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

October 26, 2021

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

RE: **Notice of Exempt Modification for T-Mobile: CT11723A**
Crown Site ID#806354
21 Berkshire Road, Newtown, CT 06482
Latitude: 41° 42′ 45.53″ / Longitude: -73° 16′ 12.34″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 165-foot mount level on the existing 185-foot monopole tower, located at 21 Berkshire Road, Newtown, CT. The property is owned by Carmine Renzulli. Crown Castle is the tower owner. T-Mobile now intends to replace six (6) antennas, add three (3) new antennas and ancillary equipment at the 130-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 – AIR 6449 B41 Antenna
(3) RFS – APXVAALL24_43-U-NA20 Antenna
(3) RFS/Cellwave-APX16DWV-16DWV-S-E-A20 Antennas
(3) Ericsson-Radio 4460 B25+B66
(3) Ericsson-Radio 4480 B71+B85
(3) RFS/Cellwave – HYBRID (1-5/8")
(3) P2 STD x 8'-0" Mount Pipes

Remove:
(3) RFS/Cellwave- APXVSPP18-C-A20 Antenna
(3) RFS/Cellwave – APXVTM14-ALU-120
(3) Alcatel Lucent – RRH8x20-25
(3) Alcatel Lucent- 800MHZ RRH
(3) Alcatel Lucent- PCS 1900MHZ RRH
(3) Alcatel Lucent- 800 External Notch Filter
(9) RFS/Cellwave- ACU-A20-N
(4) Hybrid Cables 1-1/4"
(3) Side Arm Mounts @167'

Ground:

Install New:
(1) 6160 Cabinet
(1.) B160 Battery Cabinet
(1.) BB 6648 In 6160 Cabinet
(1) DUG20 In 6601 Cabinet
(1) RBS 6601 In 6160
(1.) CSR IXR V2 (Gen 2) Transport System

Remove:
(2) Sprint Cabinets
(1) existing Steel Plinth

The facility was approved by the Connecticut Siting Council in Docket No. 89 on March 3, 1988. T-Mobiles proposed modification complies with the conditions and approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mr. Daniel Rosenthal, First Selectman, Town of Newtown, CT, Mr. Don Mitchell, Planning Commission Chair, Town of Newtown, CT and Carmine Renzulli, Property Owner. Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments
cc:

Daniel Rosenthal, First Selectman
Town of Newtown
3 Primrose Street
Newton, CT 06470
203-270-4201

Don Mitchell, Planning Commission Chair
Town of Newtown
3 Primrose Street
Newton, CT 06470
203-270-4201

Carmine Renzulli, Property Owner
505 Westport Avenue
Norwalk, CT 06851

Crown Castle Tower Owner

DOCKET NO. 89 - An application of Metro Mobile CTS of Fairfield County, Inc., for a Certificate of Environmental Compatibility and Public Need for cellular telephone antennas and associated equipment in the Town of Newtown, Connecticut	:	CONNECTICUT SITING COUNCIL
	:	March 3, 1988

DECISION AND ORDER

Pursuant to the forgoing opinion, the Connecticut Siting Council hereby directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc., for the construction, operation, and maintenance of a cellular telephone tower site and associated equipment at the "LM/A-Newtown" alternative site off of Route 34 in the Town of Newtown, Connecticut.

The "LM-Newtown" site off of Commerce Road is hereby denied.

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

1. The monopole tower at the Newtown site shall be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 193 feet, including antennas and associated equipment.

2. The facility shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

3. Unless necessary to comply with condition number 2, above, no lights shall be installed on this tower.

4. The Certificate Holder shall prepare a development and management (D&M) plan for the Newtown site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plan shall provide for permanent evergreen screening around the outside perimeter of the eight-foot chain link fence which will surround the site.

5. The Certificate Holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in this application is added to this facility.

6. The Certificate Holder or its successor shall permit public or private entities to share space on the tower for due consideration, or shall provide the requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. If this facility does not provide, or permanently ceases to provide, cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

8. The Certificate Holder shall comply with any future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in the Decision and Order shall be brought into compliance with such standards.

9. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the the issuance of this Decision and Order.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of this Decision and Order be served on each person listed below. A notice of the issuance shall be published in the Danbury News-Times and Newtown Bee.

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

The parties or intervenors to this proceeding are:

Metro Mobile CTS of Fairfield County, Inc. (applicant)
50 Rockland Road
South Norwalk, CT 06854
ATTN: Peter Kelley
Vice President

Howard L. Slater, Esq. (its representative)
Jennifer Young Gaudet, Esq.
Byrne, Slater, Sandler, Shulman & Rouse, P.C.
330 Main Street
P.O. Box 3216
Hartford, CT 06103

Fleishman and Walsh, P.C. (party)
1725 N Street, N.W.
Washington, D.C. 20036
ATTN: Richard Rubin, Esq.

Theodore G. Whippie (party)
Chairman
Planning & Zoning Comm.
Edmond Town Hall
45 Main Street
Newtown, CT 06470

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket 89 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 3rd day of March, 1988.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Yes
Commissioner Peter Boucher Designee: Roland Miller	Yes
Commissioner Leslie Carothers Designee: Brian Emerick	Yes
Owen L. Clark	Absent
Fred J. Dodcy	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
William H. Smith	Yes
Colin C. Tait	Absent

Town of Newtown, CT

Property Listing Report

Map Block Lot 38-10-3-C

Account 00428200C

Property Information

Property Location	21 BERKSHIRE ROAD
Owner	RENZULLI CARMINE V
Co-Owner	
Mailing Address	505 WESTPORT AVE LT 31 NORWALK CT 06851
Land Use	4310 CELL SITE
Land Class	I
Zoning Code	B-3
Census Tract	
Sub Lot	

Neighborhood	
Acreage	1
Utilities	Well,Septic
Lot Setting/Desc	
Survey Map	
TC Survey Numbers	

Photo

Sketch

Primary Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	

Report Created On 10/25/2021

Town of Newtown, CT

Property Listing Report | Map Block Lot 38-10-3-C | Account 00428200C

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings		
Extras		
Outbuildings		
Land		
Total		

Outbuilding and Extra Items

Type	Description
Cell Tower	1 Units
Cellular Shed	405 S.F.
Cell Tower	1 Units
Cellular Shed	400 S.F.
Cellular Shed	224 S.F.
Fence	300 L.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

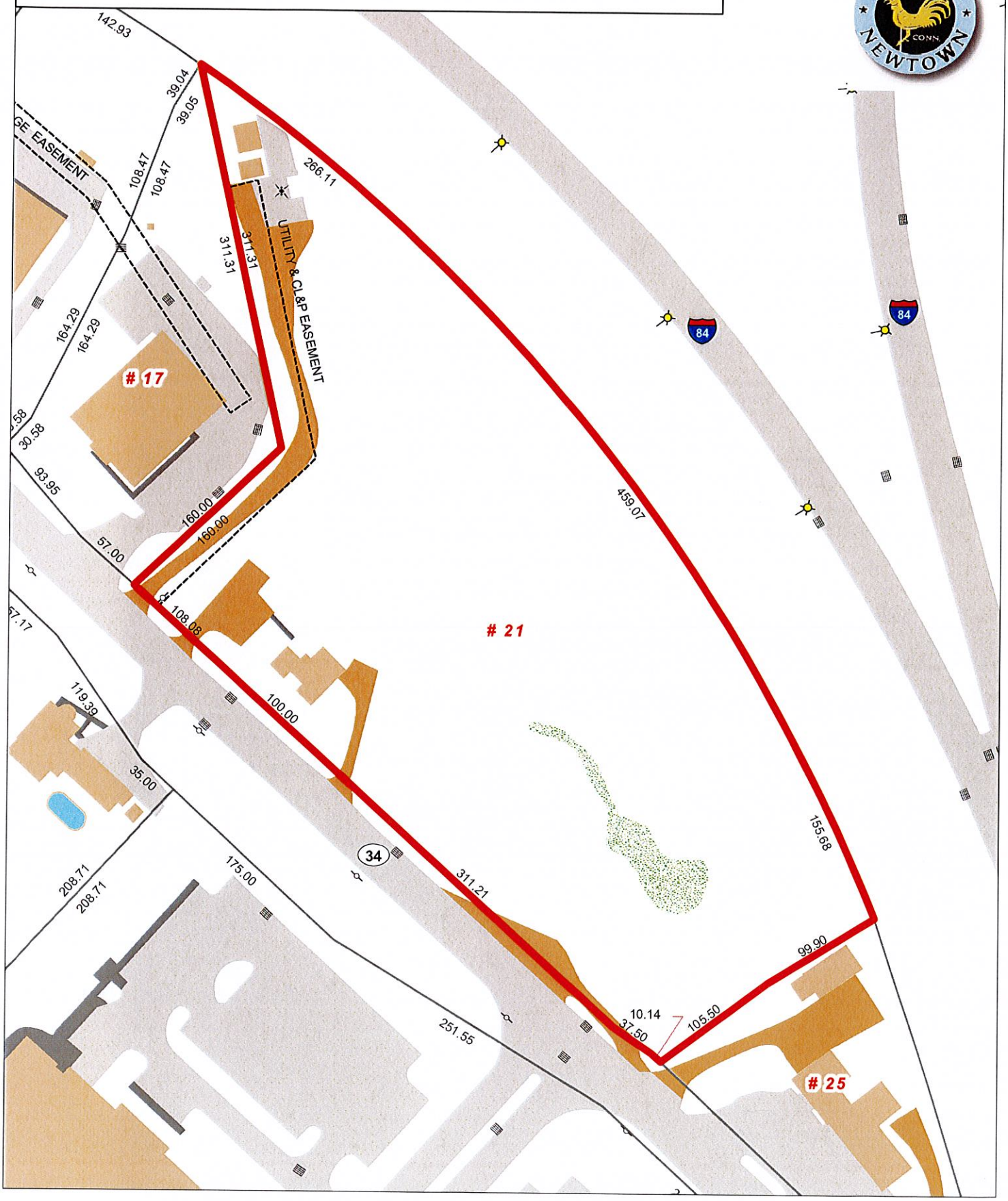
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
RENZULLI CARMINE V	0306/0377	12/25/2009	

Report Created On 10/25/2021

Town of Newtown, Connecticut - Assessment Parcel Map

Parcel: 38-10-3 **Address:** 21 BERKSHIRE ROAD



Approximate Scale:

0 25 50 75 100 Feet

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Newtown and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced Nov 2020

Date: **September 09, 2021**

MORRISON HERSHFIELD

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	**Site Number:**	CT11723A
	Site Name:	CT03XC368
Crown Castle Designation:	**BU Number:**	806354
	Site Name:	BRG 123 943084
	JDE Job Number:	666754
	Work Order Number:	2019092
	Order Number:	567925 Rev. 3
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN8-757R1 / 2101398	
Site Data:	**21 Berkshire Road Newtown, Newtown, Fairfield County, CT 06482** **Latitude *41° 24' 45.53"*, Longitude *-73° 16' 12.34"*** **185 Foot – EEI 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 – 95.8%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

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

Digitally signed by G. Lance Cooke
Date: 2021.09.09 12:44:22-07'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 185 ft Monopole tower designed by Engineered Endeavors, Inc.

The tower was modified per reinforcement drawings prepared by Vertical Structures in February of 2009. Per the post modification inspection completed by Vertical Structures, in June 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:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 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)
165.0	165.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	rfs/celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs/celwave	APXVAALL24_43-U-NA20_TMO		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	RADIO 4480 B71_TMO		
		3	-	Mount Pipe [# P2STD]		
		1	-	Miscellaneous [NA 507-1]		
		1	-	Platform Mount [LP 712-1]		

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)
187.0	187.0	1	-	Miscellaneous [NA 507-1]	7	1-5/8
		1	-	Platform Mount [LP 712-1]		
		1	-	Side Arm Mount [SO 202-3]		
	185.0	6	decibel	DB846F65ZAXY w/ Mount Pipe		
		6	quintel technology	QS8658-5 w/ Mount Pipe		
		3	samsung telecommunications	CBRS w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
187.0	185.0	1	raycap	RRFDC-3315-PF-48	-	-
	183.0	1	-	Miscellaneous [NA 507-1]		
182.0	188.0	1	decibel	ASP-601	1	1/2
	182.0	1	-	Side Arm Mount [SO 104-3]		
175.0	177.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	12 6 3 2	1-5/8 5/8 3/8 2C
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		3	kmw communications	EPBQ-654L8H6-L2 w/ Mount Pipe		
		3	cci antennas	DTMABP7819VG12A		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4478 B14		
		12	powerwave technologies	7020.00		
		6	powerwave technologies	LGP21401		
		3	raycap	DC6-48-60-18-8F		
	175.0	1	-	Miscellaneous [NA 507-1]		
		1	-	Platform Mount [LP 712-1]		
145.0	148.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	8	1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	ericsson	KRY 112 144/2		
		3	ericsson	RADIO 4449 B12/B71		
		3	Site Pro 1	Hand Rail Kit [#F3P-HK-12]		
	145.0	3	rfs/celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	-	Platform Mount [LP 712-1]		
135.0	135.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	-	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2297011	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	822037	CCISITES
4-TOWER MANUFACTURER DRAWINGS	822035	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2381114	CCISITES
4-POST-MODIFICATION INSPECTION	2447231	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	185 - 149.46	Pole	TP36.06x29x0.25	1	-15.59	1696.19	39.1	Pass
L2	149.46 - 114.083	Pole	TP42.46x34.5503x0.3125	2	-29.61	2498.40	66.7	Pass
L3	114.083 - 76.666	Pole	TP49.15x40.6947x0.375	3	-41.31	3470.70	76.8	Pass
L4	76.666 - 38.253	Pole	TP55.9x47.0966x0.4375	4	-56.72	4605.81	77.5	Pass
L5	38.253 - 0	Pole	TP62.5x53.5604x0.5	5	-79.56	6043.85	75.7	Pass
							Summary	
						Pole (L4)	77.5	Pass
						Rating =	77.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	70.8	Pass
1	Base Plate		82.3	Pass
1	Base Foundation (Structure)	0	74.7	Pass
1	Base Foundation (Soil Interaction)		95.8	Pass

Structure Rating (max from all components) =	95.8%*

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

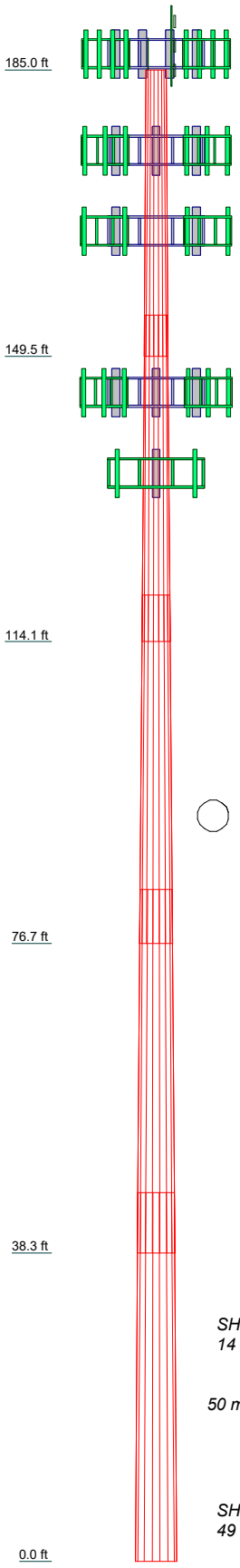
4.1) Recommendations

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	35.54	18	0.2500	5.08	29.0000	36.0600		3.1
2	40.46	18	0.3125	5.83	34.5503	42.4600		5.2
3	43.25	18	0.3750	6.67	40.6947	49.1500		7.8
4	45.08	18	0.4375	7.50	47.0966	55.9000		10.9
5	45.75	18	0.5000		53.5604	62.5000		14.2
							A572-65	41.2



ALL REACTIONS ARE FACTORED

AXIAL 135 K

SHEAR 14 K

MOMENT 2062 kip-ft

TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 80 K

SHEAR 49 K

MOMENT 6741 kip-ft

TORQUE 1 kip-ft
REACTIONS - 120 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 77.5%

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

Job: CN8-757R1 / 2101398			
Project: 806354 / BRG 123 943084			
Client: Crown Castle USA	Drawn by: AP	App'd:	
Code: TIA-222-H	Date: 09/09/21	Scale: NTS	
Path: C:\Users\Apeeta\Desktop\Old works\CN8-757R1 Re-run SA\Analysis\CN8-757R1 BU_806354 WO 2019092.eri		Dwg No. E-1	

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 349.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	185.00-149.46	35.54	5.08	18	29.0000	36.0600	0.2500	1.0000	A572-65 (65 ksi)
L2	149.46-114.08	40.46	5.83	18	34.5503	42.4600	0.3125	1.2500	A572-65 (65 ksi)
L3	114.08-76.67	43.25	6.67	18	40.6947	49.1500	0.3750	1.5000	A572-65 (65 ksi)
L4	76.67-38.25	45.08	7.50	18	47.0966	55.9000	0.4375	1.7500	A572-65

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
L5	38.25-0.00	45.75		18	53.5604	62.5000	0.5000	2.0000	(65 ksi) 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	29.4088	22.8131	2382.3081	10.2063	14.7320	161.7098	4767.7509	11.4087	4.6640	18.656
	36.5777	28.4152	4603.5975	12.7126	18.3185	251.3089	9213.2525	14.2103	5.9066	23.626
L2	36.0441	33.9596	5029.3356	12.1544	17.5515	286.5468	10065.2889	16.9830	5.5308	17.699
	43.0668	41.8051	9382.3116	14.9624	21.5697	434.9769	18776.9687	20.9065	6.9230	22.153
L3	42.4225	47.9905	9856.5919	14.3135	20.6729	476.7882	19726.1533	23.9998	6.5023	17.339
	49.8504	58.0544	17448.8767	17.3151	24.9682	698.8440	34920.7131	29.0327	7.9904	21.308
L4	49.0777	64.7920	17820.9870	16.5640	23.9251	744.8664	35665.4233	32.4022	7.5190	17.186
	56.6949	77.0166	29930.9675	19.6892	28.3972	1054.0112	59901.3189	38.5156	9.0684	20.728
L5	55.7975	84.2068	29951.9601	18.8364	27.2087	1100.8242	59943.3317	42.1114	8.5466	17.093
	63.3870	98.3940	47784.7640	22.0100	31.7500	1505.0319	95632.4044	49.2063	10.1200	20.24

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 185.00-149.46				1	1	1			
L2 149.46-114.08				1	1	1			
L3 114.08-76.67				1	1	1			
L4 76.67-38.25				1	1	1			
L5 38.25-0.00				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	B	No	Surface Ar (CaAa)	185.00 - 10.00	1	1	-0.450 -0.450	0.3750		0.22
Climbing Rungs	B	No	Surface Ar (CaAa)	185.00 - 10.00	1	1	-0.500 -0.400	0.7050		1.80
******										
CR 50 1873PE(1-5/8)	A	No	Surface Ar (CaAa)	175.00 - 8.00	12	12	-0.500 -0.250	1.9800		0.83
WR-VG82ST-BRDA(5/8)	A	No	Surface Ar (CaAa)	175.00 - 8.00	4	2	-0.250 -0.200	0.6450		0.31
***										
HB158-21U6S24-xxM_TMO(1-5/8)	B	No	Surface Ar (CaAa)	165.00 - 8.00	3	3	-0.390 -0.320	1.9960		2.50
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	B	No	Surface Ar (CaAa)	145.00 - 4.00	1	1	-0.200 -0.200	1.6250		1.07
***										

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HCS 6X12 4AWG(1-5/8)	B	No	Surface Ar (CaAa)	145.00 - 4.00	1	1	-0.250 -0.250	1.6600		2.40
******										
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	135.00 - 8.00	1	1	-0.400 -0.400	1.6000		2.35

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
******									
HJ7-50A(1-5/8)	A	No	No	Inside Pole	185.00 - 8.00	7	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
							2" Ice	0.00	1.04
******									
LDF4P-50A(1/2)	C	No	No	Inside Pole	182.00 - 8.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
FB-L98B-002-75000(3/8)	A	No	No	Inside Pole	175.00 - 8.00	3	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8)	A	No	No	Inside Pole	175.00 - 8.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
2" Rigid Conduit	A	No	No	Inside Pole	175.00 - 8.00	2	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
							2" Ice	0.00	2.80
******									
******									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	145.00 - 4.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
******									
LDF4P-50A(1/2")	C	No	No	Inside Pole	52.00 - 0.00	3	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF4P-50A(1/2")	C	No	No	Inside Pole	108.00 - 52.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF4P-50A(1/2")	C	No	No	Inside Pole	110.00 - 108.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" 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	185.00-149.46	A	0.000	0.000	63.978	0.000	0.71
		B	0.000	0.000	13.144	0.000	0.19
		C	0.000	0.000	0.000	0.000	0.00
L2	149.46-114.08	A	0.000	0.000	88.619	0.000	0.88
		B	0.000	0.000	38.507	0.000	0.65
		C	0.000	0.000	0.000	0.000	0.01

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
L3	114.08-76.67	A	0.000	0.000	93.730	0.000	0.93
		B	0.000	0.000	44.725	0.000	0.76
		C	0.000	0.000	0.000	0.000	0.02
L4	76.67-38.25	A	0.000	0.000	96.225	0.000	0.95
		B	0.000	0.000	45.915	0.000	0.78
		C	0.000	0.000	0.000	0.000	0.02
L5	38.25-0.00	A	0.000	0.000	75.784	0.000	0.75
		B	0.000	0.000	37.259	0.000	0.64
		C	0.000	0.000	0.000	0.000	0.02

