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

January 13, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CTFF119A**
Crown Site ID#806353
128 Mather Street, Wilton, CT 06897
Latitude: 41° 14′ 18.34″ / Longitude: -73° 25′ 26.44″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 143-foot mount level on the existing 180-foot monopole tower, located at 128 Mather Street, Wilton, CT. The property is owned by the Town of Wilton. The tower is owned by Crown Castle. T-Mobile now intends to add three (3) new antennas, replace six (6) antennas and ancillary equipment at the 143-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) CommScope – W-65A-R1 Antenna
(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- 4x45W-65MHZ RRH
(3) RFS/Celwave- ACU-A20-N TMA
(3) Hybrid Cables (1-1/4")
(2) Coaxial Cables (1/2")

Ground:

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

Remove:
(1) RBS 3106 Cabinet
(1.) S12000 Cabinet

The facility was approved by the Connecticut Siting Council on May 3, 1988 Via a Decision and Order, Docket NO. 94. 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 Lynne Vanderslice, First Selectwoman, Town of Wilton, Michael Wrinn, Director of Planning & Land use Management, Town of Wilton. Town of Wilton 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.

Sincerely,

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

Attachments
cc:

Lynne Vanderslice, First Selectwoman
Town of Wilton
238 Danbury Road
Wilton, CT 06897
(203) 563-0100

Michael Wrinn, Director of Planning & Land use Management
Town of Wilton
238 Danbury Road
Wilton, CT 06897
(203) 563-0188

Town of Wilton, Property Owner

Crown Castle, Tower Owner.

DOCKET NO. 94 - AN APPLICATION OF METRO MOBILE CTS OF FAIRFIELD COUNTY, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR CELLULAR TELEPHONE ANTENNAS AND ASSOCIATED EQUIPMENT IN THE TOWN OF WILTON, CONNECTICUT.	: Connecticut : Siting : Council May 3, 1988

DECISION AND ORDER

Pursuant to the foregoing opinion, the Connecticut Siting Council finds that the effects associated with the construction and operation of a cellular monopole structure at the alternative Mather Street site, including effects on the natural environment, ecological balance, public health and safety, scenic, historic and recreational values, forests and parks, air and water purity and fish and wildlife, are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the state concerning such effects, and are not sufficient reason to deny the application, and therefore, directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc. (Metro Mobile) for the construction, operation, and maintenance of a cellular telephone tower site and associated equipment at the "Wilton-D/AA" site on Mather Street in Wilton, Connecticut.

The proposed "D-Wilton" site on Richdale Drive and alternative "D/A Wilton" site on Quail Ridge Road are hereby denied.

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

1. The tower shall be constructed as a monopole or lattice tower, as determined by the Council in approving the development and management plan, and be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 193 feet, including antennas and associated equipment.

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

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

4. The Certificate Holder shall prepare a development and management (d&m) plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The d&m plan shall provide monopole and lattice tower foundation design specifications and plans for permanent evergreen screening around the outside perimeter of the eight-foot chain link fence which will surround the site.

5. The Certificate Holder shall provide the Council with the results of additional subsurface reconnaissance at the proposed site prior to the commencement of any construction at this site.

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

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

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

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

10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of issuance shall be published in the Norwalk Hour and the Wilton Bulletin.

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

The parties or intervenors to this proceeding are:

Metro Mobile CTS of Fairfield County, Inc. (Party)
50 Rockland Road
South Norwalk, CT 06854
Attn: Michael Riley

Howard L. Slater, Esq. (Its Attorney)
Jennifer Young Gaudet, Esq.
Byrne, Slater, Sandler, Shulman & Rouse, P.C.
330 Main Street
Hartford, CT 06103

Fleischman and Walsh, P.C. (Representative)
1725 N. Street, N.W.
Washington, D.C. 20036
Attn: Richard Rubin, Esq.

PEACE, Inc. (Party)

Ann Caggiano (Representative)
President
PEACE, Inc.
33 Honey Hill Trail
Wilton, CT 06897

Town of Wilton (Party)

Edward C. Desmond (Representative)
First Selectman
Town of Wilton
Town Hall
238 Danbury Road
Wilton, CT 06897

Joseph C. Lee, Esq. (Its Attorney)
Alice A. Bruno, Esq.
Tyler Cooper & Alcorn
205 Church Street
P.O. Box 1936
New Haven, CT 06509

Margaret Doheny (Party)
21 Richdale Drive
Wilton, CT 06897

SNET Cellular, Inc. (Intervenor)

Donald R. Chapman, Vice President (Representative)
Operations
SNET Cellular, Inc.
555 Long Wharf Drive
New Haven, CT 06511

Peter J. Tyrrell (Its Attorney)
Senior Attorney
SNET Cellular, Inc.
227 Church Street
Room 1021
New Haven, CT 06506

Ogden Bigelow (Intervenor)
25 Hidden Lake Road
Wilton, CT 06897

John Jordon (Party)
32 Mayapple Road
Wilton, CT 06897

Veronica Tella (Party)
41 Honey Hill Trail
Wilton, CT 06897

Betsy Mitchell (Party)
125 Catalpa Road
Wilton, CT 06897
(SERVICE WAIVED)

1390E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket 94 or read the record thereof, and that we voted as follows:

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

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

1395E-2

Town of Wilton, CT

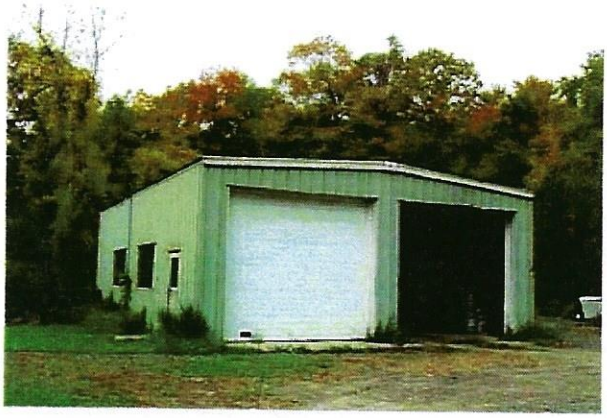
Property Listing Report | Map Block Lot 23-23 | Account 006497

Property Information

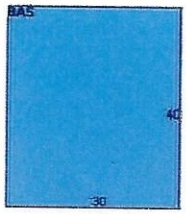
Property Location	MATHER ST
Owner	WILTON TOWN OF
Co-Owner	
Mailing Address	238 DANBURY RD WILTON CT 06897
Land Use	21V Ex Com MDL-00
Land Class	E
Zoning Code	R-2
Census Tract	
Sub Lot	

Neighborhood	4000
Acreage	74.12
Utilities	
Lot Setting/Desc	Rolling
Survey Map	
Foundation	3

Photo



Sketch



Primary Construction Details

Year Built	0
Stories	
Building Style	
Building Use	
Building Condition	
Floors	Dirt/None
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable/Hip
Roof Cover	Enam Mtl Shing

Exterior Walls	Pre-finsh Metl
Interior Walls	Drywall
Heating Type	None
Heating Fuel	None
AC Type	None
Gross Bldg Area	1200
Total Living Area	1200

Report Created On 1/10/2022

Town of Wilton, CT

Property Listing Report | Map Block Lot 23-23 | Account 006497

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	50000	35000
Extras	0	0
Outbuildings	0	0
Land	10254200	7177940
Total	10304200	7212940

Outbuilding and Extra Items

Type	Description

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	1200	1200
Total Area		0

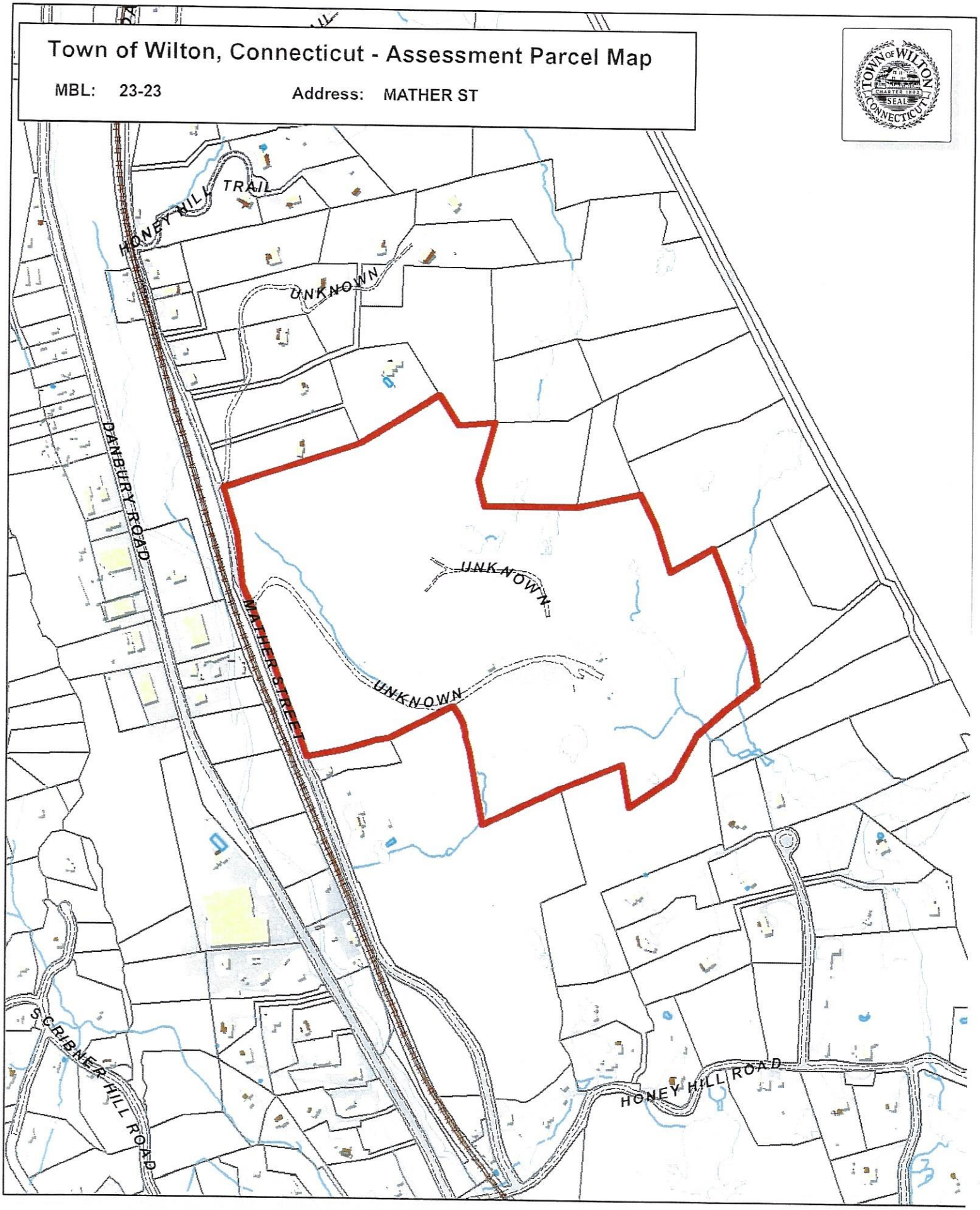
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
WILTON TOWN OF	1151/0195	2/2/1999	0
	0112/0179	5/1/1965	0

Report Created On 1/10/2022

Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 23-23 Address: MATHER ST



Approximate Scale:

1 inch = 600 feet

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

Map Grand List Date: Oct 2017

0 350 700 1,050 Fe

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, January 13, 2022 10:24 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775735695063: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

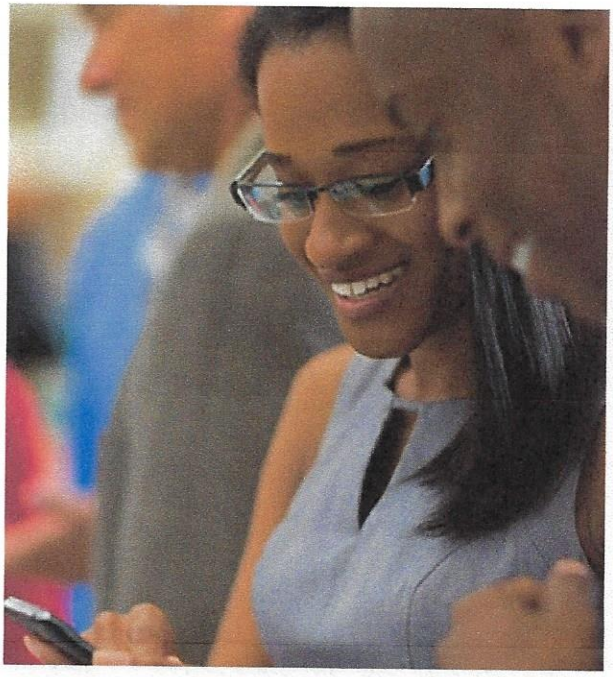
Hi. Your package was delivered Thu, 01/13/2022 at 10:20am.

Delivered to 238 DANBURY RD, WILTON, CT 06897
Received by T.COLE

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775735695063

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Wilton Lynne Vanderslice First Selectwomam 238 Danbury Road WILTON, CT, US, 06897
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/12/2022 06:21 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WILTON, CT, US, 06897
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight



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Sent: Thursday, January 13, 2022 10:24 AM
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Subject: FedEx Shipment 775735718193: Your package has been delivered

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Hi. Your package was delivered Thu, 01/13/2022 at 10:20am.

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Received by T.COLE

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775735718193

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Wilton Michael Wrinn, Dir of Planning 238 Danbury Road WILTON, CT, US, 06897
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/12/2022 06:21 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WILTON, CT, US, 06897
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
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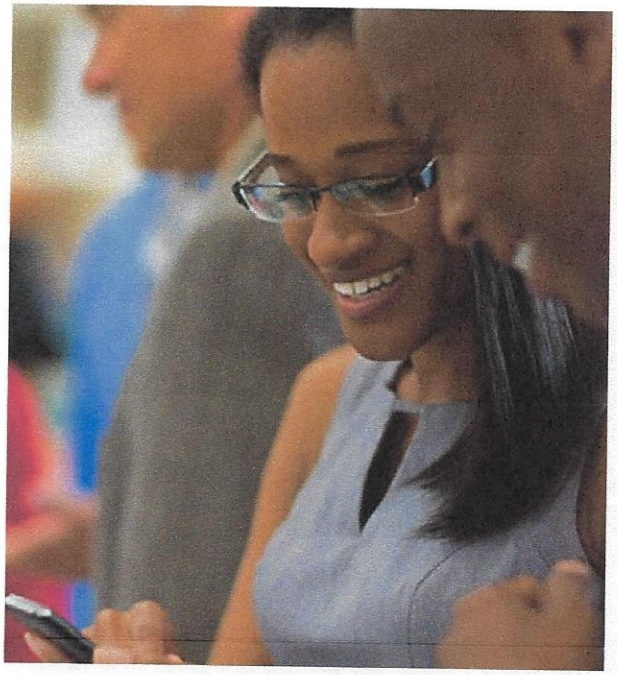

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Date: **November 24, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	**Site Number:**	CTFF119A
	Site Name:	CT03XC369
Crown Castle Designation:	**BU Number:**	806353
	Site Name:	BRG 124 943066
	JDE Job Number:	689444
	Work Order Number:	2041892
	Order Number:	589869 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	102920.010.01
Site Data:	**128 Mather Street, Wilton, Fairfield County, CT** **Latitude *41° 14' 18.7"*, Longitude *-73° 25' 26.9"*** **180 Foot - Self Support Tower**	

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

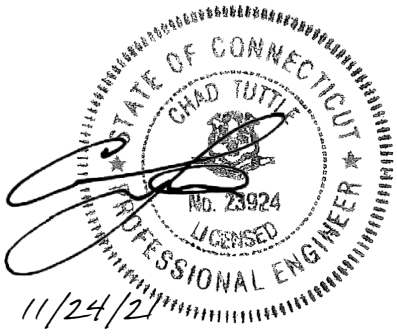
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity – 99.3%**

This analysis utilizes an ultimate 3-second gust wind speed of 116 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: Austin Steward

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



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

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1) INTRODUCTION

This tower is a 180 ft. Self-Support tower designed by FWT INC in May of 1988.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	116 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
143.0	143.0	3	Commscope	VV-65A-R1_TMO	3	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		3	Rfs Celwave	APXVAALL24_43-U-NA20_TMO		
		3	Site Pro1	VFA12-HD Sector Frames		
42.0	44.0	1	Gps	GPS_A	1	1/2
	42.0	1	--	Side Arm Mount [SO 305-1]		
31.0	32.0	1	Gps	GPS_A	1	1/2
	31.0	1	--	Side Arm Mount [SO 701-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
178.0	184.0	1	Rfs Celwave	PD10017	2	7/8
170.0	170.0	3	Fujitsu	TA08025-B604	1	1-3/4
		3	Fujitsu	TA08025-B605		
		3	Jma Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	--	Commscope MTC3975083 (3)		
164.0	164.0	1	--	Sector Mount [SM 702-3](16')	7	1-5/8
	162.0	6	Commscope	JAHH-65B-R3B		
		6	Rfs Celwave	APL868013-42T0		
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Telecom.	CBRS		
		3	Samsung Telecom.	RFV01U-D1A		
		6	Samsung Telecom.	RFV01U-D2A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	Vzw	Sub6 Antenna - VZS01		
154.0	158.0	3	CCI Antennas	DMP65R-BU6D	12 6 2	1-5/8 5/8 3/8
		3	CCI Antennas	OPA65R-BU6D		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Kaelus	DBC0061F1V51-2		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		3	Quintel Tech.	QS66512-2		
		3	Raycap	DC6-48-60-18-8F		
	154.0	1	--	Sector Mount [SM 1303-3]		
145.0	146.0	3	Alcatel Lucent	800 External Notch Filter	--	--
		3	Alcatel Lucent	800MHZ 2X50W RRH		
		3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ		
124.0	131.0	2	Rfs Celwave	1142-2C	2	1/2
	124.0	2	--	Side Arm Mount [SO 303-1]		
104.0	111.0	1	Rfs Celwave	1142-2C	1 1	7/8 1/2
	108.0	1	Rfs Celwave	220-3BN		
	104.0	2	--	Side Arm Mount [SO 303-1]		
93.0	93.0	3	Ericsson	AIR 32 B2a/B66Aa	4 6	1-5/8 1-1/4
		3	Ericsson	ERICSSON AIR 21 B2A B4P		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
		3	Rfs Celwave	APXVAARR24_43-U-NA20		
		1	--	Sector Mount [SM 404-3]		
62.0	65.0	1	Gps	GPS_A	1	1/2
	62.0	1	--	Side Arm Mount [SO 305-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	217757	CCI Sites
Mount Analysis Report	10074362	CCI Sites
Tower Modification Drawing	3290324	CCI Sites
Tower Modification Drawing	801524	CCI Sites
Tower Modification Drawing	2434484	CCI Sites
Post Modification Inspection	2575710	CCI Sites
Tower Modification Drawing	6061656	CCI Sites

Document	Reference	Source
Post Modification Inspection	6515894	CCI Sites
Foundation Drawing	262285	CCI Sites
Geotech Report	262283	CCI Sites
Crown CAD Package	Date: 11/11/2021	CCI Sites

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 168	Leg	P2x0.154	2	-3.058	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-11.432	40.351	28.3	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-52.440	91.364	57.4	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-89.837	128.240	70.1	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-122.006	165.049	73.9 84.6 (b)	Pass
T6	100 - 80	Leg	P5x0.375 (GR)	109	128.153	202.153	63.4	Pass
T7	80 - 60	Leg	P6x0.432	130	-181.448	238.435	76.1 91.5 (b)	Pass
T8	60 - 40	Leg	P6x0.432	145	-210.769	238.435	88.4	Pass
T9	40 - 20	Leg	P6x0.432	160	-238.414	266.933	89.3 91.6 (b)	Pass
T10	20 - 0	Leg	P8x.5	181	-266.722	386.074	69.1	Pass
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.796	15.935	5.0 8.9 (b)	Pass
T2	168 - 160	Diagonal	L2x1 1/2x3/16	29	-2.875	15.935	18.0 34.7 (b)	Pass
T3	160 - 140	Diagonal	L2x1 1/2x3/16	43	-4.392	10.157	43.2 54.5 (b)	Pass
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.916	9.511	51.7 66.9 (b)	Pass
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-5.019	9.472	53.0	Pass
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.760	10.923	52.7 58.5 (b)	Pass
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.799	11.950	56.9 61.8 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.187	15.837	45.4 52.1 (b)	Pass
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.318	12.837	64.8	Pass
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.532	14.867	57.4 61.8 (b)	Pass
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-4.135	23.697	17.4 46.8 (b)	Pass
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.141	10.904	1.3 2.3 (b)	Pass
							Summary	
						Leg (T9)	91.6	Pass
						Diagonal (T4)	66.9	Pass
						Secondary Horizontal (T9)	46.8	Pass
						Top Girt (T1)	2.3	Pass
						Bolt Checks	87.2	Pass
						Rating =	91.6	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	59.0	Pass
1,2	Base Foundation (Structure)	Base	99.3	Pass
1,2	Base Foundation (Soil Interaction)	Base	90.0	Pass

Structure Rating (max from all components) =	99.3%

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

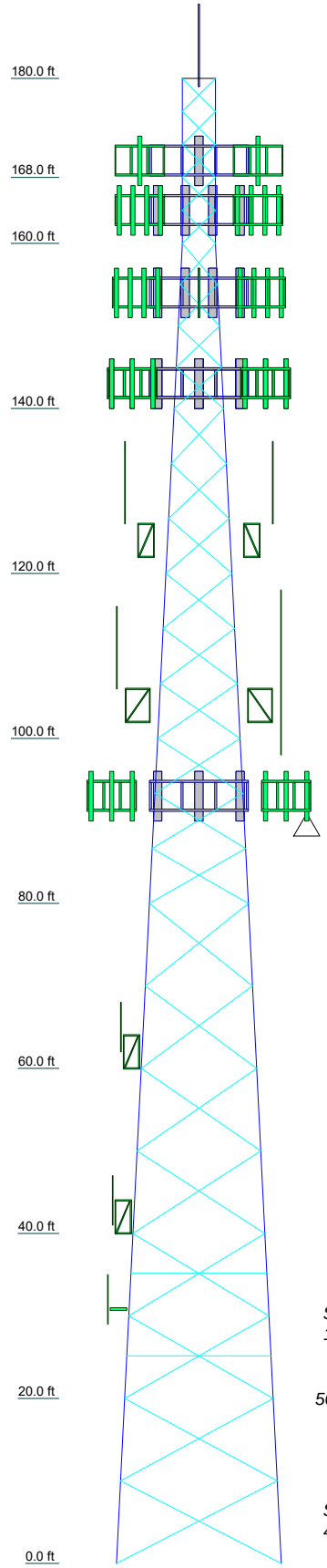
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10										
Legs	P2x0.154	A	P3x0.216 (GR)	P3.5x.318 (GR)	P4x.337 (GR)	P5x0.375 (GR)		P6x0.432		P8x.5										
Leg Grade	A53-B-35																			
Diagonals	L2x1 1/2x3/16			L2x2x3/16	L2 1/2x2x3/16	L2 1/2x2 1/2x3/16	L3x3x3/16	L3 1/2x3x1/4		L3 1/2x3 1/2x1/4										
Diagonal Grade	A36																			
Top Girts	L2x1 1/2x3/16																			
Sec. Horizontals	N.A.				N.A.				L3 1/2x3 1/2x1/4	N.A.										
Face Width (ft)	4			6	8	10	12	14	16	18	20									
# Panels @ (ft)	4 @ 5				9 @ 6.66667				8 @ 10											
Weight (K)	0.4	0.3	1.4	1.9	2.4	3.4	2.7	3.2	3.9	4.5	24.1									



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P2x0.154 (GR)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

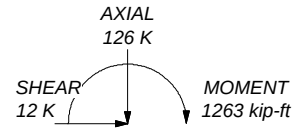
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. Grouted pipe f'c is 7.000 ksi
9. TIA-222-H Annex S
10. TOWER RATING: 91.6%

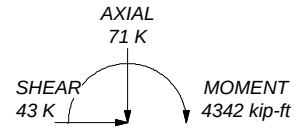
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 274 K
SHEAR: 28 K

UPLIFT: -228 K
SHEAR: 24 K



TORQUE 8 kip-ft
50 mph WIND - 1.000 in ICE



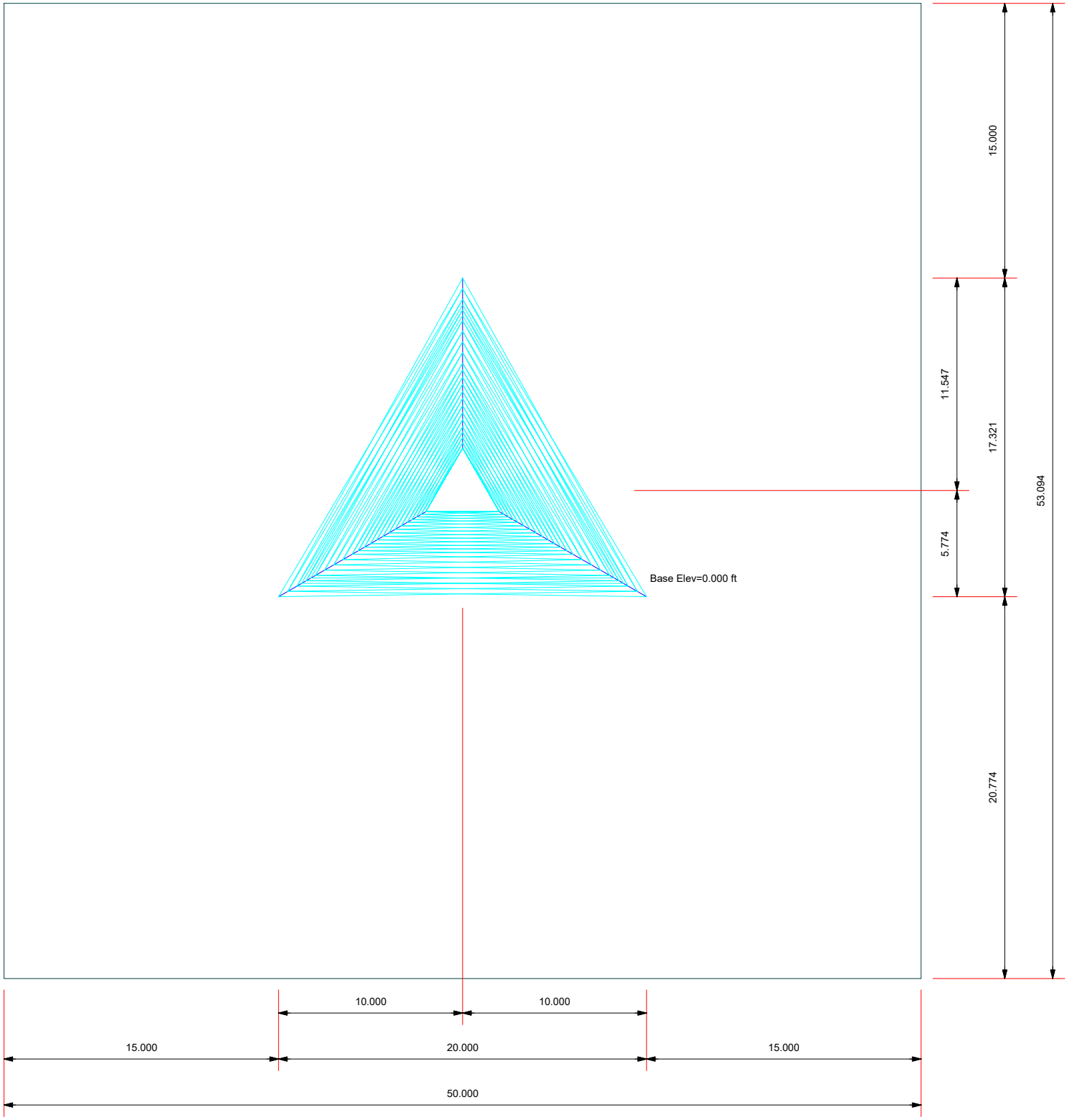
TORQUE 28 kip-ft
REACTIONS - 116 mph WIND

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 102920.010.01 - BRG 124 943066, CT (BU# 806353			
Project:			
Client: Crown Castle	Drawn by: Jayaraj B	App'd:	
Code: TIA-222-H	Date: 11/24/21	Scale: NTS	
Path:		Dwg No. E-1	

Plot Plan

Total Area - 0.06 Acres



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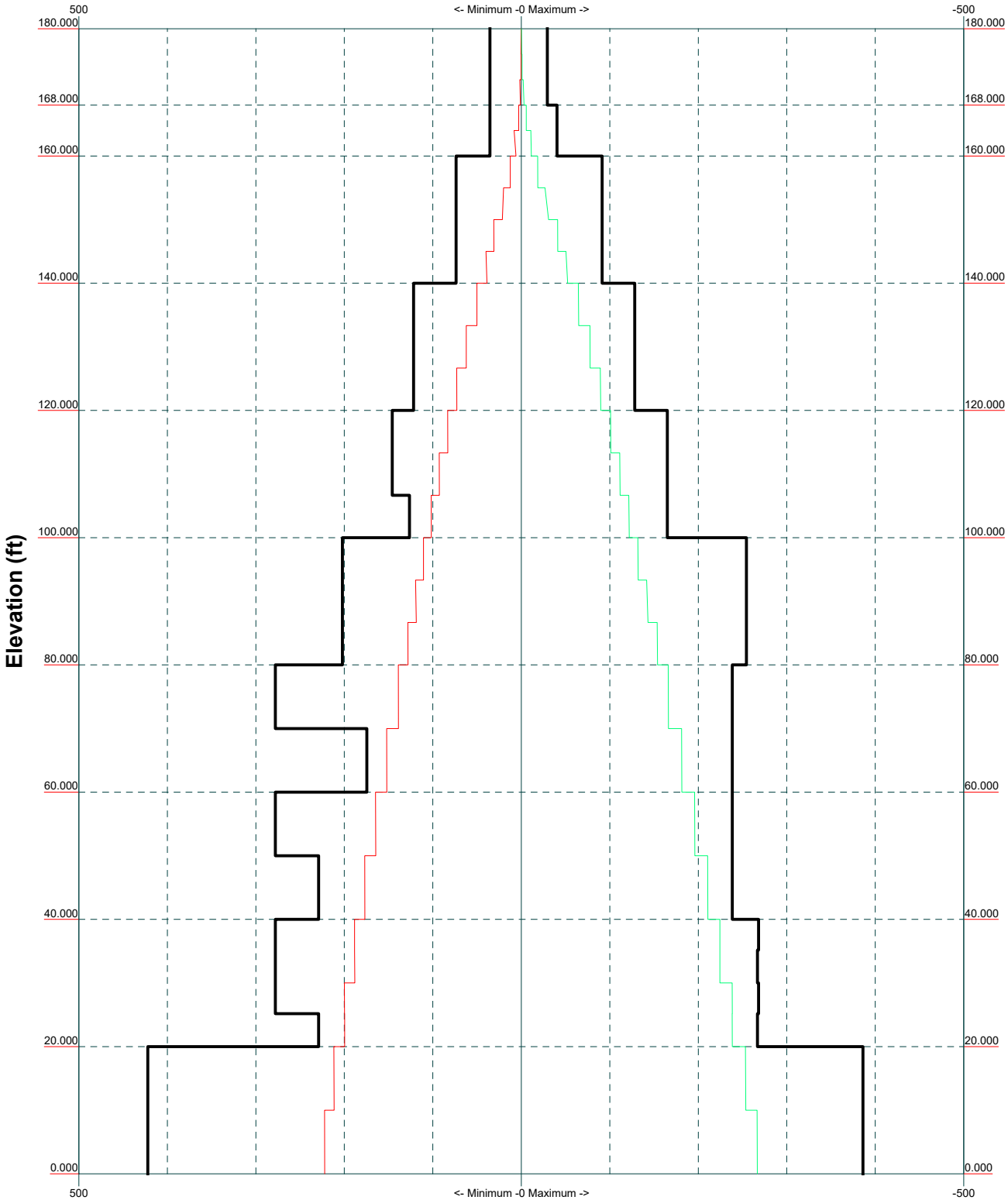
FAX: (918) 295-0265

Job: ***102920.010.01 - BRG 124 943066, CT (BU# 806353***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 11/24/21	Scale: NTS
Path:		Dwg No. E-2

TIA-222-H - 116 mph/50 mph 1.000 in Ice Exposure B

Leg Capacity ——— **Leg Compression (K)**



B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***102920.010.01 - BRG 124 943066, CT (BU# 806353***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 11/24/21	Scale: NTS
Path:		Dwg No. E-3

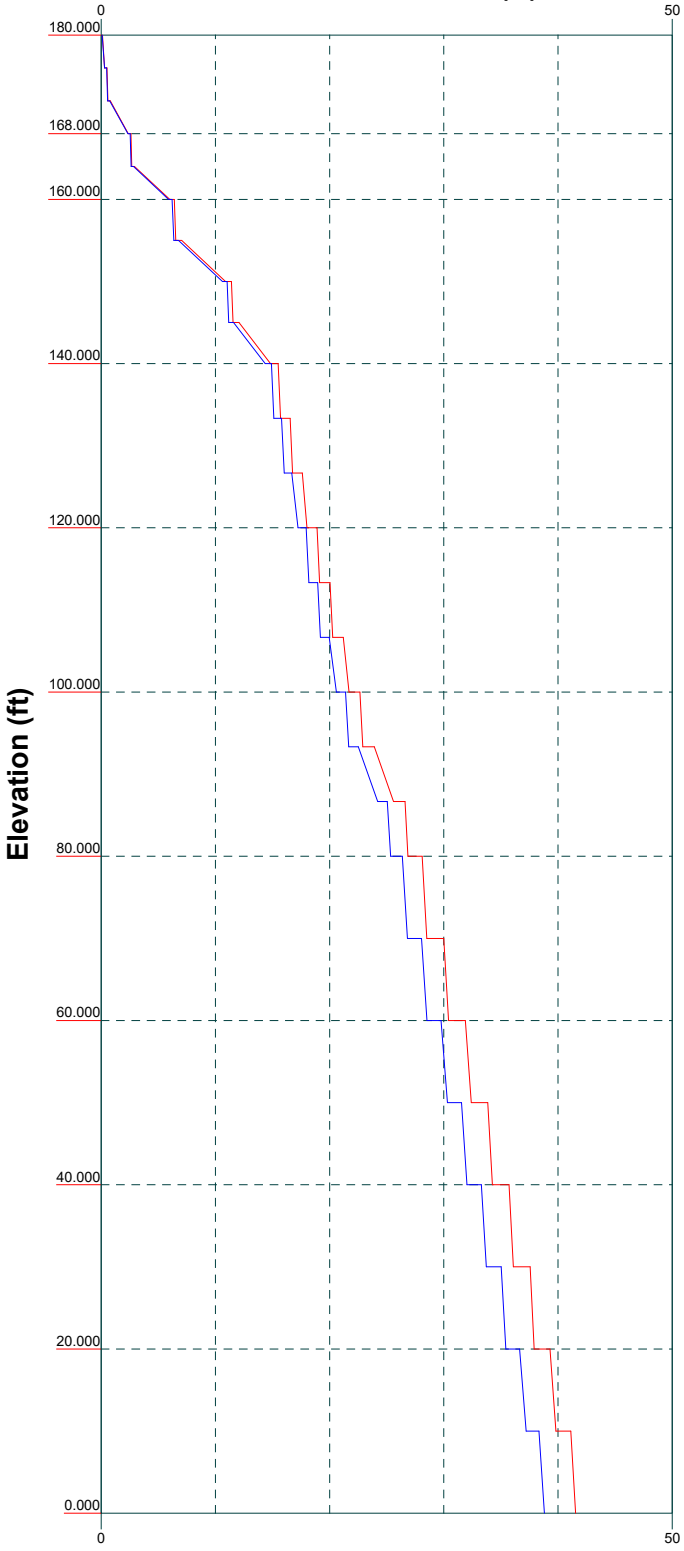
TIA-222-H - 116 mph/50 mph 1.000 in Ice Exposure B

