11.50	1.0000	1.0000
L27	20	WR-VG86ST-BRD(3/4)	6.50 - 11.50	1.0000	1.0000
L27	21	FB-L98B-002-75000(3/8)	6.50 - 11.50	1.0000	1.0000
L27	25	LDF4-50A(1/2)	6.50 - 11.50	1.0000	1.0000
L27	27	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	1.0000	1.0000
L27	28	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	1.0000	1.0000
L27	29	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	1.0000	1.0000
L27	30	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	1.0000	1.0000
L27	37	Aero MP3-04	6.50 - 11.50	1.0000	1.0000
L27	38	Aero MP3-04	6.50 - 7.50	1.0000	1.0000
L28	2	Safety Line 3/8	1.50 - 6.50	1.0000	1.0000
L28	12	HB158-1-08U8-S8F18(1-5/8)	1.50 - 6.50	1.0000	1.0000
L28	16	LDF5-50A(7/8)	1.50 - 6.50	1.0000	1.0000
L28	20	WR-VG86ST-BRD(3/4)	1.50 - 6.50	1.0000	1.0000
L28	21	FB-L98B-002-75000(3/8)	1.50 - 6.50	1.0000	1.0000
L28	25	LDF4-50A(1/2)	1.50 - 6.50	1.0000	1.0000
L28	27	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	1.0000	1.0000
L28	28	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	1.0000	1.0000
L28	29	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	1.0000	1.0000
L28	30	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	1.0000	1.0000
L28	37	Aero MP3-04	1.50 - 6.50	1.0000	1.0000
L28	38	Aero MP3-04	1.50 - 6.50	1.0000	1.0000
L29	2	Safety Line 3/8	0.00 - 1.50	1.0000	1.0000
L29	12	HB158-1-08U8-S8F18(1-5/8)	0.00 - 1.50	1.0000	1.0000
L29	16	LDF5-50A(7/8)	0.00 - 1.50	1.0000	1.0000
L29	20	WR-VG86ST-BRD(3/4)	0.00 - 1.50	1.0000	1.0000
L29	21	FB-L98B-002-75000(3/8)	0.00 - 1.50	1.0000	1.0000
L29	25	LDF4-50A(1/2)	0.00 - 1.50	1.0000	1.0000
L29	27	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	1.0000	1.0000
L29	28	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	1.0000	1.0000
L29	29	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	1.0000	1.0000
L29	30	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	1.0000	1.0000
L29	37	Aero MP3-04	0.00 - 1.50	1.0000	1.0000
L29	38	Aero MP3-04	0.00 - 1.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L11	32	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	Auto	0.3314
L11	33	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	Auto	0.3314
L11	34	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	Auto	0.3314
L11	35	(Area) CCI-65FP-065125 (H)	64.71 - 65.58	Auto	0.3314
L12	32	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	Auto	0.3221
L12	33	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	Auto	0.3221
L12	34	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	Auto	0.3221
L12	35	(Area) CCI-65FP-065125 (H)	62.83 - 64.71	Auto	0.3221
L13	32	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	Auto	0.4299
L13	33	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	Auto	0.4299
L13	34	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	Auto	0.4299
L13	35	(Area) CCI-65FP-065125 (H)	62.58 - 62.83	Auto	0.4299
L14	32	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	Auto	0.4054
L14	33	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	Auto	0.4054
L14	34	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	Auto	0.4054
L14	35	(Area) CCI-65FP-065125 (H)	57.58 - 62.58	Auto	0.4054
L15	32	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	Auto	0.3680
L15	33	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	Auto	0.3680
L15	34	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	Auto	0.3680
L15	35	(Area) CCI-65FP-065125 (H)	52.58 - 57.58	Auto	0.3680
L16	32	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	Auto	0.3273
L16	33	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	Auto	0.3273
L16	34	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	Auto	0.3273
L16	35	(Area) CCI-65FP-065125 (H)	47.58 - 52.58	Auto	0.3273
L17	32	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	Auto	0.2936
L17	33	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	Auto	0.2936
L17	34	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	Auto	0.2936
L17	35	(Area) CCI-65FP-065125 (H)	42.63 - 47.58	Auto	0.2936
L17	40	Aero MP3-03	42.63 - 47.00	Auto	0.0000
L17	41	Aero MP3-03	42.63 - 47.00	Auto	0.0000
L18	32	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	Auto	0.2929
L18	33	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	Auto	0.2929
L18	34	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	Auto	0.2929
L18	35	(Area) CCI-65FP-065125 (H)	42.38 - 42.63	Auto	0.2929
L18	40	Aero MP3-03	42.38 - 42.63	Auto	0.0000
L18	41	Aero MP3-03	42.38 - 42.63	Auto	0.0000
L19	32	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	Auto	0.2684
L19	33	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	Auto	0.2684
L19	34	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	Auto	0.2684
L19	35	(Area) CCI-65FP-065125 (H)	37.38 - 42.38	Auto	0.2684
L19	40	Aero MP3-03	37.38 - 42.38	Auto	0.0000
L19	41	Aero MP3-03	37.38 - 42.38	Auto	0.0000
L20	27	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	Auto	0.4071
L20	28	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	Auto	0.4071
L20	29	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	Auto	0.4071
L20	30	(Area) CCI-65FP-085125 (H)	32.38 - 35.50	Auto	0.4071
L20	32	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	Auto	0.2417
L20	33	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	Auto	0.2417
L20	34	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	Auto	0.2417
L20	35	(Area) CCI-65FP-065125 (H)	35.50 - 37.38	Auto	0.2417
L20	40	Aero MP3-03	32.38 - 37.38	Auto	0.0000
L20	41	Aero MP3-03	32.38 - 37.38	Auto	0.0000
L21	27	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	Auto	0.3974
L21	28	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	Auto	0.3974
L21	29	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	Auto	0.3974
L21	30	(Area) CCI-65FP-085125 (H)	31.75 - 32.38	Auto	0.3974
L21	40	Aero MP3-03	31.75 - 32.38	Auto	0.0000
L21	41	Aero MP3-03	31.75 - 32.38	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	27	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	Auto	0.4159
L22	28	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	Auto	0.4159
L22	29	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	Auto	0.4159
L22	30	(Area) CCI-65FP-085125 (H)	31.50 - 31.75	Auto	0.4159
L22	40	Aero MP3-03	31.50 - 31.75	Auto	0.0000
L22	41	Aero MP3-03	31.50 - 31.75	Auto	0.0000
L23	27	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	Auto	0.3997
L23	28	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	Auto	0.3997
L23	29	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	Auto	0.3997
L23	30	(Area) CCI-65FP-085125 (H)	26.50 - 31.50	Auto	0.3997
L23	37	Aero MP3-04	26.50 - 30.50	Auto	0.0000
L23	39	Aero MP3-04	26.50 - 30.50	Auto	0.0000
L23	40	Aero MP3-03	27.00 - 31.50	Auto	0.0000
L23	41	Aero MP3-03	27.00 - 31.50	Auto	0.0000
L24	27	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	Auto	0.3712
L24	28	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	Auto	0.3712
L24	29	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	Auto	0.3712
L24	30	(Area) CCI-65FP-085125 (H)	21.50 - 26.50	Auto	0.3712
L24	37	Aero MP3-04	21.50 - 26.50	Auto	0.0000
L24	39	Aero MP3-04	21.50 - 26.50	Auto	0.0000
L25	27	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	Auto	0.3401
L25	28	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	Auto	0.3401
L25	29	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	Auto	0.3401
L25	30	(Area) CCI-65FP-085125 (H)	16.50 - 21.50	Auto	0.3401
L25	37	Aero MP3-04	16.50 - 21.50	Auto	0.0000
L25	39	Aero MP3-04	16.50 - 21.50	Auto	0.0000
L26	27	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	Auto	0.3116
L26	28	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	Auto	0.3116
L26	29	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	Auto	0.3116
L26	30	(Area) CCI-65FP-085125 (H)	11.50 - 16.50	Auto	0.3116
L26	37	Aero MP3-04	11.50 - 16.50	Auto	0.0000
L26	39	Aero MP3-04	11.50 - 16.50	Auto	0.0000
L27	27	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	Auto	0.2831
L27	28	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	Auto	0.2831
L27	29	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	Auto	0.2831
L27	30	(Area) CCI-65FP-085125 (H)	6.50 - 11.50	Auto	0.2831
L27	37	Aero MP3-04	6.50 - 11.50	Auto	0.0000
L27	38	Aero MP3-04	6.50 - 7.50	Auto	0.0000
L28	27	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	Auto	0.2546
L28	28	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	Auto	0.2546
L28	29	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	Auto	0.2546
L28	30	(Area) CCI-65FP-085125 (H)	1.50 - 6.50	Auto	0.2546
L28	37	Aero MP3-04	1.50 - 6.50	Auto	0.0000
L28	38	Aero MP3-04	1.50 - 6.50	Auto	0.0000
L29	27	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	Auto	0.2378
L29	28	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	Auto	0.2378
L29	29	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	Auto	0.2378
L29	30	(Area) CCI-65FP-085125 (H)	0.00 - 1.50	Auto	0.2378
L29	37	Aero MP3-04	0.00 - 1.50	Auto	0.0000
L29	38	Aero MP3-04	0.00 - 1.50	Auto	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
1" x 6' Lightning Rod	C	From Leg	0.00 0.00 3.00	0.0000	117.50	No Ice 1/2" Ice 1" Ice	0.60 1.22 1.84	0.60 1.22 1.84	0.00 0.01 0.02
***									
118									
DB420-A	A	From Centroid-Leg	4.00 0.00 12.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.33 5.99 8.66	3.33 5.99 8.66	0.03 0.04 0.05
DB264-A	B	From Centroid-Leg	4.00 0.00 12.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	3.16 5.69 8.22	3.16 5.69 8.22	0.04 0.05 0.06
ASP-2011	C	From Centroid-Leg	4.00 0.00 8.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.06 1.93 2.82	1.06 1.93 2.82	0.00 0.01 0.03
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
Radio 4480_TMOV2	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73	0.08 0.10 0.13
Radio 4480_TMOV2	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73	0.08 0.10 0.13
Radio 4480_TMOV2	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73	0.08 0.10 0.13
RADIO 4460 B2/B25 B66_TMO	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
(2) 2.4" Dia x 6-ft Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
(2) 2.4" Dia x 6-ft Pipe	C	From	4.00	0.0000	118.00	No Ice	1.43	1.43	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		Centroid-Leg	0.00			1/2" Ice	1.93	1.93	0.03
			0.00			1" Ice	2.30	2.30	0.05
8' Ladder	C	From Centroid-Leg	2.00 0.00 -2.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.53 4.36 7.19	5.33 8.08 10.83	0.10 0.11 0.13
2.4" Dia x 6-ft Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
2.4" Dia x 6-ft Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
2.4" Dia x 6-ft Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	118.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
Platform Mount [LP 602-1]	C	None		0.0000	118.00	No Ice 1/2" Ice 1" Ice	31.07 34.82 38.48	31.07 34.82 38.48	1.34 1.97 2.67
105									
LNX-6514DS-A1M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.09 4.49 4.89	3.30 3.68 4.06	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.09 4.49 4.89	3.30 3.68 4.06	0.06 0.13 0.20
LNX-6514DS-A1M w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.09 4.49 4.89	3.30 3.68 4.06	0.06 0.13 0.20
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.10 0.17 0.25
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.92 5.26 5.62	2.69 3.15 3.63	0.10 0.14 0.19
(2) DB-B1-6C-12AB-0Z	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
CBC78T-DS-43-2X	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
CBC78T-DS-43-2X	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04
CBC78T-DS-43-2X	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.53	0.51 0.60 0.70	0.02 0.03 0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RFV01U-D2A	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
RFV01U-D2A	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
RFV01U-D2A	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.01 1.14 1.28	0.07 0.09 0.11
RFV01U-D1A	A	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
RFV01U-D1A	B	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
RFV01U-D1A	C	From Centroid-Leg	4.00 0.00 3.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.25 1.39 1.54	0.08 0.10 0.12
Miscellaneous [NA 507-1]	C	None		0.0000	105.00	No Ice 1/2" Ice 1" Ice	4.56 6.39 8.18	4.56 6.39 8.18	0.25 0.31 0.40
Platform Mount [LP 1201-1]	C	None		0.0000	105.00	No Ice 1/2" Ice 1" Ice	18.38 22.11 25.87	18.38 22.11 25.87	2.10 2.65 3.26
91									
7770.00 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
HPA65R-BU6A w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.83 6.40 6.99	5.00 5.56 6.13	0.08 0.14 0.22
HPA65R-BU6A w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.83 6.40 6.99	5.00 5.56 6.13	0.08 0.14 0.22
HPA65R-BU6A w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	5.83 6.40 6.99	5.00 5.56 6.13	0.08 0.14 0.22
OPA65R-BU6BA-K w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	6.76 7.40 8.06	6.06 6.69 7.33	0.10 0.16 0.24
OPA65R-BU6BA-K w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	6.76 7.40 8.06	6.06 6.69 7.33	0.10 0.16 0.24
OPA65R-BU6BA-K w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	6.76 7.40 8.06	6.06 6.69 7.33	0.10 0.16 0.24
DMP65R-BU6D w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
DMP65R-BU6D w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00	0.0000	91.00	No Ice 1/2" Ice	11.96 12.70	5.97 6.63	0.11 0.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		g	2.00			1" Ice	13.46	7.30	0.30
DMP65R-BU6D w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
(2) LGP 17201	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06
(2) LGP 17201	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06
(2) LGP 17201	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06
(2) DC6-48-60-18-8F	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
RADIO 4415 B30	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
RADIO 4415 B30	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
RADIO 4415 B30	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.64 0.75 0.87	0.04 0.05 0.07
RRUS 4478 B14	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RADIO 4449 B5/B12	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.30 1.45 1.60	0.07 0.09 0.11
RADIO 4449 B5/B12	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.30 1.45 1.60	0.07 0.09 0.11
RADIO 4449 B5/B12	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.30 1.45 1.60	0.07 0.09 0.11
RRUS 8843 B2/B66A	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	91.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
Site Pro 1 RMQLP-4120-H10	C	None		0.0000	91.00	No Ice 1/2" Ice 1" Ice	42.20 51.14 60.14	39.62 48.52 57.81	3.27 3.66 4.18

*****
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
APXVAA24_43-U-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.16 0.28 0.43
APXVAA24_43-U-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.16 0.28 0.43
APXVAA24_43-U-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.16 0.28 0.43
APXVAA24_43-U-A20 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.16 0.28 0.43
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.29 6.86 7.45	2.76 3.27 3.79	0.06 0.11 0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.29 6.86 7.45	2.76 3.27 3.79	0.06 0.11 0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.29 6.86 7.45	2.76 3.27 3.79	0.06 0.11 0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	6.29 6.86 7.45	2.76 3.27 3.79	0.06 0.11 0.16
GPS_A	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.11 0.21 0.28	0.11 0.21 0.28	0.00 0.00 0.01
(3) 641280-DF-2X	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.44 0.53 0.62	0.24 0.30 0.38	0.01 0.02 0.02
(2) 641280-DF-2X	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.44 0.53 0.62	0.24 0.30 0.38	0.01 0.02 0.02
(3) 641280-DF-2X	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.44 0.53 0.62	0.24 0.30 0.38	0.01 0.02 0.02
RRUS 11 B12	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 11 B12	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
(2) RRUS 11 B12	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RADIO 4478	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.63 1.78 1.95	1.00 1.13 1.27	0.06 0.07 0.09
(3) RADIO 4478	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.63 1.78 1.95	1.00 1.13 1.27	0.06 0.07 0.09
RRUS 11 B4	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
RRUS 11 B4	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
(2) RRUS 11 B4	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.10
DB224-A	A	From Centroid-Leg	4.00 0.00 -10.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	4.50 6.78 9.07	4.50 6.78 9.07	0.04 0.07 0.12
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
2.4" Dia x 6-ft Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
Platform Mount [LP 701-1]	C	None		0.0000	82.00	No Ice 1/2" Ice 1" Ice	58.68 66.01 73.41	58.68 66.01 73.41	2.75 3.84 5.07
75									
KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.08 0.13 0.19	0.08 0.13 0.19	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
*******									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
GHF3W-23	B	Grid	From Centroid -Leg	4.00 0.00 1.00	0.0000		118.00	3.00	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	0.00 0.04 0.00
***											
SHPX3-11W	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 0.00 1.00	0.0000		82.00	3.25	No Ice 1/2" Ice 1" Ice	7.07 7.47 7.86	0.13 0.17 0.21

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	117.5 - 112.5 (1)	TP16.2656x15x0.1875	5.00	0.00	0.0	9.5685	-3.44	559.76	0.006
L2	112.5 - 107.5 (2)	TP17.5312x16.2656x0.1875	5.00	0.00	0.0	10.3217	-3.68	603.82	0.006
L3	107.5 - 102.5 (3)	TP18.7969x17.5312x0.1875	5.00	0.00	0.0	11.0749	-8.39	647.88	0.013
L4	102.5 - 97.5 (4)	TP20.0625x18.7969x0.1875	5.00	0.00	0.0	11.8281	-8.78	691.94	0.013
L5	97.5 - 92.5 (5)	TP21.3281x20.0625x0.1875	5.00	0.00	0.0	12.5813	-9.21	736.01	0.013
L6	92.5 - 86.29 (6)	TP22.9x21.3281x0.1875	6.21	0.00	0.0	13.0016	-15.34	760.59	0.020
L7	86.29 - 84.71 (7)	TP22.9126x21.6593x0.3125	5.00	0.00	0.0	22.4164	-16.18	1311.36	0.012
L8	84.71 - 79.71 (8)	TP24.1658x22.9126x0.3125	5.00	0.00	0.0	23.6595	-22.86	1384.08	0.017
L9	79.71 - 74.71 (9)	TP25.4191x24.1658x0.3125	5.00	0.00	0.0	24.9026	-23.80	1456.80	0.016
L10	74.71 - 69.71 (10)	TP26.6724x25.4191x0.3125	5.00	0.00	0.0	26.1457	-24.71	1529.52	0.016
L11	69.71 - 64.71 (11)	TP27.9256x26.6724x0.3125	5.00	0.00	0.0	27.3888	-25.65	1602.24	0.016
L12	64.71 - 62.83 (12)	TP28.3968x27.9256x0.3125	1.88	0.00	0.0	27.8561	-25.99	1629.58	0.016
L13	62.83 - 62.58 (13)	TP28.4595x28.3968x0.7375	0.25	0.00	0.0	64.8923	-26.10	3796.20	0.007
L14	62.58 - 57.58 (14)	TP29.7128x28.4595x0.7125	5.00	0.00	0.0	65.5834	-27.61	3836.63	0.007
L15	57.58 - 52.58 (15)	TP30.966x29.7128x0.7	5.00	0.00	0.0	67.2450	-29.16	3933.83	0.007
L16	52.58 - 47.58 (16)	TP32.2193x30.966x0.675	5.00	0.00	0.0	67.5820	-30.74	3953.55	0.008
L17	47.58 - 42.63 (17)	TP33.46x32.2193x0.675	4.95	0.00	0.0	67.6894	-30.82	3959.83	0.008
L18	42.63 - 42.38 (18)	TP32.8955x31.6444x0.675	5.00	0.00	0.0	69.0309	-33.74	4038.31	0.008
L19	42.38 - 37.38 (19)	TP34.1466x32.8955x0.65	5.00	0.00	0.0	69.1069	-35.48	4042.75	0.009
L20	37.38 - 32.38 (20)	TP35.3978x34.1466x0.6375	5.00	0.00	0.0	70.3348	-37.26	4114.58	0.009
L21	32.38 - 31.75 (21)	TP35.5554x35.3978x0.6375	0.63	0.00	0.0	70.6538	-37.49	4133.24	0.009
L22	31.75 - 31.5 (22)	TP35.618x35.5554x0.7375	0.25	0.00	0.0	81.6490	-37.60	4776.47	0.008
L23	31.5 - 26.5 (23)	TP36.8691x35.618x0.725	5.00	0.00	0.0	83.1729	-39.71	4865.62	0.008
L24	26.5 - 21.5 (24)	TP38.1202x36.8691x0.7125	5.00	0.00	0.0	84.5966	-41.78	4948.90	0.008
L25	21.5 - 16.5 (25)	TP39.3713x38.1202x0.6875	5.00	0.00	0.0	84.4129	-43.88	4938.16	0.009
L26	16.5 - 11.5 (26)	TP40.6224x39.3713x0.675	5.00	0.00	0.0	85.0493	-45.60	4975.38	0.009
L27	11.5 - 6.5 (27)	TP41.8735x40.6224x0.6625	5.00	0.00	0.0	84.0267	-46.03	4915.56	0.009
L28	6.5 - 1.5 (28)	TP43.1247x41.8735x0.65	5.00	0.00	0.0	85.0483	-48.12	4975.33	0.010
L29	1.5 - 0 (29)	TP43.5x43.1247x0.65	1.50	0.00	0.0	87.6295	-50.31	5126.32	0.010