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	185.00-149.46	A	1.499	0.000	0.000	99.116	0.000	1.75
		B		0.000	0.000	42.606	0.000	0.64
		C		0.000	0.000	0.000	0.000	0.00
L2	149.46-114.08	A	1.464	0.000	0.000	137.292	0.000	2.33
		B		0.000	0.000	103.088	0.000	1.80
		C		0.000	0.000	0.000	0.000	0.01
L3	114.08-76.67	A	1.417	0.000	0.000	144.549	0.000	2.42
		B		0.000	0.000	118.794	0.000	2.07
		C		0.000	0.000	0.000	0.000	0.02
L4	76.67-38.25	A	1.347	0.000	0.000	147.502	0.000	2.44
		B		0.000	0.000	119.719	0.000	2.07
		C		0.000	0.000	0.000	0.000	0.02
L5	38.25-0.00	A	1.209	0.000	0.000	115.112	0.000	1.86
		B		0.000	0.000	93.821	0.000	1.62
		C		0.000	0.000	0.000	0.000	0.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	185.00-149.46	-7.0079	0.3401	-5.0967	-1.1007
L2	149.46-114.08	-7.0188	-1.3765	-4.5815	-3.0019
L3	114.08-76.67	-7.3747	-1.8096	-4.7969	-3.6555
L4	76.67-38.25	-7.9097	-1.9439	-5.2492	-3.9166
L5	38.25-0.00	-7.1981	-1.9037	-4.9124	-3.7282

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	149.46 - 185.00	1.0000	1.0000
L1	3	Climbing Rungs	149.46 - 185.00	1.0000	1.0000
L1	11	CR 50 1873PE(1-5/8)	149.46 - 175.00	1.0000	1.0000
L1	14	WR-VG82ST-BRDA(5/8)	149.46 - 175.00	1.0000	1.0000
L1	20	HB158-21U6S24-xxM_TMO(1-5/8)	149.46 - 165.00	1.0000	1.0000
L2	2	Safety Line 3/8	114.08 - 149.46	1.0000	1.0000
L2	3	Climbing Rungs	114.08 - 149.46	1.0000	1.0000
L2	11	CR 50 1873PE(1-5/8)	114.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			149.46		
L2	14	WR-VG82ST-BRDA(5/8)	114.08 - 149.46	1.0000	1.0000
L2	20	HB158-21U6S24-xxM_TMO(1-5/8)	114.08 - 149.46	1.0000	1.0000
L2	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	114.08 - 145.00	1.0000	1.0000
L2	25	HCS 6X12 4AWG(1-5/8)	114.08 - 145.00	1.0000	1.0000
L2	27	CU12PSM9P6XXX(1-1/2)	114.08 - 135.00	1.0000	1.0000
L3	2	Safety Line 3/8	76.67 - 114.08	1.0000	1.0000
L3	3	Climbing Rungs	76.67 - 114.08	1.0000	1.0000
L3	11	CR 50 1873PE(1-5/8)	76.67 - 114.08	1.0000	1.0000
L3	14	WR-VG82ST-BRDA(5/8)	76.67 - 114.08	1.0000	1.0000
L3	20	HB158-21U6S24-xxM_TMO(1-5/8)	76.67 - 114.08	1.0000	1.0000
L3	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	76.67 - 114.08	1.0000	1.0000
L3	25	HCS 6X12 4AWG(1-5/8)	76.67 - 114.08	1.0000	1.0000
L3	27	CU12PSM9P6XXX(1-1/2)	76.67 - 114.08	1.0000	1.0000
L4	2	Safety Line 3/8	38.25 - 76.67	1.0000	1.0000
L4	3	Climbing Rungs	38.25 - 76.67	1.0000	1.0000
L4	11	CR 50 1873PE(1-5/8)	38.25 - 76.67	1.0000	1.0000
L4	14	WR-VG82ST-BRDA(5/8)	38.25 - 76.67	1.0000	1.0000
L4	20	HB158-21U6S24-xxM_TMO(1-5/8)	38.25 - 76.67	1.0000	1.0000
L4	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	38.25 - 76.67	1.0000	1.0000
L4	25	HCS 6X12 4AWG(1-5/8)	38.25 - 76.67	1.0000	1.0000
L4	27	CU12PSM9P6XXX(1-1/2)	38.25 - 76.67	1.0000	1.0000
L5	2	Safety Line 3/8	10.00 - 38.25	1.0000	1.0000
L5	3	Climbing Rungs	10.00 - 38.25	1.0000	1.0000
L5	11	CR 50 1873PE(1-5/8)	8.00 - 38.25	1.0000	1.0000
L5	14	WR-VG82ST-BRDA(5/8)	8.00 - 38.25	1.0000	1.0000
L5	20	HB158-21U6S24-xxM_TMO(1-5/8)	8.00 - 38.25	1.0000	1.0000
L5	23	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	4.00 - 38.25	1.0000	1.0000
L5	25	HCS 6X12 4AWG(1-5/8)	4.00 - 38.25	1.0000	1.0000
L5	27	CU12PSM9P6XXX(1-1/2)	8.00 - 38.25	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
******									
Lighting Rod 5/8" x 4' on 4' Pole	C	From Leg	0.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.32 2.13 2.70 3.77	1.32 2.13 2.70 3.77	0.07 0.09 0.11 0.17
******									
CBRS w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.03 0.05 0.07 0.12
CBRS w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.03 0.05 0.07 0.12
CBRS w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.45 1.67 1.90 2.42	0.99 1.18 1.39 1.85	0.03 0.05 0.07 0.12
(2) QS8658-5 w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.42 5.92 6.43 7.48	5.62 6.12 6.63 7.69	0.13 0.22 0.33 0.58
(2) QS8658-5 w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.42 5.92 6.43 7.48	5.62 6.12 6.63 7.69	0.13 0.22 0.33 0.58
(2) QS8658-5 w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.42 5.92 6.43 7.48	5.62 6.12 6.63 7.69	0.13 0.22 0.33 0.58
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
RRFDC-3315-PF-48	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
RFV01U-D1A	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18

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" Ice			
RFV01U-D1A	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D2A	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
8' Ladder	B	From Leg	2.00 0.00 -4.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.53 4.36 7.19 12.86	5.33 8.08 10.83 16.33	0.10 0.11 0.13 0.16
Miscellaneous [NA 507-1]	C	None		0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
Miscellaneous [NA 507-1]	C	None		0.0000	183.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
Platform Mount [LP 712-1]	C	None		0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	24.56 27.92 31.27 37.98	24.56 27.92 31.27 37.98	1.34 1.91 2.55 3.97
Side Arm Mount [SO 202-3]	C	None		0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.70 6.97 8.33 11.33	5.70 6.97 8.33 11.33	0.33 0.40 0.49 0.75
***									
MT6407-77A w/ Mount Pipe	A	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	B	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.91 5.26 5.61 6.36	2.68 3.14 3.62 4.63	0.10 0.14 0.18 0.29
MT6407-77A w/ Mount Pipe	C	From Leg	4.00 0.00 -2.00	0.0000	187.00	No Ice 1/2" Ice	4.91 5.26 5.61	2.68 3.14 3.62	0.10 0.14 0.18

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 2" Ice	6.36	4.63	0.29
******									
ASP-601	B	From Leg	1.00 0.00 6.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.34 4.21 6.08 9.83	2.34 4.21 6.08 9.83	0.03 0.04 0.04 0.06
2.4" Dia x 6-ft Pipe	B	From Leg	1.00 0.00 6.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
2.4" Dia x 12-ft Pipe	B	From Leg	1.00 0.00 6.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 4.08 5.33 7.61	2.86 4.08 5.33 7.61	0.04 0.06 0.09 0.17
Side Arm Mount [SO 104-3]	C	None		0.0000	182.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.62 3.30 3.98 5.35	2.62 3.30 3.98 5.35	0.29 0.41 0.53 0.77
******									
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
EPBQ-654L8H6-L2 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.09 11.77 12.46 13.88	4.69 5.28 5.89 7.13	0.11 0.19 0.29 0.52
EPBQ-654L8H6-L2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.09 11.77 12.46 13.88	4.69 5.28 5.89 7.13	0.11 0.19 0.29 0.52
EPBQ-654L8H6-L2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.09 11.77 12.46 13.88	4.69 5.28 5.89 7.13	0.11 0.19 0.29 0.52
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	0.11 0.18 0.26 0.45
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	0.11 0.18 0.26 0.45
OPA-65R-LCUU-H6 w/	C	From Leg	4.00	0.0000	175.00	No Ice	9.19	6.21	0.11

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"	9.94	6.93	0.18
			2.00			Ice	10.71	7.66	0.26
						1" Ice	12.30	9.17	0.45
						2" Ice			
(2) LGP21401	A	From Leg	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(2) LGP21401	C	From Leg	4.00	0.0000	175.00	No Ice	1.10	0.21	0.01
			0.00			1/2"	1.24	0.27	0.02
			2.00			Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice			
(4) 7020.00	A	From Leg	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2"	0.15	0.24	0.01
			2.00			Ice	0.20	0.31	0.01
						1" Ice	0.33	0.48	0.02
						2" Ice			
(4) 7020.00	B	From Leg	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2"	0.15	0.24	0.01
			2.00			Ice	0.20	0.31	0.01
						1" Ice	0.33	0.48	0.02
						2" Ice			
(4) 7020.00	C	From Leg	4.00	0.0000	175.00	No Ice	0.10	0.17	0.00
			0.00			1/2"	0.15	0.24	0.01
			2.00			Ice	0.20	0.31	0.01
						1" Ice	0.33	0.48	0.02
						2" Ice			
RRUS 4478 B14	A	From Leg	4.00	0.0000	175.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			2.00			Ice	2.19	1.34	0.09
						1" Ice	2.57	1.66	0.14
						2" Ice			
RRUS 4478 B14	B	From Leg	4.00	0.0000	175.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			2.00			Ice	2.19	1.34	0.09
						1" Ice	2.57	1.66	0.14
						2" Ice			
RRUS 4478 B14	C	From Leg	4.00	0.0000	175.00	No Ice	1.84	1.06	0.06
			0.00			1/2"	2.01	1.20	0.08
			2.00			Ice	2.19	1.34	0.09
						1" Ice	2.57	1.66	0.14
						2" Ice			
RRUS 32	A	From Leg	4.00	0.0000	175.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			2.00			Ice	3.32	2.17	0.10
						1" Ice	3.81	2.58	0.16
						2" Ice			
RRUS 32	B	From Leg	4.00	0.0000	175.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			2.00			Ice	3.32	2.17	0.10
						1" Ice	3.81	2.58	0.16
						2" Ice			
RRUS 32	C	From Leg	4.00	0.0000	175.00	No Ice	2.86	1.78	0.06
			0.00			1/2"	3.08	1.97	0.08
			2.00			Ice	3.32	2.17	0.10
						1" Ice	3.81	2.58	0.16
						2" Ice			
RRUS 32 B66	A	From Leg	4.00	0.0000	175.00	No Ice	2.74	1.67	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
			0.00			1/2"	2.96	1.86	0.07
			2.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS 32 B66	B	From Leg	4.00	0.0000	175.00	No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			2.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS 32 B66	C	From Leg	4.00	0.0000	175.00	No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			2.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS 11	A	From Leg	4.00	0.0000	175.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 11	B	From Leg	4.00	0.0000	175.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 11	C	From Leg	4.00	0.0000	175.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			2.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
RRUS 32 B2	A	From Leg	4.00	0.0000	175.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			2.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 32 B2	B	From Leg	4.00	0.0000	175.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			2.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
RRUS 32 B2	C	From Leg	4.00	0.0000	175.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			2.00			Ice	3.18	2.05	0.10
						1" Ice	3.66	2.46	0.16
						2" Ice			
DTMABP7819VG12A	A	From Leg	4.00	0.0000	175.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			2.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
DTMABP7819VG12A	B	From Leg	4.00	0.0000	175.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			2.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
DTMABP7819VG12A	C	From Leg	4.00	0.0000	175.00	No Ice	0.98	0.34	0.02
			0.00			1/2"	1.10	0.42	0.03
			2.00			Ice	1.23	0.51	0.04
						1" Ice	1.52	0.71	0.06
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	175.00	No Ice	0.92	0.92	0.02
			0.00			1/2"	1.46	1.46	0.04
			2.00			Ice	1.64	1.64	0.06
						1" Ice	2.04	2.04	0.11
						2" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	175.00	No Ice	0.92	0.92	0.02

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 2.00			1/2" Ice 1" Ice 2" Ice	1.46 1.64 2.04	1.46 1.64 2.04	0.04 0.06 0.11
DC6-48-60-18-8F	C	From Leg	4.00 0.00 2.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
(3) 2.4" Dia x 6-ft Pipe	A	From Leg	4.00 0.00 1.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
(3) 2.4" Dia x 6-ft Pipe	B	From Leg	4.00 0.00 1.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
(3) 2.4" Dia x 6-ft Pipe	C	From Leg	4.00 0.00 1.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
8' Ladder	A	From Leg	2.00 0.00 -4.00	0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.53 4.36 7.19 12.86	5.33 8.08 10.83 16.33	0.10 0.11 0.13 0.16
Miscellaneous [NA 507-1]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
Platform Mount [LP 712-1]	C	None		0.0000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice	24.56 27.92 31.27 37.98	24.56 27.92 31.27 37.98	1.34 1.91 2.55 3.97
****** ******									
8' Ladder	A	From Leg	2.00 0.00 -4.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.53 4.36 7.19 12.86	5.33 8.08 10.83 16.33	0.10 0.11 0.13 0.16
Miscellaneous [NA 507-1]	C	None		0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 6.39 8.18 11.66	4.56 6.39 8.18 11.66	0.25 0.31 0.40 0.66
Platform Mount [LP 712-1]	C	None		0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	24.56 27.92 31.27 37.98	24.56 27.92 31.27 37.98	1.34 1.91 2.55 3.97
***									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23

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	6.90	4.12	0.35
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.19 5.59 6.02 6.90	2.71 3.04 3.38 4.12	0.13 0.17 0.23 0.35
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.29 6.86 7.45 8.68	2.76 3.27 3.79 4.90	0.06 0.11 0.16 0.29
APXVAALL24_43-U-NA20_TMO	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
APXVAALL24_43-U-NA20_TMO	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	0.15 0.26 0.38 0.65
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4480 B71_TMO	A	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.09 0.11 0.14 0.20
RADIO 4480 B71_TMO	B	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.85 3.06 3.28 3.74	1.38 1.54 1.71 2.07	0.09 0.11 0.14 0.20
RADIO 4480 B71_TMO	C	From Leg	4.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice Ice	2.85 3.06 3.28	1.38 1.54 1.71	0.09 0.11 0.14

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	3.74	2.07	0.20
						2" Ice			
Mount Pipe [# P2STD]	A	From Leg	4.00	0.0000	165.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
Mount Pipe [# P2STD]	B	From Leg	4.00	0.0000	165.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
Mount Pipe [# P2STD]	C	From Leg	4.00	0.0000	165.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice	4.40	4.40	0.12
						2" Ice			
******									
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.22
						1" Ice	4.43	3.84	0.37
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	145.00	No Ice	3.14	2.59	0.11
			0.00			1/2"	3.45	2.88	0.16
			3.00			Ice	3.77	3.19	0.23
						1" Ice	4.43	3.84	0.38
						2" Ice			
8' Ladder	A	From Centroid-Face	2.00	0.0000	145.00	No Ice	1.53	5.33	0.10
			0.00			1/2"	4.36	8.08	0.11
			0.00			Ice	7.19	10.83	0.13
						1" Ice	12.86	16.33	0.16
						2" Ice			
Platform Mount [LP 712-1]	C	None		0.0000	145.00	No Ice	24.56	24.56	1.34
						1/2"	27.92	27.92	1.91
						Ice	31.27	31.27	2.55
						1" Ice	37.98	37.98	3.97
						2" Ice			
***									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	145.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	145.00	No Ice	14.69	6.87	0.19

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
w/ Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice	15.46 16.23 17.82	7.55 8.25 9.67	0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
KRY 112 144/2	A	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.48 0.57 0.66 0.88	0.23 0.30 0.38 0.55	0.01 0.01 0.02 0.04
KRY 112 144/2	B	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.48 0.57 0.66 0.88	0.23 0.30 0.38 0.55	0.01 0.01 0.02 0.04
KRY 112 144/2	C	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.48 0.57 0.66 0.88	0.23 0.30 0.38 0.55	0.01 0.01 0.02 0.04
Hand Rail Kit [#F3P-HK-12]	A	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.83 6.08 8.02	0.02 0.07 0.13 0.28	0.07 0.10 0.13 0.22
Hand Rail Kit [#F3P-HK-12]	B	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.83 6.08 8.02	0.02 0.07 0.13 0.28	0.07 0.10 0.13 0.22
Hand Rail Kit [#F3P-HK-12]	C	From Leg	4.00 0.00 3.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.83 6.08 8.02	0.02 0.07 0.13 0.28	0.07 0.10 0.13 0.22
******									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	0.11 0.19 0.29 0.52

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	135.00	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
							2" Ice	10.11	6.12	0.52
TA08025-B604	A	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.55	0.15
TA08025-B604	B	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.55	0.15
TA08025-B604	C	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.55	0.15
TA08025-B605	A	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.72	0.16
TA08025-B605	B	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.72	0.16
TA08025-B605	C	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.71	1.72	0.16
RDIDC-9181-PF-48	B	From Leg	4.00	0.00	0.0000	135.00	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" Ice	2.76	1.78	0.11
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	135.00	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" Ice	4.40	4.40	0.12
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	135.00	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" Ice	4.40	4.40	0.12
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	135.00	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" Ice	4.40	4.40	0.12
Commscope MC-PK8-DSH	C	None			0.0000	135.00	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
							2" Ice	149.08	149.08	3.15
******										
GPS_A	C	From Face	3.00	0.00	0.0000	110.00	No Ice	0.26	0.26	0.00
			0.00				1/2" Ice	0.32	0.32	0.00
			1.00				1" Ice	0.39	0.39	0.01
								0.56	0.56	0.02

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" Ice			
2.4" Dia x 18" Pipe	C	From Face	3.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.24 0.34 0.46 0.70	0.24 0.34 0.46 0.70	0.01 0.01 0.01 0.03
Side Arm Mount [SO 701-1]	C	From Face	1.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
******									
GPS_A	C	From Leg	3.00 0.00 1.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.26 0.32 0.39 0.56	0.26 0.32 0.39 0.56	0.00 0.00 0.01 0.02
2.4" Dia x 18" Pipe	C	From Leg	3.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.24 0.34 0.46 0.70	0.24 0.34 0.46 0.70	0.01 0.01 0.01 0.03
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
******									
GPS_A	C	From Face	3.00 0.00 1.00	0.0000	52.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.26 0.32 0.39 0.56	0.26 0.32 0.39 0.56	0.00 0.00 0.01 0.02
2.4" Dia x 18" Pipe	C	From Face	3.00 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.24 0.34 0.46 0.70	0.24 0.34 0.46 0.70	0.01 0.01 0.01 0.03
Side Arm Mount [SO 701-1]	C	From Face	1.50 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
***									

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

Comb. No.	Description
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	185 - 149.46	Pole	Max Tension	42	0.00	0.00	-0.00
			Max. Compression	26	-40.80	-0.02	2.86
			Max. Mx	8	-15.59	-516.75	3.32
			Max. My	2	-15.61	-2.62	518.43
			Max. Vy	8	24.00	-516.75	3.32
			Max. Vx	2	-23.85	-2.62	518.43
			Max. Torque	12			1.87
L2	149.46 - 114.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.13	0.25	6.26
			Max. Mx	8	-29.63	-1582.25	9.01
			Max. My	2	-29.64	-7.44	1581.30
			Max. Vy	8	35.85	-1582.25	9.01
			Max. Vx	2	-35.76	-7.44	1581.30
			Max. Torque	12			1.87
L3	114.083 - 76.666	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.37	0.83	9.83
			Max. Mx	8	-41.32	-2980.31	14.79
			Max. My	2	-41.33	-12.50	2976.17
			Max. Vy	8	40.36	-2980.31	14.79
			Max. Vx	2	-40.25	-12.50	2976.17
			Max. Torque	12			1.78
L4	76.666 - 38.253	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-106.48	0.87	14.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-56.72	-4579.93	20.67
			Max. My	2	-56.73	-17.68	4572.13
			Max. Vy	8	44.59	-4579.93	20.67
			Max. Vx	2	-44.45	-17.68	4572.13
			Max. Torque	12			1.24
L5	38.253 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-135.36	0.83	18.68
			Max. Mx	8	-79.56	-6717.02	27.85
			Max. My	2	-79.56	-23.76	6703.90
			Max. Vy	8	48.39	-6717.02	27.85
			Max. Vx	2	-48.26	-23.76	6703.90
			Max. Torque	12			1.07

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	135.36	-0.01	14.02
	Max. H_x	21	59.69	48.34	-0.12
	Max. H_z	2	79.59	-0.12	48.20
	Max. M_x	2	6703.90	-0.12	48.20
	Max. M_z	8	6717.02	-48.34	0.12
	Max. Torsion	12	1.07	-24.07	-41.68
	Min. Vert	17	59.69	24.27	-41.80
	Min. H_x	8	79.59	-48.34	0.12
	Min. H_z	15	59.69	0.12	-48.20
	Min. M_x	14	-6693.35	0.12	-48.20
	Min. M_z	20	-6714.59	48.34	-0.12
	Min. Torsion	24	-0.95	24.07	41.68