Vx Vz

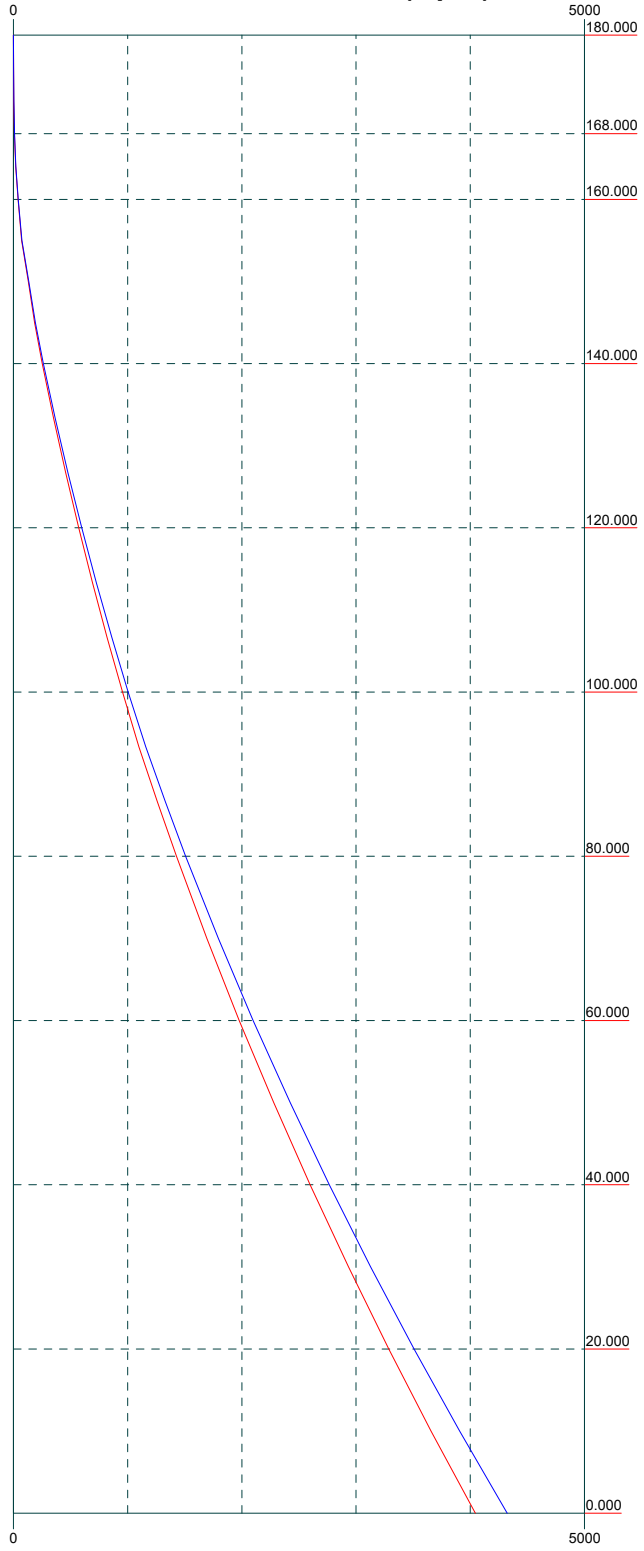
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



B+T Group
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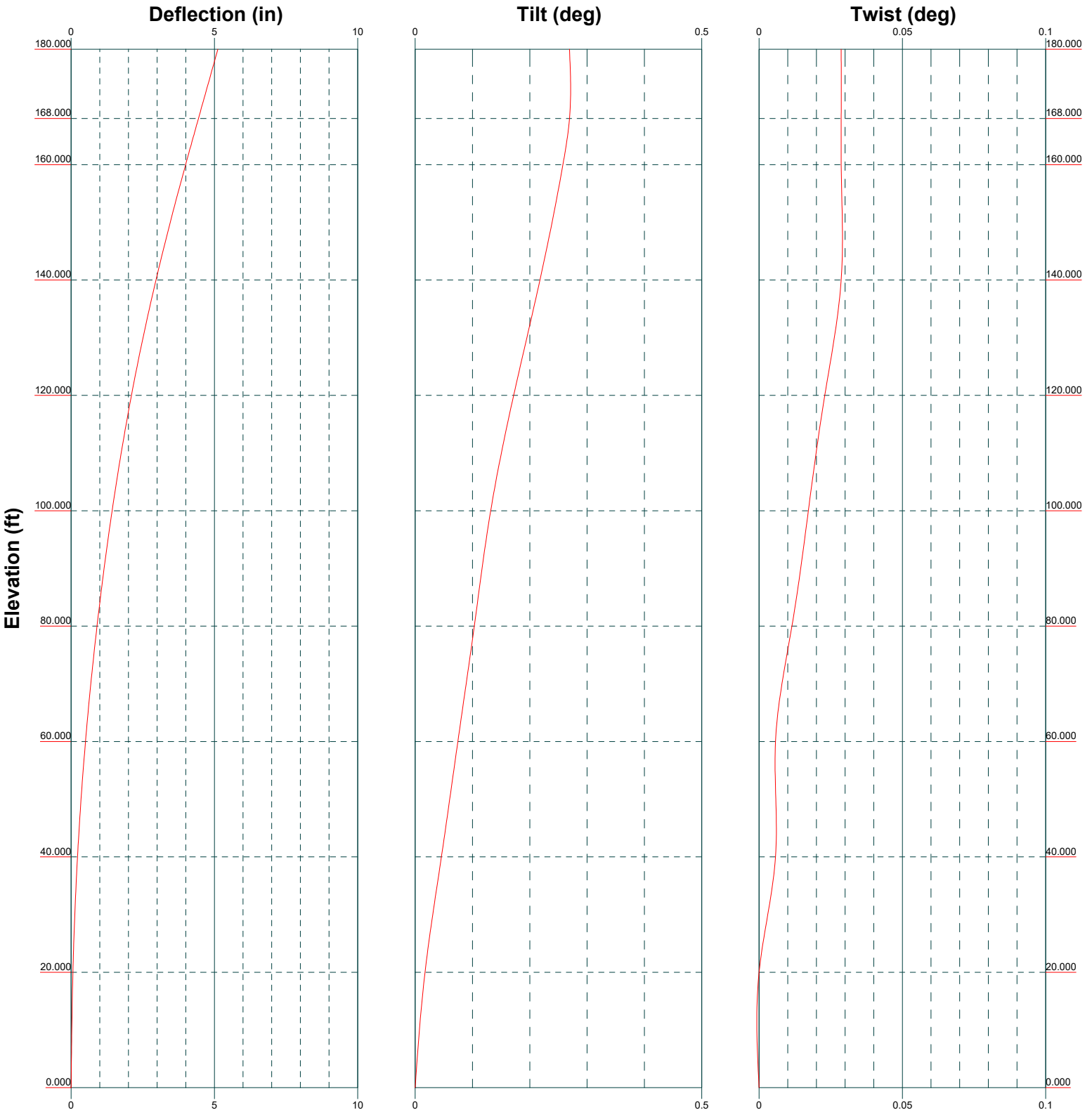
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***102920.010.01 - BRG 124 943066, CT (BU# 806353***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 11/24/21	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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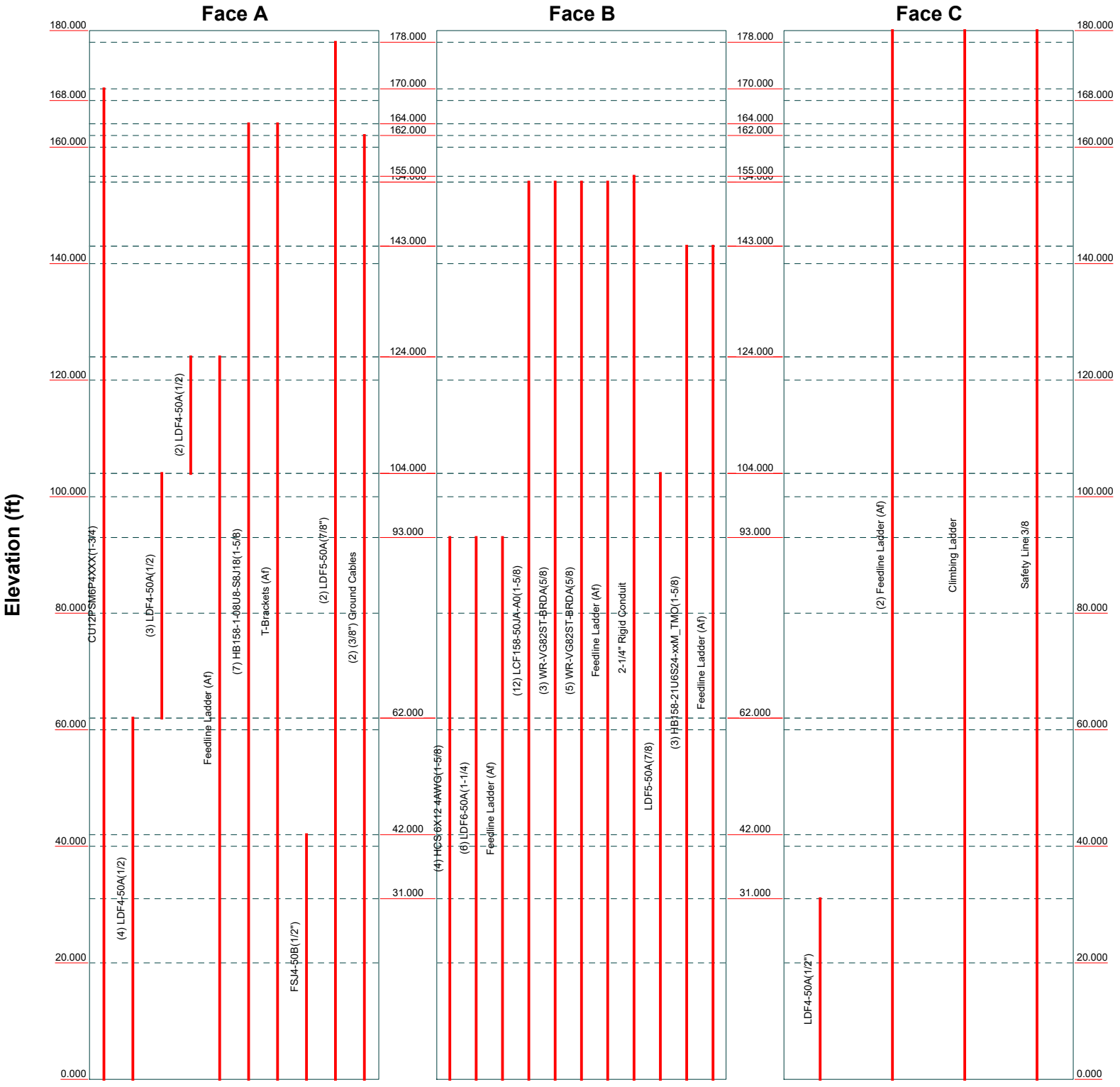
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 102920.010.01 - BRG 124 943066, CT (BU# 806353		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 11/24/21	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



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Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***102920.010.01 - BRG 124 943066, CT (BU# 806353***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 11/24/21	Scale: NTS
Path:		Dwg No. E-7

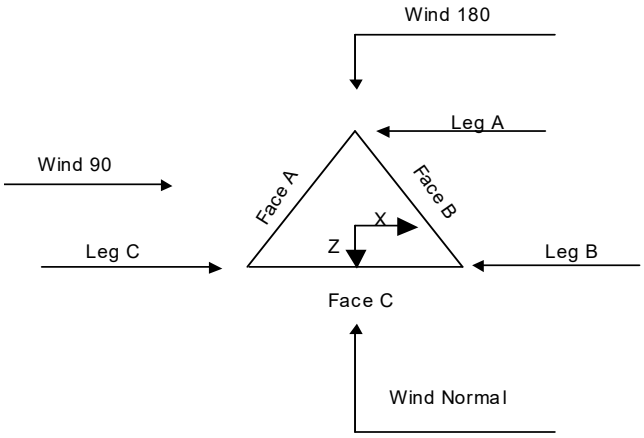
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 4.000 ft at the top and 20.000 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 427.000 ft.
Basic wind speed of 116 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
Grouted pipe f'_c is 7.000 ksi.
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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.000-168.000			4.000	1	12.000
T2	168.000-160.000			4.000	1	8.000
T3	160.000-140.000			4.000	1	20.000
T4	140.000-120.000			6.000	1	20.000
T5	120.000-100.000			8.000	1	20.000
T6	100.000-80.000			10.000	1	20.000
T7	80.000-60.000			12.000	1	20.000
T8	60.000-40.000			14.000	1	20.000
T9	40.000-20.000			16.000	1	20.000
T10	20.000-0.000			18.000	1	20.000

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.000-168.000	4.000	X Brace	No	No	0.000	0.000
T2	168.000-160.000	4.000	X Brace	No	No	0.000	0.000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	160.000-140.000	5.000	X Brace	No	No	0.000	0.000
T4	140.000-120.000	6.667	X Brace	No	No	0.000	0.000
T5	120.000-100.000	6.667	X Brace	No	No	0.000	0.000
T6	100.000-80.000	6.667	X Brace	No	No	0.000	0.000
T7	80.000-60.000	10.000	X Brace	No	No	0.000	0.000
T8	60.000-40.000	10.000	X Brace	No	No	0.000	0.000
T9	40.000-20.000	10.000	X Brace	No	Yes	0.000	0.000
T10	20.000-0.000	10.000	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.000-168.000	Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T2 168.000-160.000	Grouted Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T3 160.000-140.000	Grouted Pipe	P3x0.216	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T4 140.000-120.000	Grouted Pipe	P3.5x.318	A53-B-35 (35 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 120.000-100.000	Grouted Pipe	P4x.337	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 100.000-80.000	Grouted Pipe	P5x0.375	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 80.000-60.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 60.000-40.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T9 40.000-20.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T10 20.000-0.000	Pipe	P8x.5	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.000-168.000	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T9 40.000-20.000	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.000-168.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 168.000-160.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T3 160.000-140.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T4 140.000-120.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T5 120.000-100.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T6 100.000-80.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T7 80.000-60.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T8 60.000-40.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T9 40.000-20.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T10 20.000-0.000	0.000	0.375	A36 (36 ksi)	1.05	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.000-168.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 168.000-160.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3	Yes	No	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
160.000-140.000				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1
140.000-120.000				1	1	1	1	1	1	1
T5	Yes	No	1	1	1	1	1	1	1	1
120.000-100.000				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
100.000-80.000				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
80.000-60.000				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
60.000-40.000				1	1	1	1	1	1	1
T9	No	No	1	1	1	1	1	1	1	1
40.000-20.000				1	1	1	1	1	0.5	1
T10	Yes	No	1	1	1	1	1	1	1	1
20.000-0.000				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
180.000-168.000														
T2	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
168.000-160.000														
T3	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
160.000-140.000														
T4	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
140.000-120.000														
T5	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
120.000-100.000														
T6	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
100.000-80.000														
T7	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
80.000-60.000														
T8	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
60.000-40.000														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	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
T9 40.000-20.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.000-0.000	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

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
T1 180.000-168.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 168.000-160.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 160.000-140.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 140.000-120.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 120.000-100.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 100.000-80.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 80.000-60.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 60.000-40.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 40.000-20.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 20.000-0.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	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 180.000-168.000	Flange	0.000 A325N	0	0.625 A325N	1	0.625 A325N	1	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0

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.
T2 168.000-160.000	Flange	0.625 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T3 160.000-140.000	Flange	0.625 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T4 140.000-120.000	Flange	0.750 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T5 120.000-100.000	Flange	0.750 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T6 100.000-80.000	Flange	0.875 A490N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T7 80.000-60.000	Flange	0.875 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T8 60.000-40.000	Flange	1.000 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0
T9 40.000-20.000	Flange	1.000 A325N	4	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.500 A325N	1
T10 20.000-0.000	Flange	1.500 A36	0	0.625 A325N	1	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0

Grouted Pipe Properties

Size	F_y ksi	A_s in^2	A_c in^2	Wt plf	E_c ksi	E_m ksi	F_{ym} ksi
P2x0.154 (GR)	35.000	1.075	3.356	10.647	4768.962	40914.218	53.581
P3x0.216 (GR)	35.000	2.228	7.393	22.984	4768.962	41656.327	54.738
P3.5x.318 (GR)	35.000	3.678	8.888	31.033	4768.962	38218.387	49.377
P4x.337 (GR)	35.000	4.407	11.497	38.949	4768.962	38951.934	50.521
P5x0.375 (GR)	35.000	6.112	18.194	58.701	4768.962	40356.758	52.712

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	31.000 - 0.000	-1.000	-0.32	1	1	0.850 0.750	0.630		0.000
Feedline Ladder (Af) *	C	No	No	Af (CaAa)	180.000 - 0.000	-1.000	-0.33	2	1	3.000	3.000		0.008
Climbing Ladder	C	No	No	Af (CaAa)	180.000 - 0.000	0.000	0.025	1	1	3.000	3.000		0.008
Safety Line 3/8 *	C	No	No	Ar (CaAa)	180.000 - 0.000	0.000	0.025	1	1	0.375	0.375		0.000

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
HCS 6X12 4AWG(1-5/8)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.05	4	2	0.850 0.750	1.660		0.002
LDF6-50A(1-1/4)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.15	6	6	0.850 0.750	1.550		0.001
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	93.000 - 0.000	0.000	0.1	1	1	3.000	3.000		0.008
LCF158-50JA-A0(1-5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.3	12	6	0.850 0.750	1.980		0.001
WR-VG82ST-BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.365	3	2	0.500	0.645		0.000
WR-VG82ST-BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	5.500	0.3	5	5	1.500 1.000	0.645		0.000
Feedline Ladder (Af)	B	No	No	Af (CaAa)	154.000 - 0.000	0.000	0.32	1	1	3.000	3.000		0.008
2-1/4" Rigid Conduit *	B	No	No	Ar (CaAa)	155.000 - 0.000	0.000	0.385	1	1	0.850 0.750	2.250		0.003
LDF5-50A(7/8) *	B	No	No	Ar (CaAa)	104.000 - 0.000	0.000	0.345	1	1	0.850 0.750	1.090		0.000
CU12PSM6P4XXX(1-3/4)	A	No	No	Ar (CaAa)	170.000 - 0.000	0.000	-0.09	1	1	0.850 0.750	1.750		0.003
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	62.000 - 0.000	0.000	-0.1	4	2	0.500	0.630		0.000
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	104.000 - 62.000	0.000	-0.1	3	2	0.500	0.630		0.000
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	124.000 - 104.000	0.000	-0.1	2	2	0.500	0.630		0.000
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	124.000 - 0.000	0.000	0	1	1	3.000	3.000		0.008
HB158-1-08U8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	164.000 - 0.000	0.000	0.1	7	4	0.850 0.750	1.980		0.001
T-Brackets (Af) *	A	No	No	Af (CaAa)	164.000 - 0.000	0.000	0.1	1	1	1.000	1.000		0.008
FSJ4-50B(1/2") *	A	No	No	Ar (CaAa)	42.000 - 0.000	0.000	0.03	1	1	0.850 0.750	0.520		0.000
HB158-21U6S24-xxM_TMO (1-5/8)	B	No	No	Ar (CaAa)	143.000 - 0.000	0.000	-0.4	3	3	0.850 0.750	1.996		0.003
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	143.000 - 0.000	0.000	-0.4	1	1	3.000	3.000		0.008
LDF5-50A(7/8") *	A	No	No	Ar (CaAa)	178.000 - 0.000	5.500	0.1	2	2	0.850 0.750	1.090		0.000
(3/8") Ground Cables *	A	No	No	Ar (CaAa)	162.000 - 0.000	0.000	-0.15	2	2	0.500	0.440		0.000

Feed Line/Linear Appurtenances - Entered As Area

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

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.000-168.000	A	0.000	0.000	2.530	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	18.450	0.000	0.305
T2	168.000-160.000	A	0.000	0.000	9.531	0.000	0.097
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	12.300	0.000	0.203
T3	160.000-140.000	A	0.000	0.000	40.673	0.000	0.421
		B	0.000	0.000	54.159	0.000	0.379
		C	0.000	0.000	30.750	0.000	0.508
T4	140.000-120.000	A	0.000	0.000	43.177	0.000	0.456
		B	0.000	0.000	94.316	0.000	0.787
		C	0.000	0.000	30.750	0.000	0.508
T5	120.000-100.000	A	0.000	0.000	53.445	0.000	0.595
		B	0.000	0.000	94.752	0.000	0.788
		C	0.000	0.000	30.750	0.000	0.508
T6	100.000-80.000	A	0.000	0.000	54.453	0.000	0.598
		B	0.000	0.000	123.718	0.000	1.075
		C	0.000	0.000	30.750	0.000	0.508
T7	80.000-60.000	A	0.000	0.000	54.579	0.000	0.598
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	30.750	0.000	0.508
T8	60.000-40.000	A	0.000	0.000	55.817	0.000	0.601
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	30.750	0.000	0.508
T9	40.000-20.000	A	0.000	0.000	56.753	0.000	0.604
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	31.443	0.000	0.510
T10	20.000-0.000	A	0.000	0.000	56.753	0.000	0.604
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	32.010	0.000	0.511

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.000-168.000	A	1.004	0.000	0.000	8.143	0.000	0.064
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	28.086	0.000	0.547
T2	168.000-160.000	A	0.998	0.000	0.000	18.477	0.000	0.255
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.686	0.000	0.364
T3	160.000-140.000	A	0.989	0.000	0.000	75.099	0.000	1.070
		B		0.000	0.000	85.365	0.000	1.208

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	46.573	0.000	0.905
T4	140.000-120.000	A	0.975	0.000	0.000	79.736	0.000	1.131
		B		0.000	0.000	152.305	0.000	2.201
		C		0.000	0.000	46.348	0.000	0.897
T5	120.000-100.000	A	0.959	0.000	0.000	99.617	0.000	1.403
		B		0.000	0.000	152.895	0.000	2.191
		C		0.000	0.000	46.090	0.000	0.889
T6	100.000-80.000	A	0.940	0.000	0.000	100.316	0.000	1.403
		B		0.000	0.000	205.322	0.000	2.887
		C		0.000	0.000	45.785	0.000	0.880
T7	80.000-60.000	A	0.916	0.000	0.000	99.390	0.000	1.384
		B		0.000	0.000	230.016	0.000	3.208
		C		0.000	0.000	45.412	0.000	0.868
T8	60.000-40.000	A	0.886	0.000	0.000	98.646	0.000	1.374
		B		0.000	0.000	228.229	0.000	3.151
		C		0.000	0.000	44.927	0.000	0.853
T9	40.000-20.000	A	0.842	0.000	0.000	100.847	0.000	1.365
		B		0.000	0.000	225.629	0.000	3.070
		C		0.000	0.000	46.766	0.000	0.850
T10	20.000-0.000	A	0.754	0.000	0.000	97.027	0.000	1.289
		B		0.000	0.000	220.477	0.000	2.913
		C		0.000	0.000	47.097	0.000	0.819

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.000-168.000	0.618	4.016	0.373	3.670
T2	168.000-160.000	-1.194	1.804	-1.696	1.557
T3	160.000-140.000	3.850	1.266	3.374	1.233
T4	140.000-120.000	6.505	-1.128	5.977	-1.372
T5	120.000-100.000	6.036	-1.576	5.335	-1.896
T6	100.000-80.000	9.593	-2.072	9.141	-2.271
T7	80.000-60.000	12.227	-2.534	11.775	-2.741
T8	60.000-40.000	12.771	-2.700	12.695	-2.971
T9	40.000-20.000	12.151	-2.598	12.360	-2.910
T10	20.000-0.000	14.720	-2.923	14.545	-3.041

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	4	Feedline Ladder (Af)	168.00 - 180.00	0.6000	0.5970
T1	6	Climbing Ladder	168.00 - 180.00	0.6000	0.5970
T1	7	Safety Line 3/8	168.00 - 180.00	0.6000	0.5970
T1	23	CU12PSM6P4XXX(1-3/4)	168.00 - 170.00	0.6000	0.5970

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	39	LDF5-50A(7/8")	168.00 - 178.00	0.6000	0.5970
T2	4	Feedline Ladder (Af)	160.00 - 168.00	0.6000	0.6000
T2	6	Climbing Ladder	160.00 - 168.00	0.6000	0.6000
T2	7	Safety Line 3/8	160.00 - 168.00	0.6000	0.6000
T2	23	CU12PSM6P4XXX(1-3/4)	160.00 - 168.00	0.6000	0.6000
T2	30	HB158-1-08U8-S8J18(1-5/8)	160.00 - 164.00	0.6000	0.6000
T2	31	T-Brackets (Af)	160.00 - 164.00	0.6000	0.6000
T2	39	LDF5-50A(7/8")	160.00 - 168.00	0.6000	0.6000
T2	41	(3/8") Ground Cables	160.00 - 162.00	0.6000	0.6000
T3	4	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	6	Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T3	7	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T3	13	LCF158-50JA-A0(1-5/8)	140.00 - 154.00	0.6000	0.6000
T3	14	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	16	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	140.00 - 154.00	0.6000	0.6000
T3	19	2-1/4" Rigid Conduit	140.00 - 155.00	0.6000	0.6000
T3	23	CU12PSM6P4XXX(1-3/4)	140.00 - 160.00	0.6000	0.6000
T3	30	HB158-1-08U8-S8J18(1-5/8)	140.00 - 160.00	0.6000	0.6000
T3	31	T-Brackets (Af)	140.00 - 160.00	0.6000	0.6000
T3	36	HB158-21U6S24-xxM_TMO (1-5/8)	140.00 - 143.00	0.6000	0.6000
T3	37	Feedline Ladder (Af)	140.00 - 143.00	0.6000	0.6000
T3	39	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.6000
T3	41	(3/8") Ground Cables	140.00 - 160.00	0.6000	0.6000
T4	4	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	6	Climbing Ladder	120.00 - 140.00	0.6000	0.6000
T4	7	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T4	13	LCF158-50JA-A0(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	14	WR-VG82ST-BRDA(5/8)	120.00 - 140.00	0.6000	0.6000
T4	16	WR-VG82ST-BRDA(5/8)	120.00 - 140.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	19	2-1/4" Rigid Conduit	120.00 - 140.00	0.6000	0.6000
T4	23	CU12PSM6P4XXX(1-3/4)	120.00 - 140.00	0.6000	0.6000
T4	26	LDF4-50A(1/2)	120.00 - 124.00	0.6000	0.6000
T4	27	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T4	30	HB158-1-08U8-S8J18(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	31	T-Brackets (Af)	120.00 - 140.00	0.6000	0.6000
T4	36	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	37	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	39	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.6000
T4	41	(3/8") Ground Cables	120.00 - 140.00	0.6000	0.6000
T5	4	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	6	Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T5	7	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T5	13	LCF158-50JA-A0(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	14	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	16	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	18	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	19	2-1/4" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T5	21	LDF5-50A(7/8)	100.00 - 104.00	0.6000	0.6000
T5	23	CU12PSM6P4XXX(1-3/4)	100.00 - 120.00	0.6000	0.6000
T5	25	LDF4-50A(1/2)	100.00 - 104.00	0.6000	0.6000
T5	26	LDF4-50A(1/2)	104.00 - 120.00	0.6000	0.6000
T5	27	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	30	HB158-1-08U8-S8J18(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	31	T-Brackets (Af)	100.00 - 120.00	0.6000	0.6000
T5	36	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	37	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	39	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T5	41	(3/8") Ground Cables	100.00 - 120.00	0.6000	0.6000
T6	4	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	6	Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T6	7	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T6	9	HCS 6X12 4AWG(1-5/8)	80.00 - 93.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	10	LDF6-50A(1-1/4)	80.00 - 93.00	0.6000	0.6000
T6	11	Feedline Ladder (Af)	80.00 - 93.00	0.6000	0.6000
T6	13	LCF158-50JA-A0(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	14	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	16	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	18	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	19	2-1/4" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T6	21	LDF5-50A(7/8)	80.00 - 100.00	0.6000	0.6000
T6	23	CU12PSM6P4XXX(1-3/4)	80.00 - 100.00	0.6000	0.6000
T6	25	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	27	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	30	HB158-1-08U8-S8J18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	31	T-Brackets (Af)	80.00 - 100.00	0.6000	0.6000
T6	36	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	37	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	39	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T6	41	(3/8") Ground Cables	80.00 - 100.00	0.6000	0.6000
T7	4	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	6	Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T7	7	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T7	9	HCS 6X12 4AWG(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	10	LDF6-50A(1-1/4)	60.00 - 80.00	0.6000	0.6000
T7	11	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	13	LCF158-50JA-A0(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	14	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	16	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	19	2-1/4" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T7	21	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T7	23	CU12PSM6P4XXX(1-3/4)	60.00 - 80.00	0.6000	0.6000
T7	24	LDF4-50A(1/2)	60.00 - 62.00	0.6000	0.6000
T7	25	LDF4-50A(1/2)	62.00 - 80.00	0.6000	0.6000
T7	27	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	30	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	31	T-Brackets (Af)	60.00 - 80.00	0.6000	0.6000
T7	36	HB158-21U6S24-xxM_TMO (1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	37	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	39	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T7	41	(3/8") Ground Cables	60.00 - 80.00	0.6000	0.6000
T8	4	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	6	Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T8	7	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T8	9	HCS 6X12 4AWG(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	10	LDF6-50A(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	11	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	13	LCF158-50JA-A0(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	14	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	16	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	18	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	19	2-1/4" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T8	21	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T8	23	CU12PSM6P4XXX(1-3/4)	40.00 - 60.00	0.6000	0.6000
T8	24	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T8	27	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	30	HB158-1-08U8-S8J18(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	31	T-Brackets (Af)	40.00 - 60.00	0.6000	0.6000
T8	33	FSJ4-50B(1/2")	40.00 - 42.00	0.6000	0.6000
T8	36	HB158-21U6S24-xxM_TMO (1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	37	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	39	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T8	41	(3/8") Ground Cables	40.00 - 60.00	0.6000	0.6000
T9	3	LDF4-50A(1/2")	20.00 - 31.00	0.6000	0.6000
T9	4	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	6	Climbing Ladder	20.00 - 40.00	0.6000	0.6000
T9	7	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T9	9	HCS 6X12 4AWG(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	10	LDF6-50A(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	11	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	13	LCF158-50JA-A0(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	14	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	16	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	18	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	19	2-1/4" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T9	21	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T9	23	CU12PSM6P4XXX(1-3/4)	20.00 - 40.00	0.6000	0.6000
T9	24	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	27	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	30	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	31	T-Brackets (Af)	20.00 - 40.00	0.6000	0.6000
T9	33	FSJ4-50B(1/2")	20.00 - 40.00	0.6000	0.6000
T9	36	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	37	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	39	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T9	41	(3/8") Ground Cables	20.00 - 40.00	0.6000	0.6000
T10	3	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	4	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	6	Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T10	7	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T10	9	HCS 6X12 4AWG(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	10	LDF6-50A(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	11	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	13	LCF158-50JA-A0(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	14	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	16	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	18	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	19	2-1/4" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T10	21	LDF5-50A(7/8)	0.00 - 20.00	0.6000	0.6000
T10	23	CU12PSM6P4XXX(1-3/4)	0.00 - 20.00	0.6000	0.6000
T10	24	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	27	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	30	HB158-1-08U8-S8J18(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	31	T-Brackets (Af)	0.00 - 20.00	0.6000	0.6000
T10	33	FSJ4-50B(1/2")	0.00 - 20.00	0.6000	0.6000
T10	36	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	37	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	39	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T10	41	(3/8") Ground Cables	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PD10017	A	From Leg	0.500 0.000 6.000	0.000	178.000	No Ice 1/2" Ice 1" Ice	4.114 5.641 7.185	4.114 5.641 7.185	0.025 0.055 0.095
*									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	2.012 2.189 2.373	1.168 1.311 1.461	0.022 0.040 0.060
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	170.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
Commscope MTC3975083 (3)	C	None		0.000	170.000	No Ice 1/2" Ice 1" Ice	23.850 34.120 44.390	23.850 34.120 44.390	1.260 1.803 2.345
* *									
(2) APL868013-42T0 w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	2.630 3.070 3.530	4.130 4.600 5.090	0.030 0.064 0.106
(2) APL868013-42T0 w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	2.630 3.070 3.530	4.130 4.600 5.090	0.030 0.064 0.106
(2) APL868013-42T0 w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	2.630 3.070 3.530	4.130 4.600 5.090	0.030 0.064 0.106

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	5.500 5.970 6.450	4.380 4.840 5.300	0.096 0.169 0.254
RFV01U-D1A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D1A	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D1A	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.250 1.393 1.543	0.084 0.103 0.124
RFV01U-D2A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.013 1.145 1.284	0.070 0.087 0.106
(2) RFV01U-D2A	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.013 1.145 1.284	0.070 0.087 0.106
DB-T1-6Z-8AB-0Z	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	4.800 5.070 5.348	2.000 2.193 2.393	0.044 0.080 0.120
CBRS w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.450 1.670 1.900	0.990 1.180 1.390	0.032 0.048 0.068
CBRS w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.450 1.670 1.900	0.990 1.180 1.390	0.032 0.048 0.068
CBRS w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.450 1.670 1.900	0.990 1.180 1.390	0.032 0.048 0.068
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	4.915 5.264 5.623	2.687 3.151 3.631	0.101 0.141 0.186
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	4.915 5.264 5.623	2.687 3.151 3.631	0.101 0.141 0.186
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	4.915 5.264 5.623	2.687 3.151 3.631	0.101 0.141 0.186
RFV01U-D2A	A	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.013 1.145 1.284	0.070 0.087 0.106
(2) RFV01U-D2A	C	From Leg	4.000 0.000 -2.000	0.000	164.000	No Ice 1/2" Ice 1" Ice	1.875 2.045 2.223	1.013 1.145 1.284	0.070 0.087 0.106
Sector Mount [SM 702-3](16')	C	None		0.000	164.000	No Ice 1/2" Ice 1" Ice	47.865 62.031 76.025	47.865 62.031 76.025	1.909 2.805 3.959
* 7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	5.746 6.179	4.254 5.014	0.055 0.103

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			4.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			4.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			4.000			1" Ice	6.607	5.711	0.157
QS66512-2 w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.137
			0.000			1/2" Ice	4.420	4.570	0.206
			4.000			1" Ice	4.820	4.970	0.287
QS66512-2 w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.137
			0.000			1/2" Ice	4.420	4.570	0.206
			4.000			1" Ice	4.820	4.970	0.287
QS66512-2 w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.137
			0.000			1/2" Ice	4.420	4.570	0.206
			4.000			1" Ice	4.820	4.970	0.287
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	12.250	6.050	0.089
			0.000			1/2" Ice	13.000	6.710	0.176
			4.000			1" Ice	13.760	7.390	0.275
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	12.250	6.050	0.089
			0.000			1/2" Ice	13.000	6.710	0.176
			4.000			1" Ice	13.760	7.390	0.275
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	12.250	6.050	0.089
			0.000			1/2" Ice	13.000	6.710	0.176
			4.000			1" Ice	13.760	7.390	0.275
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	11.960	5.970	0.115
			0.000			1/2" Ice	12.700	6.630	0.201
			4.000			1" Ice	13.460	7.300	0.298
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	11.960	5.970	0.115
			0.000			1/2" Ice	12.700	6.630	0.201
			4.000			1" Ice	13.460	7.300	0.298
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	11.960	5.970	0.115
			0.000			1/2" Ice	12.700	6.630	0.201
			4.000			1" Ice	13.460	7.300	0.298
(2) LGP21401	A	From Leg	4.000	0.000	154.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			4.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	154.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			4.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	154.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			4.000			1" Ice	1.381	0.348	0.030
RRUS 32 B30	A	From Leg	4.000	0.000	154.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			4.000			1" Ice	3.138	1.945	0.104
RRUS 32 B30	B	From Leg	4.000	0.000	154.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			4.000			1" Ice	3.138	1.945	0.104
RRUS 32 B30	C	From Leg	4.000	0.000	154.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			4.000			1" Ice	3.138	1.945	0.104
RRUS 32 B2	A	From Leg	4.000	0.000	154.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074
			4.000			1" Ice	3.182	2.049	0.098
RRUS 32 B2	B	From Leg	4.000	0.000	154.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			4.000			1" Ice	3.182	2.049	0.098
RRUS 32 B2	C	From Leg	4.000	0.000	154.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074
			4.000			1" Ice	3.182	2.049	0.098
DBC0061F1V51-2	A	From Leg	4.000	0.000	154.000	No Ice	0.433	0.413	0.025
			0.000			1/2" Ice	0.518	0.496	0.031
			4.000			1" Ice	0.609	0.586	0.038
DBC0061F1V51-2	B	From Leg	4.000	0.000	154.000	No Ice	0.433	0.413	0.025
			0.000			1/2" Ice	0.518	0.496	0.031
			4.000			1" Ice	0.609	0.586	0.038
DBC0061F1V51-2	C	From Leg	4.000	0.000	154.000	No Ice	0.433	0.413	0.025
			0.000			1/2" Ice	0.518	0.496	0.031
			4.000			1" Ice	0.609	0.586	0.038
RRUS 4478 B14	A	From Leg	4.000	0.000	154.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			4.000			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	B	From Leg	4.000	0.000	154.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			4.000			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	C	From Leg	4.000	0.000	154.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			4.000			1" Ice	2.190	1.342	0.094
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	154.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			4.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	154.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			4.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	154.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			4.000			1" Ice	2.328	1.727	0.111
(3) DC6-48-60-18-8F	A	From Leg	4.000	0.000	154.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			4.000			1" Ice	2.105	2.105	0.080
(2) 5' x 2" Pipe Mount	A	From Leg	4.000	0.000	154.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
(2) 5' x 2" Pipe Mount	B	From Leg	4.000	0.000	154.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
(2) 5' x 2" Pipe Mount	C	From Leg	4.000	0.000	154.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			0.000			1" Ice	1.807	1.807	0.040
12.5' x 2.375" Horizontal Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			0.000			1" Ice	5.550	0.100	0.981
12.5' x 2.375" Horizontal Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			0.000			1" Ice	5.550	0.100	0.981
12.5' x 2.375" Horizontal Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			0.000			1" Ice	5.550	0.100	0.981
Sector Mount [SM 1303-3]	C	None		0.000	154.000	No Ice	38.780	38.780	1.104
						1/2" Ice	46.780	46.780	1.763
						1" Ice	54.730	54.730	2.567
Pipe Mount [PM 601-3]	C	None		0.000	154.000	No Ice	3.170	3.170	0.195
						1/2" Ice	3.790	3.790	0.232