Pole Bending Design Data

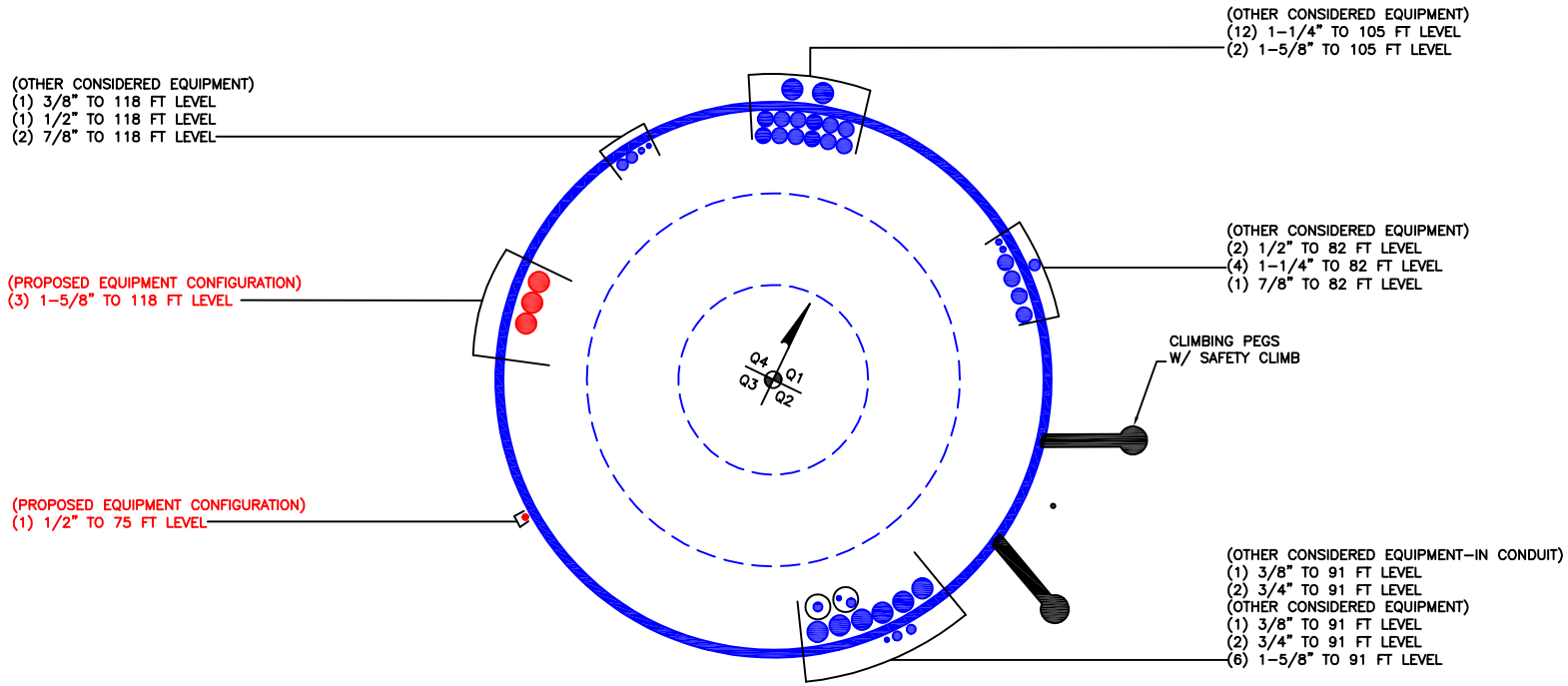
Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	117.5 - 112.5 (1)	TP16.2656x15x0.1875	39.36	234.15	0.168	0.00	234.15	0.000
L2	112.5 - 107.5 (2)	TP17.5312x16.2656x0.1875	70.68	272.69	0.259	0.00	272.69	0.000
L3	107.5 - 102.5 (3)	TP18.7969x17.5312x0.1875	121.32	310.87	0.390	0.00	310.87	0.000
L4	102.5 - 97.5 (4)	TP20.0625x18.7969x0.1875	175.53	348.75	0.503	0.00	348.75	0.000
L5	97.5 - 92.5 (5)	TP21.3281x20.0625x0.1875	230.97	387.93	0.595	0.00	387.93	0.000
L6	92.5 - 86.29 (6)	TP22.9x21.3281x0.1875	277.34	410.31	0.676	0.00	410.31	0.000
L7	86.29 - 84.71 (7)	TP22.9126x21.6593x0.3125	365.00	769.42	0.474	0.00	769.42	0.000
L8	84.71 - 79.71 (8)	TP24.1658x22.9126x0.3125	474.71	857.74	0.553	0.00	857.74	0.000
L9	79.71 - 74.71 (9)	TP25.4191x24.1658x0.3125	600.25	950.85	0.631	0.00	950.85	0.000
L10	74.71 - 69.71 (10)	TP26.6724x25.4191x0.3125	727.14	1048.76	0.693	0.00	1048.76	0.000
L11	69.71 - 64.71 (11)	TP27.9256x26.6724x0.3125	854.99	1151.47	0.743	0.00	1151.47	0.000
L12	64.71 - 62.83 (12)	TP28.3968x27.9256x0.3125	903.31	1191.33	0.758	0.00	1191.33	0.000
L13	62.83 - 62.58 (13)	TP28.4595x28.3968x0.7375	909.74	2698.16	0.337	0.00	2698.16	0.000
L14	62.58 - 57.58 (14)	TP29.7128x28.4595x0.7125	1039.30	2858.29	0.364	0.00	2858.29	0.000
L15	57.58 - 52.58 (15)	TP30.966x29.7128x0.7	1170.47	3062.93	0.382	0.00	3062.93	0.000
L16	52.58 - 47.58 (16)	TP32.2193x30.966x0.675	1303.24	3213.72	0.406	0.00	3213.72	0.000
L17	47.58 - 42.63 (17)	TP33.46x32.2193x0.675	1308.58	3224.06	0.406	0.00	3224.06	0.000
L18	42.63 - 42.38 (18)	TP32.8955x31.6444x0.675	1443.32	3354.47	0.430	0.00	3354.47	0.000
L19	42.38 - 37.38 (19)	TP34.1466x32.8955x0.65	1579.78	3496.46	0.452	0.00	3496.46	0.000
L20	37.38 - 32.38 (20)	TP35.3978x34.1466x0.6375	1717.69	3696.68	0.465	0.00	3696.68	0.000
L21	32.38 - 31.75 (21)	TP35.5554x35.3978x0.6375	1735.17	3730.59	0.465	0.00	3730.59	0.000
L22	31.75 - 31.5 (22)	TP35.618x35.5554x0.7375	1742.11	4294.36	0.406	0.00	4294.36	0.000
L23	31.5 - 26.5 (23)	TP36.8691x35.618x0.725	1881.79	4537.81	0.415	0.00	4537.81	0.000
L24	26.5 - 21.5 (24)	TP38.1202x36.8691x0.7125	2022.88	4781.58	0.423	0.00	4781.58	0.000
L25	21.5 - 16.5 (25)	TP39.3713x38.1202x0.6875	2165.31	4940.14	0.438	0.00	4940.14	0.000
L26	16.5 - 11.5 (26)	TP40.6224x39.3713x0.675	2280.17	5111.64	0.446	0.00	5111.64	0.000
L27	11.5 - 6.5 (27)	TP41.8735x40.6224x0.6625	2309.00	5085.73	0.454	0.00	5085.73	0.000
L28	6.5 - 1.5 (28)	TP43.1247x41.8735x0.65	2453.90	5314.57	0.462	0.00	5314.57	0.000
L29	1.5 - 0 (29)	TP43.5x43.1247x0.65	2600.02	5644.64	0.461	0.00	5644.64	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	117.5 - 112.5 (1)	TP16.2656x15x0.1875	6.14	167.93	0.037	0.20	236.45	0.001
L2	112.5 - 107.5 (2)	TP17.5312x16.2656x0.1875	6.40	181.15	0.035	0.23	275.14	0.001
L3	107.5 - 102.5 (3)	TP18.7969x17.5312x0.1875	10.72	194.36	0.055	0.59	316.76	0.002
L4	102.5 - 97.5 (4)	TP20.0625x18.7969x0.1875	10.97	207.58	0.053	0.59	361.31	0.002
L5	97.5 - 92.5 (5)	TP21.3281x20.0625x0.1875	11.22	220.80	0.051	0.59	408.79	0.001
L6	92.5 - 86.29 (6)	TP22.9x21.3281x0.1875	17.39	228.18	0.076	0.77	436.56	0.002
L7	86.29 - 84.71 (7)	TP22.9126x21.6593x0.3125	17.69	393.41	0.045	0.77	778.63	0.001
L8	84.71 - 79.71 (8)	TP24.1658x22.9126x0.3125	25.01	415.23	0.060	0.51	867.38	0.001
L9	79.71 - 74.71 (9)	TP25.4191x24.1658x0.3125	25.30	437.04	0.058	0.51	960.92	0.001
L10	74.71 - 69.71 (10)	TP26.6724x25.4191x0.3125	25.49	458.86	0.056	0.31	1059.25	0.000
L11	69.71 - 64.71 (11)	TP27.9256x26.6724x0.3125	25.68	480.67	0.053	0.31	1162.38	0.000
L12	64.71 - 62.83 (12)	TP28.3968x27.9256x0.3125	25.77	488.88	0.053	0.31	1202.38	0.000
L13	62.83 - 62.58 (13)	TP28.4595x28.3968x0.7375	25.75	1138.86	0.023	0.31	2764.88	0.000
L14	62.58 - 57.58 (14)	TP29.7128x28.4595x0.7125	26.08	1150.99	0.023	0.31	2923.16	0.000
L15	57.58 - 52.58 (15)	TP30.966x29.7128x0.7	26.40	1180.15	0.022	0.31	3128.04	0.000
L16	52.58 - 47.58 (16)	TP32.2193x30.966x0.675	26.72	1186.06	0.023	0.31	3276.49	0.000
L17	47.58 - 42.63 (17)	TP33.46x32.2193x0.675	26.72	1187.95	0.022	0.31	3286.92	0.000
L18	42.63 - 42.38 (18)	TP32.8955x31.6444x0.675	27.13	1211.49	0.022	0.31	3418.48	0.000
L19	42.38 - 37.38 (19)	TP34.1466x32.8955x0.65	27.43	1212.83	0.023	0.31	3557.78	0.000
L20	37.38 - 32.38 (20)	TP35.3978x34.1466x0.6375	27.72	1234.38	0.022	0.31	3757.60	0.000
L21	32.38 - 31.75 (21)	TP35.5554x35.3978x0.6375	27.75	1239.97	0.022	0.31	3791.76	0.000
L22	31.75 - 31.5 (22)	TP35.618x35.5554x0.7375	27.75	1432.94	0.019	0.31	4377.14	0.000
L23	31.5 - 26.5 (23)	TP36.8691x35.618x0.725	28.06	1459.69	0.019	0.31	4620.37	0.000
L24	26.5 - 21.5 (24)	TP38.1202x36.8691x0.7125	28.34	1484.67	0.019	0.31	4863.74	0.000
L25	21.5 - 16.5 (25)	TP39.3713x38.1202x0.6875	28.60	1481.45	0.019	0.31	5018.75	0.000
L26	16.5 - 11.5 (26)	TP40.6224x39.3713x0.675	28.84	1502.02	0.019	0.31	5189.05	0.000
L27	11.5 - 6.5 (27)	TP41.8735x40.6224x0.6625	28.89	1483.90	0.019	0.31	5160.59	0.000
L28	6.5 - 1.5 (28)	TP43.1247x41.8735x0.65	29.13	1501.66	0.019	0.31	5388.50	0.000
L29	1.5 - 0 (29)	TP43.5x43.1247x0.65	29.41	1551.49	0.019	0.31	5720.54	0.000

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(12) 1-1/4" TO 105 FT LEVEL
(2) 1-5/8" TO 105 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 118 FT LEVEL
(1) 1/2" TO 118 FT LEVEL
(2) 7/8" TO 118 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 82 FT LEVEL
(4) 1-1/4" TO 82 FT LEVEL
(1) 7/8" TO 82 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1-5/8" TO 118 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
Q4
Q1
Q3
Q2
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1/2" TO 75 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 91 FT LEVEL
(2) 3/4" TO 91 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 91 FT LEVEL
(2) 3/4" TO 91 FT LEVEL
(6) 1-5/8" TO 91 FT LEVEL

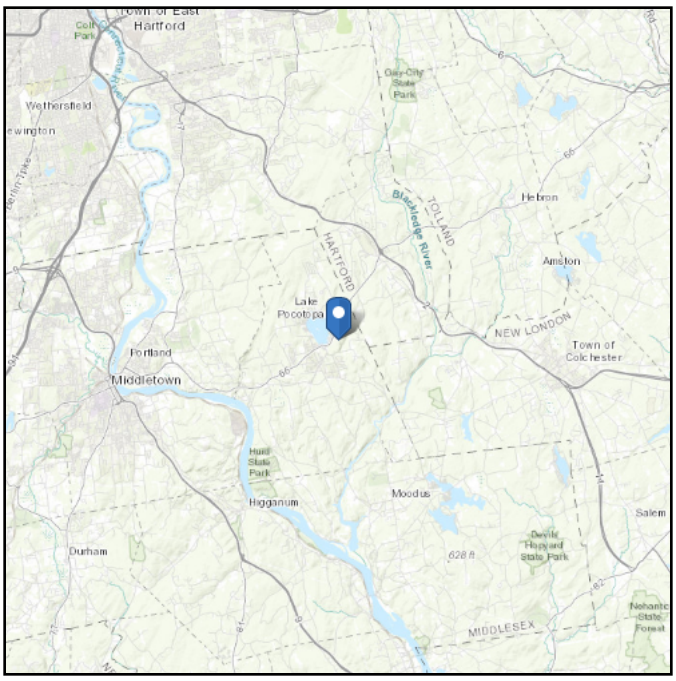
APPENDIX C

ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	664.58 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.587278
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.488778



Wind

Results:

Wind Speed:	120 Vmph
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:	Fri Oct 01 2021

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

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

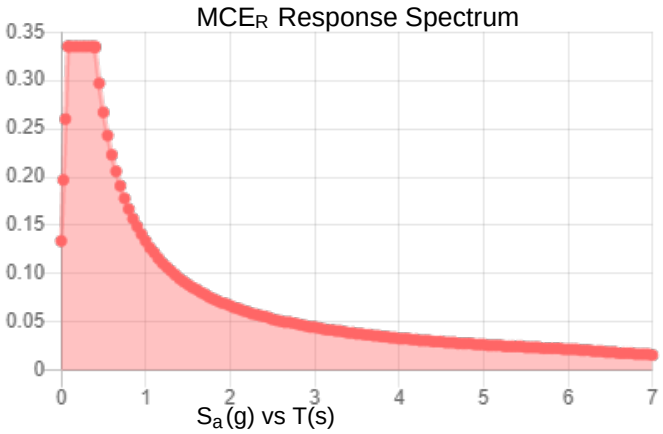
Seismic

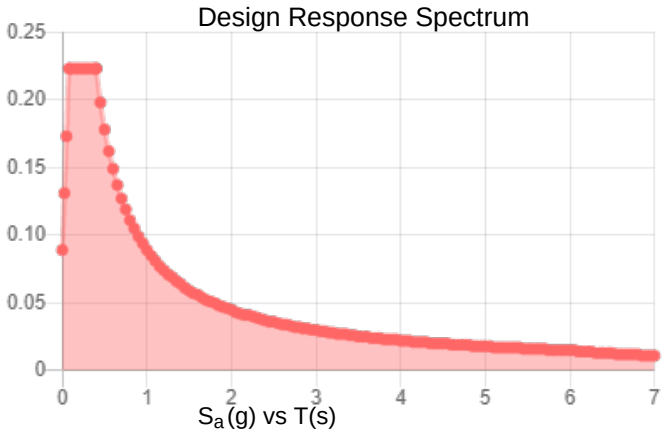
Site Soil Class: D - Default (see Section 11.4.3)

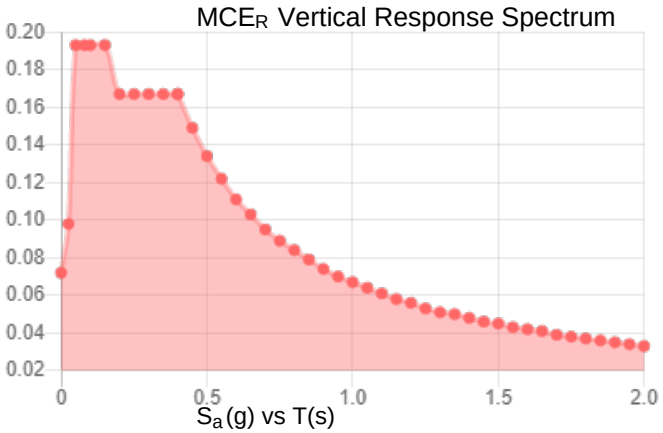
Results:

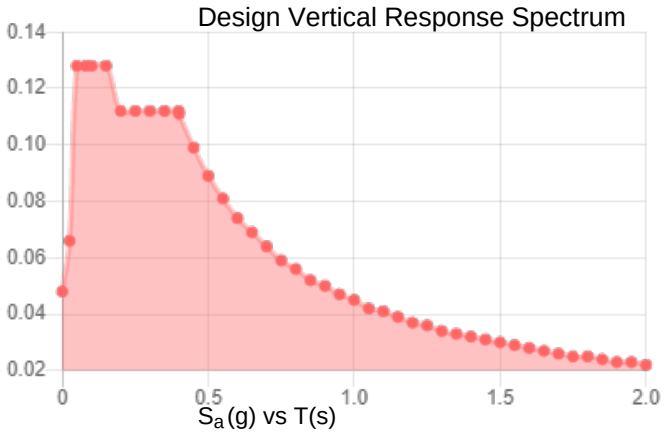
S_S :	0.209	S_{D1} :	0.089
S_1 :	0.056	T_L :	6
F_a :	1.6	PGA :	0.116
F_v :	2.4	PGA_M :	0.182
S_{MS} :	0.335	F_{PGA} :	1.567
S_{M1} :	0.134	I_e :	1
S_{DS} :	0.223	C_v :	0.719

Seismic Design Category B









Data Accessed: Fri Oct 01 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Oct 01 2021

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

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

CCIpole

per TIA-222- H

Site BU: 876352

Work Order: 2025314

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	117.5	31.21	3.42	18	15	22.9	0.1875	Auto	A572-65
2	89.71	47.08	4.75	18	21.66	33.46	0.3125	Auto	A572-65
3	47.38	47.38	0	18	31.64	43.5	0.3125	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	31.75	plate	CCI-SFP-085125	4		x				x					x				x			
2	31.75	62.83	plate	CCI-SFP-065125	4		x				x					x				x			
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	45	PC 8.8 - M20 (100)	45.000	17.000	9.063	1.1875	A572-65
2	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	117.5 - 112.5	5		18	15.000	16.266	0.1875	A572-65	1.000
2	112.5 - 107.5	5		18	16.266	17.531	0.1875	A572-65	1.000
3	107.5 - 102.5	5		18	17.531	18.797	0.1875	A572-65	1.000
4	102.5 - 97.5	5		18	18.797	20.062	0.1875	A572-65	1.000
5	97.5 - 92.5	5		18	20.062	21.328	0.1875	A572-65	1.000
6	92.5 - 89.71	6.21	3.42	18	21.328	22.900	0.1875	A572-65	1.000
7	89.71 - 84.71	5		18	21.659	22.913	0.3125	A572-65	1.000
8	84.71 - 79.71	5		18	22.913	24.166	0.3125	A572-65	1.000
9	79.71 - 74.71	5		18	24.166	25.419	0.3125	A572-65	1.000
10	74.71 - 69.71	5		18	25.419	26.672	0.3125	A572-65	1.000
11	69.71 - 64.71	5		18	26.672	27.926	0.3125	A572-65	1.000
12	64.71 - 62.83	1.88		18	27.926	28.397	0.3125	A572-65	1.000
13	62.83 - 62.58	0.25		18	28.397	28.459	0.7375	A572-65	0.931
14	62.58 - 57.58	5		18	28.459	29.713	0.7125	A572-65	0.940
15	57.58 - 52.58	5		18	29.713	30.966	0.7	A572-65	0.935
16	52.58 - 47.58	5		18	30.966	32.219	0.675	A572-65	0.949
17	47.58 - 47.38	4.95	4.75	18	32.219	33.460	0.675	A572-65	0.948
18	47.38 - 42.38	5		18	31.644	32.896	0.675	A572-65	0.939
19	42.38 - 37.38	5		18	32.896	34.147	0.65	A572-65	0.956
20	37.38 - 32.38	5		18	34.147	35.398	0.6375	A572-65	0.957
21	32.38 - 31.75	0.63		18	35.398	35.555	0.6375	A572-65	0.955
22	31.75 - 31.5	0.25		18	35.555	35.618	0.7375	A572-65	0.949
23	31.5 - 26.5	5		18	35.618	36.869	0.725	A572-65	0.947
24	26.5 - 21.5	5		18	36.869	38.120	0.7125	A572-65	0.946
25	21.5 - 16.5	5		18	38.120	39.371	0.6875	A572-65	0.962
26	16.5 - 11.5	5		18	39.371	40.622	0.675	A572-65	0.964
27	11.5 - 6.5	5		18	40.622	41.874	0.6625	A572-65	0.966
28	6.5 - 1.5	5		18	41.874	43.125	0.65	A572-65	0.970
29	1.5 - 0	1.5		18	43.125	43.500	0.65	A572-65	0.965

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	117.5 - 112.5	3.44	39.36	6.14
2	112.5 - 107.5	3.69	70.68	6.39
3	107.5 - 102.5	8.39	121.32	10.72
4	102.5 - 97.5	8.78	175.53	10.97
5	97.5 - 92.5	9.21	230.97	11.22
6	92.5 - 89.71	15.34	277.34	17.39
7	89.71 - 84.71	16.18	365.00	17.69
8	84.71 - 79.71	22.86	474.71	25.01
9	79.71 - 74.71	23.80	600.25	25.30
10	74.71 - 69.71	24.71	727.14	25.49
11	69.71 - 64.71	25.65	854.99	25.68
12	64.71 - 62.83	25.99	903.31	25.77
13	62.83 - 62.58	26.10	909.74	25.75
14	62.58 - 57.58	27.61	1039.30	26.08
15	57.58 - 52.58	29.16	1170.48	26.40
16	52.58 - 47.58	30.74	1303.24	26.72
17	47.58 - 47.38	30.82	1308.59	26.72
18	47.38 - 42.38	33.74	1443.31	27.13
19	42.38 - 37.38	35.48	1579.78	27.43
20	37.38 - 32.38	37.26	1717.69	27.72
21	32.38 - 31.75	37.49	1735.16	27.75
22	31.75 - 31.5	37.60	1742.10	27.75
23	31.5 - 26.5	39.71	1881.79	28.06
24	26.5 - 21.5	41.78	2022.88	28.34
25	21.5 - 16.5	43.88	2165.31	28.60
26	16.5 - 11.5	46.01	2309.00	28.84
27	11.5 - 6.5	48.10	2453.90	29.08
28	6.5 - 1.5	50.28	2600.02	29.33
29	1.5 - 0	50.94	2644.09	29.41

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
117.5 - 112.5	Pole	TP16.266x15x0.1875	Pole	16.7%	Pass
112.5 - 107.5	Pole	TP17.531x16.266x0.1875	Pole	25.4%	Pass
107.5 - 102.5	Pole	TP18.797x17.531x0.1875	Pole	38.7%	Pass
102.5 - 97.5	Pole	TP20.062x18.797x0.1875	Pole	49.4%	Pass
97.5 - 92.5	Pole	TP21.328x20.062x0.1875	Pole	58.1%	Pass
92.5 - 89.71	Pole	TP22.9x21.328x0.1875	Pole	66.9%	Pass
89.71 - 84.71	Pole	TP22.913x21.659x0.3125	Pole	46.5%	Pass
84.71 - 79.71	Pole	TP24.166x22.913x0.3125	Pole	54.6%	Pass
79.71 - 74.71	Pole	TP25.419x24.166x0.3125	Pole	62.0%	Pass
74.71 - 69.71	Pole	TP26.672x25.419x0.3125	Pole	67.8%	Pass
69.71 - 64.71	Pole	TP27.926x26.672x0.3125	Pole	72.5%	Pass
64.71 - 62.83	Pole	TP28.397x27.926x0.3125	Pole	74.0%	Pass
62.83 - 62.58	Pole + Reinf.	TP28.459x28.397x0.7375	Reinf. 2 Tension Rupture	50.4%	Pass
62.58 - 57.58	Pole + Reinf.	TP29.713x28.459x0.7125	Reinf. 2 Tension Rupture	54.0%	Pass
57.58 - 52.58	Pole + Reinf.	TP30.966x29.713x0.7	Reinf. 2 Tension Rupture	57.3%	Pass
52.58 - 47.58	Pole + Reinf.	TP32.219x30.966x0.675	Reinf. 2 Tension Rupture	60.2%	Pass
47.58 - 47.38	Pole + Reinf.	TP33.46x32.219x0.675	Reinf. 2 Tension Rupture	60.3%	Pass
47.38 - 42.38	Pole + Reinf.	TP32.896x31.644x0.675	Reinf. 2 Tension Rupture	64.6%	Pass
42.38 - 37.38	Pole + Reinf.	TP34.147x32.896x0.65	Reinf. 2 Tension Rupture	66.9%	Pass
37.38 - 32.38	Pole + Reinf.	TP35.398x34.147x0.6375	Reinf. 2 Tension Rupture	68.9%	Pass
32.38 - 31.75	Pole + Reinf.	TP35.555x35.398x0.6375	Reinf. 2 Tension Rupture	69.2%	Pass
31.75 - 31.5	Pole + Reinf.	TP35.618x35.555x0.7375	Reinf. 1 Bolt Shear	59.0%	Pass
31.5 - 26.5	Pole + Reinf.	TP36.869x35.618x0.725	Reinf. 1 Compression	58.4%	Pass
26.5 - 21.5	Pole + Reinf.	TP38.12x36.869x0.7125	Reinf. 1 Compression	59.8%	Pass
21.5 - 16.5	Pole + Reinf.	TP39.371x38.12x0.6875	Reinf. 1 Compression	61.1%	Pass
16.5 - 11.5	Pole + Reinf.	TP40.622x39.371x0.675	Reinf. 1 Compression	62.3%	Pass
11.5 - 6.5	Pole + Reinf.	TP41.874x40.622x0.6625	Reinf. 1 Compression	63.3%	Pass
6.5 - 1.5	Pole + Reinf.	TP43.125x41.874x0.65	Reinf. 1 Compression	64.2%	Pass
1.5 - 0	Pole + Reinf.	TP43.5x43.125x0.65	Reinf. 1 Bolt Shear	67.0%	Pass
				Summary	
			Pole	74.0%	Pass
			Reinforcement	69.2%	Pass
			Overall	74.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
117.5 - 112.5	312	n/a	312	9.57	n/a	9.57	16.7%		
112.5 - 107.5	392	n/a	392	10.32	n/a	10.32	25.4%		
107.5 - 102.5	484	n/a	484	11.07	n/a	11.07	38.7%		
102.5 - 97.5	590	n/a	590	11.83	n/a	11.83	49.4%		
97.5 - 92.5	710	n/a	710	12.58	n/a	12.58	58.1%		
92.5 - 89.71	784	n/a	784	13.00	n/a	13.00	66.9%		
89.71 - 84.71	1446	n/a	1446	22.42	n/a	22.42	46.5%		
84.71 - 79.71	1700	n/a	1700	23.66	n/a	23.66	54.6%		
79.71 - 74.71	1983	n/a	1983	24.90	n/a	24.90	62.0%		
74.71 - 69.71	2294	n/a	2294	26.14	n/a	26.14	67.8%		
69.71 - 64.71	2638	n/a	2638	27.39	n/a	27.39	72.5%		
64.71 - 62.83	2775	n/a	2775	27.86	n/a	27.86	74.0%		
62.83 - 62.58	2793	3539	6332	27.92	32.50	60.42	32.7%		50.4%
62.58 - 57.58	3183	3838	7022	29.16	32.50	61.66	35.2%		54.0%
57.58 - 52.58	3608	4150	7758	30.40	32.50	62.90	37.6%		57.3%
52.58 - 47.58	4069	4475	8544	31.65	32.50	64.15	40.0%		60.2%
47.58 - 47.38	4088	4488	8576	31.70	32.50	64.20	40.0%		60.3%
47.38 - 42.38	4333	4655	8988	32.32	32.50	64.82	43.2%		64.6%
42.38 - 37.38	4852	4998	9849	33.56	32.50	66.06	45.2%		66.9%
37.38 - 32.38	5410	5353	10763	34.80	32.50	67.30	47.1%		68.9%
32.38 - 31.75	5483	5398	10882	34.96	32.50	67.46	47.4%		69.2%
31.75 - 31.5	5513	7138	12650	35.02	42.50	77.52	41.0%	59.0%	
31.5 - 26.5	6120	7621	13741	36.26	42.50	78.76	42.6%	58.4%	
26.5 - 21.5	6770	8121	14890	37.50	42.50	80.00	44.2%	59.8%	
21.5 - 16.5	7464	8636	16101	38.74	42.50	81.24	45.7%	61.1%	
16.5 - 11.5	8205	9168	17373	39.98	42.50	82.48	47.1%	62.3%	
11.5 - 6.5	8993	9716	18709	41.22	42.50	83.72	48.4%	63.3%	
6.5 - 1.5	9830	10280	20110	42.46	42.50	84.96	49.7%	64.2%	
1.5 - 0	10090	10452	20543	42.84	42.50	85.34	50.1%	67.0%	

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

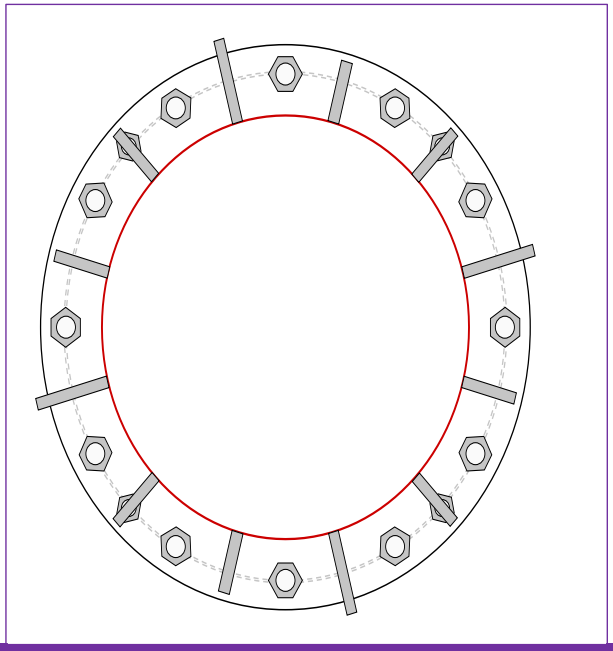
Monopole Base Plate Connection

Site Info	
BU #	876352
Site Name	Richard Wall
Order #	584621 Rev. 0

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

Applied Loads	
Moment (kip-ft)	2644.00
Axial Force (kips)	51.00
Shear Force (kips)	29.00

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 52" BC
GROUP 2: (4) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 52.5" BC

Base Plate Data

58" OD x 1.75" Plate (A871 GR60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

Group 1: (8) 20"H x 6.5"W x 1.25"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.625" groove, 45° dbl bevel, 0.625" fillet
vert. weld: 0.375" fillet