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	66.33	0.00	0.00	-4.17	-0.97	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	79.59	0.12	-48.20	-6703.90	-23.76	0.89
0.9 Dead+1.0 Wind 0 deg - No Ice	59.69	0.12	-48.20	-6603.67	-23.07	0.88
1.2 Dead+1.0 Wind 30 deg - No Ice	79.59	24.27	-41.80	-5817.64	-3378.61	0.62
0.9 Dead+1.0 Wind 30 deg - No Ice	59.69	24.27	-41.80	-5730.47	-3328.44	0.61
1.2 Dead+1.0 Wind 60 deg - No Ice	79.59	41.92	-24.20	-3374.06	-5828.47	0.18
0.9 Dead+1.0 Wind 60 deg - No Ice	59.69	41.92	-24.20	-3322.93	-5742.18	0.16
1.2 Dead+1.0 Wind 90 deg - No Ice	79.59	48.34	-0.12	-27.85	-6717.02	-0.36
0.9 Dead+1.0 Wind 90 deg - No Ice	59.69	48.34	-0.12	-26.08	-6617.65	-0.37
1.2 Dead+1.0 Wind 120 deg - No Ice	79.59	42.14	24.19	3348.05	-5846.85	-0.83
0.9 Dead+1.0 Wind 120 deg - No Ice	59.69	42.14	24.19	3300.06	-5760.44	-0.83
1.2 Dead+1.0 Wind 150 deg - No Ice	79.59	24.07	41.68	5784.71	-3339.66	-1.07
0.9 Dead+1.0 Wind 150 deg - No Ice	59.69	24.07	41.68	5700.67	-3290.13	-1.06
1.2 Dead+1.0 Wind 180 deg - No Ice	79.59	-0.12	48.20	6693.35	21.36	-0.98
0.9 Dead+1.0 Wind 180 deg	59.69	-0.12	48.20	6595.87	21.29	-0.96

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
- No Ice 1.2 Dead+1.0 Wind 210 deg	79.59	-24.27	41.80	5807.07	3376.21	-0.59
- No Ice 0.9 Dead+1.0 Wind 210 deg	59.69	-24.27	41.80	5722.68	3326.67	-0.58
- No Ice 1.2 Dead+1.0 Wind 240 deg	79.59	-41.92	24.20	3363.48	5826.06	-0.06
- No Ice 0.9 Dead+1.0 Wind 240 deg	59.69	-41.92	24.20	3315.13	5740.40	-0.05
- No Ice 1.2 Dead+1.0 Wind 270 deg	79.59	-48.34	0.12	17.27	6714.59	0.44
- No Ice 0.9 Dead+1.0 Wind 270 deg	59.69	-48.34	0.12	18.28	6615.82	0.45
- No Ice 1.2 Dead+1.0 Wind 300 deg	79.59	-42.14	-24.19	-3358.61	5844.41	0.80
- No Ice 0.9 Dead+1.0 Wind 300 deg	59.69	-42.14	-24.19	-3307.85	5758.64	0.80
- No Ice 1.2 Dead+1.0 Wind 330 deg	79.59	-24.07	-41.68	-5795.25	3337.24	0.95
- No Ice 0.9 Dead+1.0 Wind 330 deg	59.69	-24.07	-41.68	-5708.45	3288.34	0.95
- No Ice 1.2 Dead+1.0 Ice+1.0 Temp	135.36	-0.00	-0.00	-18.68	0.83	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	135.36	0.01	-14.02	-2060.99	-2.56	0.41
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	135.36	7.04	-12.15	-1789.12	-1024.93	0.29
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	135.36	12.18	-7.02	-1042.95	-1772.45	0.09
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	135.36	14.05	-0.01	-22.40	-2044.81	-0.14
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	135.36	12.16	7.00	999.08	-1769.04	-0.33
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	135.36	7.01	12.13	1747.76	-1019.03	-0.43
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	135.36	-0.01	14.02	2023.04	4.26	-0.42
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	135.36	-7.04	12.15	1751.17	1026.64	-0.29
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	135.36	-12.18	7.02	1004.98	1774.14	-0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	135.36	-14.05	0.01	-15.57	2046.50	0.15
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	135.36	-12.16	-7.00	-1037.03	1770.73	0.33
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	135.36	-7.01	-12.13	-1785.71	1020.72	0.43
Dead+Wind 0 deg - Service	66.33	0.03	-11.35	-1570.15	-6.27	0.22
Dead+Wind 30 deg - Service	66.33	5.72	-9.85	-1363.02	-790.47	0.14
Dead+Wind 60 deg - Service	66.33	9.87	-5.70	-791.83	-1363.14	0.03
Dead+Wind 90 deg - Service	66.33	11.39	-0.03	-9.65	-1570.81	-0.10
Dead+Wind 120 deg - Service	66.33	9.93	5.70	779.47	-1367.43	-0.20
Dead+Wind 150 deg - Service	66.33	5.67	9.82	1349.00	-781.36	-0.24
Dead+Wind 180 deg - Service	66.33	-0.03	11.35	1561.39	4.26	-0.22
Dead+Wind 210 deg - Service	66.33	-5.72	9.85	1354.26	788.46	-0.14
Dead+Wind 240 deg - Service	66.33	-9.87	5.70	783.07	1361.13	-0.02
Dead+Wind 270 deg - Service	66.33	-11.39	0.03	0.88	1568.79	0.10
Dead+Wind 300 deg - Service	66.33	-9.93	-5.70	-788.23	1365.42	0.19
Dead+Wind 330 deg - Service	66.33	-5.67	-9.82	-1357.76	779.34	0.24

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-66.33	0.00	0.00	66.33	0.00	0.000%
2	0.12	-79.59	-48.20	-0.12	79.59	48.20	0.000%
3	0.12	-59.69	-48.20	-0.12	59.69	48.20	0.000%
4	24.27	-79.59	-41.80	-24.27	79.59	41.80	0.000%
5	24.27	-59.69	-41.80	-24.27	59.69	41.80	0.000%
6	41.92	-79.59	-24.20	-41.92	79.59	24.20	0.000%
7	41.92	-59.69	-24.20	-41.92	59.69	24.20	0.000%
8	48.34	-79.59	-0.12	-48.34	79.59	0.12	0.000%
9	48.34	-59.69	-0.12	-48.34	59.69	0.12	0.000%
10	42.14	-79.59	24.19	-42.14	79.59	-24.19	0.000%
11	42.14	-59.69	24.19	-42.14	59.69	-24.19	0.000%
12	24.07	-79.59	41.68	-24.07	79.59	-41.68	0.000%
13	24.07	-59.69	41.68	-24.07	59.69	-41.68	0.000%
14	-0.12	-79.59	48.20	0.12	79.59	-48.20	0.000%
15	-0.12	-59.69	48.20	0.12	59.69	-48.20	0.000%
16	-24.27	-79.59	41.80	24.27	79.59	-41.80	0.000%
17	-24.27	-59.69	41.80	24.27	59.69	-41.80	0.000%
18	-41.92	-79.59	24.20	41.92	79.59	-24.20	0.000%
19	-41.92	-59.69	24.20	41.92	59.69	-24.20	0.000%
20	-48.34	-79.59	0.12	48.34	79.59	-0.12	0.000%
21	-48.34	-59.69	0.12	48.34	59.69	-0.12	0.000%
22	-42.14	-79.59	-24.19	42.14	79.59	24.19	0.000%
23	-42.14	-59.69	-24.19	42.14	59.69	24.19	0.000%
24	-24.07	-79.59	-41.68	24.07	79.59	41.68	0.000%
25	-24.07	-59.69	-41.68	24.07	59.69	41.68	0.000%
26	0.00	-135.36	0.00	0.00	135.36	0.00	0.000%
27	0.01	-135.36	-14.02	-0.01	135.36	14.02	0.000%
28	7.04	-135.36	-12.15	-7.04	135.36	12.15	0.000%
29	12.17	-135.36	-7.02	-12.18	135.36	7.02	0.000%
30	14.05	-135.36	-0.01	-14.05	135.36	0.01	0.000%
31	12.16	-135.36	7.00	-12.16	135.36	-7.00	0.000%
32	7.01	-135.36	12.13	-7.01	135.36	-12.13	0.000%
33	-0.01	-135.36	14.02	0.01	135.36	-14.02	0.000%
34	-7.04	-135.36	12.15	7.04	135.36	-12.15	0.000%
35	-12.17	-135.36	7.02	12.18	135.36	-7.02	0.000%
36	-14.05	-135.36	0.01	14.05	135.36	-0.01	0.000%
37	-12.16	-135.36	-7.00	12.16	135.36	7.00	0.000%
38	-7.01	-135.36	-12.13	7.01	135.36	12.13	0.000%
39	0.03	-66.33	-11.35	-0.03	66.33	11.35	0.000%
40	5.72	-66.33	-9.85	-5.72	66.33	9.85	0.000%
41	9.87	-66.33	-5.70	-9.87	66.33	5.70	0.000%
42	11.39	-66.33	-0.03	-11.39	66.33	0.03	0.000%
43	9.93	-66.33	5.70	-9.93	66.33	-5.70	0.000%
44	5.67	-66.33	9.82	-5.67	66.33	-9.82	0.000%
45	-0.03	-66.33	11.35	0.03	66.33	-11.35	0.000%
46	-5.72	-66.33	9.85	5.72	66.33	-9.85	0.000%
47	-9.87	-66.33	5.70	9.87	66.33	-5.70	0.000%
48	-11.39	-66.33	0.03	11.39	66.33	-0.03	0.000%
49	-9.93	-66.33	-5.70	9.93	66.33	5.70	0.000%
50	-5.67	-66.33	-9.82	5.67	66.33	9.82	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	0.00019897
3	Yes	5	0.00000001	0.00008929
4	Yes	6	0.00000001	0.00051568
5	Yes	6	0.00000001	0.00016038
6	Yes	6	0.00000001	0.00051431
7	Yes	6	0.00000001	0.00015987
8	Yes	5	0.00000001	0.00019136
9	Yes	5	0.00000001	0.00008477

10	Yes	6	0.00000001	0.00050415
11	Yes	6	0.00000001	0.00015681
12	Yes	6	0.00000001	0.00051132
13	Yes	6	0.00000001	0.00015999
14	Yes	5	0.00000001	0.00007852
15	Yes	4	0.00000001	0.00079384
16	Yes	6	0.00000001	0.00051009
17	Yes	6	0.00000001	0.00015867
18	Yes	6	0.00000001	0.00051085
19	Yes	6	0.00000001	0.00015889
20	Yes	5	0.00000001	0.00007244
21	Yes	4	0.00000001	0.00072721
22	Yes	6	0.00000001	0.00051579
23	Yes	6	0.00000001	0.00016082
24	Yes	6	0.00000001	0.00050104
25	Yes	6	0.00000001	0.00015613
26	Yes	4	0.00000001	0.00013809
27	Yes	6	0.00000001	0.00031179
28	Yes	6	0.00000001	0.00053392
29	Yes	6	0.00000001	0.00053396
30	Yes	6	0.00000001	0.00030896
31	Yes	6	0.00000001	0.00050816
32	Yes	6	0.00000001	0.00051797
33	Yes	6	0.00000001	0.00030525
34	Yes	6	0.00000001	0.00051680
35	Yes	6	0.00000001	0.00051673
36	Yes	6	0.00000001	0.00030913
37	Yes	6	0.00000001	0.00053441
38	Yes	6	0.00000001	0.00052425
39	Yes	4	0.00000001	0.00025238
40	Yes	5	0.00000001	0.00013336
41	Yes	5	0.00000001	0.00013271
42	Yes	4	0.00000001	0.00024766
43	Yes	5	0.00000001	0.00012516
44	Yes	5	0.00000001	0.00013145
45	Yes	4	0.00000001	0.00023578
46	Yes	5	0.00000001	0.00012840
47	Yes	5	0.00000001	0.00012902
48	Yes	4	0.00000001	0.00023300
49	Yes	5	0.00000001	0.00013455
50	Yes	5	0.00000001	0.00012469

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.46	34.975	41	1.6419	0.0023
L2	154.543 - 114.083	24.760	41	1.5195	0.0012
L3	119.916 - 76.666	14.744	41	1.1974	0.0006
L4	83.333 - 38.253	6.969	41	0.7974	0.0002
L5	45.753 - 0	2.095	41	0.4128	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	Lighting Rod 5/8" x 4' on 4' Pole	41	34.975	1.6419	0.0024	48318
185.00	8' Ladder	41	34.975	1.6419	0.0024	48318
183.00	Miscellaneous [NA 507-1]	41	34.289	1.6362	0.0023	48318
182.00	ASP-601	41	33.946	1.6334	0.0023	48318
175.00	7770.00 w/ Mount Pipe	41	31.552	1.6125	0.0020	24159
165.00	8' Ladder	41	28.180	1.5753	0.0016	12079
145.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	41	21.778	1.4480	0.0010	6919
135.00	MX08FRO665-21 w/ Mount Pipe	41	18.823	1.3558	0.0008	6104

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
110.00	GPS_A	41	12.341	1.0890	0.0005	5294
108.00	GPS_A	41	11.883	1.0670	0.0004	5317
52.00	GPS_A	41	2.672	0.4735	0.0001	4854

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	185 - 149.46	149.235	6	7.0168	0.0093
L2	154.543 - 114.083	105.728	6	6.4990	0.0052
L3	119.916 - 76.666	63.004	6	5.1239	0.0022
L4	83.333 - 38.253	29.795	22	3.4114	0.0010
L5	45.753 - 0	8.959	22	1.7658	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	Lighting Rod 5/8" x 4' on 4' Pole	6	149.235	7.0168	0.0109	11712
185.00	8' Ladder	6	149.235	7.0168	0.0109	11712
183.00	Miscellaneous [NA 507-1]	6	146.314	6.9932	0.0105	11712
182.00	ASP-601	6	144.854	6.9813	0.0104	11712
175.00	7770.00 w/ Mount Pipe	6	134.663	6.8933	0.0091	5854
165.00	8' Ladder	6	120.298	6.7361	0.0073	2925
145.00	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	6	93.015	6.1945	0.0046	1666
135.00	MX08FRO665-21 w/ Mount Pipe	6	80.410	5.8011	0.0036	1463
110.00	GPS_A	6	52.740	4.6599	0.0020	1256
108.00	GPS_A	6	50.786	4.5659	0.0019	1261
52.00	GPS_A	22	11.427	2.0257	0.0005	1137

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	185 - 149.46 (1)	TP36.06x29x0.25	35.54	0.00	0.0	27.6140	-15.59	1615.42	0.010
L2	149.46 - 114.083 (2)	TP42.46x34.5503x0.3125	40.46	0.00	0.0	40.6740	-29.61	2379.43	0.012
L3	114.083 - 76.666 (3)	TP49.15x40.6947x0.375	43.25	0.00	0.0	56.5031	-41.31	3305.43	0.012
L4	76.666 - 38.253 (4)	TP55.9x47.0966x0.4375	45.08	0.00	0.0	74.9828	-56.72	4386.49	0.013
L5	38.253 - 0 (5)	TP62.5x53.5604x0.5	45.75	0.00	0.0	98.3940	-79.56	5756.05	0.014

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	185 - 149.46 (1)	TP36.06x29x0.25	520.27	1306.51	0.398	0.00	1306.51	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	149.46 - 114.083 (2)	TP42.46x34.5503x0.3125	1588.66	2317.66	0.685	0.00	2317.66	0.000
L3	114.083 - 76.666 (3)	TP49.15x40.6947x0.375	2990.39	3773.73	0.792	0.00	3773.73	0.000
L4	76.666 - 38.253 (4)	TP55.9x47.0966x0.4375	4593.56	5744.41	0.800	0.00	5744.41	0.000
L5	38.253 - 0 (5)	TP62.5x53.5604x0.5	6740.72	8641.83	0.780	0.00	8641.83	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	185 - 149.46 (1)	TP36.06x29x0.25	23.97	484.63	0.049	0.62	1476.96	0.000
L2	149.46 - 114.083 (2)	TP42.46x34.5503x0.3125	35.96	713.83	0.050	0.43	2563.50	0.000
L3	114.083 - 76.666 (3)	TP49.15x40.6947x0.375	40.45	991.63	0.041	0.12	4122.52	0.000
L4	76.666 - 38.253 (4)	TP55.9x47.0966x0.4375	44.67	1315.95	0.034	0.18	6222.93	0.000
L5	38.253 - 0 (5)	TP62.5x53.5604x0.5	48.65	1726.81	0.028	0.80	9376.00	0.000

Pole Interaction Design Data

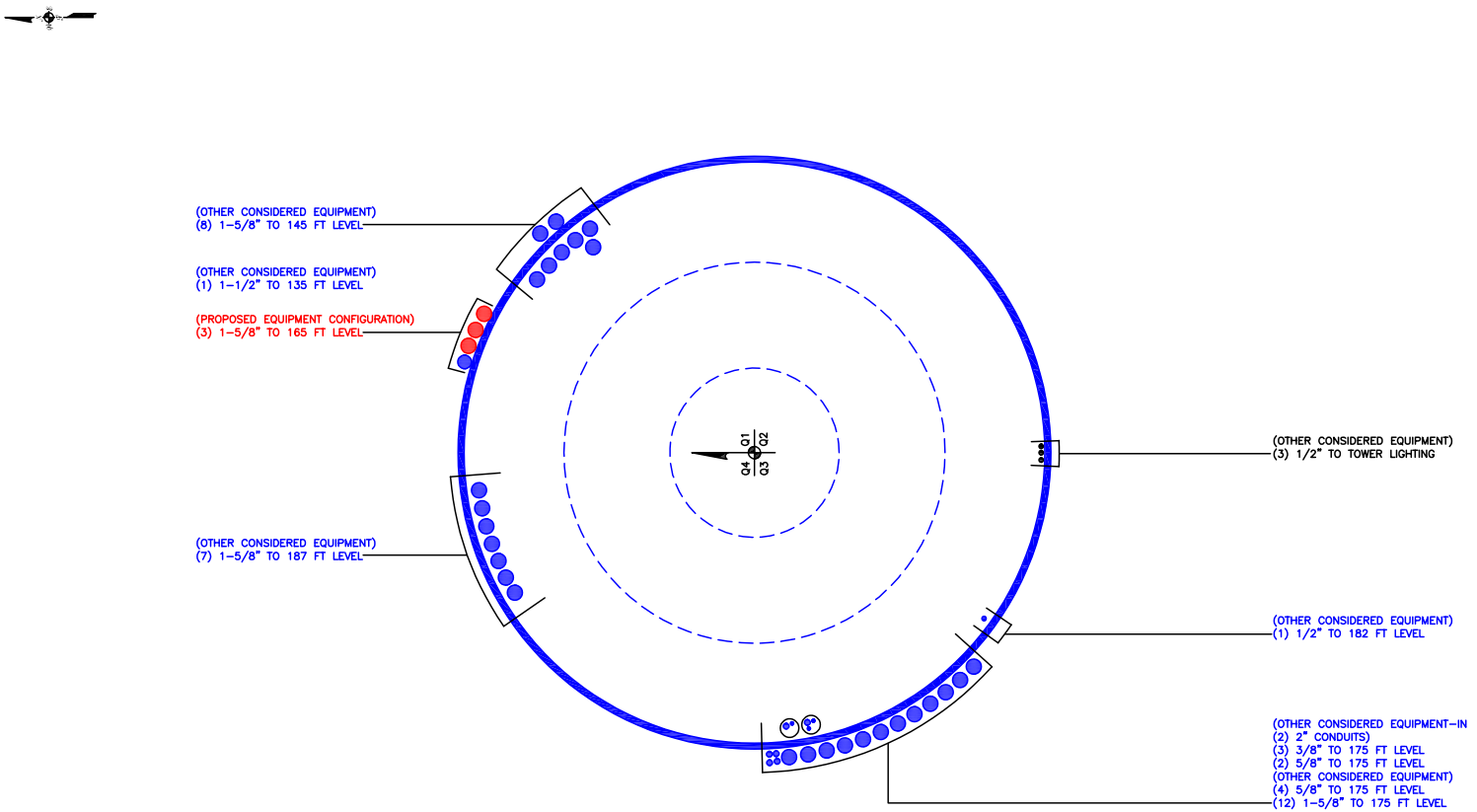
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	185 - 149.46 (1)	0.010	0.398	0.000	0.049	0.000	0.410	1.050	4.8.2
L2	149.46 - 114.083 (2)	0.012	0.685	0.000	0.050	0.000	0.700	1.050	4.8.2
L3	114.083 - 76.666 (3)	0.012	0.792	0.000	0.041	0.000	0.807	1.050	4.8.2
L4	76.666 - 38.253 (4)	0.013	0.800	0.000	0.034	0.000	0.814	1.050	4.8.2
L5	38.253 - 0 (5)	0.014	0.780	0.000	0.028	0.000	0.795	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	185 - 149.46	Pole	TP36.06x29x0.25	1	-15.59	1696.19	39.1	Pass
L2	149.46 - 114.083	Pole	TP42.46x34.5503x0.3125	2	-29.61	2498.40	66.7	Pass
L3	114.083 - 76.666	Pole	TP49.15x40.6947x0.375	3	-41.31	3470.70	76.8	Pass
L4	76.666 - 38.253	Pole	TP55.9x47.0966x0.4375	4	-56.72	4605.81	77.5	Pass
L5	38.253 - 0	Pole	TP62.5x53.5604x0.5	5	-79.56	6043.85	75.7	Pass
							Summary	
						Pole (L4)	77.5	Pass
						RATING =	**77.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806354 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