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	4.420	4.420	0.279
*									
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.322 2.527 2.739	2.238 2.441 2.651	0.060 0.083 0.110
800MHZ 2X50W RRH	A	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ 2X50W RRH	B	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ 2X50W RRH	C	From Leg	1.000 0.000 1.000	0.000	145.000	No Ice 1/2" Ice 1" Ice	2.134 2.320 2.512	1.773 1.946 2.127	0.053 0.074 0.098
*									
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	14.690 15.460 16.230	6.870 7.550 8.250	0.183 0.311 0.453
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	4.460 4.910 5.360	2.690 3.100 3.520	0.054 0.097 0.149
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	4.460 4.910 5.360	2.690 3.100 3.520	0.054 0.097 0.149
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	4.460 4.910 5.360	2.690 3.100 3.520	0.054 0.097 0.149
AIR6449 B41_T-MOBILE	A	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	5.270 5.700 6.140	2.030 2.360 2.700	0.115 0.154 0.197
AIR6449 B41_T-MOBILE	B	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	5.270 5.700 6.140	2.030 2.360 2.700	0.115 0.154 0.197
AIR6449 B41_T-MOBILE	C	From Leg	4.000 0.000 0.000	0.000	143.000	No Ice 1/2" Ice 1" Ice	5.270 5.700 6.140	2.030 2.360 2.700	0.115 0.154 0.197

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Radio 4480_TMOV2	A	From Leg	4.000	0.000	0.000	143.000	No Ice	2.878	1.397	0.081
			0.000				1/2" Ice	3.091	1.558	0.103
			0.000				1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	B	From Leg	4.000	0.000	0.000	143.000	No Ice	2.878	1.397	0.081
			0.000				1/2" Ice	3.091	1.558	0.103
			0.000				1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	C	From Leg	4.000	0.000	0.000	143.000	No Ice	2.878	1.397	0.081
			0.000				1/2" Ice	3.091	1.558	0.103
			0.000				1" Ice	3.312	1.727	0.128
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000	0.000	0.000	143.000	No Ice	2.139	1.686	0.109
			0.000				1/2" Ice	2.321	1.850	0.131
			0.000				1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000	0.000	0.000	143.000	No Ice	2.139	1.686	0.109
			0.000				1/2" Ice	2.321	1.850	0.131
			0.000				1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000	0.000	0.000	143.000	No Ice	2.139	1.686	0.109
			0.000				1/2" Ice	2.321	1.850	0.131
			0.000				1" Ice	2.511	2.022	0.156
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	0.000	143.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	0.000	143.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	143.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
Site Pro1 VFA12-HD Mount	A	From Leg	2.000	0.000	0.000	143.000	No Ice	13.200	13.200	0.658
			0.000				1/2" Ice	19.500	19.500	0.804
			0.000				1" Ice	25.800	25.800	1.015
Site Pro1 VFA12-HD Mount	B	From Leg	2.000	0.000	0.000	143.000	No Ice	13.200	13.200	0.658
			0.000				1/2" Ice	19.500	19.500	0.804
			0.000				1" Ice	25.800	25.800	1.015
Site Pro1 VFA12-HD Mount	C	From Leg	2.000	0.000	0.000	143.000	No Ice	13.200	13.200	0.658
			0.000				1/2" Ice	19.500	19.500	0.804
			0.000				1" Ice	25.800	25.800	1.015
*										
1142-2C	B	From Leg	6.000	0.000	0.000	124.000	No Ice	2.092	2.092	0.024
			0.000				1/2" Ice	3.374	3.374	0.041
			7.000				1" Ice	4.673	4.673	0.066
1142-2C	C	From Leg	6.000	0.000	0.000	124.000	No Ice	2.092	2.092	0.024
			0.000				1/2" Ice	3.374	3.374	0.041
			7.000				1" Ice	4.673	4.673	0.066
Side Arm Mount [SO 303-1]	B	From Leg	3.000	0.000	0.000	124.000	No Ice	1.080	5.310	0.115
			0.000				1/2" Ice	1.630	7.570	0.158
			0.000				1" Ice	2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000	0.000	0.000	124.000	No Ice	1.080	5.310	0.115
			0.000				1/2" Ice	1.630	7.570	0.158
			0.000				1" Ice	2.210	9.930	0.217
*										
220-3BN	B	From Leg	6.000	0.000	0.000	104.000	No Ice	5.720	5.720	0.024
			0.000				1/2" Ice	7.831	7.831	0.066
			4.000				1" Ice	9.959	9.959	0.120
1142-2C	C	From Leg	6.000	0.000	0.000	104.000	No Ice	2.092	2.092	0.024
			0.000				1/2" Ice	3.374	3.374	0.041
			7.000				1" Ice	4.673	4.673	0.066
Side Arm Mount [SO 303-1]	B	From Leg	3.000	0.000	0.000	104.000	No Ice	1.080	5.310	0.115

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	1.630	7.570	0.158
			0.000			1" Ice	2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000	0.000	104.000	No Ice	1.080	5.310	0.115
			0.000			1/2" Ice	1.630	7.570	0.158
			0.000			1" Ice	2.210	9.930	0.217
*									
APXVAARR24_43-U-NA20	A	From Leg	4.000	0.000	93.000	No Ice	14.670	5.320	0.153
			0.000			1/2" Ice	15.430	5.990	0.266
			0.000			1" Ice	16.210	6.680	0.387
APXVAARR24_43-U-NA20	B	From Leg	4.000	0.000	93.000	No Ice	14.670	5.320	0.153
			0.000			1/2" Ice	15.430	5.990	0.266
			0.000			1" Ice	16.210	6.680	0.387
APXVAARR24_43-U-NA20	C	From Leg	4.000	0.000	93.000	No Ice	14.670	5.320	0.153
			0.000			1/2" Ice	15.430	5.990	0.266
			0.000			1" Ice	16.210	6.680	0.387
AIR 32 B2a/B66Aa	A	From Leg	4.000	0.000	93.000	No Ice	3.860	2.510	0.172
			0.000			1/2" Ice	4.230	2.860	0.220
			0.000			1" Ice	4.610	3.220	0.273
AIR 32 B2a/B66Aa	B	From Leg	4.000	0.000	93.000	No Ice	3.860	2.510	0.172
			0.000			1/2" Ice	4.230	2.860	0.220
			0.000			1" Ice	4.610	3.220	0.273
AIR 32 B2a/B66Aa	C	From Leg	4.000	0.000	93.000	No Ice	3.860	2.510	0.172
			0.000			1/2" Ice	4.230	2.860	0.220
			0.000			1" Ice	4.610	3.220	0.273
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000	0.000	93.000	No Ice	3.140	2.590	0.112
			0.000			1/2" Ice	3.450	2.880	0.164
			0.000			1" Ice	3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000	0.000	93.000	No Ice	3.140	2.590	0.112
			0.000			1/2" Ice	3.450	2.880	0.164
			0.000			1" Ice	3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000	0.000	93.000	No Ice	3.140	2.590	0.112
			0.000			1/2" Ice	3.450	2.880	0.164
			0.000			1" Ice	3.770	3.190	0.225
KRY 112 144/1	A	From Leg	4.000	0.000	93.000	No Ice	0.350	0.175	0.011
			0.000			1/2" Ice	0.426	0.234	0.014
			0.000			1" Ice	0.509	0.301	0.019
KRY 112 144/1	B	From Leg	4.000	0.000	93.000	No Ice	0.350	0.175	0.011
			0.000			1/2" Ice	0.426	0.234	0.014
			0.000			1" Ice	0.509	0.301	0.019
KRY 112 144/1	C	From Leg	4.000	0.000	93.000	No Ice	0.350	0.175	0.011
			0.000			1/2" Ice	0.426	0.234	0.014
			0.000			1" Ice	0.509	0.301	0.019
RADIO 4449 B12/B71	A	From Leg	4.000	0.000	93.000	No Ice	1.650	1.163	0.074
			0.000			1/2" Ice	1.810	1.301	0.090
			0.000			1" Ice	1.978	1.447	0.109
RADIO 4449 B12/B71	B	From Leg	4.000	0.000	93.000	No Ice	1.650	1.163	0.074
			0.000			1/2" Ice	1.810	1.301	0.090
			0.000			1" Ice	1.978	1.447	0.109
RADIO 4449 B12/B71	C	From Leg	4.000	0.000	93.000	No Ice	1.650	1.163	0.074
			0.000			1/2" Ice	1.810	1.301	0.090
			0.000			1" Ice	1.978	1.447	0.109
Sector Mount [SM 404-3]	C	None		0.000	93.000	No Ice	20.430	20.430	0.920
						1/2" Ice	28.680	28.680	1.311
						1" Ice	36.800	36.800	1.839
*									
GPS_A	C	From Leg	3.000	0.000	62.000	No Ice	0.255	0.255	0.001
			0.000			1/2" Ice	0.320	0.320	0.005

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3.000			1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	62.000	No Ice	0.530	1.520	0.030
			0.000			1/2" Ice	0.780	2.070	0.044
			0.000			1" Ice	1.060	2.660	0.064
*									
GPS_A	C	From Leg	3.000	0.000	42.000	No Ice	0.255	0.255	0.001
			0.000			1/2" Ice	0.320	0.320	0.005
			2.000			1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	42.000	No Ice	0.530	1.520	0.030
			0.000			1/2" Ice	0.780	2.070	0.044
			0.000			1" Ice	1.060	2.660	0.064
*									
GPS_A	C	From Leg	3.000	0.000	31.000	No Ice	0.255	0.255	0.001
			0.000			1/2" Ice	0.320	0.320	0.005
			1.000			1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	31.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
*									
(2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000			1/2" Ice	2.625	0.500	0.054
			0.000			1" Ice	2.917	0.750	0.060
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 168	Leg	Max Tension	7	1.674	-0.152	0.084
			Max. Compression	10	-3.058	-0.150	-0.094
			Max. Mx	20	-0.982	-0.342	0.008
			Max. My	14	1.549	-0.001	0.349
			Max. Vy	20	-0.298	0.247	0.008
			Max. Vx	14	0.290	0.026	-0.230
		Diagonal	Max Tension	13	0.699	0.000	0.000
			Max. Compression	24	-0.796	0.000	0.000
			Max. Mx	8	0.320	0.011	0.001
			Max. My	24	0.675	0.006	-0.003
			Max. Vy	28	-0.011	0.010	-0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	24	-0.001	0.005	-0.003
		Top Girt	Max Tension	2	0.184	0.000	0.000
			Max. Compression	23	-0.141	0.000	0.000
			Max. Mx	26	0.044	-0.014	0.000
			Max. Vy	26	0.014	0.000	0.000
T2	168 - 160	Leg	Max Tension	7	8.112	-0.005	0.002
			Max. Compression	10	-11.432	0.010	0.003
			Max. Mx	20	-1.217	0.247	0.008
			Max. My	14	-3.259	0.026	-0.230
			Max. Vy	20	1.020	-0.020	0.051
			Max. Vx	14	-1.016	0.005	-0.007
		Diagonal	Max Tension	21	2.732	0.000	0.000
			Max. Compression	8	-2.875	0.000	0.000
			Max. Mx	8	-1.698	-0.021	0.002
			Max. My	24	2.707	0.009	-0.004
			Max. Vy	29	-0.013	0.018	-0.001
			Max. Vx	24	-0.002	0.009	-0.004
T3	160 - 140	Leg	Max Tension	7	39.985	-0.439	-0.014
			Max. Compression	10	-52.440	0.422	0.006
			Max. Mx	14	35.372	0.600	0.014
			Max. My	20	-4.894	-0.020	0.758
			Max. Vy	14	-1.051	-0.538	0.008
			Max. Vx	8	1.015	-0.033	0.257
		Diagonal	Max Tension	21	4.294	0.000	0.000
			Max. Compression	20	-4.392	0.000	0.000
			Max. Mx	10	3.261	0.026	0.002
			Max. My	24	-3.871	-0.011	-0.004
			Max. Vy	31	-0.015	0.020	-0.002
			Max. Vx	24	0.001	0.000	0.000
T4	140 - 120	Leg	Max Tension	7	73.019	-0.291	-0.059
			Max. Compression	10	-89.837	0.310	-0.028
			Max. Mx	22	48.151	-0.520	-0.007
			Max. My	4	-7.539	-0.053	-0.581
			Max. Vy	22	-0.097	-0.520	-0.007
			Max. Vx	19	0.147	-0.150	0.326
		Diagonal	Max Tension	20	5.267	0.000	0.000
			Max. Compression	20	-5.297	0.000	0.000
			Max. Mx	10	4.113	0.028	-0.001
			Max. My	28	1.102	0.021	-0.003
			Max. Vy	31	-0.020	0.027	-0.003
			Max. Vx	28	0.001	0.000	0.000
T5	120 - 100	Leg	Max Tension	7	101.803	-0.353	-0.073
			Max. Compression	10	-122.006	0.452	-0.022
			Max. Mx	19	-118.929	0.457	0.086
			Max. My	16	-11.267	0.002	0.557
			Max. Vy	3	-0.104	0.456	-0.049
			Max. Vx	4	-0.185	-0.037	-0.480
		Diagonal	Max Tension	20	4.962	0.000	0.000
			Max. Compression	20	-5.019	0.000	0.000
			Max. Mx	10	4.090	0.042	-0.002
			Max. My	28	1.050	0.035	-0.005
			Max. Vy	31	-0.027	0.042	-0.004
			Max. Vx	28	0.002	0.000	0.000
T6	100 - 80	Leg	Max Tension	7	128.153	-0.469	-0.011
			Max. Compression	10	-154.024	0.821	0.036
			Max. Mx	18	-153.810	0.837	0.045
			Max. My	4	-14.124	0.011	-0.692
			Max. Vy	22	-0.571	-0.564	-0.027
			Max. Vx	16	0.514	-0.014	0.417
		Diagonal	Max Tension	20	5.797	0.000	0.000
			Max. Compression	20	-5.802	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	31	1.385	0.049	0.006
			Max. My	29	-1.275	0.040	-0.007
			Max. Vy	29	0.035	0.048	-0.006
			Max. Vx	29	0.002	0.000	0.000
T7	80 - 60	Leg	Max Tension	7	152.162	-0.698	-0.033
			Max. Compression	18	-181.448	1.107	0.069
			Max. Mx	18	-181.448	1.107	0.069
			Max. My	8	-14.227	-0.091	1.076
			Max. Vy	18	-0.125	1.107	0.069
			Max. Vx	4	0.153	-0.092	-1.073
		Diagonal	Max Tension	20	6.755	0.000	0.000
			Max. Compression	20	-6.799	0.000	0.000
			Max. Mx	31	1.551	0.086	0.011
			Max. My	34	1.796	0.082	0.012
			Max. Vy	29	0.047	0.083	-0.012
			Max. Vx	34	-0.003	0.000	0.000
T8	60 - 40	Leg	Max Tension	7	176.973	-0.936	-0.032
			Max. Compression	18	-210.769	-0.135	0.029
			Max. Mx	18	-195.884	1.107	0.069
			Max. My	8	-17.244	-0.073	0.976
			Max. Vy	22	-0.175	-0.948	-0.043
			Max. Vx	4	0.130	-0.074	-0.974
		Diagonal	Max Tension	20	7.123	0.000	0.000
			Max. Compression	20	-7.187	0.000	0.000
			Max. Mx	18	5.540	0.133	0.012
			Max. My	28	1.765	0.118	-0.017
			Max. Vy	29	0.064	0.120	0.016
			Max. Vx	28	0.004	0.000	0.000
T9	40 - 20	Leg	Max Tension	7	199.892	1.527	-0.020
			Max. Compression	18	-238.414	-0.417	0.030
			Max. Mx	18	-224.373	3.366	-0.011
			Max. My	8	-18.831	-0.454	1.982
			Max. Vy	18	-1.189	3.299	-0.012
			Max. Vx	4	0.482	-0.462	-1.911
		Diagonal	Max Tension	21	7.425	0.103	-0.003
			Max. Compression	18	-8.318	0.000	0.000
			Max. Mx	31	1.052	0.160	-0.011
			Max. My	18	-7.849	0.012	0.015
			Max. Vy	29	0.069	0.130	-0.011
			Max. Vx	28	-0.003	0.000	0.000
		Secondary Horizontal	Max Tension	8	1.282	0.057	0.003
			Max. Compression	9	-1.059	0.051	0.020
			Max. Mx	36	0.016	0.135	0.027
			Max. My	30	0.258	0.102	0.029
			Max. Vy	36	-0.072	0.135	0.027
			Max. Vx	30	-0.005	0.000	0.000
T10	20 - 0	Leg	Max Tension	7	222.415	-1.735	-0.028
			Max. Compression	18	-266.722	0.000	-0.000
			Max. Mx	35	-106.290	4.100	-0.012
			Max. My	8	-21.849	-0.155	2.477
			Max. Vy	31	-0.728	-3.083	-0.001
			Max. Vx	4	-0.345	-0.155	-2.394
		Diagonal	Max Tension	20	7.908	0.000	0.000
			Max. Compression	18	-8.532	0.000	0.000
			Max. Mx	29	0.015	0.206	-0.021
			Max. My	28	3.679	0.124	-0.025
			Max. Vy	29	0.080	0.206	-0.021
			Max. Vx	28	0.004	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	273.757	24.302	-13.345
	Max. H_x	18	273.757	24.302	-13.345
	Max. H_z	7	-227.946	-20.873	11.389
	Min. Vert	7	-227.946	-20.873	11.389
	Min. H_x	7	-227.946	-20.873	11.389
	Min. H_z	18	273.757	24.302	-13.345
Leg B	Max. Vert	10	271.082	-23.123	-13.813
	Max. H_x	23	-219.691	19.637	11.757
	Max. H_z	23	-219.691	19.637	11.757
	Min. Vert	23	-219.691	19.637	11.757
	Min. H_x	10	271.082	-23.123	-13.813
	Min. H_z	10	271.082	-23.123	-13.813
Leg A	Max. Vert	2	256.994	0.638	25.493
	Max. H_x	20	24.141	2.741	1.751
	Max. H_z	2	256.994	0.638	25.493
	Min. Vert	15	-207.562	-0.580	-21.481
	Min. H_x	9	17.582	-2.683	1.262
	Min. H_z	15	-207.562	-0.580	-21.481

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	58.813	0.000	0.000	-4.575	-26.569	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	70.575	-0.048	-39.362	-4043.803	-26.695	20.871
0.9 Dead+1.0 Wind 0 deg - No Ice	52.931	-0.048	-39.362	-4042.431	-18.725	20.871
1.2 Dead+1.0 Wind 30 deg - No Ice	70.575	19.841	-34.604	-3542.252	-2059.295	28.091
0.9 Dead+1.0 Wind 30 deg - No Ice	52.931	19.841	-34.604	-3540.879	-2051.324	28.091
1.2 Dead+1.0 Wind 60 deg - No Ice	70.575	35.911	-20.815	-2127.388	-3692.311	20.313
0.9 Dead+1.0 Wind 60 deg - No Ice	52.931	35.911	-20.815	-2126.015	-3684.341	20.313
1.2 Dead+1.0 Wind 90 deg - No Ice	70.575	42.192	0.048	-0.302	-4324.392	-0.673
0.9 Dead+1.0 Wind 90 deg - No Ice	52.931	42.192	0.048	1.070	-4316.422	-0.673
1.2 Dead+1.0 Wind 120 deg - No Ice	70.575	36.095	20.977	2136.884	-3717.401	-12.891
0.9 Dead+1.0 Wind 120 deg - No Ice	52.931	36.095	20.977	2138.257	-3709.431	-12.891
1.2 Dead+1.0 Wind 150 deg - No Ice	70.575	18.659	32.460	3385.888	-1981.347	-12.348
0.9 Dead+1.0 Wind 150 deg - No Ice	52.931	18.659	32.460	3387.261	-1973.376	-12.348
1.2 Dead+1.0 Wind 180 deg - No Ice	70.575	0.048	37.635	3899.299	-37.070	-20.871

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
0.9 Dead+1.0 Wind 180 deg - No Ice	52.931	0.048	37.635	3900.672	-29.099	-20.871
1.2 Dead+1.0 Wind 210 deg - No Ice	70.575	-19.841	34.604	3531.273	1995.529	-28.091
0.9 Dead+1.0 Wind 210 deg - No Ice	52.931	-19.841	34.604	3532.645	2003.500	-28.091
1.2 Dead+1.0 Wind 240 deg - No Ice	70.575	-37.407	21.679	2183.171	3744.182	-20.313
0.9 Dead+1.0 Wind 240 deg - No Ice	52.931	-37.407	21.679	2184.544	3752.153	-20.313
1.2 Dead+1.0 Wind 270 deg - No Ice	70.575	-42.192	-0.048	-10.677	4260.627	0.673
0.9 Dead+1.0 Wind 270 deg - No Ice	52.931	-42.192	-0.048	-9.304	4268.598	0.673
1.2 Dead+1.0 Wind 300 deg - No Ice	70.575	-34.600	-20.113	-2081.101	3538.000	12.891
0.9 Dead+1.0 Wind 300 deg - No Ice	52.931	-34.600	-20.113	-2079.728	3545.971	12.891
1.2 Dead+1.0 Wind 330 deg - No Ice	70.575	-18.659	-32.460	-3396.867	1917.581	12.348
0.9 Dead+1.0 Wind 330 deg - No Ice	52.931	-18.659	-32.460	-3395.495	1925.552	12.348
1.2 Dead+1.0 Ice+1.0 Temp	126.494	0.000	0.000	-9.905	-76.857	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	126.494	-0.012	-10.692	-1113.335	-75.737	5.420
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	126.494	5.532	-9.657	-996.041	-641.642	7.750
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	126.494	10.075	-5.847	-602.523	-1097.642	5.442
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	126.494	11.656	0.012	-8.785	-1262.642	-0.094
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	126.494	9.697	5.642	569.920	-1073.244	-3.040
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	126.494	5.182	9.027	932.823	-617.874	-3.406
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	126.494	0.012	10.400	1071.574	-77.977	-5.420
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	126.494	-5.532	9.657	976.230	487.928	-7.750
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	126.494	-10.327	5.992	593.687	962.937	-5.442
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	126.494	-11.656	-0.012	-11.026	1108.929	0.094
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	126.494	-9.445	-5.496	-578.755	900.521	3.040
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	126.494	-5.182	-9.027	-952.634	464.160	3.406
Dead+Wind 0 deg - Service	58.813	-0.013	-11.223	-1148.571	-25.108	5.878
Dead+Wind 30 deg - Service	58.813	5.656	-9.864	-1006.423	-600.892	7.900
Dead+Wind 60 deg - Service	58.813	10.232	-5.931	-605.507	-1063.244	5.701
Dead+Wind 90 deg - Service	58.813	12.019	0.013	-3.114	-1242.152	-0.212
Dead+Wind 120 deg - Service	58.813	10.284	5.976	602.124	-1070.310	-3.650
Dead+Wind 150 deg - Service	58.813	5.323	9.260	956.331	-578.940	-3.488
Dead+Wind 180 deg - Service	58.813	0.013	10.736	1101.818	-28.030	-5.878
Dead+Wind 210 deg - Service	58.813	-5.656	9.864	997.274	547.754	-7.900
Dead+Wind 240 deg - Service	58.813	-10.653	6.174	615.159	1042.672	-5.701
Dead+Wind 270 deg - Service	58.813	-12.019	-0.013	-6.035	1189.014	0.212
Dead+Wind 300 deg - Service	58.813	-9.863	-5.733	-592.471	984.607	3.650
Dead+Wind 330 deg - Service	58.813	-5.323	-9.260	-965.480	525.802	3.488

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-58.813	0.000	-0.000	58.813	0.000	0.000%
2	-0.048	-70.575	-39.362	0.048	70.575	39.362	0.000%
3	-0.048	-52.931	-39.362	0.048	52.931	39.362	0.000%
4	19.841	-70.575	-34.604	-19.841	70.575	34.604	0.000%
5	19.841	-52.931	-34.604	-19.841	52.931	34.604	0.000%
6	35.911	-70.575	-20.815	-35.911	70.575	20.815	0.000%
7	35.911	-52.931	-20.815	-35.911	52.931	20.815	0.000%
8	42.192	-70.575	0.048	-42.192	70.575	-0.048	0.000%
9	42.192	-52.931	0.048	-42.192	52.931	-0.048	0.000%
10	36.095	-70.575	20.977	-36.095	70.575	-20.977	0.000%
11	36.095	-52.931	20.977	-36.095	52.931	-20.977	0.000%
12	18.659	-70.575	32.460	-18.659	70.575	-32.460	0.000%
13	18.659	-52.931	32.460	-18.659	52.931	-32.460	0.000%
14	0.048	-70.575	37.635	-0.048	70.575	-37.635	0.000%
15	0.048	-52.931	37.635	-0.048	52.931	-37.635	0.000%
16	-19.841	-70.575	34.604	19.841	70.575	-34.604	0.000%
17	-19.841	-52.931	34.604	19.841	52.931	-34.604	0.000%
18	-37.407	-70.575	21.679	37.407	70.575	-21.679	0.000%
19	-37.407	-52.931	21.679	37.407	52.931	-21.679	0.000%
20	-42.192	-70.575	-0.048	42.192	70.575	0.048	0.000%
21	-42.192	-52.931	-0.048	42.192	52.931	0.048	0.000%
22	-34.600	-70.575	-20.113	34.600	70.575	20.113	0.000%
23	-34.600	-52.931	-20.113	34.600	52.931	20.113	0.000%
24	-18.659	-70.575	-32.460	18.659	70.575	32.460	0.000%
25	-18.659	-52.931	-32.460	18.659	52.931	32.460	0.000%
26	0.000	-126.494	0.000	-0.000	126.494	0.000	0.000%
27	-0.012	-126.494	-10.692	0.012	126.494	10.692	0.000%
28	5.532	-126.494	-9.657	-5.532	126.494	9.657	0.000%
29	10.075	-126.494	-5.847	-10.075	126.494	5.847	0.000%
30	11.656	-126.494	0.012	-11.656	126.494	-0.012	0.000%
31	9.697	-126.494	5.642	-9.697	126.494	-5.642	0.000%
32	5.182	-126.494	9.027	-5.182	126.494	-9.027	0.000%
33	0.012	-126.494	10.400	-0.012	126.494	-10.400	0.000%
34	-5.532	-126.494	9.657	5.532	126.494	-9.657	0.000%
35	-10.327	-126.494	5.992	10.327	126.494	-5.992	0.000%
36	-11.656	-126.494	-0.012	11.656	126.494	0.012	0.000%
37	-9.445	-126.494	-5.496	9.445	126.494	5.496	0.000%
38	-5.182	-126.494	-9.027	5.182	126.494	9.027	0.000%
39	-0.013	-58.813	-11.223	0.013	58.813	11.223	0.000%
40	5.656	-58.813	-9.864	-5.656	58.813	9.864	0.000%
41	10.232	-58.813	-5.931	-10.232	58.813	5.931	0.000%
42	12.019	-58.813	0.013	-12.019	58.813	-0.013	0.000%
43	10.284	-58.813	5.976	-10.284	58.813	-5.976	0.000%
44	5.323	-58.813	9.260	-5.323	58.813	-9.260	0.000%
45	0.013	-58.813	10.736	-0.013	58.813	-10.736	0.000%
46	-5.656	-58.813	9.864	5.656	58.813	-9.864	0.000%
47	-10.653	-58.813	6.174	10.653	58.813	-6.174	0.000%
48	-12.019	-58.813	-0.013	12.019	58.813	0.013	0.000%
49	-9.863	-58.813	-5.733	9.863	58.813	5.733	0.000%
50	-5.323	-58.813	-9.260	5.323	58.813	9.260	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 168	5.121	42	0.271	0.029
T2	168 - 160	4.443	42	0.268	0.029
T3	160 - 140	3.996	42	0.258	0.028
T4	140 - 120	2.961	42	0.217	0.026
T5	120 - 100	2.105	42	0.175	0.022
T6	100 - 80	1.431	42	0.133	0.017
T7	80 - 60	0.904	42	0.103	0.012
T8	60 - 40	0.502	42	0.076	0.008
T9	40 - 20	0.223	42	0.047	0.005
T10	20 - 0	0.063	47	0.019	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	PD10017	42	5.008	0.271	0.029	785029
170.000	MX08FRO665-21 w/ Mount Pipe	42	4.556	0.269	0.029	336736
164.000	(2) APL868013-42T0 w/ Mount Pipe	42	4.218	0.264	0.029	74306
154.000	7770.00 w/ Mount Pipe	42	3.670	0.247	0.028	34718
145.000	800 EXTERNAL NOTCH FILTER	42	3.205	0.228	0.027	27600
143.000	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	42	3.106	0.224	0.026	26429
124.000	1142-2C	42	2.261	0.183	0.023	25004
104.000	220-3BN	42	1.553	0.141	0.018	31245
93.000	APXVAARR24_43-U-NA20	42	1.232	0.122	0.016	35550
62.000	GPS_A	42	0.536	0.078	0.009	37839
60.000	(2) 3'x8" Knife Plate	42	0.502	0.076	0.008	37775
42.000	GPS_A	42	0.246	0.050	0.006	41459
31.000	GPS_A	47	0.136	0.034	0.004	41153
20.000	(2) 3'x8" Knife Plate	47	0.063	0.019	0.003	41964

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 168	17.917	19	0.945	0.102
T2	168 - 160	15.555	19	0.936	0.103
T3	160 - 140	13.995	19	0.902	0.102
T4	140 - 120	10.379	19	0.761	0.093
T5	120 - 100	7.382	19	0.611	0.079
T6	100 - 80	5.023	19	0.466	0.062
T7	80 - 60	3.177	19	0.360	0.044
T8	60 - 40	1.766	19	0.264	0.029
T9	40 - 20	0.790	19	0.165	0.019
T10	20 - 0	0.223	19	0.065	0.009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	PD10017	19	17.523	0.946	0.103	305135
170.000	MX08FRO665-21 w/ Mount Pipe	19	15.948	0.940	0.103	123855
164.000	(2) APL868013-42T0 w/ Mount Pipe	19	14.771	0.922	0.103	22589
154.000	7770.00 w/ Mount Pipe	19	12.857	0.865	0.100	10103
145.000	800 EXTERNAL NOTCH FILTER	19	11.232	0.799	0.096	7906
143.000	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	19	10.886	0.784	0.095	7551
124.000	1142-2C	19	7.928	0.641	0.082	7131
104.000	220-3BN	19	5.449	0.493	0.066	8913
93.000	APXVAARR24_43-U-NA20	19	4.324	0.425	0.056	10137
62.000	GPS_A	19	1.888	0.273	0.030	10786
60.000	(2) 3'x8" Knife Plate	19	1.766	0.264	0.029	10769
42.000	GPS_A	19	0.869	0.175	0.020	11888
31.000	GPS_A	19	0.484	0.117	0.015	11805
20.000	(2) 3'x8" Knife Plate	19	0.223	0.065	0.009	12026

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	180	Diagonal	A325N	0.625	1	0.699	7.875	0.089 ✔	1.05	Member Block Shear
		Top Girt	A325N	0.625	1	0.184	7.875	0.023 ✔	1.05	Member Block Shear
T2	168	Leg	A325N	0.625	4	1.506	20.340	0.074 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	2.732	7.875	0.347 ✔	1.05	Member Block Shear
T3	160	Leg	A325N	0.625	4	9.985	20.340	0.491 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.294	7.875	0.545 ✔	1.05	Member Block Shear
T4	140	Leg	A325N	0.750	4	18.255	30.101	0.606 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	5.267	7.875	0.669 ✔	1.05	Member Block Shear
T5	120	Leg	A325N	0.750	4	25.451	30.101	0.846 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.962	9.914	0.500 ✔	1.05	Member Block Shear
T6	100	Leg	A490N	0.875	4	32.038	51.945	0.617 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	5.797	9.914	0.585 ✔	1.05	Member Block Shear
T7	80	Leg	A325N	0.875	4	38.041	41.556	0.915 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	6.755	10.934	0.618 ✔	1.05	Member Block Shear
T8	60	Leg	A325N	1.000	4	44.243	54.517	0.812 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	7.187	13.806	0.521 ✔	1.05	Bolt Shear
T9	40	Leg	A325N	1.000	4	49.929	54.517	0.916 ✔	1.05	Bolt Tension

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
		Diagonal	A325N	0.625	1	8.318	13.806	0.602 ✔	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.500	1	4.135	8.836	0.468 ✔	1.05	Bolt Shear
T10	20	Diagonal	A325N	0.625	1	8.532	13.806	0.618 ✔	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

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	180 - 168	P2x0.154	12.000	4.000	61.0 K=1.00	1.075	-3.058	27.981	0.109 [1] ✔
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0 K=1.00	1.075	-11.432	38.430	0.297 [1] ✔
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7 K=1.00	2.228	-52.440	87.013	0.603 [1] ✔
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3 K=1.00	3.678	-89.837	122.133	0.736 [1] ✔
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3 K=1.00	4.407	-122.006	157.190	0.776 [1] ✔
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6 K=1.00	6.112	-154.024	242.300	0.636 [1] ✔
T7	80 - 60	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-181.448	227.081	0.799 [1] ✔
T8	60 - 40	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-210.769	227.081	0.928 [1] ✔
T9	40 - 20	P6x0.432	20.033	5.151	28.2 K=1.00	8.405	-238.414	254.222	0.938 [1] ✔
T10	20 - 0	P8x.5	20.033	10.017	41.8 K=1.00	12.763	-266.722	367.690	0.725 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

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	180 - 168	L2x1 1/2x3/16	5.657	2.543	101.1 K=1.07	0.621	-0.796	15.177	0.052 [1] ✔
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	101.1	0.621	-2.875	15.177	0.189 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	135.6 K=1.07	0.621	-4.392	9.673	0.454 [1]
T4	140 - 120	L2x2x3/16	10.162	4.935	150.3 K=1.00	0.715	-4.916	9.058	0.543 [1]
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	160.2 K=1.00	0.809	-5.019	9.021	0.556 [1]
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	157.5 K=1.00	0.902	-5.760	10.403	0.554 [1]
T7	80 - 60	L3x3x3/16	16.803	8.223	165.6 K=1.00	1.090	-6.799	11.381	0.597 [1]
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	172.1 K=1.00	1.560	-7.187	15.083	0.477 [1]
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	191.1 K=1.00	1.560	-8.318	12.226	0.680 [1]
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	184.8 K=1.00	1.690	-8.532	14.159	0.603 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	17.486	8.467	146.4 K=1.00	1.690	-4.135	22.568	0.183 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

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	180 - 168	L2x1 1/2x3/16	4.000	3.510	130.8 K=1.00	0.621	-0.141	10.385	0.014 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

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	180 - 168	P2x0.154	12.000	4.000	61.0	1.075	1.674	33.848	0.049 [1] ✔
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0	1.075	6.026	33.848	0.178 [1] ✔
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7	2.228	39.940	70.197	0.569 [1] ✔
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3	3.678	73.019	115.870	0.630 [1] ✔
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3	4.407	101.803	138.834	0.733 [1] ✔
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6	6.112	128.153	192.527	0.666 [1] ✔
T7	80 - 60	P6x0.432	20.033	10.017	54.8	8.405	152.162	264.756	0.575 [1] ✔
T8	60 - 40	P6x0.432	20.033	10.017	54.8	8.405	176.973	264.756	0.668 [1] ✔
T9	40 - 20	P6x0.432	20.033	4.865	26.6	8.405	199.892	264.756	0.755 [1] ✔
T10	20 - 0	P8x.5	20.033	10.017	41.8	12.763	222.415	402.026	0.553 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

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	180 - 168	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	0.699	15.675	0.045 [1] ✔
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	2.732	15.675	0.174 [1] ✔
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	103.3	0.360	4.294	15.675	0.274 [1] ✔
T4	140 - 120	L2x2x3/16	9.197	4.474	89.9	0.431	5.267	18.739	0.281 [1] ✔
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	117.0	0.501	4.962	21.806	0.228 [1] ✔
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	102.5	0.571	5.797	24.840	0.233 [1] ✔
T7	80 - 60	L3x3x3/16	16.803	8.223	107.0	0.712	6.755	30.973	0.218 [1] ✔
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	120.8	1.029	7.123	44.778	0.159 [1] ✔
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	132.1	1.029	7.425	44.778	0.166 [1] ✔
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	119.3	1.127	7.908	49.019	0.161 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
									✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	17.486	8.467	186.4	1.150	4.135	50.039	0.083 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

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	180 - 168	L2x1 1/2x3/16	4.000	3.510	103.8	0.360	0.184	15.675	0.012 [1] ✔