Group 2: (4) 30"H x 8.75"W x 1.25"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.625" groove, 45° dbl bevel, 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

43.5" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
GROUP 1:		
Pu_t = 165.31	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.42	ϕVn = 149.1	**64.6%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 100.08	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**53.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	34.58	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**61.0%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**29.9%**	**Pass**
Vertical Weld:	**36.5%**	**Pass**
Plate Flexure+Shear:	**6.1%**	**Pass**
Plate Tension+Shear:	**29.7%**	**Pass**
Plate Compression:	**31.3%**	**Pass**
Pole Summary		
Punching Shear:	**13.3%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

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

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

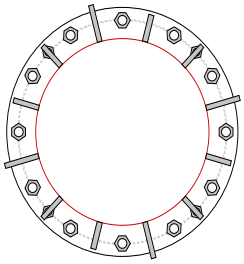
Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{se} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2.25	A615-75	52	0.5	1.25	N-Included		No
2	1	30	2.25	A615-75	52	0.5	1.25	N-Included		No
3	1	60	2.25	A615-75	52	0.5	1.25	N-Included		No
4	1	90	2.25	A615-75	52	0.5	1.25	N-Included		No
5	1	120	2.25	A615-75	52	0.5	1.25	N-Included		No
6	1	150	2.25	A615-75	52	0.5	1.25	N-Included		No
7	1	180	2.25	A615-75	52	0.5	1.25	N-Included		No
8	1	210	2.25	A615-75	52	0.5	1.25	N-Included		No
9	1	240	2.25	A615-75	52	0.5	1.25	N-Included		No
10	1	270	2.25	A615-75	52	0.5	1.25	N-Included		No
11	1	300	2.25	A615-75	52	0.5	1.25	N-Included		No
12	1	330	2.25	A615-75	52	0.5	1.25	N-Included		No
13	2	45	1.75	A193 Gr. B7	52.5	0.5	1.75	N-Included		No
14	2	135	1.75	A193 Gr. B7	52.5	0.5	1.75	N-Included		No
15	2	225	1.75	A193 Gr. B7	52.5	0.5	1.75	N-Included		No
16	2	315	1.75	A193 Gr. B7	52.5	0.5	1.75	N-Included		No

Custom Stiffener Connection

Stiffener	Stiffener Group ID	Location (deg.)	Width (in)	Height (in)	Thickness (in)	H. Notch (in)	V. Notch (in)	Grade (ksi)	Weld Type	Groove Depth (in)	Groove Angle (deg.)	H. Fillet Weld Size (in)	V. Fillet Weld Size (in)	Weld Strength (ksi)
1	2	15	8.75	30	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
2	1	75	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
3	2	105	8.75	30	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
4	1	165	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
5	2	195	8.75	30	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
6	1	255	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
7	2	285	8.75	30	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
8	1	345	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
9	1	45	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.378	80
10	1	135	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
11	1	225	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80
12	1	315	6.5	20	1.25	0.75	0.75	65	Both	0.625	45	0.625	0.375	80

Plot Graphic



Drilled Pier Foundation

BU # :	876352
Site Name:	Richard Wall
Order Number:	584621 Rev. 0
TIA-222 Revison:	H
Tower Type:	Monopole

Report File: C:\Jijin Sankar\100121\BU 876352\P-295570_L-608781_876352_RICHARD WALL_Structura

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2644	
Axial Force (kips)	51	
Shear Force (kips)	29	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	60
Tie Yield Strength, Fyt:	40	ksi	

Pier Design Data		
Depth	22	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 13' below grade		
Pier Diameter	6	ft
Rebar Quantity	14	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in
Rebar Quantity	4	
Rebar Size	1.75"	
Rebar Cage Diameter	52.5	in
Pier Section 2		
From 13' below grade to 22' below grade		
Pier Diameter	6	ft
Rebar Quantity	14	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.35	-
Soil Safety Factor	2.22	-
Max Moment (kip-ft)	2857.09	-
Rating*	*57.1%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	398.27	-
End Bearing (kips)	254.47	-
Weight of Concrete (kips)	117.06	-
Total Capacity (kips)	652.74	-
Axial (kips)	168.06	-
Rating*	*24.5%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.27	-
Critical Moment (kip-ft)	2857.04	-
Critical Moment Capacity	4066.90	-
Rating*	*66.9%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	18.89	-
Critical Shear (kip)	270.48	-
Critical Shear Capacity	436.31	-
Rating*	*59.0%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**66.9%**
Soil Interaction Rating*	**57.1%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	N/A	# of Layers	4

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	120	150	0		0.000	0.000					Cohesionless
2	3.33	6.5	3.17	120	150		33	0.708	0.708				30	Cohesionless
3	6.5	11	4.5	120	150		33	1.156	1.156				58	Cohesionless
4	11	22	11	120	150		33	1.884	1.884			12	42	Cohesionless

Date: **September 29, 2021**

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

Subject:	**Mount Analysis – Conditional Passing Report**	
Carrier Designation:	***T-Mobile* Equipment Change-Out**	
	Carrier Site Number:	CTHA701A
	Carrier Site Name:	ctha701a_crown_ 876352_richard wall
Crown Castle Designation:	**BU Number:**	876352
	Site Name:	RICHARD WALL
	JDE Job Number:	684633
	Order Number:	584621 Rev. 0
Engineering Firm Designation:	**GPD Report Designation:**	2021777.876352.02
Site Data:	**94 East Hight Street, East Hampton, Middlesex County, CT 06424 Latitude 41° 35' 14.20" Longitude -72° 29' 19.60"**	
Structure Information:	**Tower Height & Type:**	**117.5 ft Monopole Tower**
	Mount Elevation:	**118.0 ft**
	Mount Type:	**10.67 ft Platform Mount**

GPD is pleased to submit this **"Mount Analysis – Conditional Passing 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:

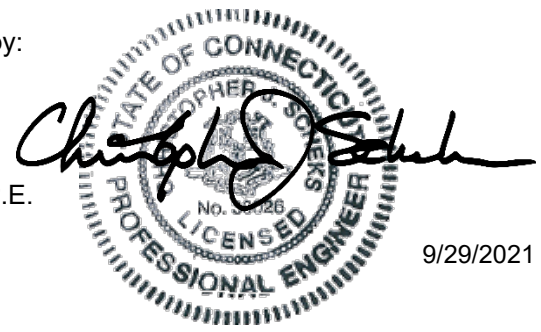
Platform Mount **Sufficient – 63.5%***

***See Section 4.1 of this report for the loading and structural modifications required in order for the mount to support the loading listed in Table 1a and 1b.**

This analysis utilizes an ultimate 3-second gust wind speed of 120 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: Parker Graf

Respectfully Submitted by:



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

9/29/2021

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3-sector 10.67' Platform Mount.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1a - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
118.0	119.0	3	Ericsson	AIR6449 B41_T-MOBILE	10.67 ft. Platform Mount
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	Radio 4480_TMOV2	

Table 1b – Other Considered Equipment

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
118.0	130.0	1	Decibel	DB420-A	10.67 ft. Platform Mount
		1	Decibel	DB264-A	
	126.0	1	Decibel	ASP-2011	
	119.0	1	Gabriel Electronics	GHF3W-23	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Application	Crown Order Number 584621 Rev. 0	-	CCI
RF Data Sheet	T-Mobile Retain RFDS Site ID: CTHA701A, dated 07/09/2021	-	CCI
Support Rail Design	Site Pro 1 Drawing #: HRK12-3HD, dated 04/07/2015	-	Site Pro 1

3.1) Analysis Method

RISA-3D Edition (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 by GPD, using Microsoft Excel, 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 Mount Analysis (Revision D).

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) This analysis assumes all information reference in Table 2 is current and correct.
5) 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.
6) The mount was modeled from site photos. Member information and dimensions not provided have been assumed based on previous experience with similar mounts. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.
7) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
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. GPD 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 Mount)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Toe Rail	M6	118.0	63.2	Pass
	Platform Inner Bracing	M7		57.0	Pass
	Pipe Mount	M4		59.0	Pass
	Ladder Support Bracing	M25		34.4	Pass
	Support Rail	M36		63.5	Pass
	Support Rail Corner Connection	M40		13.2	Pass
	Support Rail Inner Brace	M56		4.6	Pass
2,3	Mount to Tower Connection	-		51.8	Pass

Structure Rating (max from all components) =	63.5%[3]

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 calculations supporting the % capacity consumed.
3) Ratings per TIA-222-H section 15.5.

4.1) Recommendations

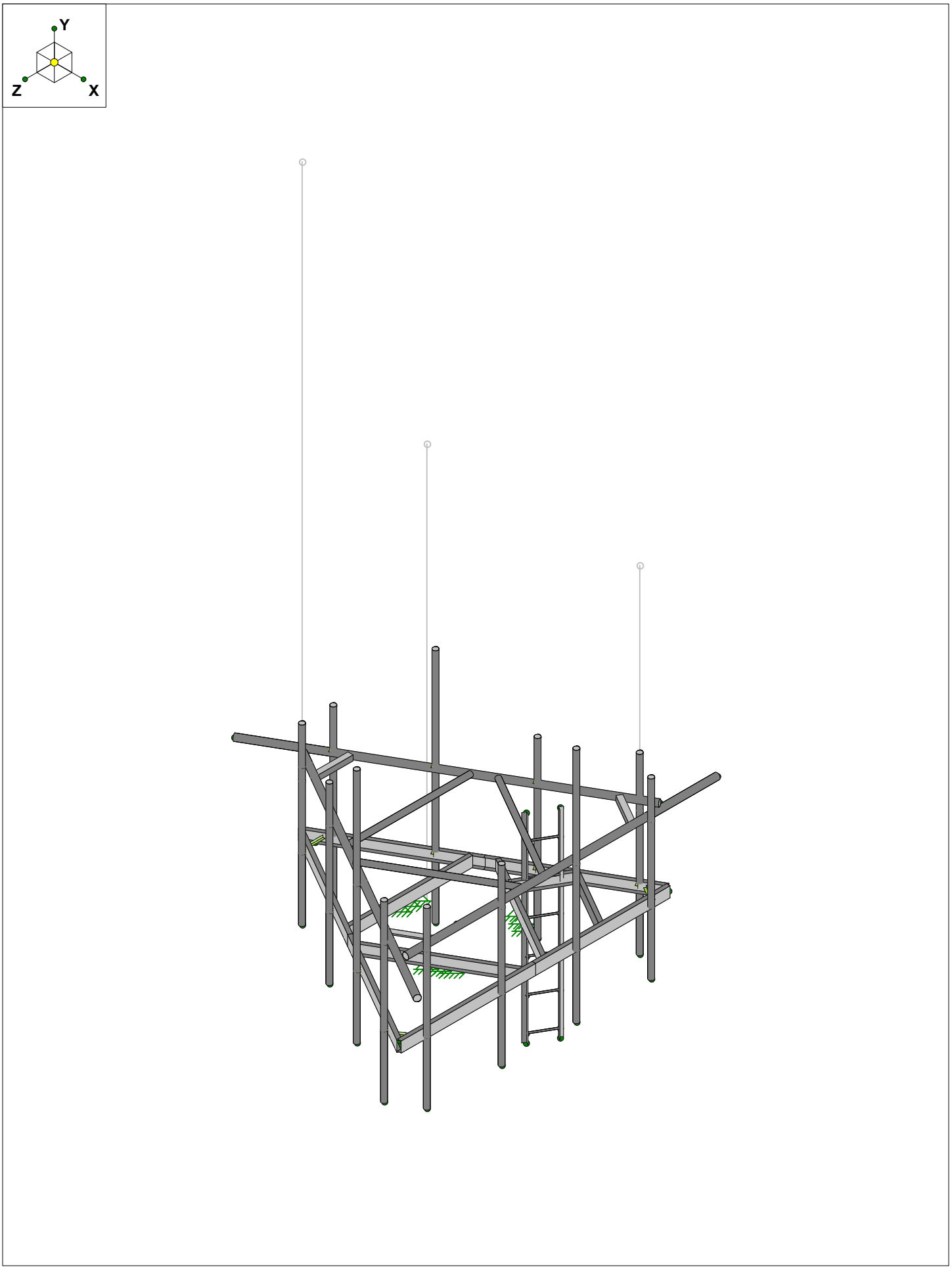
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

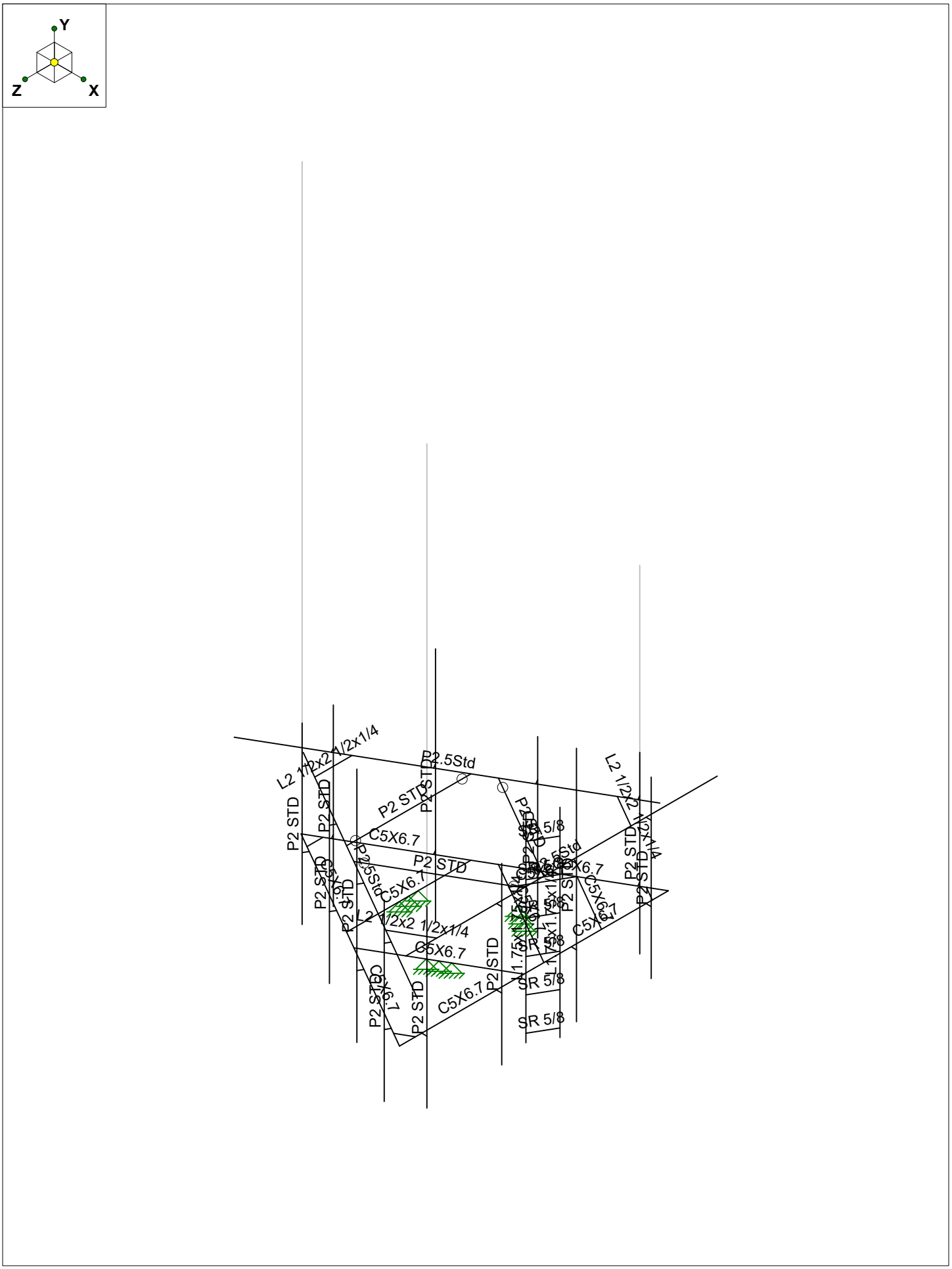
1. Install support rail (Site Pro 1 Drawing #: HRK12-3HD, dated 04/07/2015) 36” above the toe rail.

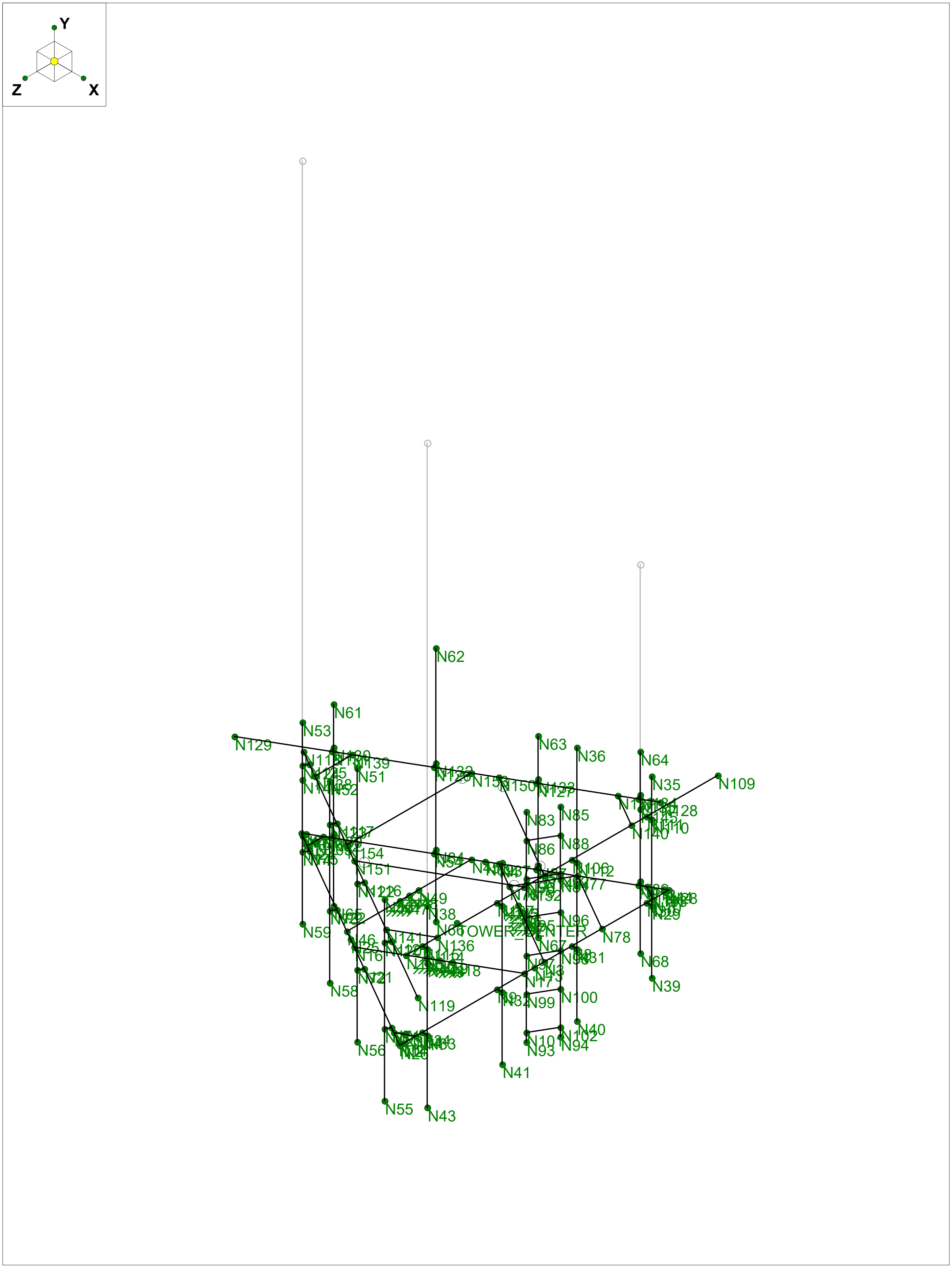
Engineering detail drawings have been provided in Appendix E – Mount Modification Design Drawings. Connection from the mount to the tower and local stresses on the tower are sufficient.

