



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

January 12, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CT11731A**
Crown Site ID#806377
197 South Street, Vernon, CT 06066
Latitude: 41° 51' 12.51" / Longitude: -72° 27' 7.52"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 130-foot mount level on the existing 132-foot monopole tower, located at 197 South Street, Vernon, CT. The property is owned by the Connecticut Water Company. The tower is owned by Crown Castle. T-Mobile now intends replace six (6) 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 – AIR6449 B41 Antenna
- (3) RFS- APXVAALL24_43-U-NA20 Antenna
- (3) Ericsson Radio 4460 B25+B66
- (3) Ericsson Radio 4480 B71+B85
- (3) Hybrid Cables (1-5/8")
- (3) Sector Frame Antenna Mounts

Remove:

- (3) RFS- APXVTM14-C-120 – Antennas
- (3) RFS- APXVSPP18-C-A20 Antenna
- (3) Alcatel Lucent- TD-RRH8X20-25 Radio
- (3) Alcatel Lucent-2x50W RRH
- (3) Alcatel Lucent- 1900MHZ RRH
- (4) Hybrid Cables (1-1/4")
- (1) Coaxial Cables (5/8")
- (3) Sector T-Frames & Antenna Mounts

Ground:

Install New:

- (1) 6160 Equipment Cabinet
- (1.) B160 Battery Cabinet
- (2.) BB 6648 IN (P) Cabinet
- (2.) PSU 4813 Voltage Booster
- (1.) CSR IXRe Router IN 6160

Remove:

- (2) Cabinets

The facility was approved by the Connecticut Siting Council on April 22, 1987 via a Decision and Order, Docket NO. 58A. The approval was given with conditions which this proposed exempt modification complies with.

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 Daniel Champagne, Mayor, Town of Vernon, George McGregor, Town Planner, Town of Vernon. Connecticut Water Company is the 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.

Melanie A. Bachman

Page 3

Sincerely,

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

Attachments

cc:

Daniel Champagne, Mayor
Town of Vernon
14 Park Place, 3rd Floor
Vernon, CT 06066
(860) 870-3600

George McGregor, Town Planner
Town of Vernon
55 West Main Street, 2nd Floor
Vernon, CT 06066
(860) 870-3640

Connecticut Water Company, Property Owner
93 West Main Street
Clinton, CT 06413-1600
(800) 286-5700

Crown Castle, Tower Owner.

AN APPLICATION FOR AN AMENDMENT TO THE : CONNECTICUT SITING
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY :
AND PUBLIC NEED FOR TELECOMMUNICATIONS : COUNCIL
TOWERS AND ASSOCIATED EQUIPMENT TO PROVIDE :
CELLULAR SERVICE IN HARTFORD, MIDDLESEX, :
AND TOLLAND COUNTIES. : April 22, 1987

DECISION AND ORDER

The Connecticut Siting Council (Council) hereby amends the Certificate of Environmental Compatibility and Public Need issued pursuant to sections 16-50g through 16-50x of the Connecticut General Statutes of Connecticut (CGS) for the construction, operation, and maintenance of cellular mobile telephone telecommunications towers and associated equipment in Hartford, Tolland, and Middlesex Counties to permit the relocation of the Vernon tower 250 feet to the west, subject to the conditions below.

1. The tower shall be no taller than necessary to provide the proposed service, and in no event shall exceed a total height, including antennas, of 143 feet.
2. The Certificate holder shall submit a development and management plan (D&M plan) for the Vernon site, pursuant to sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA). The D&M plan shall provide plans for evergreen screening around the fenced perimeter of the tower site.
3. This facility shall be constructed, operated, and maintained as specified in the Council's record and in the plan required by order number 2.

4. The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies.

Upon the establishment of any new governmental RF standards, the facility shall be brought into compliance with such standards.

5. The certificate holder shall permit public or private entities to share space on the tower approved herein, for due consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with section 16-50j-73 of the RSA, the certificate holder shall notify the Council of the addition of any equipment to the approved tower.

6. A chain link fence not lower than eight feet shall surround the tower and associated equipment.
7. Unless necessary to comply with order eight, no lights shall be installed on this tower.
8. The facility's construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to Council jurisdiction pursuant to Section 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.
9. Construction activities shall take place during daylight working hours.

39065B0016A

CONNECTICUT WATER CO

SOUTH ST 197

400

CONNECTICUT WATER CO
93 WEST MAIN ST
CLINTON, CT 06413-1600
CENSUS TRACT: 530400

Tax ID 39-065B-0016A

Printed 02/02/2019

Card No. 1 of 1

Transfer of Ownership

Owner

NA

Consideration Transfer Date Deed Book/Page Deed Type

0 12/21/1978 351 39

Neighborhood Number

11900

Neighborhood Name

General Commercial A

TAXING DISTRICT INFORMATION

Town of Vernon

Area

146

Routing Number

5887

Site Description

Topography

Public Utilities
Water, Sewer, Gas, Electric

Street or Road

Paved

Neighborhood

Zoning:

R-22

Legal Acres:

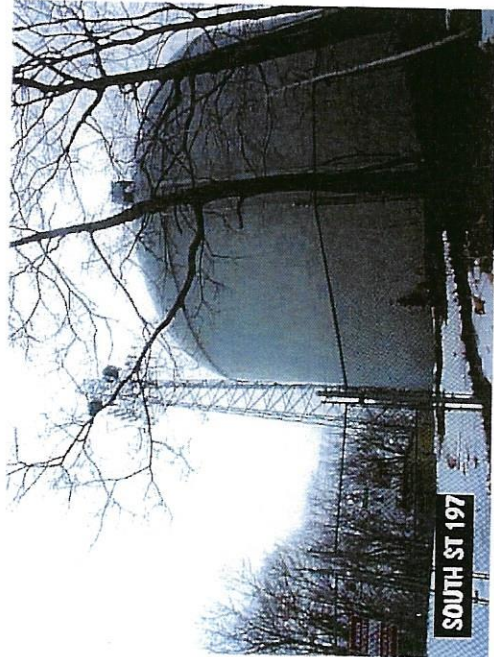
2.0000

Valuation Record

Assessment Year	2011	2016	2018			
Reason for Change	2011 REVAL	2016 Reval	2018 ASPT			
Market	L 156820	183200	183200			
	I 210220	263240	263240			
	T 427040	446440	446440			
70% Assessed/Use	L 109170	128240	128240			
	I 189160	184270	184270			
	T 298930	312510	312510			

Land Size

Rating, Soil ID - or - Actual Frontage	Acreage - or - Effective Frontage	Square Feet - or - Effective Depth	Influence Factor
Land Type			



39065B0016A

CONNECTICUT WATER CO

SOUTH ST 197

400

Physical Characteristics

Tax ID 39-065B-0016A

Printed 02/02/2019

ROOFING

Other

WALLS

B 1 2 U
Frame Yes Yes Yes Yes
Guard Yes Yes Yes Yes

FRAMING

B 1 2 U
F Res 0 312 0 0

FINISH

DF SF FO FD
1 312 0 0 0
Total 312 0 0 0

HEATING AND AIR CONDITIONING

B 1 2 U

01 02 03

26
1 s Mas 12
(312)

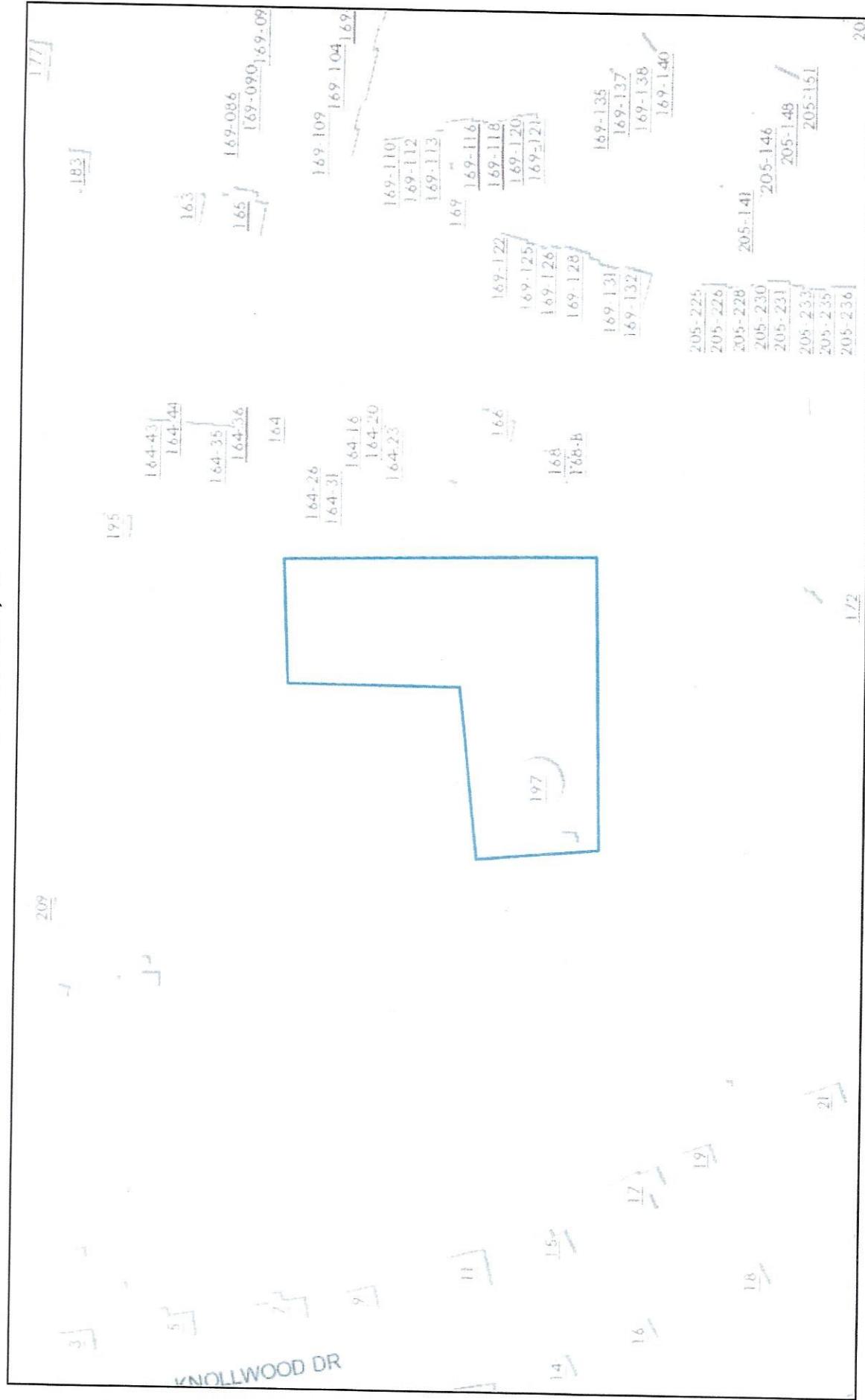
Special Features

Description

Summary of Improvements

ID	USE	Story Height	Const Type	Grade	Year Cons	Eff Year	Cond	Size or Area
C	UTLSTOR	0.00		Avg	1963	1995	AV	312
01	FENCECL	6.00	51C	Avg	1963	1985	AV	510
02	UTLISHED	0.00	4	Avg	1963	1985	AV	300
03	TANKWATR	0.00	51	Good	1963	2000	AV	125000

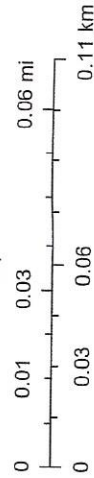
Town of Vernon, CT



January 11, 2022

TaxParcelPublishing

1:2,000



Town of Vernon, CT, Aaron Nash, Town of Vernon

Barbadora, Jeff

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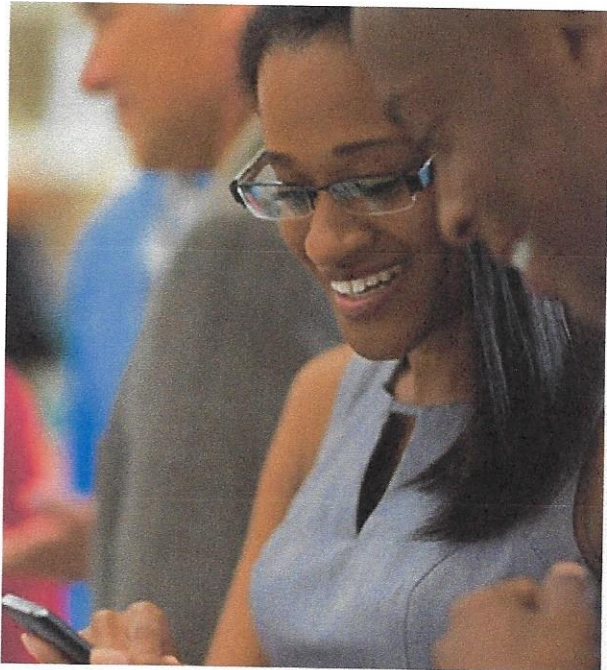
Delivered to 14 PARKWEST DR, VERNON, CT 06066

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER [775735812305](#)

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

TO	Town of Vernon Daniel Champagne, Mayor 14 Park Place 3rd Floor VERNON, CT, US, 06066
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/12/2022 06:21 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	VERNON, CT, US, 06066
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight



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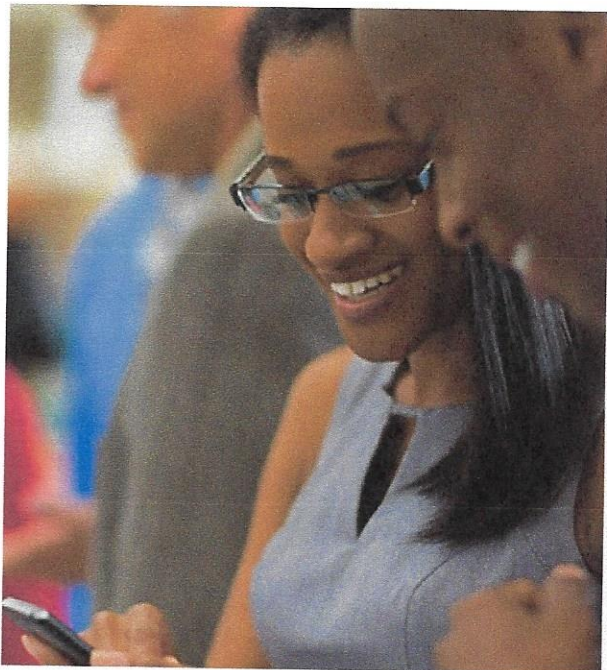
Delivered to 55 W MAIN ST, VERNON, CT 06066

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TRACKING NUMBER [775735841779](#)

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

TO	Town of Vernon George McGregor 55 West Main Street 2nd Floor VERNON, CT, US, 06066
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/12/2022 06:21 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
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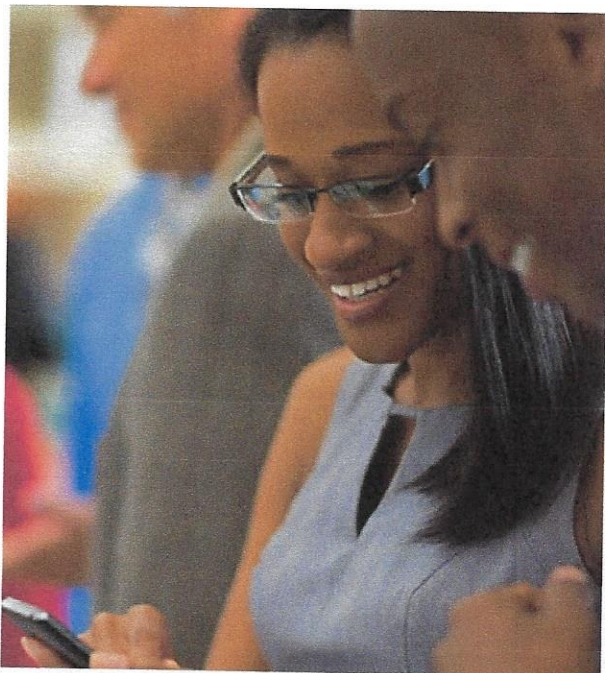
Delivered to 93 W MAIN ST, CLINTON, CT 06413

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER [775735884072](#)

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

TO	Connecticut Water Company Property Owner 93 West Main Street CLINTON, CT, US, 06413
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/12/2022 06:21 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	CLINTON, CT, US, 06413
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight



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Date: **November 23, 2021**



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

Subject: Structural Analysis Report

Carrier Designation:

Site Number: CT11731A
Site Name: CT60XC935

Crown Castle Designation:

BU Number: 806377
Site Name: HRT 084 943242
JDE Job Number: 689445
Work Order Number: 2042462
Order Number: 589867 Rev. 0

Engineering Firm Designation:

TEP Project Number: 217456.627596

Site Data:

197 South St., Vernon, Tolland County, CT 06066
Latitude 41° 51' 12.51", Longitude -72° 27' 7.52"
132 Foot - Self-Supporting Tower

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

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

LC7: Proposed Equipment Configuration

Sufficient Capacity - 73.2%

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Amanda Dare, E.I. / CLT

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

11/23/2021

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1) INTRODUCTION

This tower is a 133.2-ft self-supporting tower designed by Rohn. The tower has been modified per reinforcement drawings prepared by SSOE, Inc. in May of 2015.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	B
Topographic Factor:	1.0
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)
130.0	130.0	3	Ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	3	1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20_T-MOBILE w/ Mount Pipe		
		3	Ericsson	RADIO 4480 B71_TMO		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Site Pro 1	VFA10-HD-S Sector Frame		

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)
117.0	119.0	3	Samsung Telecom.	MT6407-77A w/ Mount Pipe	6 2	7/8 1-5/8
	117.0	2	Andrew	LBX-6515DS-T0M w/ Mount Pipe		
		1	Andrew	LNx-6514DS-T4M w/ Mount Pipe		
		6	Andrew	SBNHH-1D65B w/ Mount Pipe		
		1	Tower Mounts	Sector Mount [SM 505-3]		
	115.0	2	RFS Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Telecom.	RFV01U-D2A		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	CBRS		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
104.0	106.0	3	Kathrein	800 10121 w/ Mount Pipe	14 4 3	7/8 3/4 3/8
		2	CCI Antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		1	CCI Antennas	HPA-65R-BUU-H8 w/ Mount Pipe		
		2	CCI Antennas	TPA65R-BU6D_CCIV2 w/ Mount Pipe		
		1	CCI Antennas	TPA65R-BU8D_CCIV2 w/ Mount Pipe		
		2	CCI Antennas	DMP65R-BU6D w/ Mount Pipe		
		1	CCI Antennas	DMP65R-BU8D w/ Mount Pipe		
		3	Kathrein	782-10250		
		6	Kathrein	860 10025		
		3	Communication Components Inc.	DTMABP7819VG12A		
		3	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 8843 B2/B66A		
	104.0	1	Tower Mounts	Sector Mount [SM 502-3]		
94.0	94.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Tower Mounts	Commscope MTC3975083 (3)		
84.0	84.0	3	Ericsson	AIR 21 B2A B4P w/ Mount Pipe	1 10 2	1-5/8 7/8 1-3/8
		3	RFS Celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
		3	Site Pro 1	VFA12-U Sector Frame		
63.0	63.0	1	RFS Celwave	SB1-190BB	1	1/2
		1	Redline Comm.	RDL-3000		
		1	Tower Mounts	Side Arm Mount [SO 311-1]		
56.0	59.0	1	Maxrad	GPS-TMG-20N	1	1/2
	56.0	1	Tower Mounts	Side Arm Mount [SO 305-1]		
46.0	47.0	1	Lucent	KS24019-L112A	1	1/2

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1014866	CCISites
Tower Foundation Drawings	1014812	CCISites
Tower Manufacturer Drawings	529704	CCISites
Tower Reinforcement Drawings	5678760	CCISites
Post-Modification Inspection	5849707	CCISites

3.1) Analysis Method

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

3.2) Assumptions

- 1) The tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
- 3) The following material grades were assumed:
 - a) Concrete compressive strength: $f'_c = 3$ ksi
 - b) Foundation flexural reinforcement: $f_y = 60$ ksi

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T1	132 - 120	Leg	ROHN 2 STD	2	-5.25	38.68	13.6	Pass
T2	120 - 100	Leg	ROHN 2.5 STD	27	-23.22	59.99	38.7	Pass
T3	100 - 93.3333	Leg	ROHN 3 STD	57	-30.79	74.44	41.4	Pass
T4	93.3333 - 86.6667	Leg	ROHN 3 STD	66	-38.52	74.41	51.8	Pass
T5	86.6667 - 80	Leg	ROHN 3 STD	74	-47.78	96.10	49.7	Pass
T6	80 - 60	Leg	ROHN 3 X-STR	87	-72.53	99.05	73.2	Pass
T7	60 - 40	Leg	ROHN 4 X-STR	108	-96.02	167.91	57.2	Pass
T8	40 - 20	Leg	ROHN 5 X-STR	129	-116.26	211.31	55.0	Pass
T9	20 - 10	Leg	ROHN 5 X-STR	144	-127.18	211.31	60.2	Pass
T10	10 - 0	Leg	ROHN 5 X-STR	153	-137.10	265.94	51.6	Pass
T1	132 - 120	Diagonal	L1 3/4x1 3/4x3/16	16	-1.08	11.55	9.4	Pass
T2	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	33	-3.04	6.66	45.7	Pass
T3	100 - 93.3333	Diagonal	L2 1/2x2 1/2x3/16	60	-3.76	15.16	24.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ΦP_{allow} (k)	% Capacity	Pass / Fail
T4	93.3333 - 86.6667	Diagonal	L2 1/2x2 1/2x3/16	69	-3.98	13.54	29.4	Pass
T5	86.6667 - 80	Diagonal	L2 1/2x2 1/2x3/16	78	-4.96	12.58	39.4	Pass
T6	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	91	-4.86	9.53	51.0	Pass
T7	60 - 40	Diagonal	L3x3x3/16	112	-5.21	13.25	39.3	Pass
T8	40 - 20	Diagonal	L3x3x1/4	133	-6.05	11.51	52.6	Pass
T9	20 - 10	Diagonal	L3 1/2x3 1/2x1/4	148	-6.14	17.40	35.3	Pass
T10	10 - 0	Diagonal	L3 1/2x3 1/2x1/4	157	-6.66	16.01	41.6	Pass
T5	86.6667 - 80	Secondary Horizontal	L1 1/2x1 1/2x3/16	82	-0.83	3.92	21.1	Pass
T10	10 - 0	Secondary Horizontal	L2 1/2x2 1/2x3/16	161	-2.38	6.01	39.6	Pass
T1	132 - 120	Top Girt	L2x2x3/16	6	-0.07	6.09	1.2	Pass
T2	120 - 100	Top Girt	L2x2x3/16	29	-0.40	6.09	6.6	Pass
							Summary	
							Leg (T6)	Pass
							Diagonal (T8)	Pass
							Secondary Horizontal (T10)	Pass
							Top Girt (T2)	Pass
							Bolt Checks	Pass
							RATING =	73.2 Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	49.8	Pass
1,2	Base Foundation Structural	-	7.0	Pass
1,2	Base Foundation Soil Interaction	-	56.1	Pass

Structure Rating (max from all components) =	73.2%
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Notes:

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

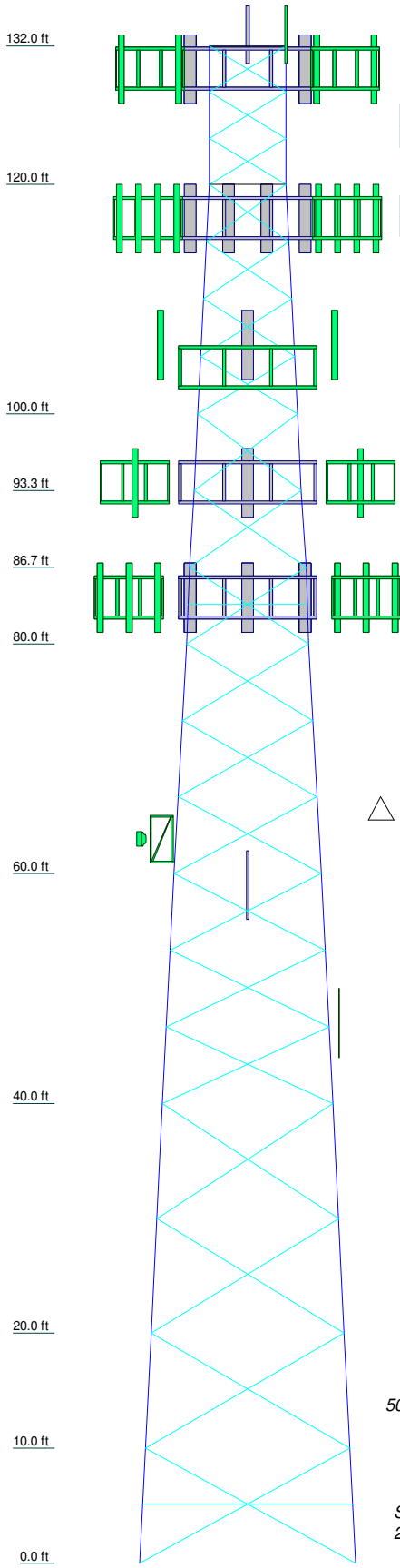
4.1) Recommendations

- 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	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	
Legs	ROHN 2.5 STD	ROHN 2.5 STD	ROHN 3 STD	ROHN 3 STD	ROHN 3 X STR	ROHN 4 X STR	ROHN 5 X STR	ROHN 5 X STR	ROHN 5 X STR	ROHN 5 X STR	
Leg Grade											
Diagonals											
Diagonal Grade											
Top Girts											
Sec. Horizontals											
Face Width (ft)											
# Panels @ (ft)											
Weight (K)											



MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x3/16		

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

- TOWER DESIGN NOTES**
1. Tower is located in Tolland County, Connecticut.
 2. Tower designed for Exposure B to the TIA-222-H Standard.
 3. Tower designed for a 118 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'
 8. TOWER RATING: 73.2%

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 143 K
SHEAR: 17 K

UPLIFT: -114 K
SHEAR: 14 K

AXIAL
94 K
SHEAR
8 K
MOMENT
696 kip-ft
TORQUE 9 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL
39 K
SHEAR
27 K
MOMENT
2108 kip-ft
TORQUE 25 kip-ft
REACTIONS - 118 mph WIND

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			Project: TEP No. 217456.627596		
			Client: Crown Castle	Drawn by: zschartraw	App'd:
			Code: TIA-222-H	Date: 11/23/21	Scale: NTS
			Path:		Dwg No. E-1

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Tower Input Data

The main tower is a 3x free standing tower with an overall height of 132' above the ground line.

The base of the tower is set at an elevation of 0' above the ground line.

The face width of the tower is 6'7-1/4" at the top and 18'9-1/4" at the base.

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

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Tower base elevation above sea level: 655'.

Basic wind speed of 118 mph.

Risk Category II.

Exposure Category B.

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

Topographic Category: 1.

Crest Height: 0'.

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.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

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

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

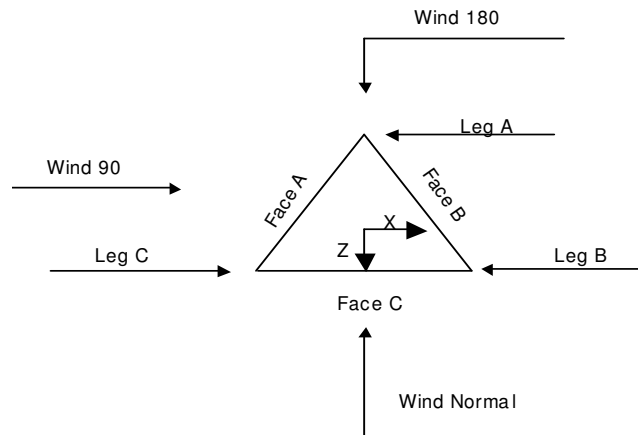
Maximum demand-capacity ratio is: 1.05.