[1] P_u / ϕP_n controls

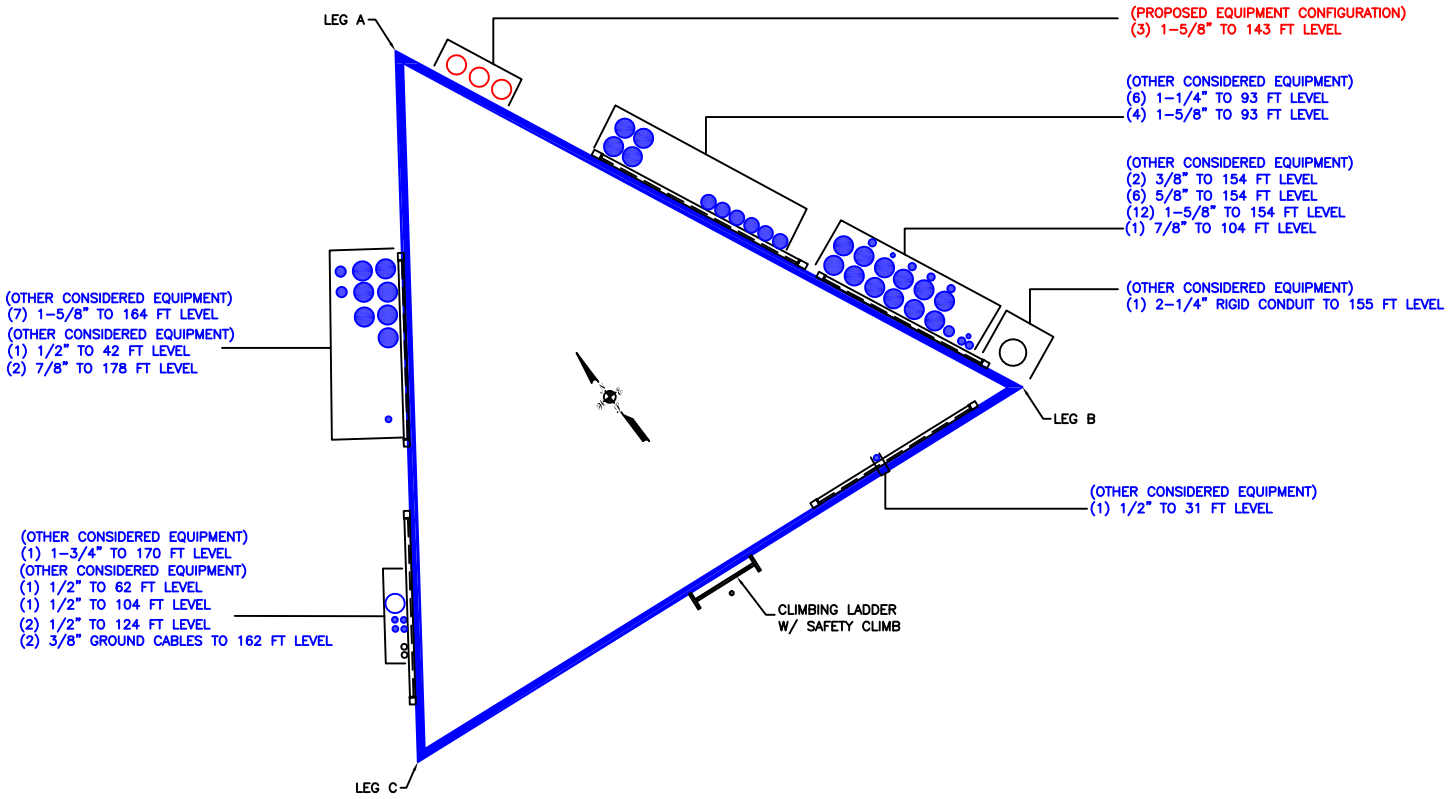
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 168	Leg	P2x0.154	2	-3.058	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-11.432	40.351	28.3	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-52.440	91.364	57.4	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-89.837	128.240	70.1	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-122.006	165.049	73.9 84.6 (b)	Pass
T6	100 - 80	Leg	P5x0.375 (GR)	109	128.153	202.153	63.4	Pass
T7	80 - 60	Leg	P6x0.432	130	-181.448	238.435	76.1 91.5 (b)	Pass
T8	60 - 40	Leg	P6x0.432	145	-210.769	238.435	88.4	Pass
T9	40 - 20	Leg	P6x0.432	160	-238.414	266.933	89.3 91.6 (b)	Pass
T10	20 - 0	Leg	P8x.5	181	-266.722	386.074	69.1	Pass
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.796	15.935	5.0 8.9 (b)	Pass
T2	168 - 160	Diagonal	L2x1 1/2x3/16	29	-2.875	15.935	18.0 34.7 (b)	Pass
T3	160 - 140	Diagonal	L2x1 1/2x3/16	43	-4.392	10.157	43.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
							54.5 (b)	
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.916	9.511	51.7	Pass
							66.9 (b)	
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-5.019	9.472	53.0	Pass
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.760	10.923	52.7	Pass
							58.5 (b)	
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.799	11.950	56.9	Pass
							61.8 (b)	
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.187	15.837	45.4	Pass
							52.1 (b)	
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.318	12.837	64.8	Pass
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.532	14.867	57.4	Pass
							61.8 (b)	
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-4.135	23.697	17.4	Pass
							46.8 (b)	
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.141	10.904	1.3	Pass
							2.3 (b)	
							Summary	
						Leg (T9)	91.6	Pass
						Diagonal (T4)	66.9	Pass
						Secondary Horizontal (T9)	46.8	Pass
						Top Girt (T1)	2.3	Pass
						Bolt Checks	87.2	Pass
						RATING =	**91.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806353

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	806353
Site Name	BRG 124 943066, CT
Order #	589869 Rev# 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	258.00	228.00
Shear Force (kips)	26.00	24.00

**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

Anchor Rod Data

(6) 1-1/2" ø bolts (A36 N; Fy=36 ksi, Fu=58 ksi)

l_{ar} (in): 0

Analysis Results

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

Pu_t = 38	ϕPn_t = 61.34	**Stress Rating**
Vu = 4	ϕVn = 38.44	**59.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Drilled Pier Foundation

BU # :	806353
Site Name:	BRG 124 943066, CT
Order Number:	589869,Rev# 1
TIA-222 Revison:	H
Tower Type:	Self Support

Applied Loads	Comp.	Uplift
Moment (kip-ft)		
Axial Force (kips)	274	228
Shear Force (kips)	28	24

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

Pier Design Data		
Depth	13.2	ft
Ext. Above Grade	0.3	ft
Pier Section 1		
From 0.3' above grade to 13.2' below grade		
Pier Diameter	2.5	ft
Rebar Quantity	14	
Rebar Size	8	
Clear Cover to Ties	4	in
Tie Size	4	
Tie Spacing	16	in

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	7.52	7.52
Soil Safety Factor	7.47	8.71
Max Moment (kip-ft)	191.60	164.23
Rating*	*17.0%*	*14.5%*
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	191.24	191.24
End Bearing (kips)	206.28	-
Weight of Concrete (kips)	11.93	8.95
Total Capacity (kips)	397.52	267.34
Axial (kips)	375.46	228.00
Rating*	*90.0%*	*81.2%*
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	7.53	7.14
Critical Moment (kip-ft)	191.60	162.92
Critical Moment Capacity	505.91	354.00
Rating*	*36.1%*	*43.8%*
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	10.51	10.51
Critical Shear (kip)	64.07	54.92
Critical Shear Capacity	127.00	52.66
Rating*	*48.1%*	*99.3%*

Tie Spacing Requirements Not Met

Structural Foundation Rating*	**99.3%**
Soil Interaction Rating*	**90.0%**

*Rating per TIA-222-H Section 15.5

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

[Go to Soil Calculations](#)

Soil Profile

Groundwater Depth	N/A

# of Layers	3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	5	6	1	110	150	0	30	0.000	0.000	0.77	0.77			Cohesionless
3	6	13.2	7.2	140	150	8	0	3.600	3.600	4.40	4.40	56.03		Cohesive

Exposure Category Determination
BU#806353

- Latitude/Longitude = 41° 14' 18.34",-73° 25' 26.44"
- Tower Height = 180 ft
- Upwind Fetch Radius = Greater of 25 x Tower Height or 3250 ft = 4500 ft
- Minimum Open Patch = 164 ft x 164 ft
- Maximum continuous surface roughness category C arc angle = 0 degrees
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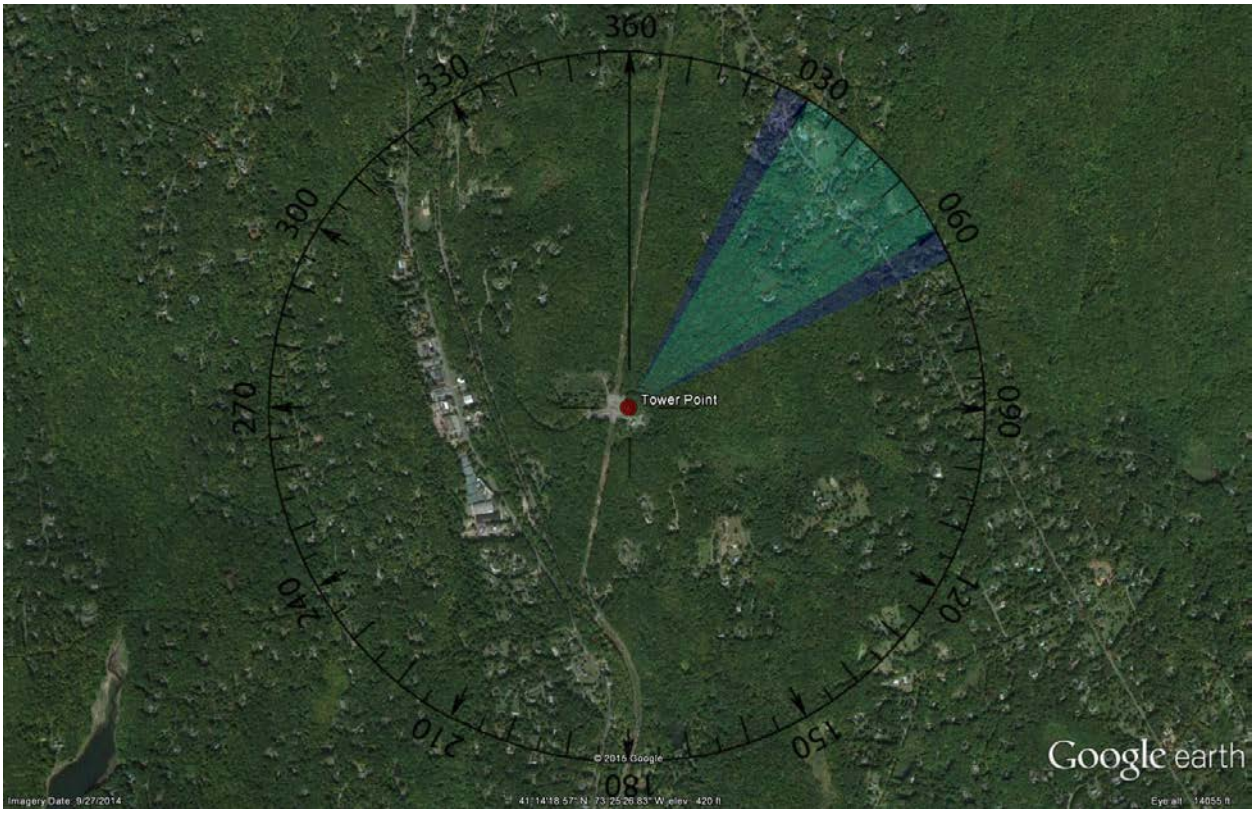


Exposure Category for this site is B.

The determination is based on Crown Castle standard ENG-PRC-10202, Determination of Exposure Category, revision C.

Completed by: Erin Doyle

Date: 11/05/2015

Approved by: Jason Hedrich

Date: 11/06/2015

Unmitigated Percentage (B/C)

Inputs

Tower Height (ft):	180'
Starting Azimuth:	30°
Upwind Fetch Radius (ft):	4500'
20% Unmitigated Limit (ft):	900'
Overlay Size Selected:	30°

Subsector (Degrees)	Total Unmitigated Length (ft)	Percentage of Subsector Unmitigated
15°		0.0%
20°		0.0%
25°	'	0.0%
30°	'	0.0%
35°	295'	6.6%
40°	'	0.0%
45°	'	0.0%
50°	'	0.0%
55°	'	0.0%
60°	'	0.0%
65°		0.0%
70°		0.0%
75°		0.0%
80°		0.0%

THIS SITE IS EXPOSURE:	B

Length measurements should be taken to the nearest 5' increment.

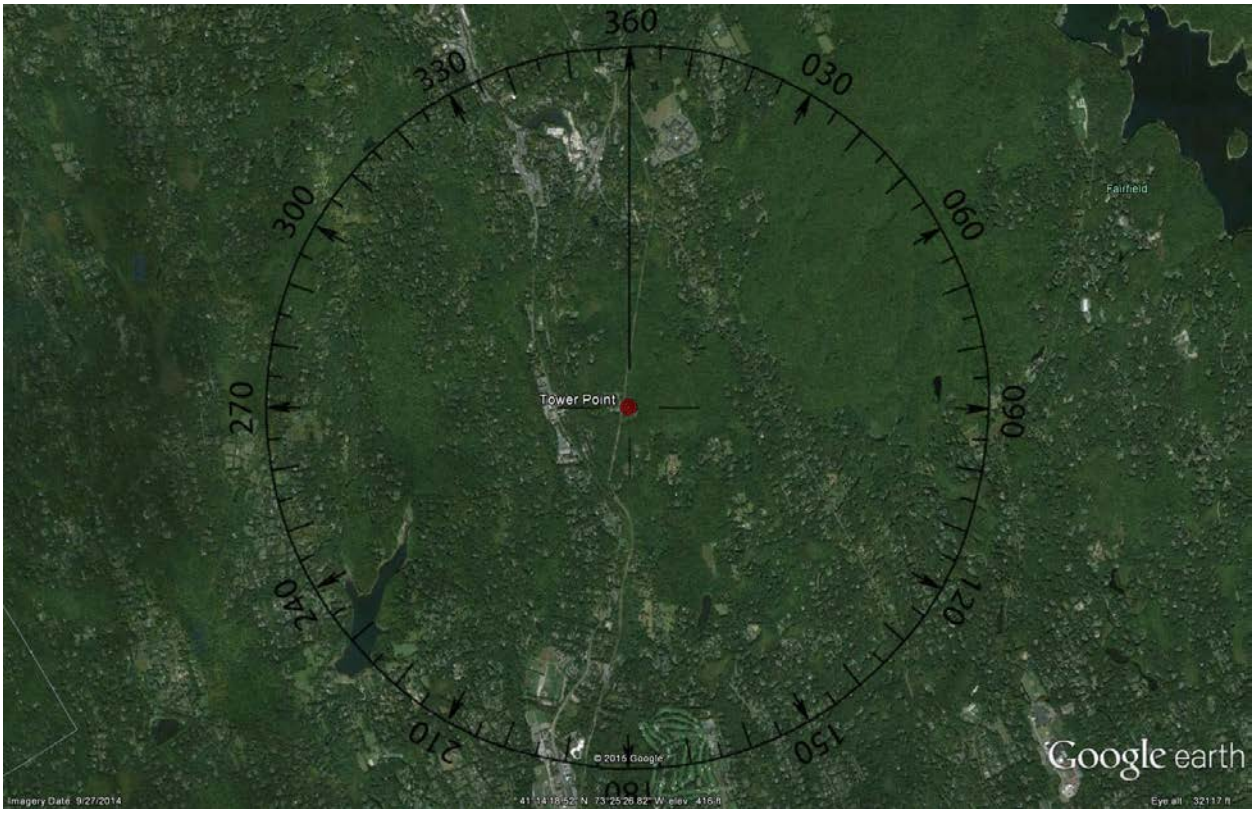
The determination is based on Crown Castle standard ENG-PRC-10202, Determination of Exposure Category, revision C.

This chart is intended only for use with Exposures B and C and is Not applicable for Exposure D.

LEGEND	
	Considered Subsector
	Bookending Subsector

Topographic Factor Determination
BU#806353

- Latitude/Longitude = 41° 14' 18.34",-73° 25' 26.44"
- Tower Height = 180 ft
- Topo Radius = 10,560 ft
- Maximum continuous effective topo arc angle = 0 degrees
- Critical wind azimuth used in topo tool = 0
- Kmz file saved in folder … R:\SA Models - Letters\Work Area\Exposure_Topo_KMZ



Exposure Category for this site is B.
No topo feature.
Topographic Factor (K_{ZT}) at base is 1.0.

The determination is based on Crown Castle standard ENG-PRC-10040, Determination of Topographic Factor, initial release.

Completed by: Erin Doyle

Date: 11/05/2015

Approved by: Jason Hedrich

Date: 11/06/2015

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: 427.44 ft (NAVD 88)
Latitude: 41.238528
Longitude: -73.424139

Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Nov 23 2021

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

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

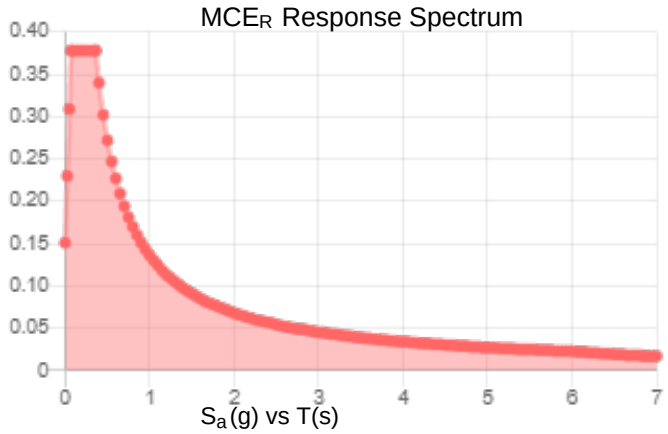
Seismic

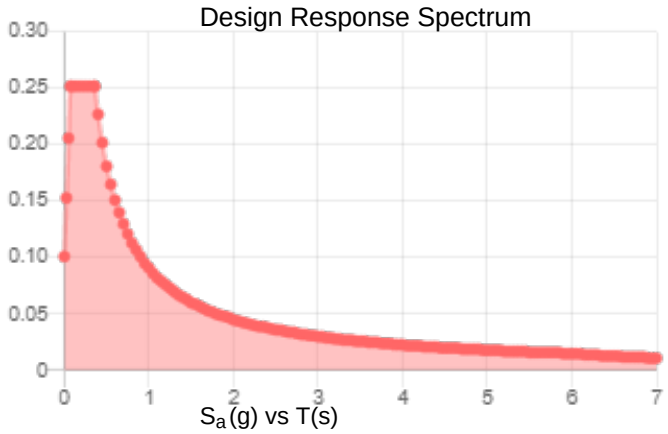
Site Soil Class: D - Default (see Section 11.4.3)

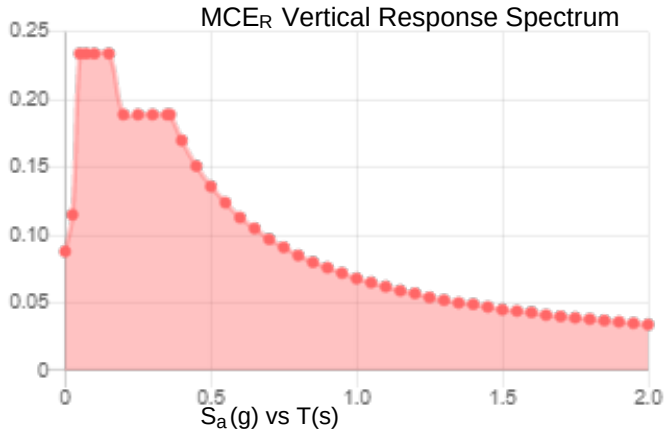
Results:

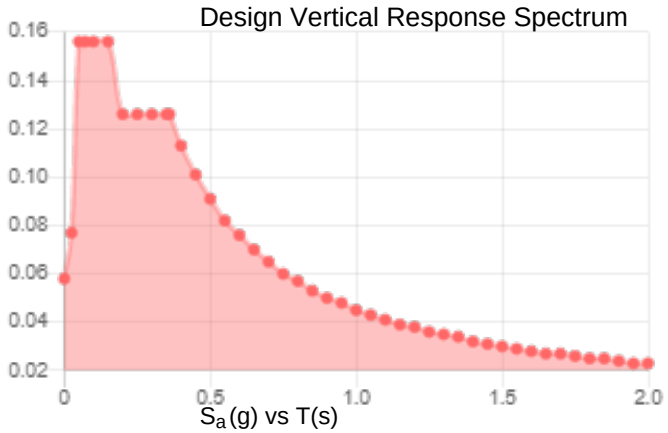
S_S :	0.236	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.139
F_v :	2.4	PGA_M :	0.211
S_{MS} :	0.378	F_{PGA} :	1.523
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.252	C_v :	0.773

Seismic Design Category B









Data Accessed: Tue Nov 23 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Nov 23 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.

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

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Date: **November 18, 2021**

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	***T-Mobile* Equipment Change-Out**	
	Carrier Site Number:	CTFF119A
	Carrier Site Name:	CT03XC369
Crown Castle Designation:	**BU Number:**	806353
	Site Name:	BRG 124 943066
	JDE Job Number:	689444
	Order Number:	589869 Rev. 1
Engineering Firm Designation:	**GPD Report Designation:**	2022777.806353.01
Site Data:	**128 Mather Street, Wilton, Fairfield County, CT 06897** **Latitude 41° 14' 18.70" Longitude -73° 25' 26.90"**	
Structure Information:	**Tower Height & Type:**	**180.0 ft Self Support Tower**
	Mount Elevation:	**143.0 ft**
	Mount Type:	**12.5 ft Sector Mount**

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

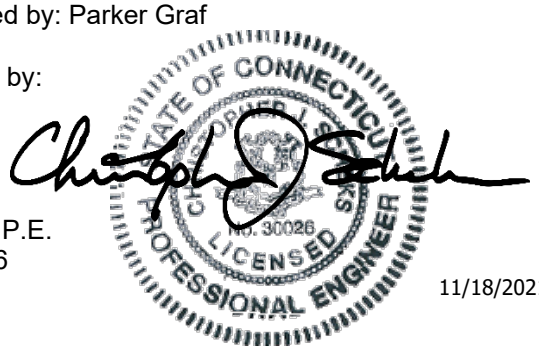
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Mount **Sufficient* - 40.1%**
***See Section 4.1 of this report for the loading and structural modifications required in order for the mount to support the loading listed in Table 1.**

This analysis utilizes an ultimate 3-second gust wind speed of 116 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Parker Graf

Respectfully Submitted by:



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

11/18/2021

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9) APPENDIX E
Supplemental Drawings

1) INTRODUCTION

This is a proposed 3-sector 12.5' Sector Mount designed by Site Pro 1 (Drawing #: VFA12-HD, dated 1/25/2017) with (4) 8'-0" P2 STD (2.375" O.D. x 0.154" thick) mount pipes per sector.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	116 mph
Exposure Category:	B
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
143.0	143.0	3	Commscope	VV-65A-R1_TMO	(3) 12.5 ft. Sector Mounts
		3	Ericsson	AIR6449 B41_T-MOBILE	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	Radio 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Application	Crown Order Number 589869 Rev. 1	-	CCI
RF Data Sheet	Sprint Retain RFDS Site ID: CTFF119A, dated 10/15/2021	-	CCI
Mount Design	Site Pro 1 Drawing #: VFA12-HD, dated 1/25/2017	-	Site Pro 1

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

Solid Round, Plate	ASTM A36 (GR 36)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A307

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

4) ANALYSIS RESULTS

Table 3a - Mount Component Stresses vs. Capacity (Sector Mount, Alpha Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Front Horizontals	A6	143.0	25.5	Pass
	Standoff Horizontals	A9		23.4	Pass
	Standoff Diagonals	A15		13.4	Pass
	Standoff Verticals	A14		28.3	Pass
	Connection Plate	A32		33.5	Pass
	Mount Pipe	AP1		40.1	Pass
	Tie Back	TB1A		1.7	Pass
2,3	Mount to Tower Connection	-		13.0	Pass
	Tieback to Tower Connection	-		3.3	Pass

Table 3b - Mount Component Stresses vs. Capacity (Sector Mount, Beta Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Front Horizontals	B46	143.0	25.2	Pass
	Standoff Horizontals	B49		23.4	Pass
	Standoff Diagonals	B55		13.4	Pass
	Standoff Verticals	B54		28.3	Pass
	Connection Plate	B72		33.6	Pass
	Mount Pipe	BP1		40.1	Pass
	Tie Back	TB1B		1.8	Pass
2,3	Mount to Tower Connection	-		13.1	Pass
	Tieback to Tower Connection	-		3.6	Pass

Table 3c - Mount Component Stresses vs. Capacity (Sector Mount, Gamma Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Front Horizontals	C86	143.0	25.0	Pass
	Standoff Horizontals	C89		23.4	Pass
	Standoff Diagonals	C95		13.4	Pass
	Standoff Verticals	C94		28.3	Pass
	Connection Plate	C112		33.6	Pass
	Mount Pipe	CP1		40.1	Pass
	Tie Back	TB1C		1.8	Pass
2,3	Mount to Tower Connection	-		13.1	Pass
	Tieback to Tower Connection	-		3.6	Pass

Structure Rating (max from all components) =	40.1%[3]

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

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)[3]	Notes
A189	Proposed	527.7	Leg	P3.5x0.216 (GR)	1305.2	2
A190	Proposed	512.7	Leg	P3.5x0.216 (GR)	1305.2	2
B121	Proposed	525.0	Leg	P3.5x0.216 (GR)	1305.2	2
B126	Proposed	510.5	Leg	P3.5x0.216 (GR)	1305.2	2
C190	Proposed	477.1	Leg	P3.5x0.216 (GR)	1305.2	2
C191	Proposed	463.9	Leg	P3.5x0.216 (GR)	1305.2	2

Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 Standard for Installation of Mounts and Appurtenances

4.1) Recommendations

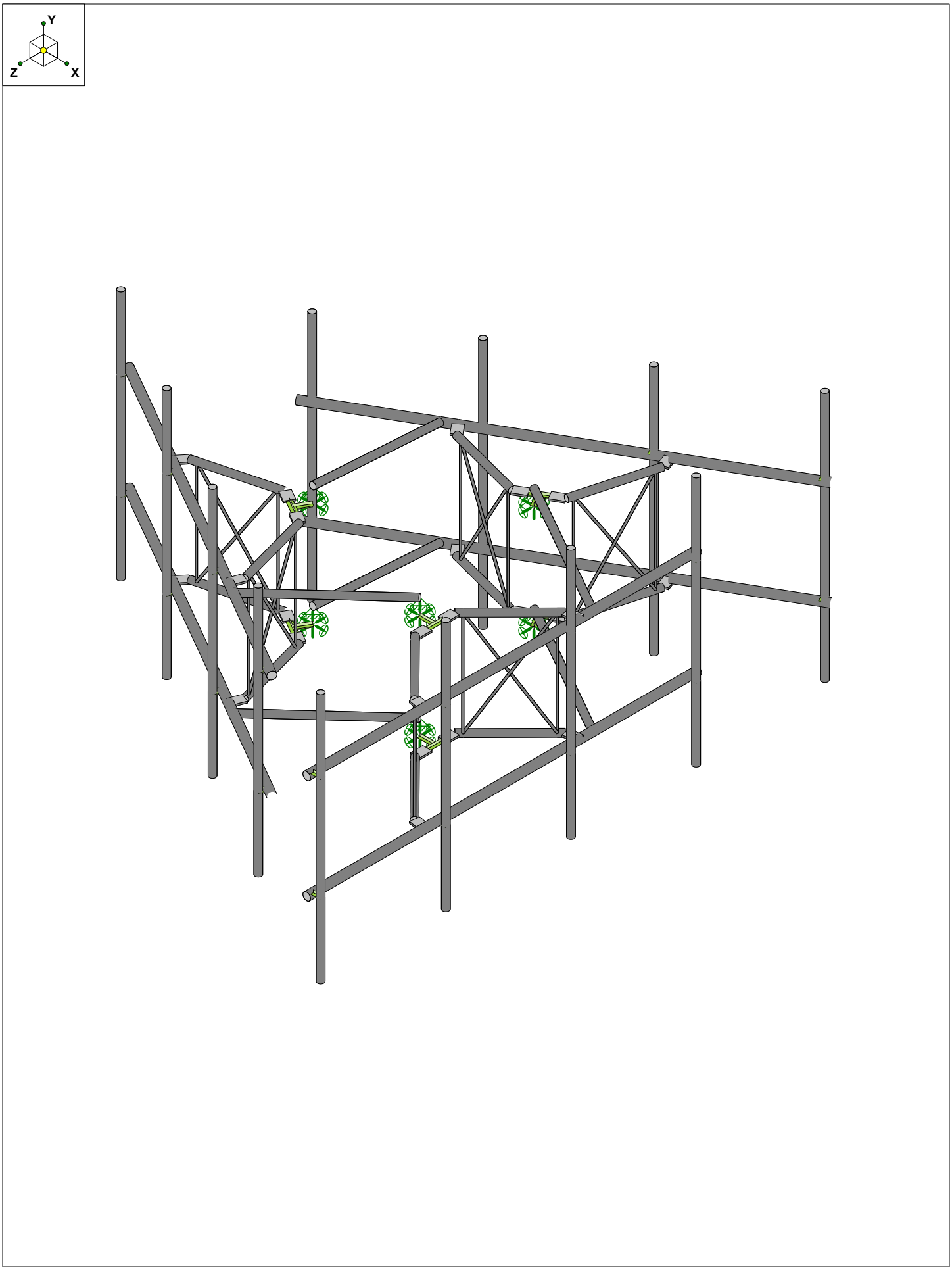
The proposed mount has sufficient capacity to support the proposed loading configuration. In order for the results of this analysis to be considered valid, the mount listed below shall be installed.