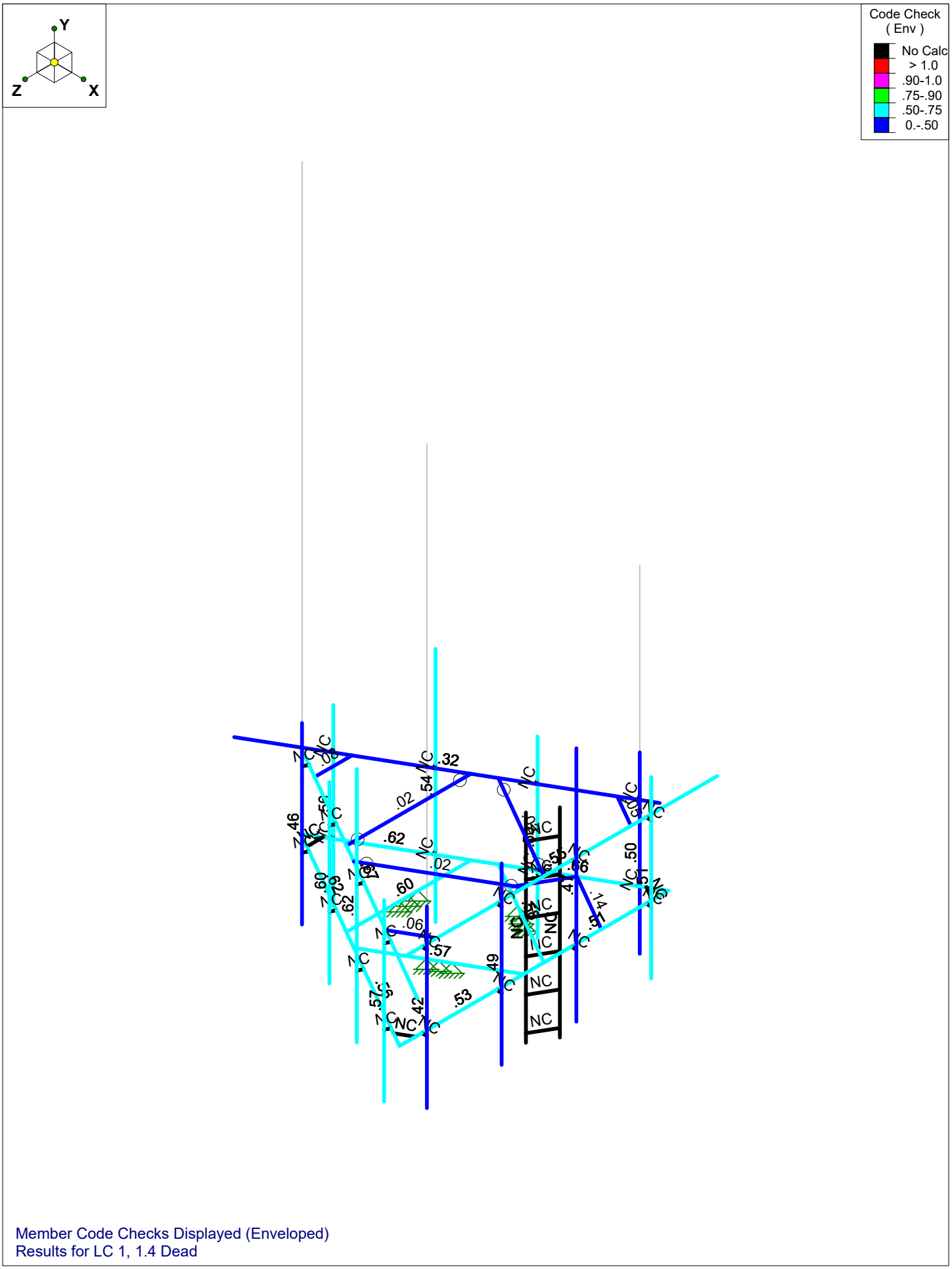
APPENDIX A

WIRE FRAME AND RENDERED MODELS

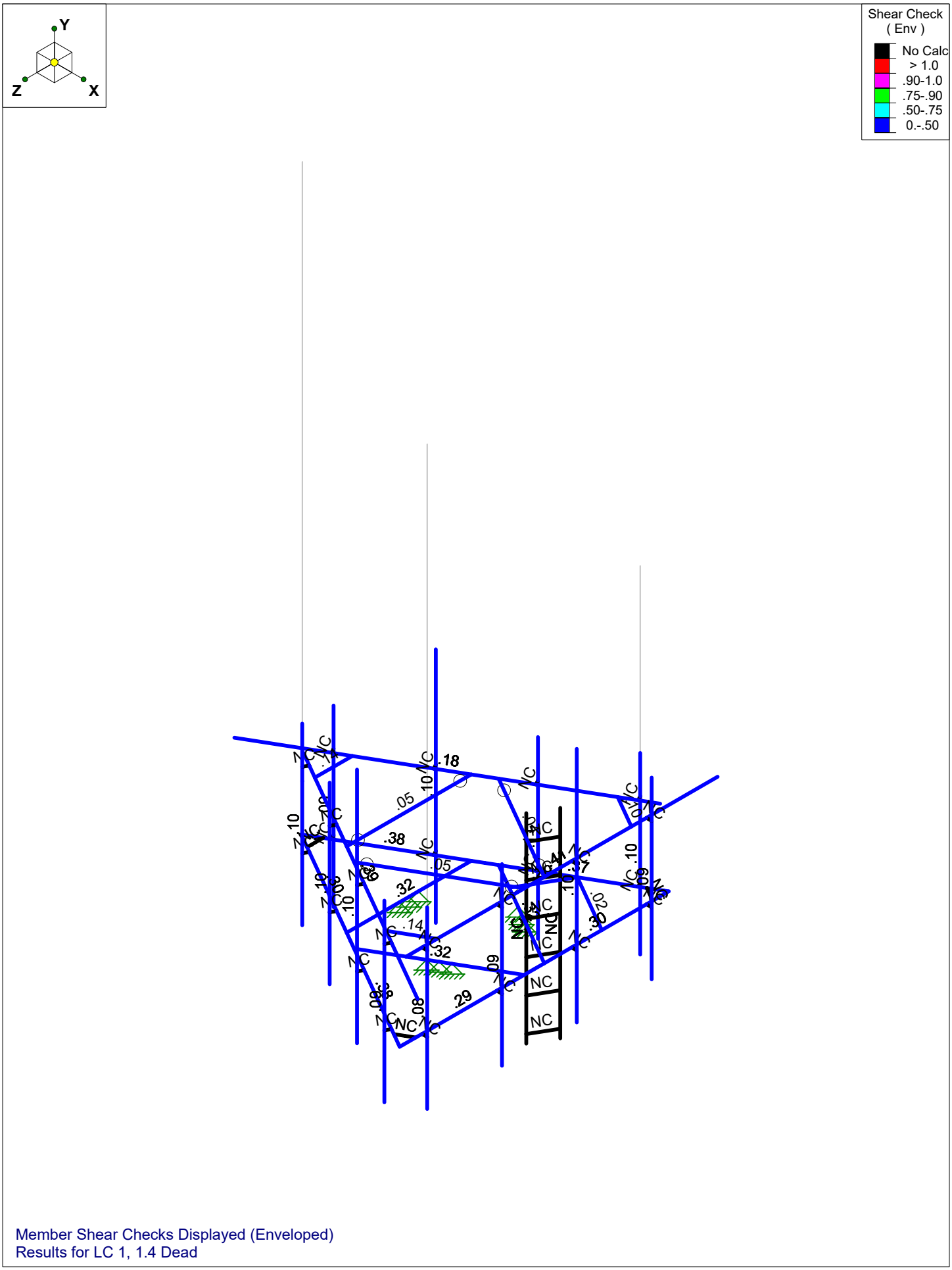

Y
Z
X


Y
Z
X
L2 1 1/2x2 1/2x1/4
P2.5Std
P2 STD
C5X6.7
L2 1 1/2x2 1/2x1/4
SR 5/8

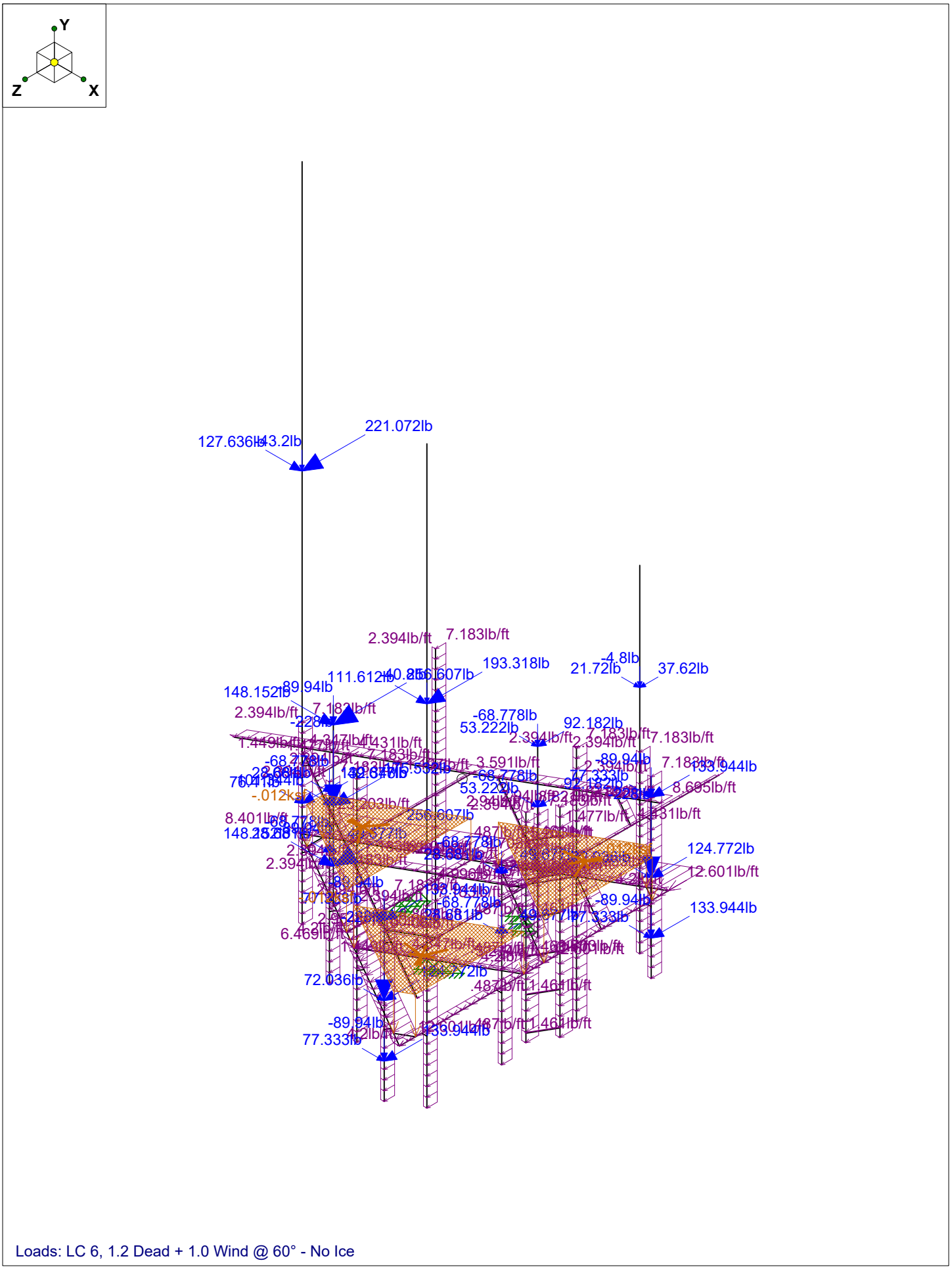

Y
Z
X
N62
N61
N53
N129
N139
N51
N63
N36
N64
N35
N109
N150
N127
N83
N85
N88
N86
N140
N151
N154
N38
N66
N136
N141
N16
N78
N96
N67
N17
N68
N39
N119
N100
N99
N40
N102
N94
N93
N41
N58
N59
N56
N55
N43



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.4 Dead



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.4 Dead



Loads: LC 6, 1.2 Dead + 1.0 Wind @ 60° - No Ice

APPENDIX B

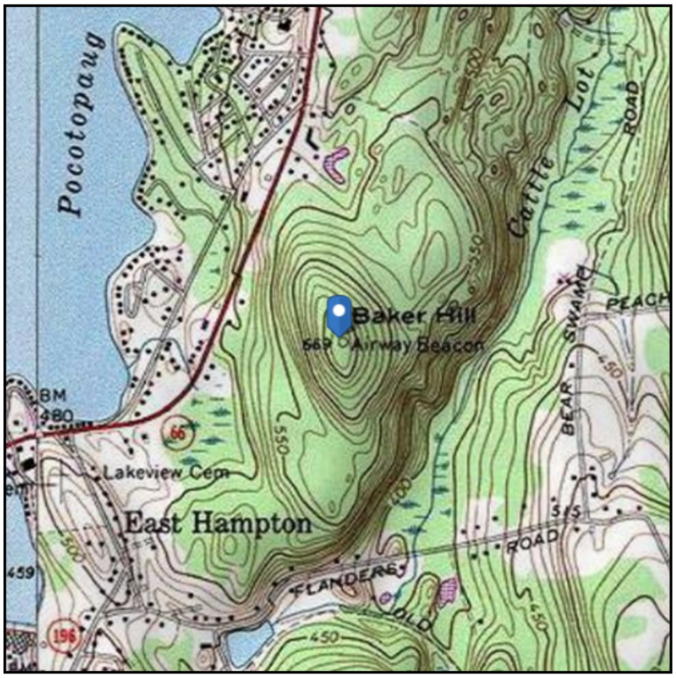
SOFTWARE INPUT CALCULATIONS

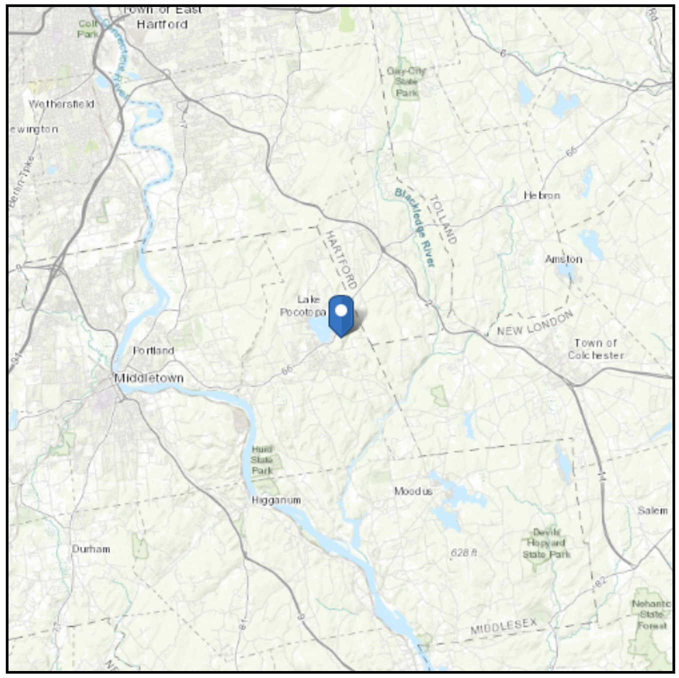
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 664.58 ft (NAVD 88)
Latitude: 41.587278
Longitude: -72.488778





Wind

Results:

Wind Speed:	120 Vmph
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:	Wed Sep 29 2021

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

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

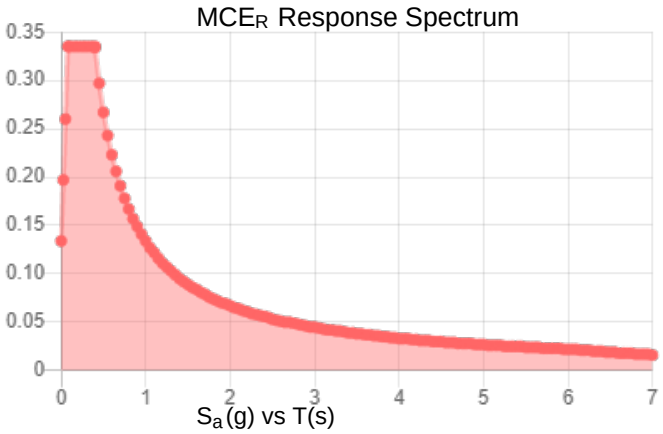
Seismic

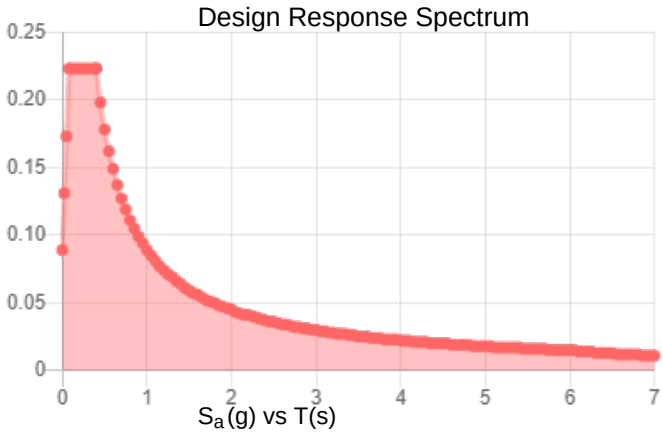
Site Soil Class: D - Default (see Section 11.4.3)

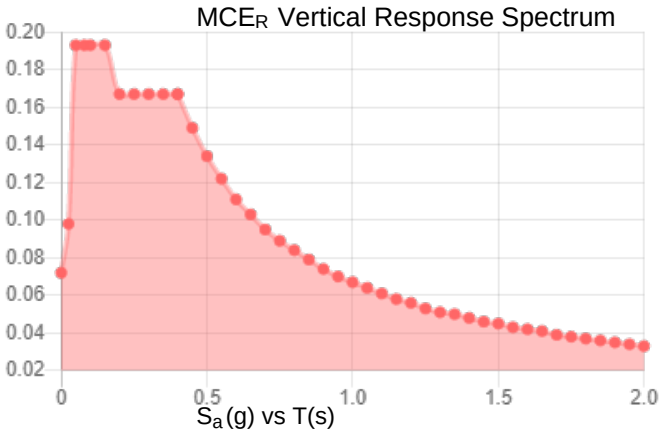
Results:

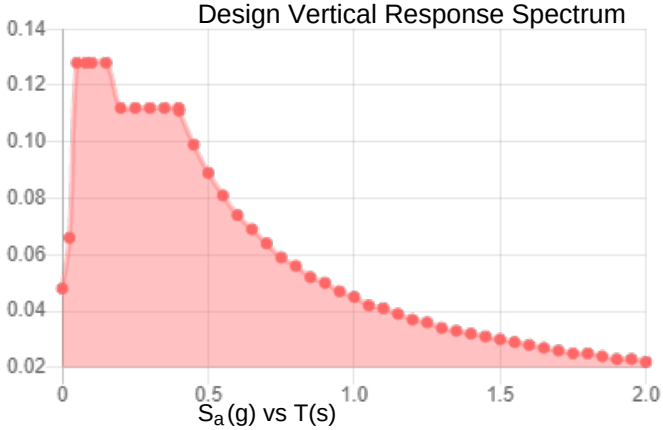
S_S :	0.209	S_{D1} :	0.089
S_1 :	0.056	T_L :	6
F_a :	1.6	PGA :	0.116
F_v :	2.4	PGA_M :	0.182
S_{MS} :	0.335	F_{PGA} :	1.567
S_{M1} :	0.134	I_e :	1
S_{DS} :	0.223	C_v :	0.719

Seismic Design Category B









Data Accessed: Wed Sep 29 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Sep 29 2021

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

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

TIA-222-H: Mount Analysis Wind Loading
876352 - RICHARD WALL
2021777.876352.02

Structure Information		
Structure Type:	Monopole	
Structure Height:	117.5	ft
z (Mount Centerline) =	118	ft
Gh (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

Code Specifications		
TIA/EIA Code:	H	
Ultimate Wind Speed (No Ice) =	120	mph (3-s gust)
Ultimate Wind Speed (With Ice) =	50	mph (3-s gust)
Ice Thickness	1	in
Exposure Category	C	
Tower Base Elevation (AMSL)	664	ft

Topographic Inputs	
Topographic Feature:	N/A

Section Sets										No Ice	Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K_a	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*
Toe Rail	Square/Rect.	128.000	5	1.75		5.30	Flat	0.90	1.00	37.34	7.21	8.93
Platform Inner Bracing	Square/Rect.	56.000	5	1.75		5.30	Flat	0.90	1.00	28.75	5.81	8.93
Pipe Mount	Pipe	114.000	2.375	2.375		2.38	Round	0.90	1.00	10.64	3.58	4.87
Ladder Support Bracing	Square/Rect.	32.000	5	1.75		5.30	Flat	0.90	1.00	25.64	5.26	8.93
Ladder Rail	Angle	102.000	1.75	1.75		2.47	Flat	0.90	1.00	13.07	4.04	5.01
Ladder Rung	Pipe	12.000	0.625	0.625		0.63	Round	0.90	1.00	2.50	1.38	2.44
Support Rail	Pipe	150.000	2.875	2.875		2.88	Round	0.90	1.00	12.88	4.00	5.57
Support Rail Corner Connection	Angle	18.000	2.5	2.5		3.54	Flat	0.90	1.00	13.13	3.11	6.48
Support Rail Inner Brace	Pipe	72.000	2.375	2.375		2.38	Round	0.90	1.00	10.64	2.98	4.87

*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K_a and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(1) DB420-A	130	216.96	3	3	34	Round	0%	0%	0.90	223.22	34.00	69.11	135.85
(1) DB264-A	130	258	2	3.18	36	Round	0%	0%	0.90	176.97	36.00	66.55	145.09
(1) ASP-2011	126	102	1.25	1.25	4	Round	0%	0%	0.90	43.44	4.00	21.82	37.11
(1) GHF3W-23	119	36	36	15.9	55	Grid Dish	0%	0%	0.90	152.82	55.00	93.24	87.16
(3) AIR6449 B41_T-MOBILE	119	33.11	20.51	8.54	114.63	CFD	0%	0%	0.90	212.89	114.63	43.94	95.57
(3) APXVAALL24_43-U-NA20_TMO	119	95.9	24	8.5	149.9	CFD	0%	0%	0.90	592.61	149.90	115.21	268.45
(3) RADIO 4460 B2/B25 B66_TMO	119	17	15.1	11.9	109	Flat	0%	0%	0.90	86.41	109.00	17.67	54.81
(3) Radio 4480_TMOV2	119	22	15.7	7.5	81	Flat	0%	0%	0.90	116.27	81.00	23.28	54.24

*All forces are unfactored.

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	None
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - 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
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
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 (/1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design L...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Toe Rail	C5X6.7	None	None	A36 Gr.36	Typical	1.97	.47	7.48	.055
2	Platform Inner Bracing	C5X6.7	None	None	A36 Gr.36	Typical	1.97	.47	7.48	.055
3	Pipe Mount	P2 STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331
4	Ladder Support Bracing	C5X6.7	None	None	A36 Gr.36	Typical	1.97	.47	7.48	.055
5	Ladder Rail	L1.75x1.75x1/4	None	None	A36 Gr.36	Typical	.813	.227	.227	.015
6	Ladder Rung	SR 5/8	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
7	Support Rail	P2.5Std	None	None	A53 Gr.B	Typical	1.704	1.53	1.53	3.059
8	Support Rail Corner Connection	L2 1/2x2 1/2x1/4	None	None	A36 Gr.36	Typical	1.19	.703	.703	.025
9	Support Rail Inner Brace	P2 STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331

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	N7	Reaction	Reaction	Reaction			
2	N6	Reaction	Reaction	Reaction			
3	N5	Reaction	Reaction	Reaction			
4	N18	Reaction	Reaction	Reaction			
5	N19	Reaction	Reaction	Reaction			

Joint Boundary Conditions (Continued)