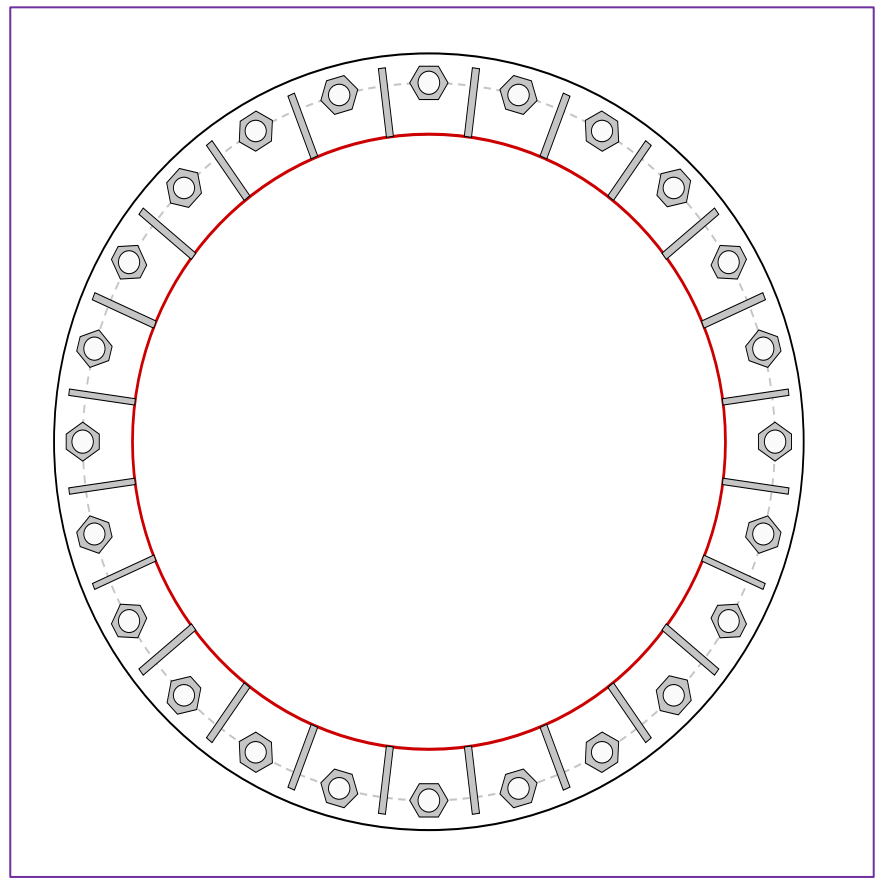
Monopole Base Plate Connection

Site Info	
BU #	806354
Site Name	BRG 123 943084
Order #	567925 Rev. 3

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	6740.73
Axial Force (kips)	79.56
Shear Force (kips)	48.65

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(24) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 73" BC

Base Plate Data

79" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(24) 15"H x 7"W x 0.75"T, Notch: 0.5"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.375" fillet

Pole Data

62.5" x 0.5" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 181.29	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.03	ϕVn = 149.1	**70.8%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	22.64	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**39.9%**	**Pass**

Stiffener Summary

Horizontal Weld:	**82.3%**	**Pass**
Vertical Weld:	**56.9%**	**Pass**
Plate Flexure+Shear:	**28.8%**	**Pass**
Plate Tension+Shear:	**59.4%**	**Pass**
Plate Compression:	**76.9%**	**Pass**

Pole Summary

Punching Shear:	**14.3%**	**Pass**

Pier and Pad Foundation

BU # :	806354
Site Name:	BRG 123 943084
App. Number:	567925 Rev.3

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	79.59	kips
Base Shear, Vu_comp:	48.59	kips
Moment, M_u:	6740.73	ft-kips
Tower Height, **H**:	185	ft
BP Dist. Above Fdn, bp_{dist}:	4.5	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	8	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	48	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	5	in

Pad Properties

Depth, **D**:	6	ft
Pad Width, W_1:	28	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	45	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	6.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:	26	
Base Friction, μ:	0.6	
Neglected Depth, **N**:	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	10	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	379.41	48.59	**12.2%**	**Pass**
Bearing Pressure (ksf)	4.50	3.77	**83.7%**	**Pass**
*Overturning (kip*ft)*	7413.59	7099.08	**95.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	8836.98	6935.09	**74.7%**	**Pass**
Pier Compression (kip)	40734.72	125.67	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	6100.57	3498.27	**54.6%**	**Pass**
Pad Shear - 1-way (kips)	997.97	473.91	**45.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	7400.51	4161.05	**53.5%**	**Pass**

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

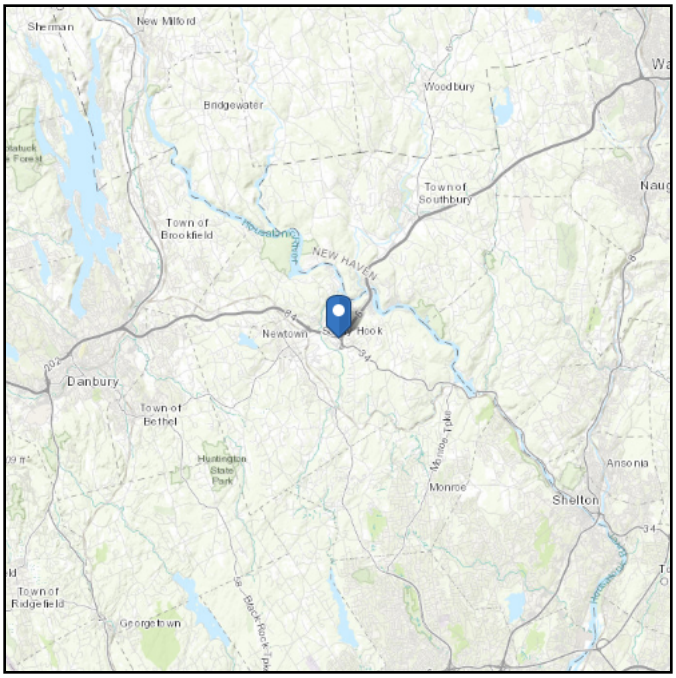
Structural Rating*:	**74.7%**
Soil Rating*:	**95.8%**

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 349.26 ft (NAVD 88)
Latitude: 41.412647
Longitude: -73.270094



Wind

Results:

Wind Speed:	119 Vmph	120 mph as per Newtown Municipality juridictions is adopted
10-year MRI	76 Vmph	
25-year MRI	85 Vmph	
50-year MRI	91 Vmph	
100-year MRI	97 Vmph	

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Wed Sep 08 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

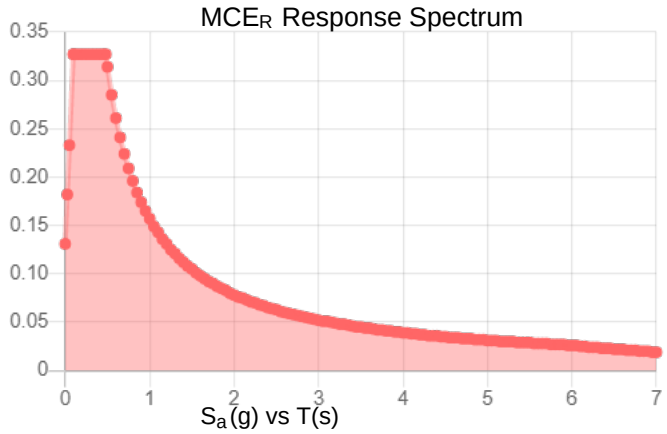
Seismic

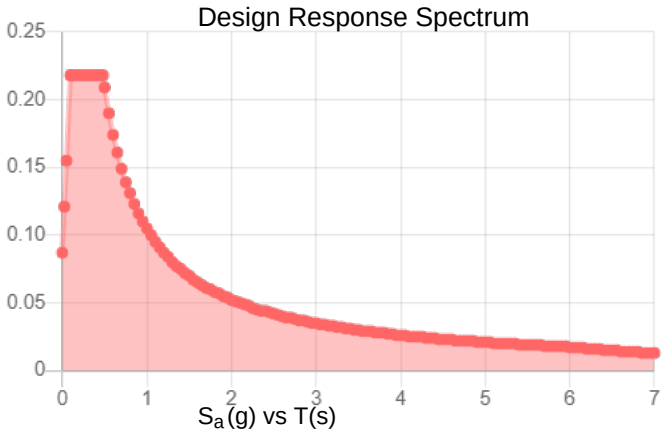
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.204	S_{DS} :	0.218
S_1 :	0.065	S_{D1} :	0.105
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.109
S_{MS} :	0.327	PGA_M :	0.173
S_{M1} :	0.157	F_{PGA} :	1.582
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Sep 08 2021

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

Ice

Results:

Ice Thickness:	0.75 in. 0.75*2=1.50 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph

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

Date Accessed: Wed Sep 08 2021

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

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

Date: **June 14, 2021**

GPD Engineering and Architecture
Professional Corporation
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Akron, Ohio 44311
(216) 927-8663
CrownMA@gpdgroup.com

Subject:	**Mount Analysis – Conditional Passing Report**	
Carrier Designation:	***T-Mobile* Equipment Change-Out**	
	Carrier Site Number:	CT11723A
	Carrier Site Name:	CT11723A
Crown Castle Designation:	**BU Number:**	806354
	Site Name:	BRG 123 943084
	JDE Job Number:	666754
	Order Number:	567925 Rev. 1
Engineering Firm Designation:	**GPD Report Designation:**	2021777.806354.01
Site Data:	**21 Berkshire Road Newtown, Newtown, Fairfield County, CT 06482 Latitude 41° 24' 45.53" Longitude -73° 16' 12.34"**	
Structure Information:	**Tower Height & Type:**	**185.0 ft Monopole Tower**
	Mount Elevation:	**165.0 ft**
	Mount Type:	**10.7 ft Platform Mount**

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

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

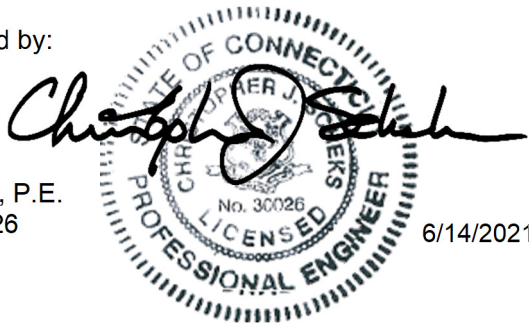
Platform Mount **Sufficient***

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

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Brandon Brookbank

Respectfully Submitted by:



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

6/14/2021

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3-sector 10.7' Platform Mount. Mount geometry was obtained from site photos and experience with similar mounts.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
165.0	165.0	3	Ericsson	AIR6449 B41_T-MOBILE	10.7 ft. Platform Mount
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	RADIO 4480 B71_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Application	Crown Order Number 567925 Rev. 1	-	CCI
RF Data Sheet	Sprint Retain RFDS #: CT11723A, dated 5/14/2021	-	CCI

3.1) Analysis Method

RISA-3D Edition (Version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

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

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 Mount Analysis (Revision D).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) This analysis assumes all information reference in Table 2 is current and correct.
5) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
6) The mount was modeled from site photos. Member information and dimensions not provided have been assumed based on previous experience with similar mounts. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.
7) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Toe Rail	M1	165.0	65.6	Pass
	Platform Inner Bracing	M64		32.1	Pass
	Support Rail	M51B		37.7	Pass
	Support Rail Corner	M52B		37.6	Pass
	Pipe Mount	C2		47.7	Pass
	Ladder Support Bracing	M94		30.6	Pass
2,3	Mount to Tower Connection	-		27.5	Pass

Structure Rating (max from all components) =	65.6%[3]

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity consumed.
3) Ratings per TIA-222-H section 15.5.

4.1) Recommendations

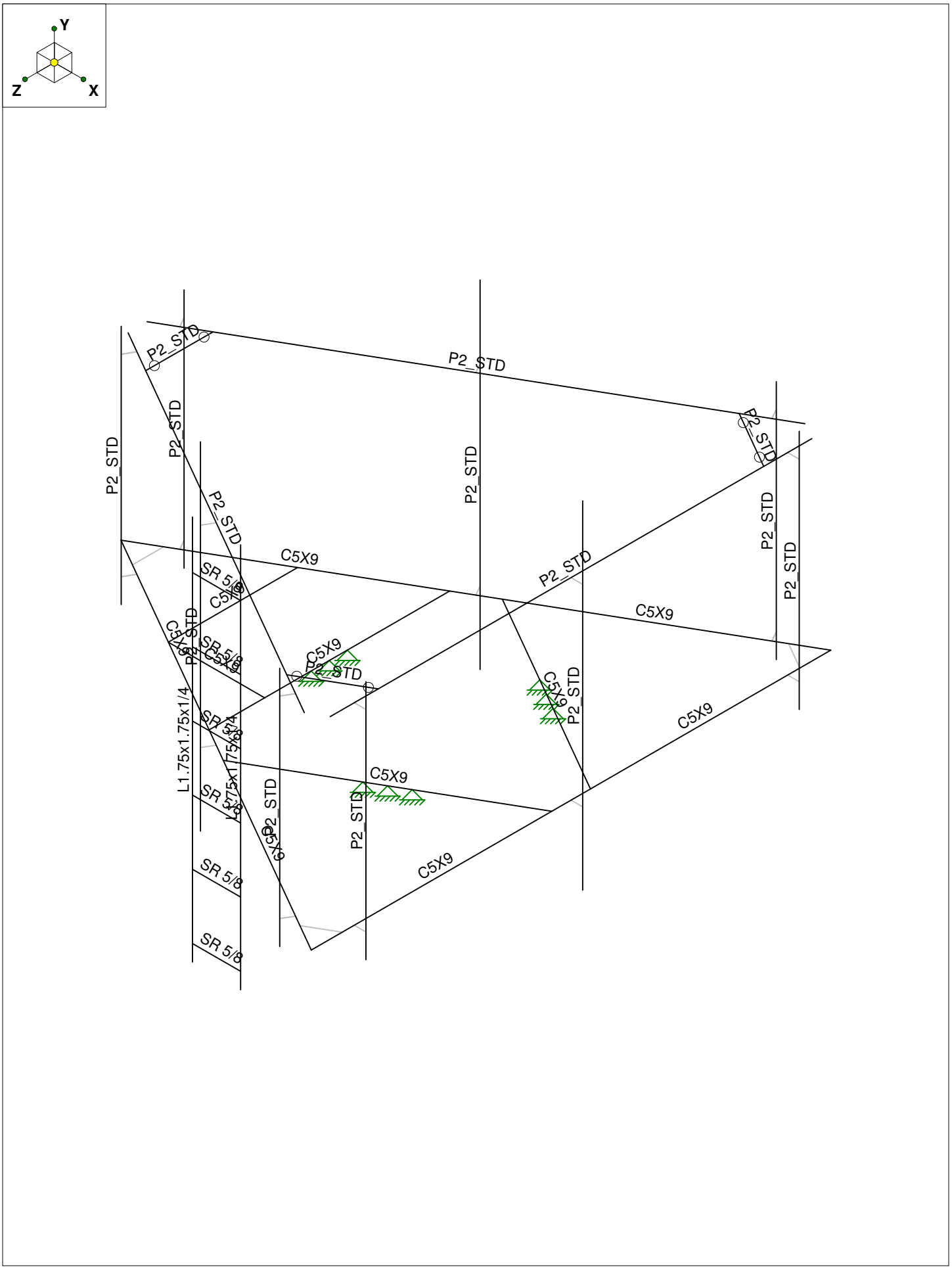
In order for the results of the analysis to be considered valid, the loading modification listed below must be completed.

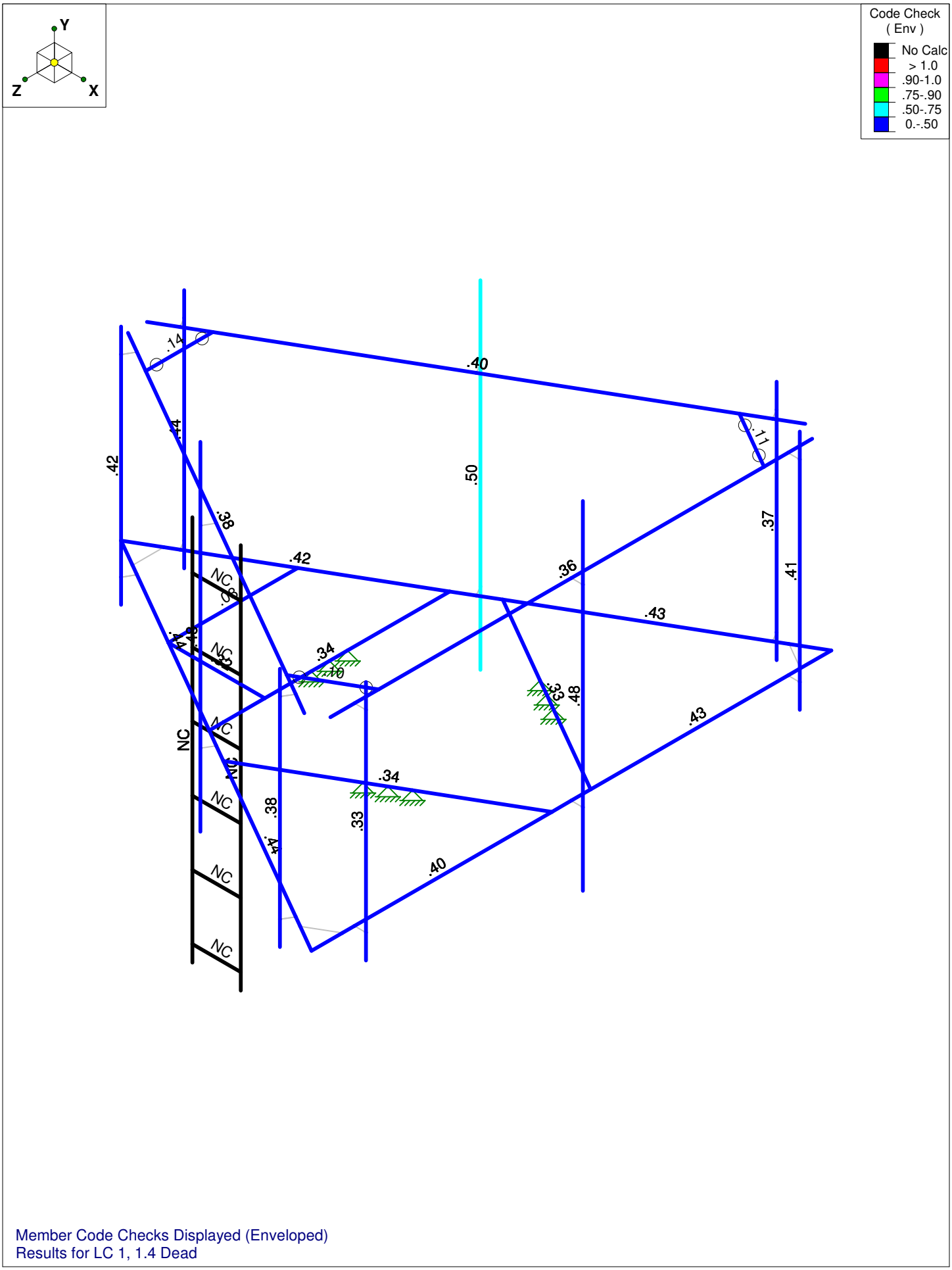
Install (1) proposed 8-ft long, P2STD (2.375” O.D. x 0.154”) mount pipe per sector in Position 2 to accommodate the proposed loading configuration.