1. Mount replacement, Site Pro 1 VFA12-HD with (4) 8’-0” P2 STD (2.375” O.D. x 0.154” thick) mount pipes per sector.

Beyond the mount replacement, no structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS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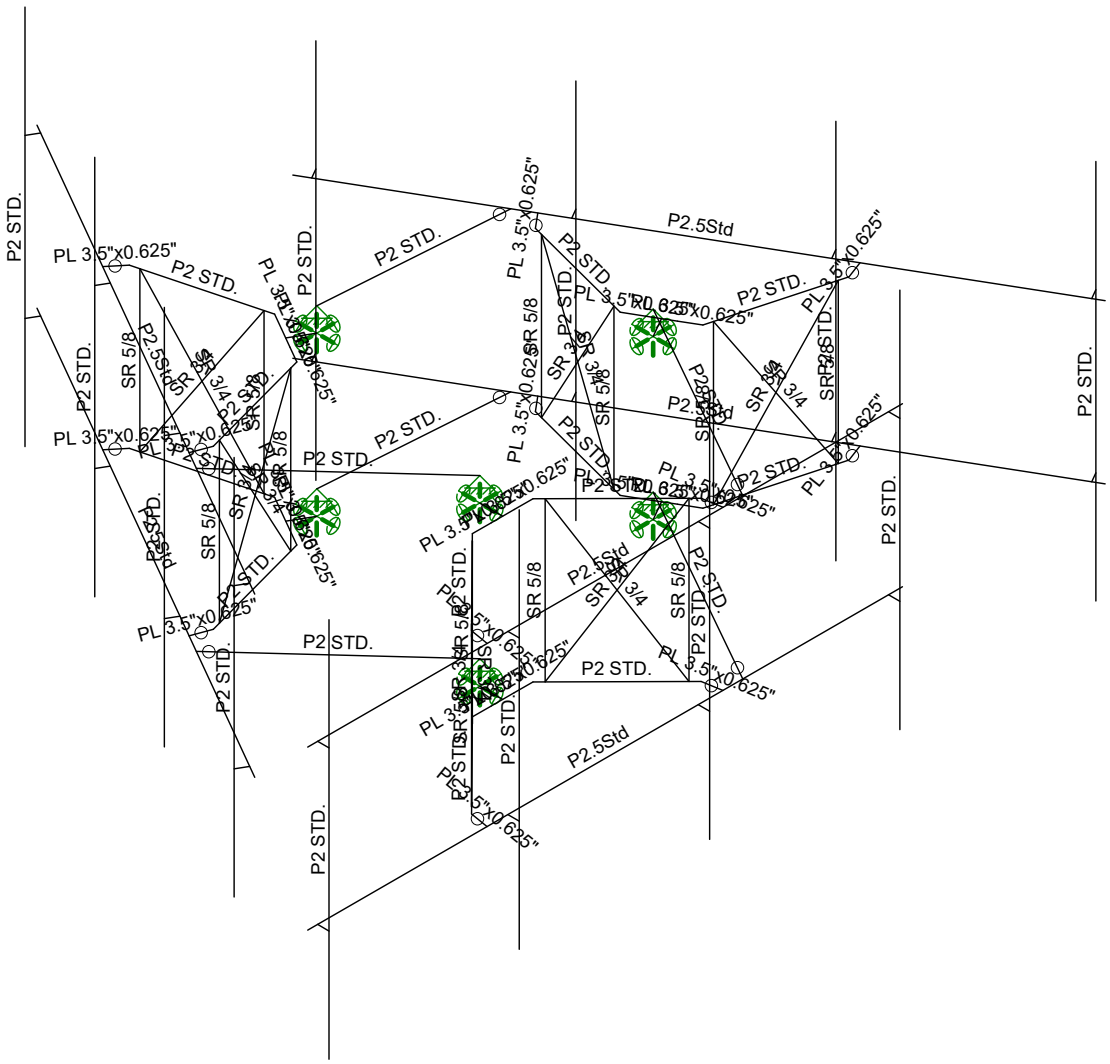
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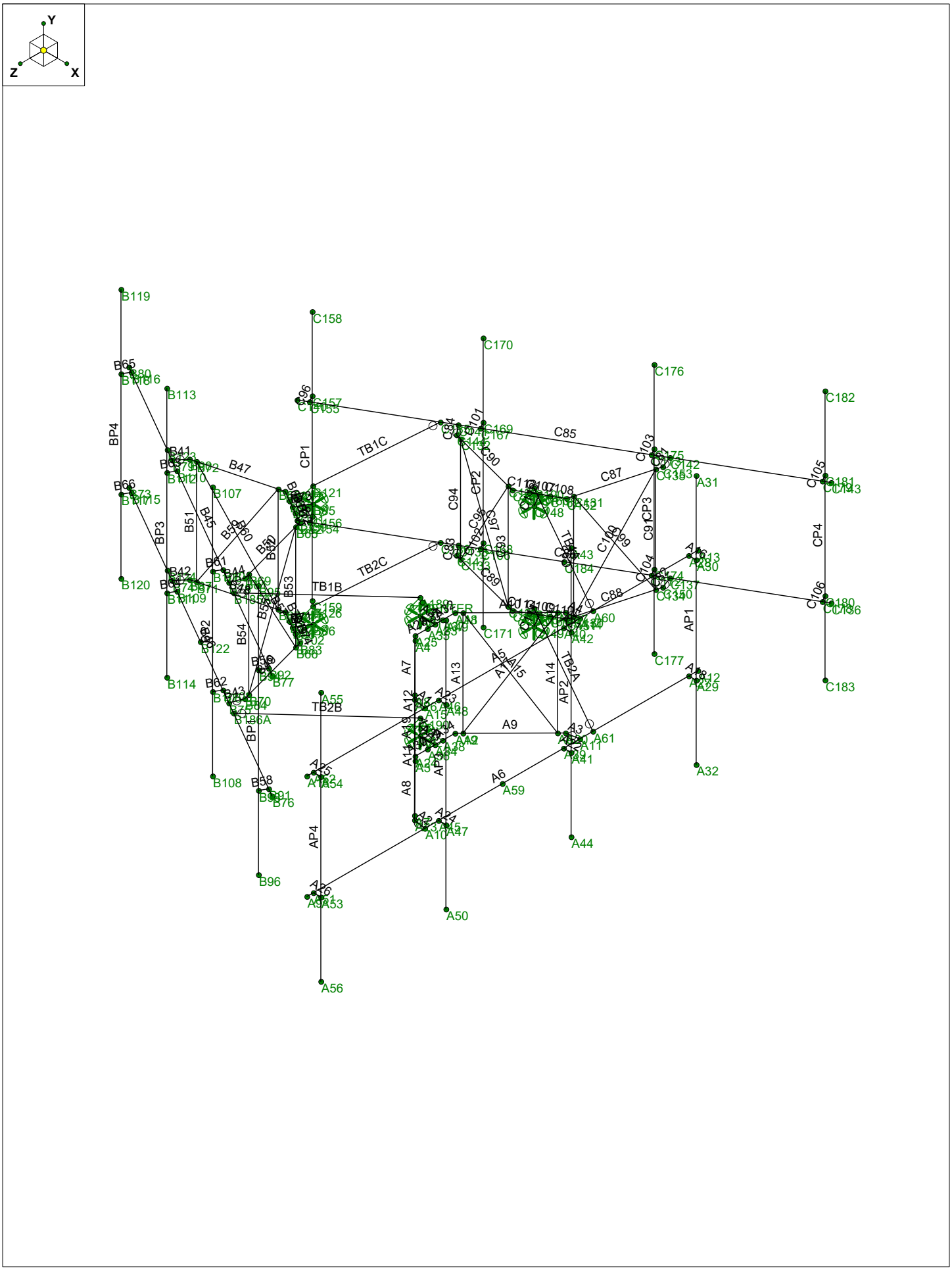
SR 3/4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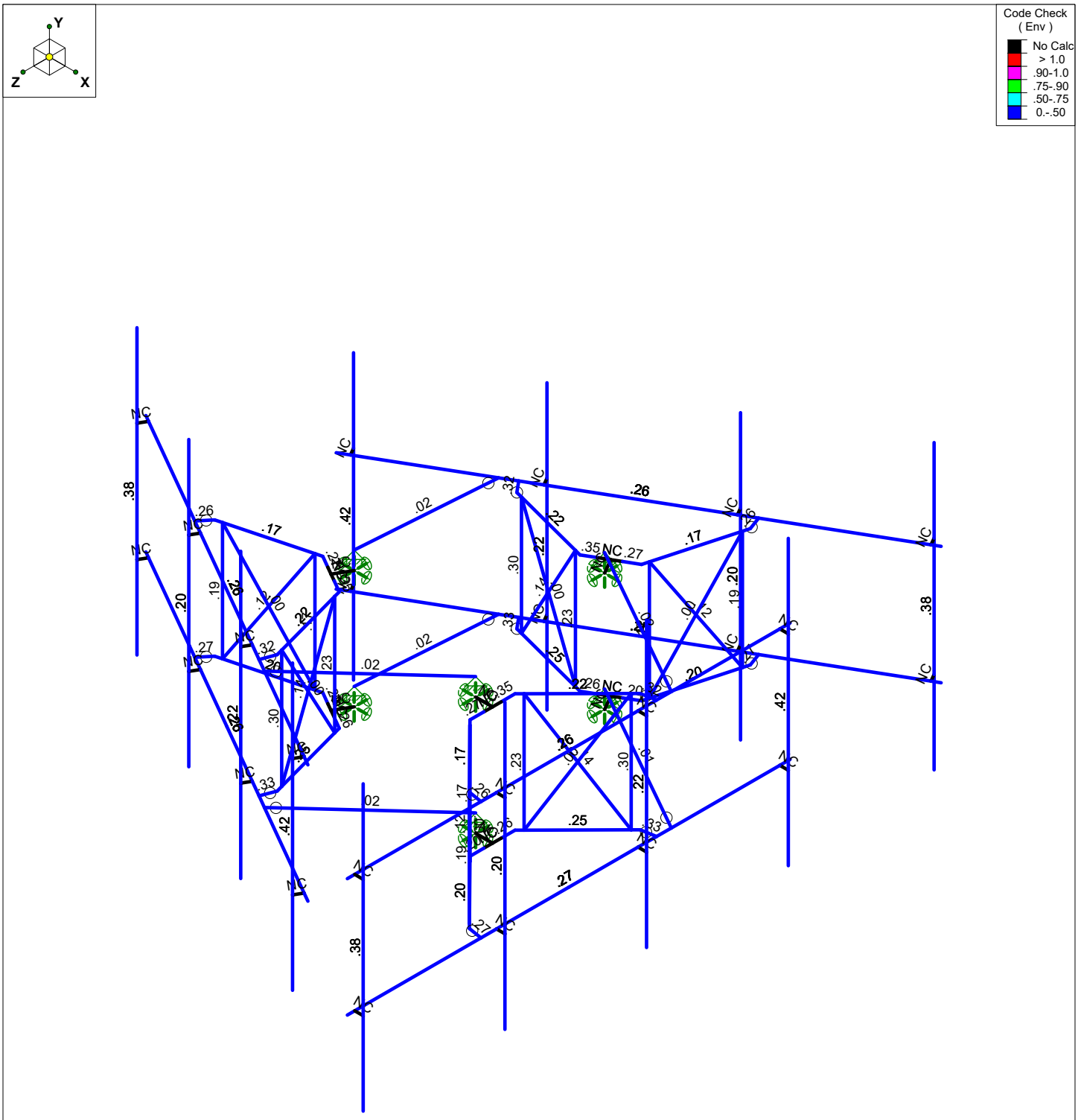
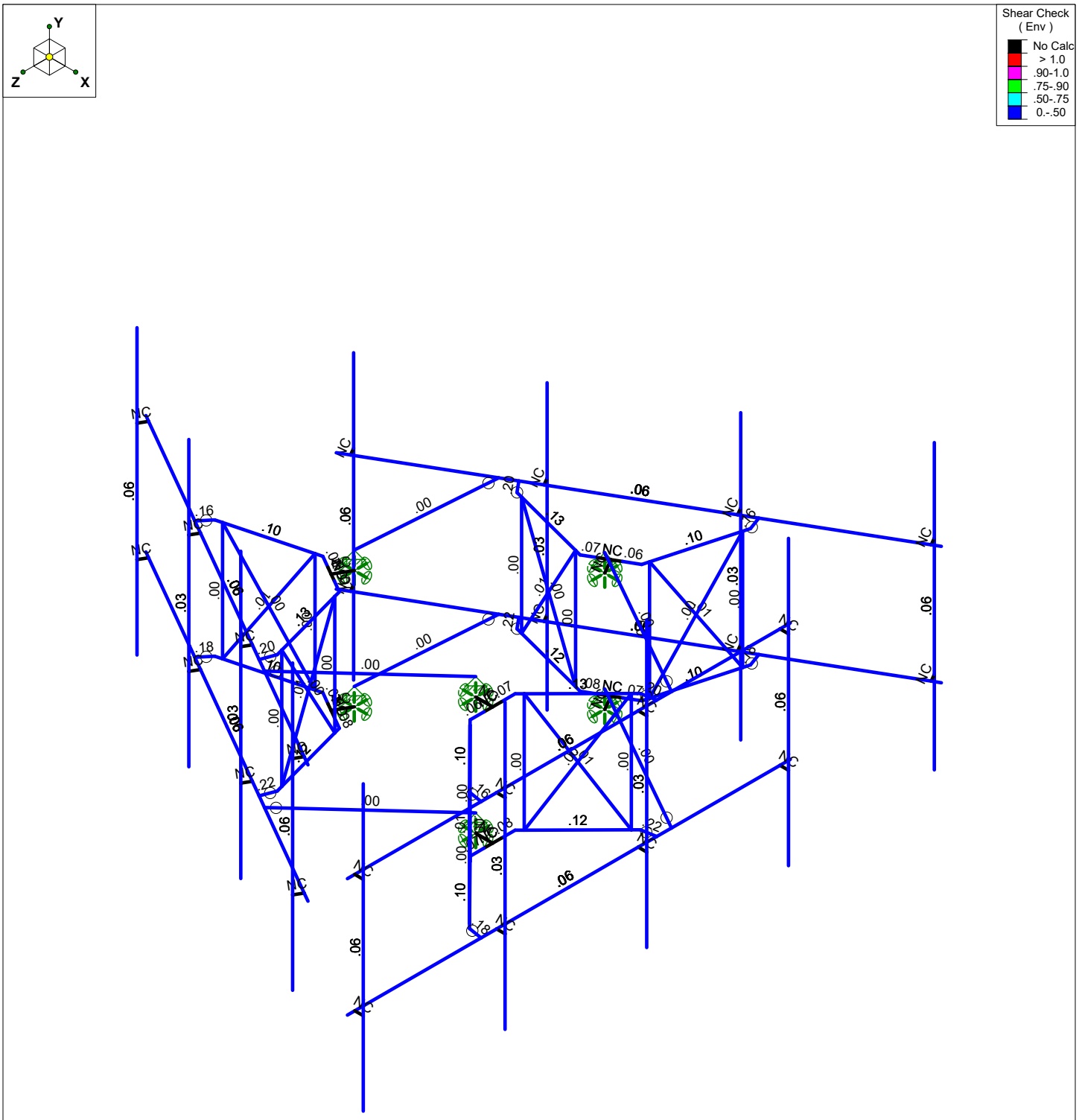
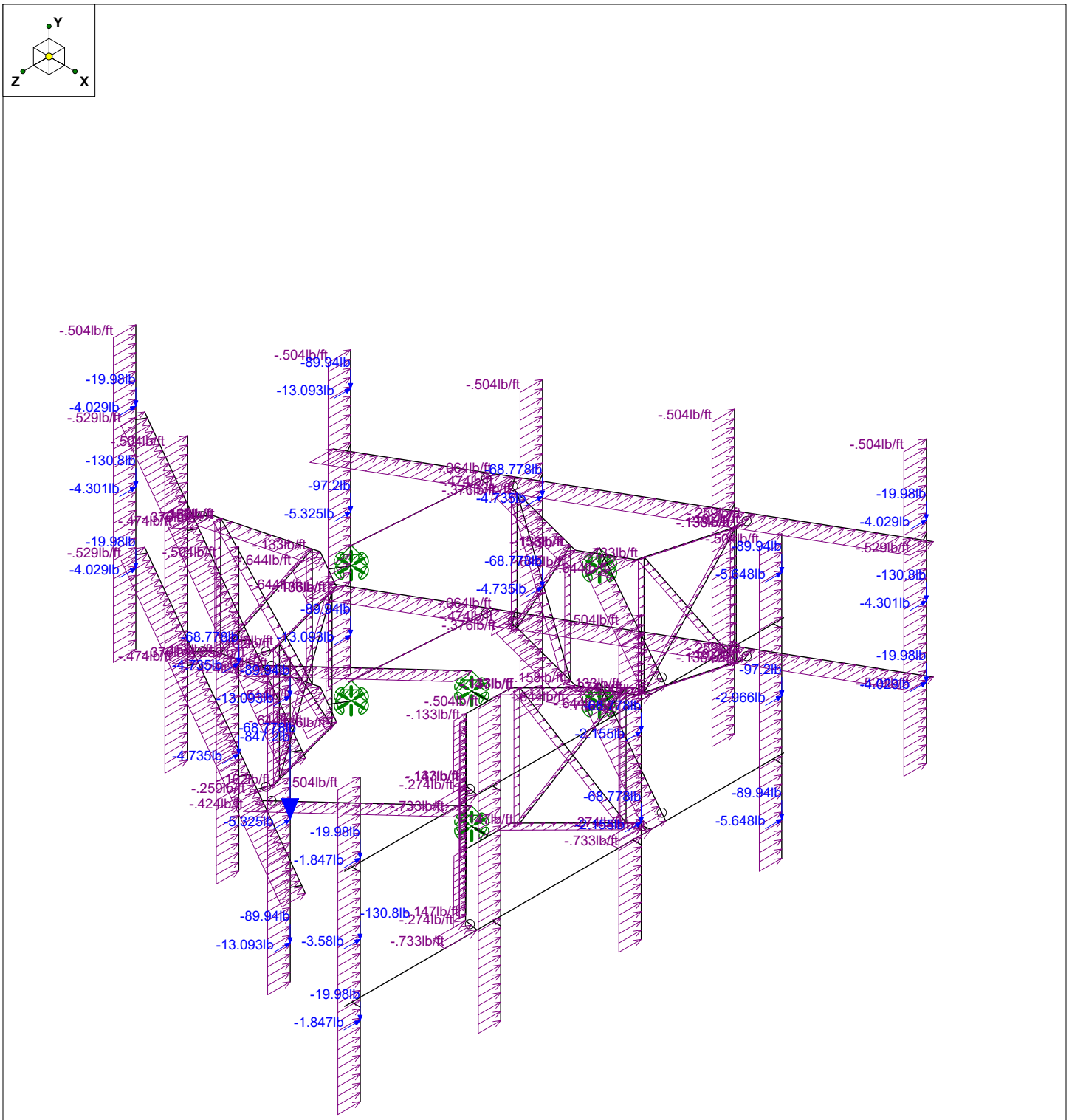
TB2B
A55
A9
A61
A32
B108
B58
B76
A59
A6
AP4
A44
B96
A50
A56



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



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



Loads: LC 95, 1.2 Dead + 1.5 Live_M - BP1 + 1.0 Wind @ 270°

APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 427.44 ft (NAVD 88)
Latitude: 41.238528
Longitude: -73.424139

Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 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:	Thu Nov 18 2021

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

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

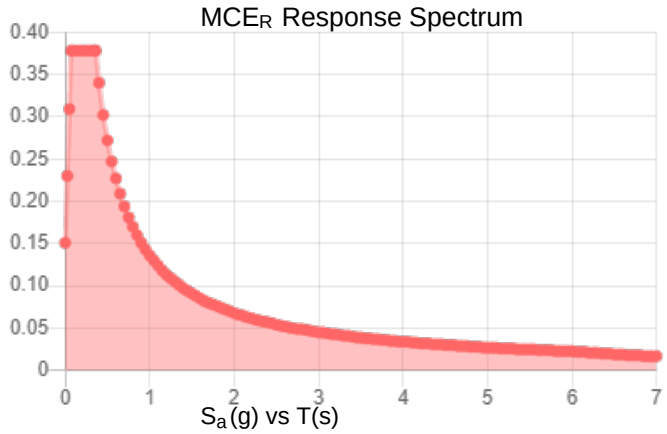
Seismic

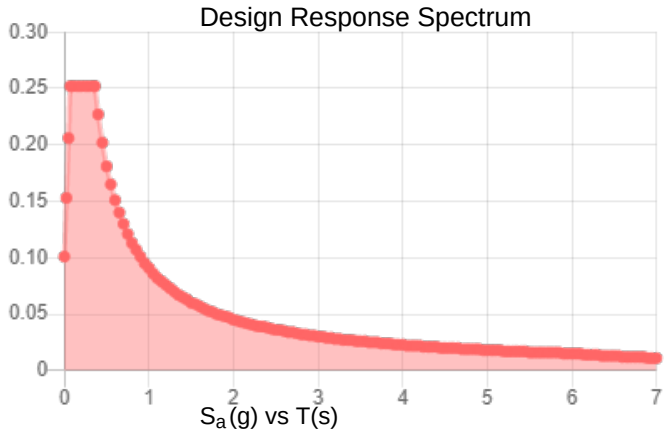
Site Soil Class: D - Default (see Section 11.4.3)

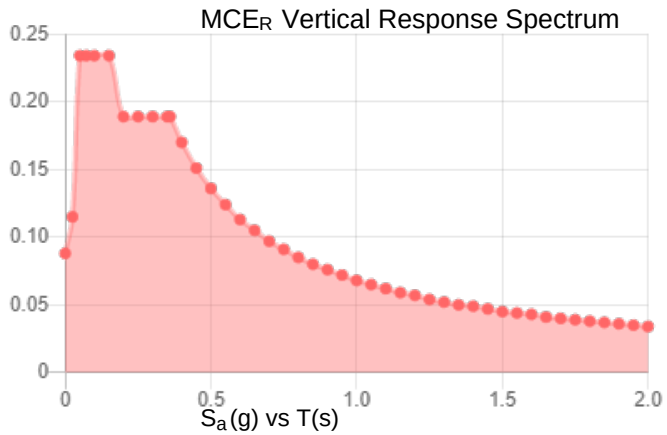
Results:

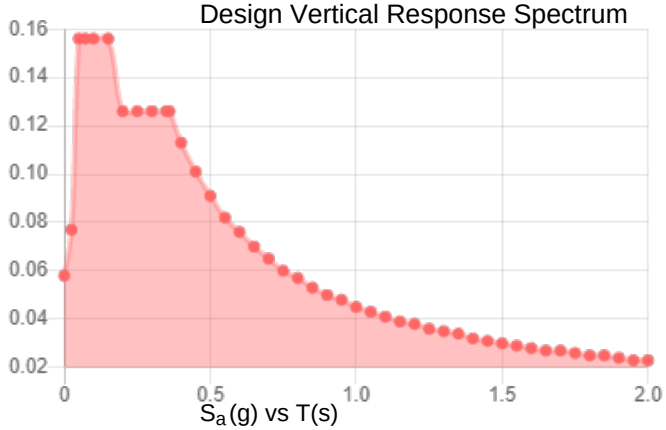
S_S :	0.236	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.139
F_v :	2.4	PGA_M :	0.211
S_{MS} :	0.378	F_{PGA} :	1.523
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.252	C_v :	0.773

Seismic Design Category B









Data Accessed: Thu Nov 18 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Nov 18 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.

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

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TIA-222-H: Mount Analysis Wind Loading
806353 - BRG 124 943066
2022777.806353.01

Structure Information		
Structure Type:	Self Support	
Structure Height:	180	ft
z (Mount Centerline) =	143	ft
Gh (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

Code Specifications		
TIA/EIA Code:	H	
Ultimate Wind Speed (No Ice) =	116	mph (3-s gust)
Ultimate Wind Speed (With Ice) =	50	mph (3-s gust)
Ice Thickness	1	in
Exposure Category	B	
Tower Base Elevation (AMSL)	425	ft

Topographic Inputs	
Topographic Feature:	N/A

Section Sets										No Ice	Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K_a	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*
Front Horizontals	Pipe	150.000	2.875	2.875		2.88	Round	0.90	1.00	10.14	3.40	5.71
Standoff Horizontals	Pipe	30.000	2.375	2.375		2.38	Round	0.90	1.00	6.46	2.01	5.00
Standoff Diagonals	Pipe	48.000	0.75	0.75		0.75	Round	0.90	1.00	2.65	1.66	2.70
Standoff Verticals	Pipe	40.000	0.625	0.625		0.63	Round	0.90	1.00	2.20	1.52	2.52
Connection Plate	Square/Rect.	5.000	3.5	0.625		3.56	Flat	0.90	1.00	12.35	3.18	6.67
Mount Pipe	Pipe	96.000	2.375	2.375		2.38	Round	0.90	1.00	8.38	2.82	5.00
Tie Back	Pipe	60.000	2.375	2.375		2.38	Round	0.90	1.00	8.38	2.38	5.00

*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K_a and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(3) VV-65A-R1_TMO	143	54.7	12	4.6	33.3	CFD	0%	0%	0.90	142.22	33.30	32.89	86.46
(3) AIR6449 B41_T-MOBILE	143	33.11	20.51	8.54	114.63	CFD	0%	0%	0.90	167.30	114.63	37.07	97.76
(3) APXVAALL24_43-U-NA20_TMO	143	95.9	24	8.5	149.9	CFD	0%	0%	0.90	465.70	149.90	97.10	274.32
(3) RADIO 4460 B2/B25 B66_TMO	143	17	15.1	11.9	109	Flat	0%	0%	0.90	67.91	109.00	14.90	55.98
(3) Radio 4480_TMOV2	143	22	15.7	7.5	81	Flat	0%	0%	0.90	91.37	81.00	19.63	55.40

*All forces are unfactored.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	20
Max Internal Sections for Member Calcs	39
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	No
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	No
Ct X	.035
Ct Z	.035
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	8.5
R Z	8.5
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	Not Entered
Occupancy Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53-b	29000	11154	.3	.65	.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design L...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Front Horizontals	P2.5Std	None	None	A53-b	Typical	1.704	1.53	1.53	3.059
2	Standoff Horizontals	P2 STD.	None	None	A53-b	Typical	1.075	.666	.666	1.331
3	Standoff Diagonals	SR 3/4	None	None	A36 Gr.36	Typical	.442	.016	.016	.031
4	Standoff Verticals	SR 5/8	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
5	Connection Plate	PL 3.5"x0.625"	None	None	A36 Gr.36	Typical	2.188	.071	2.233	.253
6	Mount Pipe	P2 STD.	None	None	A53-b	Typical	1.075	.666	.666	1.331
7	Tie Back	P2 STD.	None	None	A53-b	Typical	1.075	.666	.666	1.331

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	A21	Reaction	Reaction	Reaction	Reaction		Reaction
2	A22	Reaction	Reaction	Reaction	Reaction		Reaction
3	A33						
4	A34						
5	A35						
6	A36						
7	A37						
8	A38						

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
9	A189	Reaction	Reaction	Reaction			
10	A190	Reaction	Reaction	Reaction			
11	B85	Reaction	Reaction	Reaction	Reaction		Reaction
12	B86	Reaction	Reaction	Reaction	Reaction		Reaction
13	B97						
14	B98						
15	B99						
16	B100						
17	B101						
18	B102						
19	B121	Reaction	Reaction	Reaction			
20	B126	Reaction	Reaction	Reaction			
21	C190	Reaction	Reaction	Reaction			
22	C191	Reaction	Reaction	Reaction			
23	C148	Reaction	Reaction	Reaction	Reaction		Reaction
24	C149	Reaction	Reaction	Reaction	Reaction		Reaction
25	C160						
26	C161						
27	C162						
28	C163						
29	C164						
30	C165						

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	A1	A15	A26		90	Connection Plate	None	None	A36 Gr.36	Typical
2	A2	A10	A23		90	Connection Plate	None	None	A36 Gr.36	Typical
3	A3	A11	A20		90	Connection Plate	None	None	A36 Gr.36	Typical
4	A4	A14	A17		90	Connection Plate	None	None	A36 Gr.36	Typical
5	A5	A16	A13			Front Horizontals	None	None	A53-b	Typical
6	A6	A9	A12			Front Horizontals	None	None	A53-b	Typical
7	A7	A26	A25			Standoff Horizontals	None	None	A53-b	Typical
8	A8	A23	A24			Standoff Horizontals	None	None	A53-b	Typical
9	A9	A20	A19			Standoff Horizontals	None	None	A53-b	Typical
10	A10	A17	A18			Standoff Horizontals	None	None	A53-b	Typical
11	A11	A8	A7		46	Standoff Verticals	None	None	A36 Gr.36	Typical
12	A12	A4	A3		46	Standoff Verticals	None	None	A36 Gr.36	Typical
13	A13	A1	A2		46	Standoff Verticals	None	None	A36 Gr.36	Typical
14	A14	A5	A6		46	Standoff Verticals	None	None	A36 Gr.36	Typical
15	A15	A1	A6			Standoff Diagonals	None	None	A36 Gr.36	Typical
16	A16	A28	A30			RIGID	None	None	RIGID	Typical
17	A17	A2	A5			Standoff Diagonals	None	None	A36 Gr.36	Typical
18	A18	A27	A29			RIGID	None	None	RIGID	Typical
19	A19	A7	A4			Standoff Diagonals	None	None	A36 Gr.36	Typical
20	A20	A8	A3			Standoff Diagonals	None	None	A36 Gr.36	Typical
21	A21	A40	A42			RIGID	None	None	RIGID	Typical
22	A22	A39	A41			RIGID	None	None	RIGID	Typical
23	A23	A46	A48			RIGID	None	None	RIGID	Typical
24	A24	A45	A47			RIGID	None	None	RIGID	Typical
25	A25	A52	A54			RIGID	None	None	RIGID	Typical
26	A26	A51	A53			RIGID	None	None	RIGID	Typical
27	A27	A35	A37			RIGID	None	None	RIGID	Typical
28	A28	A25	A35		90	Connection Plate	None	None	A36 Gr.36	Typical
29	A29	A36	A38			RIGID	None	None	RIGID	Typical
30	A30	A24	A36		90	Connection Plate	None	None	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
31	A31	A34	A22			RIGID	None	None	RIGID	Typical
32	A32	A37	A18		90	Connection Plate	None	None	A36 Gr.36	Typical
33	A33	A33	A21			RIGID	None	None	RIGID	Typical
34	A34	A38	A19		90	Connection Plate	None	None	A36 Gr.36	Typical
35	AP1	A31	A32		46	Mount Pipe	None	None	A53-b	Typical
36	AP2	A43	A44		46	Mount Pipe	None	None	A53-b	Typical
37	AP3	A49	A50		46	Mount Pipe	None	None	A53-b	Typical
38	AP4	A55	A56		46	Mount Pipe	None	None	A53-b	Typical
39	B41	B79	B90		90	Connection Plate	None	None	A36 Gr.36	Typical
40	B42	B74	B87		90	Connection Plate	None	None	A36 Gr.36	Typical
41	B43	B75	B84		90	Connection Plate	None	None	A36 Gr.36	Typical
42	B44	B78	B81		90	Connection Plate	None	None	A36 Gr.36	Typical
43	B45	B80	B77			Front Horizontals	None	None	A53-b	Typical
44	B46	B73	B76			Front Horizontals	None	None	A53-b	Typical
45	B47	B90	B89			Standoff Horizontals	None	None	A53-b	Typical
46	B48	B87	B88			Standoff Horizontals	None	None	A53-b	Typical
47	B49	B84	B83			Standoff Horizontals	None	None	A53-b	Typical
48	B50	B81	B82			Standoff Horizontals	None	None	A53-b	Typical
49	B51	B72	B71		166	Standoff Verticals	None	None	A36 Gr.36	Typical
50	B52	B68	B67		166	Standoff Verticals	None	None	A36 Gr.36	Typical
51	B53	B65	B66		166	Standoff Verticals	None	None	A36 Gr.36	Typical
52	B54	B69	B70		166	Standoff Verticals	None	None	A36 Gr.36	Typical
53	B55	B65	B70			Standoff Diagonals	None	None	A36 Gr.36	Typical
54	B56	B92	B94			RIGID	None	None	RIGID	Typical
55	B57	B66	B69			Standoff Diagonals	None	None	A36 Gr.36	Typical
56	B58	B91	B93			RIGID	None	None	RIGID	Typical
57	B59	B71	B68			Standoff Diagonals	None	None	A36 Gr.36	Typical
58	B60	B72	B67			Standoff Diagonals	None	None	A36 Gr.36	Typical
59	B61	B104	B106			RIGID	None	None	RIGID	Typical
60	B62	B103	B105			RIGID	None	None	RIGID	Typical
61	B63	B110	B112			RIGID	None	None	RIGID	Typical
62	B64	B109	B111			RIGID	None	None	RIGID	Typical
63	B65	B116	B118			RIGID	None	None	RIGID	Typical
64	B66	B115	B117			RIGID	None	None	RIGID	Typical
65	B67	B99	B101			RIGID	None	None	RIGID	Typical
66	B68	B89	B99		90	Connection Plate	None	None	A36 Gr.36	Typical
67	B69	B100	B102			RIGID	None	None	RIGID	Typical
68	B70	B88	B100		90	Connection Plate	None	None	A36 Gr.36	Typical
69	B71	B98	B86			RIGID	None	None	RIGID	Typical
70	B72	B101	B82		90	Connection Plate	None	None	A36 Gr.36	Typical
71	B73	B97	B85			RIGID	None	None	RIGID	Typical
72	B74	B102	B83		90	Connection Plate	None	None	A36 Gr.36	Typical
73	BP1	B95	B96		166	Mount Pipe	None	None	A53-b	Typical
74	BP2	B107	B108		166	Mount Pipe	None	None	A53-b	Typical
75	BP3	B113	B114		166	Mount Pipe	None	None	A53-b	Typical
76	BP4	B119	B120		166	Mount Pipe	None	None	A53-b	Typical
77	C81	C142	C153		90	Connection Plate	None	None	A36 Gr.36	Typical
78	C82	C137	C150		90	Connection Plate	None	None	A36 Gr.36	Typical
79	C83	C138	C147		90	Connection Plate	None	None	A36 Gr.36	Typical
80	C84	C141	C144		90	Connection Plate	None	None	A36 Gr.36	Typical
81	C85	C143	C140			Front Horizontals	None	None	A53-b	Typical
82	C86	C136	C139			Front Horizontals	None	None	A53-b	Typical
83	C87	C153	C152			Standoff Horizontals	None	None	A53-b	Typical
84	C88	C150	C151			Standoff Horizontals	None	None	A53-b	Typical
85	C89	C147	C146			Standoff Horizontals	None	None	A53-b	Typical
86	C90	C144	C145			Standoff Horizontals	None	None	A53-b	Typical
87	C91	C135	C134		286	Standoff Verticals	None	None	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
88	C92	C131	C130		286	Standoff Verticals	None	None	A36 Gr.36	Typical
89	C93	C128	C129		286	Standoff Verticals	None	None	A36 Gr.36	Typical
90	C94	C132	C133		286	Standoff Verticals	None	None	A36 Gr.36	Typical
91	C95	C128	C133			Standoff Diagonals	None	None	A36 Gr.36	Typical
92	C96	C155	C157			RIGID	None	None	RIGID	Typical
93	C97	C129	C132			Standoff Diagonals	None	None	A36 Gr.36	Typical
94	C98	C154	C156			RIGID	None	None	RIGID	Typical
95	C99	C134	C131			Standoff Diagonals	None	None	A36 Gr.36	Typical
96	C100	C135	C130			Standoff Diagonals	None	None	A36 Gr.36	Typical
97	C101	C167	C169			RIGID	None	None	RIGID	Typical
98	C102	C166	C168			RIGID	None	None	RIGID	Typical
99	C103	C173	C175			RIGID	None	None	RIGID	Typical
100	C104	C172	C174			RIGID	None	None	RIGID	Typical
101	C105	C179	C181			RIGID	None	None	RIGID	Typical
102	C106	C178	C180			RIGID	None	None	RIGID	Typical
103	C107	C162	C164			RIGID	None	None	RIGID	Typical
104	C108	C152	C162		90	Connection Plate	None	None	A36 Gr.36	Typical
105	C109	C163	C165			RIGID	None	None	RIGID	Typical
106	C110	C151	C163		90	Connection Plate	None	None	A36 Gr.36	Typical
107	C111	C161	C149			RIGID	None	None	RIGID	Typical
108	C112	C164	C145		90	Connection Plate	None	None	A36 Gr.36	Typical
109	C113	C160	C148			RIGID	None	None	RIGID	Typical
110	C114	C165	C146		90	Connection Plate	None	None	A36 Gr.36	Typical
111	CP1	C158	C159		286	Mount Pipe	None	None	A53-b	Typical
112	CP2	C170	C171		286	Mount Pipe	None	None	A53-b	Typical
113	CP3	C176	C177		286	Mount Pipe	None	None	A53-b	Typical
114	CP4	C182	C183		286	Mount Pipe	None	None	A53-b	Typical
115	TB1A	A60	C190			Tie Back	None	None	A53-b	Typical
116	TB1B	B185A	A189			Tie Back	None	None	A53-b	Typical
117	TB1C	C185	B121			Tie Back	None	None	A53-b	Typical
118	TB2A	A61	C191			Tie Back	None	None	A53-b	Typical
119	TB2B	B186A	A190			Tie Back	None	None	A53-b	Typical
120	TB2C	C186	B126			Tie Back	None	None	A53-b	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(Pl...
1	Dead	DL		-1			30			
2	No Ice Wind 0 deg	None					30	84		
3	No Ice Wind 30 deg	None					60	156		
4	No Ice Wind 60 deg	None					60	168		
5	No Ice Wind 90 deg	None					30	78		
6	No Ice Wind 120 deg	None					60	168		
7	No Ice Wind 150 deg	None					60	156		
8	No Ice Wind 180 deg	None					30	84		
9	No Ice Wind 210 deg	None					60	156		
10	No Ice Wind 240 deg	None					60	168		
11	No Ice Wind 270 deg	None					30	78		
12	No Ice Wind 300 deg	None					60	168		
13	No Ice Wind 330 deg	None					60	156		
14	Ice Weight	None					30	84		
15	Ice Wind 0 deg	None					30	84		
16	Ice Wind 30 deg	None					60	156		
17	Ice Wind 60 deg	None					60	168		
18	Ice Wind 90 deg	None					30	78		
19	Ice Wind 120 deg	None					60	168		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(Pl...
20	Ice Wind 150 deg	None					60	156		
21	Ice Wind 180 deg	None					30	84		
22	Ice Wind 210 deg	None					60	156		
23	Ice Wind 240 deg	None					60	168		
24	Ice Wind 270 deg	None					30	78		
25	Ice Wind 300 deg	None					60	168		
26	Ice Wind 330 deg	None					60	156		
27	Live Load - AP1	None					1			
28	Live Load - AP2	None					1			
29	Live Load - AP3	None					1			
30	Live Load - AP4	None					1			
31	Live Load - BP1	None					1			
32	Live Load - BP2	None					1			
33	Live Load - BP3	None					1			
34	Live Load - BP4	None					1			
35	Live Load - CP1	None					1			
36	Live Load - CP2	None					1			
37	Live Load - CP3	None					1			
38	Live Load - CP4	None					1			
39	Live Load - A5 (Start)	None					1			
40	Live Load - A5 (Midd...	None					1			
41	Live Load - A5 (End)	None					1			
42	Live Load - A6 (Start)	None					1			
43	Live Load - A6 (Midd...	None					1			
44	Live Load - A6 (End)	None					1			
45	Live Load - A7 (Start)	None					1			
46	Live Load - A7 (Midd...	None					1			
47	Live Load - A7 (End)	None					1			
48	Live Load - A8 (Start)	None					1			
49	Live Load - A8 (Midd...	None					1			
50	Live Load - A8 (End)	None					1			
51	Live Load - A9 (Start)	None					1			
52	Live Load - A9 (Midd...	None					1			
53	Live Load - A9 (End)	None					1			
54	Live Load - A10 (Start)	None					1			
55	Live Load - A10 (Mid...	None					1			
56	Live Load - A10 (End)	None					1			
57	Live Load - B45 (Start)	None					1			
58	Live Load - B45 (Mid...	None					1			
59	Live Load - B45 (End)	None					1			
60	Live Load - B46 (Start)	None					1			
61	Live Load - B46 (Mid...	None					1			
62	Live Load - B46 (End)	None					1			
63	Live Load - B47 (Start)	None					1			
64	Live Load - B47 (Mid...	None					1			
65	Live Load - B47 (End)	None					1			
66	Live Load - B48 (Start)	None					1			
67	Live Load - B48 (Mid...	None					1			
68	Live Load - B48 (End)	None					1			
69	Live Load - B49 (Start)	None					1			
70	Live Load - B49 (Mid...	None					1			
71	Live Load - B49 (End)	None					1			
72	Live Load - B50 (Start)	None					1			
73	Live Load - B50 (Mid...	None					1			
74	Live Load - B50 (End)	None					1			
75	Live Load - C85 (Sta...	None					1			
76	Live Load - C85 (Mid...	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(Pl...
77	Live Load - C85 (End)	None					1			
78	Live Load - C86 (Sta...	None					1			
79	Live Load - C86 (Mid...	None					1			
80	Live Load - C86 (End)	None					1			
81	Live Load - C87 (Sta...	None					1			
82	Live Load - C87 (Mid...	None					1			
83	Live Load - C87 (End)	None					1			
84	Live Load - C88 (Sta...	None					1			
85	Live Load - C88 (Mid...	None					1			
86	Live Load - C88 (End)	None					1			
87	Live Load - C89 (Sta...	None					1			
88	Live Load - C89 (Mid...	None					1			
89	Live Load - C89 (End)	None					1			
90	Live Load - C90 (Sta...	None					1			
91	Live Load - C90 (Mid...	None					1			
92	Live Load - C90 (End)	None					1			