	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]
6	N20	Reaction	Reaction	Reaction			
7	N47	Reaction	Reaction	Reaction			
8	N48	Reaction	Reaction	Reaction			
9	N49	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	A1	N35	N39			Pipe Mount	None	None	A53 Gr.B	Typical
2	A2	N36	N40			Pipe Mount	None	None	A53 Gr.B	Typical
3	A3	N37	N41			Pipe Mount	None	None	A53 Gr.B	Typical
4	A4	N38	N43			Pipe Mount	None	None	A53 Gr.B	Typical
5	B1	N50	N55			Pipe Mount	None	None	A53 Gr.B	Typical
6	B2	N51	N56			Pipe Mount	None	None	A53 Gr.B	Typical
7	B3	N52	N58			Pipe Mount	None	None	A53 Gr.B	Typical
8	B4	N53	N59			Pipe Mount	None	None	A53 Gr.B	Typical
9	C1	N61	N65			Pipe Mount	None	None	A53 Gr.B	Typical
10	C2	N62	N66			Pipe Mount	None	None	A53 Gr.B	Typical
11	C3	N63	N67			Pipe Mount	None	None	A53 Gr.B	Typical
12	C4	N64	N68			Pipe Mount	None	None	A53 Gr.B	Typical
13	M1	N28	N13			Toe Rail	None	None	A36 Gr.36	Typical
14	M2	N13	N26			Toe Rail	None	None	A36 Gr.36	Typical
15	M3	N26	N25			Toe Rail	None	None	A36 Gr.36	Typical
16	M4	N25	N27			Toe Rail	None	None	A36 Gr.36	Typical
17	M5	N27	N69			Toe Rail	None	None	A36 Gr.36	Typical
18	M6	N69	N28			Toe Rail	None	None	A36 Gr.36	Typical
19	M7	N45	N46			Platform Inner ...	None	None	A36 Gr.36	Typical
20	M8	N3	N4			Platform Inner ...	None	None	A36 Gr.36	Typical
21	M9	N16	N17			Platform Inner ...	None	None	A36 Gr.36	Typical
22	M10	N60	N24			RIGID	None	None	RIGID	Typical
23	M11	N10	N12			RIGID	None	None	RIGID	Typical
24	M12	N23	N11			RIGID	None	None	RIGID	Typical
25	M13	N29	N30			RIGID	None	None	RIGID	Typical
26	M14	N31	N8			RIGID	None	None	RIGID	Typical
27	M15	N32	N9			RIGID	None	None	RIGID	Typical
28	M16	N33	N34			RIGID	None	None	RIGID	Typical
29	M17	N70	N71			RIGID	None	None	RIGID	Typical
30	M18	N72	N21			RIGID	None	None	RIGID	Typical
31	M19	N73	N22			RIGID	None	None	RIGID	Typical
32	M20	N74	N75			RIGID	None	None	RIGID	Typical
33	M21	N80	N82			RIGID	None	None	RIGID	Typical
34	M22	N84	N54			RIGID	None	None	RIGID	Typical
35	M23	N87	N57			RIGID	None	None	RIGID	Typical
36	M24	N89	N91			RIGID	None	None	RIGID	Typical
37	M25	N76	N77			Ladder Suppor...	None	None	A36 Gr.36	Typical
38	M26	N77	N78			Ladder Suppor...	None	None	A36 Gr.36	Typical
39	M27	N85	N94		120	Ladder Rail	None	None	A36 Gr.36	Typical
40	M28	N83	N93		210	Ladder Rail	None	None	A36 Gr.36	Typical
41	M29	N86	N88			Ladder Rung	None	None	A36 Gr.36	Typical
42	M30	N90	N92			Ladder Rung	None	None	A36 Gr.36	Typical
43	M31	N95	N96			Ladder Rung	None	None	A36 Gr.36	Typical
44	M32	N97	N98			Ladder Rung	None	None	A36 Gr.36	Typical
45	M33	N99	N100			Ladder Rung	None	None	A36 Gr.36	Typical
46	M34	N101	N102			Ladder Rung	None	None	A36 Gr.36	Typical
47	M35	N108	N109			Support Rail	None	None	A53 Gr.B	Typical
48	M36	N118	N119			Support Rail	None	None	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
49	M37	N128	N129			Support Rail	None	None	A53 Gr.B	Typical
50	M38	N139	N138		90	Support Rail C...	None	None	A36 Gr.36	Typical
51	M39	N140	N137		90	Support Rail C...	None	None	A36 Gr.36	Typical
52	M40	N141	N136		90	Support Rail C...	None	None	A36 Gr.36	Typical
53	M41	N110	N111			RIGID	None	None	RIGID	Typical
54	M42	N112	N106			RIGID	None	None	RIGID	Typical
55	M43	N113	N107			RIGID	None	None	RIGID	Typical
56	M44	N114	N115			RIGID	None	None	RIGID	Typical
57	M45	N120	N121			RIGID	None	None	RIGID	Typical
58	M46	N122	N116			RIGID	None	None	RIGID	Typical
59	M47	N123	N117			RIGID	None	None	RIGID	Typical
60	M48	N124	N125			RIGID	None	None	RIGID	Typical
61	M49	N130	N131			RIGID	None	None	RIGID	Typical
62	M50	N132	N126			RIGID	None	None	RIGID	Typical
63	M51	N133	N127			RIGID	None	None	RIGID	Typical
64	M52	N134	N135			RIGID	None	None	RIGID	Typical
65	M53	N146	N143			RIGID	None	None	RIGID	Typical
66	M54	N147	N144			RIGID	None	None	RIGID	Typical
67	M55	N148	N145			RIGID	None	None	RIGID	Typical
68	M56	N153	N154			Support Rail In...	None	None	A53 Gr.B	Typical
69	M57	N149	N150			Support Rail In...	None	None	A53 Gr.B	Typical
70	M58	N151	N152			Support Rail In...	None	None	A53 Gr.B	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(Pl...
1	Dead	DL		-1			26		3	
2	No Ice Wind 0 deg	None					26	40		
3	No Ice Wind 30 deg	None					52	66		
4	No Ice Wind 60 deg	None					52	80		
5	No Ice Wind 90 deg	None					26	34		
6	No Ice Wind 120 deg	None					52	66		
7	No Ice Wind 150 deg	None					52	68		
8	No Ice Wind 180 deg	None					26	40		
9	No Ice Wind 210 deg	None					52	66		
10	No Ice Wind 240 deg	None					52	80		
11	No Ice Wind 270 deg	None					26	34		
12	No Ice Wind 300 deg	None					52	66		
13	No Ice Wind 330 deg	None					52	68		
14	Ice Weight	None					26	40	3	
15	Ice Wind 0 deg	None					26	40		
16	Ice Wind 30 deg	None					52	66		
17	Ice Wind 60 deg	None					52	80		
18	Ice Wind 90 deg	None					26	34		
19	Ice Wind 120 deg	None					52	66		
20	Ice Wind 150 deg	None					52	68		
21	Ice Wind 180 deg	None					26	40		
22	Ice Wind 210 deg	None					52	66		
23	Ice Wind 240 deg	None					52	80		
24	Ice Wind 270 deg	None					26	34		
25	Ice Wind 300 deg	None					52	66		
26	Ice Wind 330 deg	None					52	68		
27	Live Load - A1	None					1			
28	Live Load - A2	None					1			
29	Live Load - A3	None					1			
30	Live Load - A4	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(Pl...
31	Live Load - B1	None					1			
32	Live Load - B2	None					1			
33	Live Load - B3	None					1			
34	Live Load - B4	None					1			
35	Live Load - C1	None					1			
36	Live Load - C2	None					1			
37	Live Load - C3	None					1			
38	Live Load - C4	None					1			
39	Live Load - M1 (Start)	None					1			
40	Live Load - M1 (Midd...	None					1			
41	Live Load - M1 (End)	None					1			
42	Live Load - M2 (Start)	None					1			
43	Live Load - M2 (Midd...	None					1			
44	Live Load - M2 (End)	None					1			
45	Live Load - M3 (Start)	None					1			
46	Live Load - M3 (Midd...	None					1			
47	Live Load - M3 (End)	None					1			
48	Live Load - M4 (Start)	None					1			
49	Live Load - M4 (Midd...	None					1			
50	Live Load - M4 (End)	None					1			
51	Live Load - M5 (Start)	None					1			
52	Live Load - M5 (Midd...	None					1			
53	Live Load - M5 (End)	None					1			
54	Live Load - M6 (Start)	None					1			
55	Live Load - M6 (Midd...	None					1			
56	Live Load - M6 (End)	None					1			
57	Live Load - M7 (Start)	None					1			
58	Live Load - M7 (Midd...	None					1			
59	Live Load - M7 (End)	None					1			
60	Live Load - M8 (Start)	None					1			
61	Live Load - M8 (Midd...	None					1			
62	Live Load - M8 (End)	None					1			
63	Live Load - M9 (Start)	None					1			
64	Live Load - M9 (Midd...	None					1			
65	Live Load - M9 (End)	None					1			
66	Live Load - M25 (Sta...	None					1			
67	Live Load - M25 (Mid...	None					1			
68	Live Load - M25 (End)	None					1			
69	Live Load - M26 (Sta...	None					1			
70	Live Load - M26 (Mid...	None					1			
71	Live Load - M26 (End)	None					1			
72	BLC 1 Transient Area...	None						43		
73	BLC 14 Transient Are...	None						43		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 Dead	Yes	Y		1	1.4	0		0		0		0		0		0		0					
2	1.2 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y		1	1.2	2	1	0		0		0		0		0		0					
3	0.9 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y		1	.9	2	1	0		0		0		0		0		0					
4	1.2 Dead + 1.0 Wind @ 30° - No I...	Yes	Y		1	1.2	3	1	0		0		0		0		0		0					
5	0.9 Dead + 1.0 Wind @ 30° - No I...	Yes	Y		1	.9	3	1	0		0		0		0		0		0					
6	1.2 Dead + 1.0 Wind @ 60° - No I...	Yes	Y		1	1.2	4	1	0		0		0		0		0		0					
7	0.9 Dead + 1.0 Wind @ 60° - No I...	Yes	Y		1	.9	4	1	0		0		0		0		0		0					
8	1.2 Dead + 1.0 Wind @ 90° - No I...	Yes	Y		1	1.2	5	1	0		0		0		0		0		0					
9	0.9 Dead + 1.0 Wind @ 90° - No I...	Yes	Y		1	.9	5	1	0		0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
10	1.2 Dead + 1.0 Wind @ 120° - No...	Yes	Y		1	1.2	6	1	0		0		0		0		0		0					
11	0.9 Dead + 1.0 Wind @ 120° - No...	Yes	Y		1	.9	6	1	0		0		0		0		0		0					
12	1.2 Dead + 1.0 Wind @ 150° - No...	Yes	Y		1	1.2	7	1	0		0		0		0		0		0					
13	0.9 Dead + 1.0 Wind @ 150° - No...	Yes	Y		1	.9	7	1	0		0		0		0		0		0					
14	1.2 Dead + 1.0 Wind @ 180° - No...	Yes	Y		1	1.2	8	1	0		0		0		0		0		0					
15	0.9 Dead + 1.0 Wind @ 180° - No...	Yes	Y		1	.9	8	1	0		0		0		0		0		0					
16	1.2 Dead + 1.0 Wind @ 210° - No...	Yes	Y		1	1.2	9	1	0		0		0		0		0		0					
17	0.9 Dead + 1.0 Wind @ 210° - No...	Yes	Y		1	.9	9	1	0		0		0		0		0		0					
18	1.2 Dead + 1.0 Wind @ 240° - No...	Yes	Y		1	1.2	10	1	0		0		0		0		0		0					
19	0.9 Dead + 1.0 Wind @ 240° - No...	Yes	Y		1	.9	10	1	0		0		0		0		0		0					
20	1.2 Dead + 1.0 Wind @ 270° - No...	Yes	Y		1	1.2	11	1	0		0		0		0		0		0					
21	0.9 Dead + 1.0 Wind @ 270° - No...	Yes	Y		1	.9	11	1	0		0		0		0		0		0					
22	1.2 Dead + 1.0 Wind @ 300° - No...	Yes	Y		1	1.2	12	1	0		0		0		0		0		0					
23	0.9 Dead + 1.0 Wind @ 300° - No...	Yes	Y		1	.9	12	1	0		0		0		0		0		0					
24	1.2 Dead + 1.0 Wind @ 330° - No...	Yes	Y		1	1.2	13	1	0		0		0		0		0		0					
25	0.9 Dead + 1.0 Wind @ 330° - No...	Yes	Y		1	.9	13	1	0		0		0		0		0		0					
26	1.2 Dead + 1.0 Ice Wind @ 0°+ 1...	Yes	Y		1	1.2	15	1	14	1		1	0		0		0		0					
27	1.2 Dead + 1.0 Ice Wind @ 30°+ ...	Yes	Y		1	1.2	16	1	14	1		1	0		0		0		0					
28	1.2 Dead + 1.0 Ice Wind @ 60°+ ...	Yes	Y		1	1.2	17	1	14	1		1	0		0		0		0					
29	1.2 Dead + 1.0 Ice Wind @ 90°+ ...	Yes	Y		1	1.2	18	1	14	1		1	0		0		0		0					
30	1.2 Dead + 1.0 Ice Wind @ 120°+...	Yes	Y		1	1.2	19	1	14	1		1	0		0		0		0					
31	1.2 Dead + 1.0 Ice Wind @ 150°+...	Yes	Y		1	1.2	20	1	14	1		1	0		0		0		0					
32	1.2 Dead + 1.0 Ice Wind @ 180°+...	Yes	Y		1	1.2	21	1	14	1		1	0		0		0		0					
33	1.2 Dead + 1.0 Ice Wind @ 210°+...	Yes	Y		1	1.2	22	1	14	1		1	0		0		0		0					
34	1.2 Dead + 1.0 Ice Wind @ 240°+...	Yes	Y		1	1.2	23	1	14	1		1	0		0		0		0					
35	1.2 Dead + 1.0 Ice Wind @ 270°+...	Yes	Y		1	1.2	24	1	14	1		1	0		0		0		0					
36	1.2 Dead + 1.0 Ice Wind @ 300°+...	Yes	Y		1	1.2	25	1	14	1		1	0		0		0		0					
37	1.2 Dead + 1.0 Ice Wind @ 330°+...	Yes	Y		1	1.2	26	1	14	1		1	0		0		0		0					
38	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	2	.063	0		0		0		0		0					
39	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	3	.063	0		0		0		0		0					
40	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	4	.063	0		0		0		0		0					
41	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	5	.063	0		0		0		0		0					
42	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	6	.063	0		0		0		0		0					
43	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	7	.063	0		0		0		0		0					
44	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	8	.063	0		0		0		0		0					
45	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	9	.063	0		0		0		0		0					
46	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	10	.063	0		0		0		0		0					
47	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	11	.063	0		0		0		0		0					
48	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	12	.063	0		0		0		0		0					
49	1.2 Dead + 1.5 Live_M - A1 + 1.0...	Yes	Y		1	1.2	27	1.5	13	.063	0		0		0		0		0					
50	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	2	.063	0		0		0		0		0					
51	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	3	.063	0		0		0		0		0					
52	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	4	.063	0		0		0		0		0					
53	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	5	.063	0		0		0		0		0					
54	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	6	.063	0		0		0		0		0					
55	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	7	.063	0		0		0		0		0					
56	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	8	.063	0		0		0		0		0					
57	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	9	.063	0		0		0		0		0					
58	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	10	.063	0		0		0		0		0					
59	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	11	.063	0		0		0		0		0					
60	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	12	.063	0		0		0		0		0					
61	1.2 Dead + 1.5 Live_M - A2 + 1.0...	Yes	Y		1	1.2	28	1.5	13	.063	0		0		0		0		0					
62	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	2	.063	0		0		0		0		0					
63	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	3	.063	0		0		0		0		0					
64	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	4	.063	0		0		0		0		0					
65	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	5	.063	0		0		0		0		0					
66	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	6	.063	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
67	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	7	.063	0		0		0		0		0					
68	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	8	.063	0		0		0		0		0					
69	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	9	.063	0		0		0		0		0					
70	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	10	.063	0		0		0		0		0					
71	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	11	.063	0		0		0		0		0					
72	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	12	.063	0		0		0		0		0					
73	1.2 Dead + 1.5 Live_M - A3 + 1.0...	Yes	Y		1	1.2	29	1.5	13	.063	0		0		0		0		0					
74	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	2	.063	0		0		0		0		0					
75	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	3	.063	0		0		0		0		0					
76	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	4	.063	0		0		0		0		0					
77	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	5	.063	0		0		0		0		0					
78	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	6	.063	0		0		0		0		0					
79	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	7	.063	0		0		0		0		0					
80	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	8	.063	0		0		0		0		0					
81	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	9	.063	0		0		0		0		0					
82	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	10	.063	0		0		0		0		0					
83	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	11	.063	0		0		0		0		0					
84	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	12	.063	0		0		0		0		0					
85	1.2 Dead + 1.5 Live_M - A4 + 1.0...	Yes	Y		1	1.2	30	1.5	13	.063	0		0		0		0		0					
86	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	2	.063	0		0		0		0		0					
87	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	3	.063	0		0		0		0		0					
88	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	4	.063	0		0		0		0		0					
89	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	5	.063	0		0		0		0		0					
90	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	6	.063	0		0		0		0		0					
91	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	7	.063	0		0		0		0		0					
92	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	8	.063	0		0		0		0		0					
93	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	9	.063	0		0		0		0		0					
94	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	10	.063	0		0		0		0		0					
95	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	11	.063	0		0		0		0		0					
96	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	12	.063	0		0		0		0		0					
97	1.2 Dead + 1.5 Live_M - B1 + 1.0...	Yes	Y		1	1.2	31	1.5	13	.063	0		0		0		0		0					
98	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	2	.063	0		0		0		0		0					
99	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	3	.063	0		0		0		0		0					
100	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	4	.063	0		0		0		0		0					
101	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	5	.063	0		0		0		0		0					
102	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	6	.063	0		0		0		0		0					
103	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	7	.063	0		0		0		0		0					
104	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	8	.063	0		0		0		0		0					
105	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	9	.063	0		0		0		0		0					
106	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	10	.063	0		0		0		0		0					
107	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	11	.063	0		0		0		0		0					
108	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	12	.063	0		0		0		0		0					
109	1.2 Dead + 1.5 Live_M - B2 + 1.0...	Yes	Y		1	1.2	32	1.5	13	.063	0		0		0		0		0					
110	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	2	.063	0		0		0		0		0					
111	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	3	.063	0		0		0		0		0					
112	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	4	.063	0		0		0		0		0					
113	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	5	.063	0		0		0		0		0					
114	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	6	.063	0		0		0		0		0					
115	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	7	.063	0		0		0		0		0					
116	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	8	.063	0		0		0		0		0					
117	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	9	.063	0		0		0		0		0					
118	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	10	.063	0		0		0		0		0					
119	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	11	.063	0		0		0		0		0					
120	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	12	.063	0		0		0		0		0					
121	1.2 Dead + 1.5 Live_M - B3 + 1.0...	Yes	Y		1	1.2	33	1.5	13	.063	0		0		0		0		0					
122	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	2	.063	0		0		0		0		0					
123	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	3	.063	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
124	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	4	.063	0		0		0		0		0					
125	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	5	.063	0		0		0		0		0					
126	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	6	.063	0		0		0		0		0					
127	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	7	.063	0		0		0		0		0					
128	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	8	.063	0		0		0		0		0					
129	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	9	.063	0		0		0		0		0					
130	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	10	.063	0		0		0		0		0					
131	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	11	.063	0		0		0		0		0					
132	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	12	.063	0		0		0		0		0					
133	1.2 Dead + 1.5 Live_M - B4 + 1.0...	Yes	Y		1	1.2	34	1.5	13	.063	0		0		0		0		0					
134	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	2	.063	0		0		0		0		0					
135	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	3	.063	0		0		0		0		0					
136	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	4	.063	0		0		0		0		0					
137	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	5	.063	0		0		0		0		0					
138	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	6	.063	0		0		0		0		0					
139	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	7	.063	0		0		0		0		0					
140	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	8	.063	0		0		0		0		0					
141	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	9	.063	0		0		0		0		0					
142	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	10	.063	0		0		0		0		0					
143	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	11	.063	0		0		0		0		0					
144	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	12	.063	0		0		0		0		0					
145	1.2 Dead + 1.5 Live_M - C1 + 1.0...	Yes	Y		1	1.2	35	1.5	13	.063	0		0		0		0		0					
146	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	2	.063	0		0		0		0		0					
147	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	3	.063	0		0		0		0		0					
148	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	4	.063	0		0		0		0		0					
149	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	5	.063	0		0		0		0		0					
150	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	6	.063	0		0		0		0		0					
151	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	7	.063	0		0		0		0		0					
152	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	8	.063	0		0		0		0		0					
153	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	9	.063	0		0		0		0		0					
154	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	10	.063	0		0		0		0		0					
155	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	11	.063	0		0		0		0		0					
156	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	12	.063	0		0		0		0		0					
157	1.2 Dead + 1.5 Live_M - C2 + 1.0...	Yes	Y		1	1.2	36	1.5	13	.063	0		0		0		0		0					
158	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	2	.063	0		0		0		0		0					
159	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	3	.063	0		0		0		0		0					
160	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	4	.063	0		0		0		0		0					
161	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	5	.063	0		0		0		0		0					
162	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	6	.063	0		0		0		0		0					
163	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	7	.063	0		0		0		0		0					
164	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	8	.063	0		0		0		0		0					
165	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	9	.063	0		0		0		0		0					
166	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	10	.063	0		0		0		0		0					
167	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	11	.063	0		0		0		0		0					
168	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	12	.063	0		0		0		0		0					
169	1.2 Dead + 1.5 Live_M - C3 + 1.0...	Yes	Y		1	1.2	37	1.5	13	.063	0		0		0		0		0					
170	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	2	.063	0		0		0		0		0					
171	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	3	.063	0		0		0		0		0					
172	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	4	.063	0		0		0		0		0					
173	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	5	.063	0		0		0		0		0					
174	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	6	.063	0		0		0		0		0					
175	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	7	.063	0		0		0		0		0					
176	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	8	.063	0		0		0		0		0					
177	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	9	.063	0		0		0		0		0					
178	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	10	.063	0		0		0		0		0					
179	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	11	.063	0		0		0		0		0					
180	1.2 Dead + 1.5 Live_M - C4 + 1.0...	Yes	Y		1	1.2	38	1.5	12	.063	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
181	1.2 Dead + 1.5 Live_M - C4 + 1.0..	Yes	Y		1	1.2	38	1.5	13	.063	0		0		0		0		0					
182	1.2 Dead + 1.5 Live_V - M1 (Start)	Yes	Y		1	1.2	39	1.5	0		0		0		0		0		0					
183	1.2 Dead + 1.5 Live_V - M1 (Midd..	Yes	Y		1	1.2	40	1.5	0		0		0		0		0		0					
184	1.2 Dead + 1.5 Live_V - M1 (End)	Yes	Y		1	1.2	41	1.5	0		0		0		0		0		0					
185	1.2 Dead + 1.5 Live_V - M2 (Start)	Yes	Y		1	1.2	42	1.5	0		0		0		0		0		0					
186	1.2 Dead + 1.5 Live_V - M2 (Midd..	Yes	Y		1	1.2	43	1.5	0		0		0		0		0		0					
187	1.2 Dead + 1.5 Live_V - M2 (End)	Yes	Y		1	1.2	44	1.5	0		0		0		0		0		0					
188	1.2 Dead + 1.5 Live_V - M3 (Start)	Yes	Y		1	1.2	45	1.5	0		0		0		0		0		0					
189	1.2 Dead + 1.5 Live_V - M3 (Midd..	Yes	Y		1	1.2	46	1.5	0		0		0		0		0		0					
190	1.2 Dead + 1.5 Live_V - M3 (End)	Yes	Y		1	1.2	47	1.5	0		0		0		0		0		0					
191	1.2 Dead + 1.5 Live_V - M4 (Start)	Yes	Y		1	1.2	48	1.5	0		0		0		0		0		0					
192	1.2 Dead + 1.5 Live_V - M4 (Midd..	Yes	Y		1	1.2	49	1.5	0		0		0		0		0		0					
193	1.2 Dead + 1.5 Live_V - M4 (End)	Yes	Y		1	1.2	50	1.5	0		0		0		0		0		0					
194	1.2 Dead + 1.5 Live_V - M5 (Start)	Yes	Y		1	1.2	51	1.5	0		0		0		0		0		0					
195	1.2 Dead + 1.5 Live_V - M5 (Midd..	Yes	Y		1	1.2	52	1.5	0		0		0		0		0		0					
196	1.2 Dead + 1.5 Live_V - M5 (End)	Yes	Y		1	1.2	53	1.5	0		0		0		0		0		0					
197	1.2 Dead + 1.5 Live_V - M6 (Start)	Yes	Y		1	1.2	54	1.5	0		0		0		0		0		0					
198	1.2 Dead + 1.5 Live_V - M6 (Midd..	Yes	Y		1	1.2	55	1.5	0		0		0		0		0		0					
199	1.2 Dead + 1.5 Live_V - M6 (End)	Yes	Y		1	1.2	56	1.5	0		0		0		0		0		0					
200	1.2 Dead + 1.5 Live_V - M7 (Start)	Yes	Y		1	1.2	57	1.5	0		0		0		0		0		0					
201	1.2 Dead + 1.5 Live_V - M7 (Midd..	Yes	Y		1	1.2	58	1.5	0		0		0		0		0		0					
202	1.2 Dead + 1.5 Live_V - M7 (End)	Yes	Y		1	1.2	59	1.5	0		0		0		0		0		0					
203	1.2 Dead + 1.5 Live_V - M8 (Start)	Yes	Y		1	1.2	60	1.5	0		0		0		0		0		0					
204	1.2 Dead + 1.5 Live_V - M8 (Midd..	Yes	Y		1	1.2	61	1.5	0		0		0		0		0		0					
205	1.2 Dead + 1.5 Live_V - M8 (End)	Yes	Y		1	1.2	62	1.5	0		0		0		0		0		0					
206	1.2 Dead + 1.5 Live_V - M9 (Start)	Yes	Y		1	1.2	63	1.5	0		0		0		0		0		0					
207	1.2 Dead + 1.5 Live_V - M9 (Midd..	Yes	Y		1	1.2	64	1.5	0		0		0		0		0		0					
208	1.2 Dead + 1.5 Live_V - M9 (End)	Yes	Y		1	1.2	65	1.5	0		0		0		0		0		0					
209	1.2 Dead + 1.5 Live_V - M25 (Sta..	Yes	Y		1	1.2	66	1.5	0		0		0		0		0		0					
210	1.2 Dead + 1.5 Live_V - M25 (Mid..	Yes	Y		1	1.2	67	1.5	0		0		0		0		0		0					
211	1.2 Dead + 1.5 Live_V - M25 (End)	Yes	Y		1	1.2	68	1.5	0		0		0		0		0		0					
212	1.2 Dead + 1.5 Live_V - M26 (Sta..	Yes	Y		1	1.2	69	1.5	0		0		0		0		0		0					
213	1.2 Dead + 1.5 Live_V - M26 (Mid..	Yes	Y		1	1.2	70	1.5	0		0		0		0		0		0					
214	1.2 Dead + 1.5 Live_V - M26 (End)	Yes	Y		1	1.2	71	1.5	0		0		0		0		0		0					

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	max	966.001	20	7204.815	2	2025.49	22	0	214	0	214	0	214
2		min	-933.893	9	-4705.563	15	-2022.081	11	0	1	0	1	0	1
3	N6	max	1023.331	21	2420.426	11	1778.004	8	0	214	0	214	0	214
4		min	-1031.383	8	-6202.216	22	-1764.058	21	0	1	0	1	0	1
5	N5	max	2562.74	15	7307.015	18	1082.446	21	0	214	0	214	0	214
6		min	-2593.076	2	-4077.105	7	-1112.814	8	0	1	0	1	0	1
7	N18	max	1180.67	10	7400.176	2	1875.823	20	0	214	0	214	0	214
8		min	-1119.016	23	-4872.709	15	-1877.46	8	0	1	0	1	0	1
9	N19	max	859.189	7	3150.502	19	1485.084	7	0	214	0	214	0	214
10		min	-871.11	18	-7032.43	6	-1505.732	18	0	1	0	1	0	1
11	N20	max	2261.704	17	7123.543	10	432.496	20	0	214	0	214	0	214
12		min	-2290.045	4	-3965.428	23	-400.996	9	0	1	0	1	0	1
13	N47	max	1266.571	15	6944.107	10	2050.804	18	0	214	0	214	0	214
14		min	-1298.518	2	-3662.994	23	-1992.934	7	0	1	0	1	0	1
15	N48	max	2032.371	2	3201.309	3	3.639	23	0	214	0	214	0	214
16		min	-2002.309	15	-7486.622	14	-3.639	6	0	1	0	1	0	1
17	N49	max	1488.568	15	7499.258	18	2019.777	3	0	214	0	214	0	214
18		min	-1507.728	2	-4498.406	7	-2058.079	14	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
19	Totals:	max	5288.216	14	7052.179	36	5131.043	21						
20		min	-5288.214	3	2551.682	11	-5131.046	8						

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

	Member	Shape	Code Check Actual	Code Check Allowable	Ratio (Act./Allow.)	Loc[in]	LC	Shear Check	Shear Check Allowable	Ratio (Act./Allow.)	Loc[in]	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M36	P2.5Std	0.667	1.05	0.635*	7.813	6	0.39	1.05	0.371*	14.06	15357.557	53677.575	3.812	3.812	2.792	H3-6
2	M6	C5X6.7	0.664	1.05	0.632*	4.72	14	0.37	1.05	0.352*	54.62	25319.628	63828	1.604	9.585	2.93	H1-1b
3	M4	C5X6.7	0.62	1.05	0.59*	4.72	14	0.3	1.05	0.286*	54.62	25319.627	63828	1.604	9.585	2.076	H1-1b
4	B2	P2 STD	0.62	1.05	0.59*	83.13	14	0.097	1.05	0.092*	83.13	11572.824	33847.758	1.997	1.997	2.586	H1-1b
5	M5	C5X6.7	0.618	1.05	0.589*	60.01	14	0.379	1.05	0.361*	10.11	25319.627	63828	1.604	9.585	2.063	H1-1b
6	B3	P2 STD	0.599	1.05	0.57*	53.38	6	0.1	1.05	0.095*	53.38	18896.611	33847.758	1.997	1.997	2.01	H1-1b
7	M7	C5X6.7	0.598	1.05	0.57*	24.96	14	0.321	1.05	0.306*	25.59	28909.906	63828	1.604	9.585	1.472	H1-1b
8	M8	C5X6.7	0.579	1.05	0.551*	34.95	20	0.315	1.05	0.3*	25.59	28909.907	63828	1.604	9.585	1.759	H1-1b
9	B1	P2 STD	0.573	1.05	0.546*	53.38	14	0.091	1.05	0.087*	53.38	18896.611	33847.758	1.997	1.997	2.028	H1-1b
10	M9	C5X6.7	0.567	1.05	0.54*	24.96	6	0.318	1.05	0.303*	34.32	28909.907	63828	1.604	9.585	1.501	H1-1b
11	M3	C5X6.7	0.564	1.05	0.537*	60.01	6	0.376	1.05	0.358*	10.11	25319.628	63828	1.604	9.585	2.003	H1-1b
12	C1	P2 STD	0.559	1.05	0.532*	53.38	20	0.09	1.05	0.086*	42	18896.611	33847.758	1.997	1.997	2.111	H1-1b
13	M35	P2.5Std	0.551	1.05	0.525*	14.06	24	0.415	1.05	0.395*	14.06	15357.557	53677.575	3.812	3.812	2.488	H3-6
14	C2	P2 STD	0.541	1.05	0.515*	83.13	20	0.096	1.05	0.091*	83.13	11572.824	33847.758	1.997	1.997	3.239	H1-1b
15	M2	C5X6.7	0.527	1.05	0.502*	4.72	6	0.291	1.05	0.277*	54.62	25319.627	63828	1.604	9.585	2.128	H1-1b
16	M1	C5X6.7	0.512	1.05	0.488*	60.01	22	0.3	1.05	0.286*	10.11	25319.627	63828	1.604	9.585	2.05	H1-1b
17	A1	P2 STD	0.509	1.05	0.485*	53.38	4	0.089	1.05	0.085*	53.38	18896.611	33847.758	1.997	1.997	2.098	H1-1b
18	C3	P2 STD	0.501	1.05	0.477*	53.38	14	0.11	1.05	0.105*	53.38	18896.611	33847.758	1.997	1.997	2.004	H1-1b
19	C4	P2 STD	0.496	1.05	0.472*	53.38	14	0.102	1.05	0.097*	53.38	18896.611	33847.758	1.997	1.997	3.3	H1-1b
20	A3	P2 STD	0.487	1.05	0.464*	53.38	22	0.09	1.05	0.086*	53.38	18896.611	33847.758	1.997	1.997	1.4	H1-1b
21	A2	P2 STD	0.474	1.05	0.451*	83.13	6	0.096	1.05	0.091*	83.13	11572.824	33847.758	1.997	1.997	2.014	H1-1b
22	B4	P2 STD	0.463	1.05	0.441*	24.5	14	0.1	1.05	0.095*	24.5	18896.611	33847.758	1.997	1.997	4.09	H1-1b
23	A4	P2 STD	0.419	1.05	0.399*	24.5	4	0.083	1.05	0.079*	24.5	18896.611	33847.758	1.997	1.997	3.415	H1-1b
24	M25	C5X6.7	0.361	1.05	0.344*	24	2	0.204	1.05	0.194*	6	56209.885	63828	1.604	9.585	1.752	H1-1b
25	M37	P2.5Std	0.324	1.05	0.309*	14.06	14	0.177	1.05	0.169*	109.4	15357.557	53677.575	3.812	3.812	2.232	H1-1b
26	M26	C5X6.7	0.138	1.05	0.131*	0	2	0.018	1.05	0.017*	6.372	50776.547	63828	1.604	9.585	1.613	H1-1b
27	M38	L2 1/2x2 1/2x1/4	0.077	1.05	0.073*	0	14	0.136	1.05	0.13*	0	35922.376	38556	0.46	2.564	2.162	H2-1
28	M40	L2 1/2x2 1/2x1/4	0.062	1.05	0.059*	6.75	15	0.139	1.05	0.132*	0	35922.376	38556	0.46	2.564	2.157	H2-1
29	M39	L2 1/2x2 1/2x1/4	0.049	1.05	0.047*	15.75	49	0.099	1.05	0.094*	18	35922.376	38556	0.46	2.564	1.152	H2-1
30	M56	P2 STD	0.022	1.05	0.021*	29.96	2	0.048	1.05	0.046*	0	25162.746	33847.758	1.997	1.997	1.136	H1-1b
31	M57	P2 STD	0.02	1.05	0.019*	29.96	10	0.04	1.05	0.038*	0	25162.746	33847.758	1.997	1.997	1.136	H1-1b
32	M58	P2 STD	0.018	1.05	0.017*	29.96	20	0.047	1.05	0.045*	0	25162.746	33847.758	1.997	1.997	1.136	H1-1b