APPENDIX A

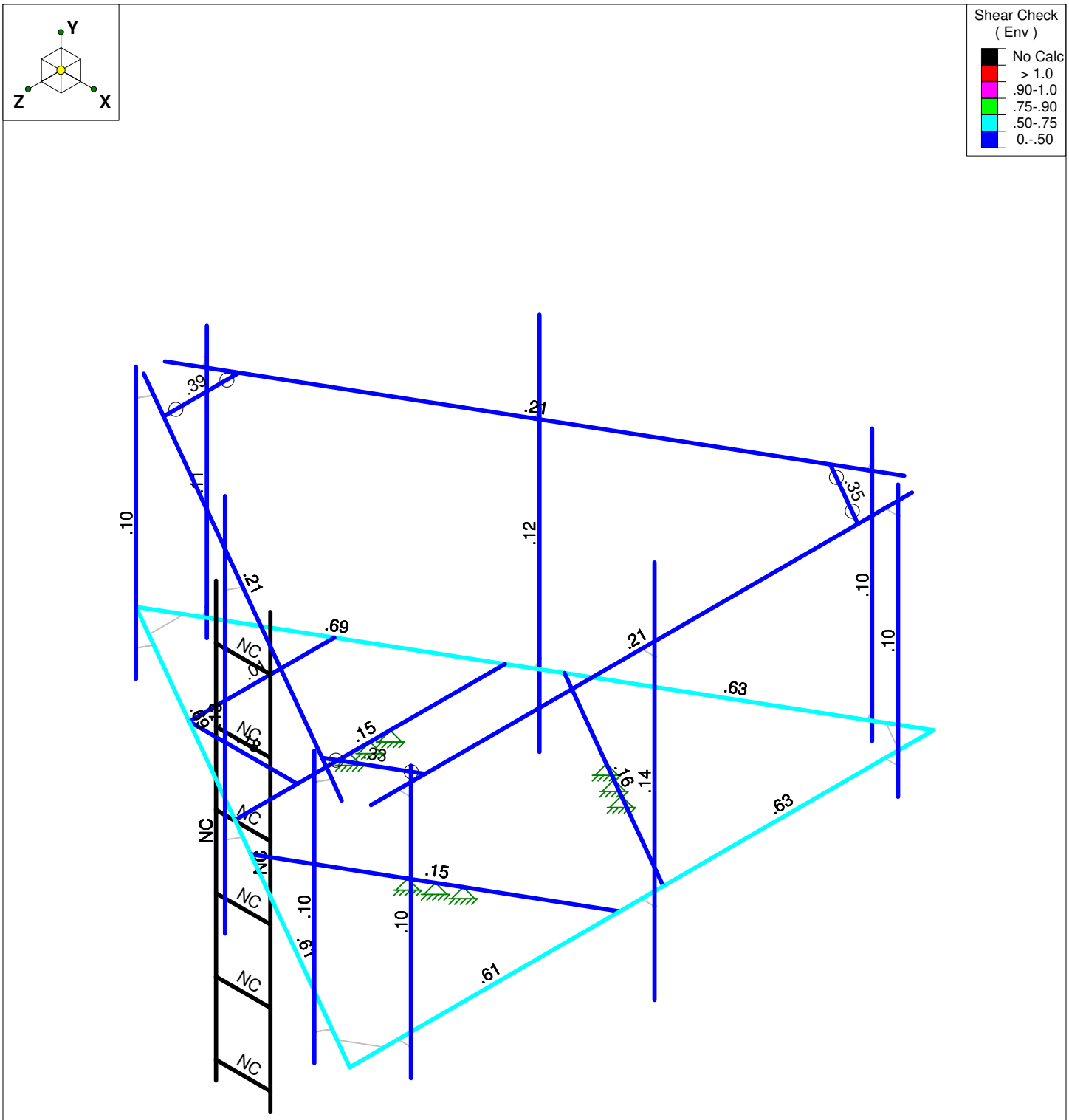
WIRE FRAME AND RENDERED MODELS


Y
Z
X

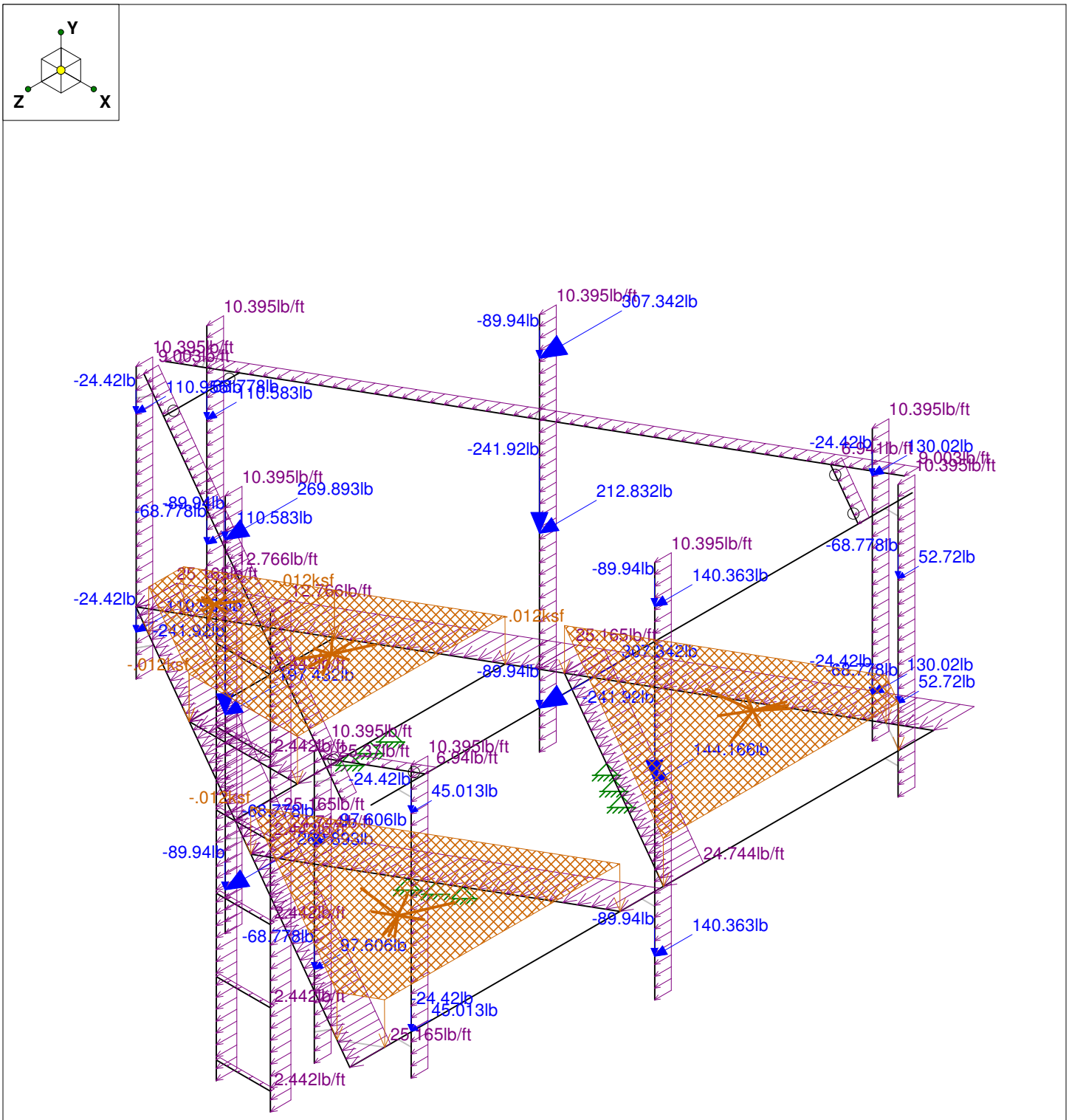

Y
Z
X
P2_STD
C5X9
SR 5/8
L1.75x1.75x1/4



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



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



Loads: LC 8, 1.2 Dead + 1.0 Wind @ 90° - No Ice

APPENDIX B

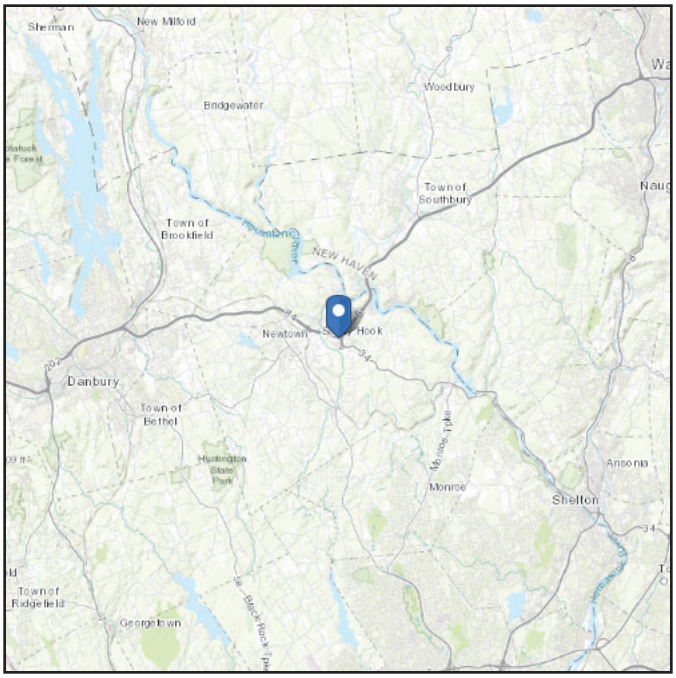
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 349.26 ft (NAVD 88)
Latitude: 41.412647
Longitude: -73.270094



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Mon Jun 14 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

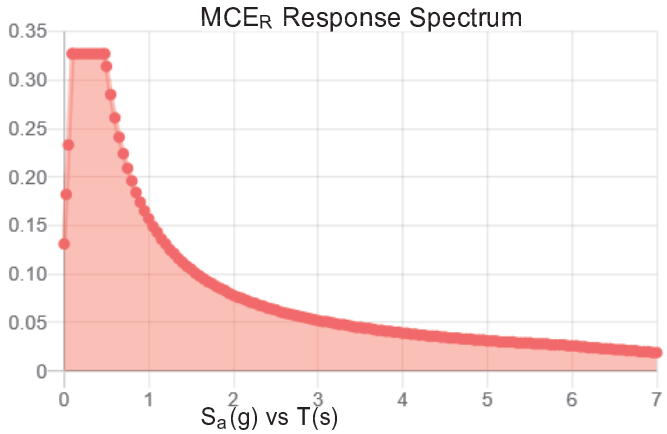
Seismic

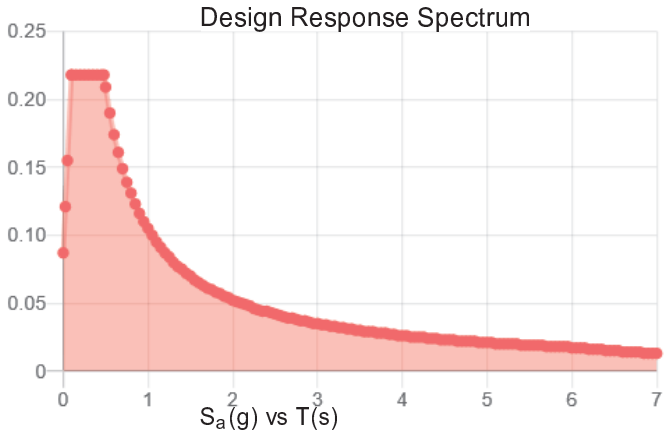
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.204	S_{DS} :	0.218
S_1 :	0.065	S_{D1} :	0.105
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.109
S_{MS} :	0.327	PGA_M :	0.173
S_{M1} :	0.157	F_{PGA} :	1.582
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Jun 14 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Jun 14 2021

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

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

TIA-222-H: Mount Analysis Wind Loading
806354 - BRG 123 943084
2021777.806354.01

Structure Information		
Structure Type:	Monopole	
Structure Height:	185	ft
z (Mount Centerline) =	165	ft
Gh (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

Code Specifications		
TIA/EIA Code:	H	
Ultimate Wind Speed (No Ice) =	120	mph (3-s gust)
Ultimate Wind Speed (With Ice) =	50	mph (3-s gust)
Ice Thickness	1.5	in
Exposure Category	C	
Tower Base Elevation (AMSL)	349	ft

Topographic Inputs	
Topographic Feature:	N/A

Section Sets										No Ice	Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K_a	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*
Toe Rail	Square/Rect.	64.000	5	1.89		5.35	Flat	0.90	1.00	32.29	7.00	15.30
Platform Inner Bracing	Square/Rect.	60.000	5	1.89		5.35	Flat	0.90	1.00	31.75	6.92	15.30
Support Rail	Pipe	120.000	2.375	2.375		2.38	Round	0.90	1.00	11.55	4.55	8.91
Support Rail Corner	Pipe	30.000	2.375	2.375		2.38	Round	0.90	1.00	8.90	3.14	8.91
Pipe Mount	Pipe	84.000	2.375	2.375		2.38	Round	0.90	1.00	11.55	3.99	8.91
Ladder Support Bracing	Square/Rect.	34.000	5	1.89		5.35	Flat	0.90	1.00	28.19	6.27	15.30
Ladder Rail	Angle	96.000	1.75	1.75		2.47	Flat	0.90	1.00	14.18	4.78	9.12
Ladder Rung	Pipe	12.000	0.625	0.625		0.63	Round	0.90	1.00	2.71	2.07	5.14

*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K_a and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(3) AIR6449 B41_T-MOBILE	165	33.11	20.51	8.54	114.63	CFD	0%	0%	0.90	230.66	114.63	51.98	157.97
(3) APX16DWV-16DWV-S-E-A20	165	55.9	13.3	3.15	40.7	CFD	0%	0%	0.90	274.00	40.70	63.98	142.26
(3) APXVAALL24_43-U-NA20_TMO	165	95.9	24	8.5	149.9	CFD	0%	0%	0.90	642.10	149.90	132.44	435.58
(3) RADIO 4460 B2/B25 B66_TMO	165	17	15.1	11.9	109	Flat	0%	0%	0.90	93.63	109.00	20.89	92.06
(3) RADIO 4480 B71_TMO	165	21.8	15.7	7.5	92.6	Flat	0%	0%	0.90	124.84	92.60	27.01	90.73

*All forces are unfactored.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design ...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Toe Rail	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
2	Platform Inner Bracing	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
3	Support Rail	P2_STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331
4	Support Rail Corner	P2_STD	None	None	A36 Gr.36	Typical	1.075	.666	.666	1.331
5	Pipe Mount	P2_STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331
6	Ladder Support Bracing	C5X9	None	None	A36 Gr.36	Typical	2.64	.624	8.89	.109
7	Ladder Rail	L1.75x1.75x1/4	None	None	A36 Gr.36	Typical	.813	.227	.227	.015
8	Ladder Rung	SR 5/8	None	None	A36 Gr.36	Typical	.307	.007	.007	.015

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL		-1			24		4	
2	No Ice Wind 0 deg	None					24	27		
3	No Ice Wind 30 deg	None					48	58		
4	No Ice Wind 60 deg	None					48	68		
5	No Ice Wind 90 deg	None					24	28		
6	No Ice Wind 120 deg	None					48	68		
7	No Ice Wind 150 deg	None					48	58		
8	No Ice Wind 180 deg	None					24	27		
9	No Ice Wind 210 deg	None					48	58		
10	No Ice Wind 240 deg	None					48	68		
11	No Ice Wind 270 deg	None					24	28		
12	No Ice Wind 300 deg	None					48	68		
13	No Ice Wind 330 deg	None					48	58		
14	Ice Weight	None					24	34		
15	Ice Wind 0 deg	None					24	27		
16	Ice Wind 30 deg	None					48	58		
17	Ice Wind 60 deg	None					48	68		
18	Ice Wind 90 deg	None					24	28		
19	Ice Wind 120 deg	None					48	68		
20	Ice Wind 150 deg	None					48	58		
21	Ice Wind 180 deg	None					24	27		
22	Ice Wind 210 deg	None					48	58		
23	Ice Wind 240 deg	None					48	68		
24	Ice Wind 270 deg	None					24	28		
25	Ice Wind 300 deg	None					48	68		
26	Ice Wind 330 deg	None					48	58		
27	Live Load - A1	None					1			
28	Live Load - A2	None					1			
29	Live Load - A3	None					1			
30	Live Load - B1	None					1			
31	Live Load - B2	None					1			
32	Live Load - B3	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
33	Live Load - C1	None					1			
34	Live Load - C2	None					1			
35	Live Load - C3	None					1			
36	Live Load - M1 (Start)	None					1			
37	Live Load - M1 (Midd...	None					1			
38	Live Load - M1 (End)	None					1			
39	Live Load - M2 (Start)	None					1			
40	Live Load - M2 (Midd...	None					1			
41	Live Load - M2 (End)	None					1			
42	Live Load - M21 (Start)	None					1			
43	Live Load - M21 (Mid...	None					1			
44	Live Load - M21 (End)	None					1			
45	Live Load - M32 (Start)	None					1			
46	Live Load - M32 (Mid...	None					1			
47	Live Load - M32 (End)	None					1			
48	Live Load - M33 (Start)	None					1			
49	Live Load - M33 (Mid...	None					1			
50	Live Load - M33 (End)	None					1			
51	Live Load - M52 (Start)	None					1			
52	Live Load - M52 (Mid...	None					1			
53	Live Load - M52 (End)	None					1			
54	Live Load - M63 (Start)	None					1			
55	Live Load - M63 (Mid...	None					1			
56	Live Load - M63 (End)	None					1			
57	Live Load - M64 (Start)	None					1			
58	Live Load - M64 (Mid...	None					1			
59	Live Load - M64 (End)	None					1			
60	Live Load - M83 (Start)	None					1			
61	Live Load - M83 (Mid...	None					1			
62	Live Load - M83 (End)	None					1			
63	BLC 1 Transient Area...	None						38		

Load Combinations

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 Dead	Yes	Y		1	1.4	0		0		0		0		0		0		0					
2	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	2	1	0		0		0		0		0		0					
3	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	2	1	0		0		0		0		0		0					
4	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	3	1	0		0		0		0		0		0					
5	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	3	1	0		0		0		0		0		0					
6	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	4	1	0		0		0		0		0		0					
7	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	4	1	0		0		0		0		0		0					
8	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	5	1	0		0		0		0		0		0					
9	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	5	1	0		0		0		0		0		0					
10	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	6	1	0		0		0		0		0		0					
11	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	6	1	0		0		0		0		0		0					
12	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	7	1	0		0		0		0		0		0					
13	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	7	1	0		0		0		0		0		0					
14	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	8	1	0		0		0		0		0		0					
15	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	8	1	0		0		0		0		0		0					
16	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	9	1	0		0		0		0		0		0					
17	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	9	1	0		0		0		0		0		0					
18	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	10	1	0		0		0		0		0		0					
19	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	10	1	0		0		0		0		0		0					
20	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	11	1	0		0		0		0		0		0					
21	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	11	1	0		0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
22	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	12	1	0		0		0		0		0		0					
23	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	12	1	0		0		0		0		0		0					
24	1.2 Dead + 1.0 Wind ...	Yes	Y		1	1.2	13	1	0		0		0		0		0		0					
25	0.9 Dead + 1.0 Wind ...	Yes	Y		1	.9	13	1	0		0		0		0		0		0					
26	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	15	1	14	1		1	0		0		0		0					
27	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	16	1	14	1		1	0		0		0		0					
28	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	17	1	14	1		1	0		0		0		0					
29	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	18	1	14	1		1	0		0		0		0					
30	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	19	1	14	1		1	0		0		0		0					
31	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	20	1	14	1		1	0		0		0		0					
32	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	21	1	14	1		1	0		0		0		0					
33	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	22	1	14	1		1	0		0		0		0					
34	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	23	1	14	1		1	0		0		0		0					
35	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	24	1	14	1		1	0		0		0		0					
36	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	25	1	14	1		1	0		0		0		0					
37	1.2 Dead + 1.0 Ice Wi...	Yes	Y		1	1.2	26	1	14	1		1	0		0		0		0					
38	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	2	.063	0		0		0		0		0					
39	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	3	.063	0		0		0		0		0					
40	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	4	.063	0		0		0		0		0					
41	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	5	.063	0		0		0		0		0					
42	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	6	.063	0		0		0		0		0					
43	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	7	.063	0		0		0		0		0					
44	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	8	.063	0		0		0		0		0					
45	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	9	.063	0		0		0		0		0					
46	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	10	.063	0		0		0		0		0					
47	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	11	.063	0		0		0		0		0					
48	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	12	.063	0		0		0		0		0					
49	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	27	1.5	13	.063	0		0		0		0		0					
50	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	2	.063	0		0		0		0		0					
51	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	3	.063	0		0		0		0		0					
52	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	4	.063	0		0		0		0		0					
53	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	5	.063	0		0		0		0		0					
54	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	6	.063	0		0		0		0		0					
55	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	7	.063	0		0		0		0		0					
56	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	8	.063	0		0		0		0		0					
57	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	9	.063	0		0		0		0		0					
58	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	10	.063	0		0		0		0		0					
59	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	11	.063	0		0		0		0		0					
60	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	12	.063	0		0		0		0		0					
61	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	28	1.5	13	.063	0		0		0		0		0					
62	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	2	.063	0		0		0		0		0					
63	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	3	.063	0		0		0		0		0					
64	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	4	.063	0		0		0		0		0					
65	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	5	.063	0		0		0		0		0					
66	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	6	.063	0		0		0		0		0					
67	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	7	.063	0		0		0		0		0					
68	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	8	.063	0		0		0		0		0					
69	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	9	.063	0		0		0		0		0					
70	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	10	.063	0		0		0		0		0					
71	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	11	.063	0		0		0		0		0					
72	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	12	.063	0		0		0		0		0					
73	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	29	1.5	13	.063	0		0		0		0		0					
74	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	2	.063	0		0		0		0		0					
75	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	3	.063	0		0		0		0		0					
76	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	4	.063	0		0		0		0		0					
77	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	5	.063	0		0		0		0		0					
78	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	6	.063	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
79	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	7	.063	0		0		0		0		0					
80	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	8	.063	0		0		0		0		0					
81	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	9	.063	0		0		0		0		0					
82	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	10	.063	0		0		0		0		0					
83	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	11	.063	0		0		0		0		0					
84	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	12	.063	0		0		0		0		0					
85	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	30	1.5	13	.063	0		0		0		0		0					
86	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	2	.063	0		0		0		0		0					
87	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	3	.063	0		0		0		0		0					
88	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	4	.063	0		0		0		0		0					
89	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	5	.063	0		0		0		0		0					
90	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	6	.063	0		0		0		0		0					
91	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	7	.063	0		0		0		0		0					
92	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	8	.063	0		0		0		0		0					
93	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	9	.063	0		0		0		0		0					
94	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	10	.063	0		0		0		0		0					
95	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	11	.063	0		0		0		0		0					
96	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	12	.063	0		0		0		0		0					
97	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	31	1.5	13	.063	0		0		0		0		0					
98	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	2	.063	0		0		0		0		0					
99	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	3	.063	0		0		0		0		0					
100	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	4	.063	0		0		0		0		0					
101	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	5	.063	0		0		0		0		0					
102	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	6	.063	0		0		0		0		0					
103	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	7	.063	0		0		0		0		0					
104	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	8	.063	0		0		0		0		0					
105	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	9	.063	0		0		0		0		0					
106	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	10	.063	0		0		0		0		0					
107	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	11	.063	0		0		0		0		0					
108	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	12	.063	0		0		0		0		0					
109	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	32	1.5	13	.063	0		0		0		0		0					
110	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	2	.063	0		0		0		0		0					
111	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	3	.063	0		0		0		0		0					
112	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	4	.063	0		0		0		0		0					
113	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	5	.063	0		0		0		0		0					
114	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	6	.063	0		0		0		0		0					
115	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	7	.063	0		0		0		0		0					
116	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	8	.063	0		0		0		0		0					
117	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	9	.063	0		0		0		0		0					
118	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	10	.063	0		0		0		0		0					
119	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	11	.063	0		0		0		0		0					
120	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	12	.063	0		0		0		0		0					
121	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	33	1.5	13	.063	0		0		0		0		0					
122	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	2	.063	0		0		0		0		0					
123	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	3	.063	0		0		0		0		0					
124	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	4	.063	0		0		0		0		0					
125	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	5	.063	0		0		0		0		0					
126	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	6	.063	0		0		0		0		0					
127	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	7	.063	0		0		0		0		0					
128	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	8	.063	0		0		0		0		0					
129	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	9	.063	0		0		0		0		0					
130	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	10	.063	0		0		0		0		0					
131	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	11	.063	0		0		0		0		0					
132	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	12	.063	0		0		0		0		0					
133	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	34	1.5	13	.063	0		0		0		0		0					
134	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	2	.063	0		0		0		0		0					
135	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	3	.063	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
136	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	4	.063	0		0		0		0		0					
137	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	5	.063	0		0		0		0		0					
138	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	6	.063	0		0		0		0		0					
139	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	7	.063	0		0		0		0		0					
140	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	8	.063	0		0		0		0		0					
141	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	9	.063	0		0		0		0		0					
142	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	10	.063	0		0		0		0		0					
143	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	11	.063	0		0		0		0		0					
144	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	12	.063	0		0		0		0		0					
145	1.2 Dead + 1.5 Live_...	Yes	Y		1	1.2	35	1.5	13	.063	0		0		0		0		0					
146	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	36	1.5	0		0		0		0		0		0					
147	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	37	1.5	0		0		0		0		0		0					
148	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	38	1.5	0		0		0		0		0		0					
149	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	39	1.5	0		0		0		0		0		0					
150	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	40	1.5	0		0		0		0		0		0					
151	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	41	1.5	0		0		0		0		0		0					
152	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	42	1.5	0		0		0		0		0		0					
153	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	43	1.5	0		0		0		0		0		0					
154	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	44	1.5	0		0		0		0		0		0					
155	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	45	1.5	0		0		0		0		0		0					
156	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	46	1.5	0		0		0		0		0		0					
157	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	47	1.5	0		0		0		0		0		0					
158	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	48	1.5	0		0		0		0		0		0					
159	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	49	1.5	0		0		0		0		0		0					
160	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	50	1.5	0		0		0		0		0		0					
161	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	51	1.5	0		0		0		0		0		0					
162	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	52	1.5	0		0		0		0		0		0					
163	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	53	1.5	0		0		0		0		0		0					
164	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	54	1.5	0		0		0		0		0		0					
165	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	55	1.5	0		0		0		0		0		0					
166	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	56	1.5	0		0		0		0		0		0					
167	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	57	1.5	0		0		0		0		0		0					
168	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	58	1.5	0		0		0		0		0		0					
169	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	59	1.5	0		0		0		0		0		0					
170	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	60	1.5	0		0		0		0		0		0					
171	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	61	1.5	0		0		0		0		0		0					
172	1.2 Dead + 1.5 Live_V...	Yes	Y		1	1.2	62	1.5	0		0		0		0		0		0					