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 Dead	Yes	Y		1	1.4	0		0		0		0		0		0		0					
2	1.2 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y		1	1.2	2	1	0		0		0		0		0		0					
3	0.9 Dead + 1.0 Wind @ 0° - No Ice	Yes	Y		1	.9	2	1	0		0		0		0		0		0					
4	1.2 Dead + 1.0 Wind @ 30° - No I...	Yes	Y		1	1.2	3	1	0		0		0		0		0		0					
5	0.9 Dead + 1.0 Wind @ 30° - No I...	Yes	Y		1	.9	3	1	0		0		0		0		0		0					
6	1.2 Dead + 1.0 Wind @ 60° - No I...	Yes	Y		1	1.2	4	1	0		0		0		0		0		0					
7	0.9 Dead + 1.0 Wind @ 60° - No I...	Yes	Y		1	.9	4	1	0		0		0		0		0		0					
8	1.2 Dead + 1.0 Wind @ 90° - No I...	Yes	Y		1	1.2	5	1	0		0		0		0		0		0					
9	0.9 Dead + 1.0 Wind @ 90° - No I...	Yes	Y		1	.9	5	1	0		0		0		0		0		0					
10	1.2 Dead + 1.0 Wind @ 120° - No...	Yes	Y		1	1.2	6	1	0		0		0		0		0		0					
11	0.9 Dead + 1.0 Wind @ 120° - No...	Yes	Y		1	.9	6	1	0		0		0		0		0		0					
12	1.2 Dead + 1.0 Wind @ 150° - No...	Yes	Y		1	1.2	7	1	0		0		0		0		0		0					
13	0.9 Dead + 1.0 Wind @ 150° - No...	Yes	Y		1	.9	7	1	0		0		0		0		0		0					
14	1.2 Dead + 1.0 Wind @ 180° - No...	Yes	Y		1	1.2	8	1	0		0		0		0		0		0					
15	0.9 Dead + 1.0 Wind @ 180° - No...	Yes	Y		1	.9	8	1	0		0		0		0		0		0					
16	1.2 Dead + 1.0 Wind @ 210° - No...	Yes	Y		1	1.2	9	1	0		0		0		0		0		0					
17	0.9 Dead + 1.0 Wind @ 210° - No...	Yes	Y		1	.9	9	1	0		0		0		0		0		0					
18	1.2 Dead + 1.0 Wind @ 240° - No...	Yes	Y		1	1.2	10	1	0		0		0		0		0		0					
19	0.9 Dead + 1.0 Wind @ 240° - No...	Yes	Y		1	.9	10	1	0		0		0		0		0		0					
20	1.2 Dead + 1.0 Wind @ 270° - No...	Yes	Y		1	1.2	11	1	0		0		0		0		0		0					
21	0.9 Dead + 1.0 Wind @ 270° - No...	Yes	Y		1	.9	11	1	0		0		0		0		0		0					
22	1.2 Dead + 1.0 Wind @ 300° - No...	Yes	Y		1	1.2	12	1	0		0		0		0		0		0					
23	0.9 Dead + 1.0 Wind @ 300° - No...	Yes	Y		1	.9	12	1	0		0		0		0		0		0					
24	1.2 Dead + 1.0 Wind @ 330° - No...	Yes	Y		1	1.2	13	1	0		0		0		0		0		0					
25	0.9 Dead + 1.0 Wind @ 330° - No...	Yes	Y		1	.9	13	1	0		0		0		0		0		0					
26	1.2 Dead + 1.0 Ice Wind @ 0°+ 1...	Yes	Y		1	1.2	15	1	14	1		1	0		0		0		0					
27	1.2 Dead + 1.0 Ice Wind @ 30°+ ...	Yes	Y		1	1.2	16	1	14	1		1	0		0		0		0					
28	1.2 Dead + 1.0 Ice Wind @ 60°+ ...	Yes	Y		1	1.2	17	1	14	1		1	0		0		0		0					
29	1.2 Dead + 1.0 Ice Wind @ 90°+ ...	Yes	Y		1	1.2	18	1	14	1		1	0		0		0		0					
30	1.2 Dead + 1.0 Ice Wind @ 120°+...	Yes	Y		1	1.2	19	1	14	1		1	0		0		0		0					
31	1.2 Dead + 1.0 Ice Wind @ 150°+...	Yes	Y		1	1.2	20	1	14	1		1	0		0		0		0					
32	1.2 Dead + 1.0 Ice Wind @ 180°+...	Yes	Y		1	1.2	21	1	14	1		1	0		0		0		0					
33	1.2 Dead + 1.0 Ice Wind @ 210°+...	Yes	Y		1	1.2	22	1	14	1		1	0		0		0		0					
34	1.2 Dead + 1.0 Ice Wind @ 240°+...	Yes	Y		1	1.2	23	1	14	1		1	0		0		0		0					
35	1.2 Dead + 1.0 Ice Wind @ 270°+...	Yes	Y		1	1.2	24	1	14	1		1	0		0		0		0					
36	1.2 Dead + 1.0 Ice Wind @ 300°+...	Yes	Y		1	1.2	25	1	14	1		1	0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
37	1.2 Dead + 1.0 Ice Wind @ 330°+...	Yes	Y		1	1.2	26	1	14	1		1	0		0		0		0					
38	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	2	.067	0		0		0		0		0					
39	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	3	.067	0		0		0		0		0					
40	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	4	.067	0		0		0		0		0					
41	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	5	.067	0		0		0		0		0					
42	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	6	.067	0		0		0		0		0					
43	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	7	.067	0		0		0		0		0					
44	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	8	.067	0		0		0		0		0					
45	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	9	.067	0		0		0		0		0					
46	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	10	.067	0		0		0		0		0					
47	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	11	.067	0		0		0		0		0					
48	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	12	.067	0		0		0		0		0					
49	1.2 Dead + 1.5 Live_M - AP1 + 1...	Yes	Y		1	1.2	27	1.5	13	.067	0		0		0		0		0					
50	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	2	.067	0		0		0		0		0					
51	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	3	.067	0		0		0		0		0					
52	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	4	.067	0		0		0		0		0					
53	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	5	.067	0		0		0		0		0					
54	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	6	.067	0		0		0		0		0					
55	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	7	.067	0		0		0		0		0					
56	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	8	.067	0		0		0		0		0					
57	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	9	.067	0		0		0		0		0					
58	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	10	.067	0		0		0		0		0					
59	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	11	.067	0		0		0		0		0					
60	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	12	.067	0		0		0		0		0					
61	1.2 Dead + 1.5 Live_M - AP2 + 1...	Yes	Y		1	1.2	28	1.5	13	.067	0		0		0		0		0					
62	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	2	.067	0		0		0		0		0					
63	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	3	.067	0		0		0		0		0					
64	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	4	.067	0		0		0		0		0					
65	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	5	.067	0		0		0		0		0					
66	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	6	.067	0		0		0		0		0					
67	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	7	.067	0		0		0		0		0					
68	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	8	.067	0		0		0		0		0					
69	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	9	.067	0		0		0		0		0					
70	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	10	.067	0		0		0		0		0					
71	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	11	.067	0		0		0		0		0					
72	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	12	.067	0		0		0		0		0					
73	1.2 Dead + 1.5 Live_M - AP3 + 1...	Yes	Y		1	1.2	29	1.5	13	.067	0		0		0		0		0					
74	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	2	.067	0		0		0		0		0					
75	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	3	.067	0		0		0		0		0					
76	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	4	.067	0		0		0		0		0					
77	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	5	.067	0		0		0		0		0					
78	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	6	.067	0		0		0		0		0					
79	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	7	.067	0		0		0		0		0					
80	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	8	.067	0		0		0		0		0					
81	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	9	.067	0		0		0		0		0					
82	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	10	.067	0		0		0		0		0					
83	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	11	.067	0		0		0		0		0					
84	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	12	.067	0		0		0		0		0					
85	1.2 Dead + 1.5 Live_M - AP4 + 1...	Yes	Y		1	1.2	30	1.5	13	.067	0		0		0		0		0					
86	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	2	.067	0		0		0		0		0					
87	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	3	.067	0		0		0		0		0					
88	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	4	.067	0		0		0		0		0					
89	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	5	.067	0		0		0		0		0					
90	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	6	.067	0		0		0		0		0					
91	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	7	.067	0		0		0		0		0					
92	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	8	.067	0		0		0		0		0					
93	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	9	.067	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
94	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	10	.067	0		0		0		0		0					
95	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	11	.067	0		0		0		0		0					
96	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	12	.067	0		0		0		0		0					
97	1.2 Dead + 1.5 Live_M - BP1 + 1...	Yes	Y		1	1.2	31	1.5	13	.067	0		0		0		0		0					
98	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	2	.067	0		0		0		0		0					
99	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	3	.067	0		0		0		0		0					
100	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	4	.067	0		0		0		0		0					
101	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	5	.067	0		0		0		0		0					
102	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	6	.067	0		0		0		0		0					
103	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	7	.067	0		0		0		0		0					
104	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	8	.067	0		0		0		0		0					
105	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	9	.067	0		0		0		0		0					
106	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	10	.067	0		0		0		0		0					
107	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	11	.067	0		0		0		0		0					
108	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	12	.067	0		0		0		0		0					
109	1.2 Dead + 1.5 Live_M - BP2 + 1...	Yes	Y		1	1.2	32	1.5	13	.067	0		0		0		0		0					
110	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	2	.067	0		0		0		0		0					
111	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	3	.067	0		0		0		0		0					
112	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	4	.067	0		0		0		0		0					
113	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	5	.067	0		0		0		0		0					
114	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	6	.067	0		0		0		0		0					
115	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	7	.067	0		0		0		0		0					
116	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	8	.067	0		0		0		0		0					
117	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	9	.067	0		0		0		0		0					
118	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	10	.067	0		0		0		0		0					
119	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	11	.067	0		0		0		0		0					
120	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	12	.067	0		0		0		0		0					
121	1.2 Dead + 1.5 Live_M - BP3 + 1...	Yes	Y		1	1.2	33	1.5	13	.067	0		0		0		0		0					
122	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	2	.067	0		0		0		0		0					
123	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	3	.067	0		0		0		0		0					
124	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	4	.067	0		0		0		0		0					
125	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	5	.067	0		0		0		0		0					
126	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	6	.067	0		0		0		0		0					
127	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	7	.067	0		0		0		0		0					
128	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	8	.067	0		0		0		0		0					
129	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	9	.067	0		0		0		0		0					
130	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	10	.067	0		0		0		0		0					
131	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	11	.067	0		0		0		0		0					
132	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	12	.067	0		0		0		0		0					
133	1.2 Dead + 1.5 Live_M - BP4 + 1...	Yes	Y		1	1.2	34	1.5	13	.067	0		0		0		0		0					
134	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	2	.067	0		0		0		0		0					
135	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	3	.067	0		0		0		0		0					
136	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	4	.067	0		0		0		0		0					
137	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	5	.067	0		0		0		0		0					
138	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	6	.067	0		0		0		0		0					
139	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	7	.067	0		0		0		0		0					
140	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	8	.067	0		0		0		0		0					
141	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	9	.067	0		0		0		0		0					
142	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	10	.067	0		0		0		0		0					
143	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	11	.067	0		0		0		0		0					
144	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	12	.067	0		0		0		0		0					
145	1.2 Dead + 1.5 Live_M - CP1 + 1...	Yes	Y		1	1.2	35	1.5	13	.067	0		0		0		0		0					
146	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	2	.067	0		0		0		0		0					
147	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	3	.067	0		0		0		0		0					
148	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	4	.067	0		0		0		0		0					
149	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	5	.067	0		0		0		0		0					
150	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	6	.067	0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
151	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	7	.067	0		0		0		0		0					
152	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	8	.067	0		0		0		0		0					
153	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	9	.067	0		0		0		0		0					
154	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	10	.067	0		0		0		0		0					
155	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	11	.067	0		0		0		0		0					
156	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	12	.067	0		0		0		0		0					
157	1.2 Dead + 1.5 Live_M - CP2 + 1...	Yes	Y		1	1.2	36	1.5	13	.067	0		0		0		0		0					
158	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	2	.067	0		0		0		0		0					
159	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	3	.067	0		0		0		0		0					
160	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	4	.067	0		0		0		0		0					
161	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	5	.067	0		0		0		0		0					
162	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	6	.067	0		0		0		0		0					
163	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	7	.067	0		0		0		0		0					
164	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	8	.067	0		0		0		0		0					
165	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	9	.067	0		0		0		0		0					
166	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	10	.067	0		0		0		0		0					
167	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	11	.067	0		0		0		0		0					
168	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	12	.067	0		0		0		0		0					
169	1.2 Dead + 1.5 Live_M - CP3 + 1...	Yes	Y		1	1.2	37	1.5	13	.067	0		0		0		0		0					
170	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	2	.067	0		0		0		0		0					
171	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	3	.067	0		0		0		0		0					
172	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	4	.067	0		0		0		0		0					
173	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	5	.067	0		0		0		0		0					
174	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	6	.067	0		0		0		0		0					
175	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	7	.067	0		0		0		0		0					
176	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	8	.067	0		0		0		0		0					
177	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	9	.067	0		0		0		0		0					
178	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	10	.067	0		0		0		0		0					
179	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	11	.067	0		0		0		0		0					
180	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	12	.067	0		0		0		0		0					
181	1.2 Dead + 1.5 Live_M - CP4 + 1...	Yes	Y		1	1.2	38	1.5	13	.067	0		0		0		0		0					
182	1.2 Dead + 1.5 Live_V - A5 (Start)	Yes	Y		1	1.2	39	1.5	0		0		0		0		0		0					
183	1.2 Dead + 1.5 Live_V - A5 (Midd..	Yes	Y		1	1.2	40	1.5	0		0		0		0		0		0					
184	1.2 Dead + 1.5 Live_V - A5 (End)	Yes	Y		1	1.2	41	1.5	0		0		0		0		0		0					
185	1.2 Dead + 1.5 Live_V - A6 (Start)	Yes	Y		1	1.2	42	1.5	0		0		0		0		0		0					
186	1.2 Dead + 1.5 Live_V - A6 (Midd..	Yes	Y		1	1.2	43	1.5	0		0		0		0		0		0					
187	1.2 Dead + 1.5 Live_V - A6 (End)	Yes	Y		1	1.2	44	1.5	0		0		0		0		0		0					
188	1.2 Dead + 1.5 Live_V - A7 (Start)	Yes	Y		1	1.2	45	1.5	0		0		0		0		0		0					
189	1.2 Dead + 1.5 Live_V - A7 (Midd..	Yes	Y		1	1.2	46	1.5	0		0		0		0		0		0					
190	1.2 Dead + 1.5 Live_V - A7 (End)	Yes	Y		1	1.2	47	1.5	0		0		0		0		0		0					
191	1.2 Dead + 1.5 Live_V - A8 (Start)	Yes	Y		1	1.2	48	1.5	0		0		0		0		0		0					
192	1.2 Dead + 1.5 Live_V - A8 (Midd..	Yes	Y		1	1.2	49	1.5	0		0		0		0		0		0					
193	1.2 Dead + 1.5 Live_V - A8 (End)	Yes	Y		1	1.2	50	1.5	0		0		0		0		0		0					
194	1.2 Dead + 1.5 Live_V - A9 (Start)	Yes	Y		1	1.2	51	1.5	0		0		0		0		0		0					
195	1.2 Dead + 1.5 Live_V - A9 (Midd..	Yes	Y		1	1.2	52	1.5	0		0		0		0		0		0					
196	1.2 Dead + 1.5 Live_V - A9 (End)	Yes	Y		1	1.2	53	1.5	0		0		0		0		0		0					
197	1.2 Dead + 1.5 Live_V - A10 (Start)	Yes	Y		1	1.2	54	1.5	0		0		0		0		0		0					
198	1.2 Dead + 1.5 Live_V - A10 (Mid..	Yes	Y		1	1.2	55	1.5	0		0		0		0		0		0					
199	1.2 Dead + 1.5 Live_V - A10 (End)	Yes	Y		1	1.2	56	1.5	0		0		0		0		0		0					
200	1.2 Dead + 1.5 Live_V - B45 (Start)	Yes	Y		1	1.2	57	1.5	0		0		0		0		0		0					
201	1.2 Dead + 1.5 Live_V - B45 (Mid..	Yes	Y		1	1.2	58	1.5	0		0		0		0		0		0					
202	1.2 Dead + 1.5 Live_V - B45 (End)	Yes	Y		1	1.2	59	1.5	0		0		0		0		0		0					
203	1.2 Dead + 1.5 Live_V - B46 (Start)	Yes	Y		1	1.2	60	1.5	0		0		0		0		0		0					
204	1.2 Dead + 1.5 Live_V - B46 (Mid..	Yes	Y		1	1.2	61	1.5	0		0		0		0		0		0					
205	1.2 Dead + 1.5 Live_V - B46 (End)	Yes	Y		1	1.2	62	1.5	0		0		0		0		0		0					
206	1.2 Dead + 1.5 Live_V - B47 (Start)	Yes	Y		1	1.2	63	1.5	0		0		0		0		0		0					
207	1.2 Dead + 1.5 Live_V - B47 (Mid..	Yes	Y		1	1.2	64	1.5	0		0		0		0		0		0					

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
208	1.2 Dead + 1.5 Live_V - B47 (End)	Yes	Y		1	1.2	65	1.5	0		0		0		0		0							
209	1.2 Dead + 1.5 Live_V - B48 (Start)	Yes	Y		1	1.2	66	1.5	0		0		0		0		0							
210	1.2 Dead + 1.5 Live_V - B48 (Mid..	Yes	Y		1	1.2	67	1.5	0		0		0		0		0							
211	1.2 Dead + 1.5 Live_V - B48 (End)	Yes	Y		1	1.2	68	1.5	0		0		0		0		0							
212	1.2 Dead + 1.5 Live_V - B49 (Start)	Yes	Y		1	1.2	69	1.5	0		0		0		0		0							
213	1.2 Dead + 1.5 Live_V - B49 (Mid..	Yes	Y		1	1.2	70	1.5	0		0		0		0		0							
214	1.2 Dead + 1.5 Live_V - B49 (End)	Yes	Y		1	1.2	71	1.5	0		0		0		0		0							
215	1.2 Dead + 1.5 Live_V - B50 (Start)	Yes	Y		1	1.2	72	1.5	0		0		0		0		0							
216	1.2 Dead + 1.5 Live_V - B50 (Mid..	Yes	Y		1	1.2	73	1.5	0		0		0		0		0							
217	1.2 Dead + 1.5 Live_V - B50 (End)	Yes	Y		1	1.2	74	1.5	0		0		0		0		0							
218	1.2 Dead + 1.5 Live_V - C85 (Sta..	Yes	Y		1	1.2	75	1.5	0		0		0		0		0							
219	1.2 Dead + 1.5 Live_V - C85 (Mid..	Yes	Y		1	1.2	76	1.5	0		0		0		0		0							
220	1.2 Dead + 1.5 Live_V - C85 (End)	Yes	Y		1	1.2	77	1.5	0		0		0		0		0							
221	1.2 Dead + 1.5 Live_V - C86 (Sta..	Yes	Y		1	1.2	78	1.5	0		0		0		0		0							
222	1.2 Dead + 1.5 Live_V - C86 (Mid..	Yes	Y		1	1.2	79	1.5	0		0		0		0		0							
223	1.2 Dead + 1.5 Live_V - C86 (End)	Yes	Y		1	1.2	80	1.5	0		0		0		0		0							
224	1.2 Dead + 1.5 Live_V - C87 (Sta..	Yes	Y		1	1.2	81	1.5	0		0		0		0		0							
225	1.2 Dead + 1.5 Live_V - C87 (Mid..	Yes	Y		1	1.2	82	1.5	0		0		0		0		0							
226	1.2 Dead + 1.5 Live_V - C87 (End)	Yes	Y		1	1.2	83	1.5	0		0		0		0		0							
227	1.2 Dead + 1.5 Live_V - C88 (Sta..	Yes	Y		1	1.2	84	1.5	0		0		0		0		0							
228	1.2 Dead + 1.5 Live_V - C88 (Mid..	Yes	Y		1	1.2	85	1.5	0		0		0		0		0							
229	1.2 Dead + 1.5 Live_V - C88 (End)	Yes	Y		1	1.2	86	1.5	0		0		0		0		0							
230	1.2 Dead + 1.5 Live_V - C89 (Sta..	Yes	Y		1	1.2	87	1.5	0		0		0		0		0							
231	1.2 Dead + 1.5 Live_V - C89 (Mid..	Yes	Y		1	1.2	88	1.5	0		0		0		0		0							
232	1.2 Dead + 1.5 Live_V - C89 (End)	Yes	Y		1	1.2	89	1.5	0		0		0		0		0							
233	1.2 Dead + 1.5 Live_V - C90 (Sta..	Yes	Y		1	1.2	90	1.5	0		0		0		0		0							
234	1.2 Dead + 1.5 Live_V - C90 (Mid..	Yes	Y		1	1.2	91	1.5	0		0		0		0		0							
235	1.2 Dead + 1.5 Live_V - C90 (End)	Yes	Y		1	1.2	92	1.5	0		0		0		0		0							

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	A21	max	4.883	13	1227.275	33	1297.883	48	.37	45	0	235	.594	33
2		min	-1599.454	37	377.067	5	-854.203	78	-.22	75	0	1	.176	5
3	A22	max	1604.973	32	880.45	36	850.319	85	.248	45	0	235	.44	37
4		min	-12.801	25	292.656	7	-1293.917	43	-.147	75	0	1	.146	11
5	A189	max	385.952	13	61.874	12	285.709	24	0	235	0	235	0	235
6		min	-440.624	24	-52.86	25	-250.252	13	0	1	0	1	0	1
7	A190	max	426.287	12	68.607	12	239.208	25	0	235	0	235	0	235
8		min	-369.032	25	-43.993	25	-276.47	12	0	1	0	1	0	1
9	B85	max	1206.519	128	1228.736	37	161.854	21	-.163	13	0	235	.073	88
10		min	-347.924	86	372.2	13	-2016.499	89	-.614	97	0	1	-.433	130
11	B86	max	345.066	92	881.302	28	2016.011	95	-.14	13	0	235	.036	96
12		min	-1203.757	122	292.834	19	-153.077	9	-.44	29	0	1	-.306	126
13	B121	max	23.919	21	61.516	20	456.782	21	0	235	0	235	0	235
14		min	-27.28	8	-52.494	9	-521.776	8	0	1	0	1	0	1
15	B126	max	26.476	20	68.292	20	505.172	20	0	235	0	235	0	235
16		min	-22.823	9	-43.666	9	-436.87	9	0	1	0	1	0	1
17	C190	max	423.245	16	55.997	4	215.337	16	0	235	0	235	0	235
18		min	-365.095	5	-46.983	17	-185.661	5	0	1	0	1	0	1
19	C191	max	348.836	17	62.949	4	177.432	17	0	235	0	235	0	235
20		min	-409.638	4	-38.335	17	-208.335	4	0	1	0	1	0	1
21	C148	max	1911.525	140	1230.428	29	1255.872	177	.533	173	0	235	-.052	179
22		min	-284.433	170	369.005	21	75.394	5	.137	21	0	1	-.568	137
23	C149	max	283.34	177	882.808	32	-60.737	19	.383	176	0	235	-.05	179
24		min	-1910.365	135	288.571	3	-1256.963	172	.108	3	0	1	-.393	137

Envelope Joint Reactions (Continued)

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
25	Totals:	max	3543.934	14	6355.725	29	3583.285	20						
26		min	-3543.933	3	2374.436	21	-3583.283	9						

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

	Member	Shape	Code Check Actual	Code Check Allowable	Ratio (Act./Allow.)	Loc[in]	LC	Shear Check	Shear Check Allowable	Ratio (Act./Allow.)	Loc[in]	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	BP1	P2 STD.	0.421	1.05	0.401*	65.68	95	0.06	1.05	0.057*	30.32	15814.703	33862.5	1.998	1.998	4.854	H1-1b
2	CP1	P2 STD.	0.421	1.05	0.401*	65.68	135	0.06	1.05	0.057*	30.32	15814.703	33862.5	1.998	1.998	4.86	H1-1b
3	AP1	P2 STD.	0.421	1.05	0.401*	65.68	43	0.06	1.05	0.057*	30.32	15814.703	33862.5	1.998	1.998	4.853	H1-1b
4	BP4	P2 STD.	0.384	1.05	0.366*	65.68	122	0.057	1.05	0.054*	30.32	15814.703	33862.5	1.998	1.998	4.976	H1-1b
5	AP4	P2 STD.	0.384	1.05	0.366*	65.68	83	0.057	1.05	0.054*	30.32	15814.703	33862.5	1.998	1.998	4.986	H1-1b
6	CP4	P2 STD.	0.383	1.05	0.365*	65.68	175	0.057	1.05	0.054*	30.32	15814.703	33862.5	1.998	1.998	4.991	H1-1b
7	B72	PL 3.5"x0.625"	0.353	1.05	0.336*	0	97	0.069	1.05	0.066*	4.697	68399.274	70891.2	0.923	5.168	1.834	H1-1b
8	C112	PL 3.5"x0.625"	0.353	1.05	0.336*	0	137	0.069	1.05	0.066*	0	68399.274	70891.2	0.923	5.168	1.833	H1-1b
9	A32	PL 3.5"x0.625"	0.352	1.05	0.335*	0	45	0.069	1.05	0.066*	0	68399.274	70891.2	0.923	5.168	1.834	H1-1b
10	C83	PL 3.5"x0.625"	0.332	1.05	0.316*	4.778	137	0.216	1.05	0.206*	0	69790.398	70891.2	0.923	5.168	1.443	H1-1b
11	B43	PL 3.5"x0.625"	0.332	1.05	0.316*	4.778	97	0.216	1.05	0.206*	4.778	69790.398	70891.2	0.923	5.168	1.444	H1-1b
12	A3	PL 3.5"x0.625"	0.332	1.05	0.316*	4.778	45	0.216	1.05	0.206*	0	69790.398	70891.2	0.923	5.168	1.444	H1-1b
13	B44	PL 3.5"x0.625"	0.32	1.05	0.305*	4.778	90	0.199	1.05	0.19*	4.778	69790.398	70891.2	0.923	5.168	1.439	H1-1b
14	A4	PL 3.5"x0.625"	0.32	1.05	0.305*	4.778	38	0.199	1.05	0.19*	4.778	69790.398	70891.2	0.923	5.168	1.439	H1-1b
15	C84	PL 3.5"x0.625"	0.32	1.05	0.305*	4.778	142	0.199	1.05	0.19*	4.778	69790.398	70891.2	0.923	5.168	1.439	H1-1b
16	A14	SR 5/8	0.297	1.05	0.283*	40	44	0.003	1.05	0.003*	40	4378.175	9940.19	0.104	0.104	1	H1-1a
17	B54	SR 5/8	0.297	1.05	0.283*	40	96	0.003	1.05	0.003*	40	4378.175	9940.19	0.104	0.104	1	H1-1a
18	C94	SR 5/8	0.297	1.05	0.283*	40	136	0.003	1.05	0.003*	0	4378.175	9940.19	0.104	0.104	1	H1-1a
19	B68	PL 3.5"x0.625"	0.273	1.05	0.26*	4.697	132	0.058	1.05	0.055*	4.697	68399.274	70891.2	0.923	5.168	1.875	H1-1b
20	C108	PL 3.5"x0.625"	0.273	1.05	0.26*	4.696	172	0.058	1.05	0.055*	4.696	68399.274	70891.2	0.923	5.168	1.875	H1-1b
21	A2	PL 3.5"x0.625"	0.273	1.05	0.26*	4.778	80	0.18	1.05	0.171*	4.778	69790.398	70891.2	0.923	5.168	1.303	H1-1b
22	A28	PL 3.5"x0.625"	0.273	1.05	0.26*	4.697	80	0.058	1.05	0.055*	0	68399.274	70891.2	0.923	5.168	1.875	H1-1b
23	C82	PL 3.5"x0.625"	0.273	1.05	0.26*	4.778	172	0.18	1.05	0.171*	4.778	69790.398	70891.2	0.923	5.168	1.302	H1-1b
24	B42	PL 3.5"x0.625"	0.273	1.05	0.26*	4.778	132	0.18	1.05	0.171*	4.778	69790.398	70891.2	0.923	5.168	1.302	H1-1b
25	A6	P2.5Std	0.268	1.05	0.255*	106.6	14	0.057	1.05	0.054*	110.5	50779.296	53677.575	3.812	3.812	1.746	H1-1b
26	B46	P2.5Std	0.265	1.05	0.252*	106.6	22	0.057	1.05	0.054*	110.5	50779.296	53677.575	3.812	3.812	1.744	H1-1b
27	C114	PL 3.5"x0.625"	0.265	1.05	0.252*	0	134	0.082	1.05	0.078*	0	68399.274	70891.2	0.923	5.168	1.862	H1-1b
28	B74	PL 3.5"x0.625"	0.265	1.05	0.252*	0	94	0.082	1.05	0.078*	0	68399.274	70891.2	0.923	5.168	1.862	H1-1b
29	A34	PL 3.5"x0.625"	0.265	1.05	0.252*	0	40	0.082	1.05	0.078*	0	68399.274	70891.2	0.923	5.168	1.84	H1-1b
30	C86	P2.5Std	0.262	1.05	0.25*	106.6	6	0.057	1.05	0.054*	110.5	50779.296	53677.575	3.812	3.812	1.748	H1-1b
31	A5	P2.5Std	0.261	1.05	0.249*	106.6	2	0.058	1.05	0.055*	110.5	50779.296	53677.575	3.812	3.812	1.678	H1-1b
32	B45	P2.5Std	0.259	1.05	0.247*	106.6	10	0.058	1.05	0.055*	110.5	50779.296	53677.575	3.812	3.812	1.681	H1-1b
33	B41	PL 3.5"x0.625"	0.258	1.05	0.246*	4.778	126	0.159	1.05	0.151*	4.778	69790.398	70891.2	0.923	5.168	1.302	H1-1b
34	A1	PL 3.5"x0.625"	0.258	1.05	0.246*	4.778	74	0.159	1.05	0.151*	4.778	69790.398	70891.2	0.923	5.168	1.303	H1-1b
35	C81	PL 3.5"x0.625"	0.258	1.05	0.246*	4.778	178	0.159	1.05	0.151*	4.778	69790.398	70891.2	0.923	5.168	1.302	H1-1b
36	C85	P2.5Std	0.256	1.05	0.244*	106.6	18	0.058	1.05	0.055*	110.5	50779.296	53677.575	3.812	3.812	1.678	H1-1b
37	C89	P2 STD.	0.246	1.05	0.234*	2.368	137	0.119	1.05	0.113*	1.579	32815.277	33862.5	1.998	1.998	2.025	H1-1b
38	B49	P2 STD.	0.246	1.05	0.234*	2.368	97	0.119	1.05	0.113*	1.579	32815.277	33862.5	1.998	1.998	2.025	H1-1b
39	A9	P2 STD.	0.246	1.05	0.234*	2.368	45	0.118	1.05	0.112*	1.579	32815.277	33862.5	1.998	1.998	2.025	H1-1b
40	B53	SR 5/8	0.235	1.05	0.224*	0	86	0.003	1.05	0.003*	0	4378.175	9940.19	0.104	0.104	1	H1-1a
41	A13	SR 5/8	0.234	1.05	0.223*	0	47	0.003	1.05	0.003*	0	4378.175	9940.19	0.104	0.104	1	H1-1a
42	C93	SR 5/8	0.234	1.05	0.223*	0	140	0.003	1.05	0.003*	0	4378.175	9940.19	0.104	0.104	1	H1-1a
43	B50	P2 STD.	0.221	1.05	0.21*	2.368	97	0.129	1.05	0.123*	30	32815.277	33862.5	1.998	1.998	2.036	H1-1b
44	C90	P2 STD.	0.221	1.05	0.21*	2.368	137	0.129	1.05	0.123*	30	32815.277	33862.5	1.998	1.998	2.036	H1-1b
45	A10	P2 STD.	0.221	1.05	0.21*	2.368	45	0.129	1.05	0.123*	30	32815.277	33862.5	1.998	1.998	2.036	H1-1b
46	CP2	P2 STD.	0.216	1.05	0.206*	30.32	140	0.035	1.05	0.033*	30.32	15814.703	33862.5	1.998	1.998	4.802	H1-1b
47	BP2	P2 STD.	0.216	1.05	0.206*	30.32	86	0.035	1.05	0.033*	30.32	15814.703	33862.5	1.998	1.998	4.743	H1-1b
48	AP2	P2 STD.	0.216	1.05	0.206*	30.32	46	0.035	1.05	0.033*	30.32	15814.703	33862.5	1.998	1.998	4.756	H1-1b
49	B70	PL 3.5"x0.625"	0.202	1.05	0.192*	4.697	126	0.069	1.05	0.066*	4.697	68399.274	70891.2	0.923	5.168	1.858	H1-1b
50	C110	PL 3.5"x0.625"	0.202	1.05	0.192*	4.696	178	0.069	1.05	0.066*	4.696	68399.274	70891.2	0.923	5.168	1.858	H1-1b
51	A30	PL 3.5"x0.625"	0.202	1.05	0.192*	4.697	75	0.069	1.05	0.066*	4.697	68399.274	70891.2	0.923	5.168	1.866	H1-1b
52	BP3	P2 STD.	0.202	1.05	0.192*	30.32	127	0.032	1.05	0.03*	30.32	15814.703	33862.5	1.998	1.998	4.962	H1-1b
53	CP3	P2 STD.	0.202	1.05	0.192*	30.32	179	0.032	1.05	0.03*	30.32	15814.703	33862.5	1.998	1.998	4.952	H1-1b
54	AP3	P2 STD.	0.201	1.05	0.191*	30.32	75	0.032	1.05	0.03*	30.32	15814.703	33862.5	1.998	1.998	4.963	H1-1b
55	A8	P2 STD.	0.2	1.05	0.19*	2.368	80	0.096	1.05	0.091*	1.579	32815.277	33862.5	1.998	1.998	2.026	H1-1b
56	C88	P2 STD.	0.2	1.05	0.19*	2.368	172	0.096	1.05	0.091*	1.579	32815.277	33862.5	1.998	1.998	2.026	H1-1b
57	B48	P2 STD.	0.2	1.05	0.19*	2.368	132	0.096	1.05	0.091*	1.579	32815.277	33862.5	1.998	1.998	2.026	H1-1b
58	C91	SR 5/8	0.195	1.05	0.186*	40	173	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
59	B51	SR 5/8	0.195	1.05	0.186*	40	133	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
60	A11	SR 5/8	0.195	1.05	0.186*	40	80	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
61	B47	P2 STD.	0.174	1.05	0.166*	2.368	126	0.105	1.05	0.1*	30	32815.277	33862.5	1.998	1.998	2.039	H1-1b
62	A7	P2 STD.	0.174	1.05	0.166*	2.368	74	0.105	1.05	0.1*	30	32815.277	33862.5	1.998	1.998	2.039	H1-1b
63	C87	P2 STD.	0.174	1.05	0.166*	2.368	178	0.105	1.05	0.1*	30	32815.277	33862.5	1.998	1.998	2.039	H1-1b
64	B52	SR 5/8	0.171	1.05	0.163*	40	125	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
65	C92	SR 5/8	0.171	1.05	0.163*	40	177	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
66	A12	SR 5/8	0.171	1.05	0.163*	40	85	0.002	1.05	0.002*	0	4378.175	9940.19	0.104	0.104	1	H1-1b*
67	A15	SR 3/4	0.141	1.05	0.134*	47.51	44	0.01	1.05	0.01*	47.51	3789.856	14320.8	0.184	0.184	2.546	H1-1b
68	B55	SR 3/4	0.141	1.05	0.134*	47.51	96	0.01	1.05	0.01*	47.51	3789.856	14320.8	0.184	0.184	2.544	H1-1b
69	C95	SR 3/4	0.141	1.05	0.134*	47.51	137	0.01	1.05	0.01*	47.51	3789.856	14320.8	0.184	0.184	2.528	H1-1b
70	B59	SR 3/4	0.119	1.05	0.113*	0	122	0.006	1.05	0.006*	0	3789.856	14320.8	0.184	0.184	2.577	H1-1b
71	A19	SR 3/4	0.118	1.05	0.112*	0	83	0.006	1.05	0.006*	0	3789.856	14320.8	0.184	0.184	2.57	H1-1b
72	C99	SR 3/4	0.118	1.05	0.112*	0	173	0.006	1.05	0.006*	0	3789.856	14320.8	0.184	0.184	2.577	H1-1b
73	TB1B	P2 STD.	0.019	1.05	0.018*	52.06	24	0.002	1.05	0.002*	0	27070.43	33862.5	1.998	1.998	1.137	H1-1b*
74	TB1C	P2 STD.	0.019	1.05	0.018*	52.06	8	0.002	1.05	0.002*	52.06	27070.43	33862.5	1.998	1.998	1.137	H1-1b*
75	TB1A	P2 STD.	0.018	1.05	0.017*	52.06	16	0.002	1.05	0.002*	0	27070.43	33862.5	1.998	1.998	1.137	H1-1b*
76	TB2B	P2 STD.	0.016	1.05	0.015*	52.05	25	0.002	1.05	0.002*	0	27070.707	33862.5	1.998	1.998	1.137	H1-1b*
77	TB2C	P2 STD.	0.016	1.05	0.015*	52.05	9	0.002	1.05	0.002*	52.05	27070.707	33862.5	1.998	1.998	1.137	H1-1b*
78	TB2A	P2 STD.	0.015	1.05	0.014*	52.05	17	0.002	1.05	0.002*	52.05	27070.707	33862.5	1.998	1.998	1.137	H1-1b*
79	A17	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a
80	A20	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a
81	B57	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a
82	B60	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a
83	C97	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a
84	C100	SR 3/4	0	1.05	0*	0	235	0	1.05	0*	0	3789.856	14320.8	0.184	0.184	1	H1-1a

*Rating per TIA-222-H, Section 15.5

APPENDIX D

ADDITIONAL CALCULATIONS

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Alpha Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	4	
Bolt Distance Up-Down	3.5	in
Bolt Distance Left-Right	9.5	in
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

RISA 3D Reactions (Up-Down)		
Moment (M)	0.58	k-ft
Axial (T)	1.56	kips
Shear (V)	1.38	kips

RISA 3D Reactions (Left -Right)		
Moment (M)	0.00	k-ft
Axial (T)	1.57	kips
Shear (V)	1.67	kips

Bolt Capacity (Up-Down)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	1.39	kips
Bolt Shear Force (V_{ub})	0.344	kips
$T_{ub}/\phi R_{nt}$	0.13039	
$V_{ub}/\phi R_{nv}$	0.04751	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.02022	
Bolt Capacity =	13.0%	OK

*Rating per TIA-222-H, Section 15.5

Bolt Capacity (Left-Right)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.39	kips
Bolt Shear Force (V_{ub})	0.417	kips
$T_{ub}/\phi R_{nt}$	0.03668	
$V_{ub}/\phi R_{nv}$	0.05756	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00489	
Bolt Capacity =	5.8%	OK

*Rating per TIA-222-H, Section 15.5

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Beta Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	4	
Bolt Distance Up-Down	3.5	in
Bolt Distance Left-Right	9.5	in
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

RISA 3D Reactions (Up-Down)		
Moment (M)	0.58	k-ft
Axial (T)	1.63	kips
Shear (V)	1.36	kips

RISA 3D Reactions (Left -Right)		
Moment (M)	0.00	k-ft
Axial (T)	1.55	kips
Shear (V)	1.67	kips

Bolt Capacity (Up-Down)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	1.39	kips
Bolt Shear Force (V_{ub})	0.340	kips
$T_{ub}/\phi R_{nt}$	0.13053	
$V_{ub}/\phi R_{nv}$	0.04696	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.02020	
Bolt Capacity =	13.1%	OK

*Rating per TIA-222-H, Section 15.5

Bolt Capacity (Left-Right)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.39	kips
Bolt Shear Force (V_{ub})	0.417	kips
$T_{ub}/\phi R_{nt}$	0.03626	
$V_{ub}/\phi R_{nv}$	0.05757	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00486	
Bolt Capacity =	5.8%	OK

*Rating per TIA-222-H, Section 15.5

TIA-222-H CONNECTION CHECK
Mount to Tower Connection - Gamma Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	4	
Bolt Distance Up-Down	3.5	in
Bolt Distance Left-Right	9.5	in
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

RISA 3D Reactions (Up-Down)		
Moment (M)	0.58	k-ft
Axial (T)	1.59	kips
Shear (V)	1.38	kips

RISA 3D Reactions (Left -Right)		
Moment (M)	0.00	k-ft
Axial (T)	1.57	kips
Shear (V)	1.67	kips

Bolt Capacity (Up-Down)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	1.40	kips
Bolt Shear Force (V_{ub})	0.345	kips
$T_{ub}/\phi R_{nt}$	0.13091	
$V_{ub}/\phi R_{nv}$	0.04763	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.02038	
Bolt Capacity =	13.1%	OK

*Rating per TIA-222-H, Section 15.5

Bolt Capacity (Left-Right)		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.39	kips
Bolt Shear Force (V_{ub})	0.417	kips
$T_{ub}/\phi R_{nt}$	0.03681	
$V_{ub}/\phi R_{nv}$	0.05760	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00491	
Bolt Capacity =	5.8%	OK

*Rating per TIA-222-H, Section 15.5

TIA-222-H CONNECTION CHECK
Tieback to Tower Connection - Alpha Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	2	
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	0.00	kips
Shear (V)	0.48	kips

Bolt Capacity		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.00	kips
Bolt Shear Force (V_{ub})	0.239	kips
$T_{ub}/\phi R_{nt}$	0.00001	
$V_{ub}/\phi R_{nv}$	0.03291	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00114	
Bolt Capacity =	3.3%	OK

*Rating per TIA-222-H, Section 15.5

TIA-222-H CONNECTION CHECK
Tieback to Tower Connection - Beta Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	2	
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	0.00	kips
Shear (V)	0.53	kips

Bolt Capacity		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.00	kips
Bolt Shear Force (V_{ub})	0.264	kips
$T_{ub}/\phi R_{nt}$	-0.00002	
$V_{ub}/\phi R_{nv}$	0.03640	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00139	
Bolt Capacity =	3.6%	OK

*Rating per TIA-222-H, Section 15.5

TIA-222-H CONNECTION CHECK
Tieback to Tower Connection - Gamma Sector
2022777.806353.01

Bolt Information		
Bolt Diameter (d)	0.625	in
Net Tensile Area (An)	0.226	in^2
# of Bolts Total (n)	2	
Bolt Grade	A307	
Bolt Tensile Strength (F_{ub})	60	ksi

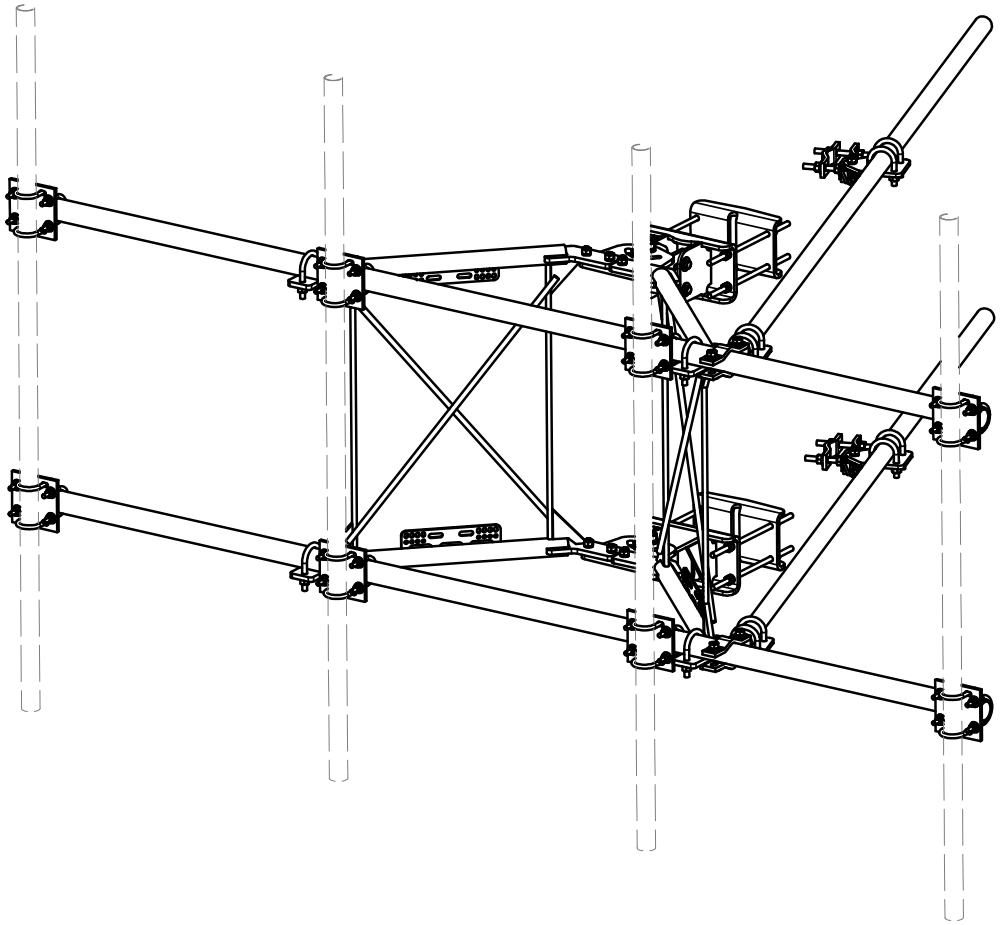
RISA 3D Reactions		
Moment (M)	0.00	k-ft
Axial (T)	0.00	kips
Shear (V)	0.53	kips

Bolt Capacity		
Nominal Tensile Strength (R_{nt})	13.560	kips
Nominal Shear Strength (R_{nv})	9.20	kips
Bolt Tensile Force (T_{ub})	0.00	kips
Bolt Shear Force (V_{ub})	0.263	kips
$T_{ub}/\phi R_{nt}$	-0.00001	
$V_{ub}/\phi R_{nv}$	0.03622	
$(V_{ub}/\phi R_{nv})^2+(T_{ub}/\phi R_{nt})^2$	0.00138	
Bolt Capacity =	3.6%	OK

*Rating per TIA-222-H, Section 15.5

APPENDIX E

SUPPLEMENTAL DRAWINGS



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
5	2	X-LCBP4	BENT BACKING PLATE	13 in	19.00	38.01
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)	18 in	0.40	3.19
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
33	16	X-UB1212	1/2" X 2" X 3" X 1-1/4" U-BOLT (HDG.)		0.60	9.56
34	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
35	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
36	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	738.06

REVISION HISTORY

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

TOLERANCE NOTES

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

PROPRIETARY NOTE:
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DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

SITE PRO 1 — A valmont COMPANY

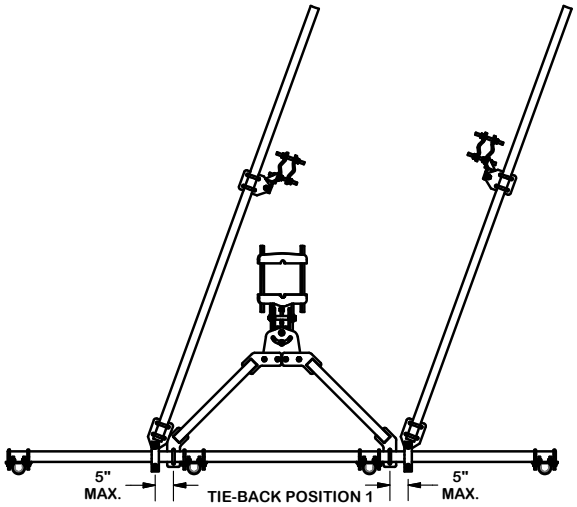
Engineering Support Team: 1-888-753-7446

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

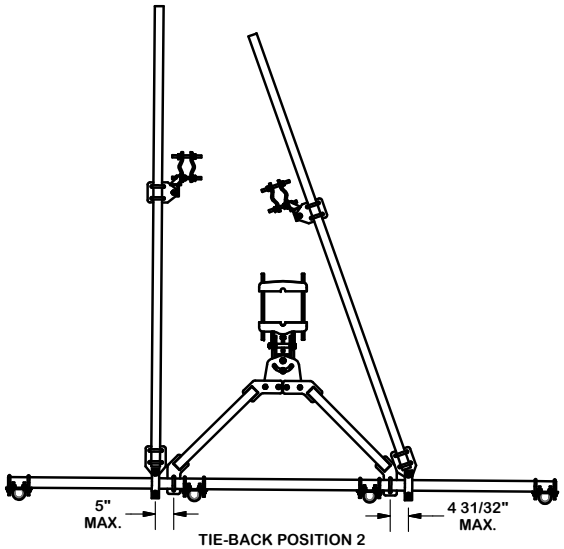
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

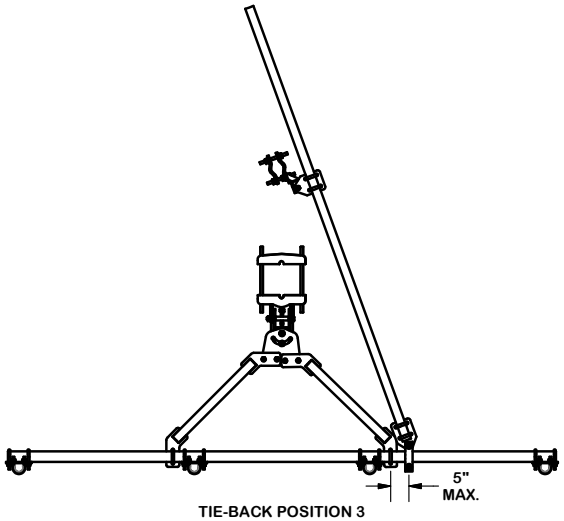
TIE-BACK POSITIONS



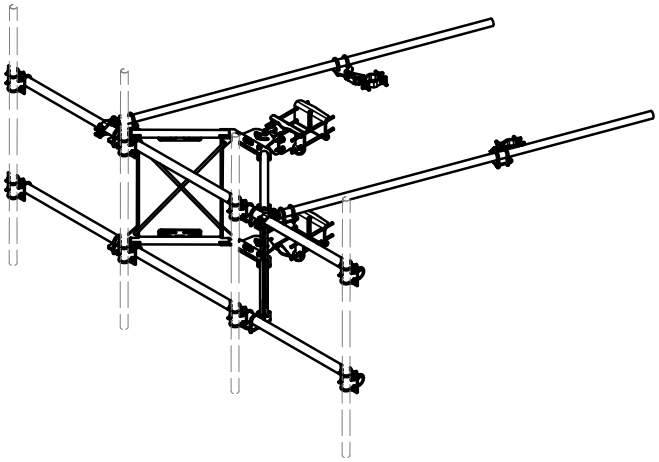
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

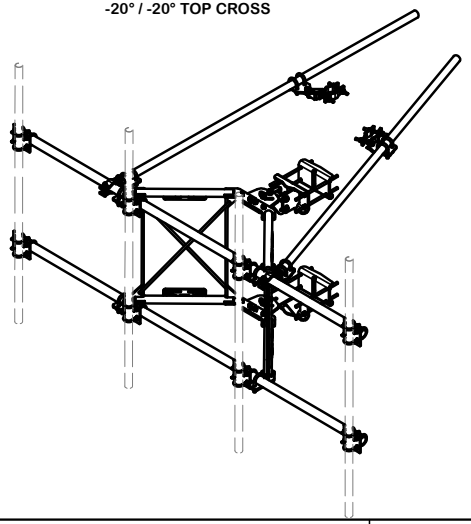


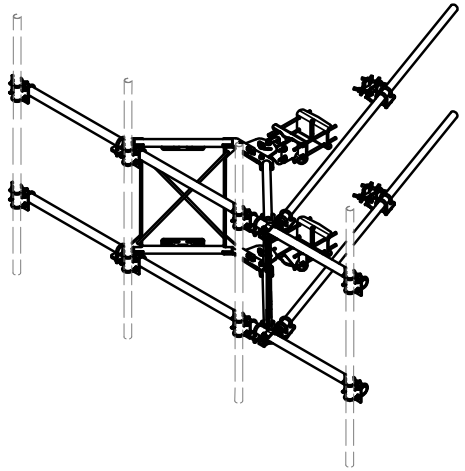
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







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C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
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REVISION HISTORY

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ALL OTHER ASSEMBLY *(± 0.060")*

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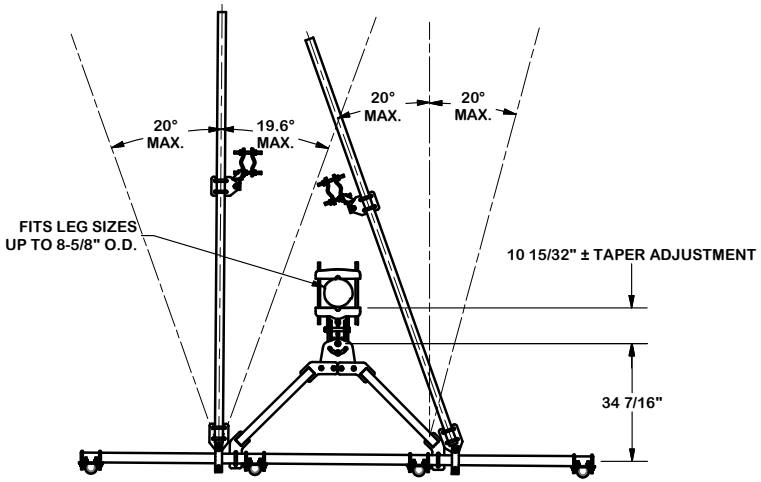
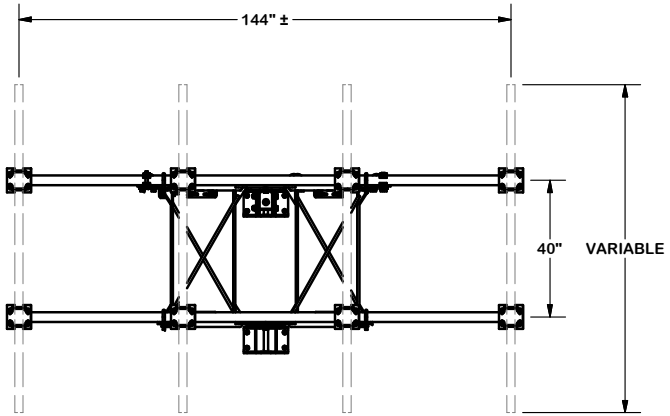
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

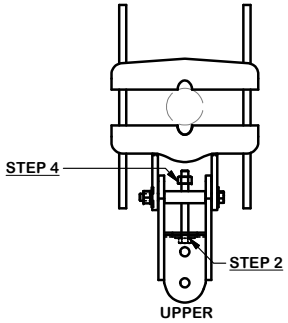
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

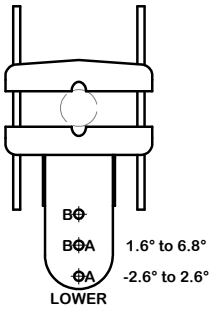


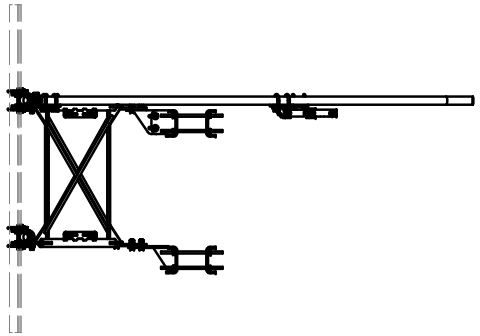


ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
   - HOLE A = -2.6° TO 2.6°
   - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.







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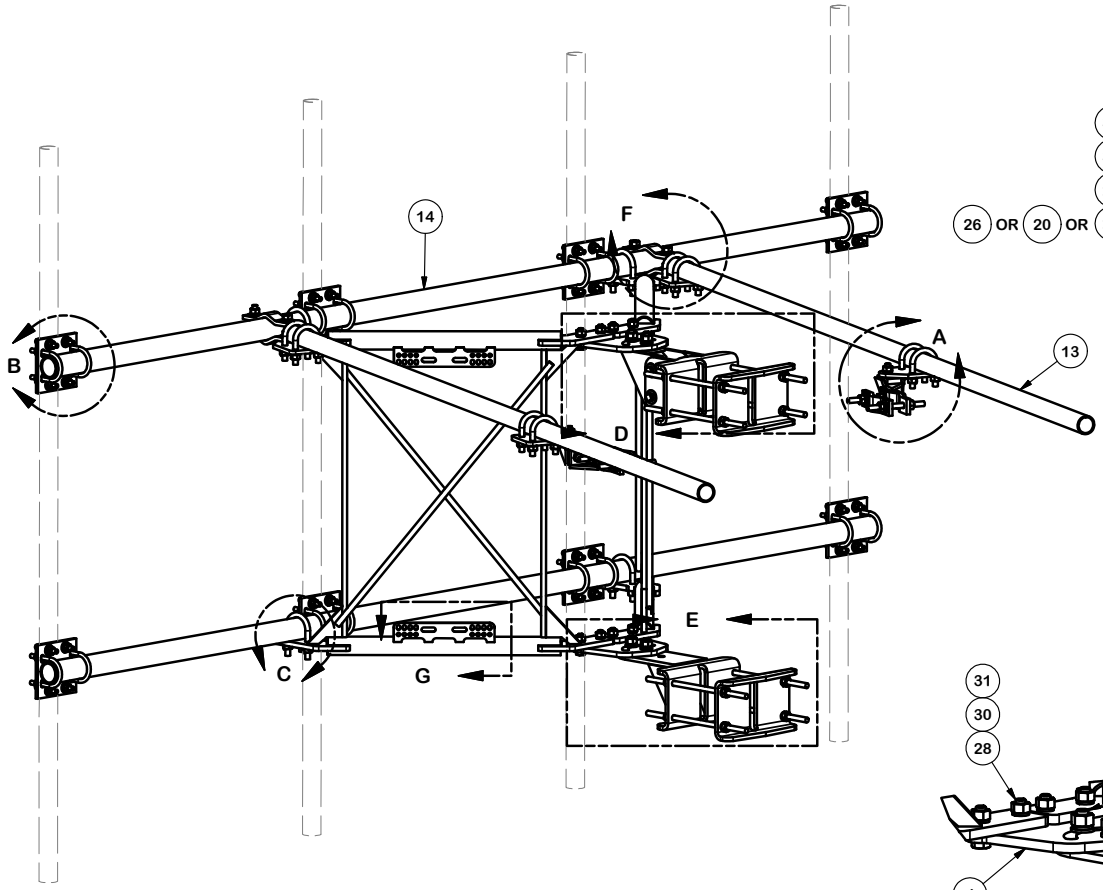
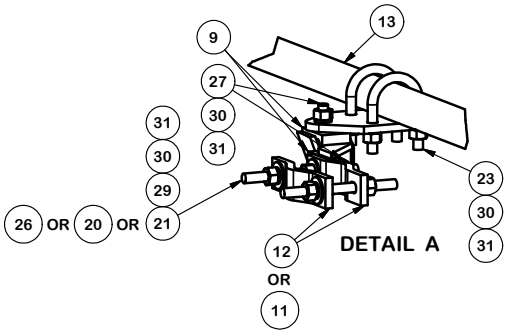
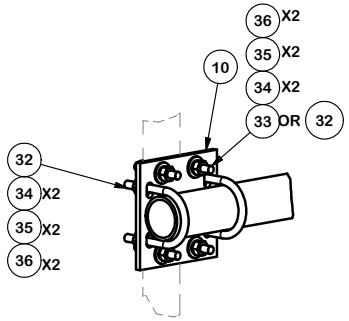
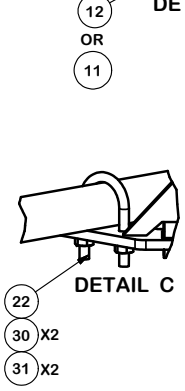
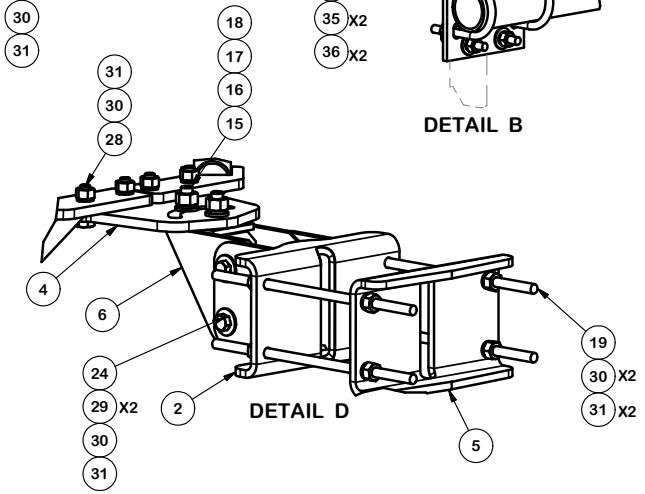
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

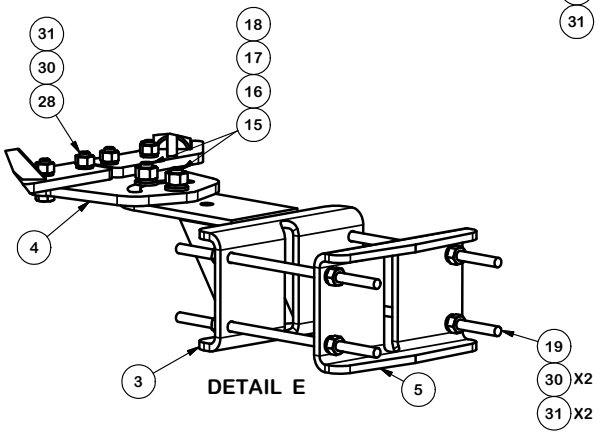


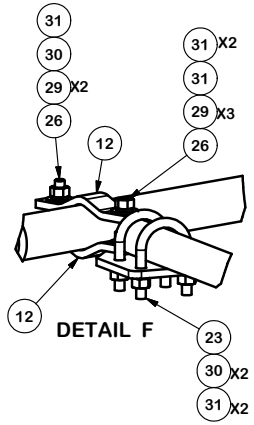








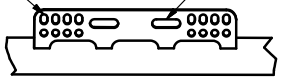




7/16" LUG HOLES

REVIEW CARRIER STANDARDS FOR PROPER SURFACE PREPARTION AND ASSEMBLY OF ELECTRICAL CONNECTIONS

9/16" SLOTTED HOLE FOR EQUIPMENT PIPE U-BOLT



DETAIL G

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

REVISION HISTORY

TOLERANCE NOTES

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

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

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

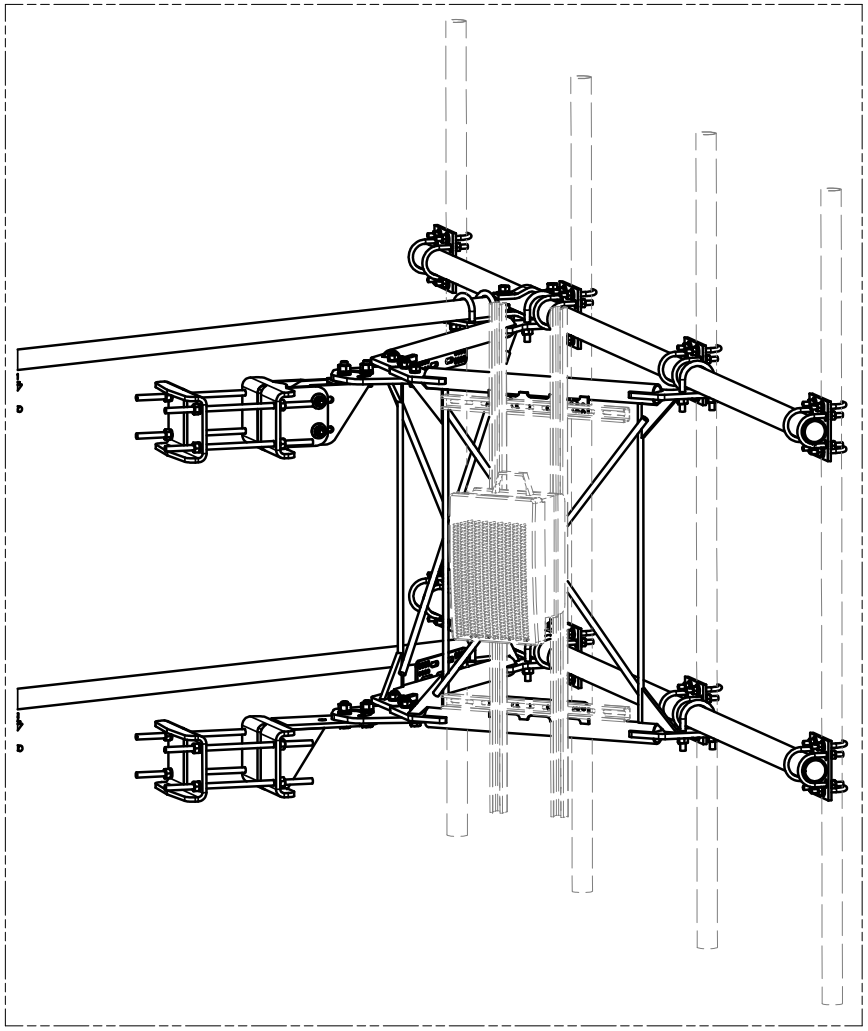
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

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

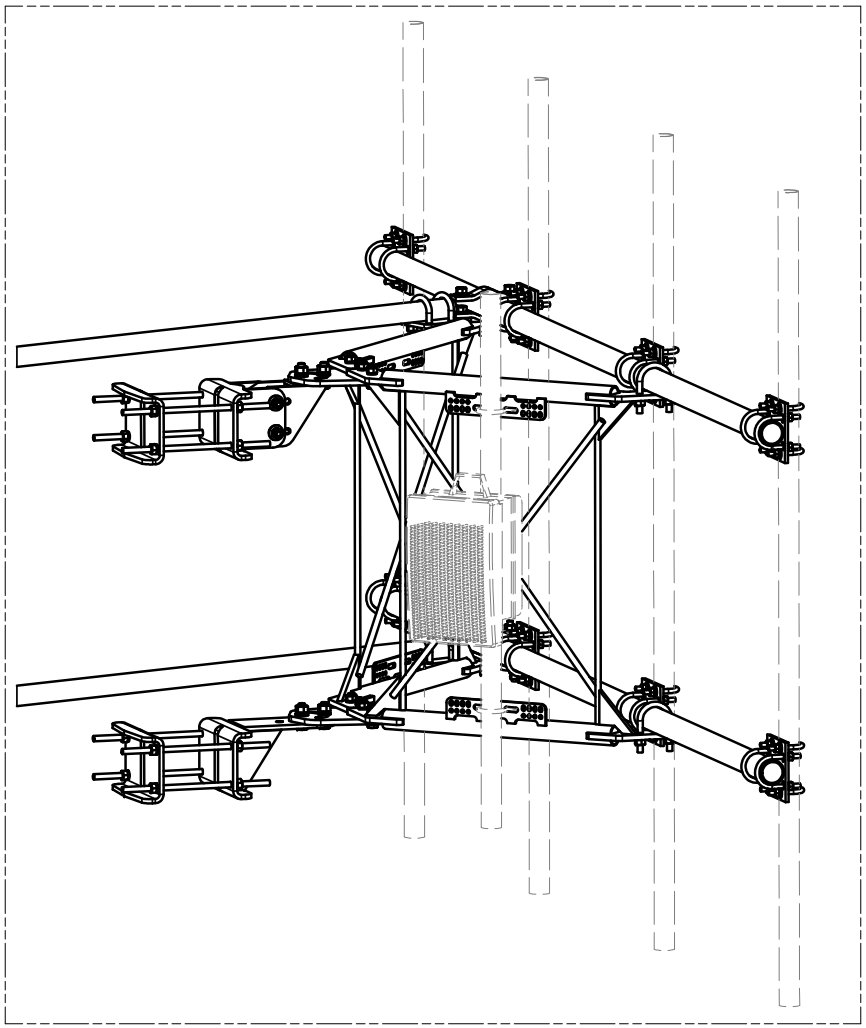
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
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REVISION HISTORY

TOLERANCE NOTES

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LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

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Engineering Support Team:
1-888-753-7446

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

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: CTFF119A

806353
128 Mather Street
Wilton, Connecticut 06897

January 6, 2022

EBI Project Number: 6222000088

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**41.09%**

January 6, 2022

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

Emissions Analysis for Site: CTFF119A - 806353

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **128 Mather Street** in **Wilton, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 128 Mather Street in Wilton, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

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

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

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

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

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

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

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

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

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

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

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

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

13) The antennas used in this modeling are the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in

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

14) The antenna mounting height centerline of the proposed antennas is 143 feet above ground level (AGL).

15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

16) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	143 feet	Height (AGL):	143 feet	Height (AGL):	143 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A1 MPE %:	**1.89%**	Antenna B1 MPE %:	**1.89%**	Antenna C1 MPE %:	**1.89%**
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):	143 feet	Height (AGL):	143 feet	Height (AGL):	143 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 %:	**6.96%**	Antenna B2 MPE %:	**6.96%**	Antenna C2 MPE %:	**6.96%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd	Gain:	15.55 dBd / 15.55 dBd / 16.05 dBd
Height (AGL):	143 feet	Height (AGL):	143 feet	Height (AGL):	143 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	13,446.73	ERP (W):	13,446.73	ERP (W):	13,446.73
Antenna A3 MPE %:	**2.58%**	Antenna B3 MPE %:	**2.58%**	Antenna C3 MPE %:	**2.58%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	11.43%
Verizon	11.41%
AT&T	4.37%
Metro PCS	0.18%
T-Mobile (Existing)	8.89%
Nextel	0.19%
Town	4.62%
Site Total MPE % :	41.09%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	11.43%
T-Mobile Sector B Total:	11.43%
T-Mobile Sector C Total:	11.43%
Site Total MPE % :	41.09%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	143.0	2.27	600 MHz LTE	400	0.57%
T-Mobile 600 MHz NR	1	1577.94	143.0	3.02	600 MHz NR	400	0.76%
T-Mobile 700 MHz LTE	2	695.22	143.0	2.66	700 MHz LTE	467	0.57%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	143.0	21.16	2500 MHz LTE 1C & 2C Traffic	1000	2.12%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	143.0	2.06	2500 MHz LTE 1C & 2C Broadcast	1000	0.21%
T-Mobile 2500 MHz NR Traffic	1	22089.26	143.0	42.31	2500 MHz NR Traffic	1000	4.23%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	143.0	4.11	2500 MHz NR Broadcast	1000	0.41%
T-Mobile 1900 MHz GSM	4	1076.77	143.0	8.25	1900 MHz GSM	1000	0.83%
T-Mobile 1900 MHz LTE	2	2153.53	143.0	8.25	1900 MHz LTE	1000	0.83%
T-Mobile 2100 MHz LTE	2	2416.30	143.0	9.26	2100 MHz LTE	1000	0.93%
						Total:	**11.43%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	11.43%
Sector B:	11.43%
Sector C:	11.43%
T-Mobile Maximum MPE % (Sector A):	11.43%
Site Total:	41.09%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **41.09%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

T-Mobile

T-MOBILE SITE NUMBER: CTFF119A
T-MOBILE SITE NAME: CT03XC369
SITE TYPE: SELF SUPPORT TOWER
TOWER HEIGHT: 180'-0"

BUSINESS UNIT #: 806353
SITE ADDRESS: 128 MATHER STREET. WILTON, CT 06897
COUNTY: FAIRFIELD
JURISDICTION: FAIRFIELD COUNTY

CTFF119A _SPRINT RETAIN: **67E5A998E_1XAIR+1OP_1QP**

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BRG 124 943066
SITE ADDRESS:	128 MATHER STREET. WILTON, CT 06897
COUNTY:	FAIRFIELD
MAP/PARCEL #:	MBLUE: NOT LISTED
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.23844970° (41° 14' 18.70")
LONGITUDE:	-73.42410930° (73° 25' 26.90")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	431 FT
CURRENT ZONING:	R-2
JURISDICTION:	FAIRFIELD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	NOT LISTED IN WILON, CT DATABASE -- --
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	EVERSOURCE
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 1033 WATERVLIET SHAKER RD. ALBANY, NY 12205
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065
	PATRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM
	JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	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

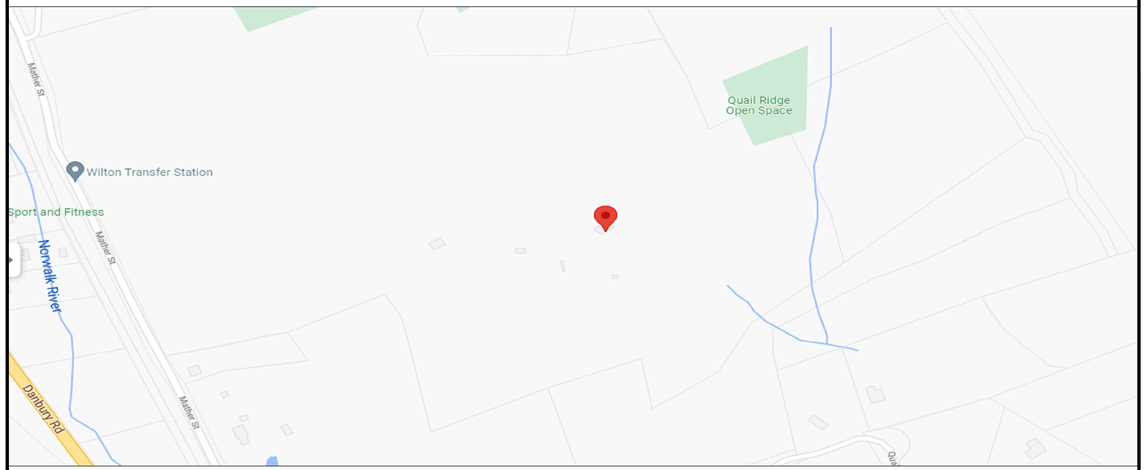
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (9) RRHS
- REMOVE (3) TMAS
- REMOVE (3) HYBRID CABLES
- REMOVE (2) COAX CABLE
- REMOVE (3) ANTENNA MOUNTS
- INSTALL (9) ANTENNAS
- INSTALL (6) RRHS
- INSTALL (3) HYBRID CABLES
- INSTALL (3) SECTOR FRAMES

GROUND SCOPE OF WORK:
- REMOVE (1) RBS 3106 CABINET
- REMOVE (1) S12000 CABINET
- 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:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

LOCATION MAP



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2018 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	11/24/2021
MOUNT ANALYSIS:	GPD ENGINEERING AND ARCHITECTURE
DATED:	11/18/2021
AC ELECTRICAL POWER DESIGN:	INFINIGY
DATED:	12/23/21
RFDS REVISION:	1
DATED:	10/25/2021
ORDER ID:	589869
REVISION:	1

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APPROVALS

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

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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

T-MOBILE SITE NUMBER:
CTFF119A

BU #: **806353**
BRG 124 943066

128 MATHER STREET.
WILTON, CT 06897

EXISTING 180'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/24/21	RCD	FINAL	SS

STATE OF NEW YORK
JOHN S. STEVENS
EXCELSIOR
071096
LICENSED PROFESSIONAL ENGINEER

12-28-2021

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: A

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–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).