*Rating per TIA-222-H, Section 15.5

APPENDIX D

ADDITIONAL CALCULATIONS

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Typ. All Sectors
2021777.876352.02

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	1	
Bolt Grade	A325N	
Bolt Tensile Strength (F_{ub})	120	ksi

RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	0.15	kips
Shear (V)	7.51	kips

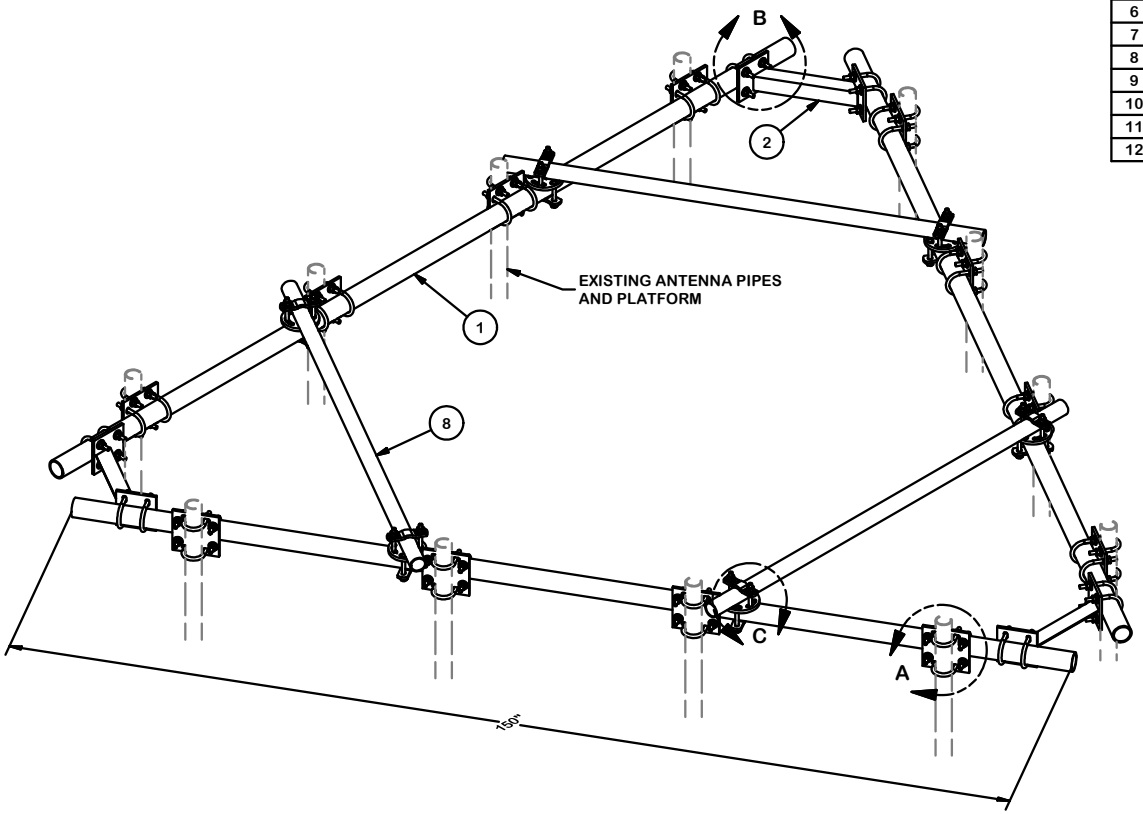
Bolt Capacity		
Nominal Tensile Strength (R_{nt})	27.120	kips
Nominal Shear Strength (R_{nv})	18.41	kips
Bolt Tensile Force (T_{ub})	0.15	kips
Bolt Shear Force (V_{ub})	7.512	kips
$T_{ub}/\phi R_{nt}$	0.00711	
$V_{ub}/\phi R_{nv}$	0.51823	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.28204	
Bolt Capacity =	51.8%	OK

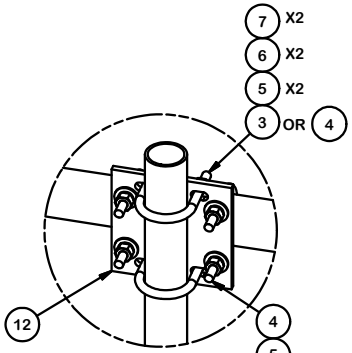
*Rating per TIA-222-H, Section 15.5

APPENDIX E

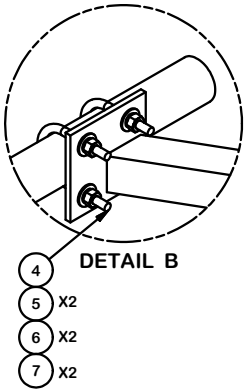
SUPPLEMENTAL DRAWINGS

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P30150	2-7/8" O.D. X 150" SCH. 40 PIPE	150 in	76.94	230.81
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	17.56
4	60	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	43.90
5	144	G12FW	1/2" HDG USS FLATWASHER		0.03	4.91
6	144	G12LW	1/2" HDG LOCKWASHER		0.01	2.00
7	144	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	10.31
8	3	P272	2-3/8" X 72" SCH 40 GALVANIZED PIPE	72 in	23.07	69.20
9	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALVANIZED)		2.48	14.90
10	12	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	10.95
11	24	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	6.48
12	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
					TOTAL WT. #	502.34

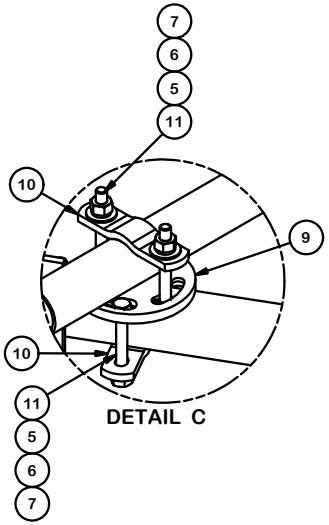




DETAIL A



DETAIL B



DETAIL C

TOLERANCE NOTES

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")*

DESCRIPTION
HEAY DUTY HANDRAIL KIT
FOR 12' PLATFORMS WITH
2-7/8" HANDRAIL PIPES

SITE PRO 1
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

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	CEK 4/6/2015		HRK12-3HD	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/7/2015	HRK12-3HD

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTHA701A

876352
94 East Hight Street
East Hampton, Connecticut 06424

November 10, 2021

EBI Project Number: 6221006617

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**63.76%**

November 10, 2021

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

Emissions Analysis for Site: CTHA701A - 876352

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **94 East Hight Street** in **East Hampton, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu W/cm^2$). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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 94 East Hight Street in East Hampton, 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 power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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) 2 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 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.

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

9) 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.

10) 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.

11) 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.

12) 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.

13) The antennas used in this modeling are the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 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.

14) The antenna mounting height centerline of the proposed antennas is 119 feet above ground level (AGL).

15) 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.

16) 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:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	119 feet	Height (AGL):	119 feet	Height (AGL):	119 feet
Channel Count:	13	Channel Count:	13	Channel Count:	13
Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts
ERP (W):	17,868.72	ERP (W):	17,868.72	ERP (W):	17,868.72
Antenna A1 MPE %:	**6.64%**	Antenna B1 MPE %:	**6.64%**	Antenna C1 MPE %:	**6.64%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
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:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	119 feet	Height (AGL):	119 feet	Height (AGL):	119 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A2 MPE %:	**10.24%**	Antenna B2 MPE %:	**10.24%**	Antenna C2 MPE %:	**10.24%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	16.88%
Town	1.47%
T-Mobile (Existing)	10.08%
Verizon	17.43%
AT&T	17.24%
Nextel	0.66%
Site Total MPE % :	63.76%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	16.88%
T-Mobile Sector B Total:	16.88%
T-Mobile Sector C Total:	16.88%
Site Total MPE % :	63.76%

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 (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	119.0	3.33	600 MHz LTE	400	0.83%
T-Mobile 600 MHz NR	1	1577.94	119.0	4.44	600 MHz NR	400	1.11%
T-Mobile 700 MHz LTE	2	695.22	119.0	3.91	700 MHz LTE	467	0.84%
T-Mobile 1900 MHz GSM	4	1052.26	119.0	11.85	1900 MHz GSM	1000	1.19%
T-Mobile 1900 MHz LTE	2	2104.51	119.0	11.85	1900 MHz LTE	1000	1.19%
T-Mobile 2100 MHz LTE	2	2649.42	119.0	14.92	2100 MHz LTE	1000	1.49%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	119.0	31.10	2500 MHz LTE 1C & 2C Traffic	1000	3.11%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	119.0	3.02	2500 MHz LTE 1C & 2C Broadcast	1000	0.30%
T-Mobile 2500 MHz NR Traffic	1	22089.26	119.0	62.19	2500 MHz NR Traffic	1000	6.22%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	119.0	6.05	2500 MHz NR Broadcast	1000	0.60%
						Total:	**16.88%**

• 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:	16.88%
Sector B:	16.88%
Sector C:	16.88%
T-Mobile Maximum MPE % (Sector A):	16.88%
Site Total:	63.76%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **63.76%** 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

CALL CONNECTICUT ONE CALL
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T-MOBILE SITE NUMBER: CTHA701A
T-MOBILE SITE NAME: CTHA701A
SITE TYPE: MONOPOLE
TOWER HEIGHT: 117'-6"

BUSINESS UNIT #: 876352
SITE ADDRESS: 94 EAST HIGHT STREET
EAST HAMPTON, CT 06424
COUNTY: MIDDLESEX
JURISDICTION: TOWN OF EAST HAMPTON &
CONNECTICUT SITING COUNCIL

T-MOBILE SPRINT-RETAIN SITE CONFIGURATION: 67E5998E_1xAIR+1OP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	RICHARD WALL
SITE ADDRESS:	94 EAST HIGHT STREET EAST HAMPTON, CT 06424
COUNTY:	MIDDLESEX
PARCEL #:	26-85-16
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 35' 14.20" (41.58727777)
LONGITUDE:	-72° 29' 19.60" (-72.48877777)
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	678 FT (AMSL)
CURRENT ZONING:	R-3S
JURISDICTION:	TOWN OF EAST HAMPTON & CONNECTICUT SITING COUNCIL
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	PAULS + SANDYS TOO INC 93 EAST HIGH ST EAST HAMPTON, CT 06424
TOWER OWNER:	CROWN CASTLE USA, INC. 1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO. 800-922-4455
TELCO PROVIDER:	AT&T (800) 288-2020

PROJECT TEAM

A&E FIRM:	TOWER ENGINEERING PROFESSIONALS 326 TRYON ROAD RALEIGH, NC 27603
	JOSEPH T. CRESS - PROJECT MANAGER (919) 661-6351
	GRAHAM M. ANDRES - CIVIL ENGINEER (919) 661-6351
	GRAHAM M. ANDRES - ELECTRICAL ENGINEER (919) 661-6351
CROWN CASTLE USA INC. DISTRICT CONTACTS:	4511 N. HIMES AVENUE, SUITE 210 TAMPA, FL 33614
	NITSA CRENSHAW - A&E SPECIALIST (813) 342-3871

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	FINAL SITE PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	EQUIPMENT SPECS
C-5	CABINET & SIGNAGE SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	MOUNT SPECS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22x34. 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.

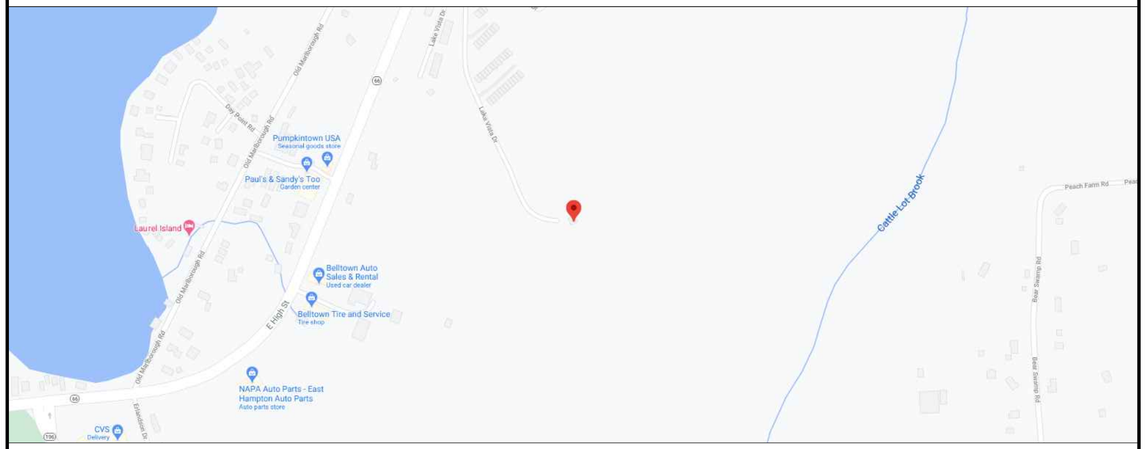
PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (4) EXISTING SPRINT CABLES
- REMOVE (6) EXISTING SPRINT ANTENNAS
- REMOVE (9) EXISTING SPRINT RRHs
- INSTALL (6) ANTENNAS
- INSTALL (6) RRHs
- INSTALL (3) BACK-TO-BACK RADIO MOUNTS
- INSTALL (4) 6x24 HCS 4AWG 60m CABLES
- RELOCATE (3) DISHES AND (3) DIPOLE ANTENNAS
- MODIFY EXSTING ANTENNA PLATFORM

GROUND SCOPE OF WORK:
- REMOVE LEGACY SPRINT CABINET(S) AS NEEDED
- INSTALL (2) CABINETS
- INSTALL (3) BB 6648, (1) RBS 6601 W/(1) DUG20, (1) IXRE ROUTER, (1) PSU 4813 BOOSTER
- REUSE EXISTING SPRINT PAD, ICE BRIDGE & UTILITY EQUIPMENT

LOCATION MAP



NO SCALE

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 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2018 INTERNATIONAL MECHANICAL CODE
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS
DATED:	08/04/2021
MOUNT ANALYSIS:	GPD ENGINEERING AND ARCHITECTURE
DATED:	09/29/2021
ORDER ID:	584621 RFDS VERSION: 1
REVISION:	0 DATED: 07/09/2021

ANALYSIS CRITERIA:

APPLICABLE CODES:	TIA-222-H / ASCE 7-16
WIND SPEED:	V = 111 MPH (ULTIMATE 3 SECOND GUST)
EXPOSURE CATEGORY:	C
RISK CATEGORY:	II
TOPOGRAPHIC CATEGORY:	1
SEISMIC Ss:	0.209
SEISMIC S1:	0.056
SERVICE WIND SPEED:	40 MPH

APPROVALS

APPROVAL	SIGNATURE	DATE
RF		
CONST.		
FAA		
OPS		
RE		
SR DEV MGR		
REG DIR		

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.

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25645.498733

T-MOBILE SITE NUMBER:
CTHA701A

BU #: **876352**
RICHARD WALL

94 EAST HIGHT STREET
EAST HAMPTON, CT 06424
(MIDDLESEX COUNTY)

EXISTING 117'-6"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/01/21	SBS	PRELIMINARY	BSE
0	04/07/21	JW	CONSTRUCTION	BSE
1	04/22/21	ER	CONSTRUCTION	BSE
2	10/13/21	INS	CONSTRUCTION	JTC

SEAL:

10/13/21

SHEET NUMBER: T-1
REVISION: 2

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

#4 BARS AND SMALLER	40 ksi
#5 BARS AND LARGER	60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 BARS AND LARGER	2"
#5 BARS AND SMALLER	1–1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:	
SLAB AND WALLS	3/4"
BEAMS AND COLUMNS	1–1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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

TOWER
ENGINEERING
PROFESSIONALS

326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25645.498733

T-MOBILE SITE NUMBER:
CTHA701A

BU #: **876352**
RICHARD WALL

94 EAST HIGHT STREET
EAST HAMPTON, CT 06424
(MIDDLESEX COUNTY)

EXISTING 117'-6"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/01/21	SBS	PRELIMINARY	BSE
0	04/07/21	JW	CONSTRUCTION	BSE
1	04/22/21	ER	CONSTRUCTION	BSE
2	10/13/21	INS	CONSTRUCTION	JTC

SEAL:

29538

10/13/21

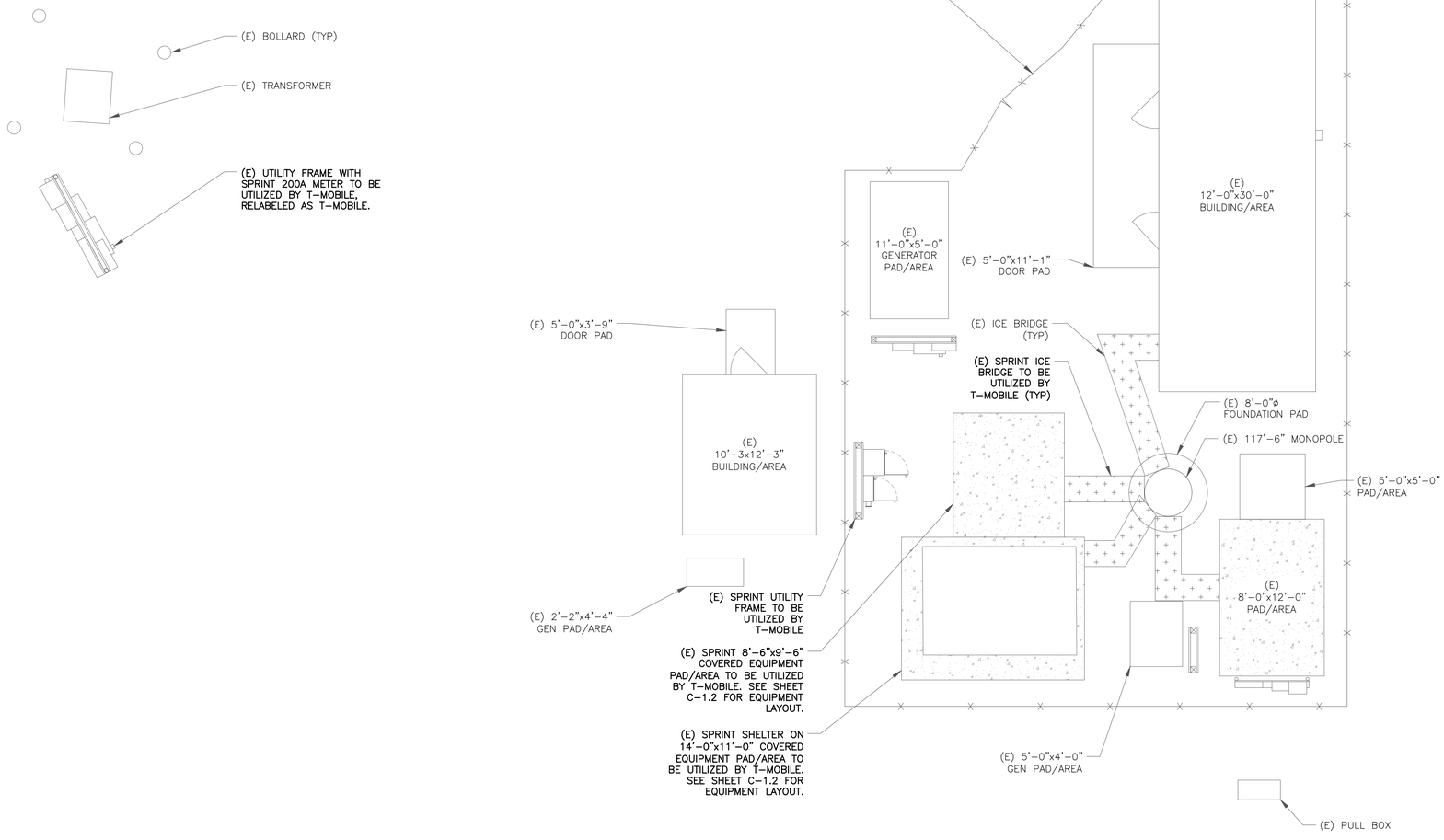
IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2

REVISION: 2

NOTE:
SITE PLAN SHOWN BELOW WAS REPRODUCED FROM INFORMATION PROVIDED BY CROWN CASTLE AND SITE WALK CONDUCTED BY TEP. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SITE PLAN. CONTRACTOR IS TO ESTABLISH THE EXISTENCE AND LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES.

FLOODPLAIN NOTE:
THE TOWER IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #09007C0155G, DATED 08/28/2008.



1 SITE PLAN
SCALE: 2' 1' 0 2' 3/8"=1'-0" (FULL SIZE) 3/16"=1'-0" (11x17)

N

T-Mobile

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SEAL:

10/13/21

SHEET NUMBER: C-1.1

REVISION: 2

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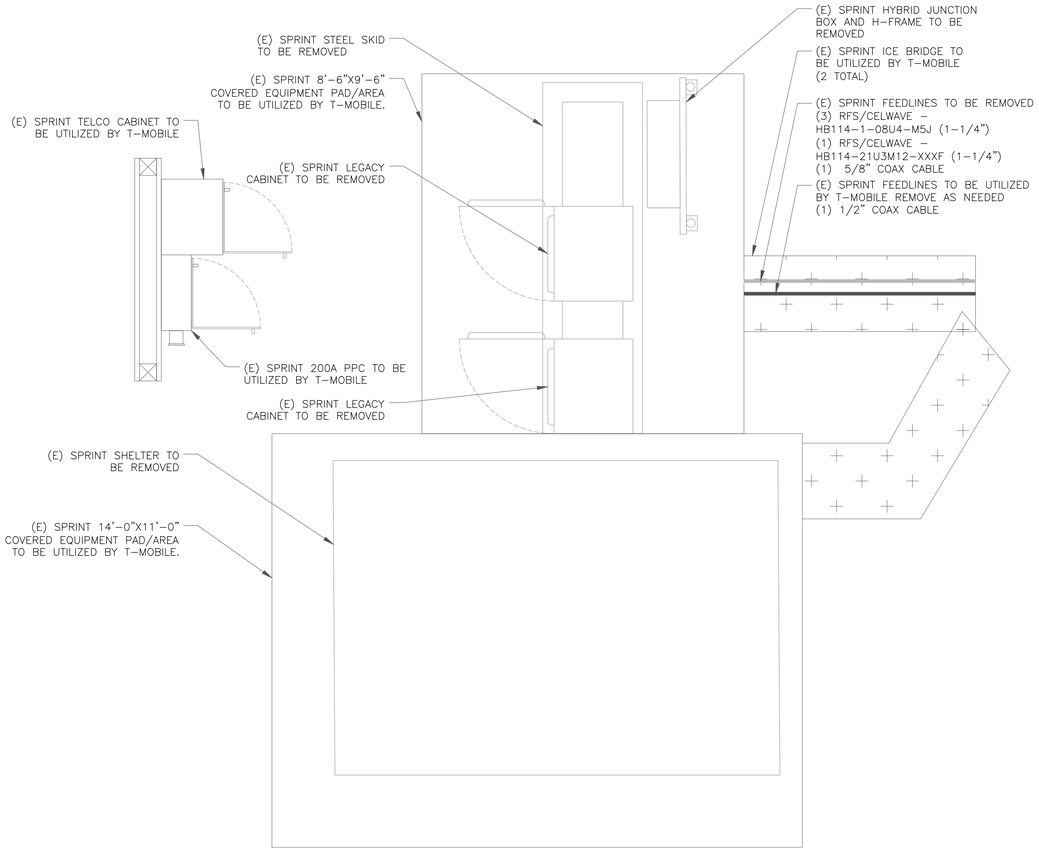
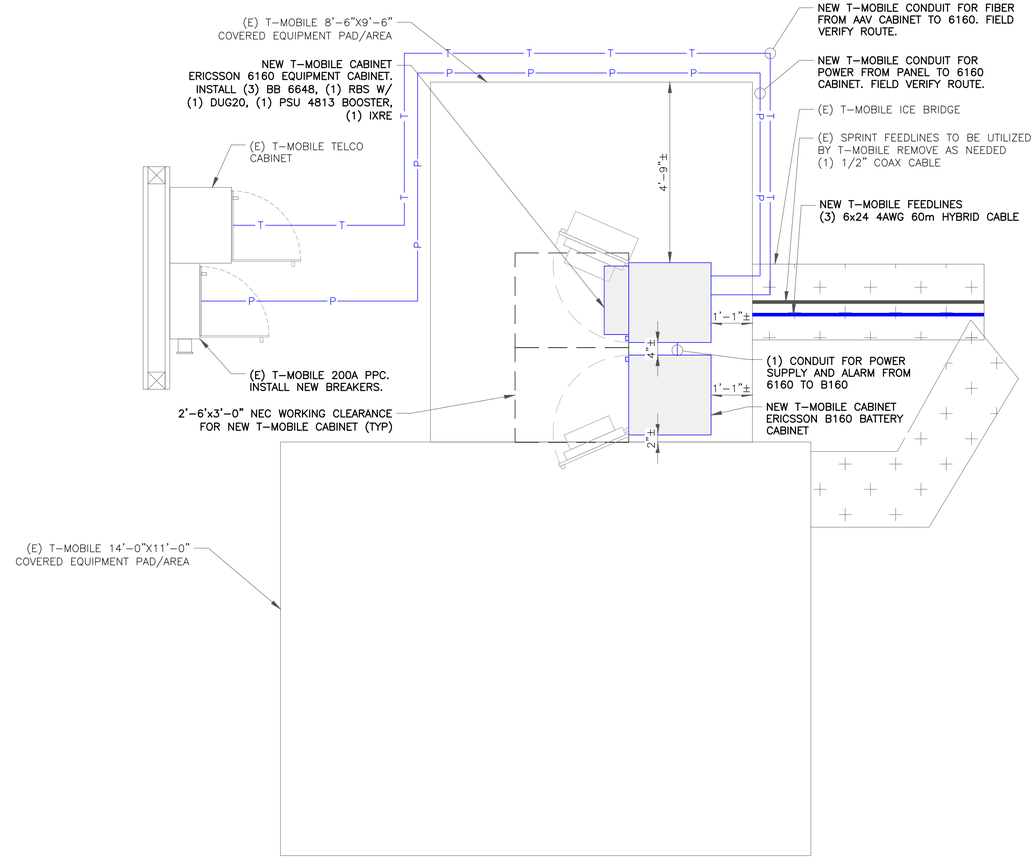