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

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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	132'-120'			6'7-3/16"	1	12'
T2	120'-100'			6'7-13/16"	1	20'
T3	100'-93'3-31/32"			8'8-9/32"	1	6'8-1/32"
T4	93'3-31/32"-86'8-1/32"			9'4-3/16"	1	6'8-1/32"
T5	86'8-1/32"-80'			10'1-7/16"	1	6'8-1/32"
T6	80'-60'			10'8-9/32"	1	20'
T7	60'-40'			12'9-1/8"	1	20'
T8	40'-20'			14'9-1/4"	1	20'
T9	20'-10'			16'9-1/4"	1	10'
T10	10'-0'			17'9-1/4"	1	10'

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	132'-120'	4'	X Brace	No	No	0.0000	0.0000
T2	120'-100'	5'	X Brace	No	No	0.0000	0.0000
T3	100'-93'3-31/32"	6'8-1/32"	X Brace	No	No	0.0000	0.0000
T4	93'3-31/32"-86'8-1/32"	6'8-1/32"	X Brace	No	No	0.0000	0.0000

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<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
	1/32"						
T5	86'8-1/32"-80'	6'8-1/32"	X Brace	No	Yes	0.0000	0.0000
T6	80'-60'	6'8-1/32"	X Brace	No	No	0.0000	0.0000
T7	60'-40'	6'8-1/32"	X Brace	No	No	0.0000	0.0000
T8	40'-20'	10'	X Brace	No	No	0.0000	0.0000
T9	20'-10'	10'	X Brace	No	No	0.0000	0.0000
T10	10'-0'	10'	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1 132'-120'	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 120'-100'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 100'-93'3-31/32"	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 93'3-31/32"-86'8-1/32"	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 86'8-1/32"-80'	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80'-60'	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 60'-40'	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T8 40'-20'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T9 20'-10'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T10 10'-0'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
<i>ft</i>						
T1 132'-120'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 120'-100'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry (cont'd)

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<i>Tower Elevation</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
<i>ft</i>						
T5 86'8-1/32"-80'	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 10'-0'	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Gusset Area (per face)</i>	<i>Gusset Thickness</i>	<i>Gusset Grade</i>	<i>Adjust. Factor A_f</i>	<i>Adjust. Factor A_r</i>	<i>Weight Mult.</i>	<i>Double Angle Stitch Bolt Spacing Diagonals</i>	<i>Double Angle Stitch Bolt Spacing Horizontals</i>	<i>Double Angle Stitch Bolt Spacing Redundants</i>
<i>ft</i>	<i>ft²</i>	<i>in</i>					<i>in</i>	<i>in</i>	<i>in</i>
T1 132'-120'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T2 120'-100'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T3 100'-93'3-31/32"	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T4 93'3-31/32"-86'8-1/32"	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T5 86'8-1/32"-80'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T6 80'-60'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T7 60'-40'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T8 40'-20'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T9 20'-10'	0.00	0.2500	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000
T10 10'-0'	0.00	0.3750	A36 (36 ksi)	1.03	1	1.05	0.0000	0.0000	0.0000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Calc K Single Angles</i>	<i>Calc K Solid Rounds</i>	<i>K Factors¹</i>							
			<i>Legs</i>	<i>X Brace Diags</i>	<i>K Brace Diags</i>	<i>Single Diags</i>	<i>Girts</i>	<i>Horiz.</i>	<i>Sec. Horiz.</i>	<i>Inner Brace</i>
				<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>
<i>ft</i>										
T1 132'-120'	Yes	Yes	1	1	1	1	1	1	1	1
T2 120'-100'	Yes	Yes	1	1	1	1	1	1	1	1
T3 100'-93'3-31/32"	Yes	Yes	1	1	1	1	1	1	1	1
T4 93'3-31/32"-8	Yes	Yes	1	1	1	1	1	1	1	1

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Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T3 100'-93'3-31/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 93'3-31/32"-86'8-1/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 86'8-1/32"-80'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80'-60'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60'-40'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40'-20'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20'-10'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 10'-0'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 132'-120'	Flange	0.6250	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325X		A325N		A325N		A325N		A325N	
T2 120'-100'	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325X		A325N		A325N		A325N		A325N	
T3 100'-93'3-31/32"	Flange	0.0000	0	0.6250	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T4 93'3-31/32"-86'8-1/32"	Flange	0.0000	0	0.6250	1	0.5000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T5 86'8-1/32"-80'	Flange	0.8750	4	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T6 80'-60'	Flange	0.8750	4	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T7 60'-40'	Flange	1.0000	4	0.6250	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T8 40'-20'	Flange	1.0000	4	0.6250	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T9 20'-10'	Flange	0.0000	0	0.6250	1	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325X		A325X		A325N		A325N		A325N		A325N		A325N	
T10 10'-0'	Flange	1.0000	0	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
		A449		A325X		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Step Pegs (5/8" SR) 7.5-in w/ 30" Step	B	No	No	Ar (CaAa)	40' - 0'	0.0000	0.5	1	1	0.3130	0.3130		0.00
Step Pegs (5/8" SR) 7.5-in w/ 30" Step	C	No	No	Ar (CaAa)	40' - 0'	0.0000	0.5	1	1	0.3130	0.3130		0.00
Step Pegs (5/8" SR) 7.5-in w/ 30" Step	A	No	No	Ar (CaAa)	132' - 0'	0.0000	0.5	1	1	0.3130	0.3130		0.00
Safety Line 3/8 ***B Face***	A	No	No	Ar (CaAa)	132' - 0'	0.0000	0.5	1	1	0.3750	0.3750		0.00
Feedline Ladder (Af)	B	No	No	Af (CaAa)	63' - 0'	0.0000	-0.43	1	1	3.0000	3.0000		0.01
LDF4-50A(1/ 2)	B	No	No	Ar (CaAa)	56' - 0'	0.0000	-0.45	1	1	0.5000	0.6250		0.00
LCF12-50J(1/ 2) ***	B	No	No	Ar (CaAa)	63' - 0'	0.0000	-0.425	1	1	0.5000	0.6400		0.00
HB158-21U6S 24-xxM_TMO (1-5/8)	B	No	No	Ar (CaAa)	130' - 0'	0.0000	0.415	3	3	0.5000	1.9960		0.00
LDF4-50A(1/ 2) ***A Face***	B	No	No	Ar (CaAa)	46' - 0'	0.0000	0.39	1	1	0.5000	0.6250		0.00
Feedline Ladder (Af)	A	No	No	Af (CaAa)	117' - 0'	0.0000	0.4	1	1	3.0000	3.0000		0.01
HB158-1-08U 8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	117' - 0'	0.0000	0.43	2	2	0.5000	1.9800		0.00
LDF5-50A(7/ 8) ***	A	No	No	Ar (CaAa)	117' - 0'	0.0000	0.39	6	6	0.5000	1.0900		0.00
LDF5-50A(7/ 8)	C	No	No	Ar (CaAa)	104' - 0'	0.0000	-0.38	14	12	0.5000	1.0900		0.00
FB-L98B-002- 75000(3/8)	C	No	No	Ar (CaAa)	104' - 0'	1.0000	-0.43	1	1	0.3937	0.3937		0.00
FB-L98B-034- XXX(3/8)	C	No	No	Ar (CaAa)	104' - 0'	0.0000	-0.46	2	2	0.3937	0.3937		0.00
WR-VG86ST- BRD(3/4) ***	C	No	No	Ar (CaAa)	104' - 0'	0.0000	-0.44	4	4	0.5000	0.7950		0.00
T-Bracket ***	B	No	No	Af (CaAa)	94' - 0'	-10.000 0	0.45	1	1	1.5000	1.5000		0.00
AL5-50(7/8)	B	No	No	Ar (CaAa)	84' - 0'	-10.000 0	0.45	8	2	0.5000	1.1000		0.00
AL5-50(7/8)	B	No	No	Ar (CaAa)	84' - 0'	-8.0000	0.462	2	1	0.5000	1.1000		0.00
HCS 6X12	B	No	No	Ar (CaAa)	84' - 0'	-12.000 0	0.435	2	2	0.5000	1.3800		0.00
6AWG(1-3/8) MLE HYBRID	B	No	No	Ar (CaAa)	84' - 0'	-12.000 0	0.455	1	1	0.5000	1.6250		0.00
9POWER/18F IBER RL 2(1-5/8) ***													
CU12PSM9P6	B	No	No	Ar (CaAa)	94' - 0'	-5.0000	0.433	1	1	0.5000	1.6000		0.00

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Per Row	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
XXX(1-1/2)													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight klf

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	132'-120'	A	0.000	0.000	0.826	0.000	0.01
		B	0.000	0.000	5.988	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
T2	120'-100'	A	0.000	0.000	27.726	0.000	0.24
		B	0.000	0.000	11.976	0.000	0.15
		C	0.000	0.000	7.848	0.000	0.03
T3	100'-93'3-31/32"	A	0.000	0.000	10.792	0.000	0.09
		B	0.000	0.000	4.265	0.000	0.05
		C	0.000	0.000	13.081	0.000	0.05
T4	93'3-31/32"-86'8-1/32"	A	0.000	0.000	10.792	0.000	0.09
		B	0.000	0.000	6.725	0.000	0.09
		C	0.000	0.000	13.081	0.000	0.05
T5	86'8-1/32"-80'	A	0.000	0.000	10.792	0.000	0.09
		B	0.000	0.000	12.879	0.000	0.12
		C	0.000	0.000	13.081	0.000	0.05
T6	80'-60'	A	0.000	0.000	32.376	0.000	0.27
		B	0.000	0.000	52.638	0.000	0.45
		C	0.000	0.000	39.242	0.000	0.14
T7	60'-40'	A	0.000	0.000	32.376	0.000	0.27
		B	0.000	0.000	63.601	0.000	0.60
		C	0.000	0.000	39.242	0.000	0.14
T8	40'-20'	A	0.000	0.000	32.376	0.000	0.27
		B	0.000	0.000	65.352	0.000	0.61
		C	0.000	0.000	39.868	0.000	0.15
T9	20'-10'	A	0.000	0.000	16.188	0.000	0.14
		B	0.000	0.000	32.676	0.000	0.30
		C	0.000	0.000	19.934	0.000	0.08
T10	10'-0'	A	0.000	0.000	16.188	0.000	0.14
		B	0.000	0.000	32.676	0.000	0.30
		C	0.000	0.000	19.934	0.000	0.08

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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	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
T1	132'-120'	A	1.458	0.000	0.000	7.823	0.000	0.09
		B		0.000	0.000	13.818	0.000	0.21
		C		0.000	0.000	0.000	0.000	0.00
T2	120'-100'	A	1.438	0.000	0.000	71.654	0.000	0.94
		B		0.000	0.000	27.505	0.000	0.41
		C		0.000	0.000	19.196	0.000	0.21
T3	100'-93'3"-31/32"	A	1.420	0.000	0.000	27.187	0.000	0.36
		B		0.000	0.000	9.779	0.000	0.15
		C		0.000	0.000	31.847	0.000	0.35
T4	93'3"-31/32"-86'8"-1/32"	A	1.410	0.000	0.000	27.102	0.000	0.35
		B		0.000	0.000	15.597	0.000	0.25
		C		0.000	0.000	31.767	0.000	0.35
T5	86'8"-1/32"-80'	A	1.399	0.000	0.000	27.011	0.000	0.35
		B		0.000	0.000	29.506	0.000	0.41
		C		0.000	0.000	31.681	0.000	0.35
T6	80'-60'	A	1.375	0.000	0.000	80.422	0.000	1.04
		B		0.000	0.000	118.829	0.000	1.62
		C		0.000	0.000	94.468	0.000	1.02
T7	60'-40'	A	1.329	0.000	0.000	79.275	0.000	1.01
		B		0.000	0.000	142.827	0.000	1.99
		C		0.000	0.000	93.387	0.000	0.99
T8	40'-20'	A	1.263	0.000	0.000	77.608	0.000	0.96
		B		0.000	0.000	150.743	0.000	2.02
		C		0.000	0.000	97.494	0.000	1.00
T9	20'-10'	A	1.178	0.000	0.000	37.740	0.000	0.45
		B		0.000	0.000	72.859	0.000	0.95
		C		0.000	0.000	47.577	0.000	0.47
T10	10'-0'	A	1.056	0.000	0.000	36.201	0.000	0.41
		B		0.000	0.000	69.220	0.000	0.87
		C		0.000	0.000	45.884	0.000	0.43

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	132'-120'	2.8260	1.2314	3.0174	-1.9239
T2	120'-100'	4.8369	-8.1207	5.5980	-10.6666
T3	100'-93'3"-31/32"	11.7749	-7.1100	14.7983	-7.8933
T4	93'3"-31/32"-86'8"-1/32"	13.2411	-6.0145	17.1957	-5.9430
T5	86'8"-1/32"-80'	15.5095	-2.8103	19.6790	-2.1837
T6	80'-60'	19.9833	-1.9160	24.7049	-1.0197
T7	60'-40'	19.9711	-5.1368	25.8585	-5.8934
T8	40'-20'	23.9631	-5.7355	30.0445	-5.0879
T9	20'-10'	24.2225	-5.8335	31.2759	-5.4505
T10	10'-0'	22.5744	-5.4644	29.8179	-5.3657

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Shielding Factor Ka

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T1	3	Step Pegs (5/8" SR) 7.5-in w/ 30" Step	120.00 - 132.00	0.6000	0.6000
T1	4	Safety Line 3/8	120.00 - 132.00	0.6000	0.6000
T1	14	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 130.00	0.6000	0.6000
T2	3	Step Pegs (5/8" SR) 7.5-in w/ 30" Step	100.00 - 120.00	0.6000	0.6000
T2	4	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T2	14	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 120.00	0.6000	0.6000
T2	17	Feedline Ladder (Af)	100.00 - 117.00	0.6000	0.6000
T2	18	HB158-1-08U8-S8J18(1-5/8)	100.00 - 117.00	0.6000	0.6000
T2	19	LDF5-50A(7/8)	100.00 - 117.00	0.6000	0.6000
T2	24	LDF5-50A(7/8)	100.00 - 104.00	0.6000	0.6000
T2	25	FB-L98B-002-75000(3/8)	100.00 - 104.00	0.6000	0.6000
T2	26	FB-L98B-034-XXX(3/8)	100.00 - 104.00	0.6000	0.6000
T2	27	WR-VG86ST-BRD(3/4)	100.00 - 104.00	0.6000	0.6000
T3	3	Step Pegs (5/8" SR) 7.5-in w/ 30" Step	93.33 - 100.00	0.6000	0.6000
T3	4	Safety Line 3/8	93.33 - 100.00	0.6000	0.6000
T3	14	HB158-21U6S24-xxM_TMO (1-5/8)	93.33 - 100.00	0.6000	0.6000
T3	17	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T3	18	HB158-1-08U8-S8J18(1-5/8)	93.33 - 100.00	0.6000	0.6000
T3	19	LDF5-50A(7/8)	93.33 - 100.00	0.6000	0.6000
T3	24	LDF5-50A(7/8)	93.33 - 100.00	0.6000	0.6000
T3	25	FB-L98B-002-75000(3/8)	93.33 - 100.00	0.6000	0.6000
T3	26	FB-L98B-034-XXX(3/8)	93.33 - 100.00	0.6000	0.6000
T3	27	WR-VG86ST-BRD(3/4)	93.33 - 100.00	0.6000	0.6000
T3	29	T-Bracket	93.33 - 94.00	0.6000	0.6000
T3	38	CU12PSM9P6XXX(1-1/2)	93.33 - 94.00	0.6000	0.6000
T4	3	Step Pegs (5/8" SR) 7.5-in w/ 30" Step	86.67 - 93.33	0.6000	0.6000
T4	4	Safety Line 3/8	86.67 - 93.33	0.6000	0.6000
T4	14	HB158-21U6S24-xxM_TMO (1-5/8)	86.67 - 93.33	0.6000	0.6000
T4	17	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T4	18	HB158-1-08U8-S8J18(1-5/8)	86.67 - 93.33	0.6000	0.6000
T4	19	LDF5-50A(7/8)	86.67 - 93.33	0.6000	0.6000
T4	24	LDF5-50A(7/8)	86.67 - 93.33	0.6000	0.6000
T4	25	FB-L98B-002-75000(3/8)	86.67 - 93.33	0.6000	0.6000
T4	26	FB-L98B-034-XXX(3/8)	86.67 - 93.33	0.6000	0.6000
T4	27	WR-VG86ST-BRD(3/4)	86.67 - 93.33	0.6000	0.6000
T4	29	T-Bracket	86.67 - 93.33	0.6000	0.6000
T4	38	CU12PSM9P6XXX(1-1/2)	86.67 - 93.33	0.6000	0.6000
T5	3	Step Pegs (5/8" SR) 7.5-in w/ 30" Step	80.00 - 86.67	0.6000	0.6000
T5	4	Safety Line 3/8	80.00 - 86.67	0.6000	0.6000
T5	14	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 86.67	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T5	17	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T5	18	HB158-1-08U8-S8J18(1-5/8)	80.00 - 86.67	0.6000	0.6000
T5	19	LDF5-50A(7/8)	80.00 - 86.67	0.6000	0.6000
T5	24	LDF5-50A(7/8)	80.00 - 86.67	0.6000	0.6000
T5	25	FB-L98B-002-75000(3/8)	80.00 - 86.67	0.6000	0.6000
T5	26	FB-L98B-034-XXX(3/8)	80.00 - 86.67	0.6000	0.6000
T5	27	WR-VG86ST-BRD(3/4)	80.00 - 86.67	0.6000	0.6000
T5	29	T-Bracket	80.00 - 86.67	0.6000	0.6000
T5	33	AL5-50(7/8)	80.00 - 84.00	0.6000	0.6000
T5	34	AL5-50(7/8)	80.00 - 84.00	0.6000	0.6000
T5	35	HCS 6X12 6AWG(1-3/8)	80.00 - 84.00	0.6000	0.6000
T5	36	MLE HYBRID	80.00 - 84.00	0.6000	0.6000
		9POWER/18FIBER RL			
		2(1-5/8)			
T5	38	CU12PSM9P6XXX(1-1/2)	80.00 - 86.67	0.6000	0.6000
T6	3	Step Pegs (5/8" SR) 7.5-in w/	60.00 - 80.00	0.6000	0.6000
		30" Step			
T6	4	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T6	6	Feedline Ladder (Af)	60.00 - 63.00	0.6000	0.6000
T6	9	LCF12-50J(1/2)	60.00 - 63.00	0.6000	0.6000
T6	14	HB158-21U6S24-xxM_TMO	60.00 - 80.00	0.6000	0.6000
		(1-5/8)			
T6	17	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T6	18	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T6	19	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T6	24	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T6	25	FB-L98B-002-75000(3/8)	60.00 - 80.00	0.6000	0.6000
T6	26	FB-L98B-034-XXX(3/8)	60.00 - 80.00	0.6000	0.6000
T6	27	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.6000
T6	29	T-Bracket	60.00 - 80.00	0.6000	0.6000
T6	33	AL5-50(7/8)	60.00 - 80.00	0.6000	0.6000
T6	34	AL5-50(7/8)	60.00 - 80.00	0.6000	0.6000
T6	35	HCS 6X12 6AWG(1-3/8)	60.00 - 80.00	0.6000	0.6000
T6	36	MLE HYBRID	60.00 - 80.00	0.6000	0.6000
		9POWER/18FIBER RL			
		2(1-5/8)			
T6	38	CU12PSM9P6XXX(1-1/2)	60.00 - 80.00	0.6000	0.6000
T7	3	Step Pegs (5/8" SR) 7.5-in w/	40.00 - 60.00	0.6000	0.6000
		30" Step			
T7	4	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T7	6	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	7	LDF4-50A(1/2)	40.00 - 56.00	0.6000	0.6000
T7	9	LCF12-50J(1/2)	40.00 - 60.00	0.6000	0.6000
T7	14	HB158-21U6S24-xxM_TMO	40.00 - 60.00	0.6000	0.6000
		(1-5/8)			
T7	15	LDF4-50A(1/2)	40.00 - 46.00	0.6000	0.6000
T7	17	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T7	18	HB158-1-08U8-S8J18(1-5/8)	40.00 - 60.00	0.6000	0.6000
T7	19	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T7	24	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T7	25	FB-L98B-002-75000(3/8)	40.00 - 60.00	0.6000	0.6000
T7	26	FB-L98B-034-XXX(3/8)	40.00 - 60.00	0.6000	0.6000
T7	27	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T7	29	T-Bracket	40.00 - 60.00	0.6000	0.6000
T7	33	AL5-50(7/8)	40.00 - 60.00	0.6000	0.6000
T7	34	AL5-50(7/8)	40.00 - 60.00	0.6000	0.6000
T7	35	HCS 6X12 6AWG(1-3/8)	40.00 - 60.00	0.6000	0.6000
T7	36	MLE HYBRID	40.00 - 60.00	0.6000	0.6000
		9POWER/18FIBER RL			
		2(1-5/8)			
T7	38	CU12PSM9P6XXX(1-1/2)	40.00 - 60.00	0.6000	0.6000
T8	1	Step Pegs (5/8" SR) 7.5-in w/	20.00 - 40.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T8	2	30" Step Step Pegs (5/8" SR) 7.5-in w/	20.00 - 40.00	0.6000	0.6000
T8	3	30" Step Step Pegs (5/8" SR) 7.5-in w/	20.00 - 40.00	0.6000	0.6000
T8	4	30" Step Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T8	6	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	7	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T8	9	LCF12-50J(1/2)	20.00 - 40.00	0.6000	0.6000
T8	14	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 40.00	0.6000	0.6000
T8	15	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T8	17	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T8	18	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T8	19	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T8	24	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T8	25	FB-L98B-002-75000(3/8)	20.00 - 40.00	0.6000	0.6000
T8	26	FB-L98B-034-XXX(3/8)	20.00 - 40.00	0.6000	0.6000
T8	27	WR-VG86ST-BRD(3/4)	20.00 - 40.00	0.6000	0.6000
T8	29	T-Bracket	20.00 - 40.00	0.6000	0.6000
T8	33	AL5-50(7/8)	20.00 - 40.00	0.6000	0.6000
T8	34	AL5-50(7/8)	20.00 - 40.00	0.6000	0.6000
T8	35	HCS 6X12 6AWG(1-3/8)	20.00 - 40.00	0.6000	0.6000
T8	36	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	20.00 - 40.00	0.6000	0.6000
T8	38	CU12PSM9P6XXX(1-1/2)	20.00 - 40.00	0.6000	0.6000
T9	1	Step Pegs (5/8" SR) 7.5-in w/	10.00 - 20.00	0.6000	0.6000
T9	2	30" Step Step Pegs (5/8" SR) 7.5-in w/	10.00 - 20.00	0.6000	0.6000
T9	3	30" Step Step Pegs (5/8" SR) 7.5-in w/	10.00 - 20.00	0.6000	0.6000
T9	4	30" Step Safety Line 3/8	10.00 - 20.00	0.6000	0.6000
T9	6	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T9	7	LDF4-50A(1/2)	10.00 - 20.00	0.6000	0.6000
T9	9	LCF12-50J(1/2)	10.00 - 20.00	0.6000	0.6000
T9	14	HB158-21U6S24-xxM_TMO (1-5/8)	10.00 - 20.00	0.6000	0.6000
T9	15	LDF4-50A(1/2)	10.00 - 20.00	0.6000	0.6000
T9	17	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T9	18	HB158-1-08U8-S8J18(1-5/8)	10.00 - 20.00	0.6000	0.6000
T9	19	LDF5-50A(7/8)	10.00 - 20.00	0.6000	0.6000
T9	24	LDF5-50A(7/8)	10.00 - 20.00	0.6000	0.6000
T9	25	FB-L98B-002-75000(3/8)	10.00 - 20.00	0.6000	0.6000
T9	26	FB-L98B-034-XXX(3/8)	10.00 - 20.00	0.6000	0.6000
T9	27	WR-VG86ST-BRD(3/4)	10.00 - 20.00	0.6000	0.6000
T9	29	T-Bracket	10.00 - 20.00	0.6000	0.6000
T9	33	AL5-50(7/8)	10.00 - 20.00	0.6000	0.6000
T9	34	AL5-50(7/8)	10.00 - 20.00	0.6000	0.6000
T9	35	HCS 6X12 6AWG(1-3/8)	10.00 - 20.00	0.6000	0.6000
T9	36	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	10.00 - 20.00	0.6000	0.6000
T9	38	CU12PSM9P6XXX(1-1/2)	10.00 - 20.00	0.6000	0.6000
T10	1	Step Pegs (5/8" SR) 7.5-in w/	0.00 - 10.00	0.6000	0.6000
T10	2	30" Step Step Pegs (5/8" SR) 7.5-in w/	0.00 - 10.00	0.6000	0.6000
T10	3	30" Step Step Pegs (5/8" SR) 7.5-in w/	0.00 - 10.00	0.6000	0.6000
T10	4	30" Step Safety Line 3/8	0.00 - 10.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T10	6	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T10	7	LDF4-50A(1/2)	0.00 - 10.00	0.6000	0.6000
T10	9	LCF12-50J(1/2)	0.00 - 10.00	0.6000	0.6000
T10	14	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 10.00	0.6000	0.6000
T10	15	LDF4-50A(1/2)	0.00 - 10.00	0.6000	0.6000
T10	17	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T10	18	HB158-1-08U8-S8J18(1-5/8)	0.00 - 10.00	0.6000	0.6000
T10	19	LDF5-50A(7/8)	0.00 - 10.00	0.6000	0.6000
T10	24	LDF5-50A(7/8)	0.00 - 10.00	0.6000	0.6000
T10	25	FB-L98B-002-75000(3/8)	0.00 - 10.00	0.6000	0.6000
T10	26	FB-L98B-034-XXX(3/8)	0.00 - 10.00	0.6000	0.6000
T10	27	WR-VG86ST-BRD(3/4)	0.00 - 10.00	0.6000	0.6000
T10	29	T-Bracket	0.00 - 10.00	0.6000	0.6000
T10	33	AL5-50(7/8)	0.00 - 10.00	0.6000	0.6000
T10	34	AL5-50(7/8)	0.00 - 10.00	0.6000	0.6000
T10	35	HCS 6X12 6AWG(1-3/8)	0.00 - 10.00	0.6000	0.6000
T10	36	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	0.00 - 10.00	0.6000	0.6000
T10	38	CU12PSM9P6XXX(1-1/2)	0.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight K</i>

4" x 5' Pipe	A	From Leg	0.00	0.0000	130'	No Ice	1.60	1.60	0.05
			0'			1/2" Ice	1.94	1.94	0.06
			3'			1" Ice	2.26	2.26	0.08
						2" Ice	2.92	2.92	0.13
4" x 5' Pipe	B	From Leg	0.00	0.0000	130'	No Ice	1.60	1.60	0.05
			0'			1/2" Ice	1.94	1.94	0.06
			3'			1" Ice	2.26	2.26	0.08
						2" Ice	2.92	2.92	0.13
130									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	130'	No Ice	5.19	2.71	0.13
			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00	0.0000	130'	No Ice	5.19	2.71	0.13
			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	130'	No Ice	5.19	2.71	0.13
			0'			1/2" Ice	5.59	3.04	0.17
			0'			1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
APXVAARR24_43-U-NA20 _T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	130'	No Ice	14.69	6.87	0.19
			0'			1/2" Ice	15.46	7.55	0.31

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 084 943242 (BU 806377)	Page	14 of 33
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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
			0'			1" Ice 16.23	8.25	0.46
						2" Ice 17.82	9.67	0.79
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	130'	No Ice 14.69	6.87	0.19
_T-MOBILE w/ Mount Pipe			0'			1/2" Ice 15.46	7.55	0.31
			0'			1" Ice 16.23	8.25	0.46
						2" Ice 17.82	9.67	0.79
APXVAARR24_43-U-NA20	C	From Leg	4.00	0.0000	130'	No Ice 14.69	6.87	0.19
_T-MOBILE w/ Mount Pipe			0'			1/2" Ice 15.46	7.55	0.31
			0'			1" Ice 16.23	8.25	0.46
						2" Ice 17.82	9.67	0.79
RADIO 4480 B71_TMO	A	From Leg	4.00	0.0000	130'	No Ice 2.85	1.38	0.09
			0'			1/2" Ice 3.06	1.54	0.11
			0'			1" Ice 3.28	1.71	0.14
						2" Ice 3.74	2.07	0.20
RADIO 4480 B71_TMO	B	From Leg	4.00	0.0000	130'	No Ice 2.85	1.38	0.09
			0'			1/2" Ice 3.06	1.54	0.11
			0'			1" Ice 3.28	1.71	0.14
						2" Ice 3.74	2.07	0.20
RADIO 4480 B71_TMO	C	From Leg	4.00	0.0000	130'	No Ice 2.85	1.38	0.09
			0'			1/2" Ice 3.06	1.54	0.11
			0'			1" Ice 3.28	1.71	0.14
						2" Ice 3.74	2.07	0.20
RADIO 4460 B2/B25	A	From Leg	4.00	0.0000	130'	No Ice 2.14	1.69	0.11
B66_TMO			0'			1/2" Ice 2.32	1.85	0.13
			0'			1" Ice 2.51	2.02	0.16
						2" Ice 2.91	2.39	0.22
RADIO 4460 B2/B25	B	From Leg	4.00	0.0000	130'	No Ice 2.14	1.69	0.11
B66_TMO			0'			1/2" Ice 2.32	1.85	0.13
			0'			1" Ice 2.51	2.02	0.16
						2" Ice 2.91	2.39	0.22
RADIO 4460 B2/B25	C	From Leg	4.00	0.0000	130'	No Ice 2.14	1.69	0.11
B66_TMO			0'			1/2" Ice 2.32	1.85	0.13
			0'			1" Ice 2.51	2.02	0.16
						2" Ice 2.91	2.39	0.22
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Leg	4.00	0.0000	130'	No Ice 1.90	1.90	0.03
			0'			1/2" Ice 2.73	2.73	0.04
			0'			1" Ice 3.40	3.40	0.06
						2" Ice 4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Leg	4.00	0.0000	130'	No Ice 1.90	1.90	0.03
			0'			1/2" Ice 2.73	2.73	0.04
			0'			1" Ice 3.40	3.40	0.06
						2" Ice 4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Leg	4.00	0.0000	130'	No Ice 1.90	1.90	0.03
			0'			1/2" Ice 2.73	2.73	0.04
			0'			1" Ice 3.40	3.40	0.06
						2" Ice 4.40	4.40	0.12
Site Pro 1 VFA10-HD-S	A	From Leg	2.00	0.0000	130'	No Ice 11.40	7.00	0.55
			0'			1/2" Ice 17.30	11.30	0.65
			0'			1" Ice 22.60	15.30	0.80
						2" Ice 35.00	24.20	0.95
Site Pro 1 VFA10-HD-S	B	From Leg	2.00	0.0000	130'	No Ice 11.40	7.00	0.55
			0'			1/2" Ice 17.30	11.30	0.65
			0'			1" Ice 22.60	15.30	0.80
						2" Ice 35.00	24.20	0.95
Site Pro 1 VFA10-HD-S	C	From Leg	2.00	0.0000	130'	No Ice 11.40	7.00	0.55
			0'			1/2" Ice 17.30	11.30	0.65
			0'			1" Ice 22.60	15.30	0.80