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N7	max	633.206	14	5676.729	18	1585.665	23	0	172	0	172	0	172
2		min	-634.464	3	-2252.968	7	-1615.285	10	0	1	0	1	0	1
3	N6	max	1152.874	3	1586.936	3	4.018	23	0	172	0	172	0	172
4		min	-1150.455	14	-8277.155	32	-4.018	6	0	1	0	1	0	1
5	N5	max	1140.723	12	6372.094	30	1939.586	20	0	172	0	172	0	172
6		min	-1140.633	24	-2126.273	23	-1904.49	9	0	1	0	1	0	1
7	N62	max	1498.922	15	6123.686	20	445.77	19	0	172	0	172	0	172
8		min	-1525.662	2	-2893.422	9	-457.98	6	0	1	0	1	0	1
9	N63	max	443.324	22	2213.589	11	765.854	11	0	172	0	172	0	172
10		min	-444.127	11	-7594.596	36	-764.463	22	0	1	0	1	0	1
11	N64	max	1226.04	18	5496.739	2	1423.21	18	0	172	0	172	0	172
12		min	-1203.573	7	-2241.483	15	-1404.281	7	0	1	0	1	0	1
13	N119	max	976.967	10	5619.121	4	1312.461	19	0	172	0	172	0	172
14		min	-954.877	23	-2428.598	17	-1321.141	6	0	1	0	1	0	1
15	N120	max	521.875	6	2480.557	19	900.518	6	0	172	0	172	0	172

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
16		min	-522.067	19	-7698.648	28	-900.849	19	0	1	0	1	0	1
17	N121	max	1707.273	15	5925.692	8	412.111	24	0	172	0	172	0	172
18		min	-1733.943	2	-2640.437	21	-400.982	13	0	1	0	1	0	1
19	Totals:	max	4522.229	15	7675.05	31	4872.42	21						
20		min	-4522.228	3	2390.997	23	-4872.422	9						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	C2	P2_STD	.501	65.625	8	.119	65.625		2	4833.391	33847.7...	1.997	1.997	1.7	H1-1b
2	A2	P2_STD	.481	65.625	18	.141	65.625		8	4833.391	33847.7...	1.997	1.997	1....	H1-1b
3	B2	P2_STD	.477	65.625	20	.128	65.625		16	4833.391	33847.7...	1.997	1.997	1....	H1-1b
4	C1	P2_STD	.438	53.75	20	.109	53.75		18	9473.447	33847.7...	1.997	1.997	1....	H1-1b
5	M63	C5X9	.437	8.092	14	.605	61.361	y	10	33638.1...	85536	1.909	11.853	2....	H1-1b
6	M83	C5X9	.437	56.641	20	.688	54.618	z	20	33638.1...	85536	1.909	11.853	2....	H1-1b
7	M32	C5X9	.430	8.092	6	.634	60.012	z	4	33638.1...	85536	1.909	11.853	2....	H1-1b
8	M21	C5X9	.427	56.641	4	.629	54.618	z	4	33638.1...	85536	1.909	11.853	2....	H1-1b
9	M1	C5X9	.422	8.092	20	.689	10.114	z	8	33638.1...	85536	1.909	11.853	2....	H1-1b
10	B3	P2_STD	.420	53.75	8	.100	53.75		10	9473.447	33847.7...	1.997	1.997	1....	H1-1b
11	A1	P2_STD	.408	53.75	6	.095	53.75		2	9473.447	33847.7...	1.997	1.997	2....	H1-1b
12	M52	C5X9	.402	56.641	10	.607	4.72	z	2	33638.1...	85536	1.909	11.853	1....	H1-1b
13	M51B	P2_STD	.396	60	20	.213	108.75		22	10444.4...	33847.7...	1.997	1.997	1....	H1-1b
14	M50	P2_STD	.383	60	8	.213	108.75		14	10444.4...	33847.7...	1.997	1.997	1....	H1-1b
15	B1	P2_STD	.375	53.75	14	.101	53.75		10	9473.447	33847.7...	1.997	1.997	2....	H1-1b
16	C3	P2_STD	.366	53.75	16	.102	53.75		20	9473.447	33847.7...	1.997	1.997	2....	H1-1b
17	M23	P2_STD	.358	60	4	.206	108.75		6	10444.4...	33847.7...	1.997	1.997	1....	H1-1b
18	M64	C5X9	.337	24.963	8	.151	25.587	y	8	38455.7...	85536	1.909	11.853	1....	H1-1b
19	M2	C5X9	.336	34.324	12	.154	25.587	y	18	38455.7...	85536	1.909	11.853	1....	H1-1b
20	A3	P2_STD	.334	53.75	22	.096	53.75		4	9473.447	33847.7...	1.997	1.997	2....	H1-1b
21	M33	C5X9	.332	34.948	20	.158	34.324	y	18	38455.7...	85536	1.909	11.853	1....	H1-1b
22	M94	C5X9	.321	24	20	.183	6	z	8	75237.2...	85536	1.909	11.853	1....	H1-1b
23	M52B	P2_STD	.139	10.109	20	.395	16.732		20	33996.3...	34814.8...	2.054	2.054	1....	H3-6
24	M53	P2_STD	.113	9.935	4	.353	0		4	33996.3...	34814.8...	2.054	2.054	1....	H3-6
25	M54A	P2_STD	.099	10.283	14	.326	0		14	33996.3...	34814.8...	2.054	2.054	1....	H3-6
26	M95	C5X9	.085	0	20	.008	9.056	y	34	67900.01	85536	1.909	11.853	1....	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Typ. All Sectors
2021777.806354.01

Bolt Information		
Bolt Diameter (d)	0.75	in
Net Tensile Area (An)	0.334	in^2
# of Bolts Total (n)	1	
Bolt Grade	A325N	
Bolt Tensile Strength (F_{ub})	120	ksi

RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	8.28	kips
Shear (V)	-0.32	kips

Bolt Capacity		
Nominal Tensile Strength (R_{nt})	40.135	kips
Nominal Shear Strength (R_{nv})	26.51	kips
Bolt Tensile Force (T_{ub})	8.28	kips
Bolt Shear Force (V_{ub})	-0.320	kips
$T_{ub}/\phi R_{nt}$	0.27498	
$V_{ub}/\phi R_{nv}$	-0.01610	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.07587	
Bolt Capacity =	27.5%	OK

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: CT11723A

806354
21 Berkshire Road
Newtown, Connecticut 06482

October 20, 2021

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**49.02%**

October 20, 2021

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

Emissions Analysis for Site: CT11723A - 806354

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **21 Berkshire Road** in **Newtown, 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 21 Berkshire Road in Newtown, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

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

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

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

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

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 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 165 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:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A1 MPE %:	**5.17%**	Antenna B1 MPE %:	**5.17%**	Antenna C1 MPE %:	**5.17%**
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):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A2 MPE %:	**1.41%**	Antenna B2 MPE %:	**1.41%**	Antenna C2 MPE %:	**1.41%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
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):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	14,005.63	ERP (W):	14,005.63	ERP (W):	14,005.63
Antenna A3 MPE %:	**1.99%**	Antenna B3 MPE %:	**1.99%**	Antenna C3 MPE %:	**1.99%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	8.57%
AT&T	2.33%
Verizon	34.44%
Nextel	0.26%
T-Mobile (Existing)	3.42%
Site Total MPE % :	49.02%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	8.57%
T-Mobile Sector B Total:	8.57%
T-Mobile Sector C Total:	8.57%
Site Total MPE % :	49.02%

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 2500 MHz LTE 1C & 2C Traffic	1	11044.63	165.0	15.71	2500 MHz LTE 1C & 2C Traffic	1000	1.57%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	165.0	1.53	2500 MHz LTE 1C & 2C Broadcast	1000	0.15%
T-Mobile 2500 MHz NR Traffic	1	22089.26	165.0	31.41	2500 MHz NR Traffic	1000	3.14%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	165.0	3.05	2500 MHz NR Broadcast	1000	0.31%
T-Mobile 600 MHz LTE	2	591.73	165.0	1.68	600 MHz LTE	400	0.42%
T-Mobile 600 MHz NR	1	1577.94	165.0	2.24	600 MHz NR	400	0.56%
T-Mobile 700 MHz LTE	2	695.22	165.0	1.98	700 MHz LTE	467	0.42%
T-Mobile 1900 MHz GSM	4	1167.14	165.0	6.64	1900 MHz GSM	1000	0.66%
T-Mobile 1900 MHz LTE	2	2334.27	165.0	6.64	1900 MHz LTE	1000	0.66%
T-Mobile 2100 MHz LTE	2	2334.27	165.0	6.64	2100 MHz LTE	1000	0.66%
						Total:	**8.57%**

• 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:	8.57%
Sector B:	8.57%
Sector C:	8.57%
T-Mobile Maximum MPE % (Sector A):	8.57%
Site Total:	49.02%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **49.02%** 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: CT11723A
T-MOBILE SITE NAME: CT11723A
SITE TYPE: MONOPOLE
TOWER HEIGHT: 185'-0"

BUSINESS UNIT #: 806354
SITE ADDRESS: 21 BERKSHIRE ROAD NEWTOWN, CT 06482
COUNTY: FAIRFIELD
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE SPRINT RETAIN SITE CONFIGURATION: 67E5A998E 6160

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BRG 123 943084
SITE ADDRESS:	21 BERKSHIRE ROAD NEWTOWN, CT 06482
COUNTY:	FAIRFIELD
MAP/PARCEL #:	38-10-3
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.41257249
LONGITUDE:	-73.27009750
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	354 FT
CURRENT ZONING:	BPO (BUSINESS & PROFESSIONAL OFFICE ZONE)
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	RENZULLI CARMINE V 505 WESTPORT AVE LT31 NORWALK, CT 06851
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	CONNECTICUT LIGHT AND POWER
TELCO PROVIDER:	N/A

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S BOULDER AVE, SUITE 300 TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	CODE SUMMARY
T-3	CODE SUMMARY
T-4	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. 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

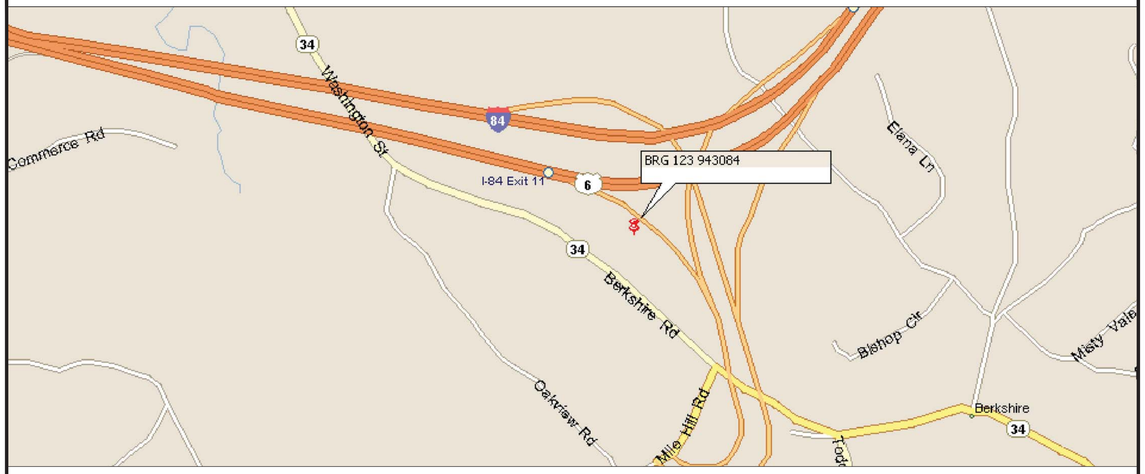
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE EXISTING 3 SIDE ARM MOUNT AT 167'-0"
- REMOVE (6) ANTENNAS
- REMOVE (9) RADIOs
- REMOVE (3) FILTERS
- REMOVE (9) TMAs
- REMOVE (4) HYBRID CABLES (1-1/4")
- INSTALL (9) ANTENNAS
- INSTALL (6) RADIOs
- INSTALL (3) HYBRID CABLES (1-5/8")
- INSTALL (3) P2 STD x 8'-0" LONG MOUNT PIPES

GROUND SCOPE OF WORK:
- REMOVE (2) SPRINT CABINETS
- REMOVE (1) PLINTH
- INSTALL (1) 6160 CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) RBS 6601 INSIDE 6160 SSC
- INSTALL (1) DUG20 IN 6601
- INSTALL (3) BB 6648 IN 6160 SSC
- INSTALL (1) CSR IXRE V2 (GEN2) TRANSPORT SYSTEM

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

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	2015 IBC W/AMENDMENTS
MECHANICAL	2015 IMC W/AMENDMENTS
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD
DATED:	9/9/21
MOUNT ANALYSIS:	GPD GROUP
DATED:	6/14/21
RFDS REVISION:	1
DATED:	5/14/21
ORDER ID:	567925
REVISION:	1

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APPROVALS

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

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

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BLOOMFIELD, CT 06002

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B+T GRP
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SUITE 300
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T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	9/8/21	JJR	CONSTRUCTION	JJR
1	10/8/21	JJR	CONSTRUCTION	JJR

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: T-1
REVISION: 1

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Verizon Antenna Removal and Addition
Address: 21 Berkshire Road, Newtown, CT Zip Code 06482Zip
Owner/Authorized Agent: _____ Phone # (____) ____ - _____ E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City_____ ☒ County FAIRFIELD ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				(___)	
Civil	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724)416-2864	andrew.fandozzi@crowncastle.com
Electrical	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724)416-2864	andrew.fandozzi@crowncastle.com
Fire Alarm				(___)	
Plumbing				(___)	
Mechanical				(___)	
Sprinkler-Standpipe				(___)	
Structural	Morrison Hershfield	G. Lance Cooke, P.E.	28133	(770)379-8500	
Retaining Walls >5' High				(___)	
Other				(___)	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): U
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): U

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☒ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☒ II-B ☐ III-B ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor			
Basement			
TOTAL			

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☒ No ☐ Yes Separation: ____ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30$ = _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]			
Building Height in Stories (Table 504.4) [3]			

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☐ Yes
Exit Signs: ☐ No ☐ Yes
Fire Alarm: ☐ No ☐ Yes
Smoke Detection Systems: ☐ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☐ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	# OF ACCESSIBLE SPACES PROVIDED: REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS MALE	WATERCLOSETS FEMALE	WATERCLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

_____

_____

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SHEET NUMBER: T-2
REVISION: 1

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☐ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here)_____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Skylights in each assembly: _____
- U-Value of skylight: _____
- total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Openings (windows or doors with glazing)
  - U-Value of assembly: _____
  - Solar heat gain coefficient: _____
  - projection factor: _____
  - Door R-Values: _____

Walls below grade (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____

Floors over unconditioned space (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____

Floors slab on grade
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Horizontal/vertical requirement: _____
- slab heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule (each fixture type)
- lamp type required in fixture
- number of lamps in fixture
- ballast type used in the fixture
- number of ballasts in fixture
- total wattage per fixture
- total interior wattage specified vs. allowed (whole building or space by space)
- total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Ultimate Wind Speed _____ mph (ASCE-7)
Exposure Category _____

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_s_____ %g S_1_____ %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system
- ☐ Bearing Wall
- ☐ Building Frame
- ☐ Moment Frame
- ☐ Dual w/Special Moment Frame
- ☐ Dual w/Intermediate R/C or Special Steel
- ☐ Inverted Pendulum

Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity _____ psf
Pile size, type, and capacity _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
- winter dry bulb: _____
- summer dry bulb: _____

Interior design conditions
- winter dry bulb: _____
- summer dry bulb: _____
- relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
- Unitary
  - description of unit: _____
  - heating efficiency: _____
  - cooling efficiency: _____
  - size category of unit: _____
- Boiler
  - Size category. If oversized, state reason.: _____
- Chiller
  - Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

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Expires 2/10/22

SHEET NUMBER: T-3

REVISION: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," 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
   CARRIER: T–MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

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

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	9/8/21	JJR	CONSTRUCTION	JJR
1	10/8/21	JJR	CONSTRUCTION	JJR

No. 23924
10/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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

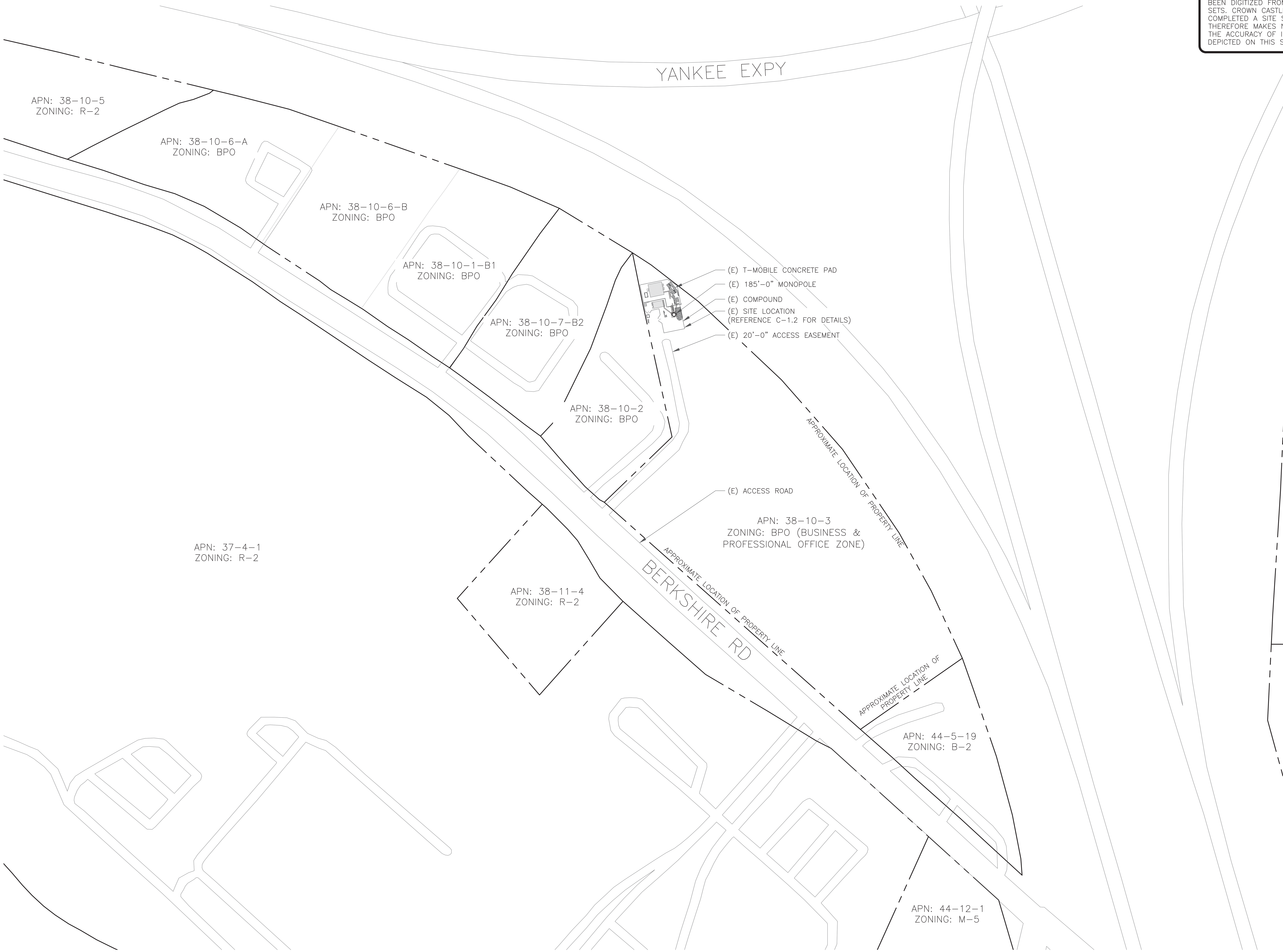
SHEET NUMBER: T-4

REVISION: 1

136440.009.01_BRG 123 943084.dwg — Sheet:T-4 — User: jrichardson — Oct 08, 2021 — 9:26am