ELECTRICAL INSTALLATION NOTES:

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

CONDUCTOR COLOR CODE

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

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T–MOBILE SITE NUMBER:
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BU #: **806353**
BRG 124 943066

128 MATHER STREET.
WILTON, CT 06897

EXISTING 180'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/24/21	RCD	FINAL	SS

12-28-2021

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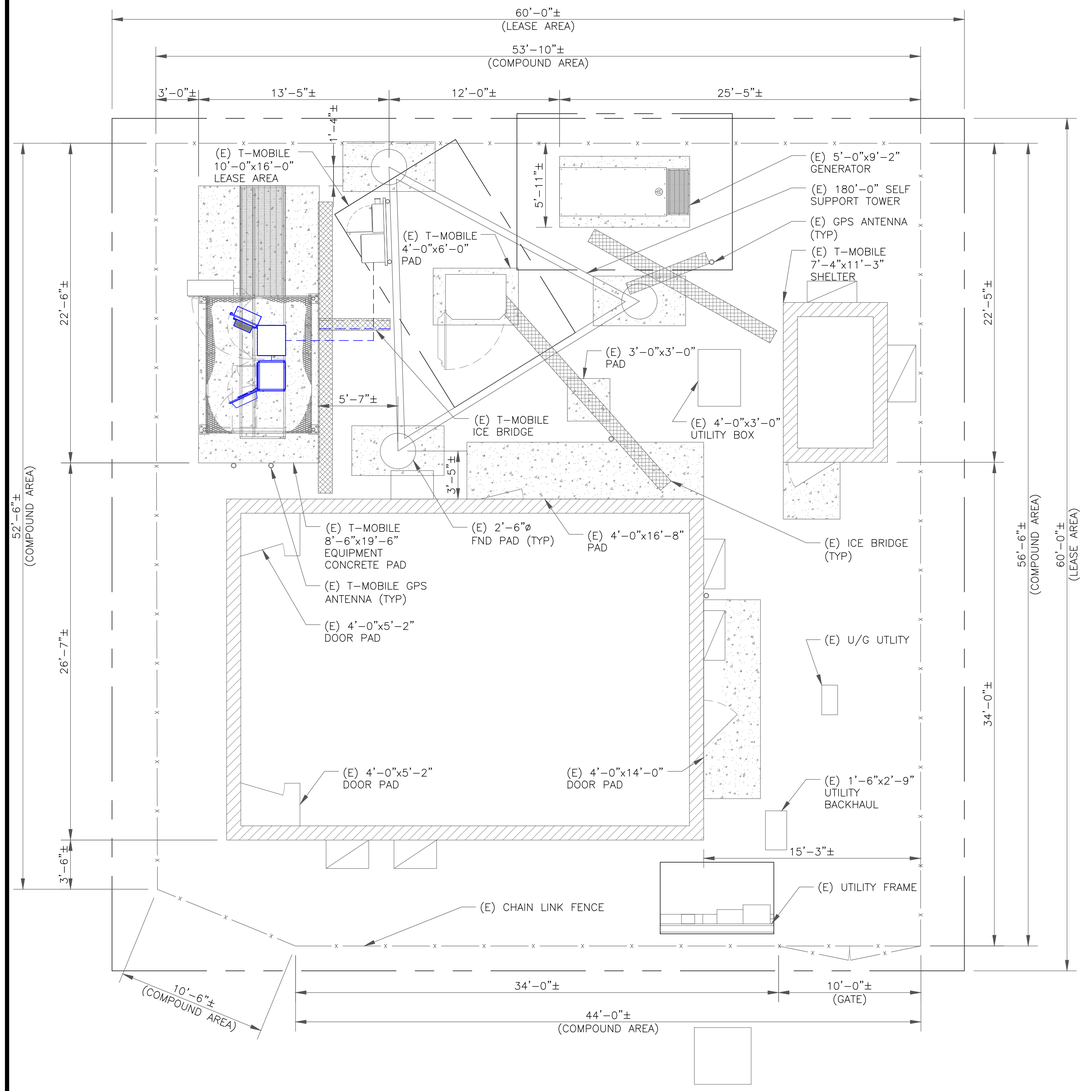
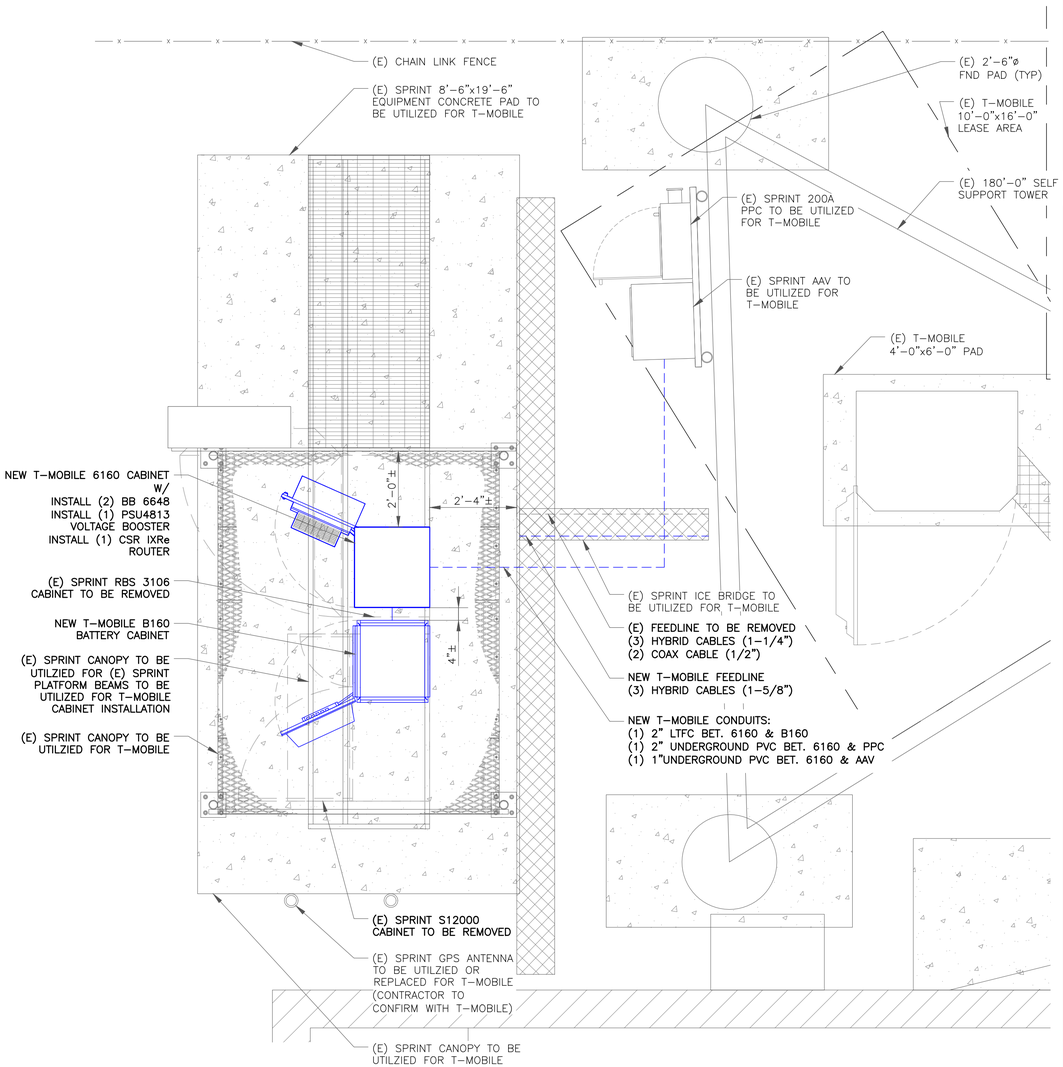
SHEET NUMBER:	REVISION:
T-2	A

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



2 ENLARGED SITE PLAN
SCALE: 0 6" 1' 1-1/2"=1'-0" (FULL SIZE) 3/4"=1'-0" (11x17)

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EXCELSIOR
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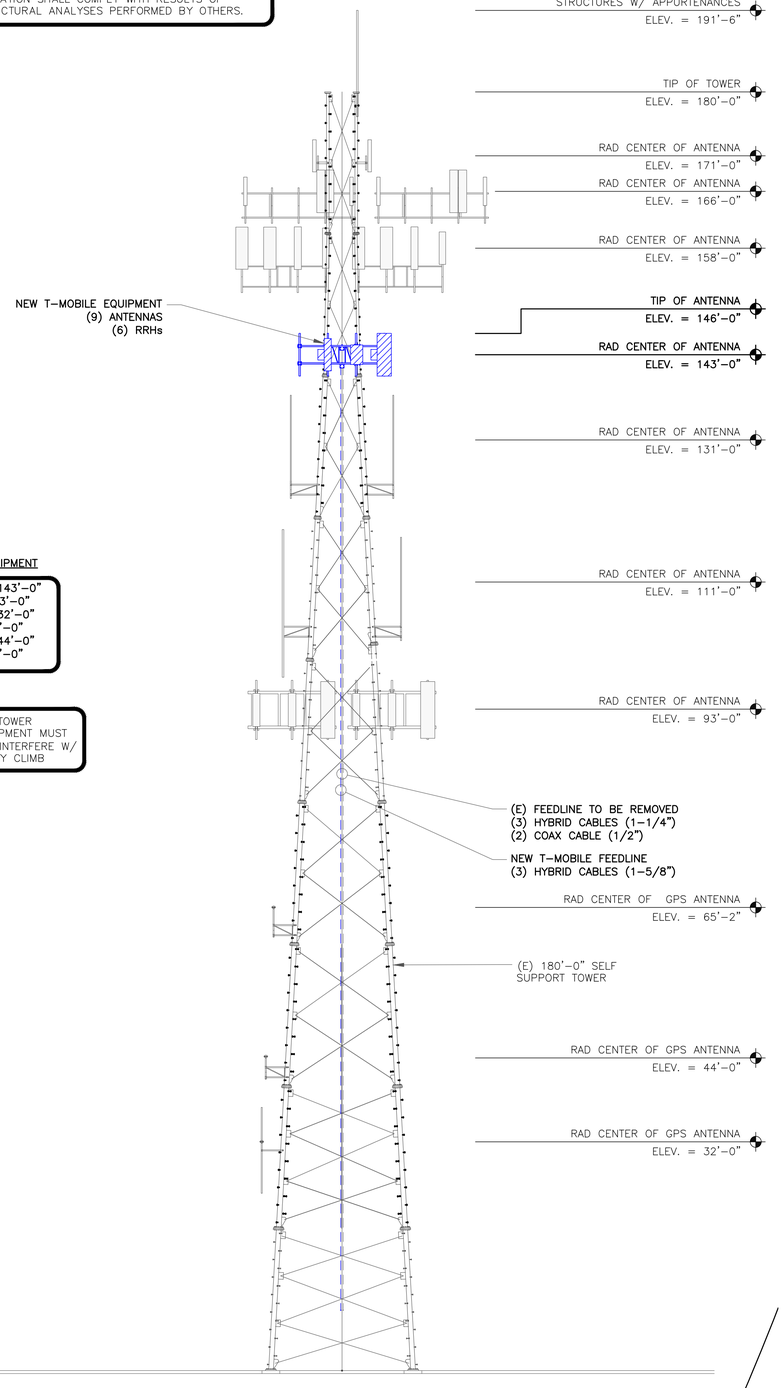
SHEET NUMBER: C-1

REVISION: A

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.

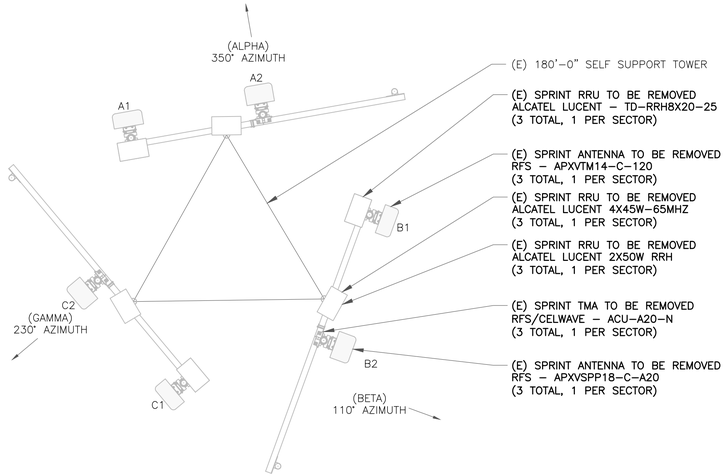


T-MOBILE EQUIPMENT

ANTENNA CL: 143'-0"
MOUNT CL: 143'-0"
ANTENNA CL: 32'-0"
MOUNT CL: 31'-0"
ANTENNA CL: 44'-0"
MOUNT CL: 42'-0"

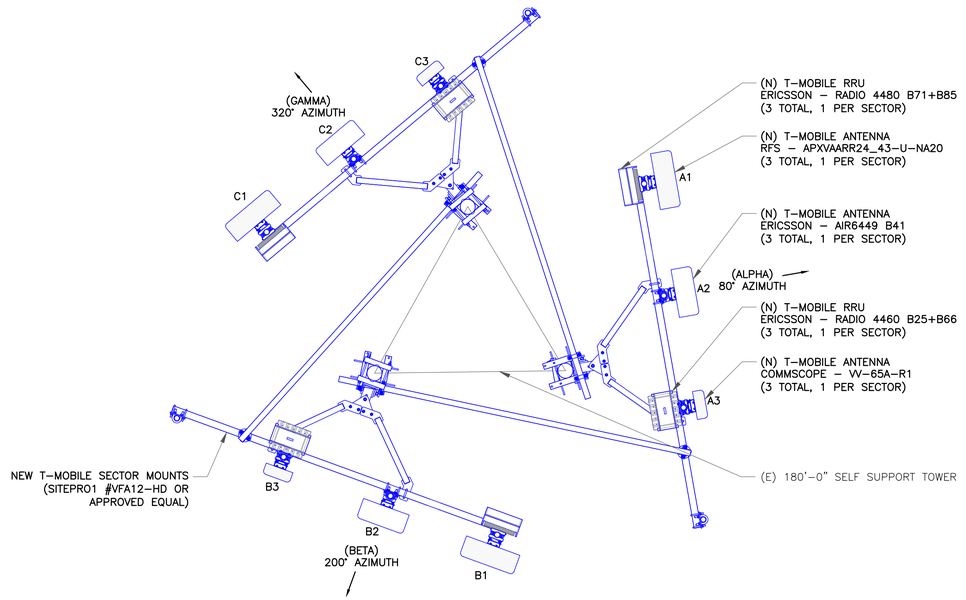
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTINGL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

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STATE OF NEW YORK
JOHN S. STEVENS
LICENSED PROFESSIONAL ENGINEER
EXCELSIOR
071096

12-28-2021

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SHEET NUMBER: C-2

REVISION: A

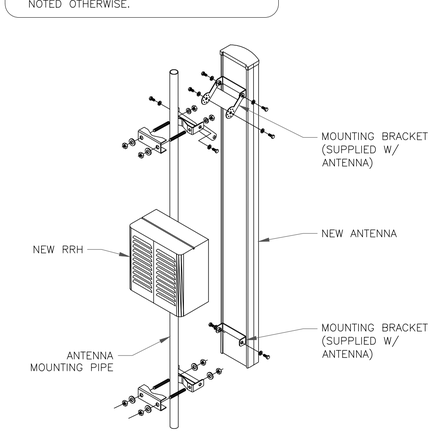
ANTENNA SCHEDULE

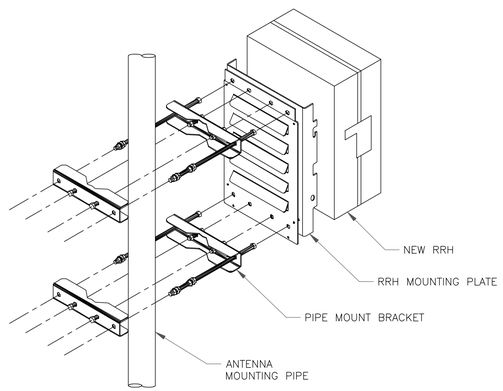
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L700, L600, N600,	143'-0"	80°	RFS	APXVAARR24_43-U-NA20	-	-	(1) ERICSSON - RRUS 4480 B71+B85	(1) 1-5/8" HYBRID
ALPHA	A2	L2500. N2500	143'-0"	80°	ERICSSON	ERICSSON - AIR6449 B41	-	-	-	-
ALPHA	A3	G1900. L2100, L1900	143'-0"	80°	COMMSCOPE	ERICSSON - VV-65A-R1	-	-	(1) ERICSSON - RRUS 4460 B25+B65	-
BETA	B1	L700, L600, N600,	143'-0"	200°	RFS	APXVAARR24_43-U-NA20	-	-	(1) ERICSSON - RRUS 4480 B71+B85	(1) 1-5/8" HYBRID
BETA	B2	L2500. N2500	143'-0"	200°	ERICSSON	ERICSSON - AIR6449 B41	-	-	-	-
BETA	B3	L2500. N2500	143'-0"	200°	COMMSCOPE	ERICSSON - VV-65A-R1	-	-	(1) ERICSSON - RRUS 4460 B25+B65	-
GAMMA	C1	L700, L600, N600,	143'-0"	320°	RFS	APXVAARR24_43-U-NA20	-	-	(1) ERICSSON - RRUS 4480 B71+B85	(1) 1-5/8" HYBRID
GAMMA	C2	L2500. N2500	143'-0"	320°	ERICSSON	ERICSSON - AIR6449 B41	-	-	-	-
GAMMA	C3	L2500. N2500	143'-0"	320°	COMMSCOPE	ERICSSON - VV-65A-R1	-	-	(1) ERICSSON - RRUS 4460 B25+B65	-

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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





2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

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

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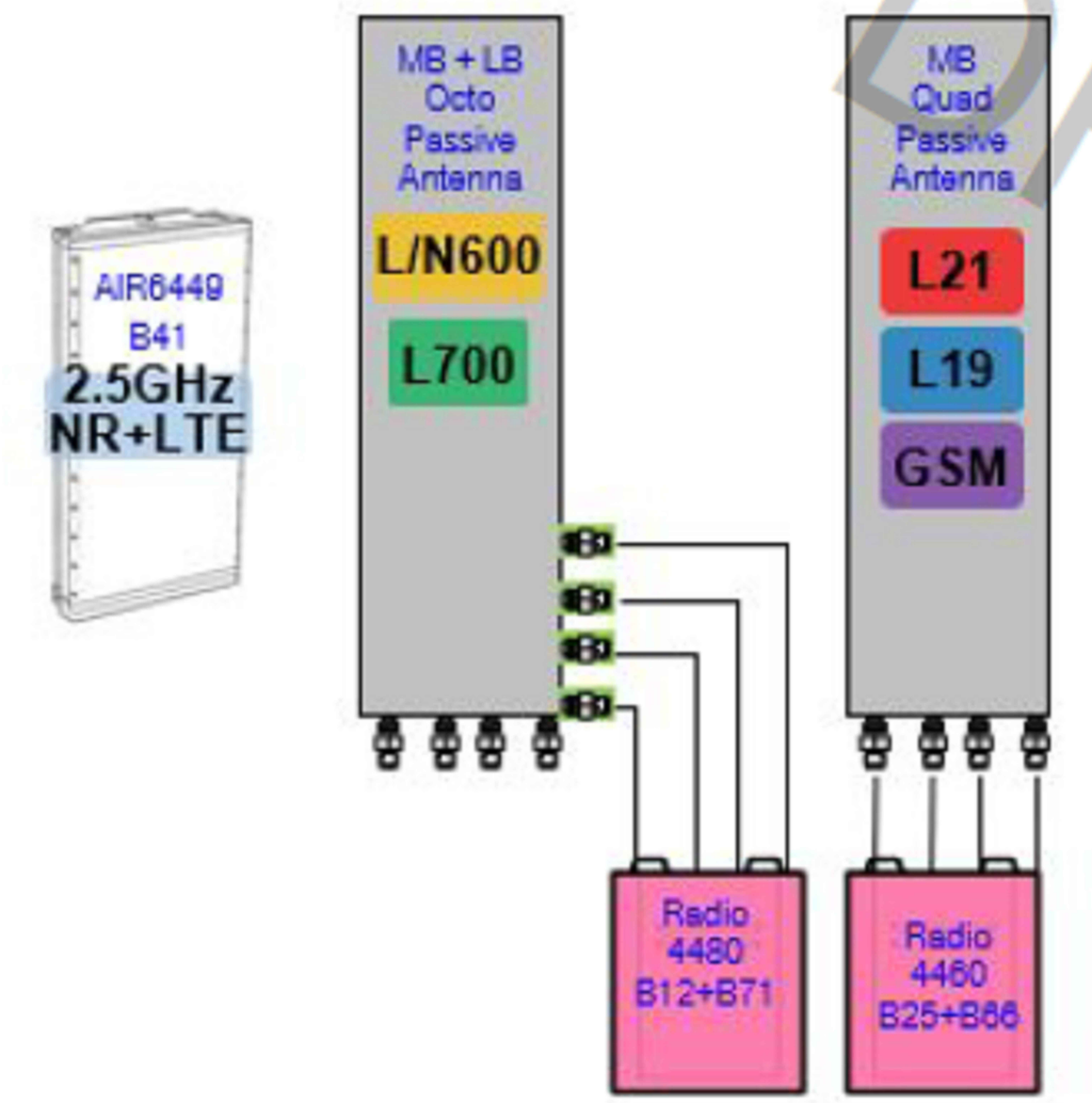
SHEET NUMBER: C-3

REVISION: A

67E5A998E.JPG



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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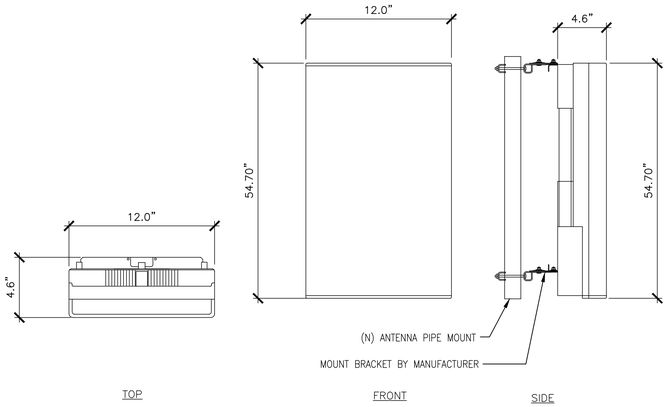
SHEET NUMBER: C-4

REVISION: A

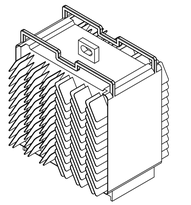
MANUFACTURER: COMMSCOPE
MODEL: VV-65A-R1
WEIGHT: 33 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 54.70"H. X 12.0"W. X 4.6"D.
FREQUENCY: REFER TO RF DATA SHEET

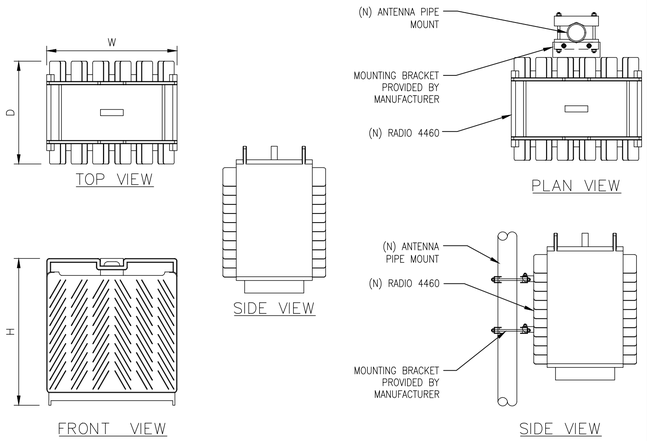


1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

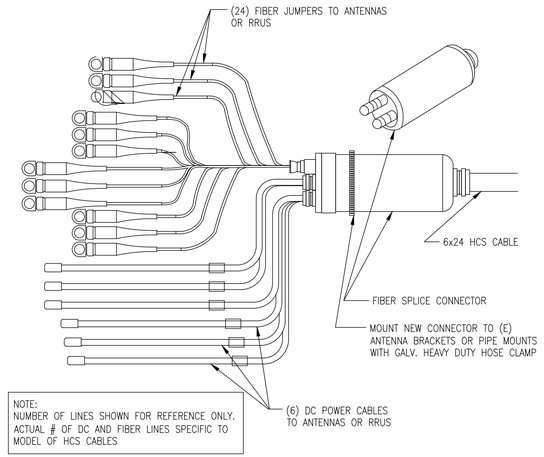
ERICSSON RADIO-4460 B25 B66

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

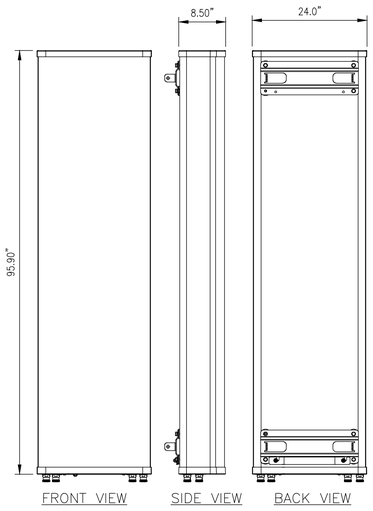




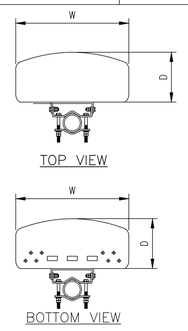
2 (N) RADIO 4460 SPEC
SCALE: NOT TO SCALE



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



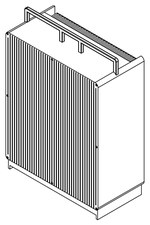
700MHz RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') VV-65A-R1	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	154

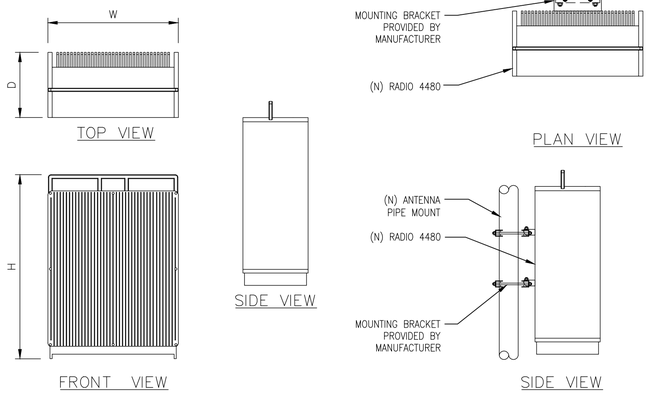


4 (N) APXVAARR24_43-U-NA20 ANTENNA SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

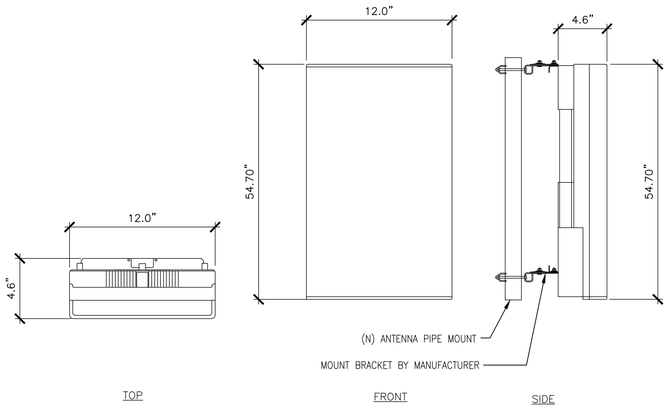
DIMENSIONS, WxDxH:	21.8"x15.7"x7.5"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	93 lbs
TEMPERATURE:	-40° TO 55° C





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

MANUFACTURER: COMMSCOPE
MODEL: VV-65A-R1
WEIGHT: 33 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 54.70"H. X 12.0"W. X 4.6"D.
FREQUENCY: REFER TO RF DATA SHEET



1 (N) VV-65A-R1 ANTENNA SPEC
SCALE: NOT TO SCALE

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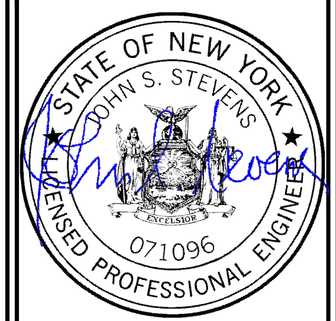

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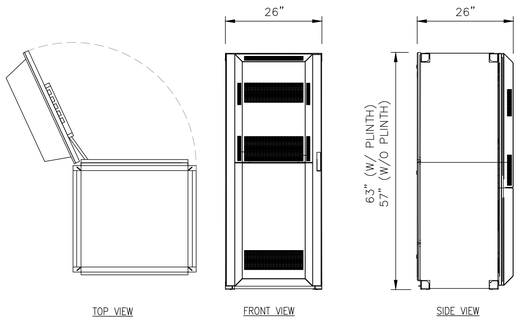
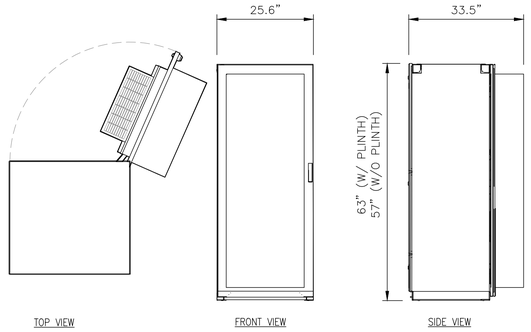
SHEET NUMBER: C-5

REVISION: A



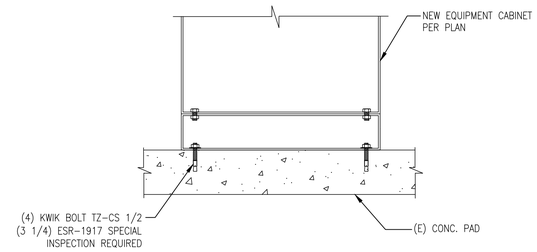
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

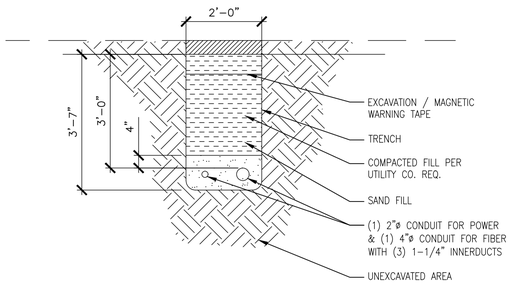


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

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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SHEET NUMBER: C-6
REVISION: A

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		
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
6160	3500	C	100	1	3501		7	60	NC	1	SURGE SUPPRESSOR
	3500	C		2		3501	8		NC	1	
PANEL BOARD PLUG	180	NC	15	3	180		9	20	NC	0	SPARE (OFF)
6160 GFI	180	NC	20	4		180	10	20	NC	0	OFF
OFF	0	NC	20	5	0		11	20	NC	0	SPARE
OFF	0	NC	15	6		0	12		NC	0	
				BASE LOAD (VA) =			3681				3681
				25% OF CONTINUOUS LOAD (VA) =			875				875
				TOTAL LOAD (VA) =			4556				4556
				TOTAL LOAD (A) =			38				38

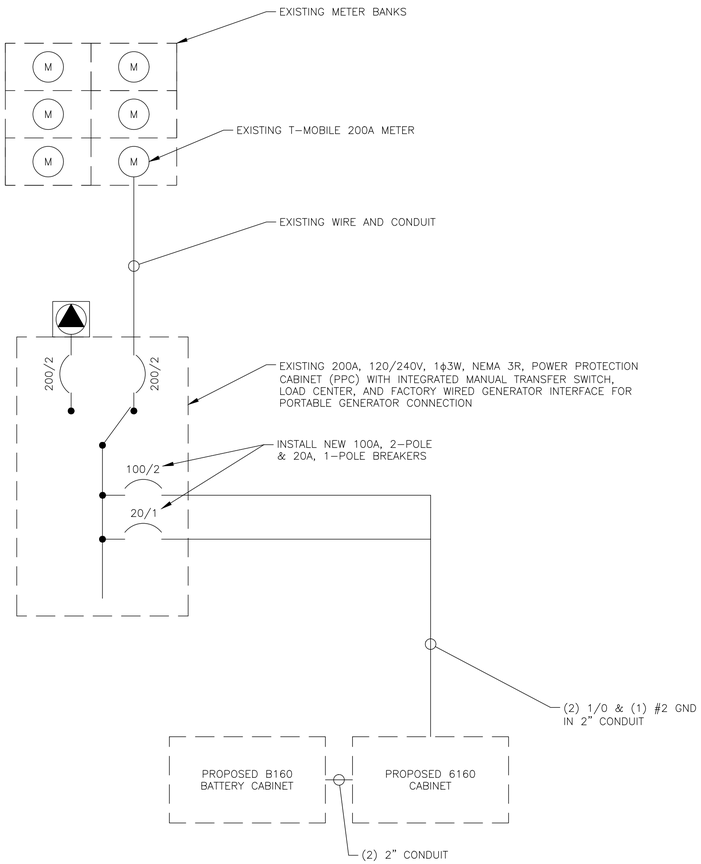
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

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.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

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



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
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T-MOBILE SITE NUMBER:
CTFF119A

BU #: **806353**
BRG 124 943066

128 MATHER STREET.
WILTON, CT 06897

EXISTING 180'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	12/24/21	RCD	FINAL	SS

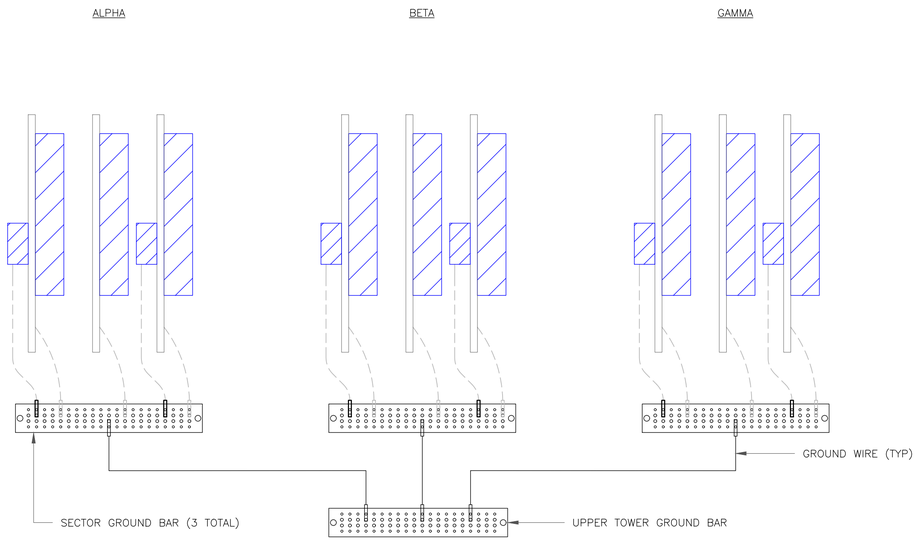
STATE OF NEW YORK
JOHN S. STEVENS
EXCELSIOR
071096
LICENSED PROFESSIONAL ENGINEER

12-28-2021

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: E-1

REVISION: A



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile

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BLOOMFIELD, CT 06002

CROWN CASTLE

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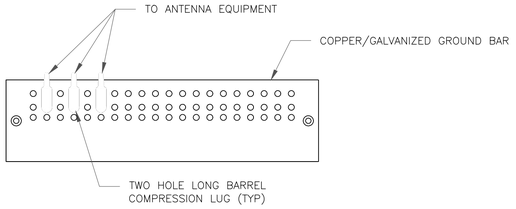
SHEET NUMBER: G-1

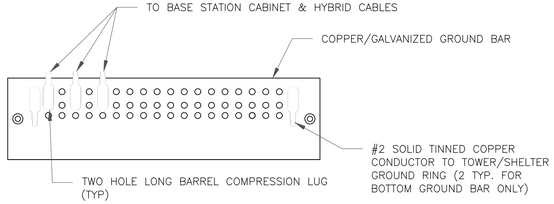
REVISION: A



NOTES:

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

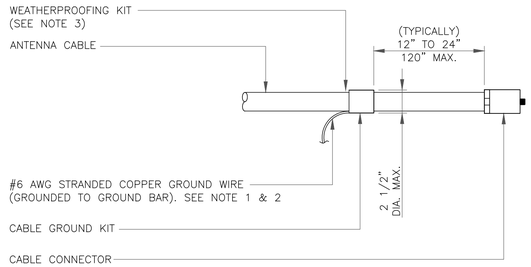
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

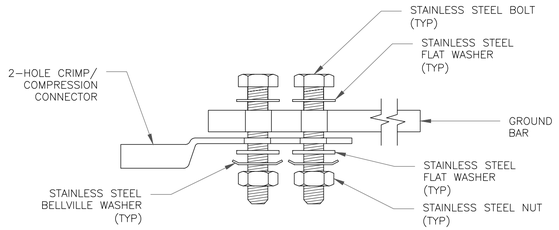
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



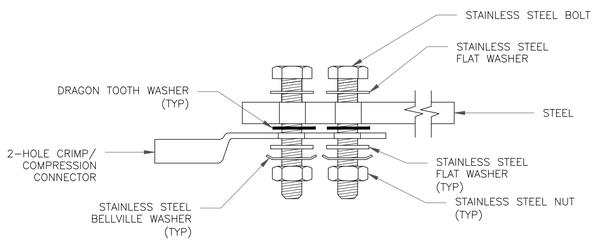
NOTES:

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

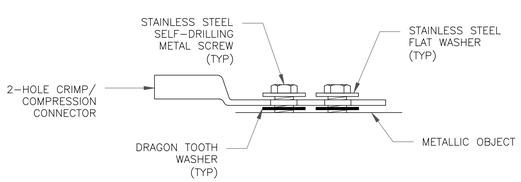
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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SHEET NUMBER: G-2
REVISION: A