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job HRT 084 943242 (BU 806377)		Page 15 of 33
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	Client Crown Castle		Designed by zschartraw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
117						2" Ice	35.00	24.20	0.95
LBX-6515DS-T0M w/ Mount Pipe	A	From Leg	4.00	0.0000	117'	No Ice	8.63	6.10	0.05
			0'			1/2" Ice	9.19	7.28	0.11
			0'			1" Ice	9.72	8.17	0.19
						2" Ice	10.81	9.98	0.36
LBX-6515DS-T0M w/ Mount Pipe	B	From Leg	4.00	0.0000	117'	No Ice	8.63	6.10	0.05
			0'			1/2" Ice	9.19	7.28	0.11
			0'			1" Ice	9.72	8.17	0.19
						2" Ice	10.81	9.98	0.36
LNx-6514DS-T4M w/ Mount Pipe	C	From Leg	4.00	0.0000	117'	No Ice	4.09	3.30	0.06
			0'			1/2" Ice	4.49	3.68	0.13
			0'			1" Ice	4.89	4.06	0.20
						2" Ice	5.71	4.87	0.38
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	0.0000	117'	No Ice	4.09	3.30	0.07
			0'			1/2" Ice	4.49	3.68	0.13
			0'			1" Ice	4.89	4.07	0.20
						2" Ice	5.72	4.87	0.39
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	0.0000	117'	No Ice	4.09	3.30	0.07
			0'			1/2" Ice	4.49	3.68	0.13
			0'			1" Ice	4.89	4.07	0.20
						2" Ice	5.72	4.87	0.39
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.0000	117'	No Ice	4.09	3.30	0.07
			0'			1/2" Ice	4.49	3.68	0.13
			0'			1" Ice	4.89	4.07	0.20
						2" Ice	5.72	4.87	0.39
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.0000	117'	No Ice	4.91	2.68	0.10
			0'			1/2" Ice	5.26	3.14	0.14
			2'			1" Ice	5.61	3.62	0.18
						2" Ice	6.36	4.63	0.29
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.0000	117'	No Ice	4.91	2.68	0.10
			0'			1/2" Ice	5.26	3.14	0.14
			2'			1" Ice	5.61	3.62	0.18
						2" Ice	6.36	4.63	0.29
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.0000	117'	No Ice	4.91	2.68	0.10
			0'			1/2" Ice	5.26	3.14	0.14
			2'			1" Ice	5.61	3.62	0.18
						2" Ice	6.36	4.63	0.29
CBRS	A	From Leg	4.00	0.0000	117'	No Ice	1.54	0.61	0.02
			0'			1/2" Ice	1.79	0.80	0.04
			-2'			1" Ice	2.06	1.02	0.05
						2" Ice	2.67	1.51	0.09
CBRS	B	From Leg	4.00	0.0000	117'	No Ice	1.54	0.61	0.02
			0'			1/2" Ice	1.79	0.80	0.04
			-2'			1" Ice	2.06	1.02	0.05
						2" Ice	2.67	1.51	0.09
CBRS	C	From Leg	4.00	0.0000	117'	No Ice	1.54	0.61	0.02
			0'			1/2" Ice	1.79	0.80	0.04
			-2'			1" Ice	2.06	1.02	0.05
						2" Ice	2.67	1.51	0.09
DB-T1-6Z-8AB-0Z	A	From Leg	4.00	0.0000	117'	No Ice	4.80	2.00	0.04
			0'			1/2" Ice	5.07	2.19	0.08
			-2'			1" Ice	5.35	2.39	0.12
						2" Ice	5.93	2.81	0.21
DB-T1-6Z-8AB-0Z	B	From Leg	4.00	0.0000	117'	No Ice	4.80	2.00	0.04
			0'			1/2" Ice	5.07	2.19	0.08
			-2'			1" Ice	5.35	2.39	0.12

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
RFV01U-D2A	A	From Leg	4.00 0' -2'	0.0000	117'	2" Ice 5.93 No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 2.60	2.81 1.01 1.14 1.28 1.59	0.21 0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Leg	4.00 0' -2'	0.0000	117'	No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 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' -2'	0.0000	117'	No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D1A	A	From Leg	4.00 0' -2'	0.0000	117'	No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Leg	4.00 0' -2'	0.0000	117'	No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 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' -2'	0.0000	117'	No Ice 1.88 1/2" Ice 2.05 1" Ice 2.22 2" Ice 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
2.4" Dia x 6-ft Pipe	A	From Leg	4.00 0' 0'	0.0000	117'	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
2.4" Dia x 6-ft Pipe	B	From Leg	4.00 0' 0'	0.0000	117'	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
2.4" Dia x 6-ft Pipe	C	From Leg	4.00 0' 0'	0.0000	117'	No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	1.43 1.93 2.30 3.06	0.02 0.03 0.05 0.09
Sector Mount [SM 505-3]	C	None		0.0000	117'	No Ice 31.66 1/2" Ice 44.64 1" Ice 57.44 2" Ice 82.68	31.66 44.64 57.44 82.68	1.73 2.36 3.19 5.45
104								
800 10121 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 3.60 1/2" Ice 4.00 1" Ice 4.42 2" Ice 5.29	2.95 3.34 3.74 4.59	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 3.60 1/2" Ice 4.00 1" Ice 4.42 2" Ice 5.29	2.95 3.34 3.74 4.59	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 3.60 1/2" Ice 4.00 1" Ice 4.42 2" Ice 5.29	2.95 3.34 3.74 4.59	0.07 0.11 0.17 0.30
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 9.22 1/2" Ice 9.98 1" Ice 10.76	6.25 6.96 7.70	0.07 0.14 0.22

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	104'	2" Ice 12.36 No Ice 9.22 1/2" Ice 9.98 1" Ice 10.76 2" Ice 12.36	9.22 6.25 6.96 7.70 9.22	0.42 0.07 0.14 0.22 0.42
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 12.25 1/2" Ice 13.19 1" Ice 14.16 2" Ice 16.14	8.33 9.23 10.15 12.05	0.10 0.19 0.30 0.54
TPA65R-BU6D_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 11.96 1/2" Ice 12.70 1" Ice 13.46 2" Ice 15.02	5.97 6.63 7.30 8.69	0.09 0.18 0.28 0.51
TPA65R-BU6D_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 11.96 1/2" Ice 12.70 1" Ice 13.46 2" Ice 15.02	5.97 6.63 7.30 8.69	0.09 0.18 0.28 0.51
TPA65R-BU8D_CCIV2 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 15.89 1/2" Ice 16.81 1" Ice 17.76 2" Ice 19.70	7.89 8.74 9.60 11.37	0.12 0.23 0.36 0.66
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 11.96 1/2" Ice 12.70 1" Ice 13.46 2" Ice 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 11.96 1/2" Ice 12.70 1" Ice 13.46 2" Ice 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 15.89 1/2" Ice 16.81 1" Ice 17.76 2" Ice 19.70	7.89 8.74 9.60 11.37	0.14 0.25 0.38 0.68
(2) 860 10025	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.14 1/2" Ice 0.19 1" Ice 0.25 2" Ice 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
(2) 860 10025	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.14 1/2" Ice 0.19 1" Ice 0.25 2" Ice 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
(2) 860 10025	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.14 1/2" Ice 0.19 1" Ice 0.25 2" Ice 0.40	0.12 0.17 0.23 0.37	0.00 0.00 0.01 0.01
782-10250	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.45 1/2" Ice 0.54 1" Ice 0.64 2" Ice 0.86	0.25 0.32 0.40 0.59	0.01 0.01 0.02 0.03
782-10250	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.45 1/2" Ice 0.54 1" Ice 0.64 2" Ice 0.86	0.25 0.32 0.40 0.59	0.01 0.01 0.02 0.03
782-10250	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.45 1/2" Ice 0.54 1" Ice 0.64 2" Ice 0.86	0.25 0.32 0.40 0.59	0.01 0.01 0.02 0.03

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
(2) DTMABP7819VG12A	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.98 1/2" Ice 1.10 1" Ice 1.23 2" Ice 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DTMABP7819VG12A	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 0.98 1/2" Ice 1.10 1" Ice 1.23 2" Ice 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DC6-48-60-18-8F	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.21 1/2" Ice 1.89 1" Ice 2.11 2" Ice 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
DC6-48-60-18-8F	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.21 1/2" Ice 1.89 1" Ice 2.11 2" Ice 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
DC6-48-60-18-8F	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.21 1/2" Ice 1.89 1" Ice 2.11 2" Ice 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
RRUS 32 B30	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B30	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B30	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 2.73 1/2" Ice 2.95 1" Ice 3.18 2" Ice 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 4478 B14	A	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19 2" Ice 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	B	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19 2" Ice 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	C	From Leg	4.00 0' 2'	0.0000	104'	No Ice 1.84 1/2" Ice 2.01 1" Ice 2.19 2" Ice 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4449 B5/B12	A	From Leg	4.00	0.0000	104'	No Ice 1.97	1.41	0.07

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>	
			0'			1/2" Ice	2.14	1.56	0.09
			2'			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	B	From Leg	4.00	0.0000	104'	No Ice	1.97	1.41	0.07
			0'			1/2" Ice	2.14	1.56	0.09
			2'			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 4449 B5/B12	C	From Leg	4.00	0.0000	104'	No Ice	1.97	1.41	0.07
			0'			1/2" Ice	2.14	1.56	0.09
			2'			1" Ice	2.33	1.73	0.11
						2" Ice	2.72	2.07	0.16
RRUS 8843 B2/B66A	A	From Leg	4.00	0.0000	104'	No Ice	1.64	1.35	0.07
			0'			1/2" Ice	1.80	1.50	0.09
			2'			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	B	From Leg	4.00	0.0000	104'	No Ice	1.64	1.35	0.07
			0'			1/2" Ice	1.80	1.50	0.09
			2'			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	C	From Leg	4.00	0.0000	104'	No Ice	1.64	1.35	0.07
			0'			1/2" Ice	1.80	1.50	0.09
			2'			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	4.00	0.0000	104'	No Ice	1.43	1.43	0.02
			0'			1/2" Ice	1.93	1.93	0.03
			0'			1" Ice	2.30	2.30	0.05
						2" Ice	3.06	3.06	0.09
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	4.00	0.0000	104'	No Ice	1.43	1.43	0.02
			0'			1/2" Ice	1.93	1.93	0.03
			0'			1" Ice	2.30	2.30	0.05
						2" Ice	3.06	3.06	0.09
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	4.00	0.0000	104'	No Ice	1.43	1.43	0.02
			0'			1/2" Ice	1.93	1.93	0.03
			0'			1" Ice	2.30	2.30	0.05
						2" Ice	3.06	3.06	0.09
Sector Mount [SM 502-3]	C	None		0.0000	104'	No Ice	29.82	29.82	1.67
						1/2" Ice	42.21	42.21	2.27
						1" Ice	54.43	54.43	3.05
						2" Ice	78.49	78.49	5.18
94									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	94'	No Ice	8.01	4.23	0.11
			0'			1/2" Ice	8.52	4.69	0.19
			0'			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	94'	No Ice	8.01	4.23	0.11
			0'			1/2" Ice	8.52	4.69	0.19
			0'			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	94'	No Ice	8.01	4.23	0.11
			0'			1/2" Ice	8.52	4.69	0.19
			0'			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
TA08025-B604	A	From Leg	4.00	0.0000	94'	No Ice	1.96	0.98	0.06
			0'			1/2" Ice	2.14	1.11	0.08
			0'			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B604	B	From Leg	4.00	0.0000	94'	No Ice	1.96	0.98	0.06

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>	
			0'			1/2" Ice	2.14	1.11	0.08
			0'			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B604	C	From Leg	4.00	0.0000	94'	No Ice	1.96	0.98	0.06
			0'			1/2" Ice	2.14	1.11	0.08
			0'			1" Ice	2.32	1.25	0.10
						2" Ice	2.71	1.55	0.15
TA08025-B605	A	From Leg	4.00	0.0000	94'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	B	From Leg	4.00	0.0000	94'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
TA08025-B605	C	From Leg	4.00	0.0000	94'	No Ice	1.96	1.13	0.08
			0'			1/2" Ice	2.14	1.27	0.09
			0'			1" Ice	2.32	1.41	0.11
						2" Ice	2.71	1.72	0.16
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	94'	No Ice	2.01	1.17	0.02
			0'			1/2" Ice	2.19	1.31	0.04
			0'			1" Ice	2.37	1.46	0.06
						2" Ice	2.76	1.78	0.11
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Leg	4.00	0.0000	94'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Leg	4.00	0.0000	94'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Leg	4.00	0.0000	94'	No Ice	1.90	1.90	0.03
			0'			1/2" Ice	2.73	2.73	0.04
			0'			1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
Commscope MTC3975083 (3)	C	None		0.0000	94'	No Ice	23.85	23.85	1.26
						1/2" Ice	34.12	34.12	1.80
						1" Ice	44.39	44.39	2.35
						2" Ice	64.93	64.93	3.43
84									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	84'	No Ice	3.14	2.59	0.11
			0'			1/2" Ice	3.45	2.88	0.16
			0'			1" Ice	3.77	3.19	0.23
						2" Ice	4.43	3.84	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	84'	No Ice	3.14	2.59	0.11
			0'			1/2" Ice	3.45	2.88	0.16
			0'			1" Ice	3.77	3.19	0.23
						2" Ice	4.43	3.84	0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	84'	No Ice	3.14	2.59	0.11
			0'			1/2" Ice	3.45	2.88	0.16
			0'			1" Ice	3.77	3.19	0.23
						2" Ice	4.43	3.84	0.38
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	84'	No Ice	14.69	6.87	0.19
			0'			1/2" Ice	15.46	7.55	0.31
			0'			1" Ice	16.23	8.25	0.46
						2" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	84'	No Ice	14.69	6.87	0.19

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
w/ Mount Pipe			0' 0'			1/2" Ice 15.46 1" Ice 16.23 2" Ice 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' 0'	0.0000	84'	No Ice 14.69 1/2" Ice 15.46 1" Ice 16.23 2" Ice 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 6' 0'	0.0000	84'	No Ice 3.76 1/2" Ice 4.12 1" Ice 4.48 2" Ice 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 6' 0'	0.0000	84'	No Ice 3.76 1/2" Ice 4.12 1" Ice 4.48 2" Ice 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 6' 0'	0.0000	84'	No Ice 3.76 1/2" Ice 4.12 1" Ice 4.48 2" Ice 5.24	3.15 3.49 3.84 4.58	0.19 0.25 0.32 0.48
KRY 112 144/1	A	From Leg	4.00 0' 0'	0.0000	84'	No Ice 0.35 1/2" Ice 0.43 1" Ice 0.51 2" Ice 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	B	From Leg	4.00 0' 0'	0.0000	84'	No Ice 0.35 1/2" Ice 0.43 1" Ice 0.51 2" Ice 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
KRY 112 144/1	C	From Leg	4.00 0' 0'	0.0000	84'	No Ice 0.35 1/2" Ice 0.43 1" Ice 0.51 2" Ice 0.70	0.17 0.23 0.30 0.46	0.01 0.01 0.02 0.03
RADIO 4449 B12/B71	A	From Leg	4.00 0' 0'	0.0000	84'	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97 2" Ice 2.33	1.15 1.29 1.44 1.75	0.08 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Leg	4.00 0' 0'	0.0000	84'	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97 2" Ice 2.33	1.15 1.29 1.44 1.75	0.08 0.09 0.11 0.16
RADIO 4449 B12/B71	C	From Leg	4.00 0' 0'	0.0000	84'	No Ice 1.64 1/2" Ice 1.80 1" Ice 1.97 2" Ice 2.33	1.15 1.29 1.44 1.75	0.08 0.09 0.11 0.16
Sitepro VFA12-U (1)	A	From Leg	2.00 0' 0'	0.0000	84'	No Ice 8.93 1/2" Ice 15.18 1" Ice 21.43 2" Ice 33.93	4.46 8.51 12.56 20.66	0.30 0.40 0.50 0.71
Sitepro VFA12-U (1)	B	From Leg	2.00 0' 0'	0.0000	84'	No Ice 8.93 1/2" Ice 15.18 1" Ice 21.43 2" Ice 33.93	4.46 8.51 12.56 20.66	0.30 0.40 0.50 0.71
Sitepro VFA12-U (1)	C	From Leg	2.00 0' 0'	0.0000	84'	No Ice 8.93 1/2" Ice 15.18 1" Ice 21.43 2" Ice 33.93	4.46 8.51 12.56 20.66	0.30 0.40 0.50 0.71
63 RDL-3000	C	From Leg	3.00	0.0000	63'	No Ice 1.01	0.26	0.01

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Side Arm Mount [SO 311-1]	C	From Leg	0'	0.0000	63'	1/2" Ice	1.13	0.01	
			0'			1" Ice	1.27	0.02	
						2" Ice	1.56	0.04	
			1.50			No Ice	1.67	4.53	0.06
			0'			1/2" Ice	2.43	6.41	0.10
			0'			1" Ice	3.21	8.37	0.15
						2" Ice	4.84	12.72	0.28
56									
GPS-TMG-20N	A	From Leg	3.00	0.0000	56'	No Ice	0.13	0.00	
			0'			1/2" Ice	0.18	0.18	0.00
			3'			1" Ice	0.24	0.24	0.01
						2" Ice	0.37	0.37	0.01
Side Arm Mount [SO 305-1]	A	From Leg	1.50	0.0000	56'	No Ice	0.53	1.52	0.03
			0'			1/2" Ice	0.78	2.07	0.04
						1" Ice	1.06	2.66	0.06
						2" Ice	1.73	3.91	0.13
46									
KS24019-L112A	B	From Leg	1.00	0.0000	46'	No Ice	0.08	0.08	0.01
			0'			1/2" Ice	0.13	0.13	0.01
			1'			1" Ice	0.19	0.19	0.01
						2" Ice	0.35	0.35	0.02
2.4" Dia x 2.5-ft Mount Pipe	B	From Leg	0.50	0.0000	46'	No Ice	0.46	0.46	0.01
			0'			1/2" Ice	0.62	0.62	0.01
			0'			1" Ice	0.78	0.78	0.02
						2" Ice	1.15	1.15	0.04

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft²	Weight K
SB1-190BB	C	Paraboloid w/Shroud (HP)	From Leg	3.00	-12.0000		63'	1.25	No Ice	1.23
				0'					1/2" Ice	1.40
				0'					1" Ice	1.57
									2" Ice	1.91

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

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

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
T1	132 - 120	Leg	Max Tension	7	2.43	0.12	-0.00
			Max. Compression	10	-5.25	0.20	0.02
			Max. Mx	6	-1.16	0.56	-0.00
			Max. My	16	-1.46	-0.00	-0.58
			Max. Vy	22	0.44	-0.31	-0.01
			Max. Vx	4	0.44	-0.00	-0.29
		Diagonal	Max Tension	12	1.14	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	120 - 100	Top Girt	Max. Compression	25	-1.08	0.00	0.00
			Max. Mx	30	0.16	0.02	-0.00
			Max. My	12	-1.05	0.00	0.00
			Max. Vy	30	-0.02	0.02	-0.00
			Max. Vx	12	-0.00	0.00	0.00
			Max Tension	6	0.10	0.00	0.00
			Max. Compression	11	-0.07	0.00	0.00
			Max. Mx	26	0.02	-0.06	0.00
			Max. My	26	0.02	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
			Max Tension	7	14.40	-0.45	0.00
		Leg	Max. Compression	2	-23.22	0.20	0.00
			Max. Mx	14	2.32	0.68	0.03
			Max. My	20	-2.93	-0.03	0.69
			Max. Vy	6	-1.00	-0.46	0.00
			Max. Vx	12	-0.90	-0.01	-0.24
			Max Tension	12	3.06	0.00	0.00
		Diagonal	Max. Compression	12	-3.04	0.00	0.00
			Max. Mx	28	0.14	0.03	0.00
			Max. My	24	-3.03	0.00	-0.00
			Max. Vy	28	0.03	0.02	0.00
			Max. Vx	38	0.00	0.00	0.00
			Max Tension	6	0.20	0.00	0.00
		Top Girt	Max. Compression	19	-0.10	0.00	0.00
			Max. Mx	26	0.12	-0.06	0.00
			Max. My	26	0.12	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T3	100 - 93.3333	Leg	Max Tension	7	20.19	-0.30	0.00
			Max. Compression	2	-30.79	0.26	-0.04
			Max. Mx	6	18.96	-0.31	0.00
			Max. My	4	-5.06	-0.05	-0.50
			Max. Vy	14	0.45	-0.19	0.04
			Max. Vx	16	-0.37	0.03	0.00
		Diagonal	Max Tension	13	3.65	0.00	0.00
			Max. Compression	12	-3.76	0.00	0.00
			Max. Mx	28	0.46	0.06	0.01
			Max. My	30	0.97	0.05	0.01
			Max. Vy	28	-0.04	0.06	0.01
			Max. Vx	30	-0.00	0.00	0.00
		Leg	Max Tension	7	26.59	0.00	-0.01
			Max. Compression	2	-38.52	-0.12	-0.02
			Max. Mx	18	-38.09	0.26	0.01
			Max. My	4	-6.37	-0.07	-0.34
			Max. Vy	18	0.09	0.26	0.01
			Max. Vx	4	0.11	-0.07	-0.34
T4	93.3333 - 86.6667	Diagonal	Max Tension	12	3.96	0.00	0.00
			Max. Compression	12	-3.98	0.00	0.00
			Max. Mx	28	1.06	0.05	-0.01
			Max. My	38	-1.23	0.04	-0.01
			Max. Vy	28	0.04	0.04	0.01
			Max. Vx	38	0.00	0.00	0.00
		Leg	Max Tension	7	34.01	0.00	-0.01
			Max. Compression	10	-47.78	0.02	0.01
			Max. Mx	2	-47.76	0.38	0.00
			Max. My	4	-6.59	-0.07	-0.34
			Max. Vy	6	0.51	-0.27	0.00
			Max. Vx	16	-0.29	0.05	-0.03
T5	86.6667 - 80	Diagonal	Max Tension	25	4.93	0.03	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T6	80 - 60	Secondary Horizontal	Max. Compression	12	-4.96	0.00	0.00			
			Max. Mx	30	0.86	0.07	-0.01			
			Max. My	28	1.37	0.07	-0.01			
			Max. Vy	30	-0.04	0.07	-0.01			
			Max. Vx	28	0.00	0.00	0.00			
			Max Tension	24	0.46	0.00	0.00			
			Max. Compression	13	-0.45	0.01	0.00			
			Max. Mx	28	-0.06	0.03	0.00			
			Max. My	24	-0.45	0.01	0.00			
			Max. Vy	28	0.03	0.03	0.00			
			Max. Vx	30	0.00	0.00	0.00			
			Max Tension	15	55.49	-0.11	0.02			
		Leg	Max. Compression	2	-72.53	0.14	-0.01			
			Max. Mx	22	52.71	-0.18	0.01			
			Max. My	4	-8.83	-0.03	-0.24			
			Max. Vy	22	0.06	-0.18	0.01			
			Max. Vx	4	0.09	-0.03	-0.24			
			Max Tension	24	4.81	0.00	0.00			
			T7	60 - 40	Diagonal	Max. Compression	24	-4.86	0.00	0.00
						Max. Mx	31	0.82	0.08	0.01
						Max. My	27	-1.80	0.06	-0.01
						Max. Vy	29	0.05	0.07	0.01
						Max. Vx	27	0.00	0.00	0.00
						Max Tension	15	75.65	-0.14	0.03
Max. Compression	2	-96.02				0.40	-0.07			
Max. Mx	37	-1.24				-0.56	-0.02			
Max. My	5	-7.66				0.02	-0.26			
Max. Vy	37	0.15				-0.56	-0.02			
Max. Vx	4	-0.08				-0.03	-0.24			
Max Tension	24	5.23				0.00	0.00			
Leg	Max. Compression	24			-5.21	0.00	0.00			
	Max. Mx	31			0.81	0.11	0.01			
	Max. My	33			-1.18	0.08	0.01			
	Max. Vy	29			0.06	0.10	0.01			
	Max. Vx	33			-0.00	0.00	0.00			
	Max Tension	15			92.66	-0.26	0.07			
	T8	40 - 20			Diagonal	Max. Compression	2	-116.25	0.68	-0.08
						Max. Mx	37	0.27	-0.98	-0.01
						Max. My	4	-11.30	-0.08	-0.66
						Max. Vy	37	0.18	-0.98	-0.01
						Max. Vx	4	-0.16	-0.08	-0.66
						Max Tension	24	5.98	0.00	0.00
Max. Compression			24	-6.05		0.00	0.00			
Max. Mx			29	0.56		0.15	-0.02			
Max. My			27	1.89		0.13	-0.02			
Max. Vy			29	0.07		0.13	0.02			
Max. Vx			27	0.00		0.00	0.00			
Max Tension			15	101.64		-0.53	0.08			
Leg			Max. Compression	2	-127.18	-0.33	-0.05			
			Max. Mx	37	3.71	-0.98	-0.01			
			Max. My	4	-12.52	-0.15	-0.96			
			Max. Vy	37	-0.22	-0.98	-0.01			
			Max. Vx	4	0.19	-0.15	-0.96			
			Max Tension	24	6.15	0.00	0.00			
			T9	20 - 10	Diagonal	Max. Compression	24	-6.14	0.00	0.00
						Max. Mx	29	0.15	0.23	-0.02
						Max. My	33	-2.80	0.21	0.03
						Max. Vy	29	0.09	0.23	-0.02
						Max. Vx	33	-0.00	0.00	0.00
						Max Tension	15	109.79	0.08	0.06

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-137.10	0.00	0.00
			Max. Mx	2	-136.94	1.16	0.01
			Max. My	4	-12.89	-0.15	-0.96
			Max. Vy	2	-0.33	1.16	0.01
			Max. Vx	4	-0.25	-0.15	-0.96
		Diagonal	Max Tension	25	6.24	0.10	0.01
			Max. Compression	24	-6.66	0.00	0.00
			Max. Mx	31	2.61	0.14	-0.03
			Max. My	27	2.18	0.14	-0.03
			Max. Vy	30	0.08	0.14	0.03
			Max. Vx	27	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	4	0.39	0.00	0.00
			Max. Compression	5	-0.32	0.00	0.00
			Max. Mx	28	-0.02	0.09	0.01
			Max. My	30	-0.16	0.08	0.01
			Max. Vy	28	0.05	0.09	0.01
			Max. Vx	30	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	138.31	14.21	-7.87
	Max. H _x	18	138.31	14.21	-7.87
	Max. H _z	7	-112.50	-11.96	6.58
	Min. Vert	7	-112.50	-11.96	6.58
	Min. H _x	7	-112.50	-11.96	6.58
	Min. H _z	18	138.31	14.21	-7.87
Leg B	Max. Vert	10	141.48	-14.10	-8.57
	Max. H _x	23	-112.16	11.81	7.22
	Max. H _z	25	-98.90	9.94	7.58
	Min. Vert	23	-112.16	11.81	7.22
	Min. H _x	10	141.48	-14.10	-8.57
	Min. H _z	10	141.48	-14.10	-8.57
Leg A	Max. Vert	2	142.60	0.74	16.77
	Max. H _x	20	13.36	2.13	1.07
	Max. H _z	2	142.60	0.74	16.77
	Min. Vert	15	-114.10	-0.70	-14.12
	Min. H _x	11	-53.99	-2.16	-6.93
	Min. H _z	15	-114.10	-0.70	-14.12

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	32.36	0.00	0.00	-4.69	-15.60	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	38.83	-0.01	-26.79	-2107.72	-17.85	23.25
0.9 Dead+1.0 Wind 0 deg - No Ice	29.13	-0.01	-26.79	-2106.31	-13.17	23.25

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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
1.2 Dead+1.0 Wind 30 deg - No Ice	38.83	12.73	-22.09	-1760.67	-1029.45	24.76
0.9 Dead+1.0 Wind 30 deg - No Ice	29.13	12.73	-22.09	-1759.26	-1024.77	24.76
1.2 Dead+1.0 Wind 60 deg - No Ice	38.83	21.23	-12.27	-992.66	-1726.38	9.26
0.9 Dead+1.0 Wind 60 deg - No Ice	29.13	21.23	-12.27	-991.26	-1721.70	9.26
1.2 Dead+1.0 Wind 90 deg - No Ice	38.83	24.66	0.01	-4.66	-2003.17	-5.72
0.9 Dead+1.0 Wind 90 deg - No Ice	29.13	24.66	0.01	-3.26	-1998.49	-5.72
1.2 Dead+1.0 Wind 120 deg - No Ice	38.83	22.76	13.16	1034.08	-1815.72	-11.61
0.9 Dead+1.0 Wind 120 deg - No Ice	29.13	22.76	13.16	1035.49	-1811.04	-11.61
1.2 Dead+1.0 Wind 150 deg - No Ice	38.83	12.98	22.51	1771.03	-1043.18	-18.59
0.9 Dead+1.0 Wind 150 deg - No Ice	29.13	12.98	22.51	1772.44	-1038.50	-18.59
1.2 Dead+1.0 Wind 180 deg - No Ice	38.83	0.01	25.41	2011.16	-19.85	-23.26
0.9 Dead+1.0 Wind 180 deg - No Ice	29.13	0.01	25.41	2012.56	-15.17	-23.26
1.2 Dead+1.0 Wind 210 deg - No Ice	38.83	-12.73	22.08	1749.08	991.71	-24.78
0.9 Dead+1.0 Wind 210 deg - No Ice	29.13	-12.73	22.08	1750.49	996.39	-24.78
1.2 Dead+1.0 Wind 240 deg - No Ice	38.83	-22.42	12.95	1023.64	1762.28	-9.28
0.9 Dead+1.0 Wind 240 deg - No Ice	29.13	-22.42	12.95	1025.05	1766.96	-9.28
1.2 Dead+1.0 Wind 270 deg - No Ice	38.83	-24.66	-0.01	-6.79	1965.42	5.71
0.9 Dead+1.0 Wind 270 deg - No Ice	29.13	-24.66	-0.01	-5.39	1970.10	5.71
1.2 Dead+1.0 Wind 300 deg - No Ice	38.83	-21.56	-12.47	-1002.97	1704.56	11.59
0.9 Dead+1.0 Wind 300 deg - No Ice	29.13	-21.56	-12.47	-1001.56	1709.24	11.59
1.2 Dead+1.0 Wind 330 deg - No Ice	38.83	-12.98	-22.51	-1782.23	1005.75	18.60
0.9 Dead+1.0 Wind 330 deg - No Ice	29.13	-12.98	-22.51	-1780.82	1010.43	18.60
1.2 Dead+1.0 Ice+1.0 Temp	93.75	0.00	-0.00	-4.58	-68.69	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	93.75	-0.00	-8.28	-650.57	-68.46	9.40
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	93.75	3.97	-6.89	-549.05	-382.50	8.47
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	93.75	6.70	-3.87	-313.23	-602.99	3.57
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	93.75	7.78	0.00	-4.32	-688.81	-2.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	93.75	7.01	4.05	314.59	-620.70	-5.34
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	93.75	4.05	7.02	546.43	-386.59	-7.53
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	93.75	0.00	8.06	628.51	-68.98	-9.41
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	93.75	-3.97	6.89	539.82	245.05	-8.47