SITE PLAN DISCLAIMER:

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



1 OVERALL SITE PLAN

SCALE: 80' 40' 0 80' — 1" = 80'-0" (FULL SIZE) 1" = 160'-0" (11x17)

N

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

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10/8/21

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Expires 2/10/22

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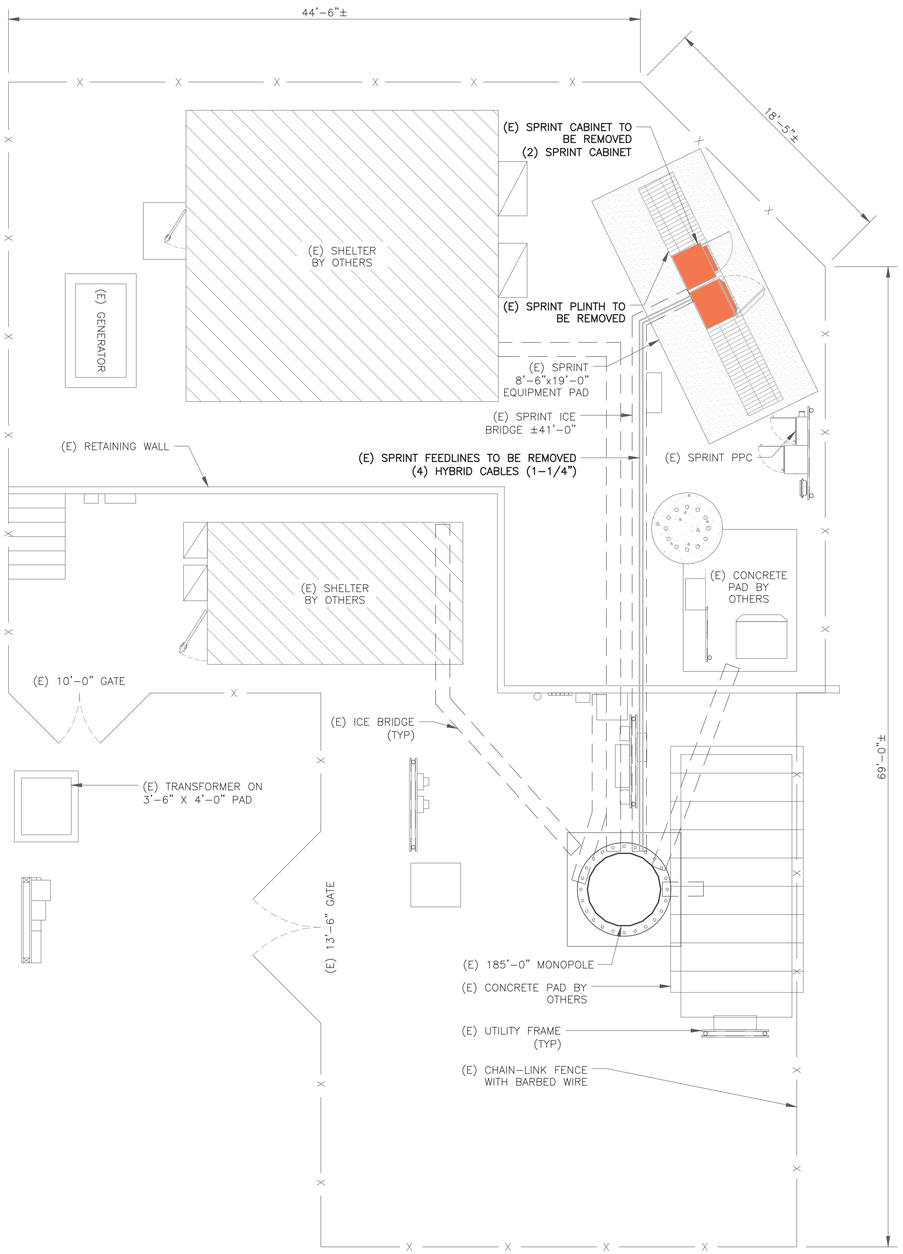
SHEET NUMBER: C-1.1
REVISION: 1

136440.009.01_BRG 123 943084.dwg — Sheet:C-1.1 — User: jrichardson — Oct 08, 2021 — 9:26am

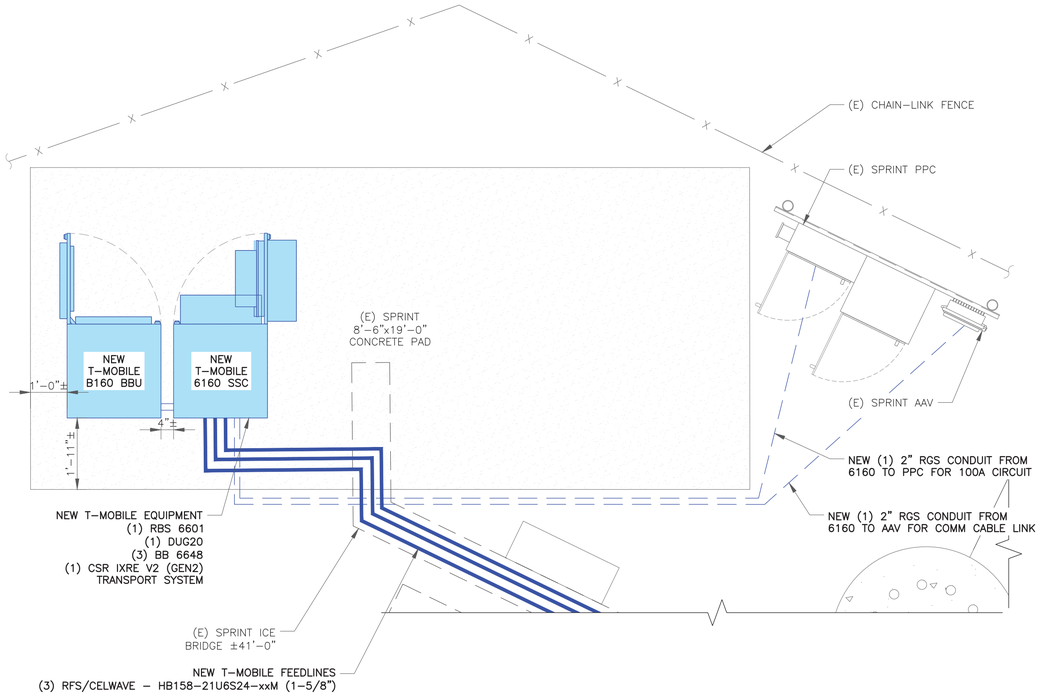


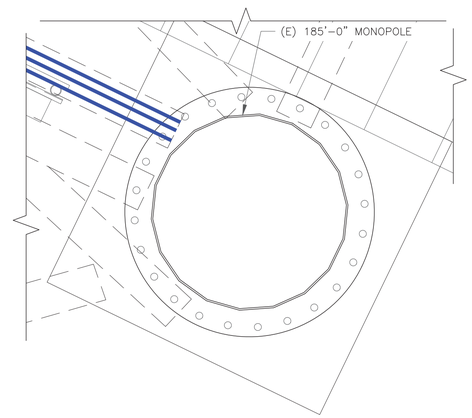
1 SITE PLAN
SCALE: 4' 2' 0 4'
3/16"=1'-0" (FULL SIZE)
3/32"=1'-0" (11x17)

N

NOTES:

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.





2 ENLARGED SITE 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
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	9/8/21	JJR	CONSTRUCTION	JJR
1	10/8/21	JJR	CONSTRUCTION	JJR

B&T ENGINEERING, INC.
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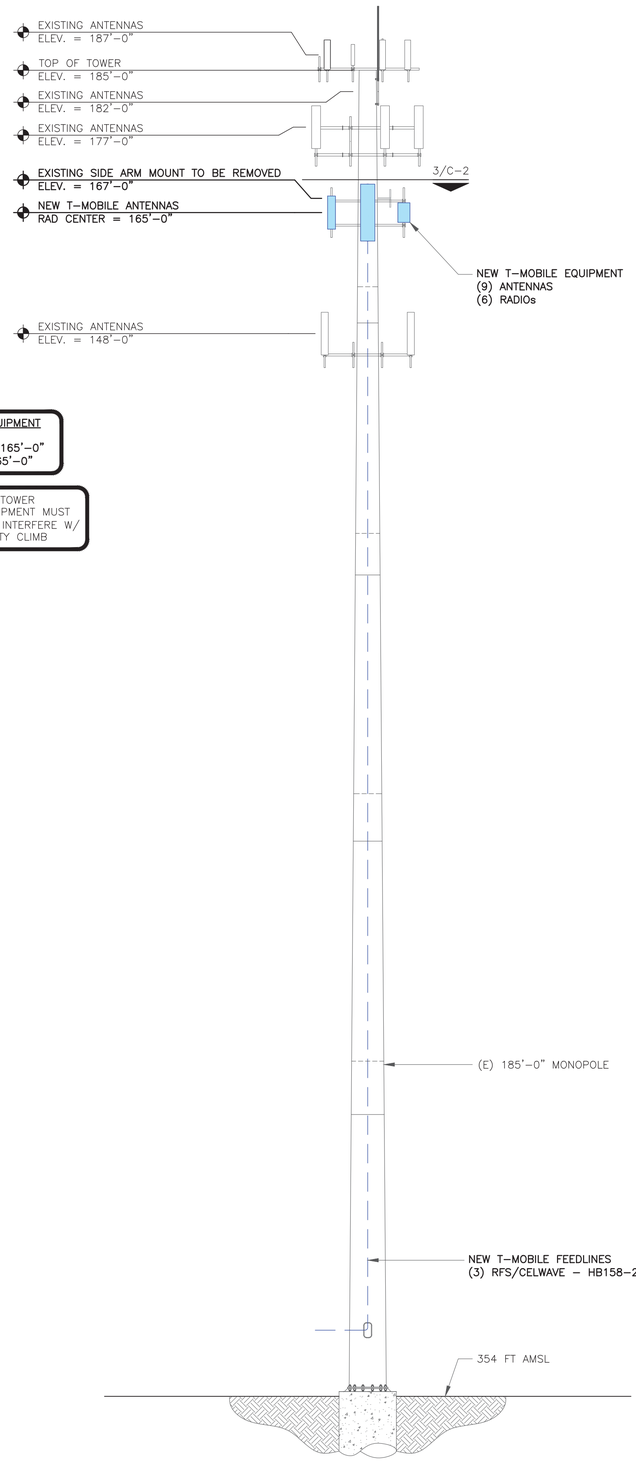
SHEET NUMBER: C-1.2
REVISION: 1

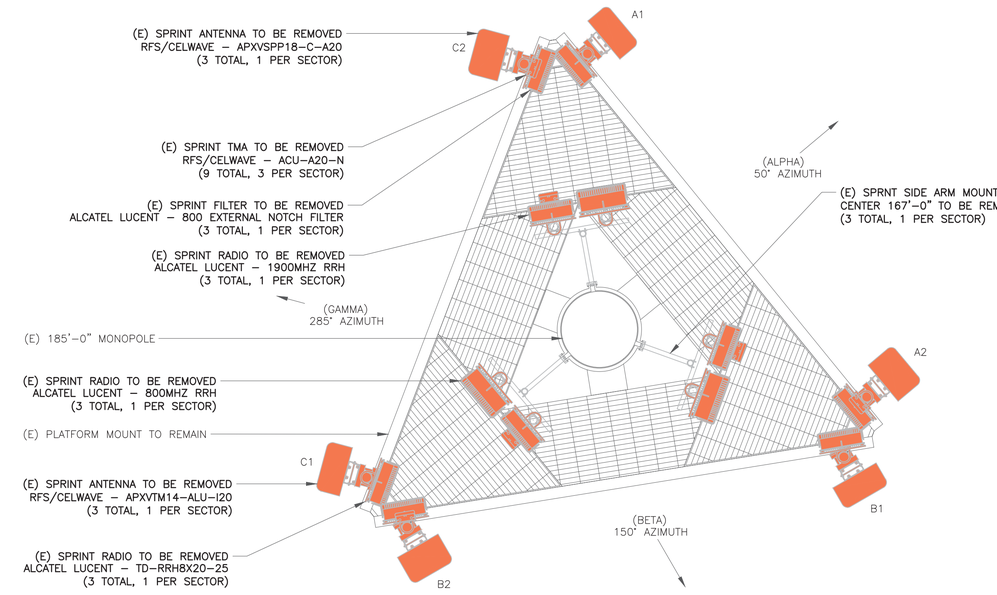


T-MOBILE EQUIPMENT

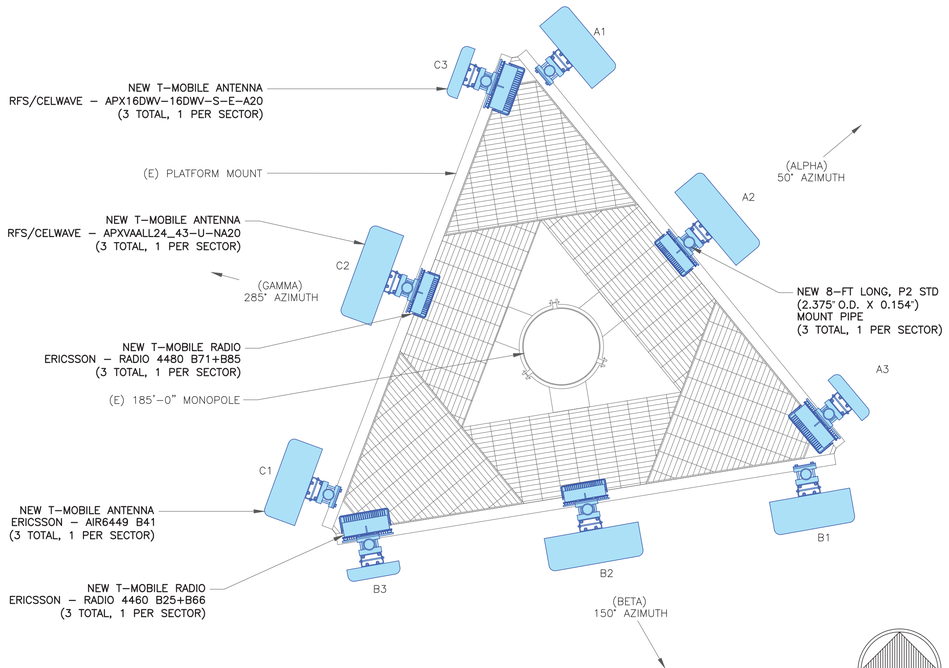
ANTENNA CL: 165'-0"
MOUNT CL: 165'-0"

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

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

T-Mobile
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SHEET NUMBER: C-2

REVISION: 1

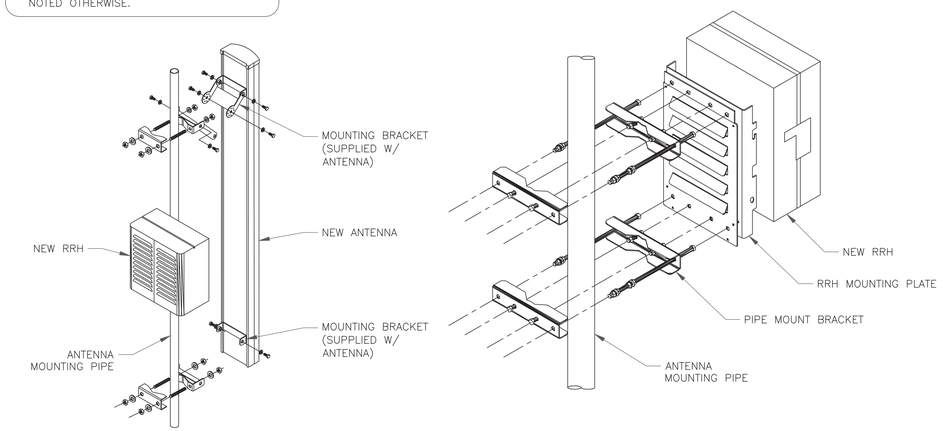
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A-1	L2500 / N2500	ERICSSON	AIR6449 B41	50°	–	–	165'-0"	–	–
	A-2	L700 / L600 / N600	RFS/CELWAVE	APXVAALL24_43-U NA20	50°	–	–	165'-0"	ERICSSON – RADIO 4480 B71+B85	(1) 1 5/8" HYBRID
	A-3	L2100 / L1900 / G1900	RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	50°	–	–	165'-0"	ERICSSON – RADIO 4460 B25+B66	–
BETA	B-1	L2500 / N2500	ERICSSON	AIR6449 B41	150°	–	–	165'-0"	–	–
	B-2	L700 / L600 / N600	RFS/CELWAVE	APXVAALL24_43-U NA20	150°	–	–	165'-0"	ERICSSON – RADIO 4480 B71+B85	(1) 1 5/8" HYBRID
	B-3	L2100 / L1900 / G1900	RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	150°	–	–	165'-0"	ERICSSON – RADIO 4460 B25+B66	–
GAMMA	C-1	L2500 / N2500	ERICSSON	AIR6449 B41	285°	–	–	165'-0"	–	–
	C-2	L700 / L600 / N600	RFS/CELWAVE	APXVAALL24_43-U NA20	285°	–	–	165'-0"	ERICSSON – RADIO 4480 B71+B85	–
	C-3	L2100 / L1900 / G1900	RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	285°	–	–	165'-0"	ERICSSON – RADIO 4460 B25+B66	–

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
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T-MOBILE SITE NUMBER:
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BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
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1	10/8/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
JOSEPH J. RICHARDSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/8/21

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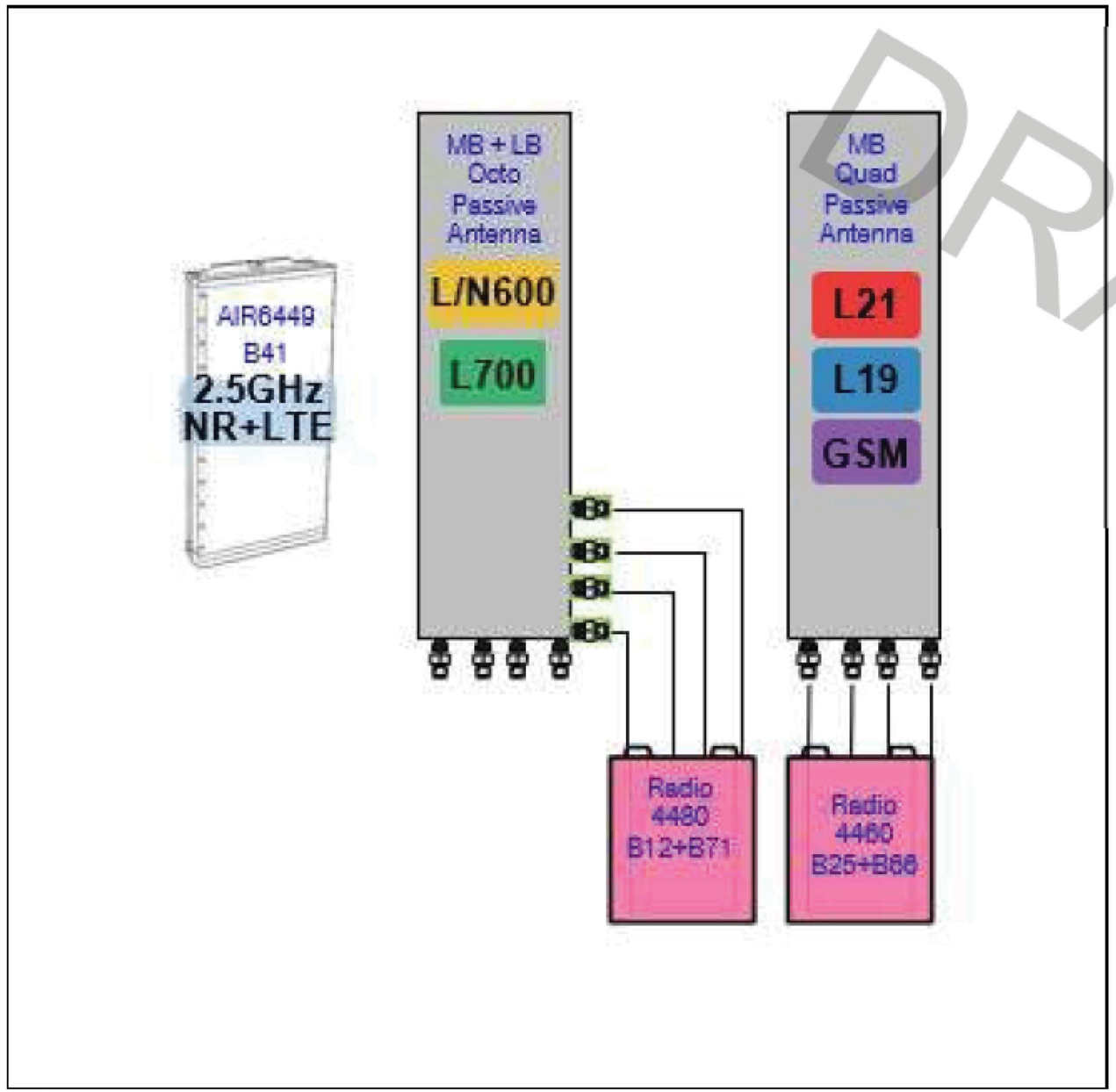
SHEET NUMBER: C-3

REVISION: 1

67E5A998E.JPG



Notes:

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
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T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

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STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/8/21

B&T ENGINEERING, INC.
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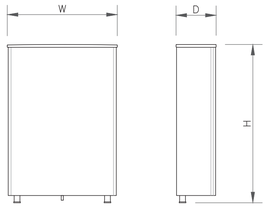
Expires 2/10/22

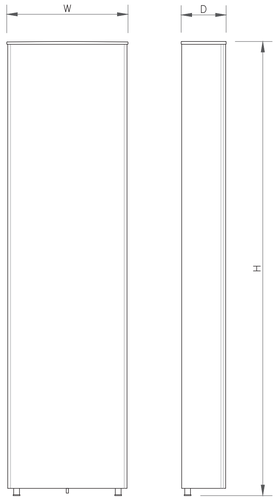
SHEET NUMBER: C-4

REVISION: 1



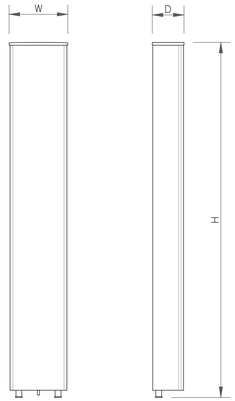
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



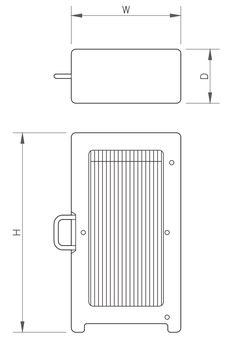
ANTENNA SPECS	
MANUFACTURER	RFS/CELWAVE
MODEL #	APXVAALL24_43-U-NA20
WIDTH	24"
DEPTH	8.5"
HEIGHT	95.9"
WEIGHT	149.9 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



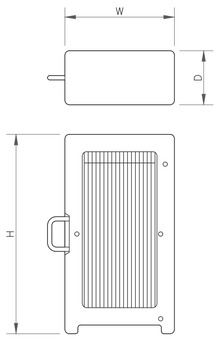
ANTENNA SPECS	
MANUFACTURER	RFS/CELWAVE
MODEL #	APX16DWV-16DWV-S-E-A20
WIDTH	13.3"
DEPTH	3.15"
HEIGHT	55.9"
WEIGHT	41 LBS

3 ANTENNA SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4480 B71+B85
WIDTH	15.7"
DEPTH	7.5"
HEIGHT	21.8"
WEIGHT	92.6 LBS

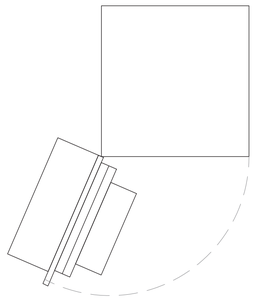
4 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4460 B25+B66
WIDTH	15.1"
DEPTH	11.9"
HEIGHT	17"
WEIGHT	109 LBS

5 RRU SPECS
SCALE: NOT TO SCALE

ERICSSON 6160 SSC
WEIGHT: 60.0 LBS
SIZE (HxWxD): 63"x25.6"x33.5" IN.