1 EXISTING EQUIPMENT PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N



2 FINAL EQUIPMENT PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

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SEAL:

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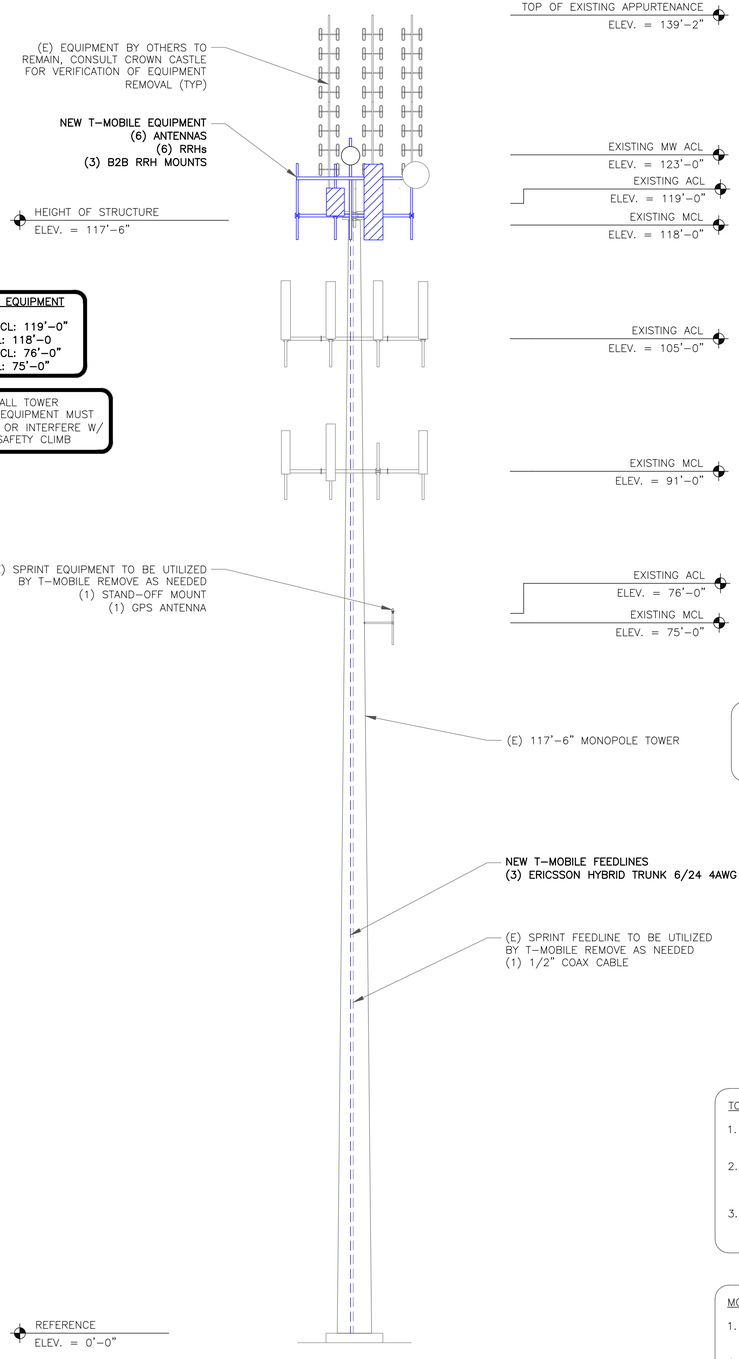
SHEET NUMBER: C-1.2

REVISION: 2



1 FINAL ELEVATION
SCALE: NOT TO SCALE

INSTALLER NOTE:

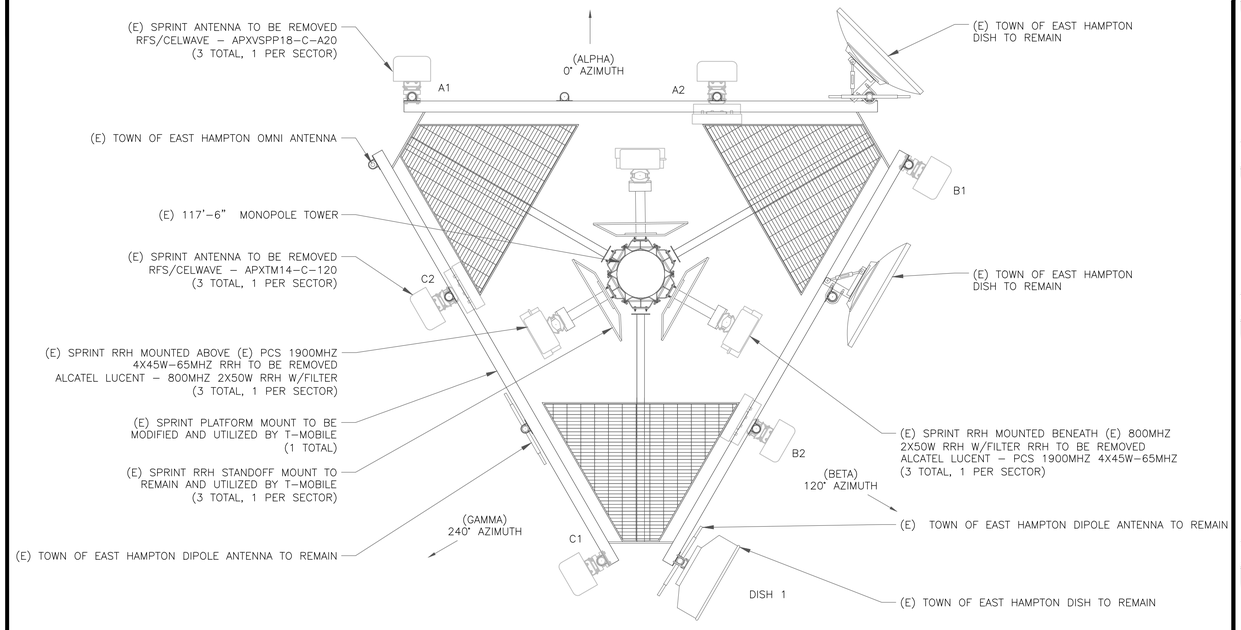
EXISTING AND PROPOSED ANTENNA/ EQUIPMENT POSITIONING SHOWN PER RFDS. FIELD CONDITIONS MAY VARY.

TOWER ANALYSIS NOTES:

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING TOWER ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE TOWER ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED TOWER MODIFICATION DESIGN OR TOWER REPLACEMENT SHALL BE APPROVED BY EOR.

MOUNT ANALYSIS NOTES:

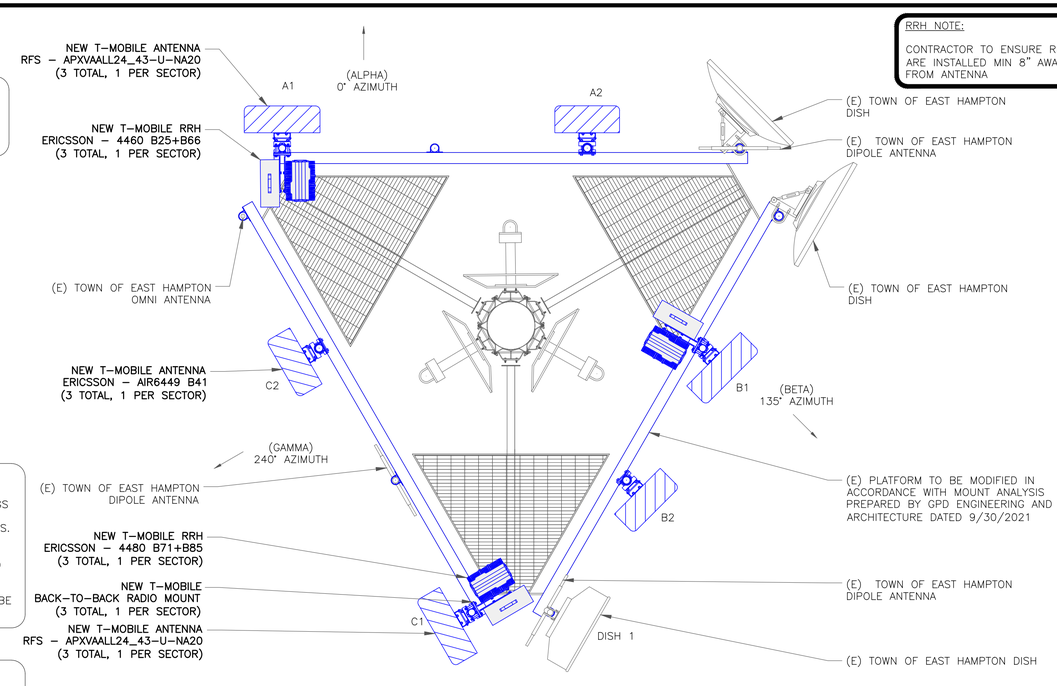
1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.



2 EXISTING ANTENNA LAYOUT AT 119'-0"
SCALE: NOT TO SCALE

RRH NOTE:

CONTRACTOR TO ENSURE RRHs ARE INSTALLED MIN 8" AWAY FROM ANTENNA



3 FINAL ANTENNA LAYOUT AT 119'-0"
SCALE: NOT TO SCALE

N

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SEAL:

10/13/21

SHEET NUMBER: C-2

REVISION: 2

FINAL 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, L1900, G1900	119'–0"	0°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	2°	(1) ERICSSON – 4480 B71+B85 (1) ERICSSON – 4460 B25+B66	(1) 6x24 4AWG 60m
ALPHA	A2	L2500, N2500	119'–0"	0°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	2°	–	HYBRID (SHARED)
BETA	B1	L700, L600, N600, L1900, G1900	119'–0"	135°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	2°	(1) ERICSSON – 4480 B71+B85 (1) ERICSSON – 4460 B25+B66	(1) 6x24 4AWG 60m
BETA	B2	L2500, N2500	119'–0"	135°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	2°	–	HYBRID (SHARED)
GAMMA	C1	L700, L600, N600, L1900, G1900	119'–0"	240°	RFS	APXVAALL24_43–U–NA20 (OCTO)	–	2°	(1) ERICSSON – 4480 B71+B85 (1) ERICSSON – 4460 B25+B66	(1) 6x24 4AWG 60m
GAMMA	C2	L2500, N2500	119'–0"	240°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	–	2°	–	HYBRID (SHARED)

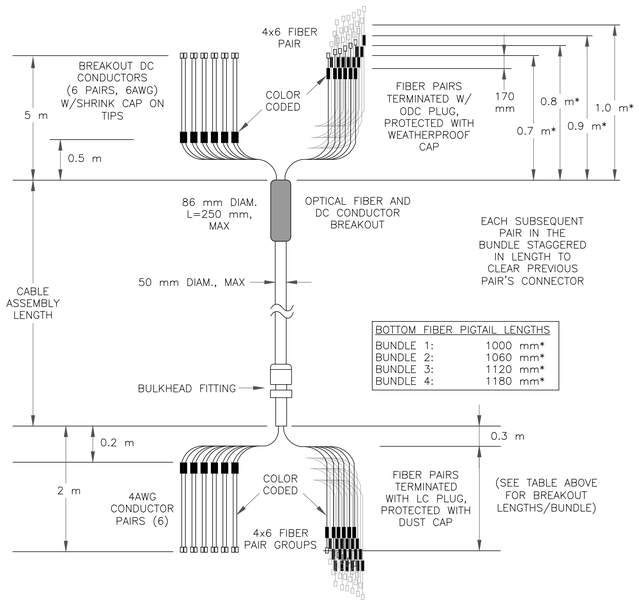
PROPOSED ANTENNA/EQUIPMENT SHOWN IN BOLD

FINAL CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	QUANTITY
NEW	HCS	6x24 4AWG 60m	3
CABLE QUANTITY			3

NOTE:
(1) HYBRID SHARED BETWEEN 6449 ANTENNAS PER SECTOR

1 PROPOSED ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



2 HCS DETAIL
SCALE: NOT TO SCALE

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SEAL:

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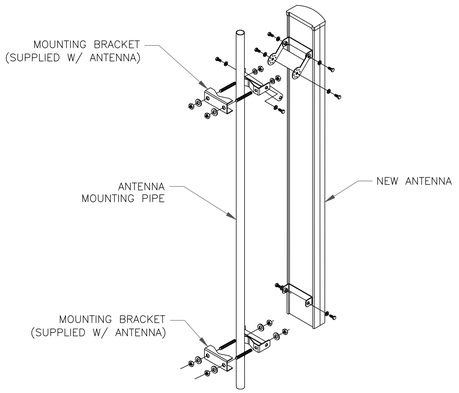
SHEET NUMBER: C-3

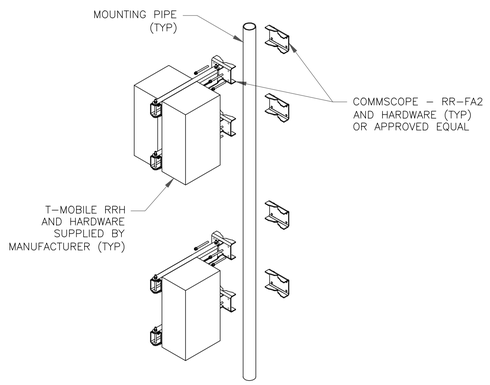
REVISION: 2



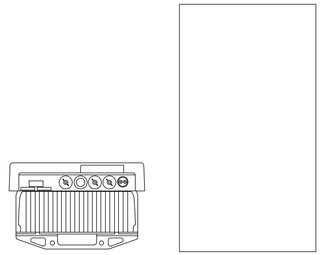
1 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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.

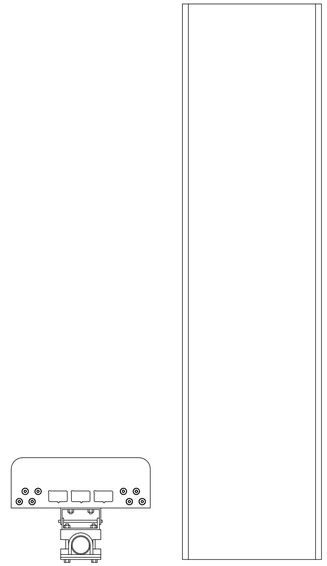


2 RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE



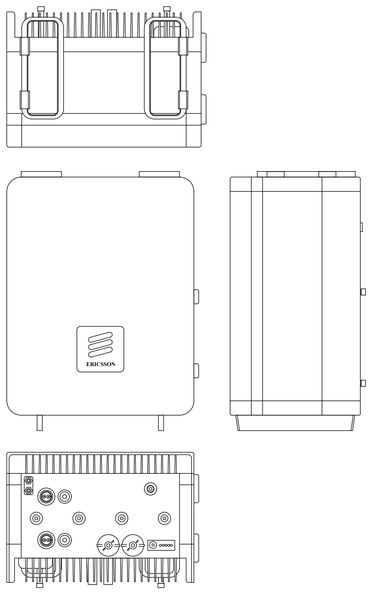
ERICSSON – AIR6449 B41
WEIGHT: 104.0 LBS
SIZE (HxWxD): 33.10x20.60x8.60 IN.

3 ERICSSON – AIR6449 B41
SCALE: NOT TO SCALE



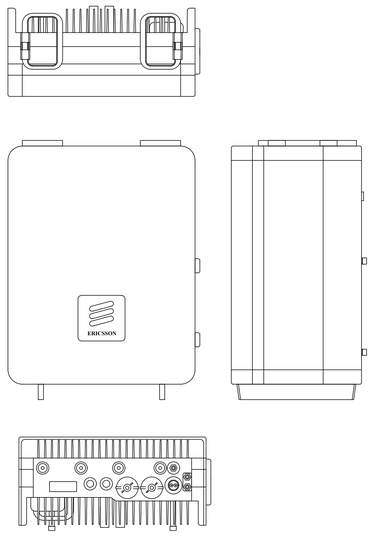
RFS/CELWAVE – APXVAALL24_43-U-NA20
WEIGHT (WITHOUT MOUNTING HARDWARE): 149.9 LBS
SIZE (HxWxD): 95.9x24.0x8.5 IN.

4 RFS/CELWAVE – APXVAALL24_43-U-NA20
SCALE: NOT TO SCALE



ERICSSON – RADIO 4480 B71+B85
WEIGHT: 81.0 LBS
SIZE (HxWxD): 22.0x15.7x7.5 IN.

5 ERICSSON – RADIO 4480 B71+B85
SCALE: NOT TO SCALE



ERICSSON – RADIO 4460 B25+66
WEIGHT: 109.0 LBS
SIZE (HxWxD): 19.0x15.1x11.9 IN.

6 ERICSSON – RADIO 4460 B25+B66
SCALE: NOT TO SCALE

7 NOT USED
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

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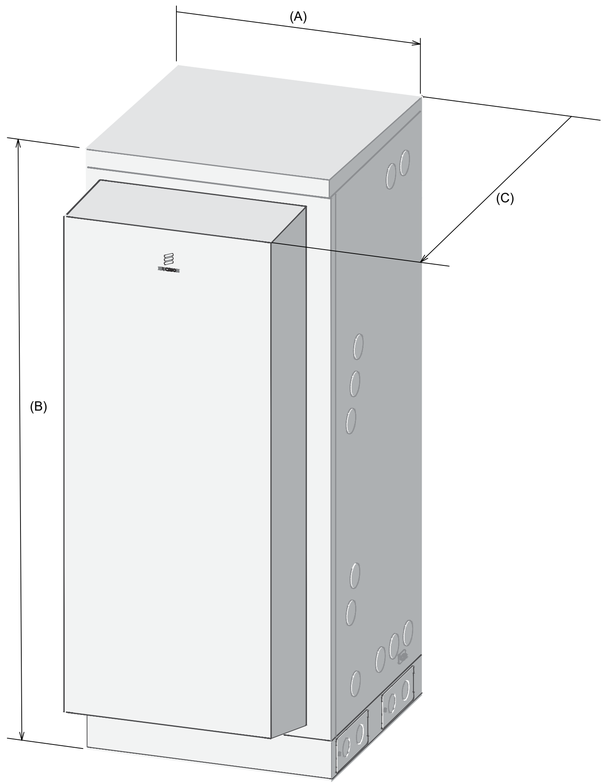
REVISION: 2



Dimensions	
Width (A)	650 mm / 25.5906 in
Height (B)	1450 mm / 57.08661 in (without base frame) 1600 mm / 62.99213 in (with base frame)
Depth (C)	850 mm / 33.4646 in
Weight	
Empty enclosure	176 kg / 388.014 lb

1 ERICSSON 6160 CABINET DETAILS
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. INFORMATION SHOWN PROVIDED BY T–MOBILE. CONTRACTOR TO REFERENCE CABINET MANUFACTURER'S SPECIFICATIONS FOR FURTHER DETAILS.
2. CONTRACTOR TO FOLLOW THE LATEST VERSION OF T–MOBILE REGIONAL CONSTRUCTION STANDARDS. CONTACT T–MOBILE FOR DETAILS.

2 ERICSSON B160 CABINET DETAILS
SCALE: NOT TO SCALE

SITE SIGNAGE NOTE:
WHERE APPLICABLE, CONTRACTOR TO FOLLOW ALL T–MOBILE SIGNAGE REQUIREMENTS. CONFIRM SITE SIGNAGE WITH T–MOBILE CM PRIOR TO CONSTRUCTION

3 T–MOBILE SIGNAGE
SCALE: NOT TO SCALE

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SEAL:

10/13/21

SHEET NUMBER: C-5

REVISION: 2

NOTE:
LOAD CALCULATIONS TAKEN FROM INFORMATION PROVIDED BY CROWN CASTLE & POWER ANALYSIS TOOL BASED ON THE RFDS DATED 07/09/2021 V1. CONTRACTOR TO VERIFY LOADS WITH MANUFACTURER'S SPECIFICATIONS PRIOR TO CONSTRUCTION.

EXISTING 200A M.C.B, 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
*UNKOWN (OFF)	0		*100	1	A	2	60	100		SURGE PROTECTOR
		0		3	B	4			100	
TELCO FAN	340		10	5	A	6	**100	9600		**MMBTS
*UNKNOWN (OFF)		0	20	7	B	8			9600	
**FAN (OFF)	0		100	9	A	10	15	180		TELCO GFI
		0		11	B	12	–		–	SPARE
VOLT AMPS	340	0						9880	9700	VOLT AMPS

L1 VOLT AMPERES	10200	10040 L2 VOLT AMPERES
	10200	MAX VOLT AMPERES
	85.2	MAX AMPS
	106.5	MAX AMPS x 125%

*NOTE – EXISTING BREAKER TO BE REMOVED. NOTIFY TEP IF BREAKER IS TO REMAIN.
**NOTE – REUSE BREAKER FOR NEW CABINET INSTALL

PROPOSED 200A M.C.B, 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
6160 ENCLOSURE	6400		*100	1	A	2	60	100		AC SURGE PROTECTOR
		6400		3	B	4			100	
GFCI INTERNAL IN 6160	180		20	5	A	6	–	–		SPARE
SPARE		–	–	7	B	8	–		–	SPARE
SPARE	–		–	9	A	10	15	180		TELCO GFI
TELCO FAN		340	10	11	B	12	–		–	SPARE
VOLT AMPS	6580	6740						280	100	VOLT AMPS

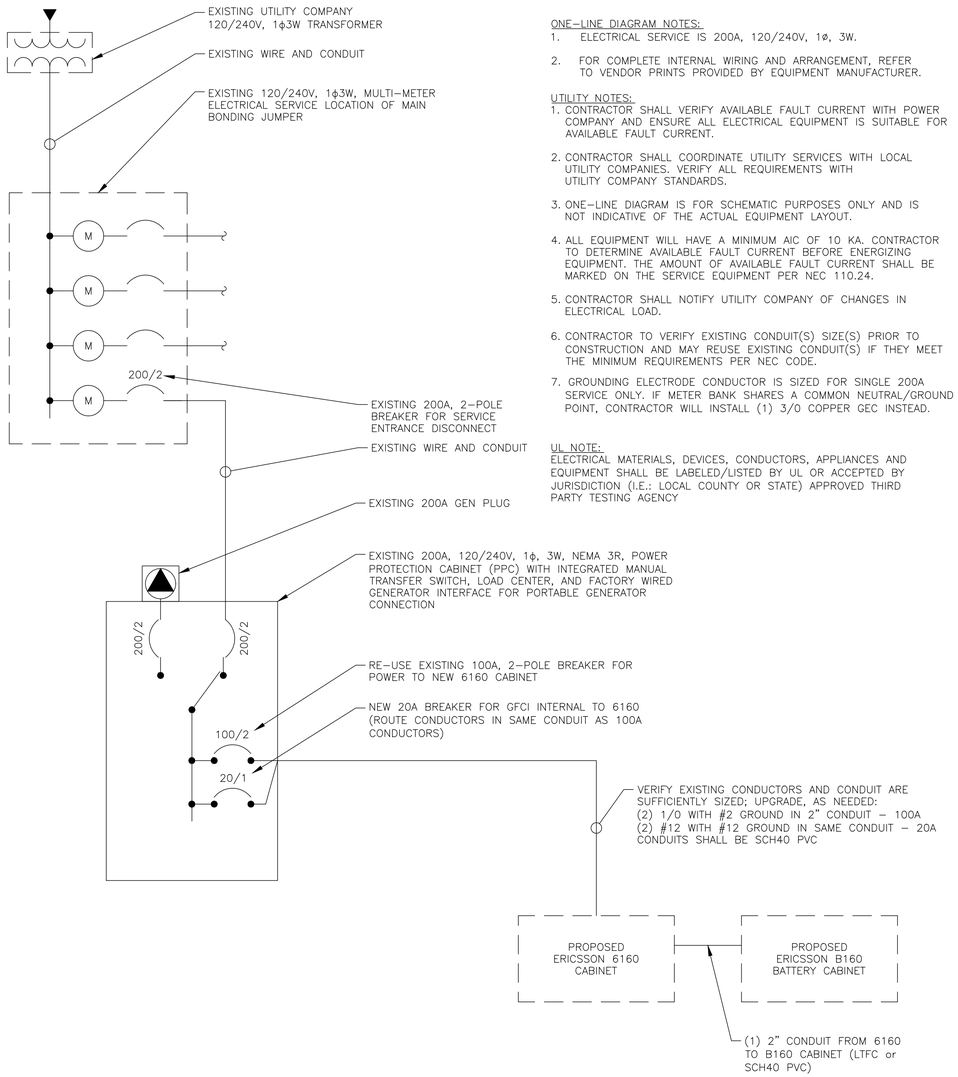
L1 VOLT AMPERES	6860	6840 L2 VOLT AMPERES
	6860	MAX VOLT AMPERES
	57.2	MAX AMPS
	71.5	MAX AMPS x 125%

NOTE – PROPOSED BREAKER IN BOLD

1 AC PANEL SCHEDULES
SCALE: NOT TO SCALE

GENERAL NOTES:

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



ONE–LINE DIAGRAM NOTES:
1. ELECTRICAL SERVICE IS 200A, 120/240V, 1ø, 3W.
2. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT MANUFACTURER.

UTILITY NOTES:
1. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT IS SUITABLE FOR AVAILABLE FAULT CURRENT.
2. CONTRACTOR SHALL COORDINATE UTILITY SERVICES WITH LOCAL UTILITY COMPANIES. VERIFY ALL REQUIREMENTS WITH UTILITY COMPANY STANDARDS.
3. ONE–LINE DIAGRAM IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT INDICATIVE OF THE ACTUAL EQUIPMENT LAYOUT.
4. ALL EQUIPMENT WILL HAVE A MINIMUM AIC OF 10 KA. CONTRACTOR TO DETERMINE AVAILABLE FAULT CURRENT BEFORE ENERGIZING EQUIPMENT. THE AMOUNT OF AVAILABLE FAULT CURRENT SHALL BE MARKED ON THE SERVICE EQUIPMENT PER NEC 110.24.
5. CONTRACTOR SHALL NOTIFY UTILITY COMPANY OF CHANGES IN ELECTRICAL LOAD.
6. CONTRACTOR TO VERIFY EXISTING CONDUIT(S) SIZE(S) PRIOR TO CONSTRUCTION AND MAY REUSE EXISTING CONDUIT(S) IF THEY MEET THE MINIMUM REQUIREMENTS PER NEC CODE.
7. GROUNDING ELECTRODE CONDUCTOR IS SIZED FOR SINGLE 200A SERVICE ONLY. IF METER BANK SHARES A COMMON NEUTRAL/GROUND POINT, CONTRACTOR WILL INSTALL (1) 3/0 COPPER GEC INSTEAD.