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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
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	93.75	-6.89	3.98	310.43	476.66	-3.58
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	93.75	-7.78	-0.00	-4.88	551.36	2.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	93.75	-6.82	-3.95	-317.36	472.18	5.34
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	93.75	-4.05	-7.02	-555.57	249.22	7.53
Dead+Wind 0 deg - Service	32.36	-0.00	-7.31	-577.50	-15.36	6.33
Dead+Wind 30 deg - Service	32.36	3.47	-6.03	-482.95	-291.03	6.74
Dead+Wind 60 deg - Service	32.36	5.79	-3.35	-273.68	-480.97	2.52
Dead+Wind 90 deg - Service	32.36	6.73	0.00	-4.43	-556.39	-1.56
Dead+Wind 120 deg - Service	32.36	6.21	3.59	278.63	-505.28	-3.16
Dead+Wind 150 deg - Service	32.36	3.54	6.14	479.45	-294.77	-5.06
Dead+Wind 180 deg - Service	32.36	0.00	6.93	544.90	-15.91	-6.33
Dead+Wind 210 deg - Service	32.36	-3.47	6.02	473.48	259.75	-6.75
Dead+Wind 240 deg - Service	32.36	-6.12	3.53	275.79	469.73	-2.53
Dead+Wind 270 deg - Service	32.36	-6.73	-0.00	-5.01	525.11	1.56
Dead+Wind 300 deg - Service	32.36	-5.88	-3.40	-276.48	454.02	3.16
Dead+Wind 330 deg - Service	32.36	-3.54	-6.14	-488.82	263.57	5.06

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-32.36	0.00	-0.00	32.36	0.00	0.000%
2	-0.01	-38.83	-26.79	0.01	38.83	26.79	0.000%
3	-0.01	-29.13	-26.79	0.01	29.13	26.79	0.000%
4	12.73	-38.83	-22.09	-12.73	38.83	22.09	0.000%
5	12.73	-29.13	-22.09	-12.73	29.13	22.09	0.000%
6	21.23	-38.83	-12.27	-21.23	38.83	12.27	0.000%
7	21.23	-29.13	-12.27	-21.23	29.13	12.27	0.000%
8	24.66	-38.83	0.01	-24.66	38.83	-0.01	0.000%
9	24.66	-29.13	0.01	-24.66	29.13	-0.01	0.000%
10	22.76	-38.83	13.16	-22.76	38.83	-13.16	0.000%
11	22.76	-29.13	13.16	-22.76	29.13	-13.16	0.000%
12	12.98	-38.83	22.51	-12.98	38.83	-22.51	0.000%
13	12.98	-29.13	22.51	-12.98	29.13	-22.51	0.000%
14	0.01	-38.83	25.41	-0.01	38.83	-25.41	0.000%
15	0.01	-29.13	25.41	-0.01	29.13	-25.41	0.000%
16	-12.73	-38.83	22.08	12.73	38.83	-22.08	0.000%
17	-12.73	-29.13	22.08	12.73	29.13	-22.08	0.000%
18	-22.42	-38.83	12.95	22.42	38.83	-12.95	0.000%
19	-22.42	-29.13	12.95	22.42	29.13	-12.95	0.000%
20	-24.66	-38.83	-0.01	24.66	38.83	0.01	0.000%
21	-24.66	-29.13	-0.01	24.66	29.13	0.01	0.000%
22	-21.56	-38.83	-12.47	21.56	38.83	12.47	0.000%
23	-21.56	-29.13	-12.47	21.56	29.13	12.47	0.000%
24	-12.98	-38.83	-22.51	12.98	38.83	22.51	0.000%
25	-12.98	-29.13	-22.51	12.98	29.13	22.51	0.000%
26	0.00	-93.75	0.00	-0.00	93.75	0.00	0.000%
27	-0.00	-93.75	-8.28	0.00	93.75	8.28	0.000%
28	3.97	-93.75	-6.89	-3.97	93.75	6.89	0.000%
29	6.70	-93.75	-3.87	-6.70	93.75	3.87	0.000%
30	7.78	-93.75	0.00	-7.78	93.75	-0.00	0.000%
31	7.01	-93.75	4.05	-7.01	93.75	-4.05	0.000%
32	4.05	-93.75	7.02	-4.05	93.75	-7.02	0.000%

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	HRT 084 943242 (BU 806377)	Page	29 of 33
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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
33	0.00	-93.75	8.06	-0.00	93.75	-8.06	0.000%
34	-3.97	-93.75	6.89	3.97	93.75	-6.89	0.000%
35	-6.89	-93.75	3.98	6.89	93.75	-3.98	0.000%
36	-7.78	-93.75	-0.00	7.78	93.75	0.00	0.000%
37	-6.82	-93.75	-3.95	6.82	93.75	3.95	0.000%
38	-4.05	-93.75	-7.02	4.05	93.75	7.02	0.000%
39	-0.00	-32.36	-7.31	0.00	32.36	7.31	0.000%
40	3.47	-32.36	-6.03	-3.47	32.36	6.03	0.000%
41	5.79	-32.36	-3.35	-5.79	32.36	3.35	0.000%
42	6.73	-32.36	0.00	-6.73	32.36	-0.00	0.000%
43	6.21	-32.36	3.59	-6.21	32.36	-3.59	0.000%
44	3.54	-32.36	6.14	-3.54	32.36	-6.14	0.000%
45	0.00	-32.36	6.93	-0.00	32.36	-6.93	0.000%
46	-3.47	-32.36	6.02	3.47	32.36	-6.02	0.000%
47	-6.12	-32.36	3.53	6.12	32.36	-3.53	0.000%
48	-6.73	-32.36	-0.00	6.73	32.36	0.00	0.000%
49	-5.88	-32.36	-3.40	5.88	32.36	3.40	0.000%
50	-3.54	-32.36	-6.14	3.54	32.36	6.14	0.000%

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	132	Leg	A325X	0.6250	4	0.61	20.34	0.030	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	1.14	6.79	0.168	1.05	Member Block Shear
T2	120	Top Girt	A325X	0.6250	1	0.10	7.83	0.013	1.05	Member Bearing
		Leg	A325X	0.7500	4	3.60	30.10	0.120	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	3.06	6.79	0.451	1.05	Member Block Shear
		Top Girt	A325X	0.6250	1	0.40	7.83	0.051	1.05	Member Bearing
T3	100	Diagonal	A325X	0.6250	1	3.65	7.83	0.466	1.05	Member Bearing
T4	93.3333	Diagonal	A325X	0.6250	1	3.96	7.83	0.505	1.05	Member Bearing
T5	86.6667	Leg	A325X	0.8750	4	8.30	41.56	0.200	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	4.93	7.83	0.630	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	0.83	5.46	0.152	1.05	Member Block Shear
T6	80	Leg	A325X	0.8750	4	13.87	41.56	0.334	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	4.81	7.83	0.614	1.05	Member Bearing
T7	60	Leg	A325X	1.0000	4	18.91	54.52	0.347	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	5.23	7.83	0.668	1.05	Member Bearing
T8	40	Leg	A325X	1.0000	4	23.17	54.52	0.425	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	5.98	11.70	0.511	1.05	Member Bearing
T9	20	Diagonal	A325X	0.6250	1	6.15	11.70	0.525	1.05	Member Bearing
T10	10	Diagonal	A325X	0.7500	1	6.24	14.14	0.441	1.05	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	2.38	9.53	0.249	1.05	Member Block Shear

Compression Checks

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	Client	Crown Castle	Designed by	zschartraw

Leg Design Data (Compression)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>K</i>	ϕP_n <i>K</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	132 - 120	ROHN 2 STD	12'	4'	61.0 K=1.00	1.0745	-5.25	36.84	0.142 ¹
T2	120 - 100	ROHN 2.5 STD	20'3/8"	5'1/8"	63.4 K=1.00	1.7040	-23.22	57.13	0.406 ¹
T3	100 - 93.3333	ROHN 3 STD	6'8-5/32'	6'8-5/32'	68.9 K=1.00	2.2285	-30.79	70.89	0.434 ¹
T4	93.3333 - 86.6667	ROHN 3 STD	6'8-5/32'	6'8-5/32'	68.9 K=1.00	2.2285	-38.52	70.87	0.544 ¹
T5	86.6667 - 80	ROHN 3 STD	6'8-1/32'	3'5-5/32'	35.4 K=1.00	2.2285	-47.78	91.52	0.522 ¹
T6	80 - 60	ROHN 3 X-STR	20'15/32"	6'8-5/32'	70.5 K=1.00	3.0159	-72.53	94.34	0.769 ¹
T7	60 - 40	ROHN 4 X-STR	20'3/8"	6'8-5/32'	54.3 K=1.00	4.4074	-96.02	159.91	0.600 ¹
T8	40 - 20	ROHN 5 X-STR	20'3/8"	10'1/4"	65.4 K=1.00	6.1120	-116.26	201.25	0.578 ¹
T9	20 - 10	ROHN 5 X-STR	10'1/4"	10'1/4"	65.4 K=1.00	6.1120	-127.18	201.25	0.632 ¹
T10	10 - 0	ROHN 5 X-STR	10'1/4"	5'1-13/16"	33.6 K=1.00	6.1120	-137.10	253.28	0.541 ¹

¹ $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>K</i>	ϕP_n <i>K</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	132 - 120	L1 3/4x1 3/4x3/16	7'8-7/8"	3'7-11/16"	127.1 K=1.00	0.6211	-1.08	11.00	0.098 ¹
T2	120 - 100	L1 3/4x1 3/4x3/16	9'9-19/32"	4'9-15/32"	167.4 K=1.00	0.6211	-3.04	6.34	0.479 ¹
T3	100 - 93.3333	L2 1/2x2 1/2x3/16	11'2-5/8"	5'6-1/4"	133.7 K=1.00	0.9023	-3.76	14.44	0.260 ¹
T4	93.3333 - 86.6667	L2 1/2x2 1/2x3/16	11'9-19/32"	5'10-3/32"	141.5 K=1.00	0.9023	-3.98	12.89	0.309 ¹
T5	86.6667 - 80	L2 1/2x2 1/2x3/16	12'4-5/16"	6'19/32"	146.8 K=1.00	0.9023	-4.96	11.98	0.414 ¹
T6	80 - 60	L2 1/2x2 1/2x3/16	14'1-3/32"	6'11-17/32"	168.7 K=1.00	0.9023	-4.86	9.07	0.535 ¹
T7	60 - 40	L3x3x3/16	15'10-13/16"	7'9-23/32"	157.2 K=1.00	1.0900	-5.21	12.62	0.413 ¹
T8	40 - 20	L3x3x1/4	19'1-3/16"	9'5-13/32"	193.9 K=1.00	1.4400	-6.05	10.96	0.552 ¹
T9	20 - 10	L3 1/2x3 1/2x1/4	19'11-17/32"	9'10-9/16"	170.9 K=1.00	1.6900	-6.14	16.57	0.371 ¹
T10	10 - 0	L3 1/2x3 1/2x1/4	20'9-31/32"	10'3-19/32"	178.1 K=1.00	1.6900	-6.66	15.25	0.437 ¹

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¹ $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
T5	86.6667 - 80	L1 1/2x1 1/2x3/16	10'4-13/16"	4'11-1/32"	201.1 K=1.00	0.5273	-0.83	3.73	0.222 ¹
T10	10 - 0	L2 1/2x2 1/2x3/16	18'3-1/8"	8'9-1/8"	212.4 K=1.00	0.9023	-2.38	5.72	0.415 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
T1	132 - 120	L2x2x3/16	6'7-3/16"	6'2-1/32"	187.8 K=1.00	0.7150	-0.07	5.80	0.012 ¹
T2	120 - 100	L2x2x3/16	6'7-13/16"	6'2-1/32"	187.8 K=1.00	0.7150	-0.40	5.80	0.069 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
T1	132 - 120	ROHN 2 STD	12'	4'	61.0	1.0745	2.43	48.35	0.050 ¹
T2	120 - 100	ROHN 2.5 STD	20'3/8"	5'1/8"	63.4	1.7040	14.40	76.68	0.188 ¹
T3	100 - 93.3333	ROHN 3 STD	6'8-5/32"	6'8-5/32"	68.9	2.2285	20.19	100.28	0.201 ¹
T4	93.3333 - 86.6667	ROHN 3 STD	6'8-5/32"	6'8-5/32"	68.9	2.2285	26.59	100.28	0.265 ¹
T5	86.6667 - 80	ROHN 3 STD	6'8-1/32"	3'3"	33.5	2.2285	34.01	100.28	0.339 ¹
T6	80 - 60	ROHN 3 X-STR	20'15/32"	6'8-5/32"	70.5	3.0159	55.49	135.72	0.409 ¹
T7	60 - 40	ROHN 4 X-STR	20'3/8"	6'8-5/32"	54.3	4.4074	75.65	198.34	0.381 ¹
T8	40 - 20	ROHN 5 X-STR	20'3/8"	10'1/4"	65.4	6.1120	92.66	275.04	0.337 ¹
T9	20 - 10	ROHN 5 X-STR	10'1/4"	10'1/4"	65.4	6.1120	101.64	275.04	0.370 ¹
T10	10 - 0	ROHN 5 X-STR	10'1/4"	4'10-7/16"	31.8	6.1120	109.79	275.04	0.399 ¹

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Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>K</i>	ϕP_n <i>K</i>	Ratio $\frac{P_u}{\phi P_n}$
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¹ $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>K</i>	ϕP_n <i>K</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	132 - 120	L1 3/4x1 3/4x3/16	7'8-7/8"	3'7-11/16"	84.0	0.3604	1.14	15.68	0.073 ¹
T2	120 - 100	L1 3/4x1 3/4x3/16	9'9-19/32"	4'9-15/32"	109.8	0.3604	3.06	15.68	0.195 ¹
T3	100 - 93.3333	L2 1/2x2 1/2x3/16	11'2-5/8"	5'6-1/4"	86.9	0.5713	3.65	24.85	0.147 ¹
T4	93.3333 - 86.6667	L2 1/2x2 1/2x3/16	11'9-19/32"	5'10-3/32"	91.8	0.5713	3.96	24.85	0.159 ¹
T5	86.6667 - 80	L2 1/2x2 1/2x3/16	12'4-5/16"	6'19/32"	95.2	0.5713	4.93	24.85	0.198 ¹
T6	80 - 60	L2 1/2x2 1/2x3/16	13'5-7/8"	6'7-29/32"	104.5	0.5713	4.81	24.85	0.194 ¹
T7	60 - 40	L3x3x3/16	15'10-13/16"	7'9-23/32"	101.3	0.7120	5.23	30.97	0.169 ¹
T8	40 - 20	L3x3x1/4	19'1-3/16"	9'5-13/32"	124.0	0.9394	5.98	45.79	0.131 ¹
T9	20 - 10	L3 1/2x3 1/2x1/4	19'11-17/32"	9'10-9/16"	110.1	1.1269	6.15	54.94	0.112 ¹
T10	10 - 0	L3 1/2x3 1/2x1/4	20'9-31/32"	10'3-19/32"	114.9	1.1034	6.24	53.79	0.116 ¹

¹ $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>K</i>	ϕP_n <i>K</i>	Ratio $\frac{P_u}{\phi P_n}$
T5	86.6667 - 80	L1 1/2x1 1/2x3/16	10'4-13/16"	4'11-1/32"	265.5	0.2900	0.83	12.62	0.066 ¹
T10	10 - 0	L2 1/2x2 1/2x3/16	18'3-1/8"	8'9-1/8"	274.4	0.5713	2.38	24.85	0.096 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

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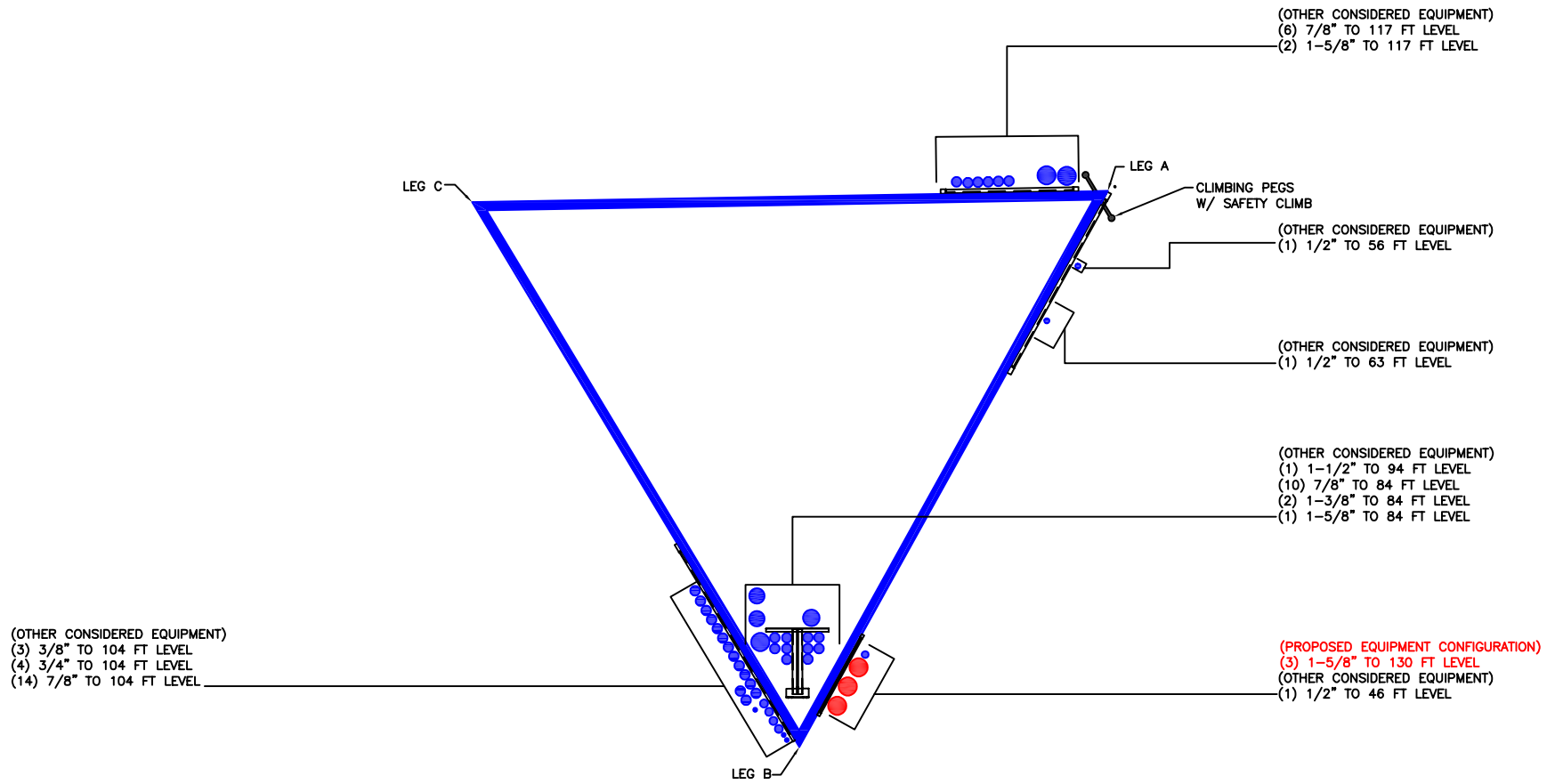
Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	132 - 120	L2x2x3/16	6'7-3/16'	6'2-1/32'	124.6	0.4308	0.10	18.74	0.005 ¹
T2	120 - 100	L2x2x3/16	6'7-13/16"	6'2-1/32'	124.6	0.4308	0.40	18.74	0.021 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	132 - 120	Leg	ROHN 2 STD	2	-5.25	38.68	13.6	Pass
T2	120 - 100	Leg	ROHN 2.5 STD	27	-23.22	59.99	38.7	Pass
T3	100 - 93.3333	Leg	ROHN 3 STD	57	-30.79	74.44	41.4	Pass
T4	93.3333 - 86.6667	Leg	ROHN 3 STD	66	-38.52	74.41	51.8	Pass
T5	86.6667 - 80	Leg	ROHN 3 STD	74	-47.78	96.10	49.7	Pass
T6	80 - 60	Leg	ROHN 3 X-STR	87	-72.53	99.05	73.2	Pass
T7	60 - 40	Leg	ROHN 4 X-STR	108	-96.02	167.91	57.2	Pass
T8	40 - 20	Leg	ROHN 5 X-STR	129	-116.26	211.31	55.0	Pass
T9	20 - 10	Leg	ROHN 5 X-STR	144	-127.18	211.31	60.2	Pass
T10	10 - 0	Leg	ROHN 5 X-STR	153	-137.10	265.94	51.6	Pass
T1	132 - 120	Diagonal	L1 3/4x1 3/4x3/16	16	-1.08	11.55	9.4	Pass
T2	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	33	-3.04	6.66	45.7	Pass
T3	100 - 93.3333	Diagonal	L2 1/2x2 1/2x3/16	60	-3.76	15.16	24.8	Pass
T4	93.3333 - 86.6667	Diagonal	L2 1/2x2 1/2x3/16	69	-3.98	13.54	29.4	Pass
T5	86.6667 - 80	Diagonal	L2 1/2x2 1/2x3/16	78	-4.96	12.58	39.4	Pass
T6	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	91	-4.86	9.53	51.0	Pass
T7	60 - 40	Diagonal	L3x3x3/16	112	-5.21	13.25	39.3	Pass
T8	40 - 20	Diagonal	L3x3x1/4	133	-6.05	11.51	52.6	Pass
T9	20 - 10	Diagonal	L3 1/2x3 1/2x1/4	148	-6.14	17.40	35.3	Pass
T10	10 - 0	Diagonal	L3 1/2x3 1/2x1/4	157	-6.66	16.01	41.6	Pass
T5	86.6667 - 80	Secondary Horizontal	L1 1/2x1 1/2x3/16	82	-0.83	3.92	21.1	Pass
T10	10 - 0	Secondary Horizontal	L2 1/2x2 1/2x3/16	161	-2.38	6.01	39.6	Pass
T1	132 - 120	Top Girt	L2x2x3/16	6	-0.07	6.09	1.2	Pass
T2	120 - 100	Top Girt	L2x2x3/16	29	-0.40	6.09	6.6	Pass
Summary								
Leg (T6)							73.2	Pass
Diagonal (T8)							52.6	Pass
Secondary Horizontal (T10)							39.6	Pass
Top Girt (T2)							6.6	Pass
Bolt Checks							63.6	Pass
RATING =							73.2	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

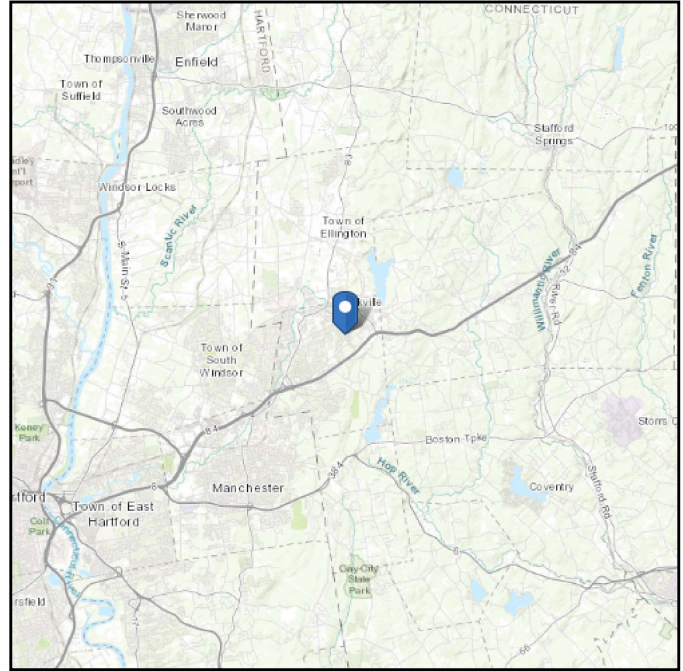
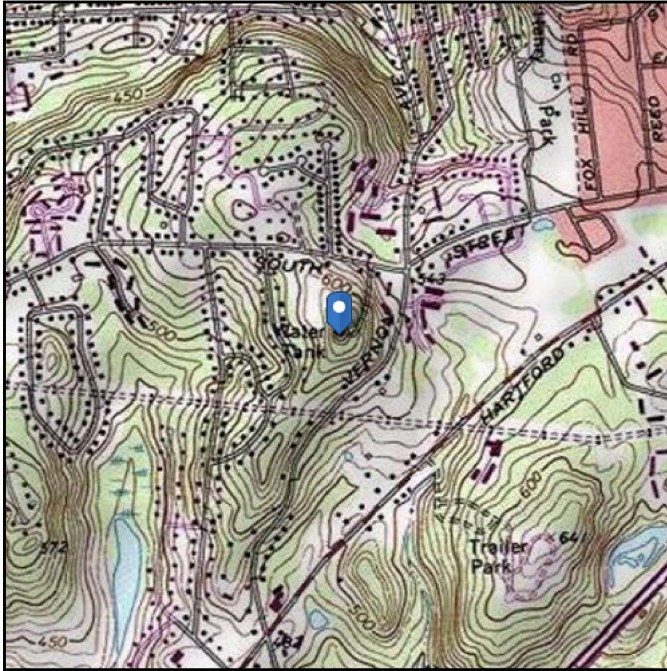
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 654.83 ft (NAVD 88)
Latitude: 41.853475
Longitude: -72.452089



Wind

Results:

Wind Speed:	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Nov 19 2021

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

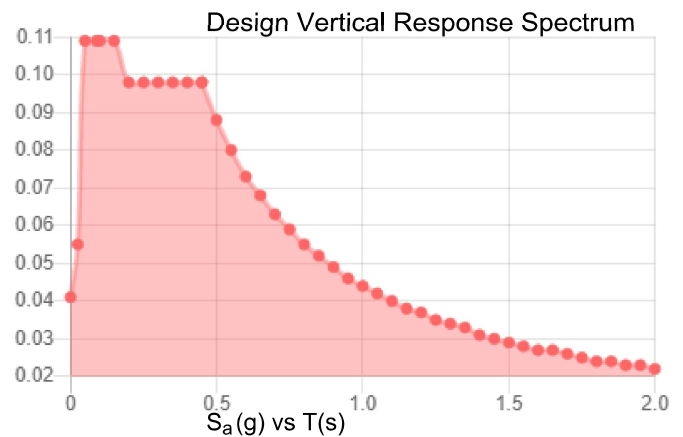
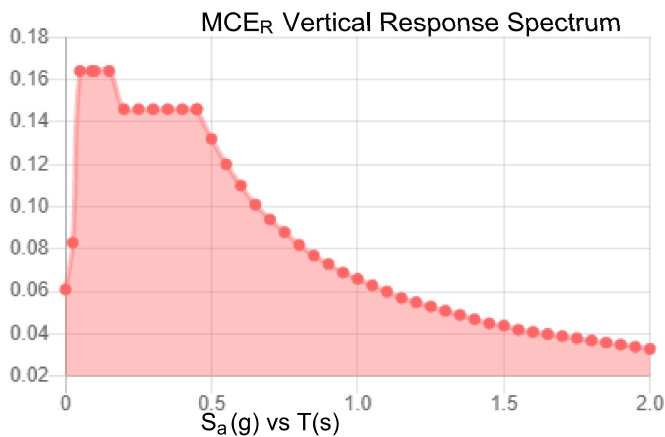
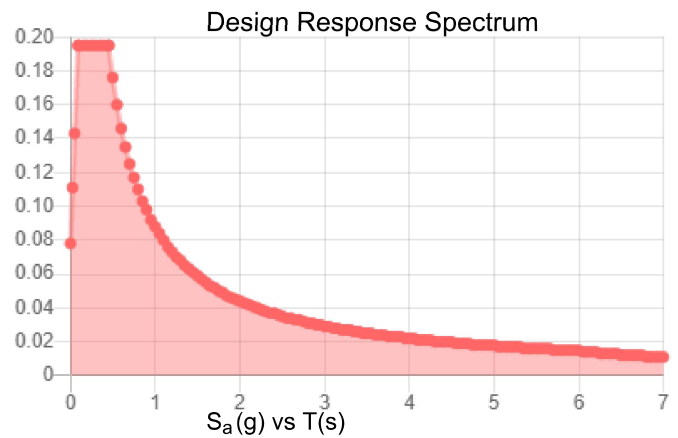
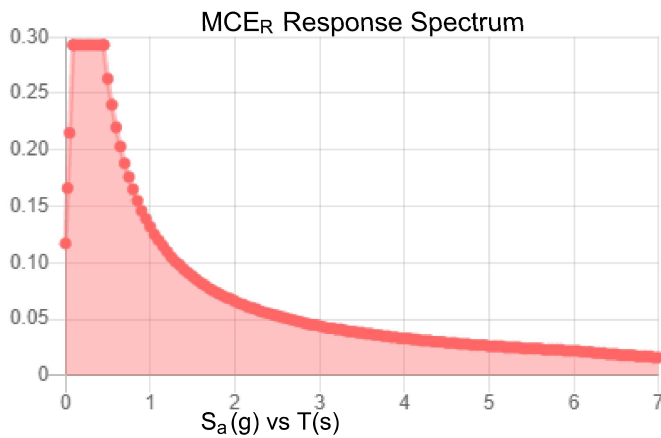
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.183	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.098
F_v :	2.4	PGA _M :	0.156
S_{MS} :	0.293	F_{PGA} :	1.6
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.195	C_v :	0.7

Seismic Design Category B



Data Accessed:

Fri Nov 19 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.50 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

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

Date Accessed: Fri Nov 19 2021

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

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

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Self Support Anchor Rod Capacity

Site Info	
BU #	806377
Site Name	HRT 084 943242
Order #	589867 Rev. 0

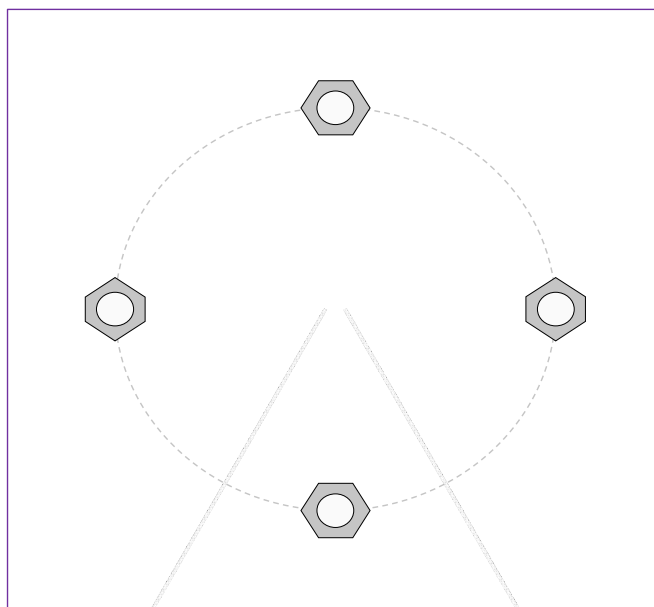
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	1.375