6 ERICSSON 6160 SSC
SCALE: NOT TO SCALE

BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	

7 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

T-Mobile
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T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

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0	9/8/21	JJR	CONSTRUCTION	JJR
1	10/8/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/8/21

B&T ENGINEERING, INC.
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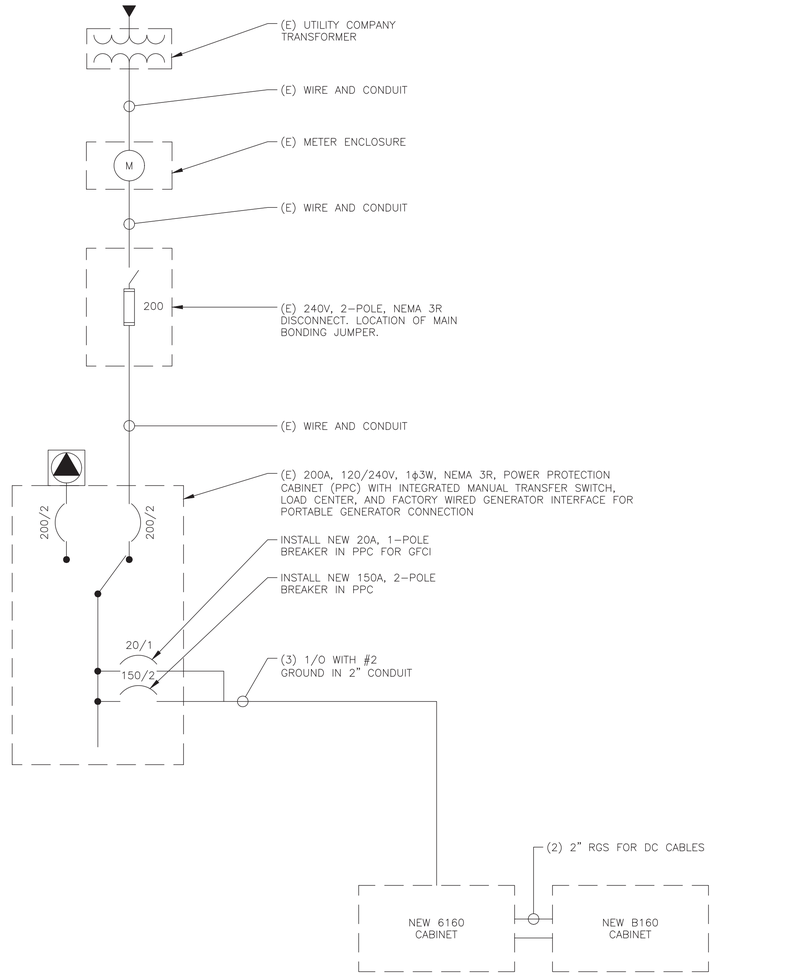
Expires 2/10/22

SHEET NUMBER: C-5
REVISION: 1

PANEL INFORMATION
UNAVAILABLE AT TIME
OF COMPLETION

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



NOTES:

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

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

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STATE OF CONNECTICUT
JOHN J. RICHARDSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/8/21

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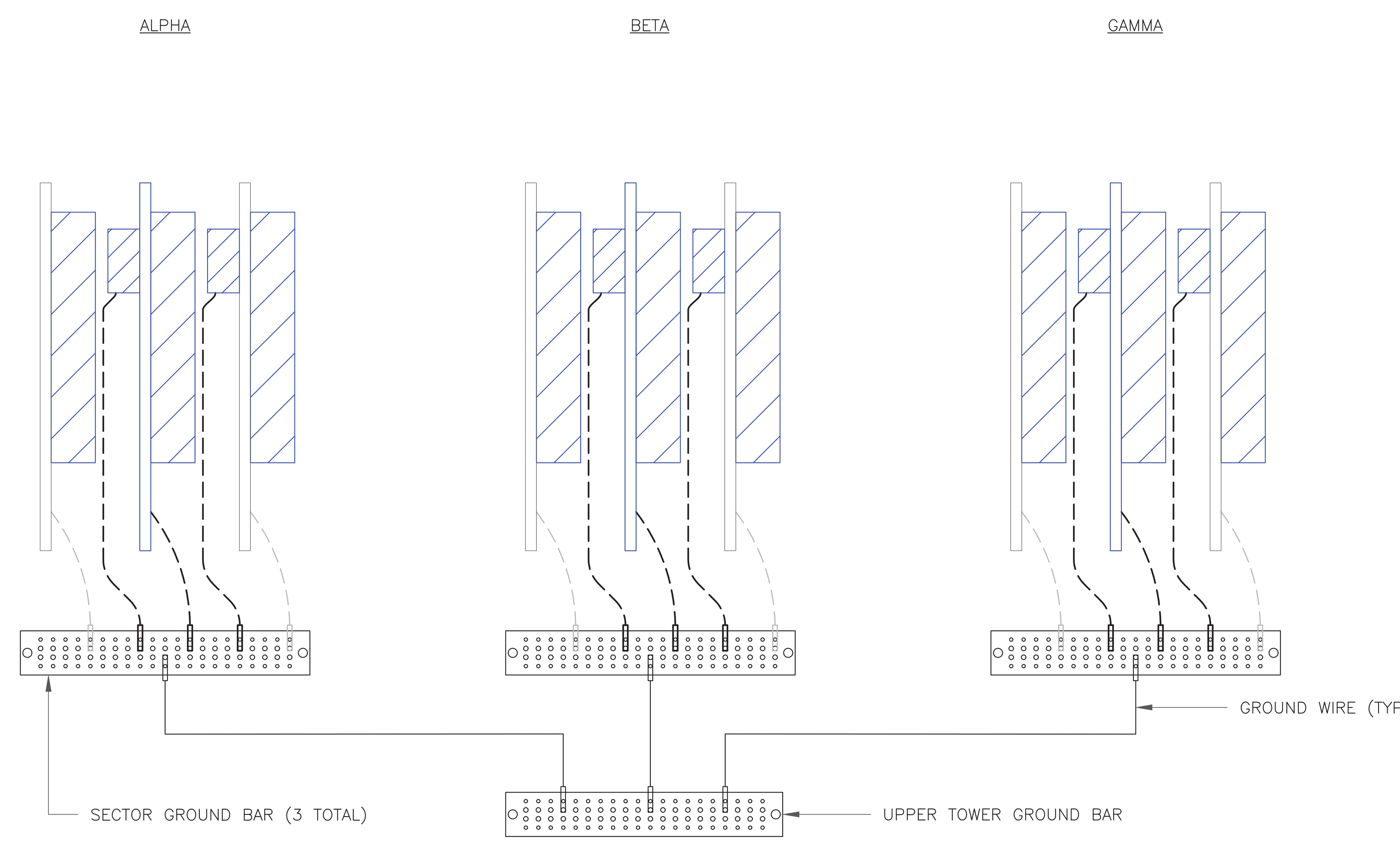
SHEET NUMBER: E-1
REVISION: 1



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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10/8/21

B&T ENGINEERING, INC.
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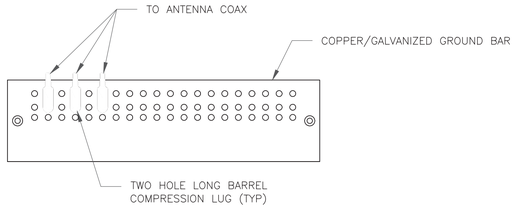
Expires 2/10/22

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

SHEET NUMBER: G-1
REVISION: 1

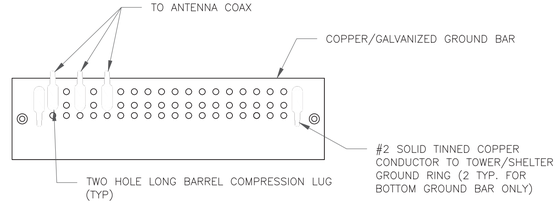
136440.009.01_BRG 123 943084.dwg – Sheet:G-1 – User: jrichardson – Oct 08, 2021 – 9:27am



NOTES:

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

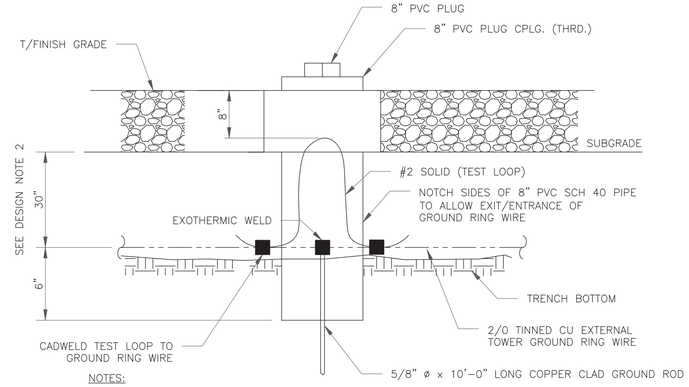
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

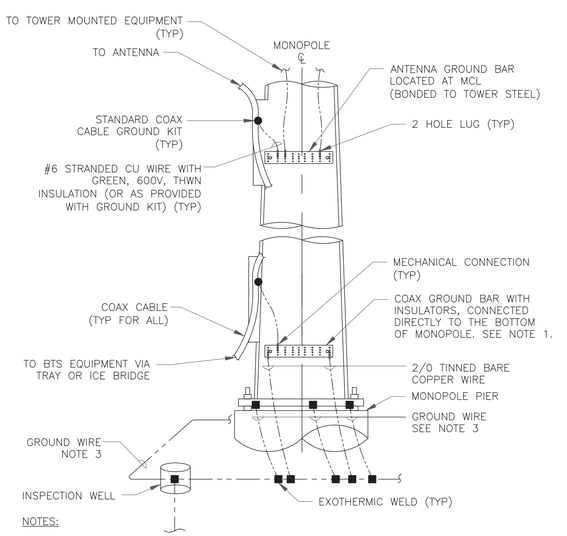
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

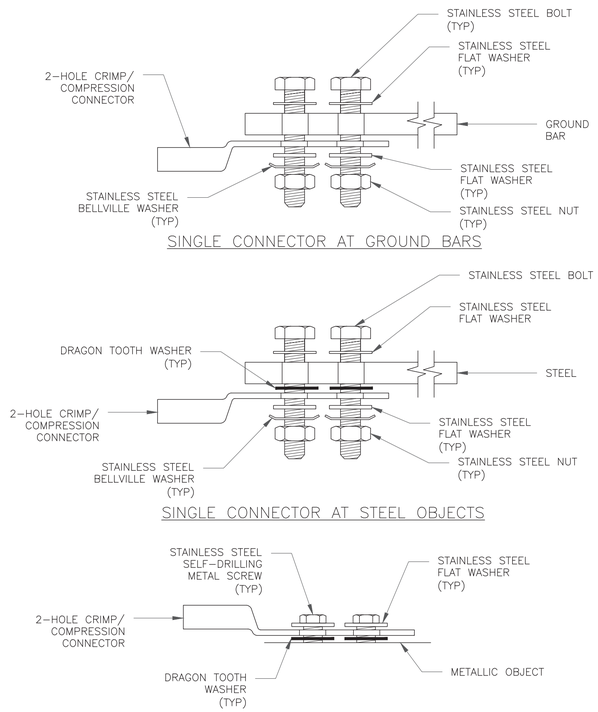
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



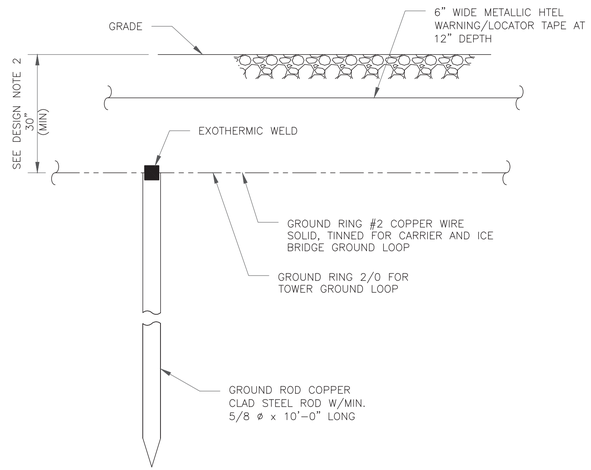
NOTES:

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

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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ISSUED FOR:

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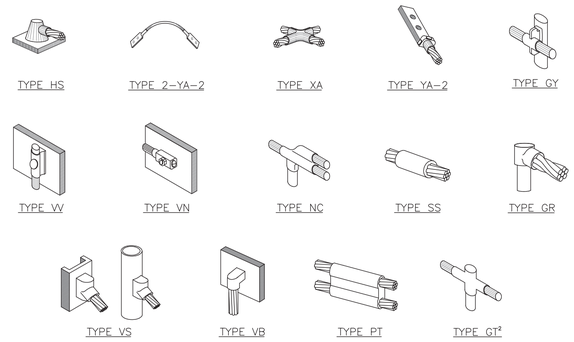
SHEET NUMBER: G-2
REVISION: 1

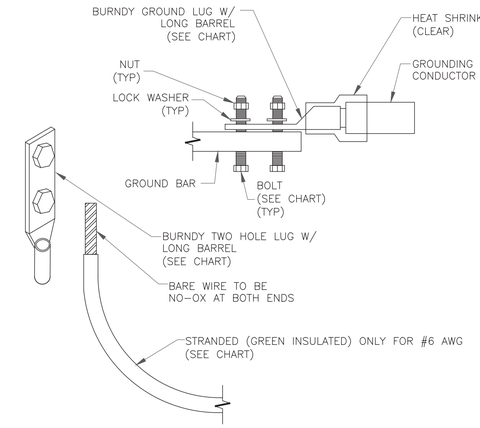


NOTE:

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

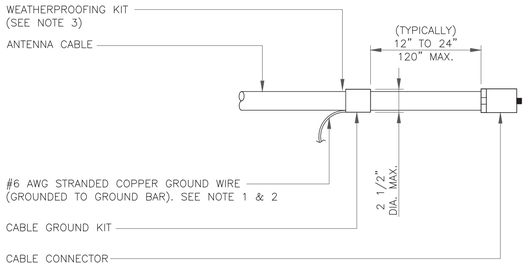
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



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.

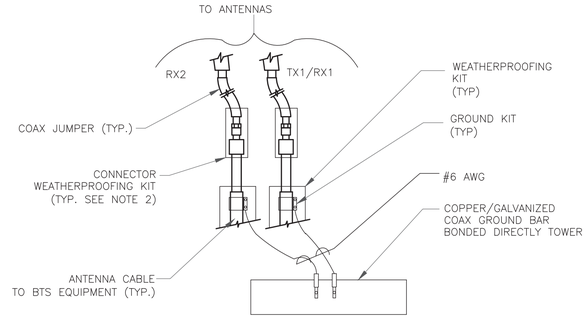
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

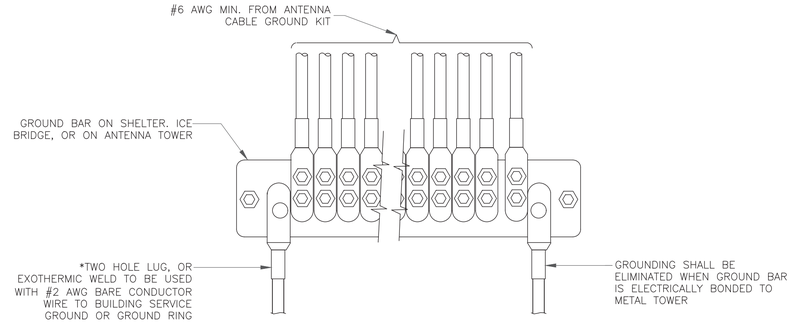
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



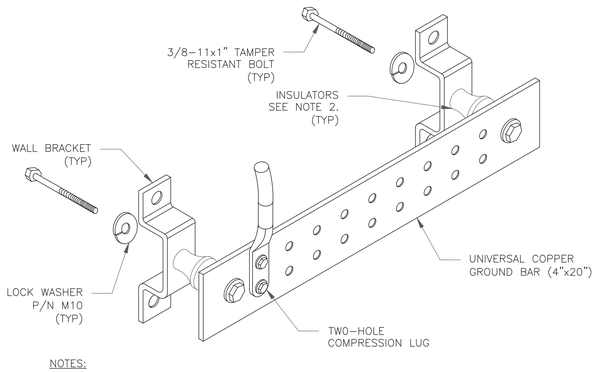
NOTES:

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



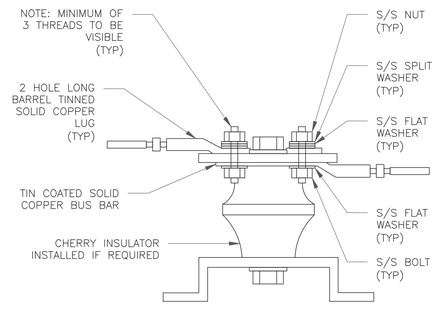
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



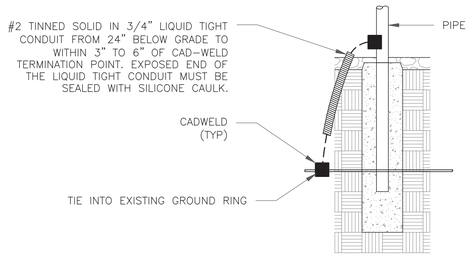
NOTES:

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

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11723A

BU #: **806354**
BRG 123 943084

21 BERKSHIRE ROAD
NEWTOWN, CT 06482

EXISTING
185'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	9/8/21	JJR	CONSTRUCTION	JJR
1	10/8/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/8/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: G-3
REVISION: 1

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, October 27, 2021 10:56 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775026372987: Your package has been delivered

Hi. Your package was delivered Wed, 10/27/2021 at 10:54am.

Delivered to 3 PRIMROSE ST, NEWTOWN, CT 06470
Received by H.ELEN

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775026372987

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Newtown Don Mitchell, Planning Commissioner 3 Primrose Street NEWTOWN, CT, US, 06470
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 10/26/2021 06:02 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	NEWTOWN, CT, US, 06470
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, October 27, 2021 10:53 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775026349739: Your package has been delivered

Hi. Your package was delivered Wed, 10/27/2021 at 10:51am.

Delivered to 3 PRIMROSE ST, NEWTOWN, CT 06470
Received by S.USAN

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775026349739

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Newtown Daniel Rosenthal, First Selectman 3 Primrose Street NEWTOWN, CT, US, 06470
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 10/26/2021 06:02 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	NEWTOWN, CT, US, 06470
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, October 27, 2021 10:55 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775026436466: Your package has been delivered

Hi. Your package was delivered Wed, 10/27/2021 at 10:54am.

Delivered to 505 WESTPORT AVE, NORWALK, CT 06851

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775026436466

FROM Jeff Barbadora
1800 W. Park Drive
WESTBOROUGH, MA, US, 01581

TO	Carmine Renzulli Carmine Renzulli 505 Westport Avenue NORWALK, CT, US, 06851
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 10/26/2021 06:02 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	NORWALK, CT, US, 06851
SPECIAL HANDLING	Deliver Weekday Residential Delivery
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight