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

April 11, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CT11511A**
Crown Site ID#876390
116 Grant Hill Road, Brooklyn, CT 06234
Latitude: 41° 47′ 29.64″ / Longitude: -72° 0′ 54.04″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 138-foot mount level on the existing 150-foot monopole tower, located at 116 Grant Hill Road, Brooklyn, CT. The property is owned by Global Signal/Crown Castle as well as the tower. T-Mobile now intends to add three (3) new antennas and ancillary equipment at the 138-ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:
Tower:

Installed New:
(3) Ericsson – AIR6419 B41 Antenna
(3) Ericsson Radio 4460 B25+B66 RRU
(2) HYBRID 6x24 Hybrid Cables

Remove:
(3) Ericsson Twin Style TMA
(6) Coaxial Cables (1-5/8")

Ground:

Install New:
(1) 6160 Equipment Cabinet
(1.) B160 Battery Cabinet
(1.) Camlock Generator Enclosure
(1.) Ice Bridge

Remove:
(1.) Appleton Generator Receptacle

The facility was approved by the Town of Brooklyn though original zoning documents have not been located despite diligent inquiry and effort. The original Building permit number 5802 issued on April 14, 2000 by the Town of Brooklyn and is included. No conditions of the approval are known. T-Mobile was approved for Tower Sharing by the Council on July 8, 2003.

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 Austin Tanner, First Selectman, Town of Brooklyn, Jana Butts Robertson, Town Planner, Town of Brooklyn Global Signal/Crown Castle is the property and 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:

Austin Tanner, First Selectman
Town of Brooklyn
4 Wolf Den Road
PO Box 356
Brooklyn, CT 06234
860.779.3411 Ext 2

Jana Butts Robertson, Director of Community Development/Town Planner
Town of Brooklyn
4 Wolf Den Road
PO Box 356
Brooklyn, CT 06234
860.779.3411 Ext 31

Global Signal/Crown Castle, Land and Tower Owner.

APPLICATION FOR BUILDING PERMIT

PERMIT NO. Nº 005802

(Application must be typed or printed)

TOWN OF BROOKLYN CONNECTICUT

LOCATION OF JOB (NO. & STREET)	CARD NO.	MAP	BLOCK	LOT
116 Grant Hill		4		5

OWNER: Robert Bennis	TEL.	ADDRESS (NO., STREET, TOWN, STATE, ZIP): Same
APPLICANT: Sprint Spectrum	TEL.	ADDRESS (NO., STREET, TOWN, STATE, ZIP): 9 Barnes Ind. Rd Wallingford Ct 06492
BUILDER	TEL.	ADDRESS (NO., STREET, TOWN, STATE, ZIP):
LICENSE #		NAME & TEL # OF PERSON RESPONSIBLE

All Permits Must Be Posted And Visible From The Street

SIZE OF BUILDING

STORIES _____ NO. OF FAMILIES _____

HEIGHT _____ DEPTH _____ FRONT _____

TOTAL FLOOR AREA (NEW) _____ SQ.FT.

TYPE OF WORK BEING DONE

☐ ORIG. CONSTRUCTION ☐ REPAIR

☐ ALTERATION ☐ DEMOLITION

☐ ADDITION _____

CONSTRUCTION VALUE

ESTIMATED _____

ACTUAL _____

TYPE OF HEAT

☐ ELECTRIC ☐ SOLAR

☐ GAS ☐ OTHER

☐ OIL _____

DISTANCES FROM LOT LINE
(Circle Front Lot Line)

EAST WEST NORTH SOUTH

PROPOSED USE

☐ NEW HOME (Single Family)

☐ MULTI FAMILY _____

OF BEDROOMS _____

WATER SUPPLY _____

☐ ADDITION _____

☐ GARAGE _____

☐ DECK/PORCH _____

☐ SHED _____

☐ POOL _____

☐ COMMERCIAL/PUBLIC _____

☐ OTHER _____

BUILDING PLANS	REQUIRED	ATTACHED
MATERIALS LIST	ON PLANS	ATTACHED

OTHER REQUIREMENTS

	REQ'D.	ATTACHED
ZONING PERMIT		
PLOT PLAN		
SEPTIC PERMIT		

APPROVALS

ZONING _____ FIRE MARSHAL _____

WETLAND _____ ENGINEER _____

SANITATION _____ STREET SUPT. _____

FEE COVERS

	VALUE	FEE
☑ CONSTRUCTION	118,000	826-
☐ PLUMBING		
☐ HEATING		
☐ ELECTRICAL		
☐ SEPTIC		
☑ ZONING		35-
☐ OTHER		
	TOTAL	861-

CHECK # 0588 DATE PAID 4/6/00

DESCRIPTION OF WORK / REMARKS:

150' ~~tower~~ telecommunications tower

All work covered by this application has been authorized by the (owner) or (agent) of this property and will be done according to state regulations. This permit shall lapse if work does not commence within 6 months.

4/17/00 (Date) _____ (Owner/Agent Signature)

☐ APPROVED ☐ DISAPPROVED

4/17/00 (Date) _____ (Building Official)

Office Copy - White Owner Copy - Yellow Assessor's Copy – Pink Building Official – Green Building Official - Goldenrod

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
Web Site: www.state.ct.us/csc/index.htm

July 9, 2003

Stephen J. Humes
LeBoeuf, Lamb, Greene & MacRae
Goodwin Square
225 Asylum Street
Hartford, CT 06103

RE: **TS-T-MOBILE-019-030617** - Omnipoint Communications, Inc. request for an order to approve tower sharing at an existing telecommunications facility located at 116 Grant Hill Road, Brooklyn, Connecticut.

Dear Attorney Humes:

At a public meeting held July 8, 2003, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated June 17, 2003.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: Honorable Maurice F. Bowen, First Selectman, Town of Brooklyn
Chester Dobrowski, Zoning Enforcement Officer, Town of Brooklyn
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels, LLP
Christopher B. Fisher, Esq., Cuddy & Feder LLP

116 GRANT HILL RD

Location	116 GRANT HILL RD	**Mblu**	4/ / 5/ CELL/
Acct#	00024910	**Owner**	SPRINT SPECTRUM
Assessment	$845,500	**Appraisal**	$1,207,800
PID	3735	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,207,800	$0	$1,207,800

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$845,500	$0	$845,500

Owner of Record

Owner	SPRINT SPECTRUM
Co-Owner	C/O GLOBAL SIGNAL AC1 II LLC
Care Of	
Address	PMB353 4017 WASHINGTON RD MCMURRAY, PA 15317

Sale Price	$0
Certificate	
Book	0000
Page	0000
Sale Date	10/01/2009
Instrument	
Qualified	U

Ownership History

Ownership History						
Owner	**Sale Price**	**Certificate**	**Instrument**	**Sale Date**	**Book**	**Page**
SPRINT SPECTRUM	$0			10/01/2009	0000	0000

Building Information

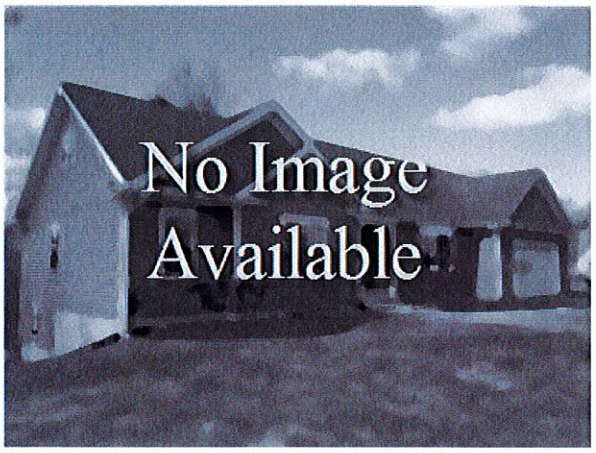
Building 1 : Section 1

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

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
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:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Cndtn	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo



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

Building Layout

Building Layout (ParcelSketch.ashx?pid=3735&bid=3668)

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

Land Line Valuation

Use Code	4300	**Size (Acres)**	0
Description	TEL TWR MDL00	**Frontage**	
Zone		**Depth**	
Neighborhood		**Assessed Value**	$0
Alt Land Appr	No	**Appraised Value**	$0
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD5	Cell Shed			360.00 SF	$54,000	1
FN3	FENCE-6' CHAIN			280.00 L.F.	$1,300	1
TWR	CELL TOWER			1.00 UNITS	$90,000	1
ARY	CELL ARRAY			5.00 UNIT	$1,062,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,207,800	$0	$1,207,800
2019	$1,055,300	$0	$1,055,300
2018	$1,055,300	$0	$1,055,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$845,500	$0	$845,500
2019	$738,700	$0	$738,700
2018	$738,700	$0	$738,700

neccog

Neccog GIS Site

Legend

- Town
- Buildings 2012
- Parcels

Notes

116 Grant Hill Road, Brooklyn, CT

0.3 0 0.14 0.3 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Tuesday, April 12, 2022 11:54 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776545765926: Your package has been delivered

FedEx

Hi. Your package was delivered Tue, 04/12/2022 at 11:52am.

Delivered to 4 WOLF DEN RD, BROOKLYN, CT 06234
Received by M.BRADLEY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 776545765926

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Brooklyn Austin Tanner, First Selectman 4 Wolf Den Road BROOKLYN, CT, US, 06234
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 4/11/2022 05:20 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BROOKLYN, CT, US, 06234
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Tuesday, April 12, 2022 11:54 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776545792952: Your package has been delivered

FedEx®

Hi. Your package was delivered Tue, 04/12/2022 at 11:52am.

Delivered to 4 WOLF DEN RD, BROOKLYN, CT 06234
Received by M.BRADLEY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 776545792952

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Brooklyn Jana Butts Robertson Town Planner 4 Wolf Den Road BROOKLYN, CT, US, 06234
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 4/11/2022 05:20 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BROOKLYN, CT, US, 06234
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **March 15, 2022**

MORRISON HERSHFIELD

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11511A
Crown Castle Designation:	**BU Number:**	876390
	Site Name:	Hampton / Bernier
	JDE Job Number:	708444
	Work Order Number:	2088287
	Order Number:	607752 Rev. 0
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN9-365R2 / 2200039	
Site Data:	**116 Grant Hill Rd., Brooklyn, Windham County, CT 06234** **Latitude *41° 47' 29.64"*, Longitude *-72° 0' 54.04"*** **150 Foot - Monopole Tower**	

Morrison Hershfield 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 – 89.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria.

Respectfully submitted by:

STATE OF CONNECTICUT
G. LANCE COOKE
No. 28133
LICENSED PROFESSIONAL ENGINEER

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

Digitally signed by G. Lance Cooke
Date: 2022.03.15 09:23:37-07'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by Engineered Endeavors, Inc.

The tower has been modified per reinforcement drawings prepared by Tower Engineering Professionals Inc., in May of 2008. Reinforcement consists of adding base plate stiffeners. Per the post modification inspection completed by Tower Engineering Professionals, Inc., in January of 2009, these modifications have been properly installed and were considered in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	121 mph
Exposure Category:	B
Topographic Factor:	5
Ice Thickness:	1 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)
137.0	138.0	3	rfs/celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	3	1-5/8
		3	rfs/celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	ericsson	AIR 6419 B41_TMO		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
	137.0	3	-	9' Mount pipe [#P2STD]		
		1	-	Platform Mount [LP 1201-1_KCKR-HR-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)
149.0	150.0	3	commscope	NNVV-65B-R4 w/ Mount Pipe	4	1-1/4
		3	rfs/celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz		
		6	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8x20-25		
	149.0	1	-	Platform Mount [LP 303-1_HR-1]		
		1	-	Platform Mount [LP 712-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
129.0	129.0	1	-	Side Arm Mount [SO 104-3]	-	-
	127.0	3	ericsson	TME-RRUS-11		
127.0	129.0	3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe	12 3 1	1-1/4 3/8 2C
		6	powerwave technologies	7770.00 w/ Mount Pipe		
	127.0	6	powerwave technologies	LGP 17201		
		6	powerwave technologies	LGP13519		
		1	raycap	DC6-48-60-18-8F		
		1	-	Sector Mount [SM 901-3]		
117.0	119.0	6	antel	LPA-80080/4CF w/ Mount Pipe	17	1-5/8
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
		1	raycap	RVZDC-6627-PF-48_CCIV2		
	117.0	1	-	Platform Mount [LP 303-1]		
90.0	100.0	1	dbspectra	DS9A09F36D-N	2 1	1-1/4 1/2
	90.0	1	-	Side Arm Mount [SO 307-1]		
		1	bird technologies group	TTA-429-94C-08179		
76.0	77.0	1	lucent	KS24019-L112A	1	1/2
	76.0	1	-	Side Arm Mount [SO 701-1]		
70.0	70.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-3/8
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1615347	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1615410	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1533003	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2255030	CCISITES
4-POST-MODIFICATION INSPECTION	2383064	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) 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. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 123.29	Pole	TP22.9x17x0.1875	1	-12.66	802.65	53.4	Pass
L2	123.29 - 88.88	Pole	TP30x21.7696x0.3125	2	-20.68	1752.41	72.5	Pass
L3	88.88 - 43.8	Pole	TP39.2x28.4504x0.375	3	-34.59	2752.19	81.8	Pass
L4	43.8 - 0	Pole	TP48x37.2689x0.4375	4	-51.22	4056.91	79.0	Pass
							Summary	
						Pole (L3)	81.8	Pass
						Rating =	81.8	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	76.3	Pass
1	Base Plate		70.6	Pass
1	Base Foundation (Structure)	0	89.5	Pass
1	Base Foundation (Soil Interaction)		74.4	Pass

Structure Rating (max from all components) =	89.5%*

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

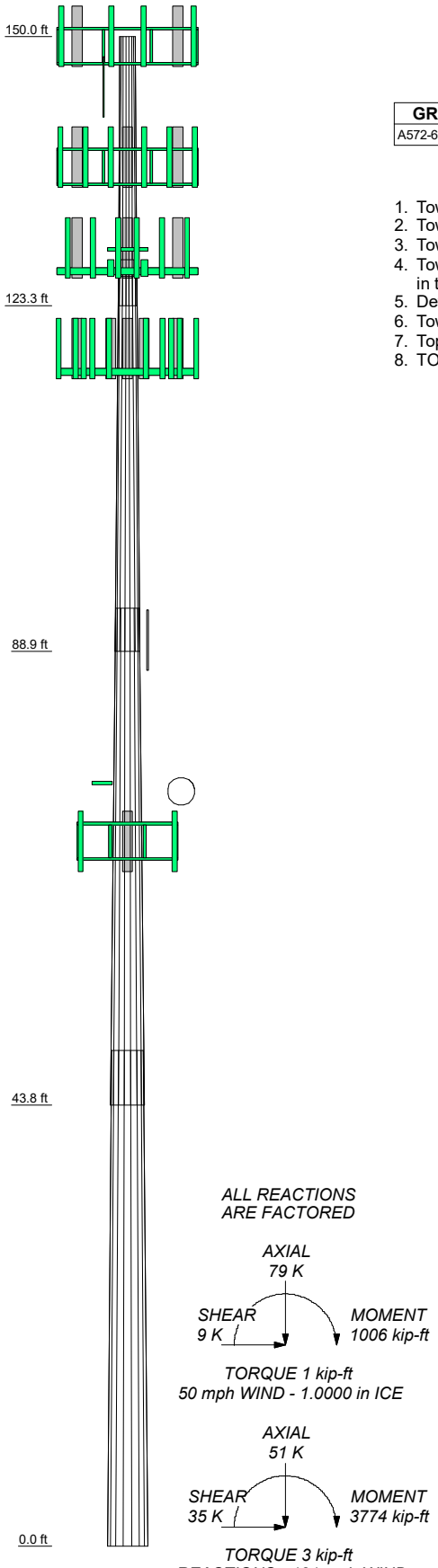
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	
Length (ft)	26.71	37.83	49.33	49.22	20.8
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.3125	0.3750	0.4375	
Socket Length (ft)	3.42	4.25	5.42		
Top Dia (in)	17.0000	21.7696	28.4504	37.2689	
Bot Dia (in)	22.9000	30.0000	39.2000	48.0000	
Grade	A572-65				
Weight (K)	1.1	3.3	6.7	9.8	



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 121 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 5 with Crest Height of 110.00 ft
8. TOWER RATING: 81.8%

Morrison Hershfield
Consulting Engineers
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job:	CN9-365R2 / 2200039		
Project:	876390 / Hampton / Bernier		
Client: Crown Castle USA	Drawn by: KV	App'd:	
Code: TIA-222-H	Date: 03/15/22	Scale: NTS	
Path:		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 Windham County, Connecticut.
- Tower base elevation above sea level: 715.00 ft.
- Basic wind speed of 121 mph.
- Risk Category II.
- Exposure Category B.
- Crest Height: 110.00 ft.
- Rigorous Topographic Factor Procedure for wind speed-up calculations is used.
  - Topographic Feature: Continuous Ridge.
  - Slope Distance L: 920.00 ft.
  - Distance from Crest x: 0.00 ft.
  - Horizontal Distance Downwind: No.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		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	150.00-123.29	26.71	3.42	18	17.0000	22.9000	0.1875	0.7500	A572-65 (65 ksi)
L2	123.29-88.88	37.83	4.25	18	21.7696	30.0000	0.3125	1.2500	A572-65 (65 ksi)
L3	88.88-43.80	49.33	5.42	18	28.4504	39.2000	0.3750	1.5000	A572-65 (65 ksi)
L4	43.80-0.00	49.22		18	37.2689	48.0000	0.4375	1.7500	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	17.2333	10.0055	357.3078	5.9684	8.6360	41.3742	715.0858	5.0037	2.6620	14.197
	23.2243	13.5168	880.9281	8.0629	11.6332	75.7253	1763.0154	6.7597	3.7004	19.735
L2	22.8127	21.2827	1237.9543	7.6173	11.0589	111.9416	2477.5376	10.6434	3.2814	10.501
	30.4146	29.4463	3278.8026	10.5391	15.2400	215.1445	6561.9196	14.7259	4.7300	15.136
L3	29.7718	33.4167	3327.7548	9.9668	14.4528	230.2502	6659.8883	16.7115	4.3473	11.593
	39.7469	46.2115	8800.5544	13.7829	19.9136	441.9369	17612.6889	23.1101	6.2392	16.638
L4	38.9763	51.1450	8765.5170	13.0752	18.9326	462.9852	17542.5679	25.5774	5.7893	13.233
	48.6730	66.0465	18876.2818	16.8847	24.3840	774.1257	37777.4015	33.0295	7.6780	17.55

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 150.00-123.29				1	1	1			
L2 123.29-88.88				1	1	1			
L3 88.88-43.80				1	1	1			
L4 43.80-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
******										
Safety Line 3/8"	C	No	Surface Ar (CaAa)	150.00 - 0.00	1	1	-0.050 -0.050	0.3750		0.22
Climbing Pegs	C	No	Surface Ar (CaAa)	150.00 - 0.00	1	1	-0.100 0.000	0.7050		1.80
**										
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	Surface Ar (CaAa)	137.00 - 0.00	3	3	0.100 0.190	1.9960		2.50
******										
LDF7-50A(1-5/8)	B	No	Surface Ar (CaAa)	117.00 - 0.00	17	9	0.000 0.330	1.9800		0.82
***										
******										
LDF4-50A(1/2)	B	No	Surface Ar (CaAa)	90.00 - 0.00	1	1	-0.270 -0.270	0.6250		0.15

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
LDF6-50A(1-1/4)	B	No	Surface Ar (CaAa)	90.00 - 0.00	2	2	-0.250 -0.200	1.5500		0.60
******										
CU12PSM9P8XXX(1-3/8)	A	No	Surface Ar (CaAa)	70.00 - 0.00	1	1	-0.500 -0.500	1.4110		1.66
*****										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
******									
HB114-1-0813U4-M5J(1-1/4)	C	No	No	Inside Pole	149.00 - 0.00	3	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
HB114-13U3M12-XXXF(1-1/4)	C	No	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.99
							1/2" Ice	0.00	0.99
							1" Ice	0.00	0.99
******									
******									
LDF6-50A(1-1/4)	B	No	No	Inside Pole	127.00 - 0.00	12	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
FB-L98B-002-75000(3/8)	B	No	No	Inside Pole	127.00 - 0.00	3	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
CONDUIT(2)	B	No	No	Inside Pole	127.00 - 0.00	1	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
******									
LDF4-50A(1/2)	A	No	No	Inside Pole	76.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
*****									

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	150.00-123.29	A	0.000	0.000	8.210	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	2.885	0.000	0.17
L2	123.29-88.88	A	0.000	0.000	20.605	0.000	0.26
		B	0.000	0.000	50.527	0.000	0.66
		C	0.000	0.000	3.716	0.000	0.23
L3	88.88-43.80	A	0.000	0.000	30.691	0.000	0.39
		B	0.000	0.000	97.125	0.000	1.04
		C	0.000	0.000	4.869	0.000	0.30
L4	43.80-0.00	A	0.000	0.000	32.408	0.000	0.41
		B	0.000	0.000	94.367	0.000	1.01
		C	0.000	0.000	4.730	0.000	0.29

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	150.00-123.29	A	1.065	0.000	0.000	13.914	0.000	0.21
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	14.268	0.000	0.28
L2	123.29-88.88	A	1.057	0.000	0.000	34.922	0.000	0.53
		B		0.000	0.000	71.169	0.000	1.33
		C		0.000	0.000	18.382	0.000	0.37
L3	88.88-43.80	A	1.036	0.000	0.000	54.887	0.000	0.83
		B		0.000	0.000	154.051	0.000	2.41
		C		0.000	0.000	23.925	0.000	0.48
L4	43.80-0.00	A	0.961	0.000	0.000	59.383	0.000	0.88
		B		0.000	0.000	149.037	0.000	2.32
		C		0.000	0.000	22.880	0.000	0.46

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-123.29	-1.4073	-0.9368	-0.9983	0.2707
L2	123.29-88.88	4.2756	-2.2902	2.9944	-1.2646
L3	88.88-43.80	5.5526	-3.3054	3.9349	-2.4066
L4	43.80-0.00	6.0243	-3.6198	4.1863	-2.5856

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"	123.29 - 150.00	1.0000	1.0000
L1	3	Climbing Pegs	123.29 - 150.00	1.0000	1.0000
L1	13	HB158-21U6S24-xxM_TMO(1-5/8)	123.29 - 137.00	1.0000	1.0000
L2	2	Safety Line 3/8"	88.88 - 123.29	1.0000	1.0000
L2	3	Climbing Pegs	88.88 - 123.29	1.0000	1.0000
L2	13	HB158-21U6S24-xxM_TMO(1-5/8)	88.88 - 123.29	1.0000	1.0000
L2	19	LDF7-50A(1-5/8)	88.88 - 117.00	1.0000	1.0000
L2	24	LDF4-50A(1/2)	88.88 - 90.00	1.0000	1.0000
L2	25	LDF6-50A(1-1/4)	88.88 - 90.00	1.0000	1.0000
L3	2	Safety Line 3/8"	43.80 - 88.88	1.0000	1.0000
L3	3	Climbing Pegs	43.80 - 88.88	1.0000	1.0000
L3	13	HB158-21U6S24-xxM_TMO(1-5/8)	43.80 - 88.88	1.0000	1.0000
L3	19	LDF7-50A(1-5/8)	43.80 - 88.88	1.0000	1.0000
L3	24	LDF4-50A(1/2)	43.80 - 88.88	1.0000	1.0000
L3	25	LDF6-50A(1-1/4)	43.80 - 88.88	1.0000	1.0000
L3	29	CU12PSM9P8XXX(1-3/8)	43.80 - 70.00	1.0000	1.0000
L4	2	Safety Line 3/8"	0.00 - 43.80	1.0000	1.0000
L4	3	Climbing Pegs	0.00 - 43.80	1.0000	1.0000
L4	13	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 43.80	1.0000	1.0000
L4	19	LDF7-50A(1-5/8)	0.00 - 43.80	1.0000	1.0000
L4	24	LDF4-50A(1/2)	0.00 - 43.80	1.0000	1.0000
L4	25	LDF6-50A(1-1/4)	0.00 - 43.80	1.0000	1.0000
L4	29	CU12PSM9P8XXX(1-3/8)	0.00 - 43.80	1.0000	1.0000

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
******									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	7.55 8.04 8.53	4.23 4.67 5.12	0.11 0.20 0.30
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	7.55 8.04 8.53	4.23 4.67 5.12	0.11 0.20 0.30
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	7.55 8.04 8.53	4.23 4.67 5.12	0.11 0.20 0.30
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
(2) RRH2X50-800	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
(4) RRH2X50-800	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
TD-RRH8x20-25	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) TD-RRH8x20-25	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
Transition Ladder	C	From Leg	2.00 0.00 -4.00	0.0000	149.00	No Ice 1/2" Ice 1" Ice	6.00 8.00 10.00	6.00 8.00 10.00	0.16 0.24 0.32
Platform Mount [LP 303-1_HR-1]	C	None		0.0000	149.00	No Ice 1/2" Ice 1" Ice	17.09 21.47 25.72	17.09 21.47 25.72	1.50 1.88 2.35
Platform Mount [LP 712-1]	C	None		0.0000	149.00	No Ice 1/2" Ice 1" Ice	24.56 27.92 31.27	24.56 27.92 31.27	1.34 1.91 2.55
******									
Platform Mount [LP 1201-1_KCKR-HR-1]	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice	37.61 45.62 53.59	37.61 45.62 53.59	2.63 3.48 4.46
**									
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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
AIR 6419 B41_TMO	A	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	7.00 7.53 8.07	2.83 3.24 3.67	0.10 0.14 0.19
AIR 6419 B41_TMO	B	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	7.00 7.53 8.07	2.83 3.24 3.67	0.10 0.14 0.19
AIR 6419 B41_TMO	C	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	7.00 7.53 8.07	2.83 3.24 3.67	0.10 0.14 0.19
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 1.00	0.0000	137.00	No Ice 1/2" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						1" Ice			
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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 Leg	4.00 0.00 1.00	0.0000	137.00	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
9' Mount pipe [#P2STD]	A	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.07 0.08 0.10
9' Mount pipe [#P2STD]	B	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.07 0.08 0.10
9' Mount pipe [#P2STD]	C	From Leg	4.00 0.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice	2.14 3.07 4.01	2.14 3.07 4.01	0.07 0.08 0.10
*****									
TME-RRUS-11	A	From Leg	1.00 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.96 3.23 3.50	1.67 1.98 2.30	0.06 0.08 0.12
TME-RRUS-11	B	From Leg	1.00 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.96 3.23 3.50	1.67 1.98 2.30	0.06 0.08 0.12
TME-RRUS-11	C	From Leg	1.00 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.96 3.23 3.50	1.67 1.98 2.30	0.06 0.08 0.12
4' x 2" Horizontal Leg Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.04 0.09 0.13	0.87 1.11 1.36	0.01 0.02 0.03
4' x 2" Horizontal Leg Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.04 0.09 0.13	0.87 1.11 1.36	0.01 0.02 0.03
4' x 2" Horizontal Leg Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	0.04 0.09 0.13	0.87 1.11 1.36	0.01 0.02 0.03
Side Arm Mount [SO 104-3]	C	None		0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.62 3.30 3.98	2.62 3.30 3.98	0.29 0.41 0.53
******									
(2) 7770.00 w/ Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	127.00	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
(2) 7770.00 w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	0.0000	127.00	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
(2) 7770.00 w/ Mount Pipe	C	From Leg	3.00 0.00	0.0000	127.00	No Ice 1/2"	5.75 6.18	4.25 5.01	0.06 0.10

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
			2.00			Ice	6.61	5.71	0.16
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	A	From Leg	3.00	0.0000	127.00	No Ice	6.09	4.31	0.09
			0.00			1/2"	6.66	4.86	0.17
			2.00			Ice	7.24	5.42	0.26
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Leg	3.00	0.0000	127.00	No Ice	6.09	4.31	0.09
			0.00			1/2"	6.66	4.86	0.17
			2.00			Ice	7.24	5.42	0.26
						1" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Leg	3.00	0.0000	127.00	No Ice	6.09	4.31	0.09
			0.00			1/2"	6.66	4.86	0.17
			2.00			Ice	7.24	5.42	0.26
						1" Ice			
(2) LGP 17201	A	From Leg	3.00	0.0000	127.00	No Ice	1.67	0.47	0.03
			0.00			1/2"	1.83	0.57	0.04
			0.00			Ice	2.00	0.68	0.06
						1" Ice			
(2) LGP 17201	B	From Leg	3.00	0.0000	127.00	No Ice	1.67	0.47	0.03
			0.00			1/2"	1.83	0.57	0.04
			0.00			Ice	2.00	0.68	0.06
						1" Ice			
(2) LGP 17201	C	From Leg	3.00	0.0000	127.00	No Ice	1.67	0.47	0.03
			0.00			1/2"	1.83	0.57	0.04
			0.00			Ice	2.00	0.68	0.06
						1" Ice			
(2) LGP13519	A	From Leg	3.00	0.0000	127.00	No Ice	0.29	0.18	0.01
			0.00			1/2"	0.36	0.24	0.01
			0.00			Ice	0.44	0.31	0.01
						1" Ice			
(2) LGP13519	B	From Leg	3.00	0.0000	127.00	No Ice	0.29	0.18	0.01
			0.00			1/2"	0.36	0.24	0.01
			0.00			Ice	0.44	0.31	0.01
						1" Ice			
(2) LGP13519	C	From Leg	3.00	0.0000	127.00	No Ice	0.29	0.18	0.01
			0.00			1/2"	0.36	0.24	0.01
			0.00			Ice	0.44	0.31	0.01
						1" Ice			
DC6-48-60-18-8F	B	From Leg	3.00	0.0000	127.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			0.00			Ice	1.64	1.64	0.06
						1" Ice			
Sector Mount [SM 901-3]	C	None		0.0000	127.00	No Ice	12.78	12.78	1.26
						1/2"	15.53	15.53	1.45
						Ice	18.18	18.18	1.69
						1" Ice			
******									
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.00	0.0000	117.00	No Ice	2.04	5.22	0.04
			0.00			1/2"	2.42	5.67	0.08
			2.00			Ice	2.82	6.13	0.13
						1" Ice			
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.00	0.0000	117.00	No Ice	2.04	5.22	0.04
			0.00			1/2"	2.42	5.67	0.08
			2.00			Ice	2.82	6.13	0.13
						1" Ice			
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.00	0.0000	117.00	No Ice	2.04	5.22	0.04
			0.00			1/2"	2.42	5.67	0.08
			2.00			Ice	2.82	6.13	0.13
						1" Ice			
Platform Mount [LP 303-1]	C	None		0.0000	117.00	No Ice	14.69	14.69	1.25
						1/2"	18.01	18.01	1.57
						Ice	21.34	21.34	1.94
						1" Ice			
*******									
(2) NHH-65B-R2B w/	A	From Leg	4.00	0.0000	117.00	No Ice	4.09	3.29	0.07