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	143.00	114.00
Shear Force (kips)	17.00	14.00

*TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



Connection Properties

Analysis Results

Anchor Rod Data

(4) 1" ϕ bolts (A449 N; $F_y=92$ ksi, $F_u=120$ ksi)
 l_{ar} (in): 1.375

Anchor Rod Summary

(units of kips, kip-in)

$P_{u_t} = 28.5$	$\phi P_{n_t} = 54.54$	Stress Rating
$V_u = 3.5$	$\phi V_n = 35.34$	49.8%
$M_u = n/a$	$\phi M_n = n/a$	Pass

SST Unit Base Foundation



BU # : 806377
 Site Name: HRT 084 943242
 App. Number: 589867 Rev. 0

TIA-222 Revision: H

Top & Bot. Pad Rein. Different?:	☐
Tower Centroid Offset?:	☒
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Global Moment, M :	2108	ft-kips
Global Axial, P :	39	kips
Global Shear, V :	27	kips
Leg Compression, P_{comp} :	143	kips
Leg Comp. Shear, V_{u, comp} :	17	kips
Leg Uplift, P_{uplift} :	114	kips
Leg Uplift. Shear, V_{u, uplift} :	14	kips
Tower Height, H :	132	ft
Base Face Width, BW :	18.77	ft
BP Dist. Above Fdn, bp_{dist} :	2.375	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier :	3.3	ft
Ext. Above Grade, E :	2.30	ft
Pier Rebar Size, Sc :	9	
Pier Rebar Quantity, mc :	12	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	2	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	4.25	in

Pad Properties		
Depth, D :	2.60	ft
Pad Width, W₁ :	24.00	ft
Pad Thickness, T :	4.20	ft
Pad Rebar Size (Bottom dir. 2), Sp₂ :	8	
Pad Rebar Quantity (Bottom dir. 2), mp₂ :	24	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, F'c :	3	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	115	pcf
Ultimate Gross Bearing, Qult :	30.000	ksf
Cohesion, Cu :	0.000	ksf
Friction Angle, φ :	33	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.4	
Neglected Depth, N :	3.3	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	16	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	109.80	27.00	23.4%	Pass
Bearing Pressure (ksf)	22.50	1.68	7.5%	Pass
Overturning (kip*ft)	4267.81	2395.57	56.1%	Pass
Pier Flexure (Comp.) (kip*ft)	871.48	39.10	4.3%	Pass
Pier Flexure (Tension) (kip*ft)	657.70	32.20	4.7%	Pass
Pier Compression (kip)	4119.38	147.51	3.4%	Pass
Pad Flexure (kip*ft)	3850.11	112.79	2.8%	Pass
Pad Shear - 1-way (kips)	1086.07	17.90	1.6%	Pass
Pad Shear - Comp 2-way (ksi)	0.164	0.012	7.0%	Pass
Flexural 2-way (Comp) (kip*ft)	1648.65	23.46	1.4%	Pass
Pad Shear - Tension 2-way (ksi)	0.164	0.011	6.2%	Pass
Flexural 2-way (Tension) (kip*ft)	1648.65	19.32	1.1%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	7.0%
Soil Rating*:	56.1%

<-- Toggle between Gross and Net

Date: **November 17, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6589

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject: **Mount Replacement Analysis Report**

Carrier Designation: **T-Mobile Keep**
Carrier Site Number: CT11731A
Carrier Site Name: CT60XC935

Crown Castle Designation: **Crown Castle BU Number:** 806377
Crown Castle Site Name: HRT 084 943242
Crown Castle JDE Job Number: 689445
Crown Castle Order Number: 589867 Rev. 0

Engineering Firm Designation: **Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B

Site Data: **197 South St., Vernon, Tolland County, CT, 06066**
Latitude 41°51'12.51" Longitude -72°27'7.52"

Structure Information: **Tower Height & Type:** **133.2 ft Self Support**
Mount Elevation: **130.0 ft**
Mount Type: **10.5 ft Sector Frame**

Dear Darcy Tarr,

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

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

Sector Frame

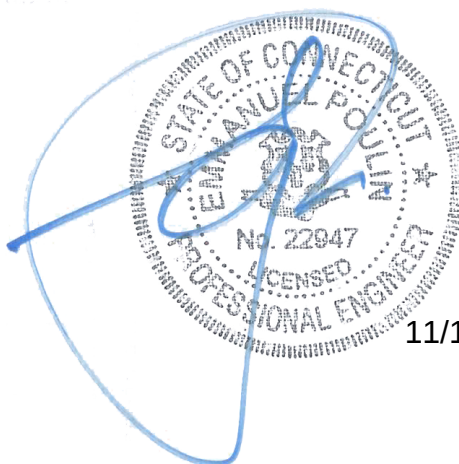
Sufficient

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Robert Faber, E.I.T.

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



11/17/21

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1) INTRODUCTION

This is a proposed 3 sector 10.5 ft Sector Frame, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	118 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.177
Seismic S_1:	0.064
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
130.0	130.0	3	ERICSSON	AIR6449 B41_T-MOBILE	10.5 ft Sector Frame (Site Pro 1: VFA10-HD-S)
		3	RFS/CELWAVE	APXVAARR24_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
Crown Application	T-Mobile Application	589867 Rev. 0	CCI Sites
Loading Document	T-Mobile	RFDS Version: 1	TSA
Mount Manufacturer Drawings	Site Pro 1	VFA10-HD-S	Infinigy

3.1) Analysis Method

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

Infinigy Mount Analysis Tool V2.1.7, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

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

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	Q345 (GR 36)
Square/ Rectangular HSS Tube	Q235-GB (GR 35)
Pipe	Q235-GB (GR 35)
Threaded Rods	SAE J429 (GR 2)

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy Engineering, PLLC 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 (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3	Mount Pipe(s)	MP1	130.0	54.3	Pass
	Horizontal(s)	HOR1		42.0	Pass
	Standoff(s)	M31		42.8	Pass
	Bracing(s)	M39A		45.6	Pass
	Connection Plate(s)	M19		35.7	Pass
	Mount Connection(s)	--		28.4	Pass

Structure Rating (max from all components) =	54.3%
---	--------------

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 detailed mount connection calculations.
- 3) All sectors are typical.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb) ²	Notes
N182	Proposed	1,476.4	Leg	ROHN 2 STD	1,934.0	1,2

Notes:

- 1) Tieback connection point is within 25% of either end of the connected tower member
- 2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

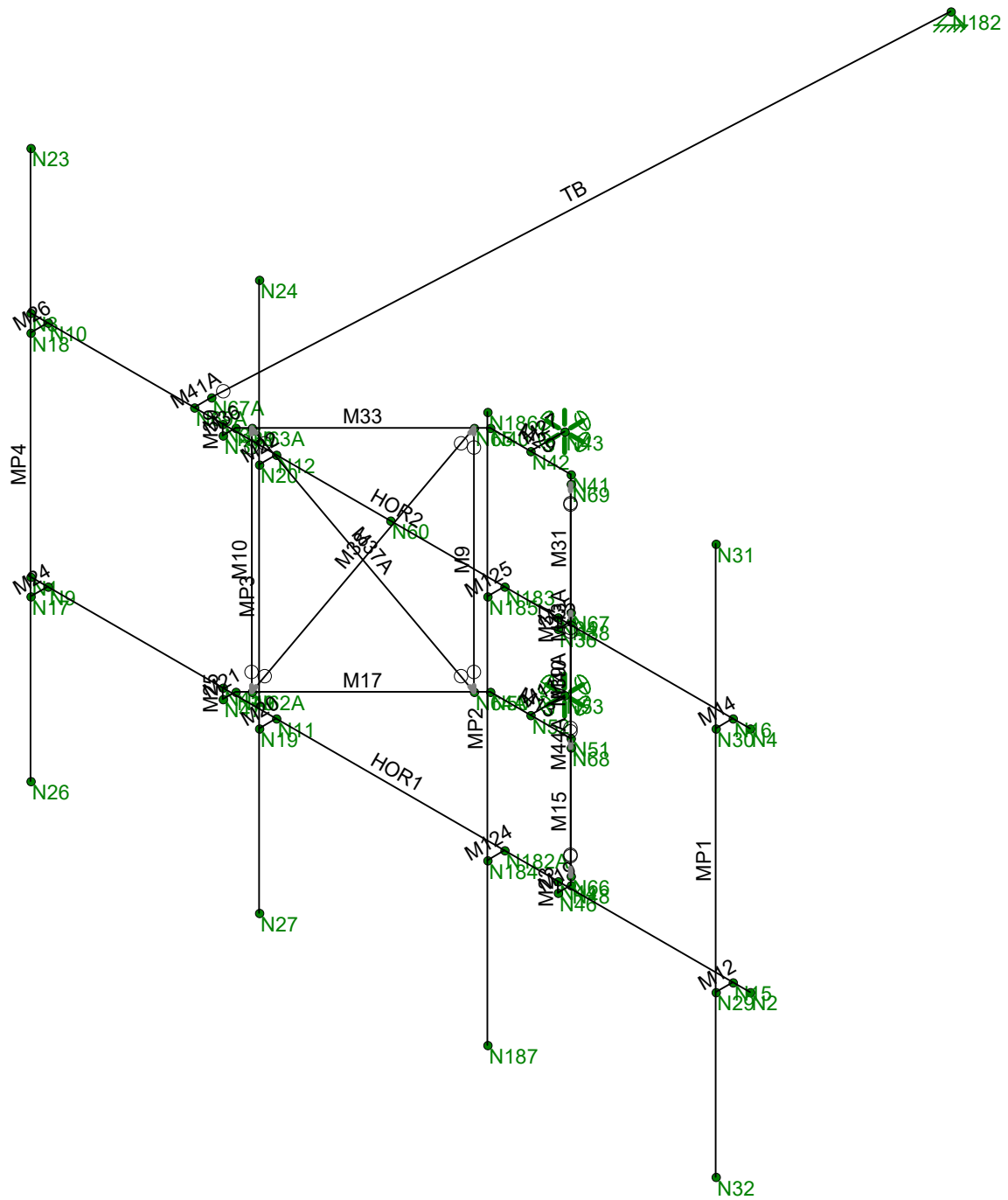
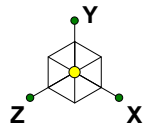
4.1) Recommendations

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

1. (3) Site Pro 1: VFA10-HD-S sector frames.
2. (12) Site Pro 1: P296 bulk pipes.

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

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC

Robert Faber

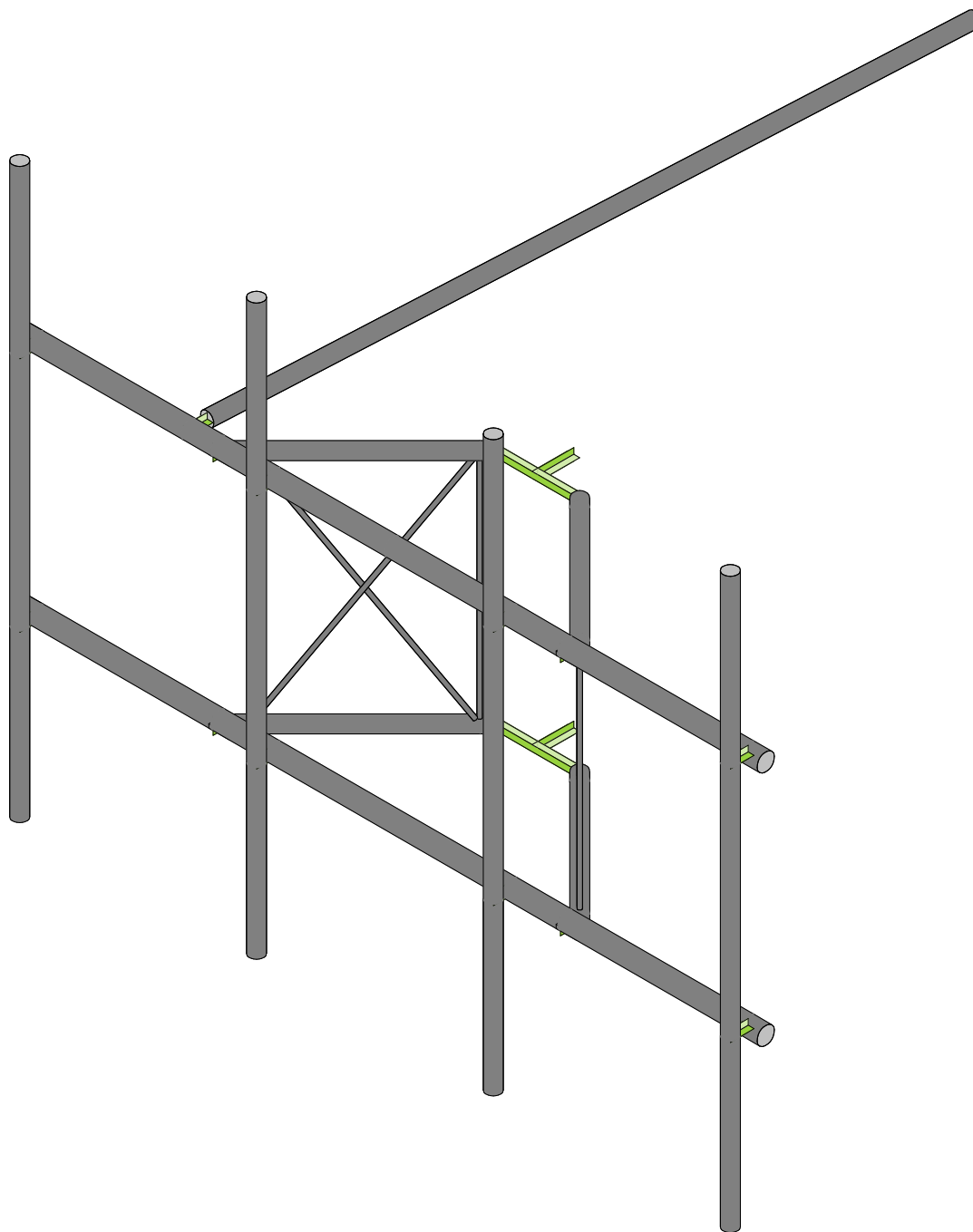
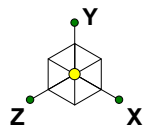
1039-Z0001-B

806377

Wireframe

Nov 17, 2021 at 12:30 PM

VFA10-HD-S_loaded.r3d



Envelope Only Solution

Infinigy Engineering, PLLC	806377	Render
Robert Faber		Nov 17, 2021 at 12:31 PM
1039-Z0001-B		VFA10-HD-S_loaded.r3d

APPENDIX B
SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION		
Client:	Crown Castle	
Carrier:	T-Mobile	
Engineer:	Robert Faber	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	654.83	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	130.00	ft
Tower Height AGL:	133.20	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.977	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Gust Effect Factor (G_h):	1.000	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

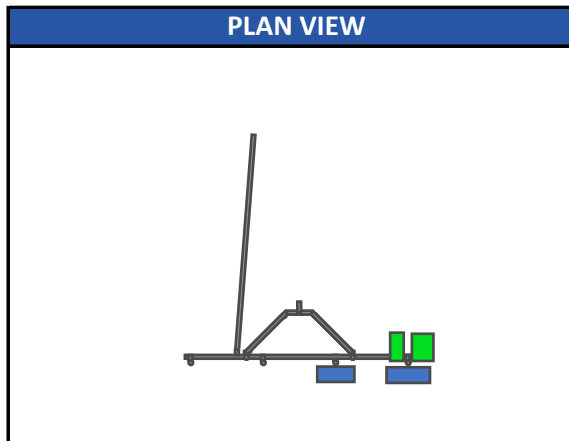
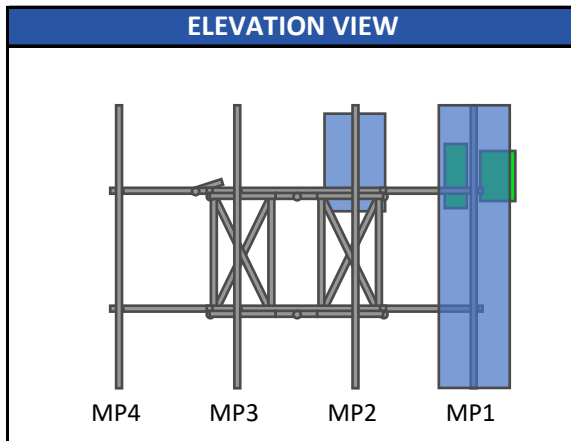
WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	118	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	2	in
Flat Pressure:	70.449	psf
Round Pressure:	42.270	psf
Ice Wind Pressure:	7.589	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.177	g
1-Second Accel. (S_1):	0.064	g
Short-Period Design (S_{DS}):	0.189	
1-Second Design (S_{D1}):	0.102	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	



Infinigy Load Calculator V2.1.7

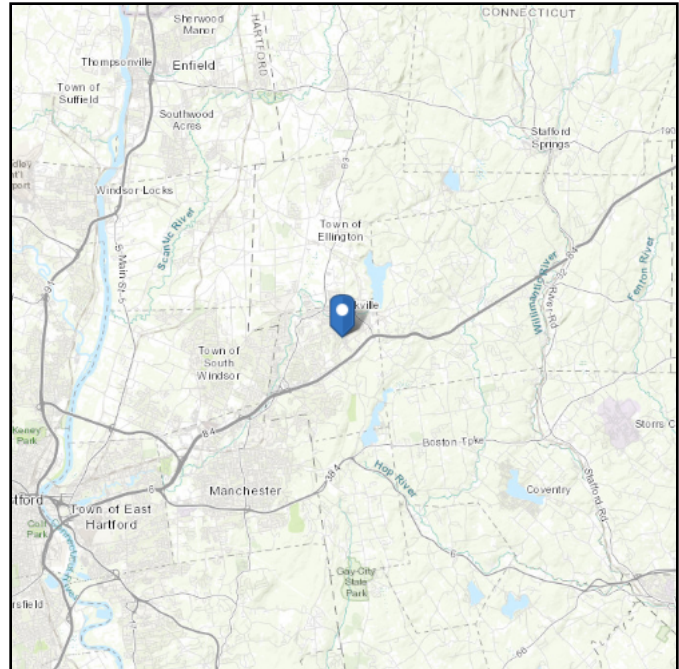
Program Inputs

[illegible]

ASCE 7 Hazards Report

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

Elevation: 654.83 ft (NAVD 88)
Latitude: 41.853475
Longitude: -72.452089



Wind

Results:

Wind Speed:	118 Vmph per the State of Connecticut allowing ASCE 7-16 wind speeds
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	101 Vmph

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

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).

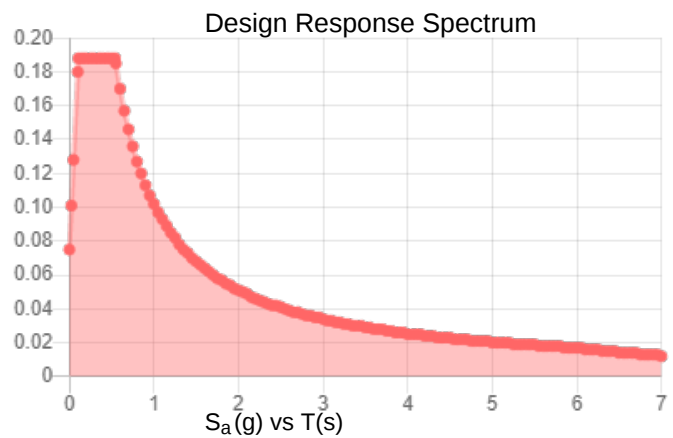
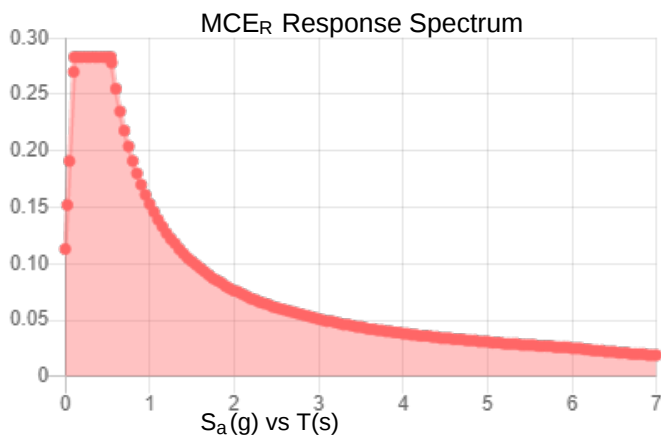
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.188
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.088
S_{MS} :	0.283	PGA_M :	0.141
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Nov 16 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.

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

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

Date Accessed: Tue Nov 16 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.

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APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...)	Section/Shape	Type	Design List	Material	Design Rules
1	M15	N51	N48			Standoff	Beam	Pipe	Q235-GB	Typical
2	M17	N50	N49			Standoff	Beam	Pipe	Q235-GB	Typical
3	MP1	N31	N32			Mount Pipe	Column	Pipe	Q235-GB	Typical
4	M31	N41	N38			Standoff	Beam	Pipe	Q235-GB	Typical
5	MP3	N24	N27			Mount Pipe	Column	Pipe	Q235-GB	Typical
6	M33	N40	N39			Standoff	Beam	Pipe	Q235-GB	Typical
7	MP4	N23	N26			Mount Pipe	Column	Pipe	Q235-GB	Typical
8	M11	N53	N52		90	RIGID	None	None	RIGID	Typical
9	M12	N15	N29			RIGID	None	None	RIGID	Typical
10	M13	N50	N51			RIGID	None	None	RIGID	Typical
11	M14	N16	N30			RIGID	None	None	RIGID	Typical
12	M20	N11	N19			RIGID	None	None	RIGID	Typical
13	M22	N12	N20			RIGID	None	None	RIGID	Typical
14	M23	N44	N46			RIGID	None	None	RIGID	Typical
15	M24	N9	N17			RIGID	None	None	RIGID	Typical
16	M25	N45	N47			RIGID	None	None	RIGID	Typical
17	M26	N10	N18			RIGID	None	None	RIGID	Typical
18	M27	N43	N42		90	RIGID	None	None	RIGID	Typical
19	M29	N40	N41			RIGID	None	None	RIGID	Typical
20	M37	N34	N36			RIGID	None	None	RIGID	Typical
21	M39	N35	N37			RIGID	None	None	RIGID	Typical
22	M41A	N67A	N69A			RIGID	None	None	RIGID	Typical
23	HOR1	N1	N2			Face Horizontal	Beam	Pipe	Q235-GB	Typical
24	HOR2	N3	N4			Face Horizontal	Beam	Pipe	Q235-GB	Typical
25	M19	N48	N46		90	Connection Plate	Beam	RECT	Q345	Typical
26	M21	N49	N47		90	Connection Plate	Beam	RECT	Q345	Typical
27	M35	N38	N36		90	Connection Plate	Beam	RECT	Q345	Typical
28	M36	N39	N37		90	Connection Plate	Beam	RECT	Q345	Typical
29	M9	N65	N64A			Bracing	VBrace	BAR	Q345	Typical
30	M10	N63A	N62A			Bracing	VBrace	BAR	Q345	Typical
31	M43A	N69	N68			Bracing	VBrace	BAR	Q345	Typical
32	M44A	N67	N66			Bracing	VBrace	BAR	Q345	Typical
33	M37A	N63A	N64A			Bracing	VBrace	BAR	Q345	Typical
34	M38	N65	N62A			Bracing	VBrace	BAR	Q345	Typical
35	M39A	N69	N66			Bracing	VBrace	BAR	Q345	Typical
36	M40	N67	N68			Bracing	VBrace	BAR	Q345	Typical
37	TB	N67A	N182			Tieback	Beam	Pipe	Q235-GB	Typical
38	M124	N182A	N184			RIGID	None	None	RIGID	Typical
39	M125	N183	N185			RIGID	None	None	RIGID	Typical
40	MP2	N186	N187			Mount Pipe	Column	Pipe	Q235-GB	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M15	Standoff	31.537			Lbyy						Lateral
2	M17	Standoff	31.537			Lbyy						Lateral
3	MP1	Mount Pipe	96			Lbyy						Lateral
4	M31	Standoff	31.537			Lbyy						Lateral
5	MP3	Mount Pipe	96			Lbyy						Lateral
6	M33	Standoff	31.537			Lbyy						Lateral
7	MP4	Mount Pipe	96			Lbyy						Lateral
8	HOR1	Face Horizo...	126			Lbyy						Lateral
9	HOR2	Face Horizo...	126			Lbyy						Lateral
10	M19	Connection ...	2.25			Lbyy						Lateral
11	M21	Connection ...	2.25			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
12	M35	Connection ...	2.25			Lbyy						Lateral
13	M36	Connection ...	2.25			Lbyy						Lateral
14	M9	Bracing	40			Lbyy						Lateral
15	M10	Bracing	40			Lbyy						Lateral
16	M43A	Bracing	40			Lbyy						Lateral
17	M44A	Bracing	40			Lbyy						Lateral
18	M37A	Bracing	48.562			Lbyy						Lateral
19	M38	Bracing	48.562			Lbyy						Lateral
20	M39A	Bracing	48.562			Lbyy						Lateral
21	M40	Bracing	48.562			Lbyy						Lateral
22	TB	Tieback	120.667									Lateral
23	MP2	Mount Pipe	96									Lateral

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Face Horizontal	PIPE 2.5	Beam	Pipe	Q235-GB	Typical	1.61	1.45	1.45	2.89
2	Standoff	PIPE 2.0	Beam	Pipe	Q235-GB	Typical	1.02	.627	.627	1.25
3	Bracing	0.625" S.R.	VBrace	BAR	Q345	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE 2.0	Column	Pipe	Q235-GB	Typical	1.02	.627	.627	1.25
5	Connection Plate	PL3 1/2x5/8	Beam	RECT	Q345	Typical	2.188	.071	2.233	.253
6	Tieback	PIPE 2.0	Beam	Pipe	Q235-GB	Typical	1.02	.627	.627	1.25

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		17	74.2	0
3	Total General		17	74.2	0
4					
5	Hot Rolled Steel				
6	Q235-GB	PIPE 2.0	9	630.8	.182
7	Q235-GB	PIPE 2.5	2	252	.115
8	Q345	0.625" S.R.	8	339.2	.03
9	Q345	PL3 1/2x5/8	4	9	.006
10	Total HR Steel		23	1231.1	.333

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(...
1	Self Weight	DL		-1			6		
2	Wind Load AZI 0	WLZ					12		
3	Wind Load AZI 30	None					12		
4	Wind Load AZI 60	None					12		
5	Wind Load AZI 90	WLX					12		
6	Wind Load AZI 120	None					12		
7	Wind Load AZI 150	None					12		
8	Wind Load AZI 180	None					12		
9	Wind Load AZI 210	None					12		
10	Wind Load AZI 240	None					12		
11	Wind Load AZI 270	None					12		
12	Wind Load AZI 300	None					12		
13	Wind Load AZI 330	None					12		
14	Distr. Wind Load Z	WLZ						40	
15	Distr. Wind Load X	WLX						40	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me... Surface(...	
16	Ice Weight	OL1					6	40	
17	Ice Wind Load AZI 0	OL2					12		
18	Ice Wind Load AZI 30	None					12		
19	Ice Wind Load AZI 60	None					12		
20	Ice Wind Load AZI 90	OL3					12		
21	Ice Wind Load AZI 120	None					12		
22	Ice Wind Load AZI 150	None					12		
23	Ice Wind Load AZI 180	None					12		
24	Ice Wind Load AZI 210	None					12		
25	Ice Wind Load AZI 240	None					12		
26	Ice Wind Load AZI 270	None					12		
27	Ice Wind Load AZI 300	None					12		
28	Ice Wind Load AZI 330	None					12		
29	Distr. Ice Wind Load Z	OL2						40	
30	Distr. Ice Wind Load X	OL3						40	
31	Seismic Load Z	ELZ			-0.283		6		
32	Seismic Load X	ELX	-0.283				6		
33	Service Live Loads	LL				1			
34	Maintenance Load 1	LL				1			
35	Maintenance Load 2	LL				1			
36	Maintenance Load 3	LL				1			
37	Maintenance Load 4	LL				1			

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-57.315	6
2	MP2	Y	-57.315	39.11
3	MP1	Y	-76.65	0
4	MP1	Y	-76.65	95.9
5	MP1	Y	-92.6	%25
6	MP1	Y	-109	%25

Member Point Loads (BLC 2 : Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	-83.54	6
3	MP2	X	0	39.11
4	MP2	Z	-83.54	39.11
5	MP1	X	0	0
6	MP1	Z	-232.54	0
7	MP1	X	0	95.9
8	MP1	Z	-232.54	95.9
9	MP1	X	0	%25
10	MP1	Z	-90.42	%25
11	MP1	X	0	%25
12	MP1	Z	-67.82	%25

Member Point Loads (BLC 3 : Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-35.35	6
2	MP2	Z	-61.22	6
3	MP2	X	-35.35	39.11
4	MP2	Z	-61.22	39.11
5	MP1	X	-97.74	0

Member Point Loads (BLC 3 : Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
6	MP1	Z	-169.29	0
7	MP1	X	-97.74	95.9
8	MP1	Z	-169.29	95.9
9	MP1	X	-39.39	%25
10	MP1	Z	-68.22	%25
11	MP1	X	-32.11	%25
12	MP1	Z	-55.62	%25

Member Point Loads (BLC 4 : Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-38.99	6
2	MP2	Z	-22.51	6
3	MP2	X	-38.99	39.11
4	MP2	Z	-22.51	39.11
5	MP1	X	-105.12	0
6	MP1	Z	-60.69	0
7	MP1	X	-105.12	95.9
8	MP1	Z	-60.69	95.9
9	MP1	X	-48.05	%25
10	MP1	Z	-27.74	%25
11	MP1	X	-49.4	%25
12	MP1	Z	-28.52	%25