UL NOTE:
ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E.: LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25645.498733

T-MOBILE SITE NUMBER:
CTHA701A

BU #: **876352**
RICHARD WALL

94 EAST HIGHT STREET
EAST HAMPTON, CT 06424
(MIDDLESEX COUNTY)

EXISTING 117'-6"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/01/21	SBS	PRELIMINARY	BSE
0	04/07/21	JW	CONSTRUCTION	BSE
1	04/22/21	ER	CONSTRUCTION	BSE
2	10/13/21	INS	CONSTRUCTION	JTC

SEAL:

10/13/21

SHEET NUMBER: E-1

REVISION: 2

T-MOBILE GROUNDING NOTES:

ALL GROUNDS MUST ROUTE DOWNHILL FOR ENTIRE DURATION OF ROUTE

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

ICE BRIDGE/ EQUIPMENT POST:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO GROUND RING (BOTH ENDS), FINAL WELD COLD GALVANIZED, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS.

PEDESTALS, PLINTHS, SSC CABINET, FCOA CABINETS:

1. #2 SOLID COPPER TINNED, 2 HOLE LUG WITH FLAT AND LOCK WASHER AT EQUIPMENT; EXOTHERMICALLY WELDED TO GROUND RING, FINAL WELD COLD GALVANIZED, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS. EACH PART REQUIRES A SEPARATE DOWNLEAD, NO DAISY CHAINS.

2. ALL COMPONENTS INSIDE FCOA CABINETS REQUIRE A DEDICATED GROUND.

COVP's:

#6 THHN STRANDED (GREEN JACKET), CONNECTED AT EQUIPMENT SIDE USING OVP TERMINAL BLOCK CONNECTION; MECHANICALLY CONNECTED TO GROUND REFERENCE AT MASTER BUSS BAR USING 2 HOLE LUG WITH FLAT AND LOCK WASHER, IN ½" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, AND ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD.

ANTENNA/ COVP/ RRU MAST PIPES:

1. ALL VERTICAL MAST PIPES: #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO TOP OF PIPE (PIPE, DOWN MOLD), FINAL WELD COLD GALVANIZED, BONDED TO TOP BUSS BAR WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

2. EXISTING/REUSED PIPES: #2 SOLID COPPER TINNED, BONDED WITH COLD WATER CLAMP TO TOP OF PIPE, BONDED TO TOP BUSS WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER

AIR TERMINALS:

TO BE INSTALLED, ONLY IF REQUIRED

TMA's, DIPLEXERS AND TRIPLEXERS:

1. #6 THHN, WITH PROPER COPPER COMPRESSION LUG, FLATS AND LOCK WASHERS

2. ALL GROUND LUGS ON TMA MUST BE GROUNDED WITH SEPARATE DOWNLEAD TO BUSS BAR (NO DAISY CHAINS)

ELEVATED STEEL PLATFORMS WITH LUNAR FEET:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (FLAT PLATE MOLD) TO OUTSIDE PERIMETER BEAMS IN FOUR (4) PLACES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING.

STEEL CANOPY (STEEL PLATFORM OR CONCRETE PAD):

1. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, DOWN MOLD) TO BOTTOM OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING.

2. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, UP MOLD) TO TOP OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED UP TO CANOPY GRIP-STRUT USING 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

RRU:

#6 THHN, WITH PROPER COPPER COMPRESSION LUG, ANTI-OXIDANT TO SECTOR BUSS BAR

FSBE ALARM BOX:

#6 THHN WITH ONE HOLE LUG BONDED TO PREVIOUSLY GROUNDED FCOA, PLINTH OR BUSS BAR.

SURGE SUPPRESSORS:

#6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

FYGA/FYGB BRACKET:

1. #6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

2. THROUGH BOLTS WITH FLAT, LOCK ON BRACKET

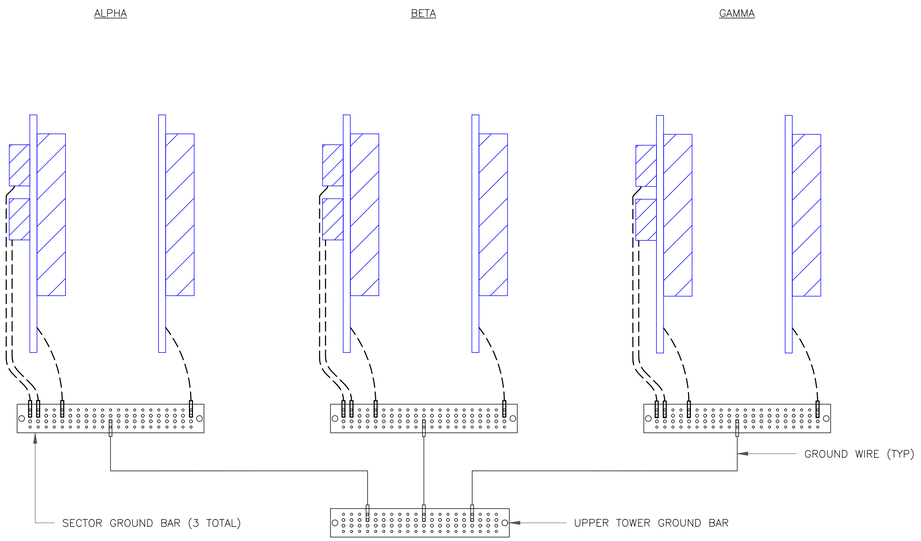
BUSS BARS:

1. PLATFORM / PAD BUSS BAR SHOULD BE MINIMUM 12" TINNED COPPER WITH INSULATORS, AND SHOULD HAVE TWO (2) EXOTHERMICALLY WELDED DOWN LEADS DIRECTLY TO GROUND RING USING #2 SOLID COPPER TINNED WIRE.

2. SECTOR BUSS BAR SHOULD BE PROPERLY SIZED TO ACCOMMODATE NECESSARY GROUNDING FOR EQUIPMENT ON EACH MOUNT, AND MAY BE SOLID COPPER (TINNED NOT REQUIRED). DO NOT USE INSULATORS ON SECTOR BUSS BARS ATTACH DIRECTLY TO TOWER MOUNT STEEL.

GENERAL:

- NO GROUND KITS ON HYBRID TRUNKS (TOP OR BOTTOM)
- NO GROUND KITS ON MICROWAVE IF CABLES (TOP OR BOTTOM)
- MICROWAVE SURGE SUPPRESSORS ARE NOT TO BE INSTALLED UPSTAIRS ON TOWER, DOWNSTAIRS ONLY (BULKHEAD PREFERRED)
- MICROWAVE ODU MUST BE GROUNDED TO TOWER TOP SECTOR OR COLLECTOR BUSS BAR
- ALL TMA'S AND DIPLEXERS MUST BE GROUNDED TO BUSS BAR. NO DAISY CHAIN ON TWIN/DUAL TMA
- ALL LUGS SHOULD BE PROPERLY SIZED FOR CONDUCTOR, BURNDY TINNED COPPER COMPRESSION STYLE
  1. INDOOR (OR INSIDE CABINET) SHOULD HAVE WINDOW
  2. OUTDOOR SHOULD NOT HAVE WINDOW
- CONTRACTOR TO VERIFY EXISTENCE AND LOCATION OF EXISTING SITE GROUND SYSTEM.
- CONTRACTOR SHALL VERIFY THAT GROUNDING ELECTRODES SHALL BE CONNECTED IN A RING USING #2 AWG BARE TINNED COPPER WIRE. THE TOP OF THE GROUND RODS AND THE RING CONDUCTOR SHALL BE 30" BELOW FINISHED GRADE, OR TO FROST DEPTH, WHICHEVER IS GREATER. GROUNDING ELECTRODES SHALL BE DRIVEN ON 10'-0" CENTERS (PROVIDE AND INSTALL AS REQUIRED. REQUIRED PER PLAN BELOW).
- GROUNDING CONDUCTORS SHALL BE OF EQUAL LENGTH, MATERIAL, AND BONDING TECHNIQUE.
- CONTRACTOR SHALL ENSURE GROUND RING IS WITHIN 12 TO 36 INCHES OF THE EQUIPMENT PAD. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY ALL EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
- ALL DOWN CONDUCTORS MUST GO DOWN.



NOTE:

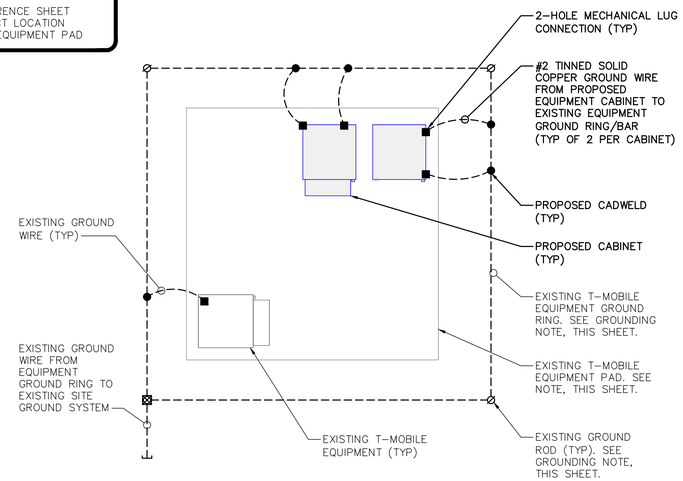
ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

GROUNDING SHOWN TYPICAL PER SECTOR.

1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

NOTE:

CONTRACTOR TO REFERENCE SHEET C-1.1 & 1.2 FOR EXACT LOCATION AND ORIENTATION OF EQUIPMENT PAD



2 TYPICAL CABINET GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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35 GRIFFIN ROAD
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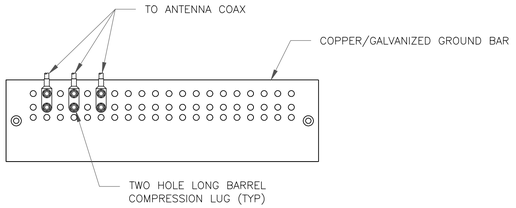
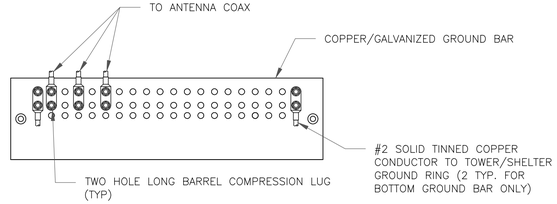


NOTES:

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

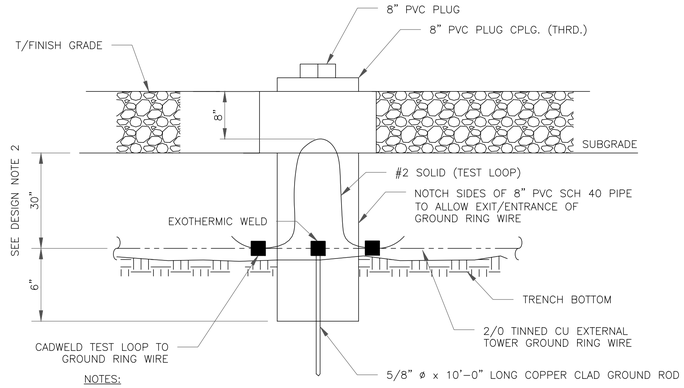
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

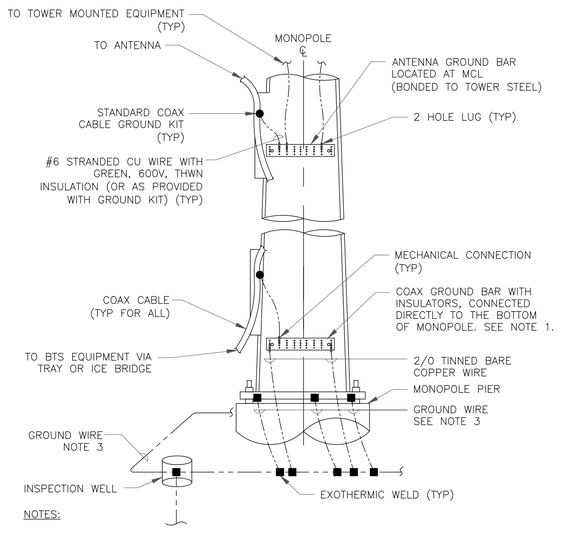
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

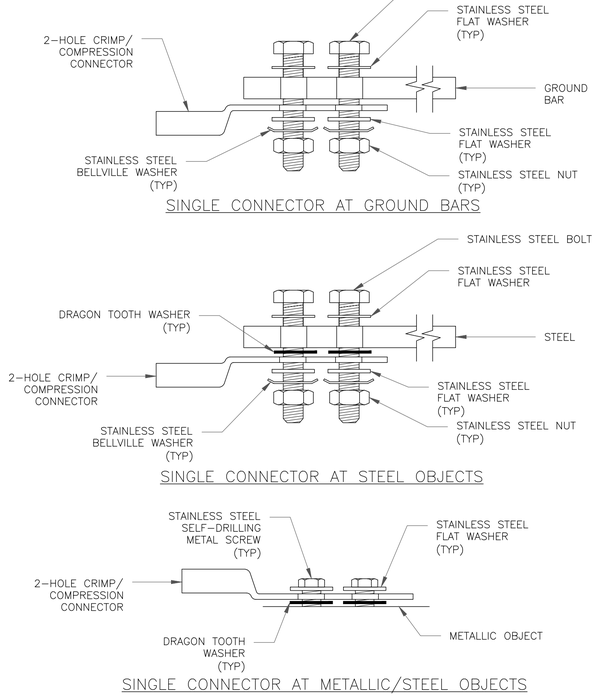
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



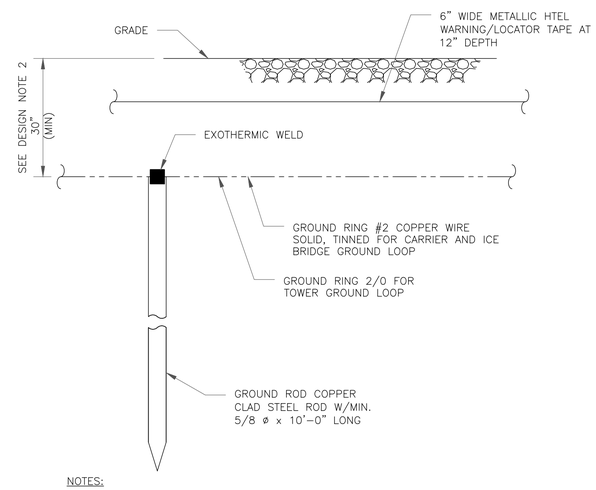
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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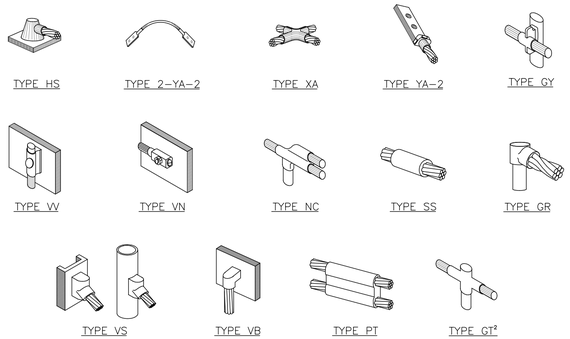
2	10/13/21	INS	CONSTRUCTION	JTC

SEAL:

10/13/21

SHEET NUMBER: G-2

REVISION: 2

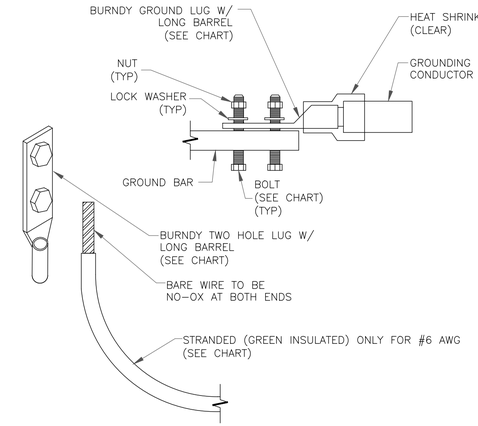


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

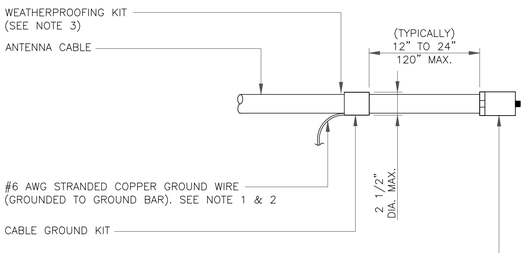
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

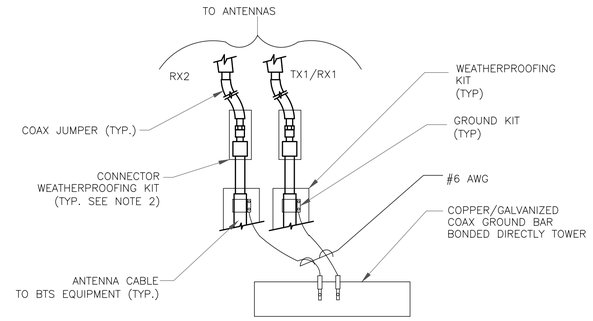
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

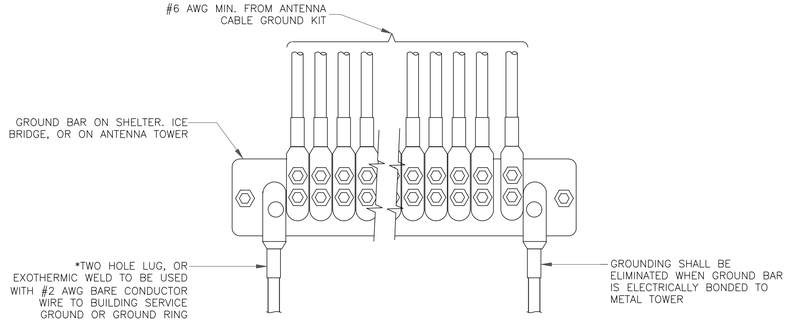
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



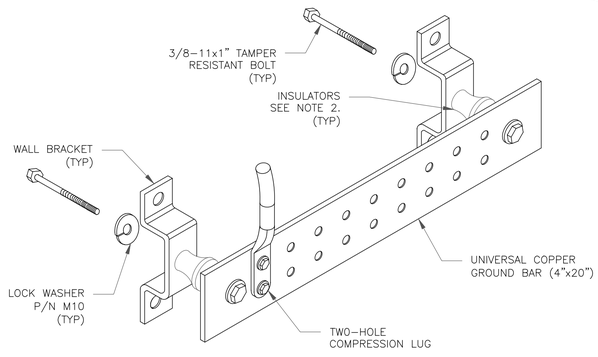
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



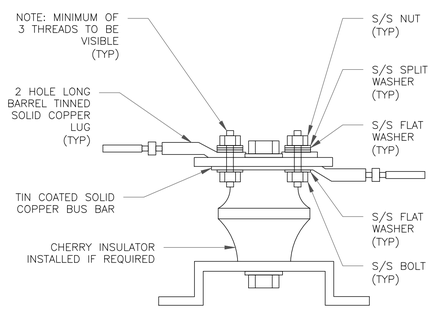
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



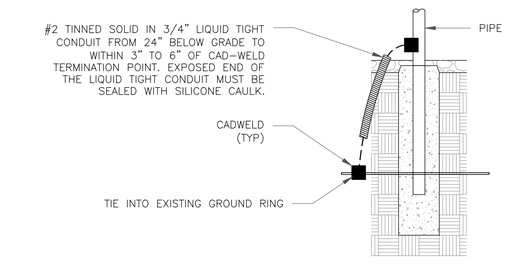
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 25645.498733

T-MOBILE SITE NUMBER:
CTHA701A

BU #: **876352**
RICHARD WALL

94 EAST HIGHT STREET
EAST HAMPTON, CT 06424
(MIDDLESEX COUNTY)

EXISTING 117'-6"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/01/21	SBS	PRELIMINARY	BSE
0	04/07/21	JW	CONSTRUCTION	BSE
1	04/22/21	ER	CONSTRUCTION	BSE
2	10/13/21	INS	CONSTRUCTION	JTC

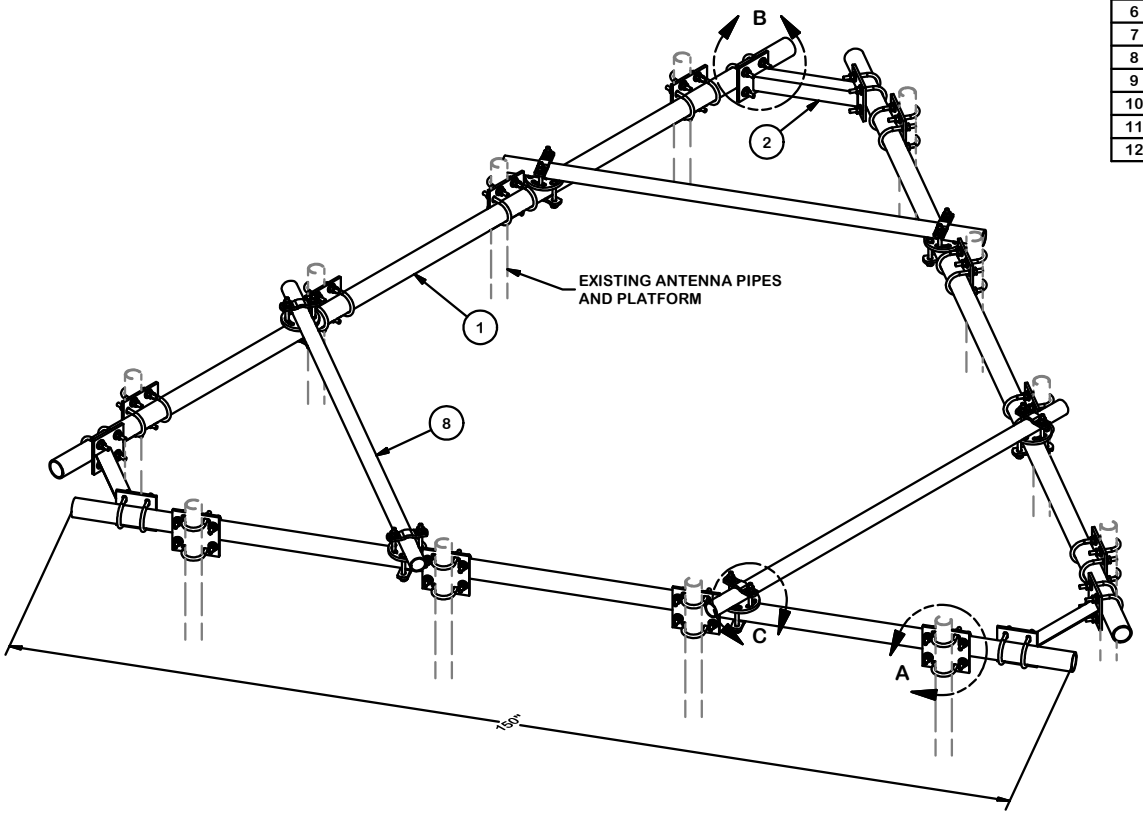
SEAL:

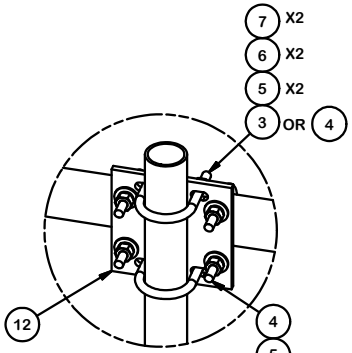
10/13/21

SHEET NUMBER: G-3

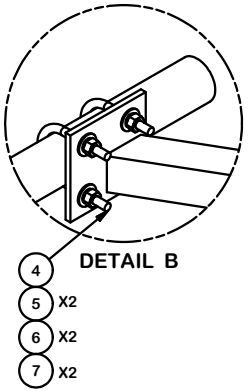
REVISION: 2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P30150	2-7/8" O.D. X 150" SCH. 40 PIPE	150 in	76.94	230.81
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	17.56
4	60	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	43.90
5	144	G12FW	1/2" HDG USS FLATWASHER		0.03	4.91
6	144	G12LW	1/2" HDG LOCKWASHER		0.01	2.00
7	144	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	10.31
8	3	P272	2-3/8" X 72" SCH 40 GALVANIZED PIPE	72 in	23.07	69.20
9	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALVANIZED)		2.48	14.90
10	12	X-100064	CLAMP (S) (4" V-CLAMP) GALVANIZED		0.91	10.95
11	24	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	6.48
12	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
					TOTAL WT. #	502.34

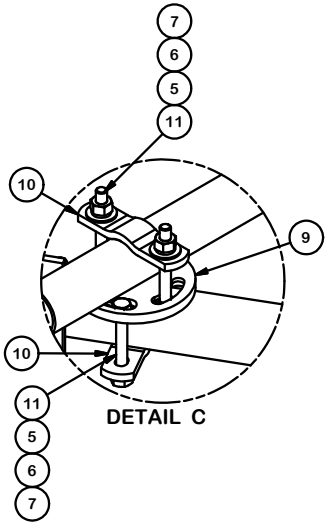




DETAIL A



DETAIL B



DETAIL C

TOLERANCE NOTES

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")*

DESCRIPTION
HEAY DUTY HANDRAIL KIT
FOR 12' PLATFORMS WITH
2-7/8" HANDRAIL PIPES

SITE PRO 1
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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	CEK 4/6/2015		HRK12-3HD	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 4/7/2015	HRK12-3HD