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
Mount Pipe			0.00			1/2" Ice	4.48	3.67	0.13
			2.00			1" Ice	4.88	4.06	0.21
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.00	0.0000	117.00	No Ice	4.09	3.29	0.07
			0.00			1/2" Ice	4.48	3.67	0.13
			2.00			1" Ice	4.88	4.06	0.21
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.00	0.0000	117.00	No Ice	4.09	3.29	0.07
			0.00			1/2" Ice	4.48	3.67	0.13
			2.00			1" Ice	4.88	4.06	0.21
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.0000	117.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			2.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.0000	117.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			2.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.0000	117.00	No Ice	4.91	2.68	0.10
			0.00			1/2" Ice	5.26	3.14	0.14
			2.00			1" Ice	5.61	3.62	0.18
RF4440D-13A	A	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.13	0.07
			0.00			1/2" Ice	2.03	1.27	0.09
			2.00			1" Ice	2.21	1.41	0.11
RF4440D-13A	B	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.13	0.07
			0.00			1/2" Ice	2.03	1.27	0.09
			2.00			1" Ice	2.21	1.41	0.11
RF4440D-13A	C	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.13	0.07
			0.00			1/2" Ice	2.03	1.27	0.09
			2.00			1" Ice	2.21	1.41	0.11
RF4439D-25A	A	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			2.00			1" Ice	2.21	1.54	0.11
RF4439D-25A	B	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			2.00			1" Ice	2.21	1.54	0.11
RF4439D-25A	C	From Leg	4.00	0.0000	117.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			2.00			1" Ice	2.21	1.54	0.11
RVZDC-6627-PF-48_CCIV2	A	From Leg	4.00	0.0000	117.00	No Ice	4.06	3.10	0.03
			0.00			1/2" Ice	4.32	3.34	0.07
			2.00			1" Ice	4.58	3.58	0.11
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DS9A09F36D-N	A	From Leg	4.00	0.0000	90.00	No Ice	5.76	5.76	0.05
			0.00			1/2" Ice	7.71	7.71	0.09
			10.00			1" Ice	9.68	9.68	0.14
TTA-429-94C-08179	A	From Leg	4.00	0.0000	90.00	No Ice	1.03	1.03	0.01
			0.00			1/2" Ice	1.17	1.17	0.02
			0.00			1" Ice	1.32	1.32	0.04
6' x 2" Horizontal Mount Pipe	A	From Leg	2.50	0.0000	90.00	No Ice	1.14	0.01	0.02
			0.00			1/2" Ice	1.76	0.04	0.03
			0.00			1" Ice	2.14	0.09	0.04
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	90.00	No Ice	1.32	1.32	0.07

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
			0.00			1/2" Ice	1.58	1.58	0.08
			0.00			1" Ice	1.84	1.84	0.09
Side Arm Mount [SO 307-1]	A	From Leg	2.50	0.0000	90.00	No Ice	0.41	2.66	0.05
			0.00			1/2" Ice	0.81	4.48	0.07
			0.00			1" Ice	1.23	6.37	0.11
******									
KS24019-L112A	C	From Leg	3.00	0.0000	76.00	No Ice	0.14	0.14	0.01
			0.00			1/2" Ice	0.20	0.20	0.01
			1.00			1" Ice	0.26	0.26	0.01
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.0000	76.00	No Ice	0.85	1.67	0.07
			0.00			1/2" Ice	1.14	2.34	0.08
			0.00			1" Ice	1.43	3.01	0.09
**********									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	70.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	70.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	70.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
TA08025-B604	A	From Leg	4.00	0.0000	70.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
(2) TA08025-B604	C	From Leg	4.00	0.0000	70.00	No Ice	1.96	0.98	0.06
			0.00			1/2" Ice	2.14	1.11	0.08
			0.00			1" Ice	2.32	1.25	0.10
TA08025-B605	A	From Leg	4.00	0.0000	70.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
(2) TA08025-B605	B	From Leg	4.00	0.0000	70.00	No Ice	1.96	1.13	0.08
			0.00			1/2" Ice	2.14	1.27	0.09
			0.00			1" Ice	2.32	1.41	0.11
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	70.00	No Ice	2.01	1.17	0.02
			0.00			1/2" Ice	2.19	1.31	0.04
			0.00			1" Ice	2.37	1.46	0.06
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	70.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	70.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	70.00	No Ice	1.90	1.90	0.03
			0.00			1/2" Ice	2.73	2.73	0.04
			0.00			1" Ice	3.40	3.40	0.06
Commscope MC-PK8-DSH	C	None		0.0000	70.00	No Ice	34.24	34.24	1.75
						1/2" Ice	62.95	62.95	2.10
						1" Ice	91.66	91.66	2.45

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
******								

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 123.29	Pole	Max Tension	48	0.00	-0.00	-0.00
			Max. Compression	26	-26.38	-3.41	-0.56
			Max. Mx	8	-12.69	-219.99	-3.55
			Max. My	14	-12.68	-5.02	-218.58
			Max. Vy	8	16.87	-219.99	-3.55
			Max. Vx	2	-16.88	1.72	218.00
			Max. Torque	16			1.76
L2	123.29 - 88.88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.58	-4.55	1.10
			Max. Mx	8	-20.75	-923.81	-8.09
			Max. My	2	-20.71	6.45	925.73
			Max. Vy	8	23.11	-923.81	-8.09
			Max. Vx	2	-23.31	6.45	925.73
			Max. Torque	23			-2.17
L3	88.88 - 43.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.73	-6.60	5.39
			Max. Mx	8	-34.66	-2109.23	-13.51
			Max. My	2	-34.62	12.70	2124.26
			Max. Vy	8	30.36	-2109.23	-13.51
			Max. Vx	2	-30.75	12.70	2124.26
			Max. Torque	23			-2.95
L4	43.8 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.83	-8.97	8.20
			Max. Mx	8	-51.22	-3693.67	-19.84
			Max. My	2	-51.22	19.53	3728.90
			Max. Vy	8	34.01	-3693.67	-19.84
			Max. Vx	2	-34.40	19.53	3728.90
			Max. Torque	23			-2.93

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	78.83	-9.10	-0.03
	Max. H_x	20	51.26	33.95	0.15
	Max. H_z	2	51.26	0.15	34.34
	Max. M_x	2	3728.90	0.15	34.34
	Max. M_z	8	3693.67	-33.95	-0.15
	Max. Torsion	11	2.92	-29.48	-17.12
	Min. Vert	11	38.44	-29.48	-17.12
	Min. H_x	8	51.26	-33.95	-0.15
	Min. H_z	15	38.44	-0.15	-34.34
	Min. M_x	14	-3722.60	-0.15	-34.34
	Min. M_z	20	-3686.78	33.95	0.15
	Min. Torsion	23	-2.92	29.48	17.12

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	42.72	0.00	-0.00	-2.56	-2.80	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	51.26	-0.15	-34.34	-3728.90	19.53	1.54
0.9 Dead+1.0 Wind 0 deg - No Ice	38.44	-0.15	-34.34	-3655.87	19.94	1.54
1.2 Dead+1.0 Wind 30 deg - No Ice	51.26	17.14	-29.86	-3236.51	-1855.19	0.10
0.9 Dead+1.0 Wind 30 deg - No Ice	38.44	17.14	-29.86	-3173.11	-1818.47	0.10

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 60 deg - No Ice	51.26	29.33	-16.87	-1830.23	-3187.98	-1.36
0.9 Dead+1.0 Wind 60 deg - No Ice	38.44	29.33	-16.87	-1793.98	-3125.20	-1.37
1.2 Dead+1.0 Wind 90 deg - No Ice	51.26	33.95	0.15	19.84	-3693.67	-2.46
0.9 Dead+1.0 Wind 90 deg - No Ice	38.44	33.95	0.15	20.13	-3621.06	-2.47
1.2 Dead+1.0 Wind 120 deg - No Ice	51.26	29.48	17.12	1863.56	-3210.59	-2.91
0.9 Dead+1.0 Wind 120 deg - No Ice	38.44	29.48	17.12	1828.05	-3147.32	-2.92
1.2 Dead+1.0 Wind 150 deg - No Ice	51.26	17.60	30.37	3259.01	-1898.32	-2.58
0.9 Dead+1.0 Wind 150 deg - No Ice	38.44	17.60	30.37	3196.83	-1860.73	-2.58
1.2 Dead+1.0 Wind 180 deg - No Ice	51.26	0.15	34.34	3722.60	-26.41	-1.56
0.9 Dead+1.0 Wind 180 deg - No Ice	38.44	0.15	34.34	3651.22	-24.93	-1.56
1.2 Dead+1.0 Wind 210 deg - No Ice	51.26	-17.14	29.86	3230.20	1848.28	-0.11
0.9 Dead+1.0 Wind 210 deg - No Ice	38.44	-17.14	29.86	3168.46	1813.45	-0.10
1.2 Dead+1.0 Wind 240 deg - No Ice	51.26	-29.33	16.87	1823.95	3181.06	1.37
0.9 Dead+1.0 Wind 240 deg - No Ice	38.44	-29.33	16.87	1789.36	3120.17	1.38
1.2 Dead+1.0 Wind 270 deg - No Ice	51.26	-33.95	-0.15	-26.10	3686.78	2.48
0.9 Dead+1.0 Wind 270 deg - No Ice	38.44	-33.95	-0.15	-24.74	3616.04	2.49
1.2 Dead+1.0 Wind 300 deg - No Ice	51.26	-29.48	-17.12	-1869.82	3203.73	2.92
0.9 Dead+1.0 Wind 300 deg - No Ice	38.44	-29.48	-17.12	-1832.66	3142.33	2.92
1.2 Dead+1.0 Wind 330 deg - No Ice	51.26	-17.60	-30.37	-3265.31	1891.47	2.57
0.9 Dead+1.0 Wind 330 deg - No Ice	38.44	-17.60	-30.37	-3201.46	1855.75	2.57
1.2 Dead+1.0 Ice+1.0 Temp	78.83	0.00	-0.00	-8.20	-8.97	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	78.83	-0.03	-9.09	-1004.93	-4.31	0.27
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	78.83	4.52	-7.86	-869.03	-503.63	-0.11
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	78.83	7.86	-4.52	-502.49	-870.43	-0.46
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	78.83	9.10	0.03	-3.52	-1006.42	-0.69
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	78.83	7.89	4.57	494.18	-875.16	-0.73
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	78.83	4.57	7.89	857.25	-511.83	-0.58
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	78.83	0.03	9.09	988.41	-13.78	-0.27
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	78.83	-4.52	7.86	852.52	485.55	0.11
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	78.83	-7.86	4.52	485.98	852.35	0.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	78.83	-9.10	-0.03	-12.99	988.34	0.69
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	78.83	-7.89	-4.57	-510.69	857.09	0.73
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	78.83	-4.57	-7.89	-873.77	493.75	0.58
Dead+Wind 0 deg - Service	42.72	-0.03	-7.95	-857.19	2.39	0.37
Dead+Wind 30 deg - Service	42.72	3.97	-6.92	-744.27	-427.62	0.03
Dead+Wind 60 deg - Service	42.72	6.79	-3.91	-421.67	-733.25	-0.32
Dead+Wind 90 deg - Service	42.72	7.86	0.03	2.64	-849.24	-0.58
Dead+Wind 120 deg - Service	42.72	6.83	3.97	425.54	-738.50	-0.69
Dead+Wind 150 deg - Service	42.72	4.08	7.03	745.70	-437.55	-0.61
Dead+Wind 180 deg - Service	42.72	0.03	7.95	851.94	-8.13	-0.37
Dead+Wind 210 deg - Service	42.72	-3.97	6.92	739.02	421.87	-0.03
Dead+Wind 240 deg - Service	42.72	-6.79	3.91	416.43	727.50	0.32
Dead+Wind 270 deg - Service	42.72	-7.86	-0.03	-7.88	843.49	0.58
Dead+Wind 300 deg - Service	42.72	-6.83	-3.97	-430.78	732.76	0.69
Dead+Wind 330 deg - Service	42.72	-4.08	-7.03	-750.95	431.80	0.61

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-42.72	0.00	-0.00	42.72	0.00	0.000%
2	-0.15	-51.26	-34.34	0.15	51.26	34.34	0.000%
3	-0.15	-38.44	-34.34	0.15	38.44	34.34	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
4	17.14	-51.26	-29.86	-17.14	51.26	29.86	0.000%
5	17.14	-38.44	-29.86	-17.14	38.44	29.86	0.000%
6	29.33	-51.26	-16.87	-29.33	51.26	16.87	0.000%
7	29.33	-38.44	-16.87	-29.33	38.44	16.87	0.000%
8	33.95	-51.26	0.15	-33.95	51.26	-0.15	0.000%
9	33.95	-38.44	0.15	-33.95	38.44	-0.15	0.000%
10	29.48	-51.26	17.12	-29.48	51.26	-17.12	0.000%
11	29.48	-38.44	17.12	-29.48	38.44	-17.12	0.000%
12	17.60	-51.26	30.37	-17.60	51.26	-30.37	0.000%
13	17.60	-38.44	30.37	-17.60	38.44	-30.37	0.000%
14	0.15	-51.26	34.34	-0.15	51.26	-34.34	0.000%
15	0.15	-38.44	34.34	-0.15	38.44	-34.34	0.000%
16	-17.14	-51.26	29.86	17.14	51.26	-29.86	0.000%
17	-17.14	-38.44	29.86	17.14	38.44	-29.86	0.000%
18	-29.33	-51.26	16.87	29.33	51.26	-16.87	0.000%
19	-29.33	-38.44	16.87	29.33	38.44	-16.87	0.000%
20	-33.95	-51.26	-0.15	33.95	51.26	0.15	0.000%
21	-33.95	-38.44	-0.15	33.95	38.44	0.15	0.000%
22	-29.48	-51.26	-17.12	29.48	51.26	17.12	0.000%
23	-29.48	-38.44	-17.12	29.48	38.44	17.12	0.000%
24	-17.60	-51.26	-30.37	17.60	51.26	30.37	0.000%
25	-17.60	-38.44	-30.37	17.60	38.44	30.37	0.000%
26	0.00	-78.83	0.00	-0.00	78.83	0.00	0.000%
27	-0.03	-78.83	-9.09	0.03	78.83	9.09	0.000%
28	4.52	-78.83	-7.86	-4.52	78.83	7.86	0.000%
29	7.86	-78.83	-4.52	-7.86	78.83	4.52	0.000%
30	9.10	-78.83	0.03	-9.10	78.83	-0.03	0.000%
31	7.89	-78.83	4.57	-7.89	78.83	-4.57	0.000%
32	4.57	-78.83	7.88	-4.57	78.83	-7.89	0.000%
33	0.03	-78.83	9.09	-0.03	78.83	-9.09	0.000%
34	-4.52	-78.83	7.86	4.52	78.83	-7.86	0.000%
35	-7.86	-78.83	4.52	7.86	78.83	-4.52	0.000%
36	-9.10	-78.83	-0.03	9.10	78.83	0.03	0.000%
37	-7.89	-78.83	-4.57	7.89	78.83	4.57	0.000%
38	-4.57	-78.83	-7.88	4.57	78.83	7.89	0.000%
39	-0.03	-42.72	-7.95	0.03	42.72	7.95	0.000%
40	3.97	-42.72	-6.92	-3.97	42.72	6.92	0.000%
41	6.79	-42.72	-3.91	-6.79	42.72	3.91	0.000%
42	7.86	-42.72	0.03	-7.86	42.72	-0.03	0.000%
43	6.83	-42.72	3.97	-6.83	42.72	-3.97	0.000%
44	4.08	-42.72	7.03	-4.08	42.72	-7.03	0.000%
45	0.03	-42.72	7.95	-0.03	42.72	-7.95	0.000%
46	-3.97	-42.72	6.92	3.97	42.72	-6.92	0.000%
47	-6.79	-42.72	3.91	6.79	42.72	-3.91	0.000%
48	-7.86	-42.72	-0.03	7.86	42.72	0.03	0.000%
49	-6.83	-42.72	-3.97	6.83	42.72	3.97	0.000%
50	-4.08	-42.72	-7.03	4.08	42.72	7.03	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00052920
3	Yes	5	0.00000001	0.00024436
4	Yes	7	0.00000001	0.00015505
5	Yes	6	0.00000001	0.00053441
6	Yes	7	0.00000001	0.00015092
7	Yes	6	0.00000001	0.00052048
8	Yes	5	0.00000001	0.00024010
9	Yes	5	0.00000001	0.00011165
10	Yes	7	0.00000001	0.00014903
11	Yes	6	0.00000001	0.00051148
12	Yes	7	0.00000001	0.00015928
13	Yes	6	0.00000001	0.00054854
14	Yes	6	0.00000001	0.00011765

15	Yes	5	0.00000001	0.00057993
16	Yes	7	0.00000001	0.00014926
17	Yes	6	0.00000001	0.00051343
18	Yes	7	0.00000001	0.00015017
19	Yes	6	0.00000001	0.00051867
20	Yes	5	0.00000001	0.00088725
21	Yes	5	0.00000001	0.00039986
22	Yes	7	0.00000001	0.00015727
23	Yes	6	0.00000001	0.00054310
24	Yes	7	0.00000001	0.00014926
25	Yes	6	0.00000001	0.00051092
26	Yes	4	0.00000001	0.00012693
27	Yes	6	0.00000001	0.00023684
28	Yes	6	0.00000001	0.00055108
29	Yes	6	0.00000001	0.00054727
30	Yes	6	0.00000001	0.00023697
31	Yes	6	0.00000001	0.00053433
32	Yes	6	0.00000001	0.00056204
33	Yes	6	0.00000001	0.00023510
34	Yes	6	0.00000001	0.00049991
35	Yes	6	0.00000001	0.00050371
36	Yes	6	0.00000001	0.00023163
37	Yes	6	0.00000001	0.00054667
38	Yes	6	0.00000001	0.00051930
39	Yes	4	0.00000001	0.00073200
40	Yes	5	0.00000001	0.00034223
41	Yes	5	0.00000001	0.00031736
42	Yes	4	0.00000001	0.00053435
43	Yes	5	0.00000001	0.00030903
44	Yes	5	0.00000001	0.00036816
45	Yes	4	0.00000001	0.00082706
46	Yes	5	0.00000001	0.00029932
47	Yes	5	0.00000001	0.00030521
48	Yes	4	0.00000001	0.00059417
49	Yes	5	0.00000001	0.00034857
50	Yes	5	0.00000001	0.00030637

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.29	35.966	44	2.2122	0.0094
L2	126.71 - 88.88	25.544	50	1.9942	0.0046
L3	93.13 - 43.8	13.312	50	1.4277	0.0028
L4	49.22 - 0	3.534	50	0.6727	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	NNVV-65B-R4 w/ Mount Pipe	44	35.506	2.2044	0.0091	16846
137.00	Platform Mount [LP 1201-1_KCKR-HR-1]	44	30.034	2.1048	0.0062	6479
129.00	TME-RRUS-11	44	26.517	2.0219	0.0049	4034
127.00	(2) 7770.00 w/ Mount Pipe	50	25.666	1.9978	0.0047	3767
117.00	(2) LPA-80080/4CF w/ Mount Pipe	50	21.618	1.8549	0.0037	3510
90.00	DS9A09F36D-N	50	12.373	1.3696	0.0027	3250
76.00	KS24019-L112A	50	8.621	1.1164	0.0021	3161
70.00	MX08FRO665-21 w/ Mount Pipe	50	7.239	1.0118	0.0018	3125

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123.29	156.407	12	9.6284	0.0423
L2	126.71 - 88.88	111.286	24	8.7104	0.0200
L3	93.13 - 43.8	58.037	24	6.2402	0.0119
L4	49.22 - 0	15.410	24	2.9362	0.0038

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.00	NNVV-65B-R4 w/ Mount Pipe	12	154.416	9.5962	0.0411	4192
137.00	Platform Mount [LP 1201-1_KCKR-HR-1]	12	130.738	9.1809	0.0275	1609
129.00	TME-RRUS-11	12	115.507	8.8291	0.0214	999
127.00	(2) 7770.00 w/ Mount Pipe	24	111.816	8.7260	0.0202	931
117.00	(2) LPA-80080/4CF w/ Mount Pipe	24	94.194	8.1085	0.0158	855
90.00	DS9A09F36D-N	24	53.948	5.9857	0.0116	762
76.00	KS24019-L112A	24	37.596	4.8772	0.0090	735
70.00	MX08FRO665-21 w/ Mount Pipe	24	31.573	4.4195	0.0077	725

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	150 - 123.29 (1)	TP22.9x17x0.1875	26.71	0.00	0.0	13.0672	-12.66	764.43	0.017
L2	123.29 - 88.88 (2)	TP30x21.7696x0.3125	37.83	0.00	0.0	28.5292	-20.68	1668.96	0.012
L3	88.88 - 43.8 (3)	TP39.2x28.4504x0.375	49.33	0.00	0.0	44.8057	-34.59	2621.13	0.013
L4	43.8 - 0 (4)	TP48x37.2689x0.4375	49.22	0.00	0.0	66.0465	-51.22	3863.72	0.013

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	150 - 123.29 (1)	TP22.9x17x0.1875	222.76	413.83	0.538	0.00	413.83	0.000
L2	123.29 - 88.88 (2)	TP30x21.7696x0.3125	933.49	1249.92	0.747	0.00	1249.92	0.000
L3	88.88 - 43.8 (3)	TP39.2x28.4504x0.375	2141.13	2537.12	0.844	0.00	2537.12	0.000
L4	43.8 - 0 (4)	TP48x37.2689x0.4375	3773.57	4628.73	0.815	0.00	4628.73	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	150 - 123.29 (1)	TP22.9x17x0.1875	17.00	229.33	0.074	0.46	440.97	0.001
L2	123.29 - 88.88 (2)	TP30x21.7696x0.3125	23.44	500.69	0.047	1.57	1261.18	0.001
L3	88.88 - 43.8 (3)	TP39.2x28.4504x0.375	31.15	786.34	0.040	2.58	2592.30	0.001
L4	43.8 - 0 (4)	TP48x37.2689x0.4375	35.16	1159.12	0.030	2.57	4828.05	0.001

Pole Interaction Design Data

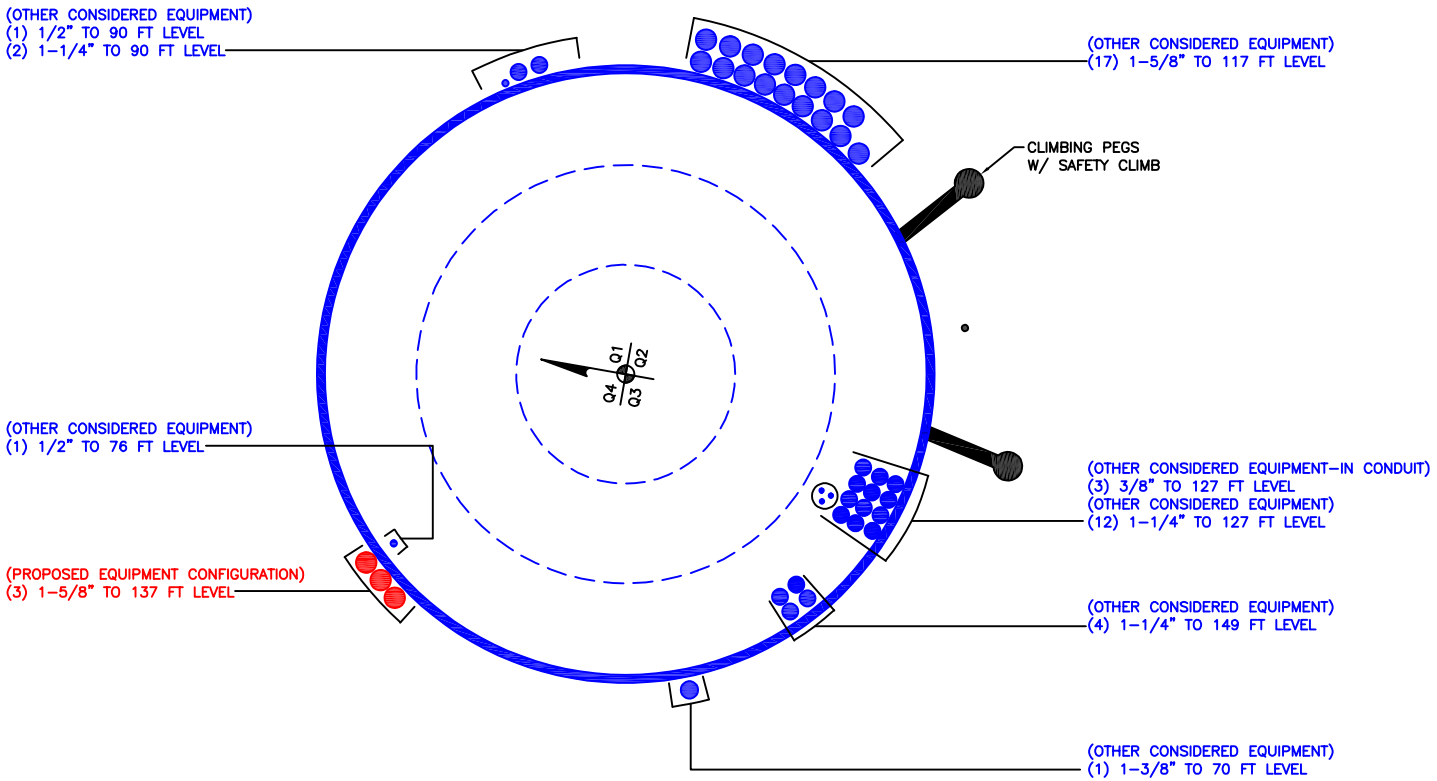
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123.29 (1)	0.017	0.538	0.000	0.074	0.001	0.560	1.050	4.8.2
L2	123.29 - 88.88 (2)	0.012	0.747	0.000	0.047	0.001	0.762	1.050	4.8.2
L3	88.88 - 43.8 (3)	0.013	0.844	0.000	0.040	0.001	0.859	1.050	4.8.2
L4	43.8 - 0 (4)	0.013	0.815	0.000	0.030	0.001	0.829	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 123.29	Pole	TP22.9x17x0.1875	1	-12.66	802.65	53.4	Pass
L2	123.29 - 88.88	Pole	TP30x21.7696x0.3125	2	-20.68	1752.41	72.5	Pass
L3	88.88 - 43.8	Pole	TP39.2x28.4504x0.375	3	-34.59	2752.19	81.8	Pass
L4	43.8 - 0	Pole	TP48x37.2689x0.4375	4	-51.22	4056.91	79.0	Pass
							Summary	
						Pole (L3)	81.8	Pass
						RATING =	**81.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876390 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

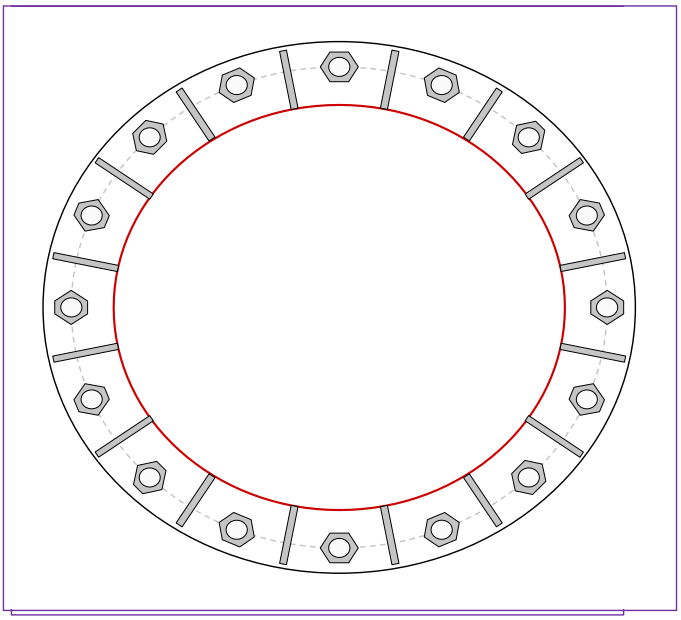
Monopole Base Plate Connection

Site Info	
BU #	876390
Site Name	Hampton / Bernier
Order #	607752 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads	
Moment (kip-ft)	3773.58
Axial Force (kips)	51.22
Shear Force (kips)	35.16

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 57" BC

Base Plate Data

63" OD x 2" Plate (A871 Gr. 60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 18"H x 7"W x 0.75"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" groove, 45° dbl bevelFALSE
vert. weld: 0.375" fillet

Pole Data

48" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_t = 195.28	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.2	ϕVn = 149.1	**76.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	34.85	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**61.5%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**63.3%**	**Pass**
Vertical Weld:	**48.4%**	**Pass**
Plate Flexure+Shear:	**22.4%**	**Pass**
Plate Tension+Shear:	**64.0%**	**Pass**
Plate Compression:	**70.6%**	**Pass**
Pole Summary		
Punching Shear:	**12.5%**	**Pass**

Pier and Pad Foundation

BU # :	876390
Site Name:	Hampton / Bernier
App. Number:	607752 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	51.26	kips
Base Shear, Vu_comp:	35.1	kips
Moment, M_u:	3773.58	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	6.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	27	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	25.25	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	9	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	20	
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	35	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	6	
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	13	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	217.29	35.10	**15.4%**	**Pass**
Bearing Pressure (ksf)	9.47	2.75	**29.1%**	**Pass**
*Overturning (kip*ft)*	5370.13	3993.69	**74.4%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	4129.39	3878.88	**89.5%**	**Pass**
Pier Compression (kip)	26891.28	74.08	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	4770.48	1845.91	**36.9%**	**Pass**
Pad Shear - 1-way (kips)	899.95	271.55	**28.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.041	**20.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4566.12	2327.33	**48.5%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**89.5%**
Soil Rating*:	**74.4%**

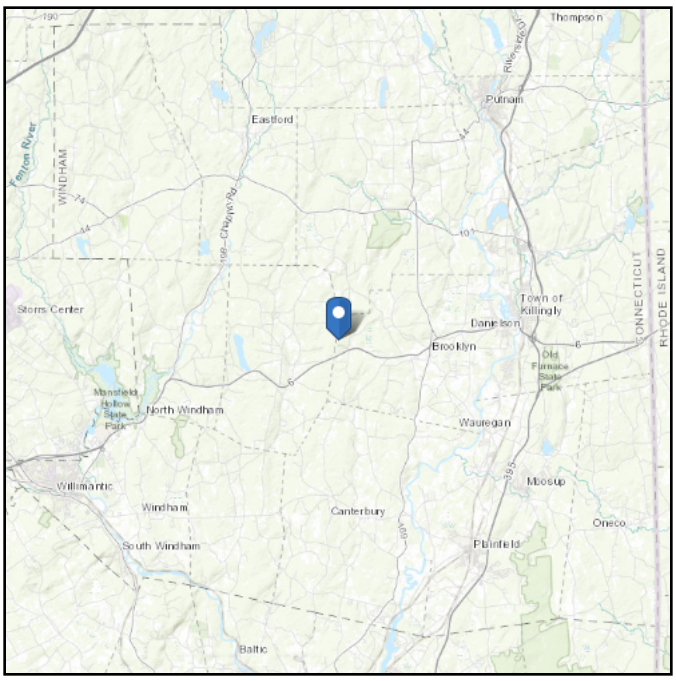
Version 4.1.1

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 715.2 ft (NAVD 88)
Latitude: 41.791567
Longitude: -72.015011



Wind

Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	94 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Mar 15 2022