Member Point Loads (BLC 5 : Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-32.18	6
2	MP2	Z	0	6
3	MP2	X	-32.18	39.11
4	MP2	Z	0	39.11
5	MP1	X	-84.33	0
6	MP1	Z	0	0
7	MP1	X	-84.33	95.9
8	MP1	Z	0	95.9
9	MP1	X	-43.84	%25
10	MP1	Z	0	%25
11	MP1	X	-53.44	%25
12	MP1	Z	0	%25

Member Point Loads (BLC 6 : Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-38.99	6
2	MP2	Z	22.51	6
3	MP2	X	-38.99	39.11
4	MP2	Z	22.51	39.11
5	MP1	X	-105.12	0
6	MP1	Z	60.69	0
7	MP1	X	-105.12	95.9
8	MP1	Z	60.69	95.9
9	MP1	X	-48.05	%25
10	MP1	Z	27.74	%25
11	MP1	X	-49.4	%25
12	MP1	Z	28.52	%25

Member Point Loads (BLC 7 : Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-38.99	6
2	MP2	Z	22.51	6
3	MP2	X	-38.99	39.11
4	MP2	Z	22.51	39.11
5	MP1	X	-105.12	0
6	MP1	Z	60.69	0
7	MP1	X	-105.12	95.9
8	MP1	Z	60.69	95.9
9	MP1	X	-48.05	%25
10	MP1	Z	27.74	%25
11	MP1	X	-49.4	%25
12	MP1	Z	28.52	%25

Member Point Loads (BLC 7 : Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-35.35	6
2	MP2	Z	61.22	6
3	MP2	X	-35.35	39.11
4	MP2	Z	61.22	39.11
5	MP1	X	-97.74	0
6	MP1	Z	169.29	0
7	MP1	X	-97.74	95.9
8	MP1	Z	169.29	95.9
9	MP1	X	-39.39	%25
10	MP1	Z	68.22	%25
11	MP1	X	-32.11	%25
12	MP1	Z	55.62	%25

Member Point Loads (BLC 8 : Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	83.54	6
3	MP2	X	0	39.11
4	MP2	Z	83.54	39.11
5	MP1	X	0	0
6	MP1	Z	232.54	0
7	MP1	X	0	95.9
8	MP1	Z	232.54	95.9
9	MP1	X	0	%25
10	MP1	Z	90.42	%25
11	MP1	X	0	%25
12	MP1	Z	67.82	%25

Member Point Loads (BLC 9 : Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	35.35	6
2	MP2	Z	61.22	6
3	MP2	X	35.35	39.11
4	MP2	Z	61.22	39.11
5	MP1	X	97.74	0
6	MP1	Z	169.29	0
7	MP1	X	97.74	95.9
8	MP1	Z	169.29	95.9
9	MP1	X	39.39	%25
10	MP1	Z	68.22	%25
11	MP1	X	32.11	%25
12	MP1	Z	55.62	%25

Member Point Loads (BLC 10 : Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	38.99	6
2	MP2	Z	22.51	6
3	MP2	X	38.99	39.11
4	MP2	Z	22.51	39.11
5	MP1	X	105.12	0
6	MP1	Z	60.69	0
7	MP1	X	105.12	95.9
8	MP1	Z	60.69	95.9
9	MP1	X	48.05	%25
10	MP1	Z	27.74	%25

Member Point Loads (BLC 10 : Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
11	MP1	X	49.4	%25
12	MP1	Z	28.52	%25

Member Point Loads (BLC 11 : Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	32.18	6
2	MP2	Z	0	6
3	MP2	X	32.18	39.11
4	MP2	Z	0	39.11
5	MP1	X	84.33	0
6	MP1	Z	0	0
7	MP1	X	84.33	95.9
8	MP1	Z	0	95.9
9	MP1	X	43.84	%25
10	MP1	Z	0	%25
11	MP1	X	53.44	%25
12	MP1	Z	0	%25

Member Point Loads (BLC 12 : Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	38.99	6
2	MP2	Z	-22.51	6
3	MP2	X	38.99	39.11
4	MP2	Z	-22.51	39.11
5	MP1	X	105.12	0
6	MP1	Z	-60.69	0
7	MP1	X	105.12	95.9
8	MP1	Z	-60.69	95.9
9	MP1	X	48.05	%25
10	MP1	Z	-27.74	%25
11	MP1	X	49.4	%25
12	MP1	Z	-28.52	%25

Member Point Loads (BLC 13 : Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	X	35.35	6
2	MP2	Z	-61.22	6
3	MP2	X	35.35	39.11
4	MP2	Z	-61.22	39.11
5	MP1	X	97.74	0
6	MP1	Z	-169.29	0
7	MP1	X	97.74	95.9
8	MP1	Z	-169.29	95.9
9	MP1	X	39.39	%25
10	MP1	Z	-68.22	%25
11	MP1	X	32.11	%25
12	MP1	Z	-55.62	%25

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP2	Y	-107.288	6
2	MP2	Y	-107.288	39.11
3	MP1	Y	-294.068	0
4	MP1	Y	-294.068	95.9
5	MP1	Y	-126.526	%25

Member Point Loads (BLC 16 : Ice Weight) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
6	MP1	Y	-128.101	%25

Member Point Loads (BLC 17 : Ice Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	-9.35	6
3	MP2	X	0	39.11
4	MP2	Z	-9.35	39.11
5	MP1	X	0	0
6	MP1	Z	-29.67	0
7	MP1	X	0	95.9
8	MP1	Z	-29.67	95.9
9	MP1	X	0	%25
10	MP1	Z	-10.58	%25
11	MP1	X	0	%25
12	MP1	Z	-8.4	%25

Member Point Loads (BLC 18 : Ice Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-4.24	6
2	MP2	Z	-7.34	6
3	MP2	X	-4.24	39.11
4	MP2	Z	-7.34	39.11
5	MP1	X	-13.4	0
6	MP1	Z	-23.22	0
7	MP1	X	-13.4	95.9
8	MP1	Z	-23.22	95.9
9	MP1	X	-4.93	%25
10	MP1	Z	-8.55	%25
11	MP1	X	-4.08	%25
12	MP1	Z	-7.06	%25

Member Point Loads (BLC 19 : Ice Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-5.82	6
2	MP2	Z	-3.36	6
3	MP2	X	-5.82	39.11
4	MP2	Z	-3.36	39.11
5	MP1	X	-18.26	0
6	MP1	Z	-10.54	0
7	MP1	X	-18.26	95.9
8	MP1	Z	-10.54	95.9
9	MP1	X	-7.31	%25
10	MP1	Z	-4.22	%25
11	MP1	X	-6.64	%25
12	MP1	Z	-3.83	%25

Member Point Loads (BLC 20 : Ice Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-5.84	6
2	MP2	Z	0	6
3	MP2	X	-5.84	39.11
4	MP2	Z	0	39.11
5	MP1	X	-18.23	0
6	MP1	Z	0	0

Member Point Loads (BLC 20 : Ice Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
7	MP1	X	-18.23	95.9
8	MP1	Z	0	95.9
9	MP1	X	-7.73	%25
10	MP1	Z	0	%25
11	MP1	X	-7.42	%25
12	MP1	Z	0	%25

Member Point Loads (BLC 21 : Ice Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-5.82	6
2	MP2	Z	3.36	6
3	MP2	X	-5.82	39.11
4	MP2	Z	3.36	39.11
5	MP1	X	-18.26	0
6	MP1	Z	10.54	0
7	MP1	X	-18.26	95.9
8	MP1	Z	10.54	95.9
9	MP1	X	-7.31	%25
10	MP1	Z	4.22	%25
11	MP1	X	-6.64	%25
12	MP1	Z	3.83	%25

Member Point Loads (BLC 22 : Ice Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-4.24	6
2	MP2	Z	7.34	6
3	MP2	X	-4.24	39.11
4	MP2	Z	7.34	39.11
5	MP1	X	-13.4	0
6	MP1	Z	23.22	0
7	MP1	X	-13.4	95.9
8	MP1	Z	23.22	95.9
9	MP1	X	-4.93	%25
10	MP1	Z	8.55	%25
11	MP1	X	-4.08	%25
12	MP1	Z	7.06	%25

Member Point Loads (BLC 23 : Ice Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	0	6
2	MP2	Z	9.35	6
3	MP2	X	0	39.11
4	MP2	Z	9.35	39.11
5	MP1	X	0	0
6	MP1	Z	29.67	0
7	MP1	X	0	95.9
8	MP1	Z	29.67	95.9
9	MP1	X	0	%25
10	MP1	Z	10.58	%25
11	MP1	X	0	%25
12	MP1	Z	8.4	%25

Member Point Loads (BLC 24 : Ice Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	4.24	6

Member Point Loads (BLC 24 : Ice Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
2	MP2	Z	7.34	6
3	MP2	X	4.24	39.11
4	MP2	Z	7.34	39.11
5	MP1	X	13.4	0
6	MP1	Z	23.22	0
7	MP1	X	13.4	95.9
8	MP1	Z	23.22	95.9
9	MP1	X	4.93	%25
10	MP1	Z	8.55	%25
11	MP1	X	4.08	%25
12	MP1	Z	7.06	%25

Member Point Loads (BLC 25 : Ice Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	5.82	6
2	MP2	Z	3.36	6
3	MP2	X	5.82	39.11
4	MP2	Z	3.36	39.11
5	MP1	X	18.26	0
6	MP1	Z	10.54	0
7	MP1	X	18.26	95.9
8	MP1	Z	10.54	95.9
9	MP1	X	7.31	%25
10	MP1	Z	4.22	%25
11	MP1	X	6.64	%25
12	MP1	Z	3.83	%25

Member Point Loads (BLC 26 : Ice Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	5.84	6
2	MP2	Z	0	6
3	MP2	X	5.84	39.11
4	MP2	Z	0	39.11
5	MP1	X	18.23	0
6	MP1	Z	0	0
7	MP1	X	18.23	95.9
8	MP1	Z	0	95.9
9	MP1	X	7.73	%25
10	MP1	Z	0	%25
11	MP1	X	7.42	%25
12	MP1	Z	0	%25

Member Point Loads (BLC 27 : Ice Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	5.82	6
2	MP2	Z	-3.36	6
3	MP2	X	5.82	39.11
4	MP2	Z	-3.36	39.11
5	MP1	X	18.26	0
6	MP1	Z	-10.54	0
7	MP1	X	18.26	95.9
8	MP1	Z	-10.54	95.9
9	MP1	X	7.31	%25
10	MP1	Z	-4.22	%25
11	MP1	X	6.64	%25

Member Point Loads (BLC 27 : Ice Wind Load AZI 300) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
12	MP1	Z	-3.83	%25

Member Point Loads (BLC 28 : Ice Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	4.24	6
2	MP2	Z	-7.34	6
3	MP2	X	4.24	39.11
4	MP2	Z	-7.34	39.11
5	MP1	X	13.4	0
6	MP1	Z	-23.22	0
7	MP1	X	13.4	95.9
8	MP1	Z	-23.22	95.9
9	MP1	X	4.93	%25
10	MP1	Z	-8.55	%25
11	MP1	X	4.08	%25
12	MP1	Z	-7.06	%25

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Z	-16.232	6
2	MP2	Z	-16.232	39.11
3	MP1	Z	-21.707	0
4	MP1	Z	-21.707	95.9
5	MP1	Z	-26.224	%25
6	MP1	Z	-30.869	%25

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-16.232	6
2	MP2	X	-16.232	39.11
3	MP1	X	-21.707	0
4	MP1	X	-21.707	95.9
5	MP1	X	-26.224	%25
6	MP1	X	-30.869	%25

Member Distributed Loads (BLC 14 : Distr. Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in,%]	End Location[in,%]
1	M15	SZ	-42.27	-42.27	0	%100
2	M17	SZ	-42.27	-42.27	0	%100
3	MP1	SZ	-42.27	-42.27	0	%100
4	M31	SZ	-42.27	-42.27	0	%100
5	MP3	SZ	-42.27	-42.27	0	%100
6	M33	SZ	-42.27	-42.27	0	%100
7	MP4	SZ	-42.27	-42.27	0	%100
8	M11	SZ	0	0	0	%100
9	M12	SZ	0	0	0	%100
10	M13	SZ	0	0	0	%100
11	M14	SZ	0	0	0	%100
12	M20	SZ	0	0	0	%100
13	M22	SZ	0	0	0	%100
14	M23	SZ	0	0	0	%100
15	M24	SZ	0	0	0	%100
16	M25	SZ	0	0	0	%100
17	M26	SZ	0	0	0	%100

Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
18	M27	SZ	0	0	0	%100
19	M29	SZ	0	0	0	%100
20	M37	SZ	0	0	0	%100
21	M39	SZ	0	0	0	%100
22	M41A	SZ	0	0	0	%100
23	HOR1	SZ	-42.27	-42.27	0	%100
24	HOR2	SZ	-42.27	-42.27	0	%100
25	M19	SZ	-70.449	-70.449	0	%100
26	M21	SZ	-70.449	-70.449	0	%100
27	M35	SZ	-70.449	-70.449	0	%100
28	M36	SZ	-70.449	-70.449	0	%100
29	M9	SZ	-42.27	-42.27	0	%100
30	M10	SZ	-42.27	-42.27	0	%100
31	M43A	SZ	-42.27	-42.27	0	%100
32	M44A	SZ	-42.27	-42.27	0	%100
33	M37A	SZ	-42.27	-42.27	0	%100
34	M38	SZ	-42.27	-42.27	0	%100
35	M39A	SZ	-42.27	-42.27	0	%100
36	M40	SZ	-42.27	-42.27	0	%100
37	TB	SZ	-42.27	-42.27	0	%100
38	M124	SZ	0	0	0	%100
39	M125	SZ	0	0	0	%100
40	MP2	SZ	-42.27	-42.27	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M15	SX	-42.27	-42.27	0	%100
2	M17	SX	-42.27	-42.27	0	%100
3	MP1	SX	-42.27	-42.27	0	%100
4	M31	SX	-42.27	-42.27	0	%100
5	MP3	SX	-42.27	-42.27	0	%100
6	M33	SX	-42.27	-42.27	0	%100
7	MP4	SX	-42.27	-42.27	0	%100
8	M11	SX	0	0	0	%100
9	M12	SX	0	0	0	%100
10	M13	SX	0	0	0	%100
11	M14	SX	0	0	0	%100
12	M20	SX	0	0	0	%100
13	M22	SX	0	0	0	%100
14	M23	SX	0	0	0	%100
15	M24	SX	0	0	0	%100
16	M25	SX	0	0	0	%100
17	M26	SX	0	0	0	%100
18	M27	SX	0	0	0	%100
19	M29	SX	0	0	0	%100
20	M37	SX	0	0	0	%100
21	M39	SX	0	0	0	%100
22	M41A	SX	0	0	0	%100
23	HOR1	SX	-42.27	-42.27	0	%100
24	HOR2	SX	-42.27	-42.27	0	%100
25	M19	SX	-70.449	-70.449	0	%100
26	M21	SX	-70.449	-70.449	0	%100
27	M35	SX	-70.449	-70.449	0	%100
28	M36	SX	-70.449	-70.449	0	%100
29	M9	SX	-42.27	-42.27	0	%100
30	M10	SX	-42.27	-42.27	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
31	M43A	SX	-42.27	-42.27	0	%100
32	M44A	SX	-42.27	-42.27	0	%100
33	M37A	SX	-42.27	-42.27	0	%100
34	M38	SX	-42.27	-42.27	0	%100
35	M39A	SX	-42.27	-42.27	0	%100
36	M40	SX	-42.27	-42.27	0	%100
37	TB	SX	-42.27	-42.27	0	%100
38	M124	SX	0	0	0	%100
39	M125	SX	0	0	0	%100
40	MP2	SX	-42.27	-42.27	0	%100

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M15	Y	-13.085	-13.085	0	%100
2	M17	Y	-13.085	-13.085	0	%100
3	MP1	Y	-13.085	-13.085	0	%100
4	M31	Y	-13.085	-13.085	0	%100
5	MP3	Y	-13.085	-13.085	0	%100
6	M33	Y	-13.085	-13.085	0	%100
7	MP4	Y	-13.085	-13.085	0	%100
8	M11	Y	-6.429	-6.429	0	%100
9	M12	Y	-6.429	-6.429	0	%100
10	M13	Y	-6.429	-6.429	0	%100
11	M14	Y	-6.429	-6.429	0	%100
12	M20	Y	-6.429	-6.429	0	%100
13	M22	Y	-6.429	-6.429	0	%100
14	M23	Y	-6.429	-6.429	0	%100
15	M24	Y	-6.429	-6.429	0	%100
16	M25	Y	-6.429	-6.429	0	%100
17	M26	Y	-6.429	-6.429	0	%100
18	M27	Y	-6.429	-6.429	0	%100
19	M29	Y	-6.429	-6.429	0	%100
20	M37	Y	-6.429	-6.429	0	%100
21	M39	Y	-6.429	-6.429	0	%100
22	M41A	Y	-6.429	-6.429	0	%100
23	HOR1	Y	-14.486	-14.486	0	%100
24	HOR2	Y	-14.486	-14.486	0	%100
25	M19	Y	-16.393	-16.393	0	%100
26	M21	Y	-16.393	-16.393	0	%100
27	M35	Y	-16.393	-16.393	0	%100
28	M36	Y	-16.393	-16.393	0	%100
29	M9	Y	-8.18	-8.18	0	%100
30	M10	Y	-8.18	-8.18	0	%100
31	M43A	Y	-8.18	-8.18	0	%100
32	M44A	Y	-8.18	-8.18	0	%100
33	M37A	Y	-8.18	-8.18	0	%100
34	M38	Y	-8.18	-8.18	0	%100
35	M39A	Y	-8.18	-8.18	0	%100
36	M40	Y	-8.18	-8.18	0	%100
37	TB	Y	-13.085	-13.085	0	%100
38	M124	Y	-6.429	-6.429	0	%100
39	M125	Y	-6.429	-6.429	0	%100
40	MP2	Y	-13.085	-13.085	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
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Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M15	SZ	-22.25	-22.25	0	%100
2	M17	SZ	-22.25	-22.25	0	%100
3	MP1	SZ	-22.25	-22.25	0	%100
4	M31	SZ	-22.25	-22.25	0	%100
5	MP3	SZ	-22.25	-22.25	0	%100
6	M33	SZ	-22.25	-22.25	0	%100
7	MP4	SZ	-22.25	-22.25	0	%100
8	M11	SZ	0	0	0	%100
9	M12	SZ	0	0	0	%100
10	M13	SZ	0	0	0	%100
11	M14	SZ	0	0	0	%100
12	M20	SZ	0	0	0	%100
13	M22	SZ	0	0	0	%100
14	M23	SZ	0	0	0	%100
15	M24	SZ	0	0	0	%100
16	M25	SZ	0	0	0	%100
17	M26	SZ	0	0	0	%100
18	M27	SZ	0	0	0	%100
19	M29	SZ	0	0	0	%100
20	M37	SZ	0	0	0	%100
21	M39	SZ	0	0	0	%100
22	M41A	SZ	0	0	0	%100
23	HOR1	SZ	-19.7	-19.7	0	%100
24	HOR2	SZ	-19.7	-19.7	0	%100
25	M19	SZ	-17.382	-17.382	0	%100
26	M21	SZ	-17.382	-17.382	0	%100
27	M35	SZ	-17.382	-17.382	0	%100
28	M36	SZ	-17.382	-17.382	0	%100
29	M9	SZ	-63.299	-63.299	0	%100
30	M10	SZ	-63.299	-63.299	0	%100
31	M43A	SZ	-63.299	-63.299	0	%100
32	M44A	SZ	-63.299	-63.299	0	%100
33	M37A	SZ	-63.299	-63.299	0	%100
34	M38	SZ	-63.299	-63.299	0	%100
35	M39A	SZ	-63.299	-63.299	0	%100
36	M40	SZ	-63.299	-63.299	0	%100
37	TB	SZ	-22.25	-22.25	0	%100
38	M124	SZ	0	0	0	%100
39	M125	SZ	0	0	0	%100
40	MP2	SZ	-22.25	-22.25	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[in, %]	End Location[in, %]
1	M15	SX	-22.25	-22.25	0	%100
2	M17	SX	-22.25	-22.25	0	%100
3	MP1	SX	-22.25	-22.25	0	%100
4	M31	SX	-22.25	-22.25	0	%100
5	MP3	SX	-22.25	-22.25	0	%100
6	M33	SX	-22.25	-22.25	0	%100
7	MP4	SX	-22.25	-22.25	0	%100
8	M11	SX	0	0	0	%100
9	M12	SX	0	0	0	%100
10	M13	SX	0	0	0	%100
11	M14	SX	0	0	0	%100
12	M20	SX	0	0	0	%100
13	M22	SX	0	0	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft....]	End Magnitude[lb/ft,F....]	Start Location[in, %]	End Location[in, %]
14	M23	SX	0	0	0	%100
15	M24	SX	0	0	0	%100
16	M25	SX	0	0	0	%100
17	M26	SX	0	0	0	%100
18	M27	SX	0	0	0	%100
19	M29	SX	0	0	0	%100
20	M37	SX	0	0	0	%100
21	M39	SX	0	0	0	%100
22	M41A	SX	0	0	0	%100
23	HOR1	SX	-19.7	-19.7	0	%100
24	HOR2	SX	-19.7	-19.7	0	%100
25	M19	SX	-17.382	-17.382	0	%100
26	M21	SX	-17.382	-17.382	0	%100
27	M35	SX	-17.382	-17.382	0	%100
28	M36	SX	-17.382	-17.382	0	%100
29	M9	SX	-63.299	-63.299	0	%100
30	M10	SX	-63.299	-63.299	0	%100
31	M43A	SX	-63.299	-63.299	0	%100
32	M44A	SX	-63.299	-63.299	0	%100
33	M37A	SX	-63.299	-63.299	0	%100
34	M38	SX	-63.299	-63.299	0	%100
35	M39A	SX	-63.299	-63.299	0	%100
36	M40	SX	-63.299	-63.299	0	%100
37	TB	SX	-22.25	-22.25	0	%100
38	M124	SX	0	0	0	%100
39	M125	SX	0	0	0	%100
40	MP2	SX	-22.25	-22.25	0	%100

Load Combinations

	Description	So..P...	S...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
1	1.4DL	Yes	Y	1	1.4															
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15										
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	.866	15	.5									
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	.5	15	.866									
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1									
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-.5	15	.866									
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-.866	15	.5									
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15										
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-.866	15	-.5									
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-.5	15	-.866									
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1									
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	.5	15	-.866									
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	.866	15	-.5									
14	0.9DL + 1WL AZI 0	Yes	Y	1	.9	2	1	14	1	15										
15	0.9DL + 1WL AZI 30	Yes	Y	1	.9	3	1	14	.866	15	.5									
16	0.9DL + 1WL AZI 60	Yes	Y	1	.9	4	1	14	.5	15	.866									
17	0.9DL + 1WL AZI 90	Yes	Y	1	.9	5	1	14		15	1									
18	0.9DL + 1WL AZI 120	Yes	Y	1	.9	6	1	14	-.5	15	.866									
19	0.9DL + 1WL AZI 150	Yes	Y	1	.9	7	1	14	-.866	15	.5									
20	0.9DL + 1WL AZI 180	Yes	Y	1	.9	8	1	14	-1	15										
21	0.9DL + 1WL AZI 210	Yes	Y	1	.9	9	1	14	-.866	15	-.5									
22	0.9DL + 1WL AZI 240	Yes	Y	1	.9	10	1	14	-.5	15	-.866									
23	0.9DL + 1WL AZI 270	Yes	Y	1	.9	11	1	14		15	-1									
24	0.9DL + 1WL AZI 300	Yes	Y	1	.9	12	1	14	.5	15	-.866									
25	0.9DL + 1WL AZI 330	Yes	Y	1	.9	13	1	14	.866	15	-.5									

Load Combinations (Continued)

	Description	So...P...	S...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1									
27	1.2D + 1.0Di + 1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30				
28	1.2D + 1.0Di + 1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	.866	30	.5			
29	1.2D + 1.0Di + 1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	.5	30	.866			
30	1.2D + 1.0Di + 1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1			
31	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	21	1	29	-.5	30	.866			
32	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	22	1	29	-.866	30	.5			
33	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	23	1	29	-1	30				
34	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	24	1	29	-.866	30	-.5			
35	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	25	1	29	-.5	30	-.866			
36	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	26	1	29		30	-1			
37	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	27	1	29	.5	30	-.866			
38	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y	1	1.2	16	1	28	1	29	.866	30	-.5			
39	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	1	32								
40	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	.866	32	.5							
41	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	.5	32	.866							
42	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31		32	1							
43	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	-.5	32	.866							
44	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	-.866	32	.5							
45	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	-1	32								
46	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	-.866	32	-.5							
47	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	-.5	32	-.866							
48	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31		32	-1							
49	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	.5	32	-.866							
50	(1.2 + 0.2Sds)DL + 1.0E ...	Yes	Y	1	1.2...	31	.866	32	-.5							
51	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	1	32								
52	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	.866	32	.5							
53	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	.5	32	.866							
54	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31		32	1							
55	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	-.5	32	.866							
56	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	-.866	32	.5							
57	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	-1	32								
58	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	-.866	32	-.5							
59	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	-.5	32	-.866							
60	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31		32	-1							
61	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	.5	32	-.866							
62	(0.9 - 0.2Sds)DL + 1.0E A...	Yes	Y	1	.862	31	.866	32	-.5							
63	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	2	.259	14	.259	15		33	1.5			
64	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	3	.259	14	.224	15	.129	33	1.5			
65	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	4	.259	14	.129	15	.224	33	1.5			
66	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	5	.259	14		15	.259	33	1.5			
67	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	6	.259	14	-.129	15	.224	33	1.5			
68	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	7	.259	14	-.224	15	.129	33	1.5			
69	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	8	.259	14	-.259	15		33	1.5			
70	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	9	.259	14	-.224	15	-.129	33	1.5			
71	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	10	.259	14	-.129	15	-.224	33	1.5			
72	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	11	.259	14		15	-.259	33	1.5			
73	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	12	.259	14	.129	15	-.224	33	1.5			
74	1.0DL + 1.5LL + 1.0SWL ...	Yes	Y	1	1	13	.259	14	.224	15	-.129	33	1.5			
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5									
76	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	2	.065	14	.065	15				
77	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	3	.065	14	.056	15	.032			
78	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	4	.065	14	.032	15	.056			
79	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	5	.065	14		15	.065			
80	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	6	.065	14	-.032	15	.056			
81	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	7	.065	14	-.056	15	.032			
82	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y	1	1.2	34	1.5	8	.065	14	-.065	15				

Load Combinations (Continued)

	Description	So...	P...	S...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...	BLCFa...
83	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	9	.065	14	-.056	15	-.032	
84	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	10	.065	14	-.032	15	-.056	
85	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	11	.065	14		15	-.065	
86	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	12	.065	14	.032	15	-.056	
87	1.2DL + 1.5LM-MP1 + 1S...	Yes	Y		1	1.2	34	1.5	13	.065	14	.056	15	-.032	
88	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	2	.065	14	.065	15		
89	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	3	.065	14	.056	15	.032	
90	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	4	.065	14	.032	15	.056	
91	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	5	.065	14		15	.065	
92	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	6	.065	14	-.032	15	.056	
93	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	7	.065	14	-.056	15	.032	
94	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	8	.065	14	-.065	15		
95	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	9	.065	14	-.056	15	-.032	
96	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	10	.065	14	-.032	15	-.056	
97	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	11	.065	14		15	-.065	
98	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	12	.065	14	.032	15	-.056	
99	1.2DL + 1.5LM-MP2 + 1S...	Yes	Y		1	1.2	35	1.5	13	.065	14	.056	15	-.032	
100	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	2	.065	14	.065	15		
101	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	3	.065	14	.056	15	.032	
102	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	4	.065	14	.032	15	.056	
103	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	5	.065	14		15	.065	
104	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	6	.065	14	-.032	15	.056	
105	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	7	.065	14	-.056	15	.032	
106	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	8	.065	14	-.065	15		
107	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	9	.065	14	-.056	15	-.032	
108	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	10	.065	14	-.032	15	-.056	
109	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	11	.065	14		15	-.065	
110	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	12	.065	14	.032	15	-.056	
111	1.2DL + 1.5LM-MP3 + 1S...	Yes	Y		1	1.2	36	1.5	13	.065	14	.056	15	-.032	
112	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	2	.065	14	.065	15		
113	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	3	.065	14	.056	15	.032	
114	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	4	.065	14	.032	15	.056	
115	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	5	.065	14		15	.065	
116	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	6	.065	14	-.032	15	.056	
117	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	7	.065	14	-.056	15	.032	
118	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	8	.065	14	-.065	15		
119	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	9	.065	14	-.056	15	-.032	
120	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	10	.065	14	-.032	15	-.056	
121	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	11	.065	14		15	-.065	
122	1.2DL + 1.5LM-MP4 + 1S...	Yes	Y		1	1.2	37	1.5	12	.065	14	.032	15	-.056	

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*	phi*	phi*	phi*	Cb	Eqn
1	MP1 PIPE 2...	.543	68	28	.070	28	8	149...	32130	187...	187...	4.2...	H1...
2	M39A 0.625" ...	.456	23.344	29	.011	46.687	8	725...	994...	96.7...	96.7...	1.1...	H1...
3	M31 PIPE 2...	.428	0	29	.344	0	30	295...	32130	187...	187...	2.82	H1...
4	HOR1 PIPE 2...	.420	93.188	29	.137	91.875	28	205...	50715	359...	359...	2.2...	H1...
5	M43A 0.625" ...	.366	22.637	27	.011	38.125	7	108...	994...	96.7...	96.7...	1	H1...
6	M19 PL3 1/2...	.357	2.25	30	.153	2.25	y 38	702...	70875	922...	516...	1.3...	H1...
7	M15 PIPE 2...	.335	29.237	27	.269	29.566	30	295...	32130	187...	187...	1.9...	H1...
8	HOR2 PIPE 2...	.334	93.188	8	.115	93.188	14	205...	50715	359...	359...	2.1...	H1...
9	M35 PL3 1/2...	.328	2.25	14	.219	0	y 8	702...	70875	922...	516...	1.1...	H1...
10	MP4 PIPE 2...	.266	68	105	.043	68	111	149...	32130	187...	187...	4.8...	H1...
11	MP2 PIPE 2...	.254	68	29	.052	28	32	149...	32130	187...	187...	3.06	H1...
12	M36 PL3 1/2...	.250	2.25	2	.144	0	y 2	702...	70875	922...	516...	1.28	H1...

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*	phi*	phi*	phi*	Cb	Eqn
13	MP3	PIPE_2...	.176	28	.053	28	7	149...	32130	187...	187...	4.3...	H1...
14	M38	0.625" ...	.171	23.344	.006	46.687	28	725...	994...	96.7...	96.7...	1.1...	H1...
15	M33	PIPE_2...	.171	31.537	.136	0	111	295...	32130	187...	187...	2.9...	H1...
16	TB	PIPE_2...	.152	0	.009	120.667	36	972...	32130	187...	187...	1.1...	H1...
17	M21	PL3 1/2...	.116	2.25	.109	0	y 111	702...	70875	922...	516...	1.2...	H1...
18	M17	PIPE_2...	.113	31.537	.087	29.566	108	295...	32130	187...	187...	1.9...	H1...
19	M9	0.625" ...	.095	38.125	.010	0	7	108...	994...	96.7...	96.7...	1	H1...
20	M37A	0.625" ...	.013	46.686	.009	46.686	7	725...	994...	96.7...	96.7...	1.1...	H1...
21	M44A	0.625" ...	.008	0	.007	38.124	7	108...	994...	96.7...	96.7...	1	H1...
22	M10	0.625" ...	.002	0	.011	0	7	108...	994...	96.7...	96.7...	1	H1...
23	M40	0.625" ...	.000	0	.000	0	122	725...	994...	96.7...	96.7...	1	H1...

APPENDIX D
ADDITIONAL CALCUATIONS

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	HRT 084 943242
Site Number:	806377
Connection Description:	Sector Frame to Tower Leg

MAXIMUM BOLT LOADS		
Bolt Tension:	3563.71	lbs
Bolt Shear:	1828.40	lbs

WORST CASE BOLT LOADS ¹		
Bolt Tension:	3563.71	lbs
Bolt Shear:	732.32	lbs

BOLT PROPERTIES		
Bolt Type:	Threaded Rod	-
Bolt Diameter:	0.625	in
Bolt Grade:	Other	-
Yield Strength:	57	ksi
Ultimate Strength:	74	ksi
# of Threaded Rods:	4	-
Threads Excluded?	No	-

¹ Worst case bolt loads correspond to Load combination #32 on member M27 in RISA-3D, which causes the maximum demand on the bolts.

Member Information	
I nodes of M11, M27	

BOLT CHECK		
Tensile Strength	12543.09	
Shear Strength	8513.59	
Max Tensile Usage	28.4%	
Max Shear Usage	21.5%	
Interaction Check (Worst Case)	0.09	≤1.05
Result	Pass	





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: CT11731A

806377

197 South Street

Vernon, Connecticut 06066

January 6, 2022

EBI Project Number: 6222000089

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	56.53%



January 6, 2022

T-Mobile

Attn: Jason Overbey, RF Manager

35 Griffin Road South

Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11731A - 806377

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **197 South Street in Vernon, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 1.1 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 197 South Street in Vernon, 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 UMTS 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.



- 6) 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.
- 7) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 8) 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.
- 9) 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.
- 10) 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.
- 11) 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.
- 12) 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.
- 13) 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.
- 14) 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.
- 15) The antennas used in this modeling are the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS



APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 16) The antenna mounting height centerline of the proposed antennas is 130 feet above ground level (AGL).
- 17) 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.
- 18) 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 #:	I	Antenna #:	I	Antenna #:	I
Make / Model:	RFS APXVAARR24_43- U-NA20	Make / Model:	RFS APXVAARR24_43- U-NA20	Make / Model:	RFS APXVAARR24_43- U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd / 16.35 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	17	Channel Count:	17	Channel Count:	17
Total TX Power (W):	680 Watts	Total TX Power (W):	680 Watts	Total TX Power (W):	680 Watts
ERP (W):	22,844.84	ERP (W):	22,844.84	ERP (W):	22,844.84
Antenna AI MPE %:	6.66%	Antenna BI MPE %:	6.66%	Antenna CI MPE %:	6.66%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A2 MPE %:	8.50%	Antenna B2 MPE %:	8.50%	Antenna C2 MPE %:	8.50%



Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	15.16%
AT&T	15%
Verizon	14.93%
XM Sat Radio	0.14%
Town	0.89%
Metro PCS	1.12%
T-Mobile (Existing)	9.29%
Site Total MPE % :	56.53%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	15.16%
T-Mobile Sector B Total:	15.16%
T-Mobile Sector C Total:	15.16%
Site Total MPE % :	56.53%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	130.0	2.77	600 MHz LTE	400	0.69%
T-Mobile 600 MHz NR	1	1577.94	130.0	3.69	600 MHz NR	400	0.92%
T-Mobile 700 MHz LTE	2	648.82	130.0	3.03	700 MHz LTE	467	0.65%
T-Mobile 1900 MHz GSM	4	1101.85	130.0	10.31	1900 MHz GSM	1000	1.03%
T-Mobile 1900 MHz UMTS	2	1101.85	130.0	5.15	1900 MHz UMTS	1000	0.52%
T-Mobile 1900 MHz LTE	2	2203.69	130.0	10.31	1900 MHz LTE	1000	1.03%
T-Mobile 2100 MHz UMTS	2	1294.56	130.0	6.05	2100 MHz UMTS	1000	0.61%
T-Mobile 2100 MHz LTE	2	2589.11	130.0	12.11	2100 MHz LTE	1000	1.21%
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	11044.63	130.0	25.82	2500 MHz LTE IC & 2C Traffic	1000	2.58%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	1074.06	130.0	2.51	2500 MHz LTE IC & 2C Broadcast	1000	0.25%
T-Mobile 2500 MHz NR Traffic	1	22089.26	130.0	51.65	2500 MHz NR Traffic	1000	5.16%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	130.0	5.02	2500 MHz NR Broadcast	1000	0.50%
Total:							15.16%

• 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:	15.16%
Sector B:	15.16%
Sector C:	15.16%
T-Mobile Maximum MPE % (Sector A):	15.16%
Site Total:	56.53%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **56.53%** 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 SITE NUMBER:CT11731A

T-MOBILE SITE NAME:CT60XC935

SITE TYPE:SELF SUPPORT TOWER

TOWER HEIGHT:132'-1"

BUSINESS UNIT #:806377

SITE ADDRESS:197 SOUTH ST.
VERNON, CT 06066

COUNTY:TOLLAND

JURISDICTION:TOWN OF VERNON

T-MOBILE SPRINT REATIN SITE CONFIGURATION: 67E5998E_1xAIR+10P



35 GRIFFIN ROAD
BLOOMFIELD, CT 06002



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



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T-MOBILE SITE NUMBER:
CT11731A

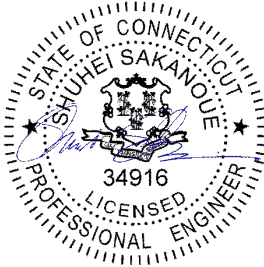
BU #: 806377
HRT 084 943242

197 SOUTH ST.
VERNON, CT 06066

EXISTING 132'-1" SELF
SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	01/07/2022	TJ	FINAL	SS



01/07/2022

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

SHEET NUMBER:

T-1

REVISION:

0

SITE INFORMATION

CROWN CASTLE USA INC.
SITE NAME:

HRT 084 943242

SITE ADDRESS:

197 SOUTH ST.
VERNON, CT 06066

COUNTY:

TOLLAND

MAP/PARCEL #:

VERIFY

AREA OF CONSTRUCTION:

EXISTING

LATITUDE:

41.85360000° (41° 51' 12.51")

LONGITUDE:

-72.45190000° (72° 27' 7.52")

LAT/LONG TYPE:

NAD83

GROUND ELEVATION:

508 FT

CURRENT ZONING:

TBD

JURISDICTION:

TOWN OF VERNON

OCCUPANCY CLASSIFICATION:

U

TYPE OF CONSTRUCTION:

IIB

A.D.A. COMPLIANCE:

FACILITY IS UNMANNED AND NOT FOR
HUMAN HABITATION

PROPERTY OWNER:

CONNECTICUT WATER COMPANY

TOWER OWNER:

CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317

CARRIER/APPLICANT:

T-MOBILE
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

ELECTRIC PROVIDER:

N/A

TELCO PROVIDER:

N/A

DRAWING INDEX

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

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:

- REMOVE (6) ANTENNAS
- REMOVE (9) RRHS
- REMOVE (4) HYBRID CABLES
- REMOVE (1) COAX CABLE
- REMOVE (3) SECTOR FRAMES
- INSTALL (6) ANTENNAS
- INSTALL (6) RRHS
- INSTALL (3) HYBRID CABLES
- REMOVE (3) ANTENNA MOUNTS
- INSTALL (3) VFA10-HD-S SECTOR FRAMES

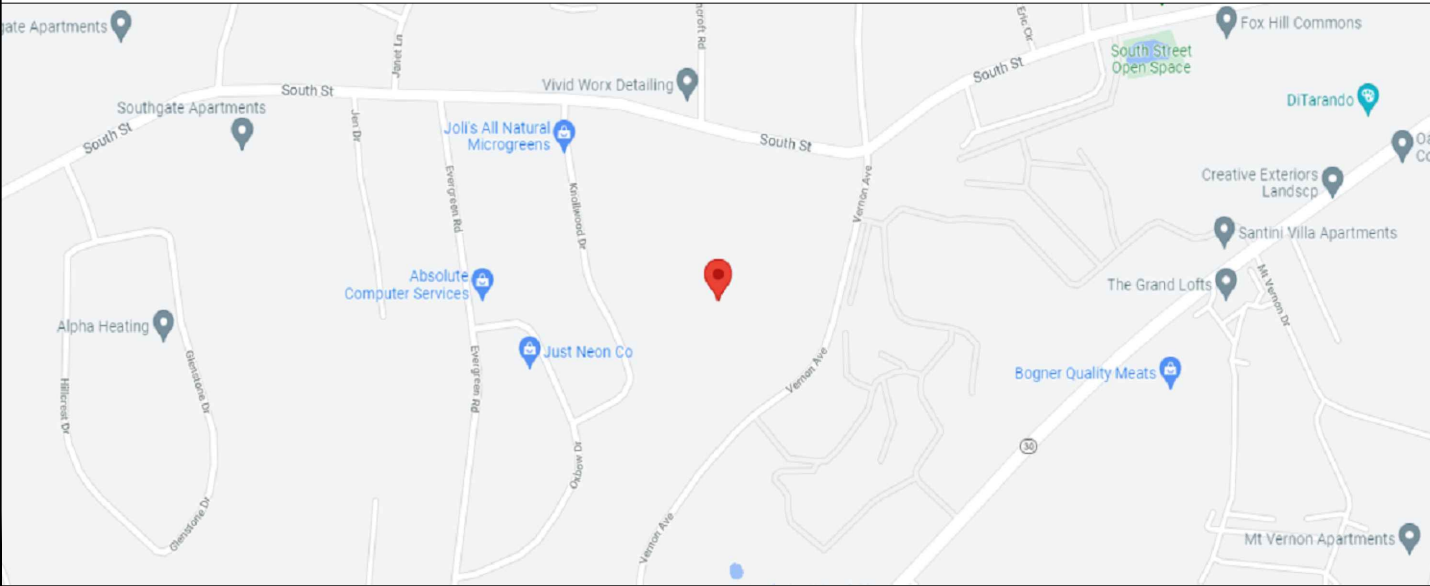
GROUND SCOPE OF WORK:

- REMOVE (2) EXISTING CABINETS
- INSTALL (1) 6160 & (1) B160 BATTERY CABINET
- INSTALL (2) PSU4813 VOLTAGE BOOSTER IN (P) CABINET
- INSTALL (1) CSR IXRE ROUTER IN (P) CABINET
- INSTALL (2) BB6648 IN (P) CABINET

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	2018 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS
DATED:	11/23/2021
MOUNT ANALYSIS:	INFINIGY ENGINEERING, PLLC
DATED:	NOVEMBER 17, 2021
RFDS REVISION:	1
DATED:	10/27/2021
ORDER ID:	589867
REVISION:	0



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APPROVALS

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

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

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.

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-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED 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).

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° AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER.....40 ksi
#5 BARS AND LARGER.....60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER.....2"
#5 BARS AND SMALLER.....1-1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
SLAB AND WALLS.....3/4"
BEAMS AND COLUMNS.....1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR #6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/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 NEW 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
	A PHASE	BLACK
120/208V, 3Ø	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
	A PHASE	BROWN
277/480V, 3Ø	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
	POS (+)	RED**
DC VOLTAGE	NEG (-)	BLACK**

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

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
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
RETS	REMOTE ELECTRIC TILT
RFDSD	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

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

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BU #: 806377

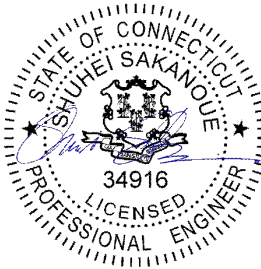
HRT 084 943242

197 SOUTH ST.
VERNON, CT 06066

EXISTING 132'-1" SELF
SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	01/07/2022	TJ	FINAL	SS



01/07/2022

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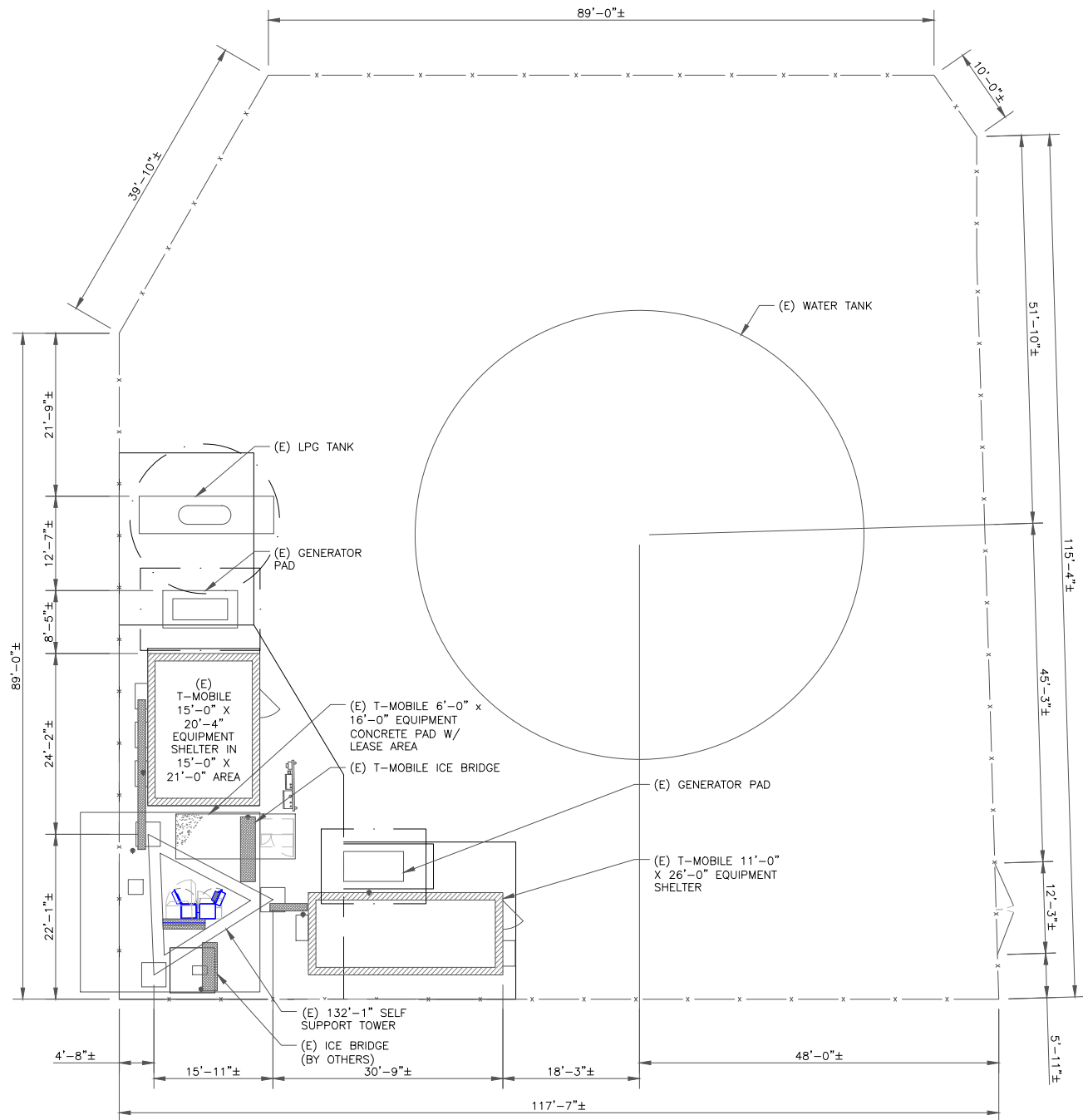
T-2

REVISION:

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NOTE:

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

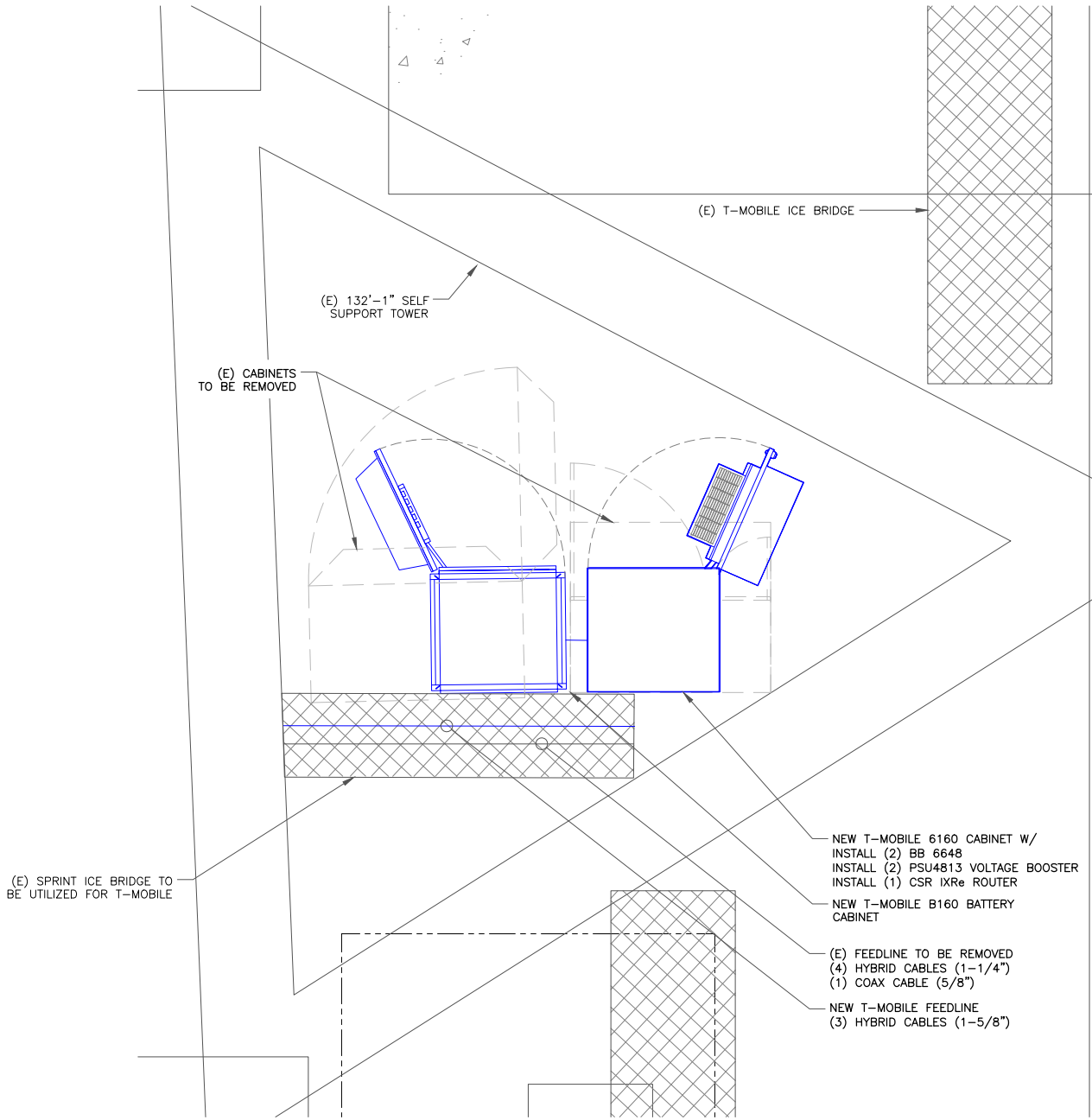


1 SITE PLAN
SCALE: 3/16\"=1'-0\" (FULL SIZE)
3/32\"=1'-0\" (11x17)



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



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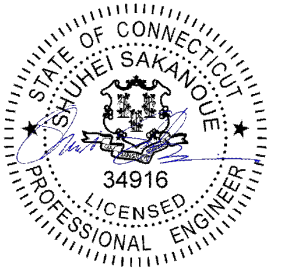
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NOTES:

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

NEW T-MOBILE EQUIPMENT
(6) ANTENNAS
(6) RRHs

STRUCTURES W/ APPURTENANCES
ELEV. = 154'-2"

TIP OF ANTENNA
ELEV. = 133'-0"

TIP OF MONOPOLE
ELEV. = 132'-1"

RAD CENTER OF ANTENNA
ELEV. = 130'-0"

RAD CENTER OF ANTENNA BY OTHERS
ELEV. = 117'-0"

RAD CENTER OF ANTENNA BY OTHERS
ELEV. = 106'-0"

RAD CENTER OF ANTENNA BY OTHERS
ELEV. = 94'-0"

RAD CENTER OF ANTENNA
ELEV. = 84'-0"

RAD CENTER OF MW DISH
ELEV. = 63'-0"

RAD CENTER OF GPS ANTENNA
ELEV. = 56'-0"

RAD CENTER OF GPS ANTENNA
ELEV. = 48'-0"

(E) 132'-1" SELF
SUPPORT TOWER

(E) FEEDLINE TO BE REMOVED
(4) HYBRID CABLES (1-1/4")
(1) COAX CABLE (5/8")

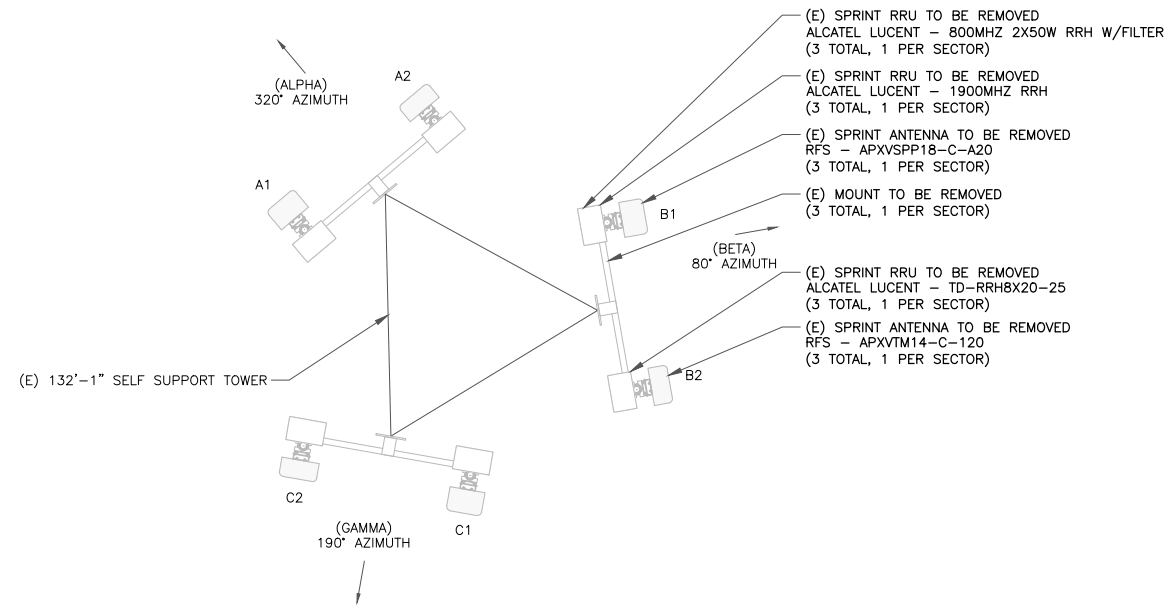
NEW T-MOBILE FEEDLINE
(3) HYBRID CABLES (1-5/8")

T-MOBILE EQUIPMENT

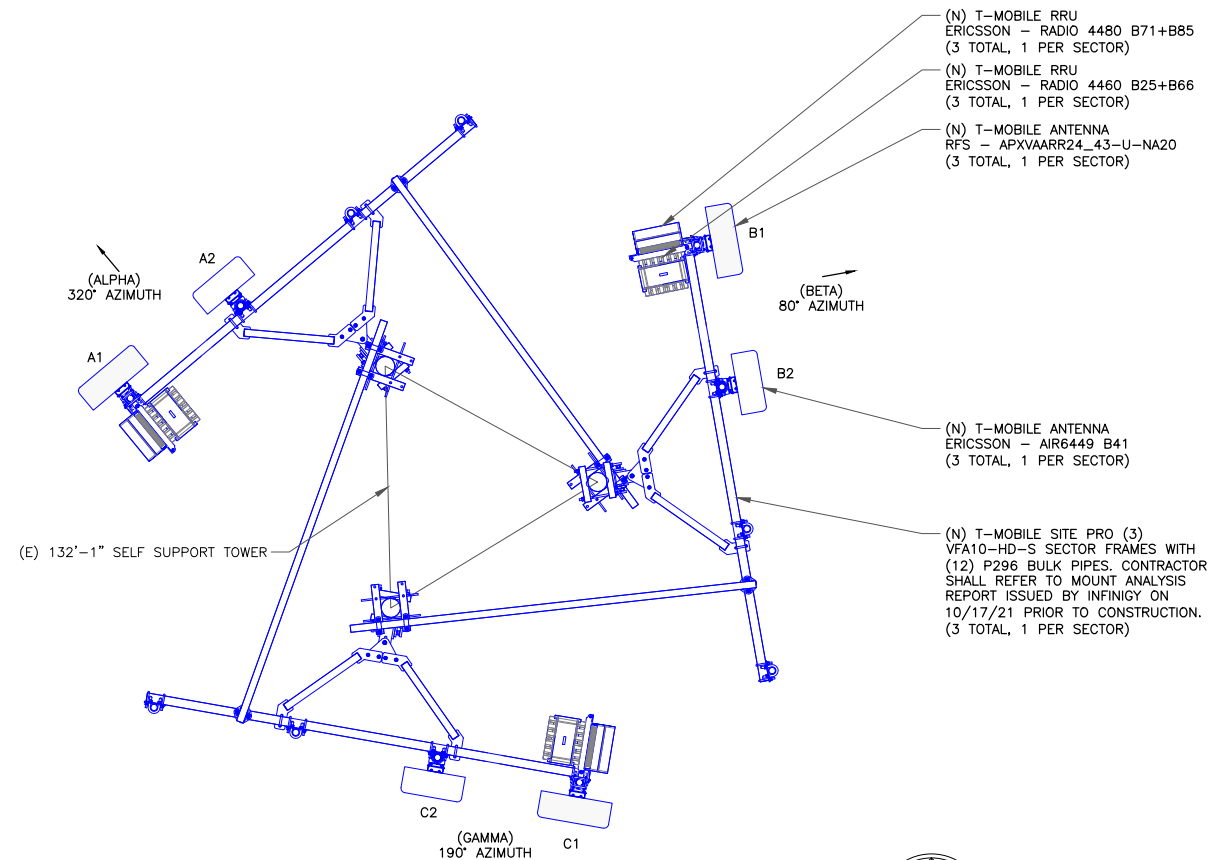
ANTENNA CL: 130'-0"
MOUNT CL: 130'-0"
ANTENNA CL: 84'-0"
MOUNT CL: 84'-0"

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

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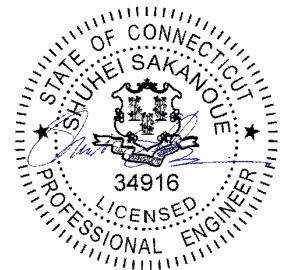
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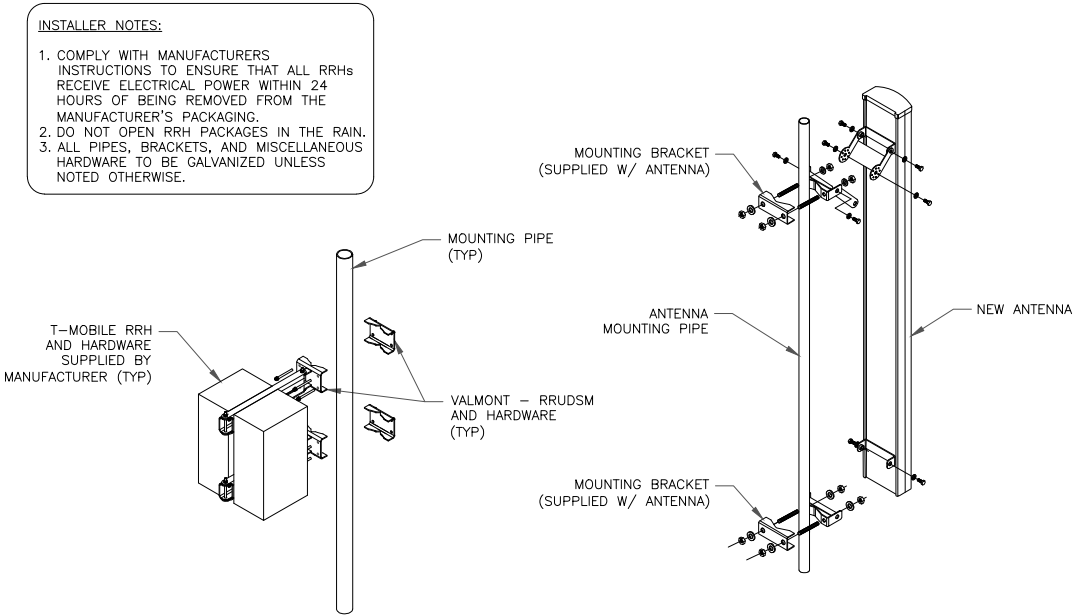
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ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L700, L600, N600, U2100,L2100,L1900,G1900, U1900	130'—0"	320°	RFS	APXVAARR24_43—U—NA20	—	—	(1) ERICSSON — RRUS 4480 B71+B85 (1) ERICSSON — RRUS 4460 B25+B65	(1) 1—5/8" HYBRID
ALPHA	A2	L2500. N2500	130'—0"	320°	ERICSSON	ERICSSON — AIR6449 B41	—	—	—	—
BETA	B1	L700, L600, N600, U2100,L2100,L1900,G1900, U1900	130'—0"	80°	RFS	APXVAARR24_43—U—NA20	—	—	(1) ERICSSON — RRUS 4480 B71+B85 (1) ERICSSON — RRUS 4460 B25+B65	(1) 1—5/8" HYBRID
BETA	B2	L2500. N2500	130'—0"	80°	ERICSSON	ERICSSON — AIR6449 B41	—	—	—	—
GAMMA	C1	L700, L600, N600, U2100,L2100,L1900,G1900, U1900	130'—0"	190°	RFS	APXVAARR24_43—U—NA20	—	—	(1) ERICSSON — RRUS 4480 B71+B85 (1) ERICSSON — RRUS 4460 B25+B65	(1) 1—5/8" HYBRID
GAMMA	C2	L2500. N2500	130'—0"	190°	ERICSSON	ERICSSON — AIR6449 B41	—	—	—	—

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

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

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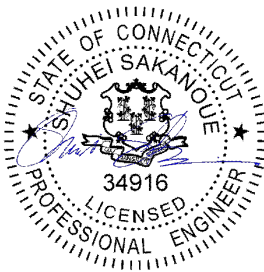
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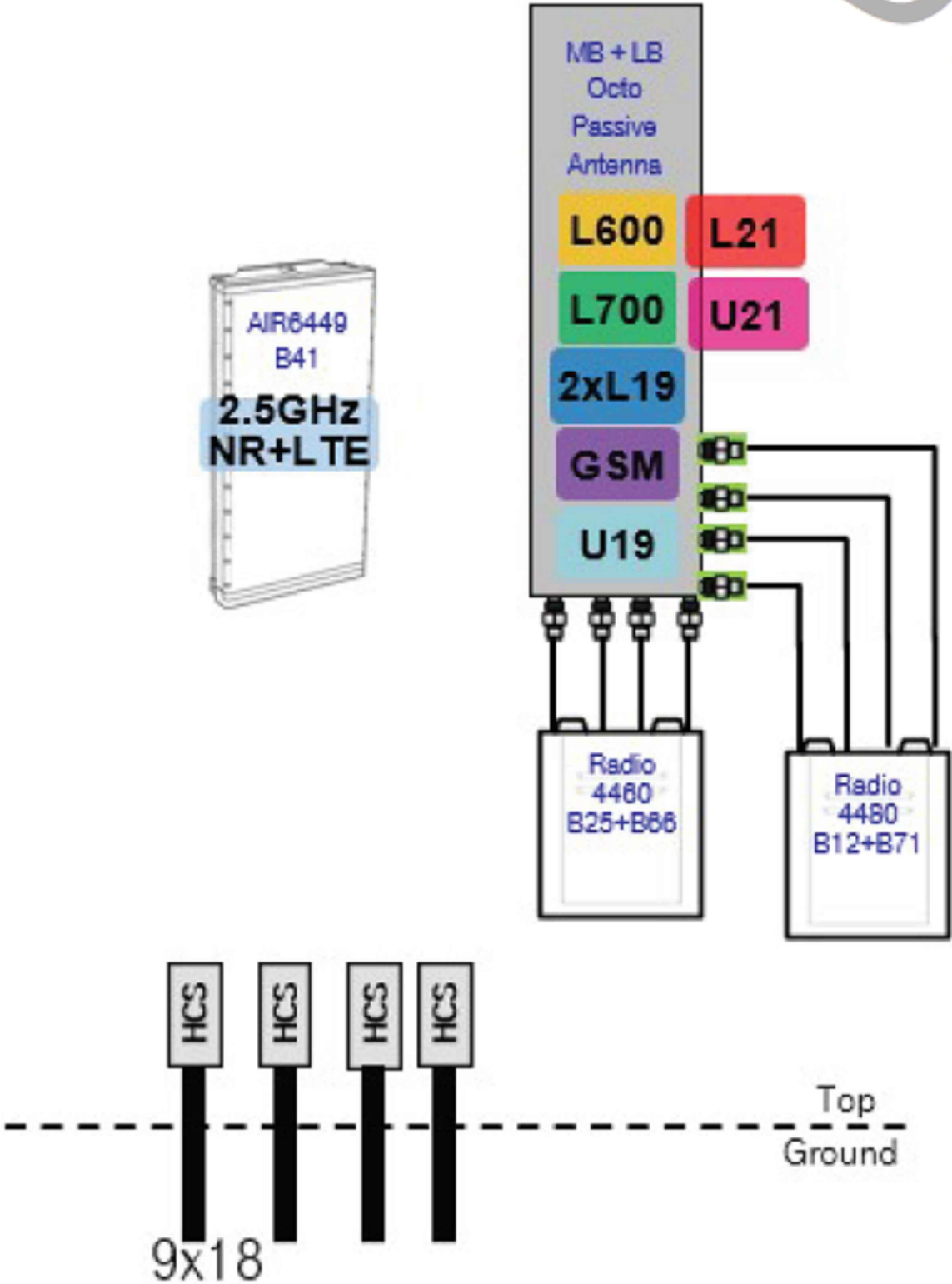
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T-MOBILE SITE NUMBER:
CT11731A

BU #: 806377

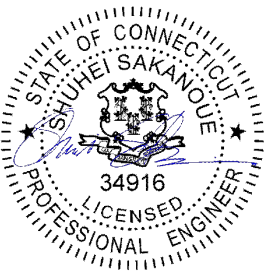
HRT 084 943242

197 SOUTH ST.
VERNON, CT 06066

EXISTING 132'-1" SELF
SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	01/07/2022	TJ	FINAL	SS



01/07/2022

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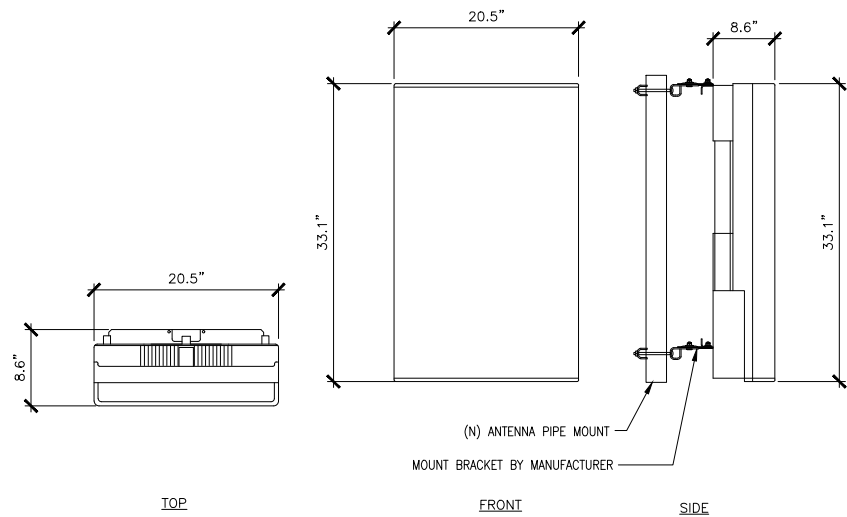
SHEET NUMBER:

C-4

REVISION:

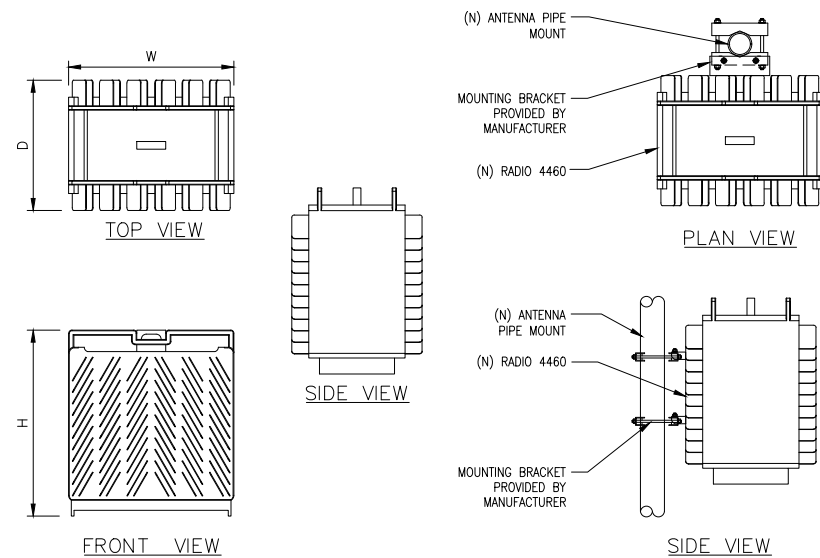
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MANUFACTURER: ERICSSON
MODEL: AIR6449 B41
WEIGHT: 104 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 33.1"H. X 20.5"W. X 8.6"D.
FREQUENCY: REFER TO RF DATA SHEET

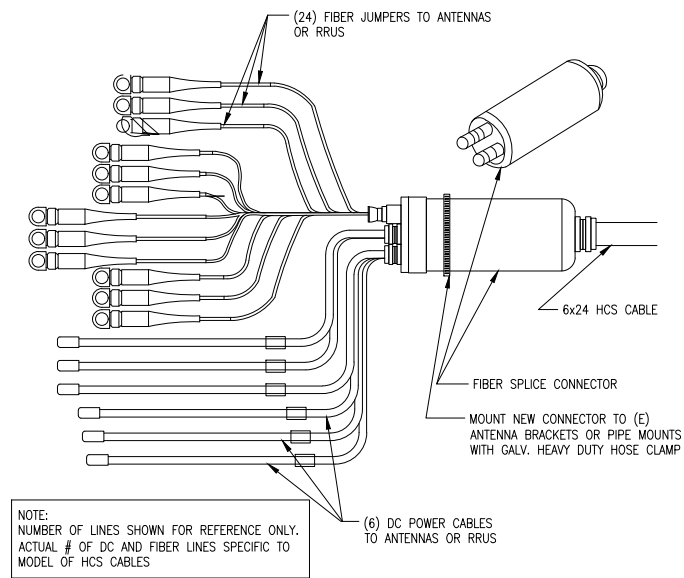


1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

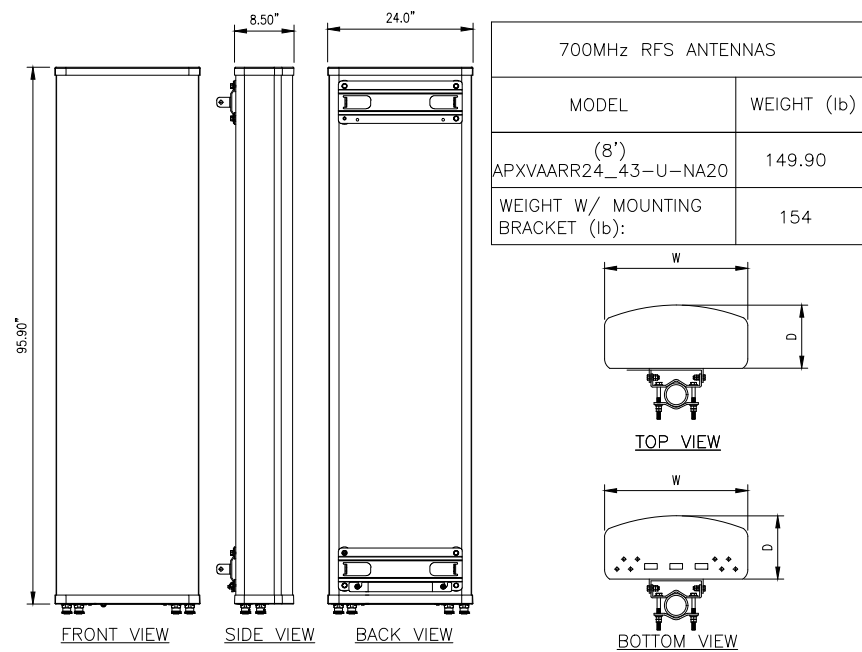
ERICSSON RADIO-4460 B25 B66
DIMENSIONS, WxDxH: 17.0"x15.1"x11.9"
MAX OUTPUT POWER: 4x80W (2x(2x80W))
TOTAL WEIGHT: 109 lbs
TEMPERATURE: -40° TO 55° C



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

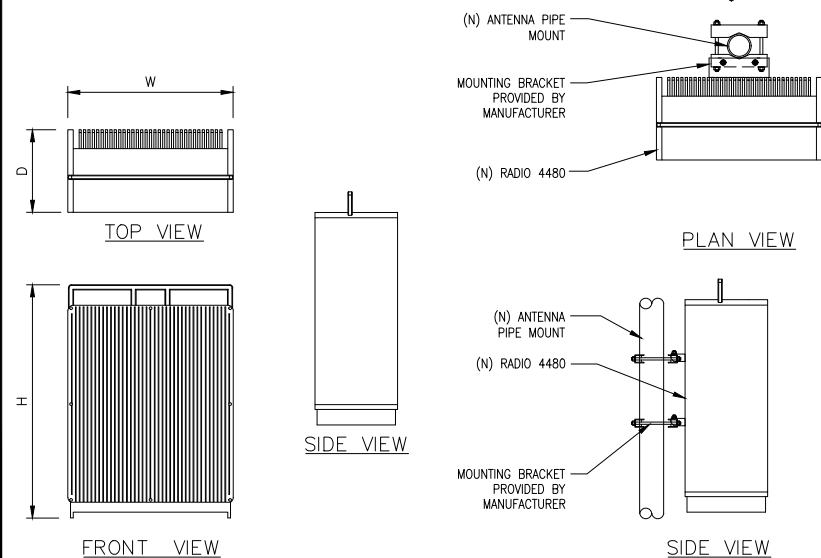


3 (N) 6X24 HCS CABLE DETAIL
SCALE: NOT TO SCALE



4 (N) APXVAARR24_43-U-NA20 ANTENNA SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85
DIMENSIONS, WxDxH: 21.8"x15.7"x7.5"
MAX OUTPUT POWER: 4x80W (2x(2x80W))
TOTAL WEIGHT: 93 lbs
TEMPERATURE: -40° TO 55° C



5 (N) RADIO 4480 SPEC
SCALE: NOT TO SCALE

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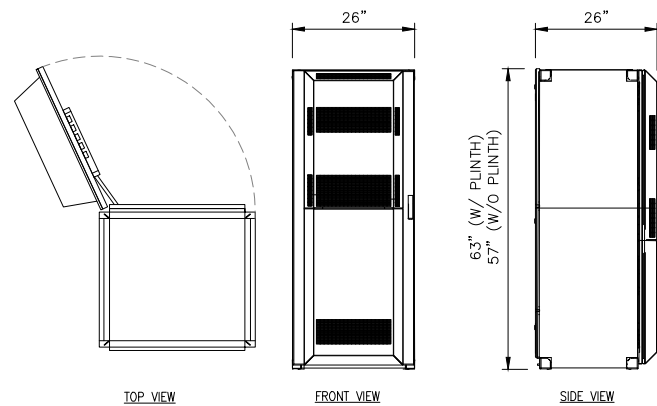
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STATE OF CONNECTICUT
SHUHEI SAKANAKU
34916
LICENSED PROFESSIONAL ENGINEER
01/07/2022

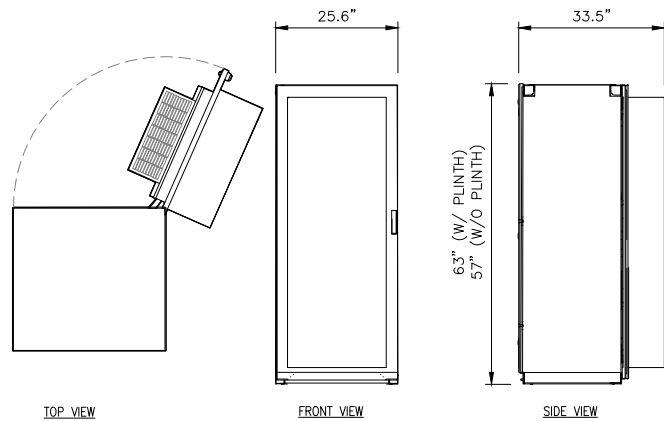
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SHEET NUMBER: **C-5**
REVISION: **0**



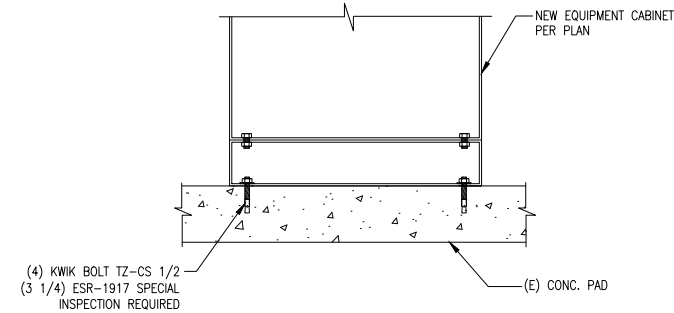
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

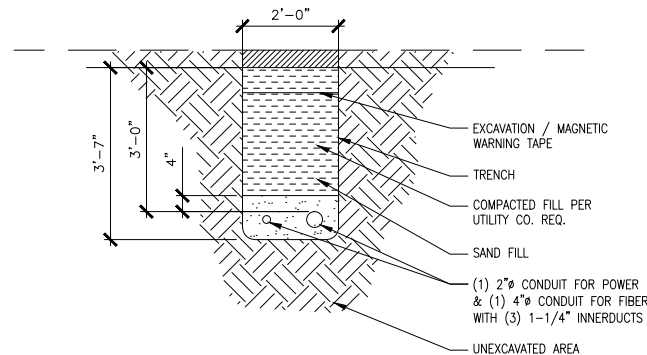


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

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



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



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

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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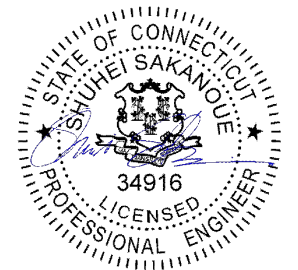
BU #: 806377
HRT 084 943242

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SHEET NUMBER:

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REVISION:

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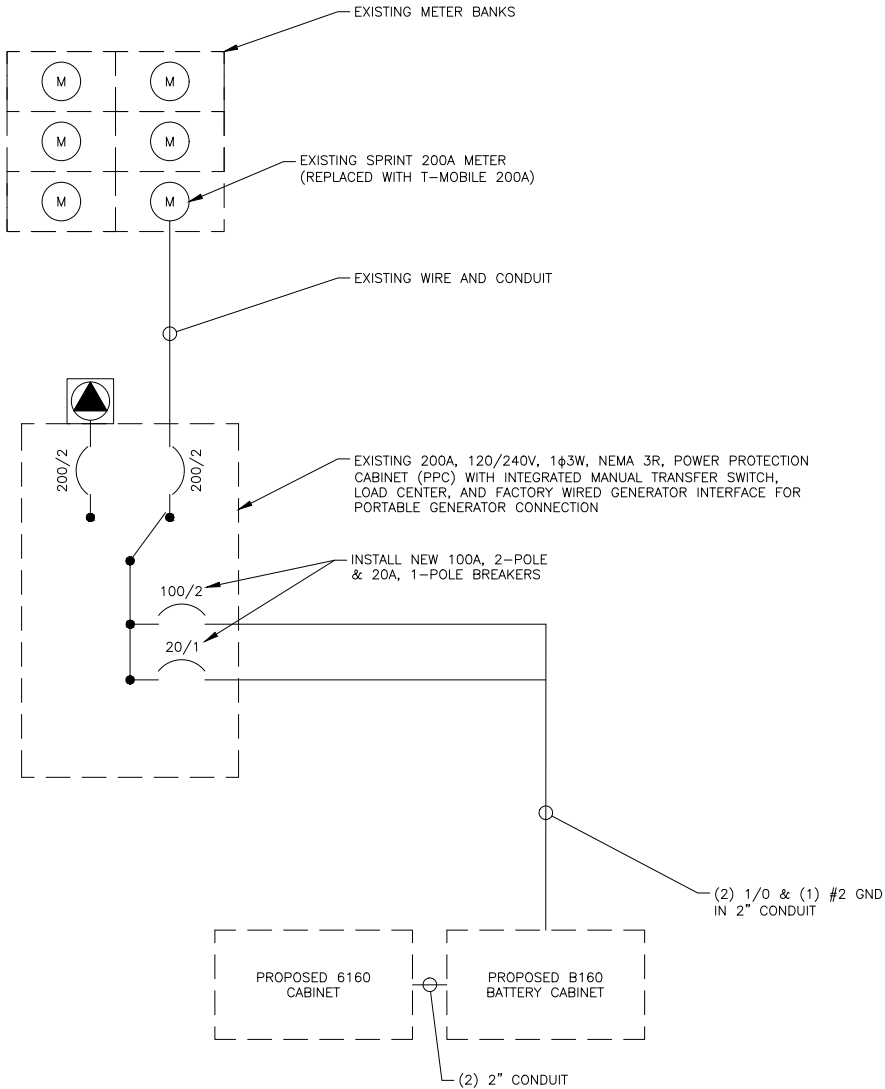
NOTES:

1. EXISTING DISTRIBUTION PANEL WAS NOT ACCESSIBLE DURING SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL INFORM ENGINEER IF THERE ARE ANY DISCREPANCIES IN PANEL SCHEDULE.

T-MOBILE PANEL SCHEDULE												
MAIN: 200A MAIN BREAKER			VOTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE						SHORT CIRCUIT CURRENT RATING: --			
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES					
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	PHASE LOADS (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION	
					A	B						
6160	7000	C	100	1	7001		2	60	C	1	SURGE PROTECTION	
	7000	C		3		7001	4		C	1		
6160 GFI	180	C	20	5	380		6	20	NC	200	TOWER LIGHTS	
BLANK				7		200	8		NC	200		
				9	0		10			BLANK		
				11		0	12					
				13	0		14					
				15		0	16					
				17	0		18					
				19		0	20					
				21	0		22					
				23		0	24					
BASE LOAD (VA) =					7381	7201	C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD					
25% OF CONTINUOUS LOAD (VA) =					1750	1750						
TOTAL LOAD (VA) =					9131	8951	NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.					
TOTAL LOAD (A) =					76	75						

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-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.



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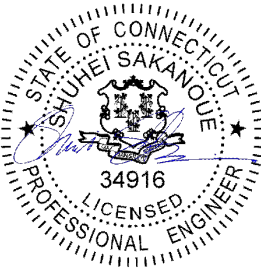
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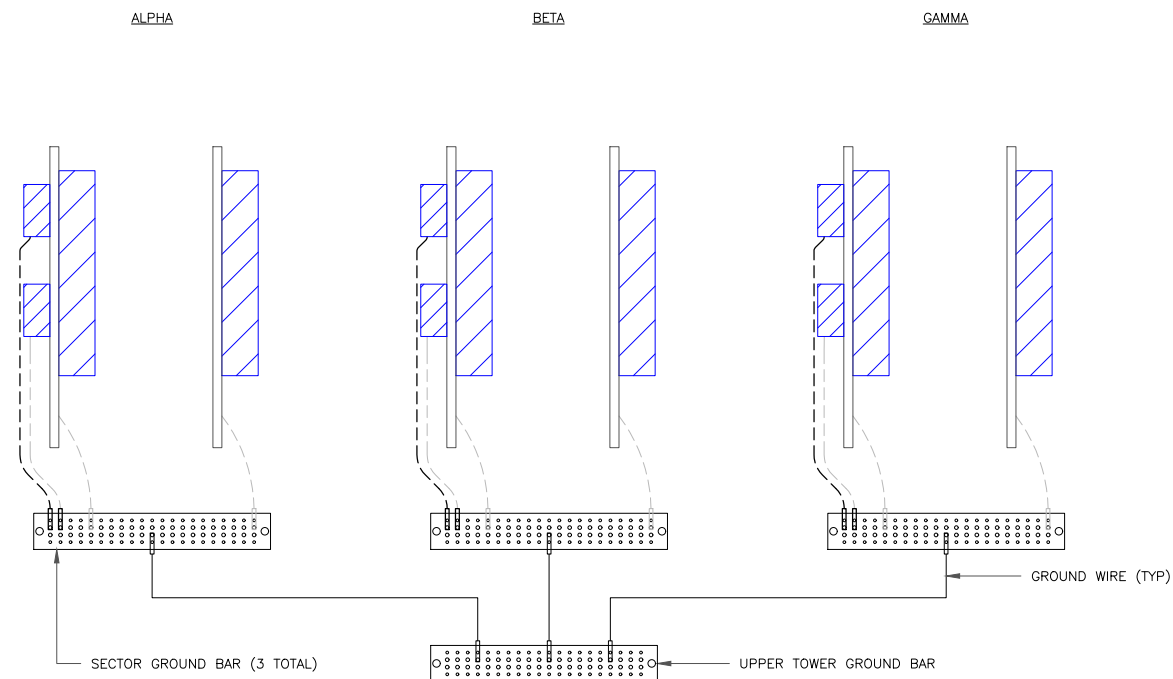
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E-1

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



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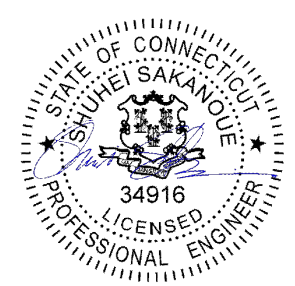
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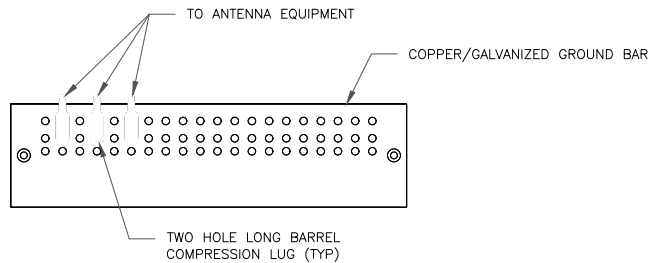


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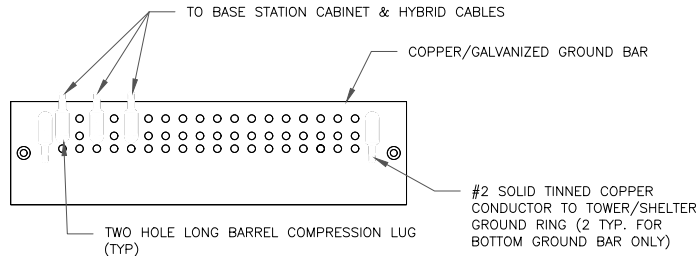
SHEET NUMBER:
G-1

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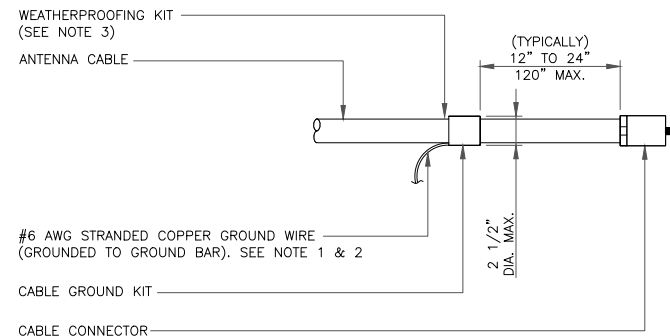
- NOTES:
- DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
 - EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



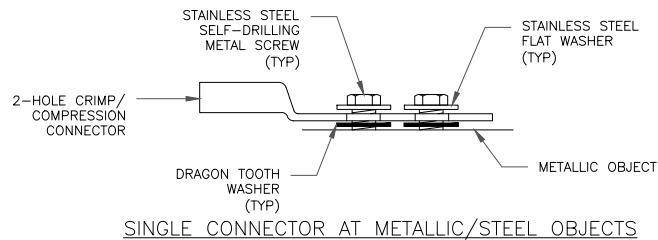
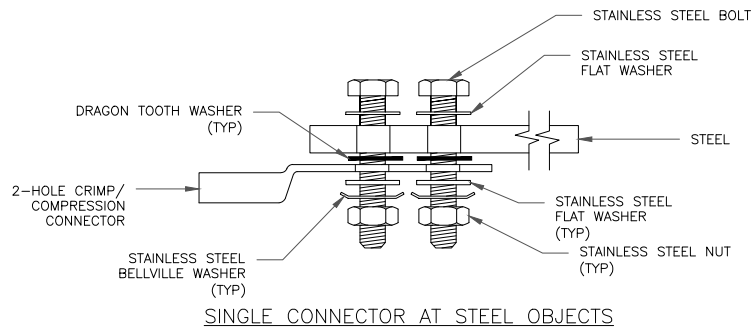
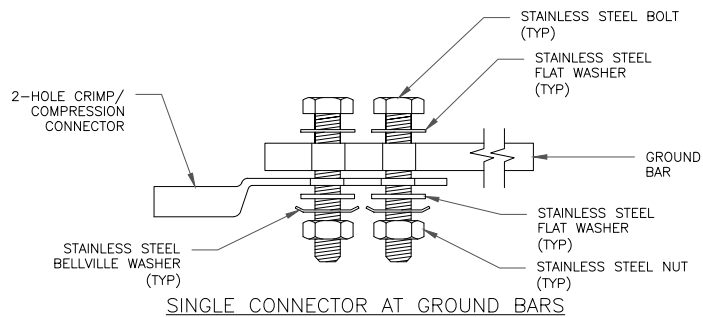
- NOTES:
- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
 - GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

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



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

3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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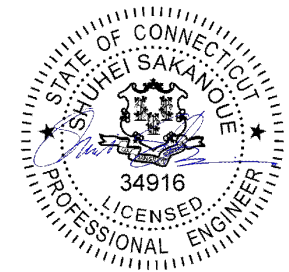
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