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

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

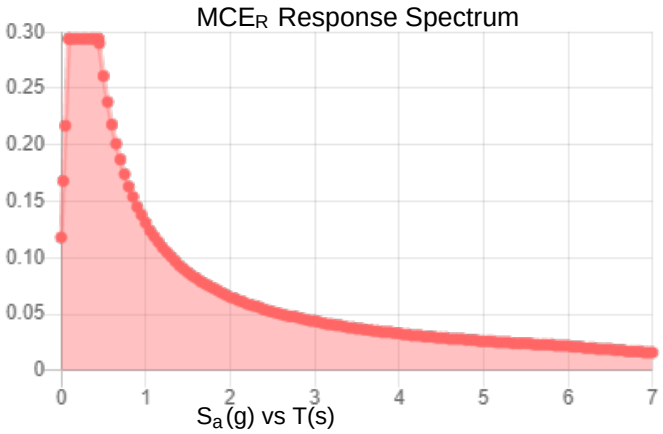
Seismic

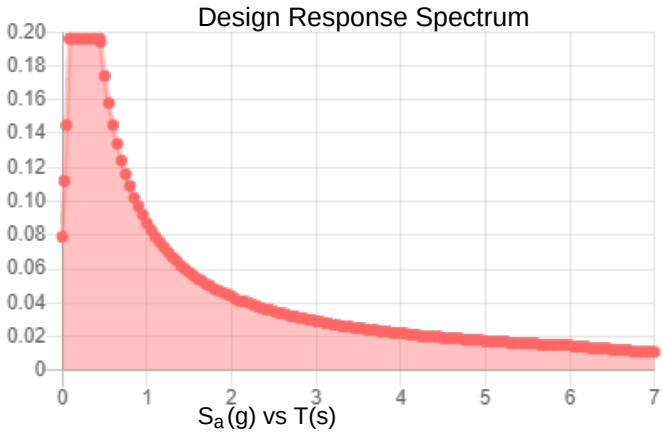
Site Soil Class: D - Stiff Soil

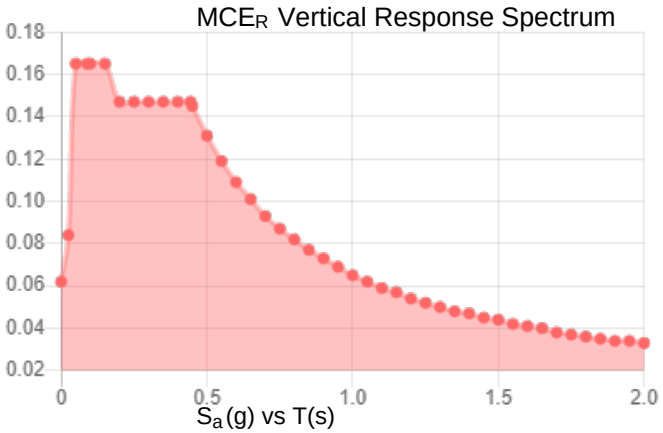
Results:

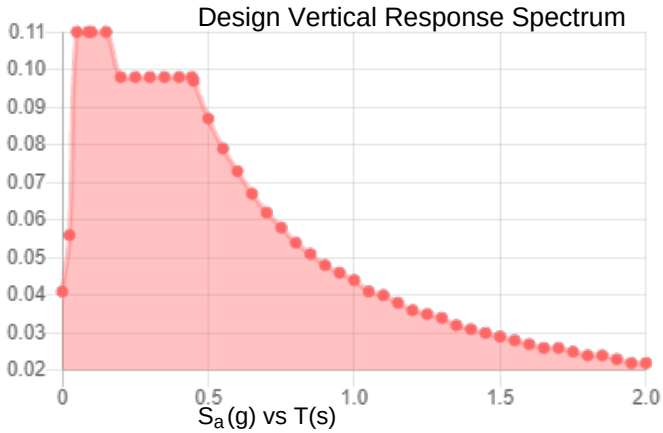
S_S :	0.184	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.099
F_v :	2.4	PGA_M :	0.159
S_{MS} :	0.294	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.196	C_v :	0.7

Seismic Design Category B









Data Accessed: **Tue Mar 15 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Mar 15 2022

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

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

Date: March 8, 2022

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
towersupport@btgrp.com

Subject:	**Mount Analysis - Conditional Passing Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT11511A
	Carrier Site Name:	Sprint - Brooklyn
Crown Castle Designation:	**BU Number:**	876390
	Site Name:	Hampton / Bernier
	JDE Job Number:	708444
	Order Number:	607752, Rev.0
Engineering Firm Designation:	**B+T Group Report Designation:**	136355.006.01
Site Data:	**116 Grant Hill Rd., Brooklyn, CT, Windham County, 06234** **Latitude 41° 47' 29.64" Longitude -72° 0' 54.04"**	
Structure Information:	**Tower Height & Type:**	**150 ft. Monopole**
	Mount Elevation:	**137 ft.**
	Mount Type:	**14 ft. Platform Mount**

B+T Group 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 abovementioned 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's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **Sufficient**
***The Capacities listed are based on recommendations listed in Sec.4.1 being installed.**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Austin Steward

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2022

Chad E. Tuttle, P.E.

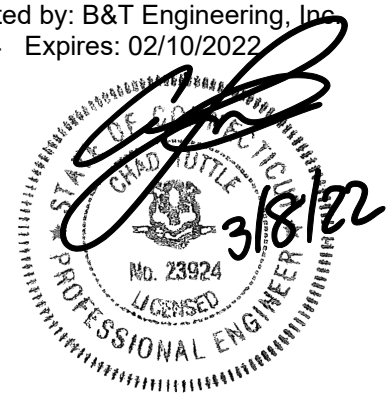


TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 - Sector 14' Platform Mount, mapped by B+T Group.

The mount has been modified per reinforcement drawings prepared by B+T Group, in July of 2019. Reinforcement consists of installing new support rail kit with SitePro1 connection angle kit (Part #AHCP) and installing new SitePro1 support rail reinforcement kit (Part# PRK-SFS-L).

2) ANALYSIS CRITERIA

Building Code:	2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	121 mph
Exposure Category:	B
Topographic Factor at Base:	1.718
Topographic Factor at Mount:	1.718
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.184
Seismic S_1:	0.054
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb.
Man Live Load at Mount Pipes:	500 lb.

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Number of Antennas	Manufacturer	Model/Type	Mount / Modification Details
137	138	3	Ericsson	AIR 6419 B41_TMO	14' Platform Mount
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	Radio 4449 B71 B85A_T-Mobile	
		3	Ericsson	Radio 4460 B2/B25 B66_TMO	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 03/04/2022	Crown Castle
RFDS		Date: 02/15/2022	
Mount Mapping	B+T Group	Date: 06/27/2019	On File
Previous MDD		Date: 07/09/2019	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), 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 B+T Group, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading 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 E).

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
   The following assumptions have been included in the analysis of the mount

Component	Section	Length	Note
Existing Support Rails	2" Std. Pipe	13'-0"	Per photos

5. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
6. Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
7. 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.
8. The following material grades were assumed (Unless Noted Otherwise):
   (a) Connection Bolts : ASTM A325
   (b) Steel Pipe : ASTM A53 (GR. 35)
   (c) HSS (Round) : ASTM 500 (GR. B-42)
   (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
   (e) Channel : ASTM A36 (GR. 36)
   (f) Steel Solid Rod : ASTM A36 (GR. 36)
   (g) Steel Plate : ASTM A36 (GR. 36)
   (h) Steel Angle : ASTM A36 (GR. 36)
   (i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group 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	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1,2	Main Face Horizontals	137	2	68.5	Pass
	Mount Pipes		48	67.8	Pass
	Support Tubes		20	32.5	Pass
	Support Angles		9	46.7	Pass
	Support Rails		25	99.0	Pass
	Connection Angles		36	59.0	Pass
	Reinforcement Angles		42	22.1	Pass
3	Mount to Tower Connection		--	23	Pass

Structure Rating with Recommendations (max from all components) =	99.0%

Notes:
1) Capacities listed are based on recommendations listed in Sec.4.1 being installed.
2) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
3) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity reported.

4.1) Recommendations

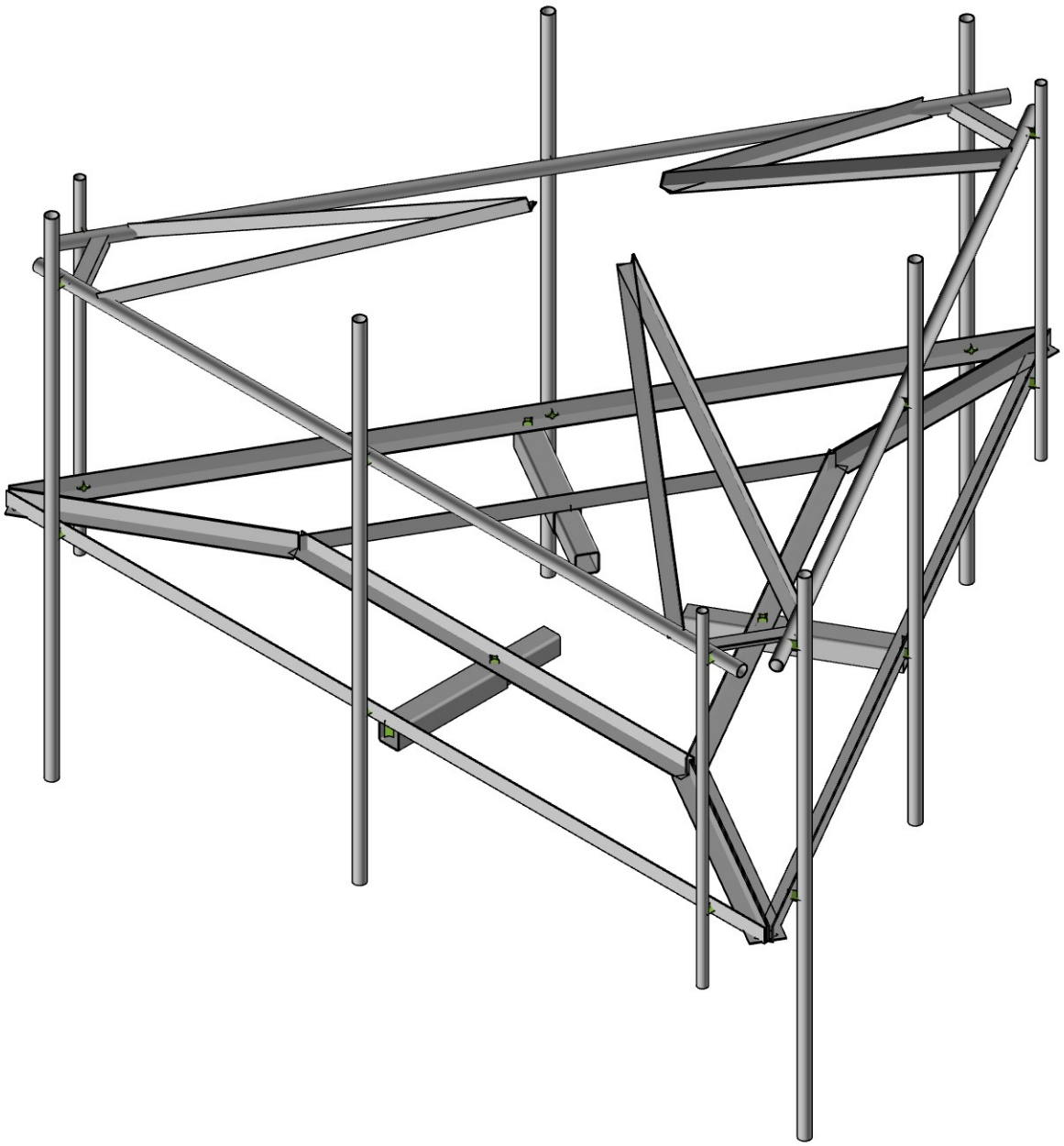
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modification listed below must be completed.

1. Remove existing 6’-0’’ long mount pipe and replace with new 2” Std. x 9’-0’’ long mount pipe at position 2 on all sectors.

No modifications are required at this time provided that the above-listed changes are completed.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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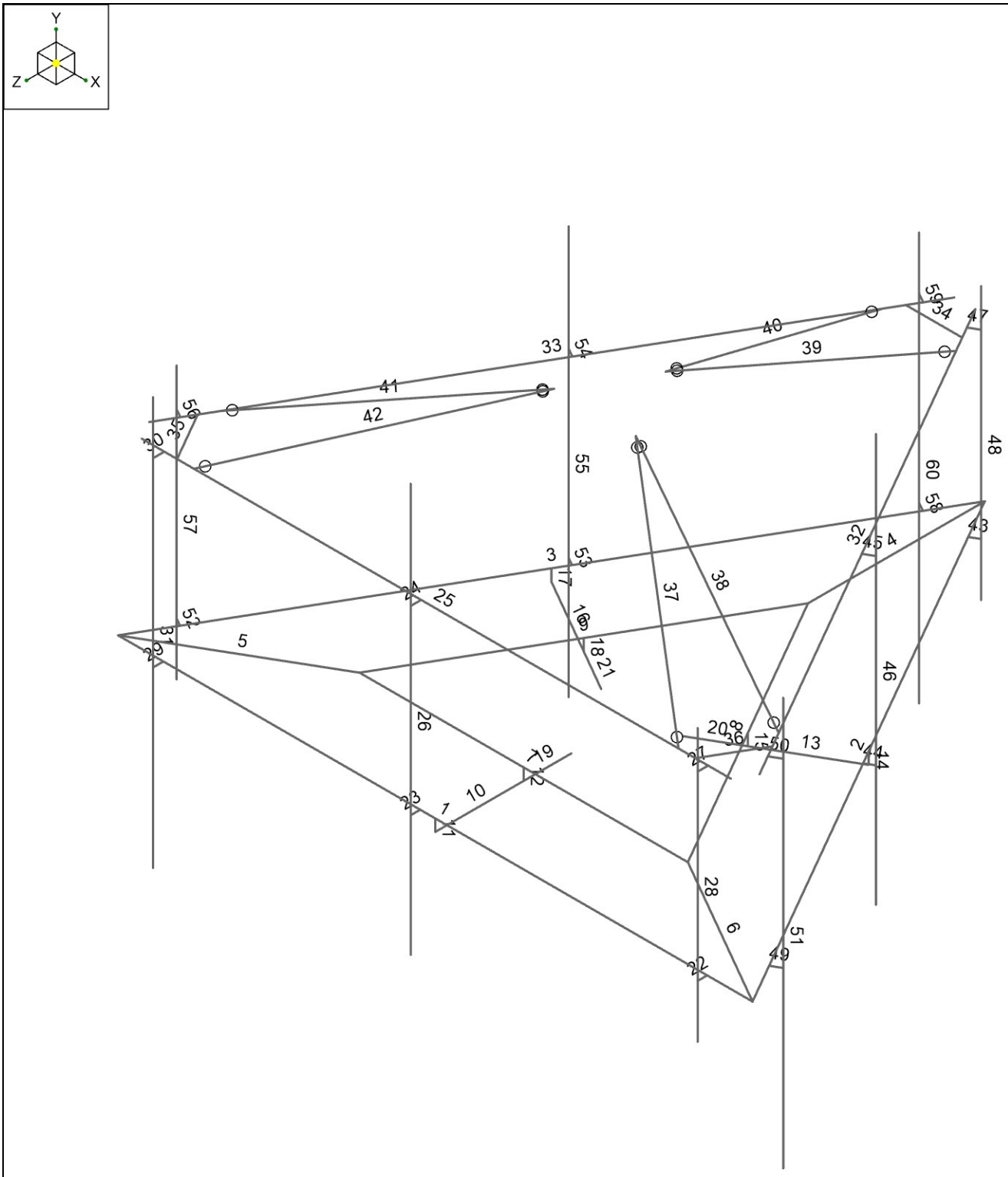
KR		Mar 08, 2022
136355.006.01		136355_006_01_Hampton _Berni…



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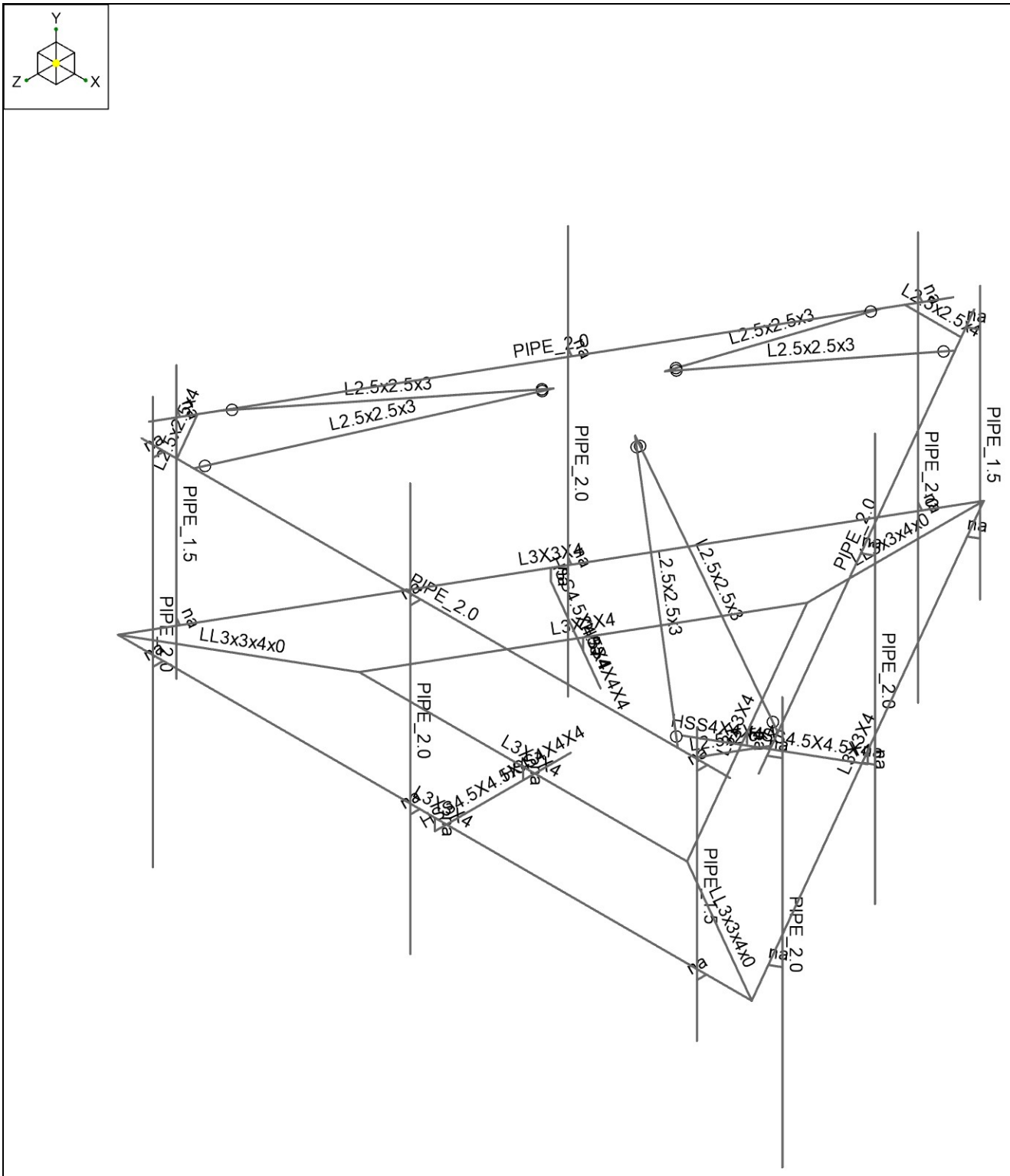

Envelope Only Solution

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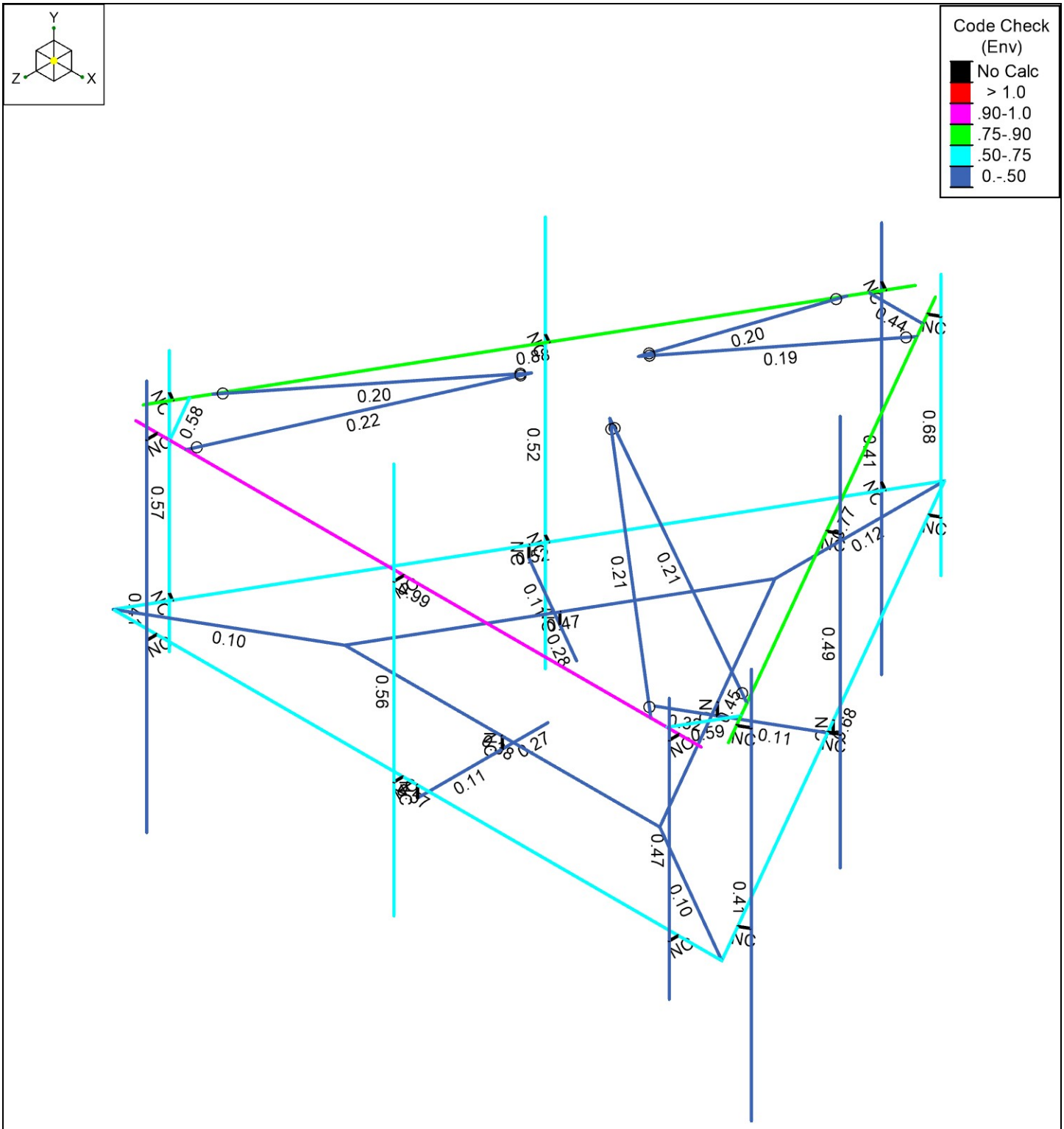

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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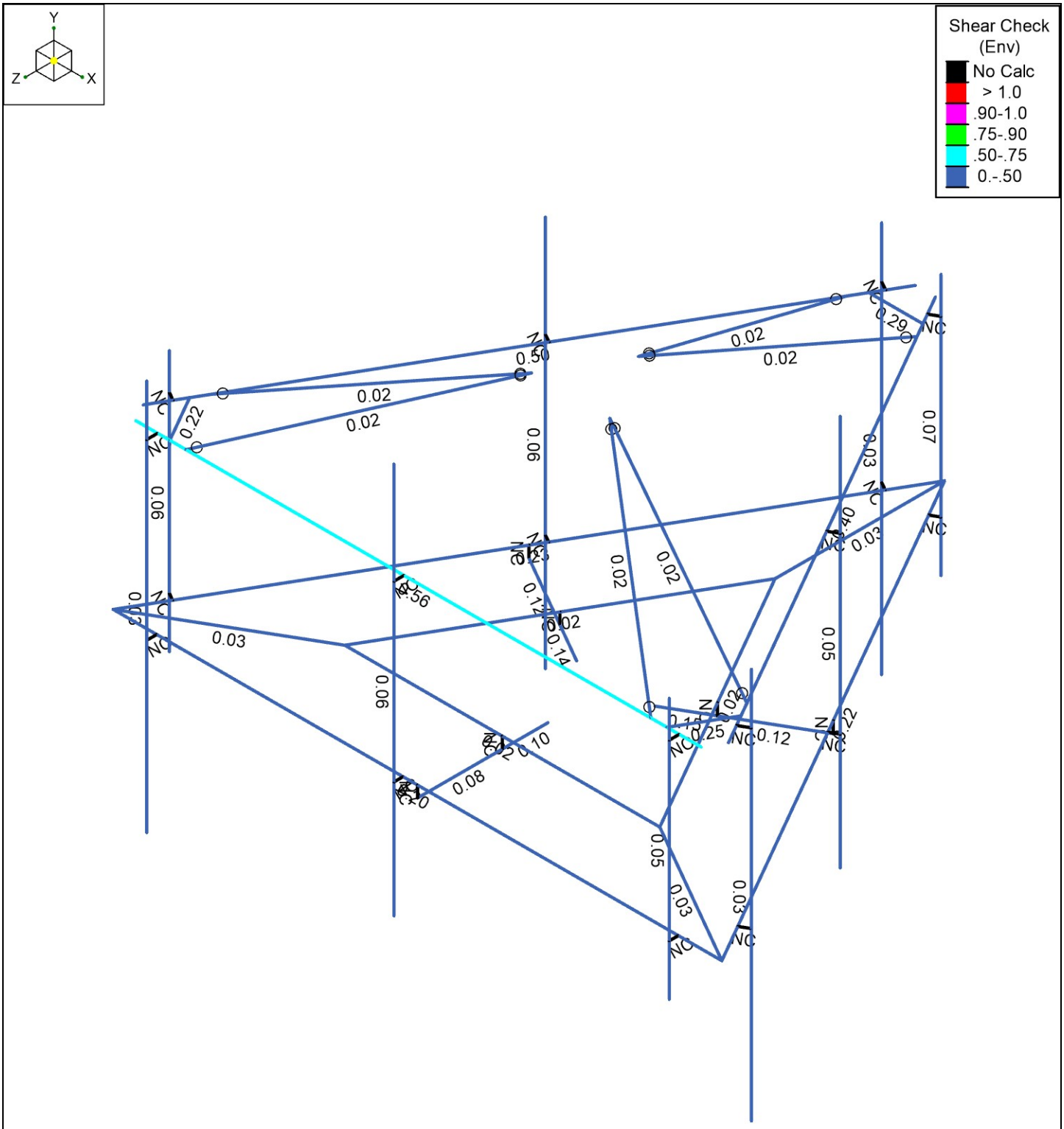


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	876390 - Hampton / Bernier	SK-5
KR		Mar 08, 2022
136355.006.01		136355_006_01_Hampton _Berni…

APPENDIX B

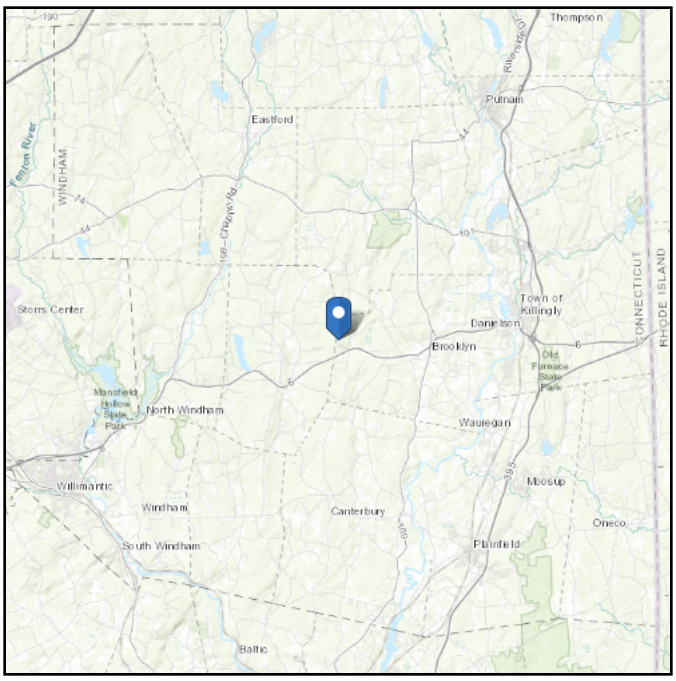
SOFTWARE INPUT CALCULATIONS

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: 715.2 ft (NAVD 88)
Latitude: 41.791567
Longitude: -72.015011



Wind

Results:

Wind Speed	121 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	94 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Mar 08 2022

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

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

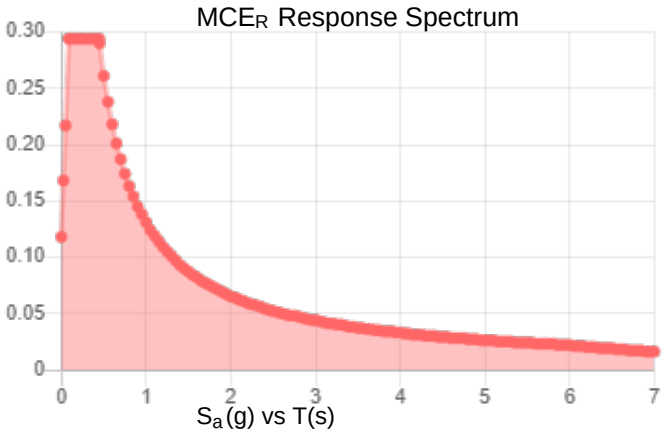
Seismic

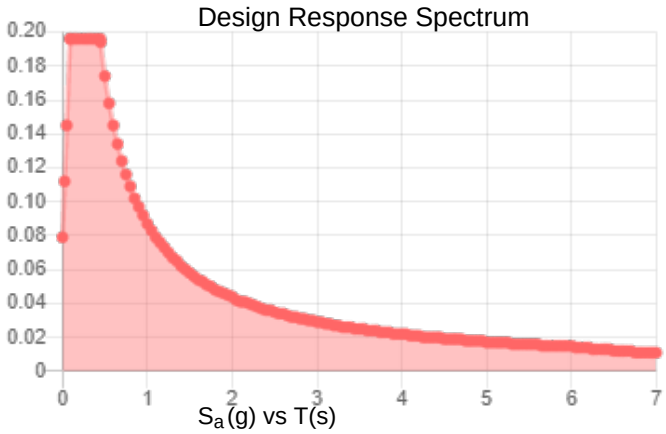
Site Soil Class: D - Default (see Section 11.4.3)

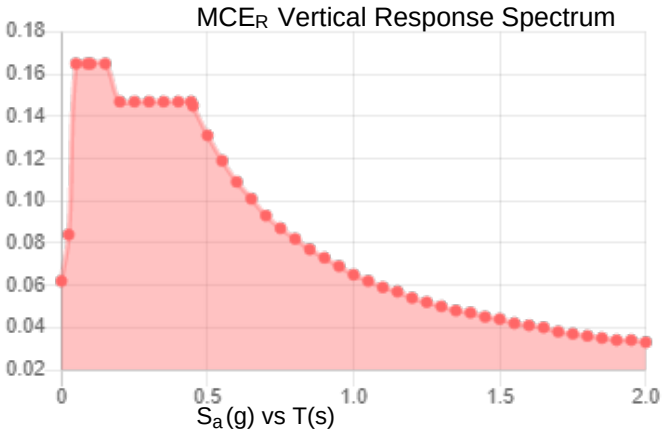
Results:

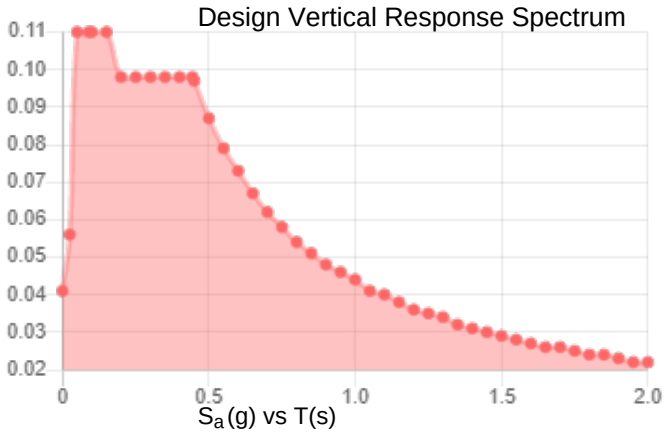
S_S :	0.184	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.099
F_v :	2.4	PGA_M :	0.159
S_{MS} :	0.294	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.196	C_v :	0.7

Seismic Design Category B









Data Accessed: **Tue Mar 08 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Mar 08 2022

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

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

PROJECT	**136355.006.01 - Hampton / E**	**KSC**
SUBJECT	**Platform Mount Analysis**	
DATE	**03/08/22**	PAGE OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Tower Type		:	Monopole		
Ground Elevation	z_s	:	715	ft	[ASCE7 Hazard Tool]
Tower Height		:	150.00	ft	
Mount Elevation		:	137.00	ft	
Antenna Elevation		:	138.00	ft	
Crest Height		:	110	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	B		[Sec. 2.6.5.1.2]
Topography Category		:	5.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	121	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.18		
	S_1	:	0.05		
	S_{DS}	:	0.20		
	S_{D1}	:	0.09		

Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.08		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.72		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.97		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.39	in	[Sec. 2.6.10]

Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.098		[Sec. 2.7.7.1]
Amplification	A_s	:	2.653333		[Sec. 16.7]

	q_z	:	64.45	psf

PROJECT	**136355.006.01 - Hampton / E**		**KSC**
SUBJECT	**Platform Mount Analysis**		
DATE	**03/08/22**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
ERICSSON	RADIO 4460 B2/B25 B66_TMC	1	1.13	1.20	1.78	1.40	2.46	2.02	0.12	0.10	0.02	0.02
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.30	1.93	0.11	0.09	0.02	0.02
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
ERICSSON	RADIO 4460 B2/B25 B66_TMC	1	1.13	1.20	1.78	1.40	2.46	2.02	0.12	0.10	0.02	0.02
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.30	1.93	0.11	0.09	0.02	0.02
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01

PROJECT	**136355.006.01 - Hampton / E**		**KSC**
SUBJECT	**Platform Mount Analysis**		
DATE	**03/08/22**	PAGE 3	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0.5	4.20	1.28	3.13	0.75	3.73	1.26	0.20	0.05	0.04	0.01
ERICSSON	RADIO 4460 B2/B25 B66_TMC	1	1.13	1.20	1.78	1.40	2.46	2.02	0.12	0.10	0.02	0.02
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.47	0.17	0.09	0.04
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.30	1.93	0.11	0.09	0.02	0.02
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01
ERICSSON	AIR 6419 B41_TMO	0.5	1.73	1.20	2.63	1.14	3.21	1.60	0.18	0.08	0.03	0.01

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	0	
2	2	0	0.257667	-8.082904	
3	3	-7	0.257667	4.041452	
4	4	7	0.257667	4.041452	
5	5	3.622501	0.257667	2.091452	
6	6	-3.622501	0.257667	2.091452	
7	7	0	0.257667	-4.182904	
8	8	0	0	2.041452	
9	9	0	0.257667	4.041452	
10	10	0	0	4.041452	
11	11	0	0.257667	2.091452	
12	12	0	0	2.091452	
13	13	1.767949	0	-1.020726	
14	14	3.5	0.257667	-2.020726	
15	15	3.5	0	-2.020726	
16	16	1.81125	0.257667	-1.045726	
17	17	1.81125	0	-1.045726	
18	18	-1.767949	0	-1.020726	
19	19	-3.5	0.257667	-2.020726	
20	20	-3.5	0	-2.020726	
21	21	-1.81125	0.257667	-1.045726	
22	22	-1.81125	0	-1.045726	
23	23	0	0	1.04145	
24	24	0.901922	0	-0.520725	
25	25	-0.901922	0	-0.520725	
26	26	6	0.257667	4.041452	
27	27	6	0.257667	4.249783	
28	28	-0.333333	0.257667	4.041452	
29	29	-0.333333	0.257667	4.249783	
30	30	-0.333333	4.257667	4.249783	
31	31	-0.333333	4.257667	4.020617	
32	32	-6.5	4.257667	4.020617	
33	33	6.5	4.257667	4.020617	
34	34	-0.333333	6.591	4.249783	
35	35	-0.333333	-2.409	4.249783	
36	36	6	4.257667	4.249783	
37	37	6	4.257667	4.020617	
38	38	6	5.091	4.249783	
39	39	6	-0.909	4.249783	
40	40	-6	0.257667	4.041452	
41	41	-6	0.257667	4.249783	
42	42	-6	4.257667	4.020617	
43	43	-6	4.257667	4.270617	
44	44	-6	5.424334	4.270617	
45	45	-6	-3.575666	4.270617	
46	46	6.731956	4.257667	3.618857	
47	47	0.231956	4.257667	-7.639473	
48	48	-0.231956	4.257667	-7.639473	
49	49	-6.731956	4.257667	3.618857	
50	50	-0.62255	4.257667	-6.962945	
51	51	0.62255	4.257667	-6.962945	
52	52	-5.718812	4.257667	4.020617	
53	53	-6.341362	4.257667	2.942328	
54	54	6.341362	4.257667	2.942328	
55	55	5.718812	4.257667	4.020617	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
56	56	5.346162	4.257667	4.020617	
57	57	0.901923	6.257667	0.520724	
58	58	6.155036	4.257667	2.619601	
59	59	0.808875	4.257667	-6.64022	
60	60	-0.000002	6.257667	-1.04145	
61	61	-0.808875	4.257667	-6.64022	
62	62	-6.155037	4.257667	2.619604	
63	63	-0.901921	6.257667	0.520726	
64	64	-5.346157	4.257667	4.020617	
65	65	0.5	0.257667	-7.216878	
66	66	0.68042	0.257667	-7.321044	
67	67	3.666667	0.257667	-1.732051	
68	68	3.847087	0.257667	-1.836217	
69	69	3.847087	4.257667	-1.836217	
70	70	3.648623	4.257667	-1.721633	
71	71	3.847087	6.591	-1.836217	
72	72	3.847087	-2.409	-1.836217	
73	73	0.68042	4.257667	-7.321044	
74	74	0.481956	4.257667	-7.206461	
75	75	0.68042	5.091	-7.321044	
76	76	0.68042	-0.909	-7.321044	
77	77	6.5	0.257667	3.175426	
78	78	6.68042	0.257667	3.071261	
79	79	6.481956	4.257667	3.185844	
80	80	6.698463	4.257667	3.060844	
81	81	6.698463	5.424334	3.060844	
82	82	6.698463	-3.575666	3.060844	
83	83	-6.5	0.257667	3.175426	
84	84	-6.68042	0.257667	3.071261	
85	85	-3.333333	0.257667	-2.309401	
86	86	-3.513754	0.257667	-2.413567	
87	87	-3.513754	4.257667	-2.413567	
88	88	-3.315289	4.257667	-2.298983	
89	89	-3.513754	6.591	-2.413567	
90	90	-3.513754	-2.409	-2.413567	
91	91	-6.68042	4.257667	3.071261	
92	92	-6.481956	4.257667	3.185844	
93	93	-6.68042	5.091	3.071261	
94	94	-6.68042	-0.909	3.071261	
95	95	-0.5	0.257667	-7.216878	
96	96	-0.68042	0.257667	-7.321044	
97	97	-0.481956	4.257667	-7.206461	
98	98	-0.698463	4.257667	-7.331461	
99	99	-0.698463	5.424334	-7.331461	
100	100	-0.698463	-3.575666	-7.331461	

Node Boundary Conditions

	Node 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	25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	23	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	24	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	63	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	60	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	57	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
2	MF-P1	PIPE_1.5	Column	Pipe	A53 Gr.B	Typical	0.749	0.293	0.293	0.586
3	F1-ST1	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
4	F1-S1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
5	F1-S2	LL3x3x4x0	Beam	Double Angle (No Gap)	A36 Gr.36	Typical	2.88	4.5	2.46	0.063
6	MF-P2	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	F1-ST2	HSS4.5X4.5X4	Beam	Tube	A500 Gr.B Rect	Typical	3.84	11.4	11.4	18.5
8	MF-H2	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
9	C-A1	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
10	MOD Reinforcement Angles	L2.5x2.5x3	VBrace	Single Angle	A36 Gr.36	Typical	0.901	0.535	0.535	0.011

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	3	4	270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
2	2	4	2	270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
3	3	2	3	270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
4	4	2	7	180	F1-S2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
5	5	3	6	180	F1-S2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
6	6	4	5	180	F1-S2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
7	7	5	6	270	F1-S1	Beam	Single Angle	A36 Gr.36	Typical
8	8	7	5	270	F1-S1	Beam	Single Angle	A36 Gr.36	Typical
9	9	6	7	270	F1-S1	Beam	Single Angle	A36 Gr.36	Typical
10	10	10	8		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
11	11	9	10		RIGID	None	None	RIGID	Typical
12	12	11	12		RIGID	None	None	RIGID	Typical
13	13	15	13		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
14	14	14	15		RIGID	None	None	RIGID	Typical
15	15	16	17		RIGID	None	None	RIGID	Typical
16	16	20	18		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
17	17	19	20		RIGID	None	None	RIGID	Typical
18	18	21	22		RIGID	None	None	RIGID	Typical
19	19	8	23		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
20	20	13	24		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
21	21	18	25		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
22	22	26	27		RIGID	None	None	RIGID	Typical
23	23	28	29		RIGID	None	None	RIGID	Typical
24	24	30	31		RIGID	None	None	RIGID	Typical
25	25	32	33		MF-H2	Beam	Pipe	A53 Gr.B	Typical
26	26	34	35		MF-P2	Column	Pipe	A53 Gr.B	Typical
27	27	36	37		RIGID	None	None	RIGID	Typical
28	28	38	39		MF-P1	Column	Pipe	A53 Gr.B	Typical
29	29	40	41		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
30	30	42	43		RIGID	None	None	RIGID	Typical
31	31	44	45		MF-P2	Column	Pipe	A53 Gr.B	Typical
32	32	46	47		MF-H2	Beam	Pipe	A53 Gr.B	Typical
33	33	48	49		MF-H2	Beam	Pipe	A53 Gr.B	Typical
34	34	50	51	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical
35	35	52	53	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical
36	36	54	55	180	C-A1	Beam	Single Angle	A36 Gr.36	Typical
37	37	57	56		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
38	38	57	58		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
39	39	60	59		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
40	40	60	61		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
41	41	63	62		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
42	42	63	64		MOD Reinforcement Angles	VBrace	Single Angle	A36 Gr.36	Typical
43	43	65	66		RIGID	None	None	RIGID	Typical
44	44	67	68		RIGID	None	None	RIGID	Typical
45	45	69	70		RIGID	None	None	RIGID	Typical
46	46	71	72		MF-P2	Column	Pipe	A53 Gr.B	Typical
47	47	73	74		RIGID	None	None	RIGID	Typical
48	48	75	76		MF-P1	Column	Pipe	A53 Gr.B	Typical
49	49	77	78		RIGID	None	None	RIGID	Typical
50	50	79	80		RIGID	None	None	RIGID	Typical
51	51	81	82		MF-P2	Column	Pipe	A53 Gr.B	Typical
52	52	83	84		RIGID	None	None	RIGID	Typical
53	53	85	86		RIGID	None	None	RIGID	Typical
54	54	87	88		RIGID	None	None	RIGID	Typical
55	55	89	90		MF-P2	Column	Pipe	A53 Gr.B	Typical
56	56	91	92		RIGID	None	None	RIGID	Typical
57	57	93	94		MF-P1	Column	Pipe	A53 Gr.B	Typical
58	58	95	96		RIGID	None	None	RIGID	Typical
59	59	97	98		RIGID	None	None	RIGID	Typical
60	60	99	100		MF-P2	Column	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	1			Yes	N/A	None
2	2			Yes	N/A	None
3	3			Yes	N/A	None
4	4			Yes	N/A	None
5	5			Yes	N/A	None
6	6			Yes	N/A	None
7	7			Yes	N/A	None
8	8			Yes	N/A	None
9	9			Yes	N/A	None
10	10			Yes	N/A	None
11	11			Yes	** NA **	None
12	12			Yes	** NA **	None
13	13			Yes	N/A	None
14	14			Yes	** NA **	None
15	15			Yes	** NA **	None
16	16			Yes	N/A	None
17	17			Yes	** NA **	None
18	18			Yes	** NA **	None
19	19			Yes	N/A	None
20	20			Yes	N/A	None
21	21			Yes	N/A	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
22	22			Yes	** NA **	None
23	23			Yes	** NA **	None
24	24			Yes	** NA **	None
25	25			Yes	N/A	None
26	26			Yes	** NA **	None
27	27			Yes	** NA **	None
28	28			Yes	** NA **	None
29	29			Yes	** NA **	None
30	30			Yes	** NA **	None
31	31			Yes	** NA **	None
32	32			Yes	N/A	None
33	33			Yes	N/A	None
34	34			Yes	N/A	None
35	35			Yes	N/A	None
36	36			Yes	N/A	None
37	37	BenPIN	BenPIN	Yes	** NA **	None
38	38	BenPIN	BenPIN	Yes	** NA **	None
39	39	BenPIN	BenPIN	Yes	** NA **	None
40	40	BenPIN	BenPIN	Yes	** NA **	None
41	41	BenPIN	BenPIN	Yes	** NA **	None
42	42	BenPIN	BenPIN	Yes	** NA **	None
43	43			Yes	** NA **	None
44	44			Yes	** NA **	None
45	45			Yes	** NA **	None
46	46			Yes	** NA **	None
47	47			Yes	** NA **	None
48	48			Yes	** NA **	None
49	49			Yes	** NA **	None
50	50			Yes	** NA **	None
51	51			Yes	** NA **	None
52	52			Yes	** NA **	None
53	53			Yes	** NA **	None
54	54			Yes	** NA **	None
55	55			Yes	** NA **	None
56	56			Yes	** NA **	None
57	57			Yes	** NA **	None
58	58			Yes	** NA **	None
59	59			Yes	** NA **	None
60	60			Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lcomp top [ft]	Function
1	1	MF-H1	14	7	Lbyy	Lateral
2	2	MF-H1	14	7	Lbyy	Lateral
3	3	MF-H1	14	7	Lbyy	Lateral
4	4	F1-S2	3.9		Lbyy	Lateral
5	5	F1-S2	3.9		Lbyy	Lateral
6	6	F1-S2	3.9		Lbyy	Lateral
7	7	F1-S1	7.245		Lbyy	Lateral
8	8	F1-S1	7.245		Lbyy	Lateral
9	9	F1-S1	7.245		Lbyy	Lateral
10	10	F1-ST2	2		Lbyy	Lateral
11	13	F1-ST2	2		Lbyy	Lateral
12	16	F1-ST2	2		Lbyy	Lateral
13	19	F1-ST1	1		Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lcomp top [ft]	Function
14	20	F1-ST1	1		Lbyy	Lateral
15	21	F1-ST1	1		Lbyy	Lateral
16	25	MF-H2	13		Lbyy	Lateral
17	26	MF-P2	9		Lbyy	Lateral
18	28	MF-P1	6		Lbyy	Lateral
19	31	MF-P2	9		Lbyy	Lateral
20	32	MF-H2	13		Lbyy	Lateral
21	33	MF-H2	13		Lbyy	Lateral
22	34	C-A1	1.245		Lbyy	Lateral
23	35	C-A1	1.245		Lbyy	Lateral
24	36	C-A1	1.245		Lbyy	Lateral
25	37	MOD Reinforcement Angles	6		Lbyy	Lateral
26	38	MOD Reinforcement Angles	6		Lbyy	Lateral
27	39	MOD Reinforcement Angles	6		Lbyy	Lateral
28	40	MOD Reinforcement Angles	6		Lbyy	Lateral
29	41	MOD Reinforcement Angles	6		Lbyy	Lateral
30	42	MOD Reinforcement Angles	6		Lbyy	Lateral
31	46	MF-P2	9		Lbyy	Lateral
32	48	MF-P1	6		Lbyy	Lateral
33	51	MF-P2	9		Lbyy	Lateral
34	55	MF-P2	9		Lbyy	Lateral
35	57	MF-P1	6		Lbyy	Lateral
36	60	MF-P2	9		Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.02	%25
2	28	Y	-0.02	%95
3	28	Y	-0.109	%50
4	28	Y	0	0
5	28	Y	0	0
6	26	Y	-0.075	%5
7	26	Y	-0.075	%90
8	26	Y	-0.073	%40
9	26	Y	0	0
10	26	Y	0	0
11	31	Y	-0.048	%5
12	31	Y	-0.048	%35
13	31	Y	0	0
14	31	Y	0	0
15	31	Y	0	0
16	57	Y	-0.02	%25
17	57	Y	-0.02	%95
18	57	Y	-0.109	%50
19	57	Y	0	0
20	57	Y	0	0
21	55	Y	-0.075	%5
22	55	Y	-0.075	%90
23	55	Y	-0.073	%40
24	55	Y	0	0
25	55	Y	0	0
26	60	Y	-0.048	%5
27	60	Y	-0.048	%35
28	60	Y	0	0
29	60	Y	0	0

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
30	60	Y	0	0
31	48	Y	-0.02	%25
32	48	Y	-0.02	%95
33	48	Y	-0.109	%50
34	48	Y	0	0
35	48	Y	0	0
36	46	Y	-0.075	%5
37	46	Y	-0.075	%90
38	46	Y	-0.073	%40
39	46	Y	0	0
40	46	Y	0	0
41	51	Y	-0.048	%5
42	51	Y	-0.048	%35
43	51	Y	0	0
44	51	Y	0	0
45	51	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.202	%25
2	28	Z	-0.202	%95
3	28	Z	-0.124	%50
4	28	Z	0	0
5	28	Z	0	0
6	26	Z	-0.474	%5
7	26	Z	-0.474	%90
8	26	Z	-0.115	%40
9	26	Z	0	0
10	26	Z	0	0
11	31	Z	-0.184	%5
12	31	Z	-0.184	%35
13	31	Z	0	0
14	31	Z	0	0
15	31	Z	0	0
16	57	Z	-0.202	%25
17	57	Z	-0.202	%95
18	57	Z	-0.124	%50
19	57	Z	0	0
20	57	Z	0	0
21	55	Z	-0.474	%5
22	55	Z	-0.474	%90
23	55	Z	-0.115	%40
24	55	Z	0	0
25	55	Z	0	0
26	60	Z	-0.184	%5
27	60	Z	-0.184	%35
28	60	Z	0	0
29	60	Z	0	0
30	60	Z	0	0
31	48	Z	-0.202	%25
32	48	Z	-0.202	%95
33	48	Z	-0.124	%50
34	48	Z	0	0
35	48	Z	0	0
36	46	Z	-0.474	%5

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
37	46	Z	-0.474	%90
38	46	Z	-0.115	%40
39	46	Z	0	0
40	46	Z	0	0
41	51	Z	-0.184	%5
42	51	Z	-0.184	%35
43	51	Z	0	0
44	51	Z	0	0
45	51	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.048	%25
2	28	X	-0.048	%95
3	28	X	-0.098	%50
4	28	X	0	0
5	28	X	0	0
6	26	X	-0.172	%5
7	26	X	-0.172	%90
8	26	X	-0.092	%40
9	26	X	0	0
10	26	X	0	0
11	31	X	-0.079	%5
12	31	X	-0.079	%35
13	31	X	0	0
14	31	X	0	0
15	31	X	0	0
16	57	X	-0.048	%25
17	57	X	-0.048	%95
18	57	X	-0.098	%50
19	57	X	0	0
20	57	X	0	0
21	55	X	-0.172	%5
22	55	X	-0.172	%90
23	55	X	-0.092	%40
24	55	X	0	0
25	55	X	0	0
26	60	X	-0.079	%5
27	60	X	-0.079	%35
28	60	X	0	0
29	60	X	0	0
30	60	X	0	0
31	48	X	-0.048	%25
32	48	X	-0.048	%95
33	48	X	-0.098	%50
34	48	X	0	0
35	48	X	0	0
36	46	X	-0.172	%5
37	46	X	-0.172	%90
38	46	X	-0.092	%40
39	46	X	0	0
40	46	X	0	0
41	51	X	-0.079	%5
42	51	X	-0.079	%35
43	51	X	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
44	51	X	0	0
45	51	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.041	%25
2	28	Z	-0.041	%95
3	28	Z	-0.021	%50
4	28	Z	0	0
5	28	Z	0	0
6	26	Z	-0.089	%5
7	26	Z	-0.089	%90
8	26	Z	-0.02	%40
9	26	Z	0	0
10	26	Z	0	0
11	31	Z	-0.031	%5
12	31	Z	-0.031	%35
13	31	Z	0	0
14	31	Z	0	0
15	31	Z	0	0
16	57	Z	-0.041	%25
17	57	Z	-0.041	%95
18	57	Z	-0.021	%50
19	57	Z	0	0
20	57	Z	0	0
21	55	Z	-0.089	%5
22	55	Z	-0.089	%90
23	55	Z	-0.02	%40
24	55	Z	0	0
25	55	Z	0	0
26	60	Z	-0.031	%5
27	60	Z	-0.031	%35
28	60	Z	0	0
29	60	Z	0	0
30	60	Z	0	0
31	48	Z	-0.041	%25
32	48	Z	-0.041	%95
33	48	Z	-0.021	%50
34	48	Z	0	0
35	48	Z	0	0
36	46	Z	-0.089	%5
37	46	Z	-0.089	%90
38	46	Z	-0.02	%40
39	46	Z	0	0
40	46	Z	0	0
41	51	Z	-0.031	%5
42	51	Z	-0.031	%35
43	51	Z	0	0
44	51	Z	0	0
45	51	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.014	%25
2	28	X	-0.014	%95
3	28	X	-0.017	%50
4	28	X	0	0
5	28	X	0	0
6	26	X	-0.037	%5
7	26	X	-0.037	%90
8	26	X	-0.016	%40
9	26	X	0	0
10	26	X	0	0
11	31	X	-0.014	%5
12	31	X	-0.014	%35
13	31	X	0	0
14	31	X	0	0
15	31	X	0	0
16	57	X	-0.014	%25
17	57	X	-0.014	%95
18	57	X	-0.017	%50
19	57	X	0	0
20	57	X	0	0
21	55	X	-0.037	%5
22	55	X	-0.037	%90
23	55	X	-0.016	%40
24	55	X	0	0
25	55	X	0	0
26	60	X	-0.014	%5
27	60	X	-0.014	%35
28	60	X	0	0
29	60	X	0	0
30	60	X	0	0
31	48	X	-0.014	%25
32	48	X	-0.014	%95
33	48	X	-0.017	%50
34	48	X	0	0
35	48	X	0	0
36	46	X	-0.037	%5
37	46	X	-0.037	%90
38	46	X	-0.016	%40
39	46	X	0	0
40	46	X	0	0
41	51	X	-0.014	%5
42	51	X	-0.014	%35
43	51	X	0	0
44	51	X	0	0
45	51	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.012	%25
2	28	Z	-0.012	%95
3	28	Z	-0.008	%50
4	28	Z	0	0
5	28	Z	0	0
6	26	Z	-0.029	%5

Member Point Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	26	Z	-0.029	%90
8	26	Z	-0.007	%40
9	26	Z	0	0
10	26	Z	0	0
11	31	Z	-0.011	%5
12	31	Z	-0.011	%35
13	31	Z	0	0
14	31	Z	0	0
15	31	Z	0	0
16	57	Z	-0.012	%25
17	57	Z	-0.012	%95
18	57	Z	-0.008	%50
19	57	Z	0	0
20	57	Z	0	0
21	55	Z	-0.029	%5
22	55	Z	-0.029	%90
23	55	Z	-0.007	%40
24	55	Z	0	0
25	55	Z	0	0
26	60	Z	-0.011	%5
27	60	Z	-0.011	%35
28	60	Z	0	0
29	60	Z	0	0
30	60	Z	0	0
31	48	Z	-0.012	%25
32	48	Z	-0.012	%95
33	48	Z	-0.008	%50
34	48	Z	0	0
35	48	Z	0	0
36	46	Z	-0.029	%5
37	46	Z	-0.029	%90
38	46	Z	-0.007	%40
39	46	Z	0	0
40	46	Z	0	0
41	51	Z	-0.011	%5
42	51	Z	-0.011	%35
43	51	Z	0	0
44	51	Z	0	0
45	51	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.003	%25
2	28	X	-0.003	%95
3	28	X	-0.006	%50
4	28	X	0	0
5	28	X	0	0
6	26	X	-0.011	%5
7	26	X	-0.011	%90
8	26	X	-0.006	%40
9	26	X	0	0
10	26	X	0	0
11	31	X	-0.005	%5
12	31	X	-0.005	%35
13	31	X	0	0

Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	31	X	0	0
15	31	X	0	0
16	57	X	-0.003	%25
17	57	X	-0.003	%95
18	57	X	-0.006	%50
19	57	X	0	0
20	57	X	0	0
21	55	X	-0.011	%5
22	55	X	-0.011	%90
23	55	X	-0.006	%40
24	55	X	0	0
25	55	X	0	0
26	60	X	-0.005	%5
27	60	X	-0.005	%35
28	60	X	0	0
29	60	X	0	0
30	60	X	0	0
31	48	X	-0.003	%25
32	48	X	-0.003	%95
33	48	X	-0.006	%50
34	48	X	0	0
35	48	X	0	0
36	46	X	-0.011	%5
37	46	X	-0.011	%90
38	46	X	-0.006	%40
39	46	X	0	0
40	46	X	0	0
41	51	X	-0.005	%5
42	51	X	-0.005	%35
43	51	X	0	0
44	51	X	0	0
45	51	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Y	-0.056	%25
2	28	Y	-0.056	%95
3	28	Y	-0.05	%50
4	28	Y	0	0
5	28	Y	0	0
6	26	Y	-0.191	%5
7	26	Y	-0.191	%90
8	26	Y	-0.047	%40
9	26	Y	0	0
10	26	Y	0	0
11	31	Y	-0.062	%5
12	31	Y	-0.062	%35
13	31	Y	0	0
14	31	Y	0	0
15	31	Y	0	0
16	57	Y	-0.056	%25
17	57	Y	-0.056	%95
18	57	Y	-0.05	%50
19	57	Y	0	0
20	57	Y	0	0

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
21	55	Y	-0.191	%5
22	55	Y	-0.191	%90
23	55	Y	-0.047	%40
24	55	Y	0	0
25	55	Y	0	0
26	60	Y	-0.062	%5
27	60	Y	-0.062	%35
28	60	Y	0	0
29	60	Y	0	0
30	60	Y	0	0
31	48	Y	-0.056	%25
32	48	Y	-0.056	%95
33	48	Y	-0.05	%50
34	48	Y	0	0
35	48	Y	0	0
36	46	Y	-0.191	%5
37	46	Y	-0.191	%90
38	46	Y	-0.047	%40
39	46	Y	0	0
40	46	Y	0	0
41	51	Y	-0.062	%5
42	51	Y	-0.062	%35
43	51	Y	0	0
44	51	Y	0	0
45	51	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	Z	-0.011	%25
2	28	Z	-0.011	%95
3	28	Z	-0.028	%50
4	28	Z	0	0
5	28	Z	0	0
6	26	Z	-0.039	%5
7	26	Z	-0.039	%90
8	26	Z	-0.019	%40
9	26	Z	0	0
10	26	Z	0	0
11	31	Z	-0.025	%5
12	31	Z	-0.025	%35
13	31	Z	0	0
14	31	Z	0	0
15	31	Z	0	0
16	57	Z	-0.011	%25
17	57	Z	-0.011	%95
18	57	Z	-0.028	%50
19	57	Z	0	0
20	57	Z	0	0
21	55	Z	-0.039	%5
22	55	Z	-0.039	%90
23	55	Z	-0.019	%40
24	55	Z	0	0
25	55	Z	0	0
26	60	Z	-0.025	%5
27	60	Z	-0.025	%35

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
28	60	Z	0	0
29	60	Z	0	0
30	60	Z	0	0
31	48	Z	-0.011	%25
32	48	Z	-0.011	%95
33	48	Z	-0.028	%50
34	48	Z	0	0
35	48	Z	0	0
36	46	Z	-0.039	%5
37	46	Z	-0.039	%90
38	46	Z	-0.019	%40
39	46	Z	0	0
40	46	Z	0	0
41	51	Z	-0.025	%5
42	51	Z	-0.025	%35
43	51	Z	0	0
44	51	Z	0	0
45	51	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	28	X	-0.011	%25
2	28	X	-0.011	%95
3	28	X	-0.028	%50
4	28	X	0	0
5	28	X	0	0
6	26	X	-0.039	%5
7	26	X	-0.039	%90
8	26	X	-0.019	%40
9	26	X	0	0
10	26	X	0	0
11	31	X	-0.025	%5
12	31	X	-0.025	%35
13	31	X	0	0
14	31	X	0	0
15	31	X	0	0
16	57	X	-0.011	%25
17	57	X	-0.011	%95
18	57	X	-0.028	%50
19	57	X	0	0
20	57	X	0	0
21	55	X	-0.039	%5
22	55	X	-0.039	%90
23	55	X	-0.019	%40
24	55	X	0	0
25	55	X	0	0
26	60	X	-0.025	%5
27	60	X	-0.025	%35
28	60	X	0	0
29	60	X	0	0
30	60	X	0	0
31	48	X	-0.011	%25
32	48	X	-0.011	%95
33	48	X	-0.028	%50
34	48	X	0	0

Member Point Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
35	48	X	0	0
36	46	X	-0.039	%5
37	46	X	-0.039	%90
38	46	X	-0.019	%40
39	46	X	0	0
40	46	X	0	0
41	51	X	-0.025	%5
42	51	X	-0.025	%35
43	51	X	0	0
44	51	X	0	0
45	51	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	25	Y	-0.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%5

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	33	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	3	Y	-0.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	25	Y	-0.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	33	Y	-0.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	3	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	32	Y	-0.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	10	Y	-0.25	%5

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	16	Y	-0.25	%5

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	13	Y	-0.25	%5

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.029	-0.029	0	%100
2	2	Z	-0.029	-0.029	0	%100
3	3	Z	-0.029	-0.029	0	%100
4	4	Z	-0.04	-0.04	0	%100
5	5	Z	-0.04	-0.04	0	%100
6	6	Z	-0.04	-0.04	0	%100
7	7	Z	-0.029	-0.029	0	%100
8	8	Z	-0.029	-0.029	0	%100
9	9	Z	-0.029	-0.029	0	%100
10	10	Z	-0.028	-0.028	0	%100
11	13	Z	-0.028	-0.028	0	%100
12	16	Z	-0.028	-0.028	0	%100
13	19	Z	-0.024	-0.024	0	%100
14	20	Z	-0.024	-0.024	0	%100
15	21	Z	-0.024	-0.024	0	%100
16	25	Z	-0.014	-0.014	0	%100
17	26	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
18	28	Z	-0.011	-0.011	0	%100
19	31	Z	-0.014	-0.014	0	%100
20	32	Z	-0.014	-0.014	0	%100
21	33	Z	-0.014	-0.014	0	%100
22	34	Z	-0.016	-0.016	0	%100
23	35	Z	-0.016	-0.016	0	%100
24	36	Z	-0.016	-0.016	0	%100
25	37	Z	-0.024	-0.024	0	%100
26	38	Z	-0.024	-0.024	0	%100
27	39	Z	-0.024	-0.024	0	%100
28	40	Z	-0.024	-0.024	0	%100
29	41	Z	-0.024	-0.024	0	%100
30	42	Z	-0.024	-0.024	0	%100
31	46	Z	-0.014	-0.014	0	%100
32	48	Z	-0.011	-0.011	0	%100
33	51	Z	-0.014	-0.014	0	%100
34	55	Z	-0.014	-0.014	0	%100
35	57	Z	-0.011	-0.011	0	%100
36	60	Z	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.029	-0.029	0	%100
2	2	X	-0.029	-0.029	0	%100
3	3	X	-0.029	-0.029	0	%100
4	4	X	-0.04	-0.04	0	%100
5	5	X	-0.04	-0.04	0	%100
6	6	X	-0.04	-0.04	0	%100
7	7	X	-0.029	-0.029	0	%100
8	8	X	-0.029	-0.029	0	%100
9	9	X	-0.029	-0.029	0	%100
10	10	X	-0.028	-0.028	0	%100
11	13	X	-0.028	-0.028	0	%100
12	16	X	-0.028	-0.028	0	%100
13	19	X	-0.024	-0.024	0	%100
14	20	X	-0.024	-0.024	0	%100
15	21	X	-0.024	-0.024	0	%100
16	25	X	-0.014	-0.014	0	%100
17	26	X	-0.014	-0.014	0	%100
18	28	X	-0.011	-0.011	0	%100
19	31	X	-0.014	-0.014	0	%100
20	32	X	-0.014	-0.014	0	%100
21	33	X	-0.014	-0.014	0	%100
22	34	X	-0.016	-0.016	0	%100
23	35	X	-0.016	-0.016	0	%100
24	36	X	-0.016	-0.016	0	%100
25	37	X	-0.024	-0.024	0	%100
26	38	X	-0.024	-0.024	0	%100
27	39	X	-0.024	-0.024	0	%100
28	40	X	-0.024	-0.024	0	%100
29	41	X	-0.024	-0.024	0	%100
30	42	X	-0.024	-0.024	0	%100
31	46	X	-0.014	-0.014	0	%100
32	48	X	-0.011	-0.011	0	%100
33	51	X	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
34	55	X	-0.014	-0.014	0	%100
35	57	X	-0.011	-0.011	0	%100
36	60	X	-0.014	-0.014	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.01	-0.01	0	%100
2	2	Z	-0.01	-0.01	0	%100
3	3	Z	-0.01	-0.01	0	%100
4	4	Z	-0.011	-0.011	0	%100
5	5	Z	-0.011	-0.011	0	%100
6	6	Z	-0.011	-0.011	0	%100
7	7	Z	-0.01	-0.01	0	%100
8	8	Z	-0.01	-0.01	0	%100
9	9	Z	-0.01	-0.01	0	%100
10	10	Z	-0.009	-0.009	0	%100
11	13	Z	-0.009	-0.009	0	%100
12	16	Z	-0.009	-0.009	0	%100
13	19	Z	-0.008	-0.008	0	%100
14	20	Z	-0.008	-0.008	0	%100
15	21	Z	-0.008	-0.008	0	%100
16	25	Z	-0.003	-0.003	0	%100
17	26	Z	-0.003	-0.003	0	%100
18	28	Z	-0.002	-0.002	0	%100
19	31	Z	-0.003	-0.003	0	%100
20	32	Z	-0.003	-0.003	0	%100
21	33	Z	-0.003	-0.003	0	%100
22	34	Z	-0.007	-0.007	0	%100
23	35	Z	-0.007	-0.007	0	%100
24	36	Z	-0.007	-0.007	0	%100
25	37	Z	-0.009	-0.009	0	%100
26	38	Z	-0.009	-0.009	0	%100
27	39	Z	-0.009	-0.009	0	%100
28	40	Z	-0.009	-0.009	0	%100
29	41	Z	-0.009	-0.009	0	%100
30	42	Z	-0.009	-0.009	0	%100
31	46	Z	-0.003	-0.003	0	%100
32	48	Z	-0.002	-0.002	0	%100
33	51	Z	-0.003	-0.003	0	%100
34	55	Z	-0.003	-0.003	0	%100
35	57	Z	-0.002	-0.002	0	%100
36	60	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.01	-0.01	0	%100
2	2	X	-0.01	-0.01	0	%100
3	3	X	-0.01	-0.01	0	%100
4	4	X	-0.011	-0.011	0	%100
5	5	X	-0.011	-0.011	0	%100
6	6	X	-0.011	-0.011	0	%100
7	7	X	-0.01	-0.01	0	%100
8	8	X	-0.01	-0.01	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
9	9	X	-0.01	-0.01	0	%100
10	10	X	-0.009	-0.009	0	%100
11	13	X	-0.009	-0.009	0	%100
12	16	X	-0.009	-0.009	0	%100
13	19	X	-0.008	-0.008	0	%100
14	20	X	-0.008	-0.008	0	%100
15	21	X	-0.008	-0.008	0	%100
16	25	X	-0.003	-0.003	0	%100
17	26	X	-0.003	-0.003	0	%100
18	28	X	-0.002	-0.002	0	%100
19	31	X	-0.003	-0.003	0	%100
20	32	X	-0.003	-0.003	0	%100
21	33	X	-0.003	-0.003	0	%100
22	34	X	-0.007	-0.007	0	%100
23	35	X	-0.007	-0.007	0	%100
24	36	X	-0.007	-0.007	0	%100
25	37	X	-0.009	-0.009	0	%100
26	38	X	-0.009	-0.009	0	%100
27	39	X	-0.009	-0.009	0	%100
28	40	X	-0.009	-0.009	0	%100
29	41	X	-0.009	-0.009	0	%100
30	42	X	-0.009	-0.009	0	%100
31	46	X	-0.003	-0.003	0	%100
32	48	X	-0.002	-0.002	0	%100
33	51	X	-0.003	-0.003	0	%100
34	55	X	-0.003	-0.003	0	%100
35	57	X	-0.002	-0.002	0	%100
36	60	X	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0	%100
2	2	Z	-0.002	-0.002	0	%100
3	3	Z	-0.002	-0.002	0	%100
4	4	Z	-0.003	-0.003	0	%100
5	5	Z	-0.003	-0.003	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.002	-0.002	0	%100
10	10	Z	-0.002	-0.002	0	%100
11	13	Z	-0.002	-0.002	0	%100
12	16	Z	-0.002	-0.002	0	%100
13	19	Z	-0.002	-0.002	0	%100
14	20	Z	-0.002	-0.002	0	%100
15	21	Z	-0.002	-0.002	0	%100
16	25	Z	-0.0004	-0.0004	0	%100
17	26	Z	-0.0004	-0.0004	0	%100
18	28	Z	-0.0003	-0.0003	0	%100
19	31	Z	-0.0004	-0.0004	0	%100
20	32	Z	-0.0004	-0.0004	0	%100
21	33	Z	-0.0004	-0.0004	0	%100
22	34	Z	-0.001	-0.001	0	%100
23	35	Z	-0.001	-0.001	0	%100
24	36	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
25	37	Z	-0.002	-0.002	0	%100
26	38	Z	-0.002	-0.002	0	%100
27	39	Z	-0.002	-0.002	0	%100
28	40	Z	-0.002	-0.002	0	%100
29	41	Z	-0.002	-0.002	0	%100
30	42	Z	-0.002	-0.002	0	%100
31	46	Z	-0.0004	-0.0004	0	%100
32	48	Z	-0.0003	-0.0003	0	%100
33	51	Z	-0.0004	-0.0004	0	%100
34	55	Z	-0.0004	-0.0004	0	%100
35	57	Z	-0.0003	-0.0003	0	%100
36	60	Z	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0	%100
2	2	X	-0.002	-0.002	0	%100
3	3	X	-0.002	-0.002	0	%100
4	4	X	-0.003	-0.003	0	%100
5	5	X	-0.003	-0.003	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.002	-0.002	0	%100
10	10	X	-0.002	-0.002	0	%100
11	13	X	-0.002	-0.002	0	%100
12	16	X	-0.002	-0.002	0	%100
13	19	X	-0.002	-0.002	0	%100
14	20	X	-0.002	-0.002	0	%100
15	21	X	-0.002	-0.002	0	%100
16	25	X	-0.0004	-0.0004	0	%100
17	26	X	-0.0004	-0.0004	0	%100
18	28	X	-0.0003	-0.0003	0	%100
19	31	X	-0.0004	-0.0004	0	%100
20	32	X	-0.0004	-0.0004	0	%100
21	33	X	-0.0004	-0.0004	0	%100
22	34	X	-0.001	-0.001	0	%100
23	35	X	-0.001	-0.001	0	%100
24	36	X	-0.001	-0.001	0	%100
25	37	X	-0.002	-0.002	0	%100
26	38	X	-0.002	-0.002	0	%100
27	39	X	-0.002	-0.002	0	%100
28	40	X	-0.002	-0.002	0	%100
29	41	X	-0.002	-0.002	0	%100
30	42	X	-0.002	-0.002	0	%100
31	46	X	-0.0004	-0.0004	0	%100
32	48	X	-0.0003	-0.0003	0	%100
33	51	X	-0.0004	-0.0004	0	%100
34	55	X	-0.0004	-0.0004	0	%100
35	57	X	-0.0003	-0.0003	0	%100
36	60	X	-0.0004	-0.0004	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.01	-0.01	0	%100
2	2	Y	-0.01	-0.01	0	%100
3	3	Y	-0.01	-0.01	0	%100
4	4	Y	-0.014	-0.014	0	%100
5	5	Y	-0.014	-0.014	0	%100
6	6	Y	-0.014	-0.014	0	%100
7	7	Y	-0.01	-0.01	0	%100
8	8	Y	-0.01	-0.01	0	%100
9	9	Y	-0.01	-0.01	0	%100
10	10	Y	-0.013	-0.013	0	%100
11	13	Y	-0.013	-0.013	0	%100
12	16	Y	-0.013	-0.013	0	%100
13	19	Y	-0.012	-0.012	0	%100
14	20	Y	-0.012	-0.012	0	%100
15	21	Y	-0.012	-0.012	0	%100
16	25	Y	-0.006	-0.006	0	%100
17	26	Y	-0.006	-0.006	0	%100
18	28	Y	-0.006	-0.006	0	%100
19	31	Y	-0.006	-0.006	0	%100
20	32	Y	-0.006	-0.006	0	%100
21	33	Y	-0.006	-0.006	0	%100
22	34	Y	-0.008	-0.008	0	%100
23	35	Y	-0.008	-0.008	0	%100
24	36	Y	-0.008	-0.008	0	%100
25	37	Y	-0.008	-0.008	0	%100
26	38	Y	-0.008	-0.008	0	%100
27	39	Y	-0.008	-0.008	0	%100
28	40	Y	-0.008	-0.008	0	%100
29	41	Y	-0.008	-0.008	0	%100
30	42	Y	-0.008	-0.008	0	%100
31	46	Y	-0.006	-0.006	0	%100
32	48	Y	-0.006	-0.006	0	%100
33	51	Y	-0.006	-0.006	0	%100
34	55	Y	-0.006	-0.006	0	%100
35	57	Y	-0.006	-0.006	0	%100
36	60	Y	-0.006	-0.006	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.001	-0.001	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.001	-0.001	0	%100
4	4	Z	-0.003	-0.003	0	%100
5	5	Z	-0.003	-0.003	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.001	-0.001	0	%100
9	9	Z	-0.001	-0.001	0	%100
10	10	Z	-0.004	-0.004	0	%100
11	13	Z	-0.004	-0.004	0	%100
12	16	Z	-0.004	-0.004	0	%100
13	19	Z	-0.003	-0.003	0	%100
14	20	Z	-0.003	-0.003	0	%100
15	21	Z	-0.003	-0.003	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	25	Z	-0.001	-0.001	0	%100
17	26	Z	-0.001	-0.001	0	%100
18	28	Z	-0.0007	-0.0007	0	%100
19	31	Z	-0.001	-0.001	0	%100
20	32	Z	-0.001	-0.001	0	%100
21	33	Z	-0.001	-0.001	0	%100
22	34	Z	-0.001	-0.001	0	%100
23	35	Z	-0.001	-0.001	0	%100
24	36	Z	-0.001	-0.001	0	%100
25	37	Z	-0.0008	-0.0008	0	%100
26	38	Z	-0.0008	-0.0008	0	%100
27	39	Z	-0.0008	-0.0008	0	%100
28	40	Z	-0.0008	-0.0008	0	%100
29	41	Z	-0.0008	-0.0008	0	%100
30	42	Z	-0.0008	-0.0008	0	%100
31	46	Z	-0.001	-0.001	0	%100
32	48	Z	-0.0007	-0.0007	0	%100
33	51	Z	-0.001	-0.001	0	%100
34	55	Z	-0.001	-0.001	0	%100
35	57	Z	-0.0007	-0.0007	0	%100
36	60	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.001	-0.001	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.001	-0.001	0	%100
4	4	X	-0.003	-0.003	0	%100
5	5	X	-0.003	-0.003	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.001	-0.001	0	%100
9	9	X	-0.001	-0.001	0	%100
10	10	X	-0.004	-0.004	0	%100
11	13	X	-0.004	-0.004	0	%100
12	16	X	-0.004	-0.004	0	%100
13	19	X	-0.003	-0.003	0	%100
14	20	X	-0.003	-0.003	0	%100
15	21	X	-0.003	-0.003	0	%100
16	25	X	-0.001	-0.001	0	%100
17	26	X	-0.001	-0.001	0	%100
18	28	X	-0.0007	-0.0007	0	%100
19	31	X	-0.001	-0.001	0	%100
20	32	X	-0.001	-0.001	0	%100
21	33	X	-0.001	-0.001	0	%100
22	34	X	-0.001	-0.001	0	%100
23	35	X	-0.001	-0.001	0	%100
24	36	X	-0.001	-0.001	0	%100
25	37	X	-0.0008	-0.0008	0	%100
26	38	X	-0.0008	-0.0008	0	%100
27	39	X	-0.0008	-0.0008	0	%100
28	40	X	-0.0008	-0.0008	0	%100
29	41	X	-0.0008	-0.0008	0	%100
30	42	X	-0.0008	-0.0008	0	%100
31	46	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
32	48	X	-0.0007	-0.0007	0	%100
33	51	X	-0.001	-0.001	0	%100
34	55	X	-0.001	-0.001	0	%100
35	57	X	-0.0007	-0.0007	0	%100
36	60	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	7	Y	-0.01	-0.01	0.009	7.236
2	3	Y	-0.002	-0.005	0	2.333
3	3	Y	-0.005	-0.009	2.333	4.667
4	3	Y	-0.009	-0.012	4.667	7
5	3	Y	-0.012	-0.009	7	9.333
6	3	Y	-0.009	-0.005	9.333	11.667
7	3	Y	-0.005	-0.002	11.667	14
8	4	Y	-0.002	-0.009	0	1.95
9	4	Y	-0.009	-0.017	1.95	3.9
10	9	Y	-0.01	-0.01	0.009	7.236
11	2	Y	-0.002	-0.005	0	2.333
12	2	Y	-0.005	-0.009	2.333	4.667
13	2	Y	-0.009	-0.012	4.667	7
14	2	Y	-0.012	-0.009	7	9.333
15	2	Y	-0.009	-0.005	9.333	11.667
16	2	Y	-0.005	-0.002	11.667	14
17	8	Y	-0.01	-0.01	0.009	7.236
18	1	Y	-0.0002018	-0.006	0	2
19	1	Y	-0.006	-0.01	2	4
20	1	Y	-0.01	-0.009	4	6
21	1	Y	-0.009	-0.009	6	8
22	1	Y	-0.009	-0.01	8	10
23	1	Y	-0.01	-0.006	10	12
24	1	Y	-0.006	-0.0002018	12	14
25	5	Y	-0.002	-0.009	0	1.95
26	5	Y	-0.009	-0.017	1.95	3.9
27	6	Y	-0.002	-0.009	0	1.95
28	6	Y	-0.009	-0.017	1.95	3.9

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.0001337	-0.004	0	2
2	1	Y	-0.004	-0.006	2	4
3	1	Y	-0.006	-0.006	4	6
4	1	Y	-0.006	-0.006	6	8
5	1	Y	-0.006	-0.006	8	10
6	1	Y	-0.006	-0.004	10	12
7	1	Y	-0.004	-0.0001337	12	14
8	5	Y	-0.001	-0.006	0	1.95
9	5	Y	-0.006	-0.012	1.95	3.9
10	6	Y	-0.001	-0.006	0	1.95
11	6	Y	-0.006	-0.012	1.95	3.9
12	7	Y	-0.007	-0.007	0.009	7.236
13	3	Y	-0.001	-0.004	0	2.333
14	3	Y	-0.004	-0.006	2.333	4.667

Member Distributed Loads (BLC 31 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
15	3	Y	-0.006	-0.008	4.667	7
16	3	Y	-0.008	-0.006	7	9.333
17	3	Y	-0.006	-0.004	9.333	11.667
18	3	Y	-0.004	-0.001	11.667	14
19	4	Y	-0.001	-0.007	0	1.95
20	4	Y	-0.007	-0.012	1.95	3.9
21	9	Y	-0.007	-0.007	0.009	7.236
22	2	Y	-0.001	-0.004	0	2.333
23	2	Y	-0.004	-0.006	2.333	4.667
24	2	Y	-0.006	-0.008	4.667	7
25	2	Y	-0.008	-0.006	7	9.333
26	2	Y	-0.006	-0.004	9.333	11.667
27	2	Y	-0.004	-0.001	11.667	14
28	8	Y	-0.007	-0.007	0.009	7.236

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	3	6	5	4	Y	Two Way	-0.01
2	2	7	6	3	Y	Two Way	-0.01
3	4	5	7	2	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	3	6	5	4	Y	Two Way	-0.007
2	2	7	6	3	Y	Two Way	-0.007
3	4	5	7	2	Y	Two Way	-0.007

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	40	L	Y	-0.5
2	77	L	Y	-0.5
3	95	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	28	L	Y	-0.5
2	67	L	Y	-0.5
3	85	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	26	L	Y	-0.5
2	65	L	Y	-0.5
3	83	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		45		3
2	0 Wind - No Ice	WLZ			45	36	
3	90 Wind - No Ice	WLX			45	36	
4	0 Wind - Ice	WLZ			45	36	
5	90 Wind - Ice	WLX			45	36	
6	0 Wind - Service	WLZ			45	36	
7	90 Wind - Service	WLX			45	36	
8	Ice	OL1			45	36	3
9	0 Seismic	ELZ			45	36	
10	90 Seismic	ELX			45	36	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL			1		
25	Maint LL 11	LL			1		
26	Maint LL 12	LL			1		
27	Maint LL 13	LL			1		
28	Maint LL 14	LL			1		
29	Maint LL 15	LL			1		
30	BLC 1 Transient Area Loads	None				28	
31	BLC 8 Transient Area Loads	None				28	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	25	max	1.477	6	1.447	23	2.6	2	1.891	56	2.468	13	-0.071	6
2		min	-1.461	12	0.205	5	-2.631	8	0.233	2	-2.457	7	-3.029	24
3	23	max	2.229	5	1.472	15	1.277	2	-0.141	9	1.877	5	0.476	4
4		min	-2.262	11	0.027	9	-1.285	8	-3.542	15	-1.865	11	-0.549	10
5	24	max	1.438	4	1.473	19	2.762	2	2.19	8	2.507	9	3.098	55
6		min	-1.42	10	0.053	13	-2.735	8	-0.818	2	-2.492	3	0.521	13
7	63	max	3.464	18	1.476	19	0.259	13	0.003	8	0.001	8	0.001	2
8		min	0.057	12	0.066	13	-2.041	19	-0.002	2	-0.001	2	-0.001	8
9	60	max	0.341	5	1.512	14	4.104	14	0	7	0.001	3	0.003	3
10		min	-0.361	11	-0.137	8	-0.577	8	0	13	-0.001	9	-0.002	9
11	57	max	-0.09	4	1.473	22	0.158	3	0.002	6	0.001	12	0.001	5
12		min	-3.438	22	0.1	4	-2.058	21	-0.002	12	-0.001	6	-0.001	11
13	Totals:	max	7.348	5	8.16	20	10.854	2						
14		min	-7.348	11	3.687	2	-10.854	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	L3X3X4	0.573	7	3	0.201	7	y	2	15.746	46.656	1.688	2.161	1	H2-1
2	2	L3X3X4	0.685	7	8	0.219	7	y	5	15.746	46.656	1.688	2.161	1	H2-1
3	3	L3X3X4	0.52	7	12	0.226	7	y	10	15.746	46.656	1.688	2.161	1	H2-1
4	4	LL3x3x4x0	0.115	3.9	2	0.028	3.9	z	39	76.391	93.312	6.48	4.361	1.907	H1-1b
5	5	LL3x3x4x0	0.098	0	8	0.028	3.9	z	44	76.391	93.312	6.48	4.361	1.739	H1-1b
6	6	LL3x3x4x0	0.098	3.9	9	0.028	3.9	z	47	76.391	93.312	6.48	4.361	1.506	H1-1b
7	7	L3X3X4	0.377	3.623	3	0.016	3.623	z	17	14.729	46.656	1.688	3.167	1.347	H2-1
8	8	L3X3X4	0.453	3.623	8	0.02	3.623	z	8	14.729	46.656	1.688	3.14	1.304	H2-1

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
9	9	L3X3X4	0.467	3.623	8	0.02	3.623	z	8	14.729	46.656	1.688	3.205	1.412	H2-1
10	10	HSS4.5X4.5X4	0.107	2	50	0.08	2	z	11	156.915	158.976	20.907	20.907	1.708	H1-1b
11	13	HSS4.5X4.5X4	0.109	1.938	8	0.12	2	z	2	156.915	158.976	20.907	20.907	1.799	H1-1b
12	16	HSS4.5X4.5X4	0.106	2	57	0.115	2	z	7	156.915	158.976	20.907	20.907	1.706	H1-1b
13	19	HSS4X4X4	0.267	1	4	0.097	1	z	11	138.935	139.518	16.181	16.181	1.198	H1-1b
14	20	HSS4X4X4	0.325	1	8	0.146	1	z	2	138.935	139.518	16.181	16.181	1.193	H1-1b
15	21	HSS4X4X4	0.283	1	13	0.14	1	z	7	138.935	139.518	16.181	16.181	1.175	H1-1b
16	25	PIPE_2.0	0.99	6.094	8	0.561	1.083		8	5.82	32.13	1.872	1.872	1.863	H3-6
17	26	PIPE_2.0	0.563	6.281	2	0.063	6.281		13	12.144	32.13	1.872	1.872	3	H1-1b
18	28	PIPE_1.5	0.469	4.812	4	0.053	4.812		3	11.974	23.593	1.105	1.105	1.907	H1-1b
19	31	PIPE_2.0	0.408	1.219	2	0.03	1.219		2	12.144	32.13	1.872	1.872	1.509	H1-1b
20	32	PIPE_2.0	0.771	6.229	2	0.398	1.083		12	5.82	32.13	1.872	1.872	1.604	H1-1a
21	33	PIPE_2.0	0.882	6.094	3	0.495	1.083		3	5.82	32.13	1.872	1.872	2.685	H3-6
22	34	L2.5x2.5x4	0.44	1.245	5	0.288	0	y	2	36.654	38.556	1.114	2.537	1.386	H2-1
23	35	L2.5x2.5x4	0.581	1.245	8	0.22	0	y	6	36.654	38.556	1.114	2.537	1.5	H2-1
24	36	L2.5x2.5x4	0.59	1.245	13	0.248	0	y	10	36.654	38.556	1.114	2.537	1.148	H2-1
25	37	L2.5x2.5x3	0.211	3	7	0.018	6	z	12	9.122	29.192	0.873	1.531	1.136	H2-1
26	38	L2.5x2.5x3	0.207	3	13	0.019	6	z	13	9.122	29.192	0.873	1.531	1.136	H2-1
27	39	L2.5x2.5x3	0.19	3	11	0.021	6	z	3	9.122	29.192	0.873	1.531	1.136	H2-1
28	40	L2.5x2.5x3	0.198	3	5	0.019	6	z	5	9.122	29.192	0.873	1.531	1.136	H2-1
29	41	L2.5x2.5x3	0.198	3	3	0.021	6	z	8	9.122	29.192	0.873	1.531	1.136	H2-1
30	42	L2.5x2.5x3	0.221	3	9	0.019	6	z	9	9.122	29.192	0.873	1.531	1.136	H2-1
31	46	PIPE_2.0	0.486	6.281	8	0.053	6.375		8	12.144	32.13	1.872	1.872	2.384	H1-1b
32	48	PIPE_1.5	0.678	4.812	8	0.074	4.812		8	11.974	23.593	1.105	1.105	1.867	H1-1b
33	51	PIPE_2.0	0.41	1.219	8	0.03	1.219		8	12.144	32.13	1.872	1.872	1.509	H1-1b
34	55	PIPE_2.0	0.519	6.281	8	0.058	6.281		8	12.144	32.13	1.872	1.872	3	H1-1b
35	57	PIPE_1.5	0.565	4.812	13	0.064	4.812		13	11.974	23.593	1.105	1.105	1.959	H1-1b
36	60	PIPE_2.0	0.406	1.219	2	0.03	1.219		2	12.144	32.13	1.872	1.872	1.509	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

PROJECT	**136355.006.01 - Hampton / Bernier, C KSC**				
SUBJECT	**Platform Mount Analysis**				
DATE	**03/08/22**	PAGE	1	OF	1

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.277	k
Vertical Shear	:	1.472	k
Horizontal Shear	:	2.229	k
Torsion	:	0.476	k.ft
Moment from Horizontal Forces	:	1.877	k.ft
Moment from Vertical Forces	:	-0.141	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	2.67	k
Force from Horz. Moment	:	3.40	k
Force from Vert. Moment	:	-0.26	k
Shear Load / Bolt	:	0.67	k
Tension Load / Bolt	:	0.32	k
Resultant from Moments / Bolt	:	1.70	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**9.77%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**8.93%**		**OKAY**
Unity Check, Combined	:	**18.70%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**1.93%**		**OKAY**

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: CT11511A

876390
116 Grant Hill Road
Brooklyn, Connecticut 06234

April 7, 2022

EBI Project Number: 6222002218

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.51%**

April 7, 2022

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

Emissions Analysis for Site: CT11511A - 876390

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **116 Grant Hill Road** in **Brooklyn, 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 116 Grant Hill Road in Brooklyn, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 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 APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave

dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 138 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 APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts
ERP (W):	14,005.63	ERP (W):	14,005.63	ERP (W):	14,005.63
Antenna A1 MPE %:	**2.89%**	Antenna B1 MPE %:	**2.89%**	Antenna C1 MPE %:	**2.89%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
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	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A2 MPE %:	**2.04%**	Antenna B2 MPE %:	**2.04%**	Antenna C2 MPE %:	**2.04%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	31,011.95	ERP (W):	31,011.95	ERP (W):	31,011.95
Antenna A3 MPE %:	**6.40%**	Antenna B3 MPE %:	**6.40%**	Antenna C3 MPE %:	**6.40%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	11.33%
Sprint	2.62%
AT&T	2.35%
Verizon	14.9%
CL&P	0.31%
Site Total MPE % :	31.51%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	11.33%
T-Mobile Sector B Total:	11.33%
T-Mobile Sector C Total:	11.33%
Site Total MPE % :	31.51%

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 1900 MHz GSM	4	1167.14	138.0	9.63	1900 MHz GSM	1000	0.96%
T-Mobile 1900 MHz LTE	2	2334.27	138.0	9.63	1900 MHz LTE	1000	0.96%
T-Mobile 2100 MHz LTE	2	2334.27	138.0	9.63	2100 MHz LTE	1000	0.96%
T-Mobile 600 MHz LTE	2	591.73	138.0	2.44	600 MHz LTE	400	0.61%
T-Mobile 600 MHz NR	1	1577.94	138.0	3.26	600 MHz NR	400	0.81%
T-Mobile 700 MHz LTE	2	695.22	138.0	2.87	700 MHz LTE	467	0.61%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	9619.47	138.0	19.85	2500 MHz LTE 1C & 2C Traffic	1000	1.98%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	717.84	138.0	1.48	2500 MHz LTE 1C & 2C Broadcast	1000	0.15%
T-Mobile 2500 MHz NR Traffic	1	19238.94	138.0	39.70	2500 MHz NR Traffic	1000	3.97%
T-Mobile 2500 MHz NR Broadcast	1	1435.69	138.0	2.96	2500 MHz NR Broadcast	1000	0.30%
						Total:	**11.33%**

• 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:	11.33%
Sector B:	11.33%
Sector C:	11.33%
T-Mobile Maximum MPE % (Sector A):	11.33%
Site Total:	31.51%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.51%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

T-Mobile

T-MOBILE SITE NUMBER: CT11511A
T-MOBILE SITE NAME: SPRINT - BROOKLYN
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'

BUSINESS UNIT #: 876390
SITE ADDRESS: 116 GRANT HILL RD.
BROOKLYN, CT 06234
COUNTY: WINDHAM
JURISDICTION: CT - TOWN OF BROOKLYN

T-MOBILE ANCHOR **SITE CONFIGURATION:** 67D5D998E ODE+6160

SITE INFORMATION

CROWN CASTLE USA INC.		
SITE NAME:	HAMPTON / BERNIER	
SITE ADDRESS:	116 GRANT HILL RD. BROOKLYN, CT 06234	
COUNTY:	WINDHAM	
MAP/PARCEL #:	6019-3735	
AREA OF CONSTRUCTION:	EXISTING	
LATITUDE:	41.791553	(41° 47' 29.59")
LONGITUDE:	-72.015125	(-72° 00' 54.44")
LAT/LONG TYPE:	NAD83	
GROUND ELEVATION:	722' AMSL	
CURRENT ZONING:	RESIDENTIAL	
JURISDICTION:	CT - TOWN OF BROOKLYN	
OCCUPANCY CLASSIFICATION:	U	
TYPE OF CONSTRUCTION:	IIB	
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION	
PROPERTY OWNER:	SPRINT SPECTRUM MCMURRAY PA 15317	
TOWER OWNER:	CROWN CASTLE INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317	
CARRIER/APPLICANT:	T-MOBILE LLC 35 GRIFFIN ROAD BLOOMFIELD, CT 06002	
ELECTRIC PROVIDER:	NORTHEAST UTILITIES	
TELCO PROVIDER:	FIBERAPP	

FLOODPLAIN INFORMATION

THIS SITE IS NOT IN ANY SPECIAL FLOOD HAZARD AREAS OR FUTURE CONDITIONS FLOOD HAZARD AREAS, AS SHOWN ON:
FIRM PANEL(S): 0901640004A
EFFECTIVE DATE(S): 1/3/1985

PROJECT TEAM

A&E FIRM:	P. MARSHALL & ASSOCIATES, LLC 3545 WHITEHALL PARK DRIVE SUITE 450 CHARLOTTE NC 28273 478-542-3291
CROWN CASTLE USA INC. DISTRICT CONTACTS:	CROWN CASTLE 46 BROADWAY MENANDS, NY 12204 SUSAN PALM SUSAN.PALM@CROWNCASTLE.COM 205-909-2049

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
GN-1	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EXISTING & PROPOSED EQUIPMENT PLAN
C-2	EXISTING & FINAL ELEVATION
C-3	ANTENNA PLANS & SCHEDULE
C-4	MOUNTING DETAILS
C-5	TOWER EQUIPMENT SPECIFICATIONS
C-6	RF SPECIFICATIONS
C-7	CABINET SPECIFICATIONS
C-8	ICE BRIDGE DETAILS
C-9	EQUIPMENT DETAILS
E-1	UTILITY ROUTING AND GROUNDING PLAN
E-2	AC PANEL SCHEDULES & ONE LINE DIAGRAM
E-3	COLOR CODING CHART
G-1	ANTENNA GROUNDING DETAILS
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. 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 (3) TMAs
- REMOVE (6) 1-5/8" COAX CABLES
- INSTALL (3) ANTENNAS
- INSTALL (3) RRHs
- INSTALL (2) 6x24 4AWG HYBRID CABLES

GROUND SCOPE OF WORK:
- REMOVE (1) APPLETON GENERATOR RECEPTACLE
- INSTALL (1) INTERSECT CAM-LOK GENERATOR ENCLOSURE
- INSTALL ICE BRIDGE
- INSTALL 6160 & B160 CABINETS

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

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 CT STATE BUILDING CODE (IBC 2015)
MECHANICAL	2018 CT STATE MECHANICAL CODE (IMC 2015)
ELECTRICAL	2017 ELECTRICAL CODE - NFPA 70
ANSI/TIA	
TIA-222-G, TIA-598-C, TIA-6087-B, TIA-569-B, TIA-568-C, TIA-1019-A	

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD # CN9-365R2 / 2200039
DATED:	03/15/22
MOUNT ANALYSIS:	B+T GRP 136355.006.01
DATED:	03/08/22
RFDS REVISION:	4
DATED:	02/15/22
ORDER ID:	607752
REVISION:	0

APPROVALS

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

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

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

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.

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: T-1
REVISION: 0

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," CED-STD-10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
2. CARRIER: T-MOBILE
3. TOWER OWNER: CROWN CASTLE USA INC.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
11. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
12. 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.
13. 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.
14. 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.
15. 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.
16. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   - SLAB AND WALLS........ 3/4"
   - BEAMS AND COLUMNS........ 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

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

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).

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

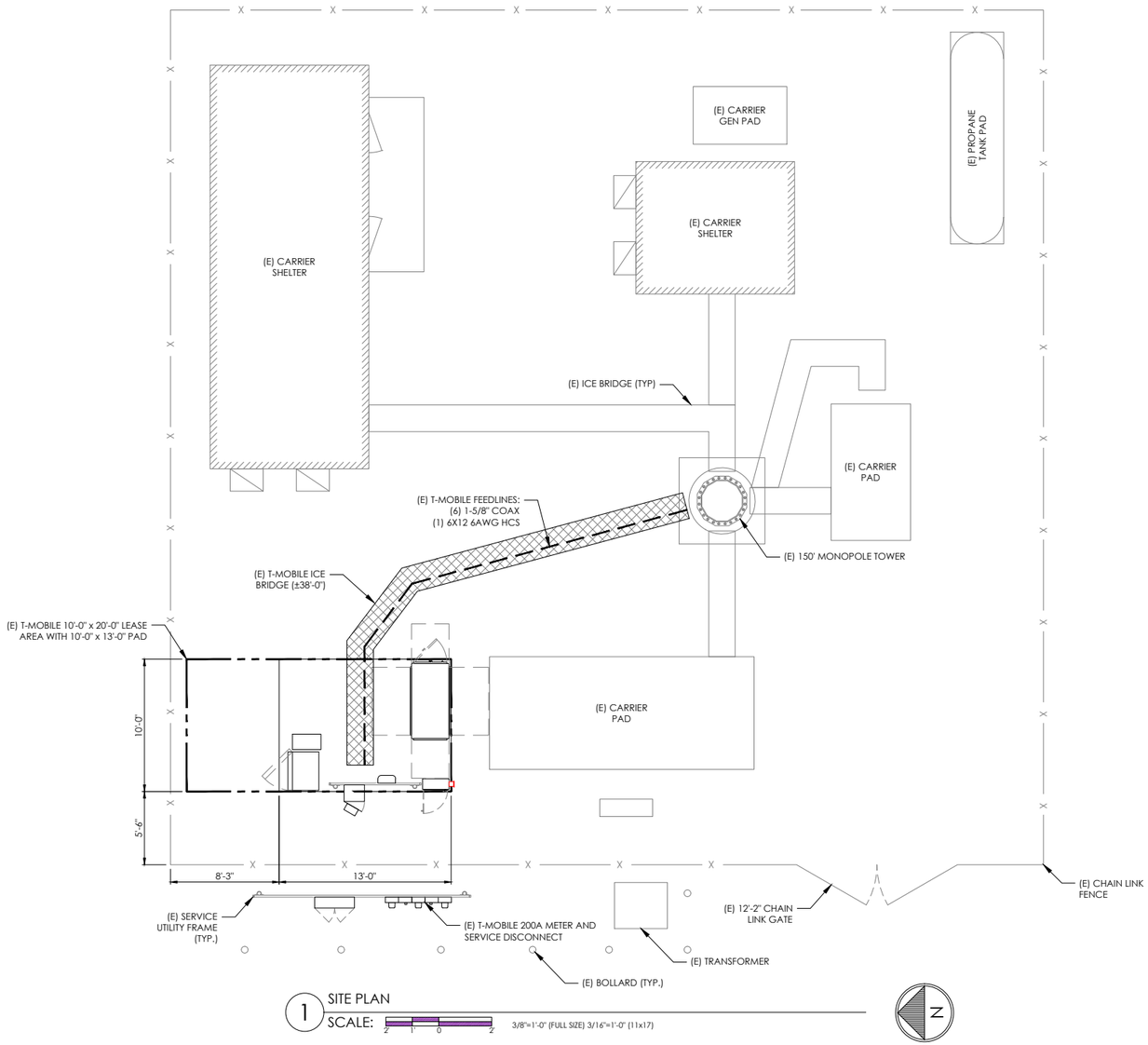
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED
PROFESSIONAL ENGINEER
03/30/2022

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: GN-1
REVISION: 0



GENERAL NOTES

1. ALL MATERIAL AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY. FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND OF QUALITY OF MATERIAL AND EQUIPMENT BEING SUBSTITUTED.
2. ACCESS TO PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS WITH THE LEASING AGENT FOR APPROVAL.
3. CONTRACTOR SHALL HAVE PRESENT ON SITE CURRENT CARRIER SUPPLIED INFORMATION PRIOR TO COMMENCE OF WORK; IE. RFDS, DESIGN DOCUMENTS SPECIFIC TO SITE AND CONFIGURATION. NOTIFY CONSTRUCTION MANAGER OF ANY DISCREPANCY PRIOR TO ARRIVAL AT SITE.
4. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTION SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
5. ALL DAMAGE TO EXISTING UNDERGROUND, OVERHEAD OBSTACLES AND/OR EXISTING EQUIPMENT, PAD OR SHELTERS SHALL BE REPLACED BACK TO FULL ORIGINAL OR BETTER CONDITION & SHALL MATCH EXISTING CONDITIONS BY REPAIRS AT GENERAL CONTRACTOR EXPENSE.
6. THE EXISTING TREES AND VEGETATION ARE SUFFICIENT TO PROVIDE THE REQUIRED SCREENING PER LOCAL ORDINANCE. IF THE VEGETATION IS REMOVED OR DAMAGED, NEW LANDSCAPING/ SCREENING WILL BE INSTALLED TO MEET LOCAL ORDINANCE REQUIREMENTS. REPLACE DEAD OR DYING SHRUBS AS NEEDED. REPLACEMENT SHOULD BE DONE IN THE FALL WHEN WEATHER IS COOLER.

T-Mobile
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STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

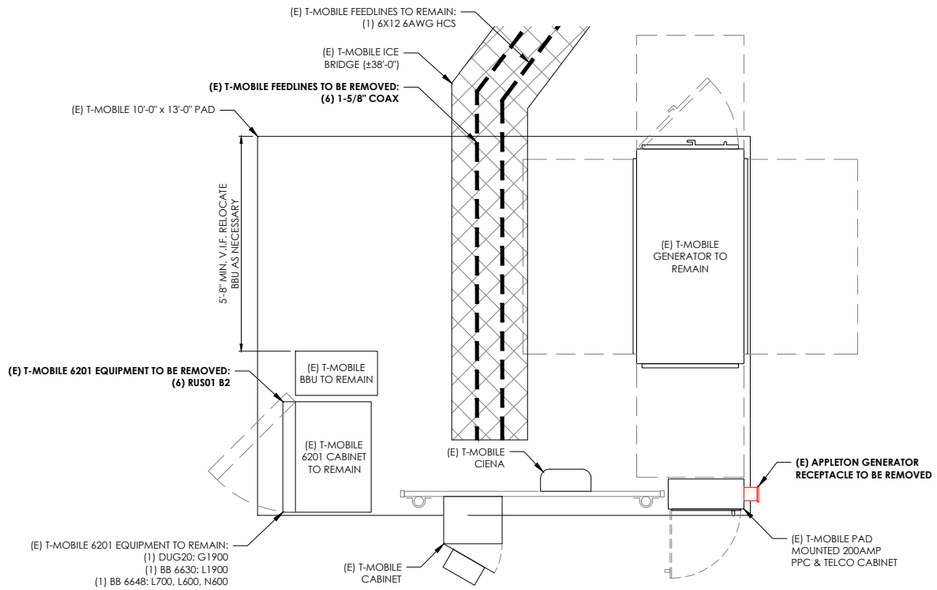
PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-1.1

REVISION: 0

NOTE:

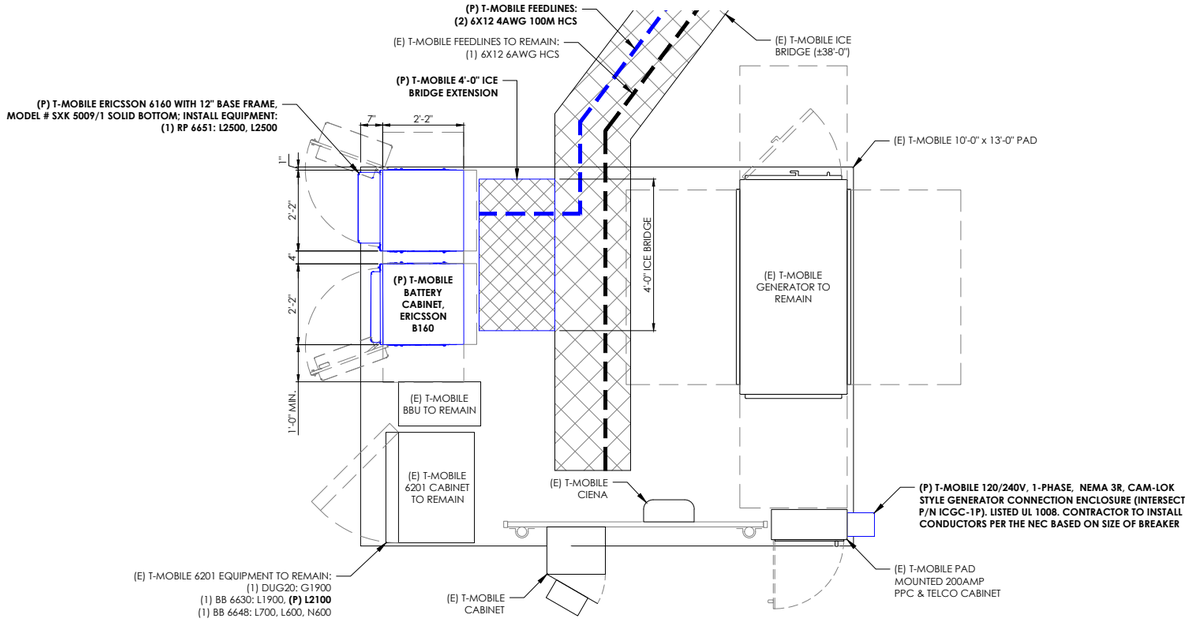
THIS SHEET HAS BEEN PRODUCED USING INFORMATION PROVIDED BY CROWN CASTLE.



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

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-1.2

REVISION: 0

T-MOBILE EQUIPMENT

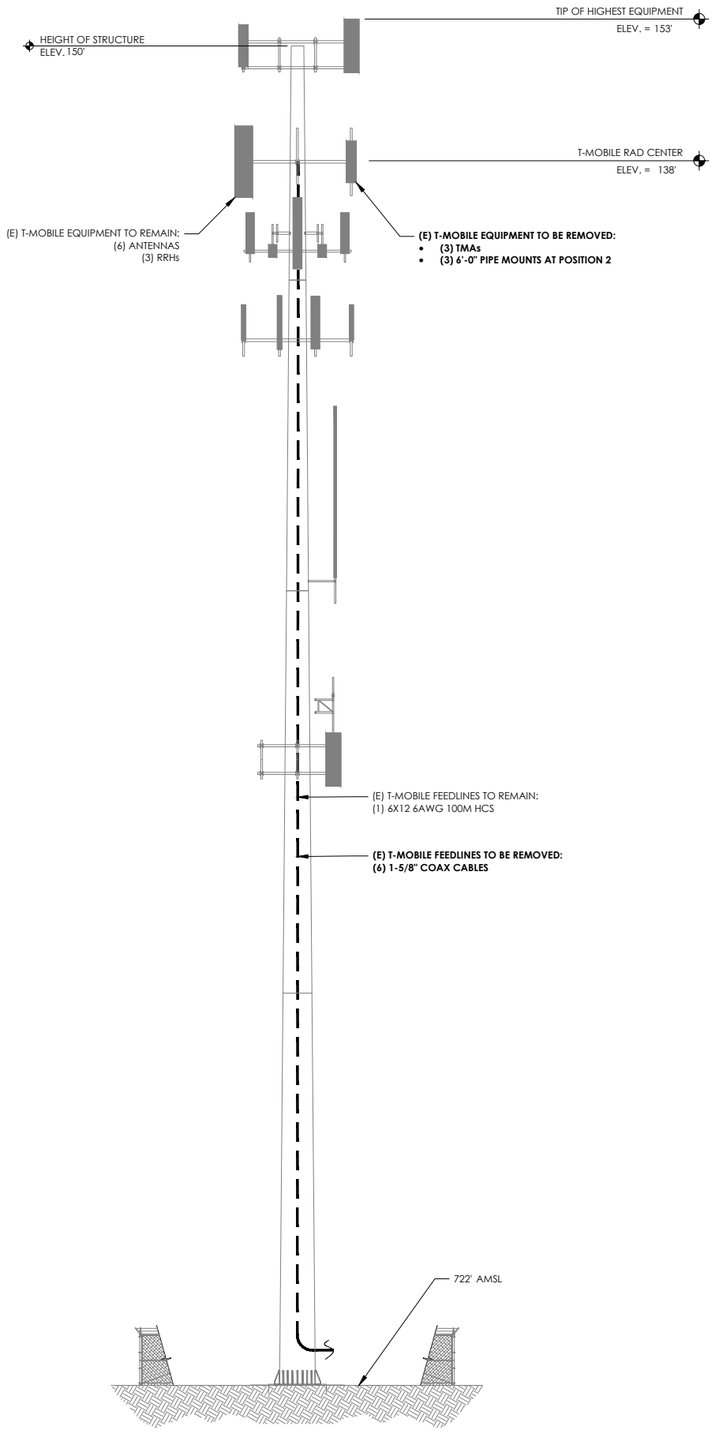
ANTENNA CL: 138'
MOUNT CL: 137'

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

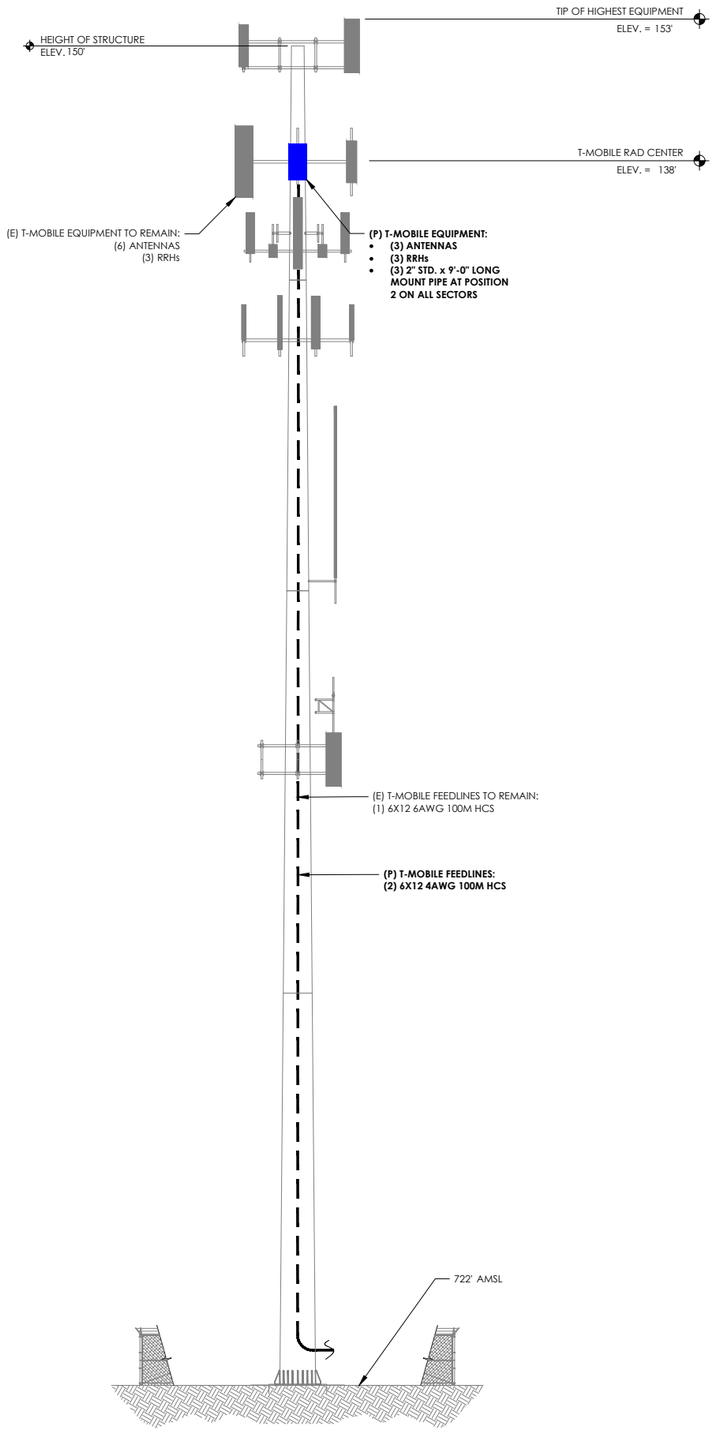
COAX NOTE:
CONTRACTOR TO REMOVE (6) 1-5/8" COAX

MOUNT NOTE:
CONTRACTOR TO REMOVE EXISTING 6'-0'' LONG MOUNT PIPE AND REPLACE WITH NEW 2" STD. X 9'-0'' LONG MOUNT PIPE AT POSITION 2 ON ALL SECTORS

REFER TO TOWER STRUCTURAL ANALYSIS FOR PROPOSED ANTENNA & CABLE LOADING DETAILS. ON-SITE CONDITIONS SHALL NOT EXCEED ANALYSIS. G.C. TO NOTIFY ENGINEER OF RECORD OF ALL ON-SITE DISCREPANCIES PRIOR TO COMMENCEMENT OF WORK



1 EXISTING ELEVATION
SCALE: NOT TO SCALE



2 FINAL ELEVATION
SCALE: NOT TO SCALE

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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.

"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.

T-Mobile

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BLOOMFIELD, CT 06002

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T-MOBILE SITE NUMBER:
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CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' – MONOPOLE

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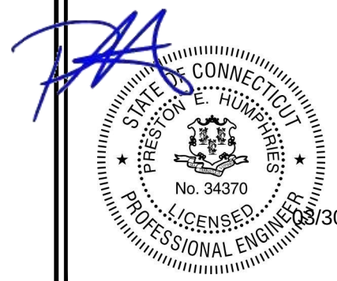


IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-2

REVISION: 0

T-MOBILE EQUIPMENT

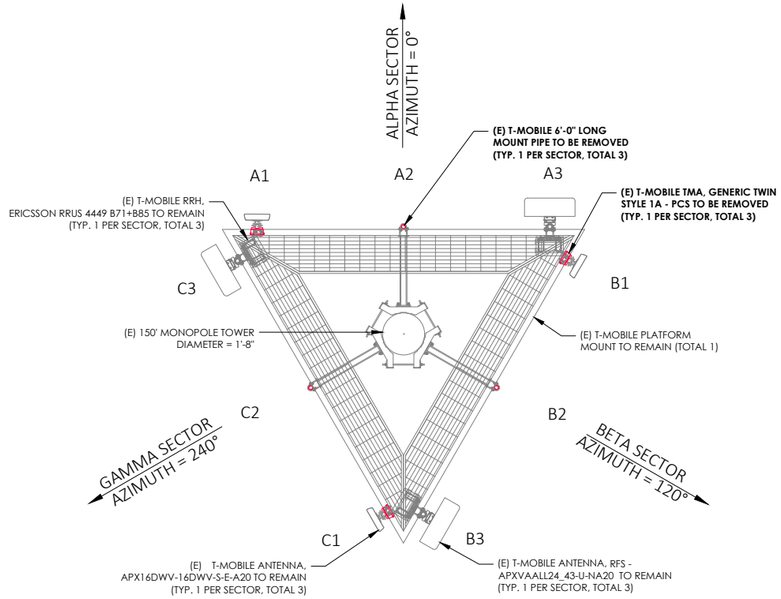
ANTENNA CL:138'
MOUNT CL:137'

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

ANTENNA SCHEDULE

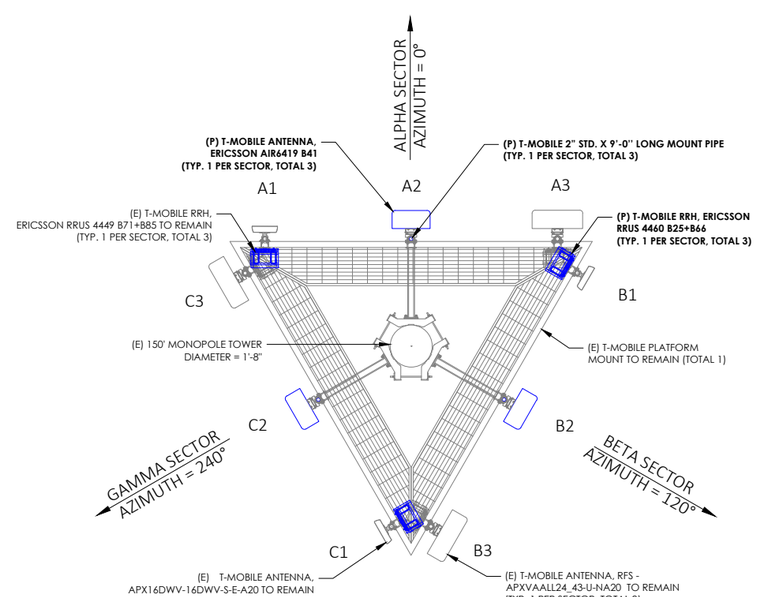
SECTOR	POS.	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	138'	0°	RFS	APX16DWV-16DWV-S-E-A20 (QUAD) (E)	0°	2°, 2°	(1) 4460 B25+B66 (P)	-
ALPHA	A2	138'	0°	ERICSSON	AIR6419 B41 (ACTIVE ANTENNA - MASSIVE MIMO) (P)	0°	2°, 2°	-	-
ALPHA	A3	138'	0°	RFS	APXVAALL24_43-U-NA20 (OCTO) (E)	0°	2°, 2°	(1) 4449 B71 +B85 (E)	(1) 6x12 6AWG (100M) (E)
BETA	B1	138'	120°	RFS	APX16DWV-16DWV-S-E-A20 (QUAD) (E)	0°	2°, 2°	(1) 4460 B25+B66 (P)	(1) 6x24 4AWG (100M) (P)
BETA	B2	138'	120°	ERICSSON	AIR6419 B41 (ACTIVE ANTENNA - MASSIVE MIMO) (P)	0°	2°, 2°	-	-
BETA	B3	138'	120°	RFS	APXVAALL24_43-U-NA20 (OCTO) (E)	0°	2°, 2°	(1) 4449 B71 +B85 (E)	-
GAMMA	C1	138'	240°	RFS	APX16DWV-16DWV-S-E-A20 (QUAD) (E)	0°	2°, 2°	(1) 4460 B25+B66 (P)	(1) 6x24 4AWG (100M) (P)
GAMMA	C2	138'	240°	ERICSSON	AIR6419 B41 (ACTIVE ANTENNA - MASSIVE MIMO) (P)	0°	2°, 2°	-	-
GAMMA	C3	138'	240°	RFS	APXVAALL24_43-U-NA20 (OCTO) (E)	0°	2°, 2°	(1) 4449 B71 +B85 (E)	-

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE

N



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

GENERAL NOTES

1. THE HYBRID CABLE LENGTH SHOWN IS ONLY AN ESTIMATE AND SHOULD NOT BE USED FOR ORDERING MATERIALS. CONFIRM THE REQUIRED HYBRID CABLE LENGTH WITH T-MOBILE PRIOR TO ORDERING OR INSTALLATION.
2. THE CONTRACTOR SHALL TEST THE OPTICAL FIBER AFTER INSTALLATION IN ACCORDANCE WITH T-MOBILE STANDARDS AND SUPPLY THE RESULTS TO T-MOBILE.
3. THE CONTRACTOR SHALL CONFIRM THE TOWER TOP EQUIPMENT LIST ABOVE WITH THE FINAL T-MOBILE RFDS PRIOR TO INSTALLATION.
4. ALL PROPOSED ANTENNA CABLES SHALL BE COLOR CODED PER T-MOBILE MARKET STANDARDS.
5. REFER TO ERICSSON EQUIPMENT INSTALLATION STANDARDS FOR ADDITIONAL INFORMATION.
6. REFER TO EQUIPMENT MANUFACTURER'S SPECIFICATION SHEETS FOR ADDITIONAL INFORMATION NOT LISTED ABOVE.
7. CONTRACTOR TO FIELD COORDINATE EXACT LOCATION OF PROPOSED EQUIPMENT WITH EXISTING CONDITIONS ON SITE.
8. PROPOSED EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE FASTENERS SHALL BE HIGH STRENGTH (A325, A36)
9. DRILLING OF EXISTING STEEL MEMBERS IS NOT PERMITTED.
10. BOND PROPOSED EQUIPMENT TO EXISTING SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS. PROVIDE ADDITIONAL SECTOR GROUND BARS AS REQUIRED.
11. ALL ANTENNAS, CABLES, AND MOUNTS SHALL BE INSTALLED IN ACCORDANCE WITH THE ENGINEER'S RECOMMENDATIONS IN A MANNER CONSISTENT WITH THE STRUCTURAL ANALYSIS REPORT.
12. CONTRACTOR TO CONTACT T-MOBILE FOR UP-TO-DATE RF DESIGN DATA. NOTIFY ENGINEER IF CONFLICT EXISTS.
13. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
14. GENERAL CONTRACTOR TO NOTIFY T-MOBILE C.M. OF ALL ON-SITE DISCREPANCIES AS SHOWN HERE AS EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
15. GENERAL CONTRACTOR TO ADJUST EXISTING MOUNT TO ACCOMMODATE PROPOSED AZIMUTHS AS NECESSARY.
16. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.

T-Mobile
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STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-3

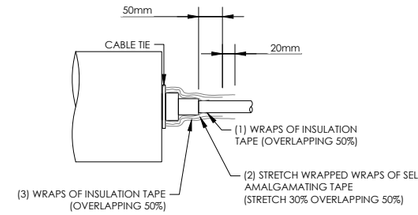
REVISION: 0

1 NOT USED
SCALE: NOT TO SCALE

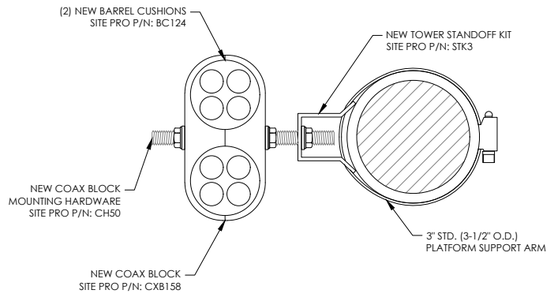
2 NOT USED
SCALE: NOT TO SCALE

INSTALLER NOTE:

JUMPERS TO BE TORQUED TO 221.27 IN/LBS.



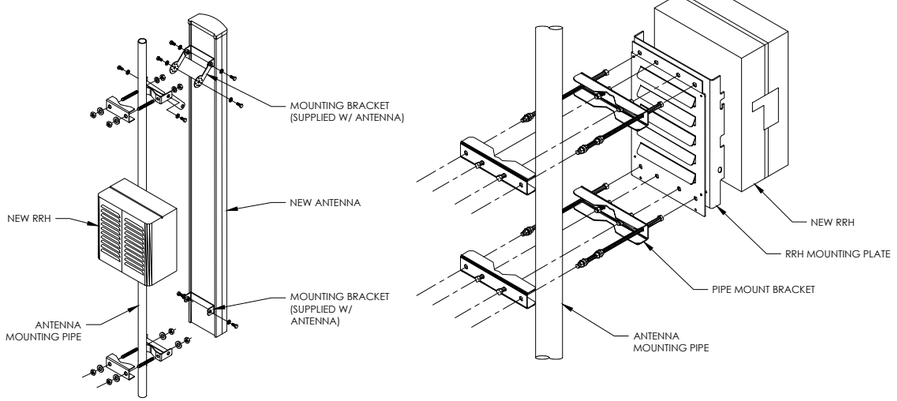
6 RF JUMPER CONNECTION
SCALE: NOT TO SCALE



3 RF JUMPER 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.



4 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

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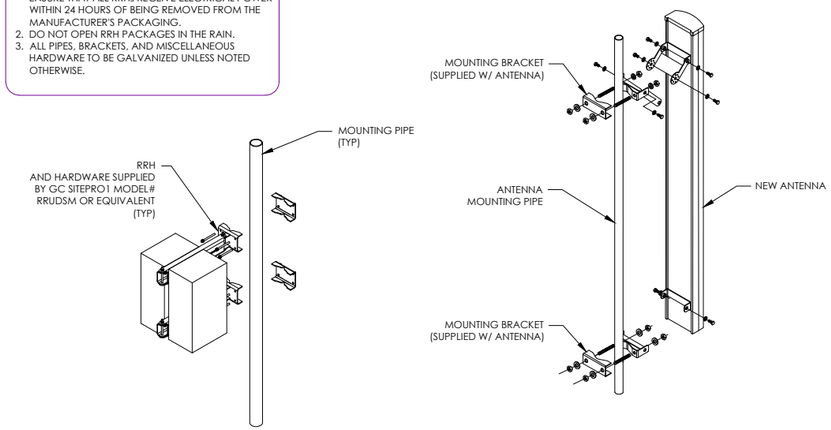

5 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

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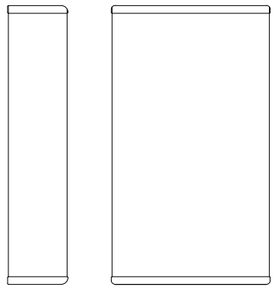
SHEET NUMBER: C-4

REVISION: 0

ERICSSON - AIR6419 B41	
WEIGHT (W/O MOUNTING HARDWARE)	96.5 LBS
SIZE (H x W x D)	36.25 x 20.91 x 9.02 IN.
MOUNTING HARDWARE P/N	TBD
RATED WIND VELOCITY	TBD



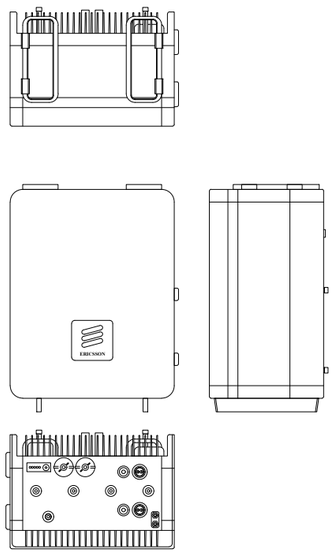
1 ERICSSON - AIR6419 B41
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

ERICSSON - RADIO 4460 B25+B66	
WEIGHT (W/O MOUNTING HARDWARE)	109.0 LBS
SIZE (H x W x D)	17.0 x 15.1 x 11.9 IN.



5 ERICSSON RADIO 4460 B25+B66
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' – MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

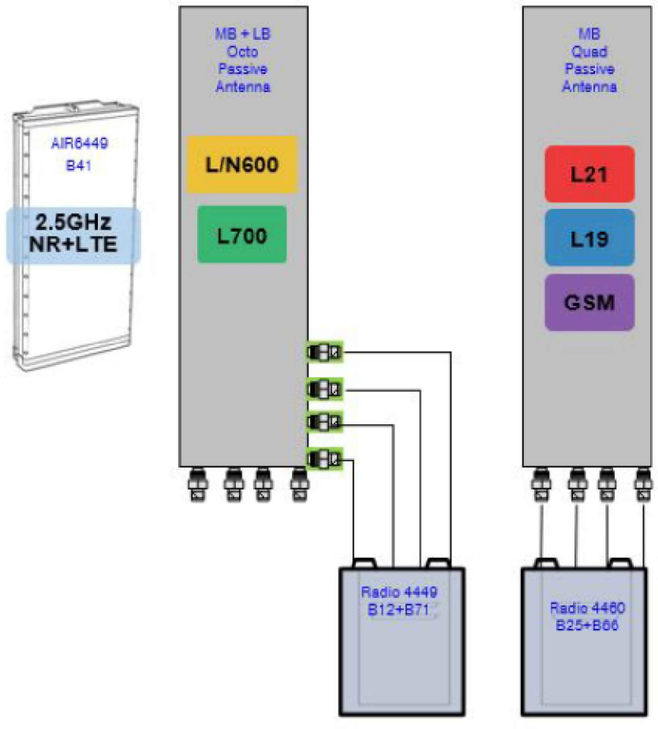
PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-5

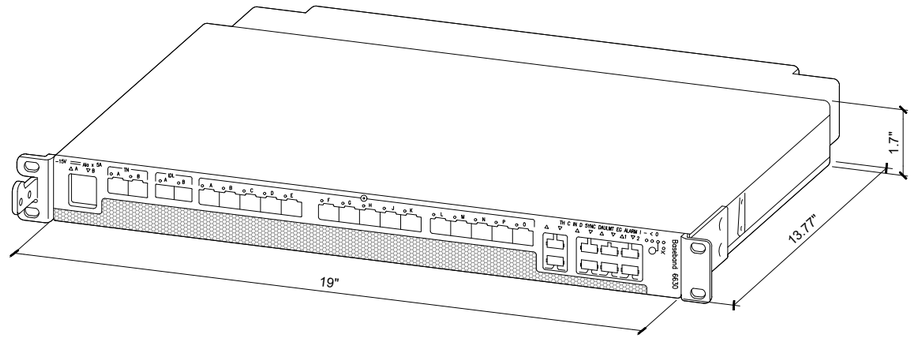
REVISION: 0

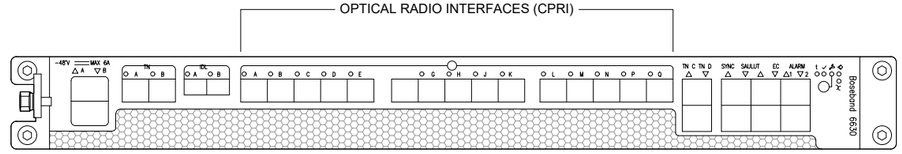
PROPOSED RF CONFIGURATION:
(INFORMATION PROVIDED BY CLIENT)

67D5D998E ODE+6160



ERICSSON BASEBAND 6630	
WEIGHT (W/O MOUNTING HARDWARE)	14.3 LBS
SIZE (H x W x D)	1.7 x 19 x 13.77 IN.



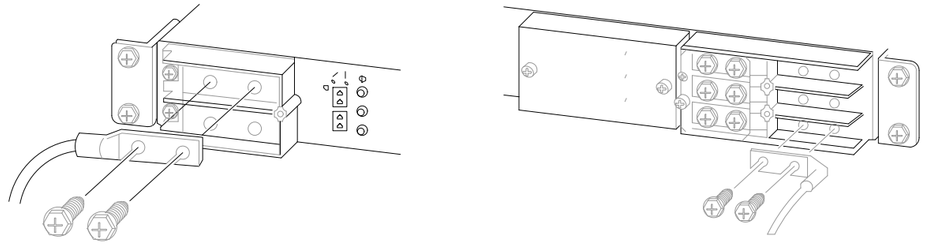


1 ERICSSON BB 6630 / BB 6648
SCALE: NOT TO SCALE

ERICSSON PSU 4813	
WEIGHT (W/O MOUNTING HARDWARE)	17.1 LBS
SIZE (H x W x D)	1.7 x 19 x 13.3 IN.
NEEDED INSTALLATION KIT	
PSU4813 INSTALL KIT FOR RBS	34133
PSU4813 INSTALL KIT FOR PBC6200	34134
PSU4813 INSTALL KIT FOR 6160/RBS6230	34135

INSTALLER NOTE:

1. THE PSU 48 13 SHALL BE FED VIA 200A BREAKER INSTALLED, FOR EXAMPLE, IN THE LLVD1 SECTION OF AN ENCLOSURE 6160 DC DISTRIBUTION SUBRACK.
2. CONNECT -48 VDC DISTRIBUTION CABLE TO TERMINAL AT THE RIGHT, WHICH WILL BE FED TO RRU/AIR AT THE OTHER END.



2 ERICSSON PSU 48 13 VOLTAGE BOOSTER
SCALE: NOT TO SCALE

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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PRESTON E. HUMPHRIES
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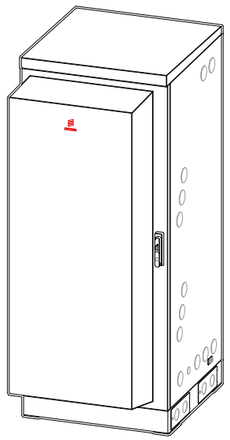
LICENSED PROFESSIONAL ENGINEER
03/30/2022

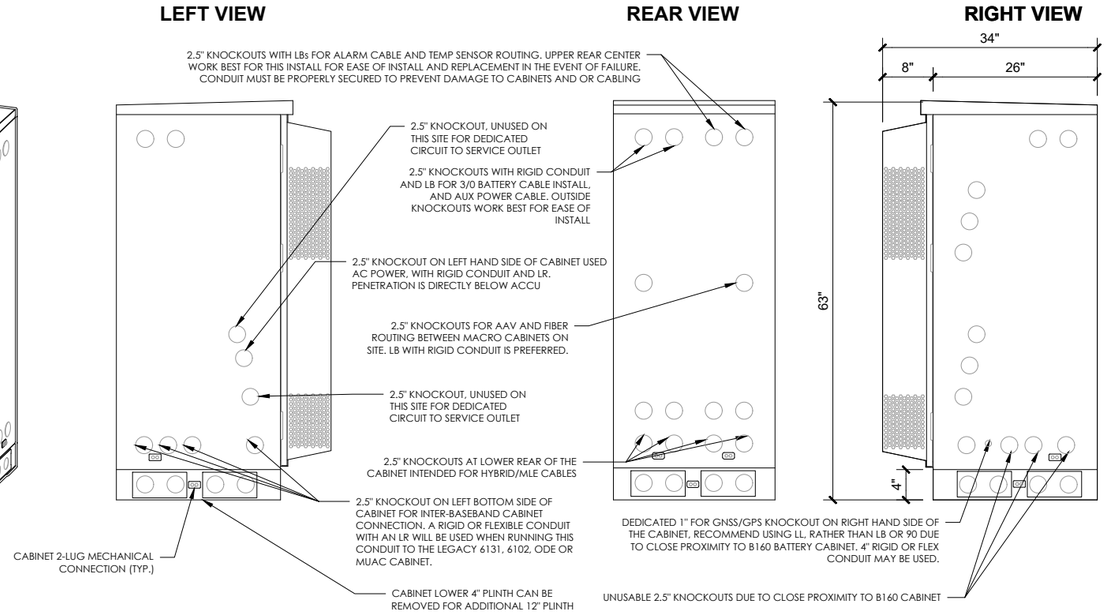
PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-6

REVISION: 0

ERICSSON - 6160	
WEIGHT (W/O WITHOUT EQUIPMENT)	295.0 LBS
SIZE (H x W x D)	63" x 25.6x 34"



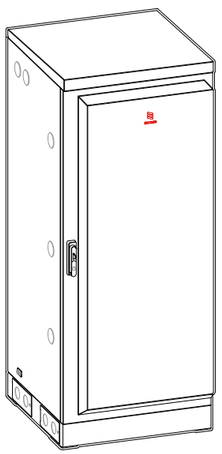


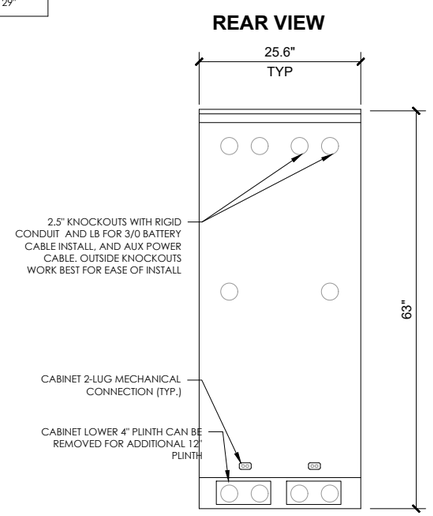
1 ERICSSON 6160
SCALE: NOT TO SCALE

INSTALLER NOTE:

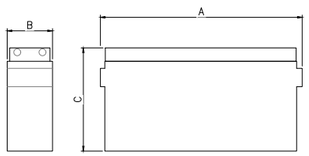
- 6160 BTS REQUIRES FMB FOR CABLE MANAGEMENT SUPPLIED BY GC AND WILL NEED TO BE INCLUDED IN AOS (NO CABLING CAN BE INSTALLED INTO THE PLINTH BELOW BTS UNLESS SUPPLIED WITH OPTIONAL 12" FULLY ENCLOSED PLINTH.

ERICSSON - B160	
WEIGHT (W/O WITHOUT EQUIPMENT)	295.0 LBS
SIZE (H x W x D)	63" x 25.6x 29"





2 ERICSSON B160
SCALE: NOT TO SCALE



INSTALLER NOTE:

THE BATTERIES INSTALLED IN THE CABINET ARE VALVE REGULATED LEAD-ACID (VRLA) CELLS BATTERY STRINGS; NORTHSTAR NSB 190FT RED. ALL NORTHSTAR BATTERIES ARE COMPLIANT WITH: TELCORDIA SR4228, IEC 60896; BELLCORE GR-63-CORE, ISSUE 1; UL APPROVED AND UN2800 CERTIFIED. NORTHSTAR IS REGISTERED TO ISO 9001 AND ISO 14001. ERICSSON CABINET PROVIDES REQUIRED VENTILATION, SMOKE, SEISMIC & ADDITIONAL SIGNAGE TO MEET ALL IFC SECTION 608 REQUIREMENTS.

SPECIFICATIONS												
MODEL NUMBER	VOLTAGE	CAPACITY (AH)		NOMINAL DIMENSIONS						NOMINAL WEIGHT	
		8 HR TO 1.75 VPC @ 25°	10 HR TO 1.8 VPC @ 25°	INCHES			MILLIMETERS				
				A	B	C	A	B	C	LBS	Kg
NSB 190FT RED BATTERY	12	183 / 186 AH	187 / 190 AH	22.0	4.9	12.6	560	125	320	124.3	56.3

ELECTRICAL DATA		
MODEL NUMBER	SHORT CIRCUIT CURRENT	INTERNAL RESISTANCE (mOhms)
NSB 190FT RED BATTERY	5000 A	2.8

FLOAT VOLTAGE

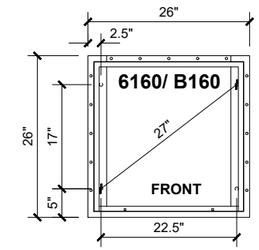
CONSTANT VOLTAGE CHARGING IS RECOMMENDED

RECOMMENDED FLOAT VOLTAGE: 2.27 +/- 0.02 VPC

CHAPTER 12, SECTION 1206					
ELECTRICAL ENERGY STORAGE SYSTEM					
1206.2 SCOPE:					
STATIONARY STORAGE BATTERY SYSTEMS HAVING CAPACITIES EXCEEDING THE VALUES SHOWN IN TABLE 1206.2 SHALL COMPLY W/ SECTION 1206.2.1 THROUGH 1206.2.12.6, AS APPLICABLE.					
BATTERY STORAGE SYSTEM THRESHOLD QTY'S					
CATTERY TECHNOLOGY		CAPACITY ALLOWED			
LEAD ACID, ALL TYPES		70 kWh (252 MEGAJOULES)			
AH = VOLTAGE (AH)/1000					
VOLTS	AH		kWh	NO. OF BATTERIES	TOTAL kWh
12	190	1000	2.28	12	27.36
CONCLUSIONS:					
27.36	<	70 kWh	SECTION 1206.2 DOES NOT APPLY		
TOTAL BATTERY WEIGHT (12 BATTERIES):					1,491.6 LBS
TOTAL GALLONS - ELECTROLYTE & ACID (12 BATTERIES):					33.36

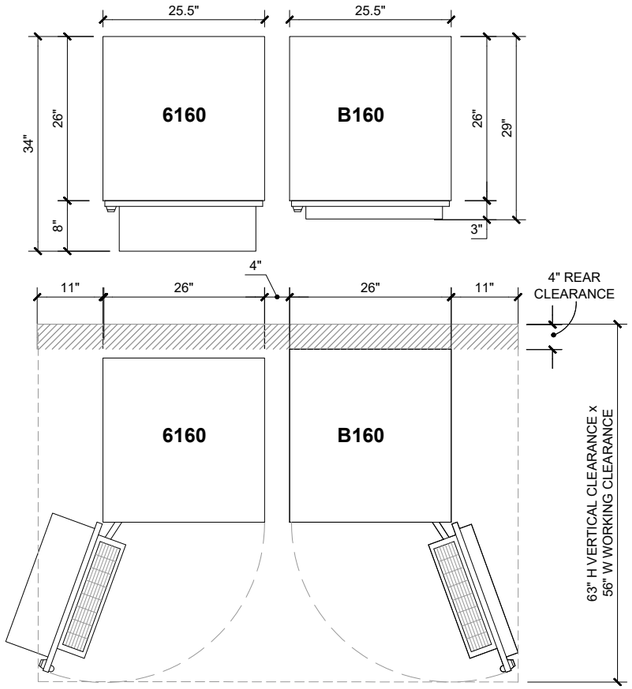
NSB 190FT RED BATTERY LEAD & ACID WEIGHTS (12-VOLT MODULE):			
ELECTROLYTE	WEIGHT	/KG	10.5
		/LBS	23.2
	VOLUME	/LITERS	7.8
		/GALLONS	2.08
ACID	WEIGHT	/KG	4.8
		/LBS	10.5
	VOLUME	/LITERS	2.6
		/GALLONS	0.7
LEAD	WEIGHT	/KG	17.9
		/LBS	39.4
LEAD OXIDE	VOLUME	/KG	23.3
		/LBS	51.2
TOTAL WEIGHT	WEIGHT	/KG	56.3
		/LBS	124.3

BOTTOM VIEW

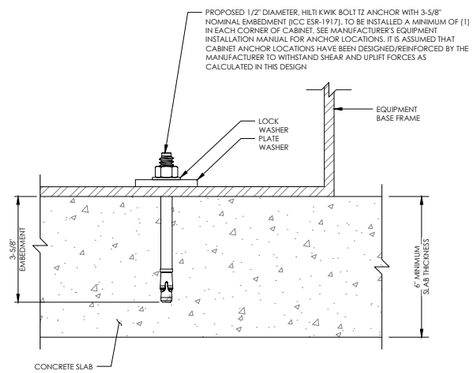


INSTALLER NOTE:

- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL KNOCKOUTS THROUGH
- CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND/OR CABLING



3 PLAN CABINET DETAILS
SCALE: NOT TO SCALE



4 CABINET ATTACHMENT
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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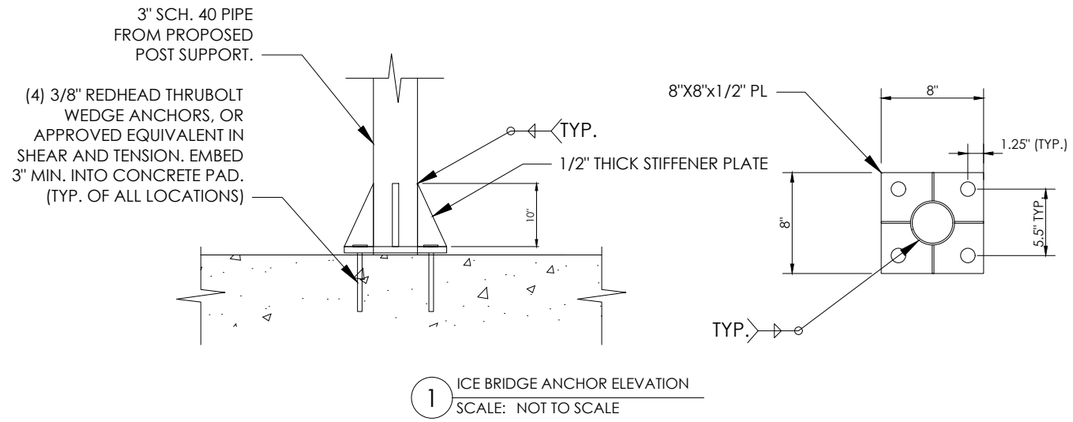
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

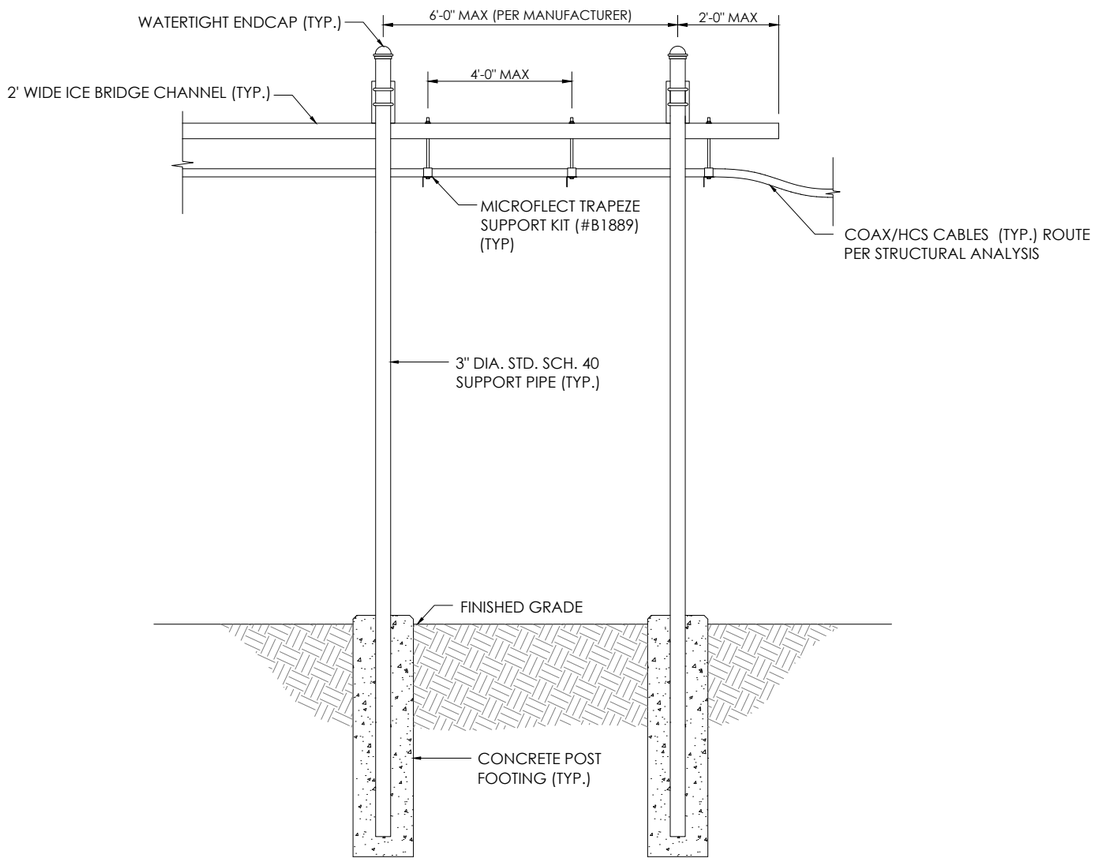
PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-7

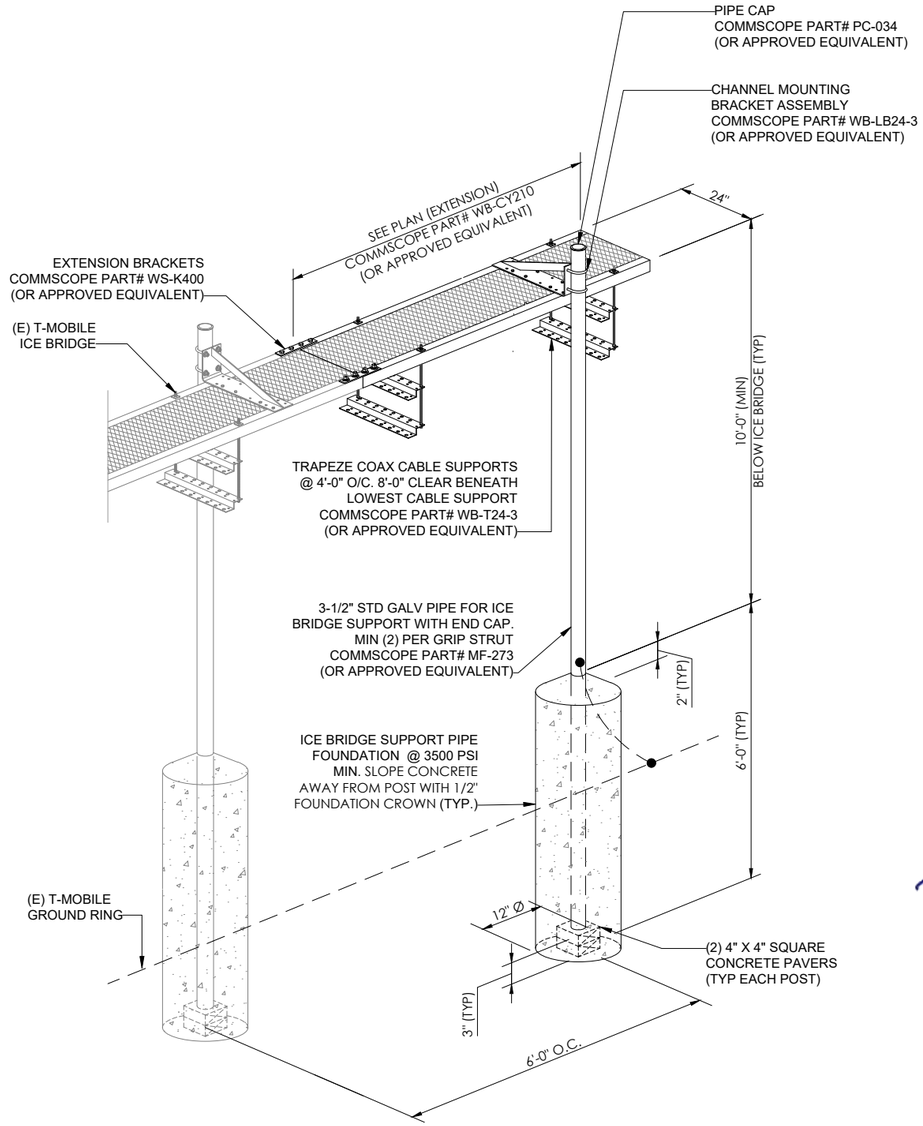
REVISION: 0



1 ICE BRIDGE ANCHOR ELEVATION
SCALE: NOT TO SCALE



2 ICE BRIDGE ELEVATION
SCALE: NOT TO SCALE



3 ICE BRIDGE DETAIL
SCALE: NOT TO SCALE

GENERAL NOTES

1. #2 SOLID TINNED GROUND WIRE TO BE CADWELDED FROM EACH SUPPORT COLUMN TO GROUND RING
2. STAGGER ICE-BRIDGE POST AT 6'-0" O.C.
3. ROUTE HYBRID CABLES WITH APPROVED SNAP IN CLAMPS. CONTINUE CABLES UP TOWER PER STRUCTURAL ANALYSIS

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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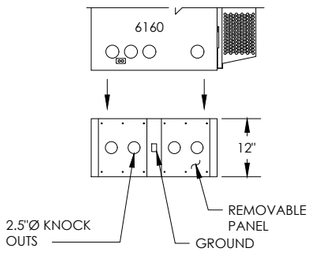
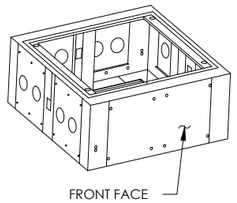
03/30/2022

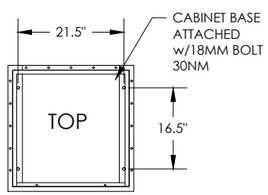
PM&A PROJECT NUMBER:
22CCTCTM-0004

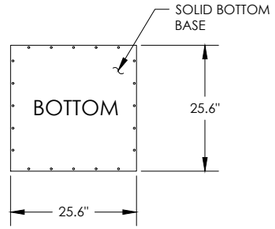
SHEET NUMBER: C-8
REVISION: 0

MANUFACTURER:	ERICSSON
MODEL:	6160 12" BASE FRAME (SXK 125 5009/1)
DIMENSIONS:	12" x 25.6" x 25.6" (H x D x W)
WEIGHT:	73 LBS





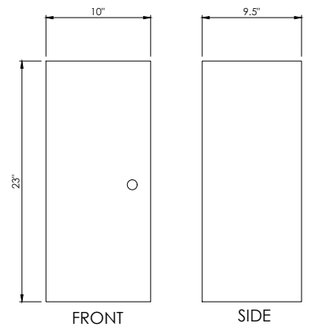




1 CABINET BASE ATTACHED w/18MM BOLT 30NM
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

SPECIFICATIONS	
WEIGHT	APPROX. 13 LBS.



3 INTERSECT - CAM-LOK GENERATOR PLUG
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
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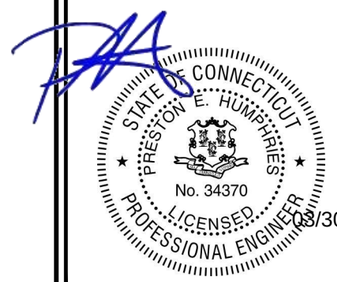
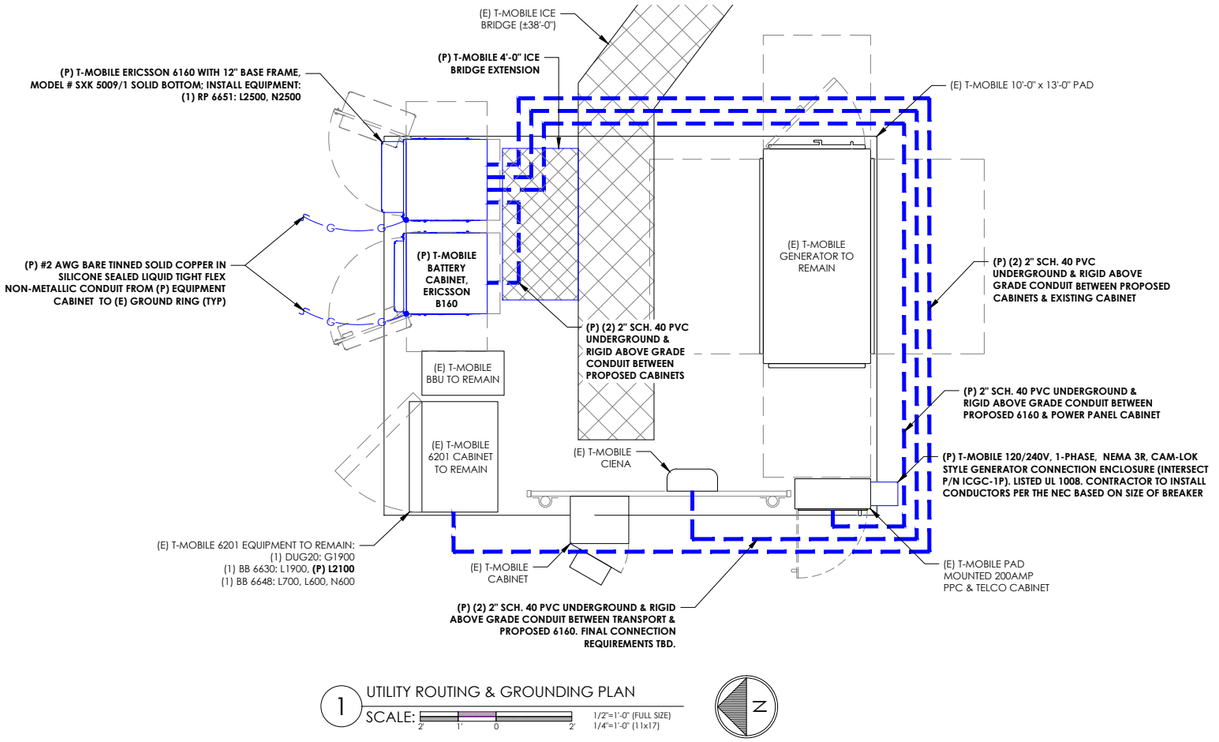


PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: C-9

REVISION: 0



1 UTILITY ROUTING & GROUNDING PLAN

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

N

GROUNDING PLAN LEGEND:

- #6 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 BARE, SOLID, TINNED COPPER GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- GROUND ROD W/ TEST WELL

NOTE:

SEE FINAL EQUIPMENT PLAN FOR PROPOSED EQUIPMENT REQUIRING GROUNDING. CONTRACTOR TO VERIFY EXISTING EQUIPMENT GROUNDING IN FIELD. CONTRACTOR TO VERIFY IN FIELD AND INSTALL ANY MISSING T-MOBILE GROUND BARS ON SITE.

NOTE:

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

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED
PROFESSIONAL ENGINEER
03/30/2022

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.

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: E-1

REVISION: 0

T-MOBILE SITE #:			LOCATION:	VOLTAGE: 240/120 1Ø							MOUNTING / ENCLOSURE: EXISTING / NEMA 3R			
CT11511A (EXISTING)			H-FRAME	MAIN C/B: 200 AMPS							AVAIL. FAULT CURRENT: EXISTING			
3/22/2022				BUS RATING: 200 AMPS							SHORT CIRCUIT RATING: EXISTING			
AMPS/ POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A		B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS/ POLES
					1				2	0.00	SURGE	E	EXISTING	40/2
					3				4	0.00	-	E	-	-
					5	3.44			6	3.44	RBS 6201	EQ	EXISTING	100/2
					7			3.44	8	3.44	-	EQ	-	-
20/1	EXISTING	EQ	POWER BATTERY	1.00	9	1.00			10		BLANK			
20/1	EXISTING	R	GFCI	0.18	11			0.18	12		BLANK			
				PHASE TOTAL		4.4		3.6	KVA					

TOTAL CONNECTED LOAD	8.1	kVA	34 A
TOTAL DEMAND LOAD	8.1	kVA	34 A

LOAD TYPE	DESCRIPTION	CONN. LOAD		DEMAND FACTOR	DESIGN LOAD	
		KVA	AMPS		KVA	AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.2	0.8	NEC	0.2	0.8
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	7.9	32.8	1.00	7.9	32.8
E	EXISTING	0.0	0.0	1.25	0.0	0.0

* ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

NOTES:

DEPICTED LOAD BASED ON ASSUMPTIONS OF EQUIPMENT INSTALLED AND WAS NOT V.I.F. NOTIFY E.O.R. OF ANY DISCREPANCIES PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT.

1 EXISITNG PANEL SCHEDULE
SCALE: NOT TO SCALE

T-MOBILE SITE #:			LOCATION:	VOLTAGE: 240/120 1Ø							MOUNTING / ENCLOSURE: EXISTING / NEMA 3R			
CT11511A (PROPOSED)			H-FRAME	MAIN C/B: 200 AMPS							AVAIL. FAULT CURRENT: EXISTING			
3/22/2022				BUS RATING: 200 AMPS							SHORT CIRCUIT RATING: EXISTING			
AMPS/ POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A		B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS/ POLES
150/2	**2#3/0, 1#6G, 2"C**	**EQ**	**(P) 6160**	**2.61**	1	2.61			2	0.00	SURGE	E	EXISTING	40/2
-	-	**EQ**	-	**2.61**	3			2.61	4	0.00	-	E	-	-
-	-	**EQ**	-	**0.00**	5	3.18			6	3.18	RBS 6201	EQ	EXISTING	100/2
-	-	**EQ**	-	**0.00**	7			3.18	8	3.18	-	EQ	-	-
20/1	EXISTING	EQ	POWER BATTERY	1.00	9	1.00			10		BLANK			
20/1	EXISTING	R	GFCI	0.18	11			0.36	12	**0.18**	**(P) 6160 GFCI**	**R**	**2#12, 1#12G, 1/2"C**	**20/1**
				PHASE TOTAL		6.8		6.2	KVA					

TOTAL CONNECTED LOAD	12.9	kVA	54 A
TOTAL DEMAND LOAD	12.9	kVA	54 A

LOAD TYPE	DESCRIPTION	CONN. LOAD		DEMAND FACTOR	DESIGN LOAD	
		KVA	AMPS		KVA	AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.4	1.5	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	12.6	52.4	1.00	12.6	52.4
E	EXISTING	0.0	0.0	1.25	0.0	0.0

* ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

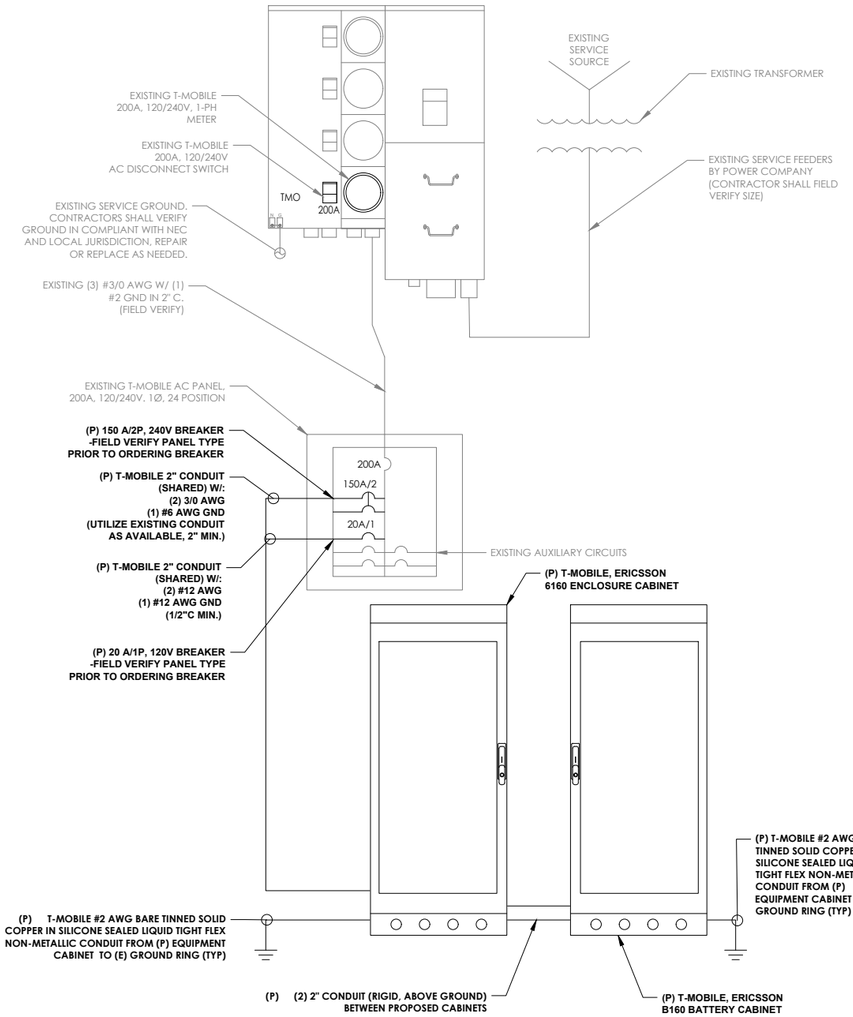
NOTES:

DEPICTED LOAD BASED ON ASSUMPTIONS OF EQUIPMENT INSTALLED AND WAS NOT V.I.F. NOTIFY E.O.R. OF ANY DISCREPANCIES PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT.

2 PROPOSED PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

1. THE MAXIMUM 12-MONTH DEMAND LOAD WAS NOT AVAILABLE AT TIME OF PRINTING. CONTRACTOR SHALL COORDINATE WITH POWER CO., OBTAIN MAXIMUM DEMAND LOAD, MULTIPLY VALUE BY 1.25, ADD ALL NEW LOADS & VERIFY NEW MAXIMUM DEMAND LOAD DOES NOT OVERLOAD ANY PORTION OF THE EXISTING ELECTRICAL SYSTEM. CONTACT EOR IF OVERLOAD IS POSSIBLE BEFORE START OF WORK.
2. CONTRACTOR IS RESPONSIBLE FOR LOADING ON ALL PANELS AND FEEDERS PER THE N.E.C. CONTRACTOR SHALL ENSURE CONTINUITY OF EXISTING CIRCUITS TO REMAIN. ELECTRICAL CONTRACTOR SHALL VERIFY THAT ALL EXISTING AND PROPOSED LOADS PLACED ON EXISTING PANELS DO NOT EXCEED THE MAXIMUM LOADING REQUIRED PER THE LATEST EDITION OF THE N.E.C. NOTIFY EOR IF OVERLOAD IS POSSIBLE.
3. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY AND CALCULATE SHORT CIRCUIT FAULT CURRENT AND ARC FLASH AND PROVIDE LABELS ON ELECTRICAL EQUIPMENT PER THE N.E.C. AND LOCAL JURISDICTION. CONTRACTOR SHALL PROVIDE EQUIPMENT RATED FOR FAULT CURRENT.
4. 6160 ENCLOSURE STANDARD CONFIGURATION INCLUDES (4) 3500W RECTIFIERS, MAX OF 7. LOAD PROVIDED IN PANEL SCHEDULE IS BASED ON THIS CONFIGURATION. IF ADDITIONAL RECTIFIERS ARE REQUIRED, ENGINEER OF RECORD SHALL BE CONTACTED TO DETERMINE ADEQUACY OF EXISTING PANEL FOR ADDITIONAL LOAD
5. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT RATINGS AND WIRE SIZES. IF ANY DISCREPANCIES EXIST, CONTACT ENGINEER PRIOR TO ROUGH IN.
6. CONTRACTOR SHALL FIELD VERIFY EXISTING AC PANEL MODEL AND ENSURE 150A, 2P, 4-POSITION BREAKER IS COMPATIBLE, CONTACT EOR IF DISCREPANCIES ARE FOUND.



3 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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER:	REVISION:
E-2	0

Hybrid Plumbing (3) 6x24 Hybrids

TRUNK COLOR CODE	PAIR #	AIR/RRU END ODC		PIN	RBS END PIN	RBS END LC BOOT		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
RED 1	1	RED		1	B	RED		Radio 4460 B25+B66 (G19 CPRI1)	RED 1 + LC Boot Color	ALPHA B2 G19 CPRI1	ALPHA
				2	A						
	2	GREEN		1	B	GREEN		Radio 4460 B25+B66 (L19 CPRI2)	RED 1 + LC Boot Color	ALPHA B25 L19 CPRI2	ALPHA
				2	A						
	3	BLUE		1	B	BLUE		Radio 4460 B25+B66 (L21 CPRI3)	RED 1 + LC Boot Color	ALPHA B66 L21 CPRI3	ALPHA
				2	A						
	4	YELLOW		1	B	YELLOW		Radio 4460 B25+B66 (L21 CPRI4)	RED 1 + LC Boot Color	ALPHA B66 L21 CPRI4	ALPHA
				2	A						
	5	WHITE		1	B	WHITE		Radio 4460 B25+B66 (G19 CPRI1)	YELLOW 1 + LC Boot Color	BETA B2 G19 CPRI1	BETA
				2	A						
	6	BLACK		1	B	BLACK		Radio 4460 B25+B66 (L19 CPRI2)	YELLOW 1 + LC Boot Color	BETA B25 L19 CPRI2	BETA
				2	A						
	7	RED	WHITE	1	B	RED	WHITE	Radio 4460 B25+B66 (L21 CPRI3)	YELLOW 1 + LC Boot Color	BETA B66 L21 CPRI3	BETA
				2	A						
	8	GREEN	WHITE	1	B	GREEN	WHITE	Radio 4460 B25+B66 (L21 CPRI4)	YELLOW 1 + LC Boot Color	BETA B66 L21 CPRI4	BETA
				2	A						
	9	BLUE	WHITE	1	B	BLUE	WHITE	Radio 4460 B25+B66 (G19 CPRI1)	BLUE 1 + LC Boot Color	GAMMA B2 G19 CPRI1	GAMMA
				2	A						
	10	YELLOW	WHITE	1	B	YELLOW	WHITE	Radio 4460 B25+B66 (L19 CPRI2)	BLUE 1 + LC Boot Color	GAMMA B25 L19 CPRI2	GAMMA
				2	A						
	11	WHITE	WHITE	1	B	WHITE	WHITE	Radio 4460 B25+B66 (L21 CPRI3)	BLUE 1 + LC Boot Color	GAMMA B66 L21 CPRI3	GAMMA
				2	A						
	12	BLACK	WHITE	1	B	BLACK	WHITE	Radio 4460 B25+B66 (L21 CPRI4)	BLUE 1 + LC Boot Color	GAMMA B66 L21 CPRI4	GAMMA
				2	A						

TRUNK COLOR CODE	PAIR #	AIR/RRU END ODC		PIN	RBS END PIN	RBS END LC BOOT		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
RED 2	1	RED		1	B	RED		Radio 4480 B71+B85A CPRI1	RED 2 + LC Boot Color	Alpha L700/L600 CPRI1	ALPHA
				2	A						
	2	GREEN		1	B	GREEN		Radio 4480 B71+B85A CPRI2	RED 2 + LC Boot Color	Alpha N600 CPRI2	ALPHA
				2	A						
	3	BLUE		1	B	BLUE		Radio 4480 B71+B85A CPRI1	YELLOW 2 + LC Boot Color	Beta L700/L600 CPRI1	BETA
				2	A						
	4	YELLOW		1	B	YELLOW		Radio 4480 B71+B85A CPRI2	YELLOW 2 + LC Boot Color	Beta N600 CPRI2	BETA
				2	A						
	5	WHITE		1	B	WHITE		Radio 4480 B71+B85A CPRI1	BLUE 2 + LC Boot Color	Gamma L700/L600 CPRI1	GAMMA
				2	A						
	6	BLACK		1	B	BLACK		Radio 4480 B71+B85A CPRI2	BLUE 2 + LC Boot Color	Gamma N600 CPRI2	GAMMA
				2	A						
	7	RED	WHITE	1	B	RED	WHITE				
				2	A						
	8	GREEN	WHITE	1	B	GREEN	WHITE				
				2	A						
	9	BLUE	WHITE	1	B	BLUE	WHITE				
				2	A						
	10	YELLOW	WHITE	1	B	YELLOW	WHITE				
				2	A						
	11	WHITE	WHITE	1	B	WHITE	WHITE				
				2	A						
	12	BLACK	WHITE	1	B	BLACK	WHITE				
				2	A						

TRUNK COLOR CODE	PAIR #	AIR/RRU END ODC		PIN	RBS END PIN	RBS END LC BOOT		RADIO (TECHNOLOGY)	AIR/RRU END COLOR CODE	RBS END FIBER LABELS	SECTOR
RED 3	1	RED		1	B	RED		Radio 4460 B25+B66 (G19 CPRI1)	RED 3 + LC Boot Color	DELTA B2 G19 CPRI1	DELTA
				2	A						
	2	GREEN		1	B	GREEN		Radio 4460 B25+B66 (L19 CPRI2)	RED 3 + LC Boot Color	DELTA B25 L19 CPRI2	DELTA
				2	A						
	3	BLUE		1	B	BLUE		Radio 4460 B25+B66 (L21 CPRI3)	YELLOW 3 + LC Boot Color	DELTA B66 L21 CPRI3	DELTA
				2	A						
	4	YELLOW		1	B	YELLOW		Radio 4460 B25+B66 (L21 CPRI4)	YELLOW 3 + LC Boot Color	DELTA B66 L21 CPRI4	DELTA
				2	A						
	5	WHITE		1	B	WHITE		Radio 4480 B71+B85A CPRI1	BLUE 3 + LC Boot Color	DELTA L700/L600 CPRI1	DELTA
				2	A						
	6	BLACK		1	B	BLACK		Radio 4480 B71+B85A CPRI2	BLUE 3 + LC Boot Color	DELTA N600 CPRI2	DELTA
				2	A						
	7	RED	WHITE	1	B	RED	WHITE				
				2	A						
	8	GREEN	WHITE	1	B	GREEN	WHITE				
				2	A						
	9	BLUE	WHITE	1	B	BLUE	WHITE				
				2	A						
	10	YELLOW	WHITE	1	B	YELLOW	WHITE				
				2	A						
	11	WHITE	WHITE	1	B	WHITE	WHITE				
				2	A						
	12	BLACK	WHITE	1	B	BLACK	WHITE				
				2	A						

DC Power

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END		RADIO (TECHNOLOGY)	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	Radio 4460 B66aA	ALPHA	Alpha 4460 P1
	OV	B	RED				
2	-48	A	BLACK	GREEN	Radio 4460 B25	ALPHA	Alpha 4460 P2
	OV	B	RED				
3	-48	A	BLACK	BLUE	Radio 4460 B66aA	BETA	Beta 4460 P1
	OV	B	RED				
4	-48	A	BLACK	YELLOW	Radio 4460 B25	BETA	Beta 4460 P2
	OV	B	RED				
5	-48	A	BLACK	WHITE	Radio 4460 B66aA	GAMMA	Gamma 4460 P1
	OV	B	RED				
6	-48	A	BLACK	BLACK	Radio 4460 B25	GAMMA	Gamma 4460 P2
	OV	B	RED				

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END		RADIO	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	Radio 4480	ALPHA	Alpha 4480
	OV	B	RED				
2	-48	A	BLACK	GREEN			
	OV	B	RED				
3	-48	A	BLACK	BLUE	Radio 4480	BETA	Beta 4480
	OV	B	RED				
4	-48	A	BLACK	YELLOW			
	OV	B	RED				
5	-48	A	BLACK	WHITE	Radio 4480	GAMMA	Gamma 4480
	OV	B	RED				
6	-48	A	BLACK	BLACK			
	OV	B	RED				

PAIR #	REF HOOKUP	PIN LETTER	AIR/RRU END		RADIO	SECTOR	SPD LABELS
1	-48	A	BLACK	RED	Radio 4460	ALPHA	Delta 4460 P1
	OV	B	RED				
2	-48	A	BLACK	GREEN	Radio 4460	BETA	Delta 4460 P2
	OV	B	RED				
3	-48	A	BLACK	BLUE	Radio 4460	GAMMA	Delta 4480
	OV	B	RED				
4	-48	A	BLACK	YELLOW			
	OV	B	RED				
5	-48	A	BLACK	WHITE			
	OV	B	RED				
6	-48	A	BLACK	BLACK			
	OV	B	RED				

Alpha RF Jumper Color Code

Radio 4460				Radio 4480			
port 1	port 2	port 3	port 4	port 1	port 2	port 3	port 4
RED 1	RED 2	RED 3	RED 4	RED 5	RED 6	RED 7	RED 8

Beta RF Jumper Color Code

Radio 4460				Radio 4480			
port 1	port 2	port 3	port 4	port 1	port 2	port 3	port 4
YELLOW 1	YELLOW 2	YELLOW 3	YELLOW 4	YELLOW 5	YELLOW 6	YELLOW 7	YELLOW 8

Gamma RF Jumper Color Code

Radio 4460				Radio 4480			
port 1	port 2	port 3	port 4	port 1	port 2	port 3	port 4
BLUE 1	BLUE 2	BLUE 3	BLUE 4	BLUE 5	BLUE 6	BLUE 7	BLUE 8

Delta RF Jumper Color Code

Radio 4460				Radio 4480			
port 1	port 2	port 3	port 4	port 1	port 2	port 3	port 4
GREEN 1	GREEN 2	GREEN 3	GREEN 4	GREEN 5	GREEN 6	GREEN 7	GREEN 8

1 COLOR CODING CHART
SCALE: NOT TO SCALE

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED
PROFESSIONAL ENGINEER
03/30/2022

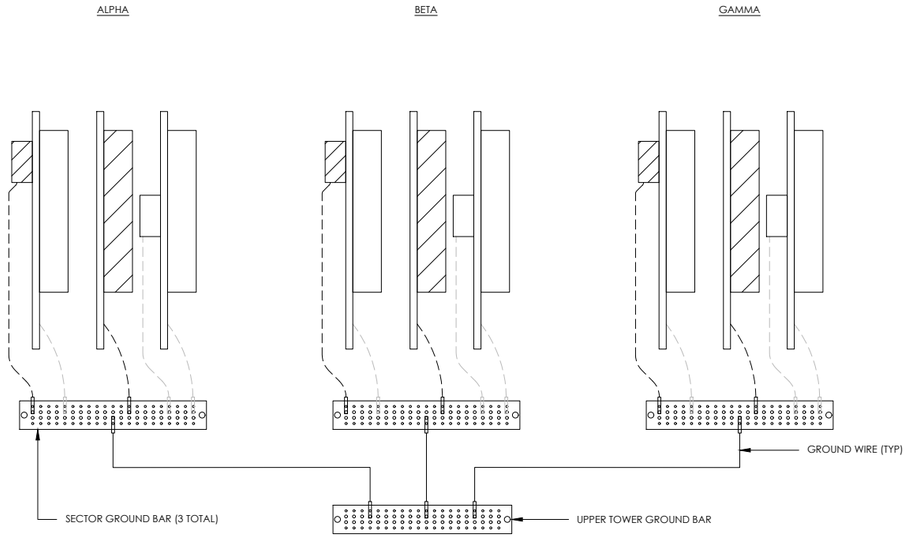
PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: E-3

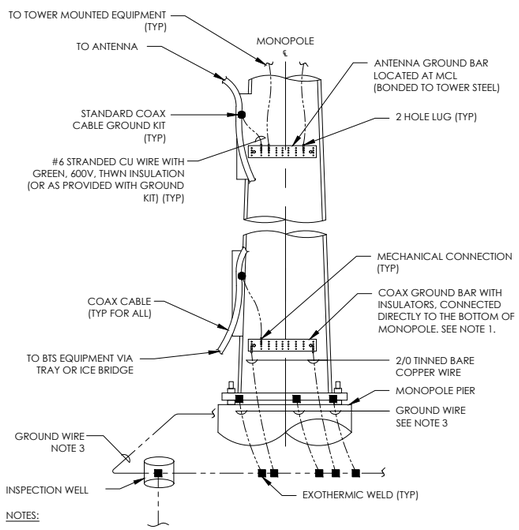
REVISION: 0

NOTE:

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



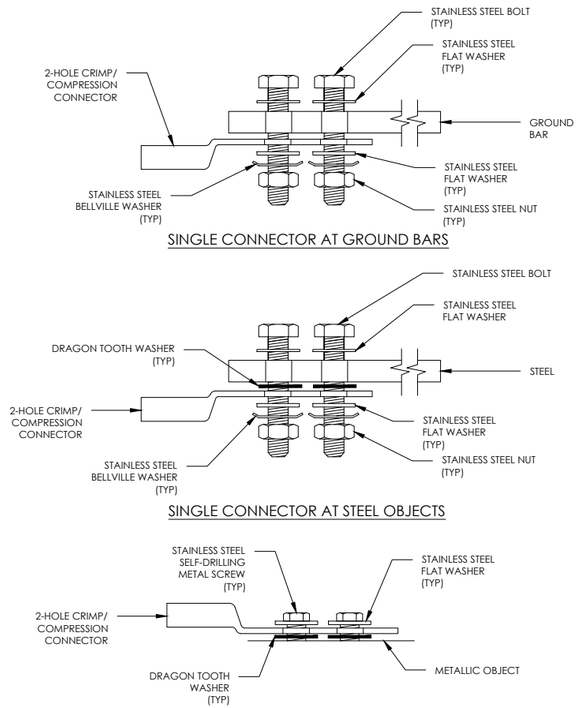
1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



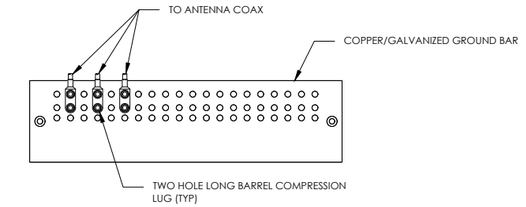
NOTES:

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



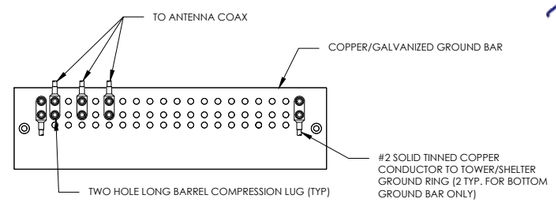
5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. 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

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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

PM&A

P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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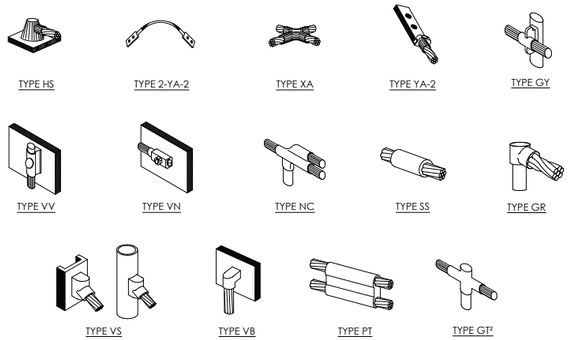
STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: G-1

REVISION: 0

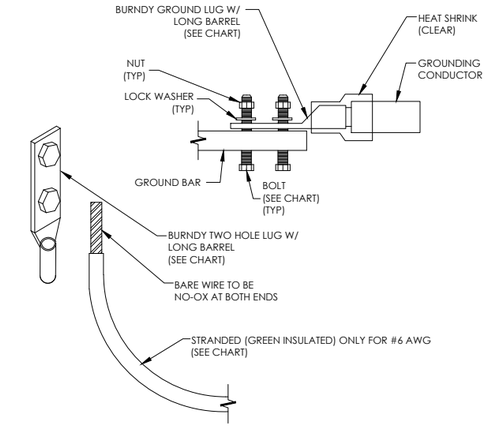


NOTE:

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

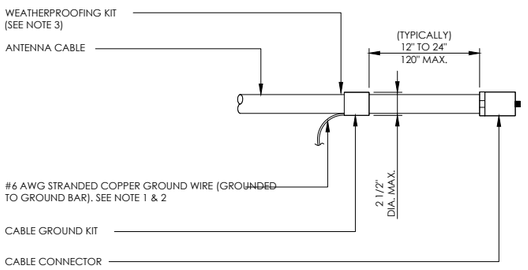
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



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.

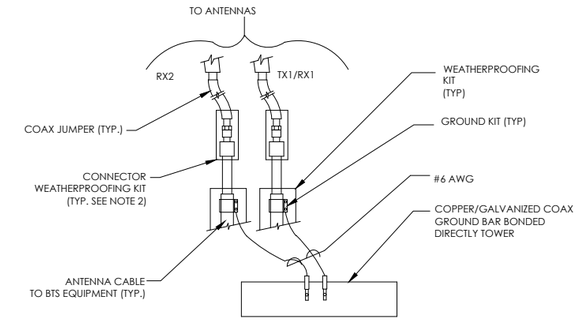
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

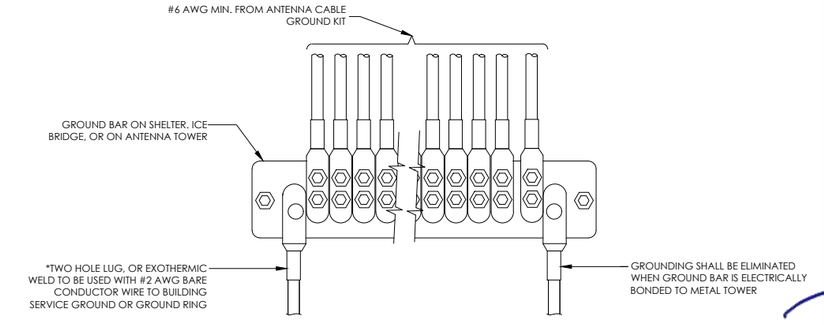
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



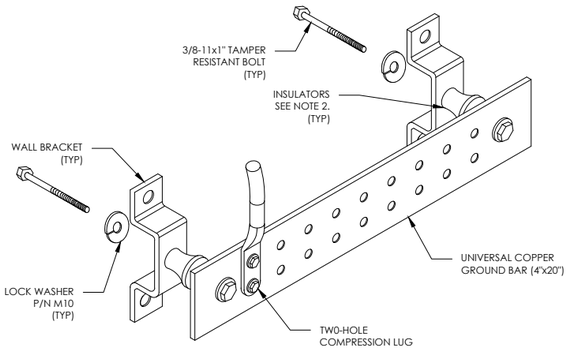
NOTES:

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



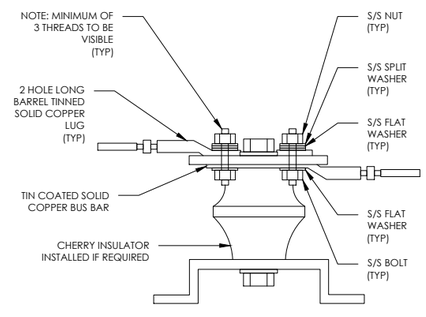
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



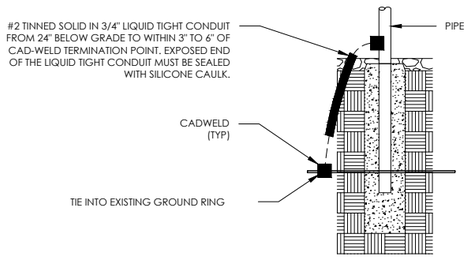
NOTES:

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

PM&A
P. MARSHALL & ASSOCIATES
3545 WHITEHALL PARK DRIVE
SUITE 450 CHARLOTTE,
NORTH CAROLINA 28273

T-MOBILE SITE NUMBER:
CT11511A
CROWN CASTLE BU #:
876390
SITE ADDRESS:

116 GRANT HILL RD.
BROOKLYN, CT 06234

150' - MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/21/22	RLB	PRELIMINARY	JTM
0	03/29/22	RLB	FCDs	JTM

STATE OF CONNECTICUT
PRESTON E. HUMPHRIES
No. 34370
LICENSED PROFESSIONAL ENGINEER
03/30/2022

PM&A PROJECT NUMBER:
22CCTCTM-0004

SHEET NUMBER: G-2
REVISION: 0