



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

September 22, 2022

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

RE: Notice of Exempt Modification for T-Mobile: CT11062B
Crown Site#876325
92 Weston Street, Hartford, CT 06103
Latitude: 41° 47' 12.30" / Longitude: -72° 39' 44.42"

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 108' level of the 110' monopole tower located at 92 Weston Street, Hartford, CT. The property is owned by Freeport Realty V LLC. The tower is owned Crown Castle. T-Mobile now intends to replace (9) antennas with nine (9) new antennas and ancillary equipment at the 108' mount level of the tower. 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:

Install:

- (3) Ericsson – AIR6419 B41 Antennas
- (3) RFS APXVAALL24_43-U-NA20 Antennas
- (3) Commscope – W-65B-R1
- (3) Ericsson-Radio 4480_B71+B85 RRH
- (3) Ericsson- 4460 B25+B66 RRH
- (3) 6x24 Hybrid Cable
- (1) SITPRO1 RMQP-396-New Antenna Mount

Remove:

- (3) Andrew LNX-6515DS-A1M Antennas
- (3) Ericsson – Air32 KRD901146-1_B66A_B2A
- (3) Ericsson – Air21 KRC118023-1_B2A_B4P Antennas
- (3) T-Mobile RRUs
- (6) 7/8" Coaxial Cables
- (1) Antenna Mount Platform

Ground:

Install New:

- (1) 6160 Cabinet
- (1.) B160 Battery Cabinet
- (1) RP 6651
- (2.) PSU 4813 vR2A
- (1) CRS IXRc V2
- (1.) AAV Cabinet

Remove:

- (1) Equipment Cabinet

The facility was approved by the Connecticut Siting Council Docket No. 58A on April 22, 1987.

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 Luke Bronin, Mayor, City of Hartford and Aimee Chambers, Director of Planning, City of Hartford. Freeport Realty V LLC is the property and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Melanie A. Bachman

Page 3

Sincerely,



Jeffrey Barbadora
Site Acquisition Specialist
1800 W. Park Drive, STE 250
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments

cc:

Luke Bronin, Mayor
City of Hartford
550 Main Street, Room 200
Hartford, CT 06103
(860) 757-9500

Aimee Chambers, Director of Planning
City of Hartford
260 Constitution Plaza, 1st Floor
Hartford, CT 06103
(860) 757-9200

Freeport Realty V LLC, Property Owner
337 Freeport Street
Boston, MA 02122

Crown Castle, Tower Owner

CT03X064

BUILDING PERMIT

DEPARTMENT OF LICENSES & INSPECTIONS CITY OF HARTFORD

Appl. Nbr. 964013 Permit Nbr. 964785 E
THE APPLICANT NAMED BELOW IS HEREBY GRANTED PERMISSION TO
PERFORM WORK AS DESCRIBED HEREIN AT:
0000 0092 WESTON ST

FLOOR: 0 0 0

CONDO:

IN ACCORDANCE WITH THE APPLICATION AND PLANS APPROVED BY
THE DEPARTMENT OF LICENSES AND INSPECTIONS.

Joseph Hewes
Building Official

Date 11/26/96

OWNER: WESTON SQUARE ASSOCIATES
ADDRESS: ONE HARTFORD SQUARE
NEW BRITAIN, CT 06051

APPLICANT: MIKE EVANCHICK
SPRINT SPECTRUM LP
9 BARNES INDUSTRIAL RD
WALLINGFORD, CT 06492

294-5600

ESTIMATED COST: \$ 98000.

Application Date: 10/08/96

Fee: 1568.00

DESCRIPTION OF JOB:

INSTALLATION OF 110 FT MONOPOLE WITH 6 ANTENNAS
AND ASSOCIATED INFRASTRUCTURE.

PARCEL ID.: NOT FOUND

Unofficial Property Record Card - Hartford, CT

General Property Data

Parcel ID **286-173-007**
Prior Parcel ID
Property Owner **FREEMPORT REALTY V LLC**

Account Number

Mailing Address **337 FREEMPORT ST**

Property Location **92 WESTON ST**
Property Use **WAREHOUSE**
Most Recent Sale Date **9/20/2019**
Legal Reference **07527-0278**
Grantor **NEPREO INC**

City **BOSTON**
Mailing State **MA** Zip **02122**
Parcel Zoning **ID-1**

Sale Price **0**
Land Area **187,334.453 acres**

Current Property Assessment

Card 1 Value Building Value **1,034,320**

Xtra Features Value **59,780**

Land Value **464,800**

Total Value **1,558,900**

Building Description

Building Style **OFFICE/WHS**
of Living Units **0**
Year Built **1978**
Building Grade **Average**
Building Condition **N/A**
Finished Area (SF) **N/A**
Number Rooms **0**
of 3/4 Baths **0**

Foundation Type **Concrete**
Frame Type **Steel**
Roof Structure **FLAT**
Roof Cover **Metal**
Siding **Brick**
Interior Walls **DRYWALL**
of Bedrooms **0**
of 1/2 Baths **0**

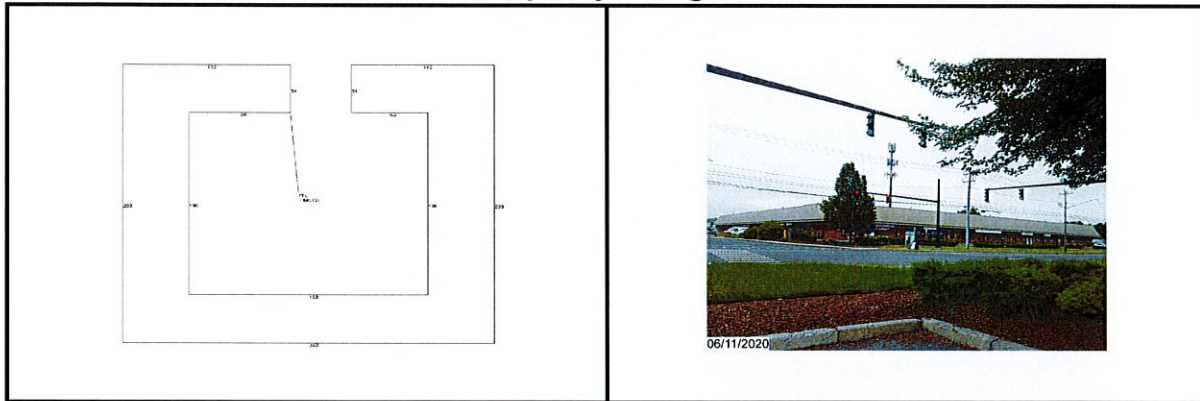
Flooring Type **COMBINATION**
Basement Floor **N/A**
Heating Type **Warm Air**
Heating Fuel **Gas**
Air Conditioning **30%**
of Bsmt Garages **0**
of Full Baths **0**
of Other Fixtures **0**

Legal Description

Narrative Description of Property

This property contains 187,334.453 acres of land mainly classified as WAREHOUSE with a(n) OFFICE/WHS style building, built about 1978 , having Brick exterior and Metal roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images

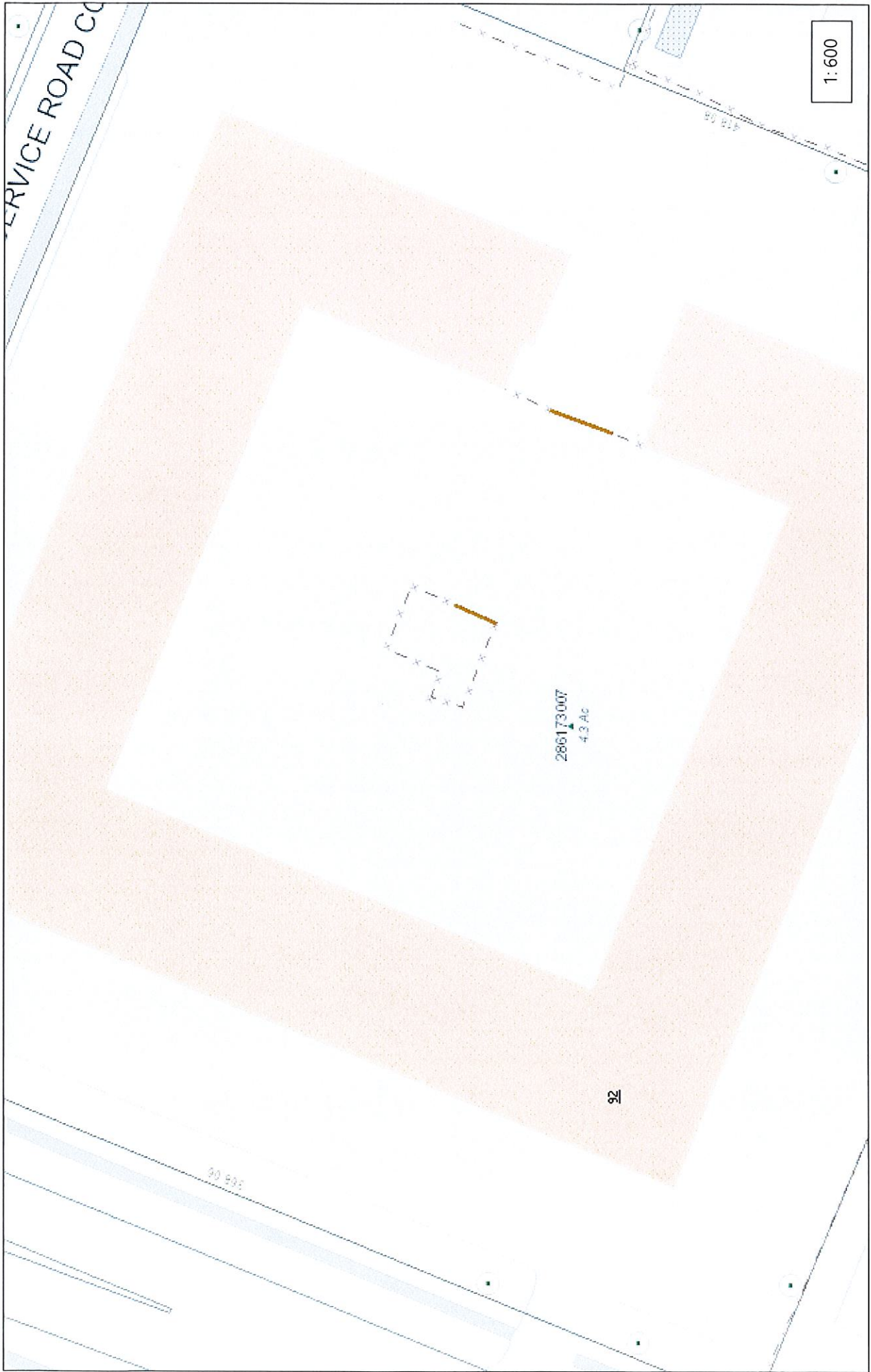


Disclaimer: This information is believed to be correct but is subject to change and is not warranted.



City of Hartford - Property Map

92 Weston Street



1:600

The planimetric and topographic information depicted on this map was compiled by The Sanborn Map Company and is based on an aerial flight performed in April 2015. In addition, the City's GIS staff has been updating limited planimetric features on a yearly basis. The intent of this map is to depict a graphical representation of real property information relative to the planimetric features for the City of Hartford and is subject to change as a more accurate survey may disclose. The City of Hartford and the mapping company assume no legal responsibility for the information contained in this data. THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY

100 Feet



Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, September 23, 2022 10:34 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 770011308399: 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 Fri, 09/23/2022 at
10:27am.



Delivered to 550 MAIN ST, HARTFORD, CT 06103

[OBTAIN PROOF OF DELIVERY](#)

TRACKING NUMBER [770011308399](#)

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

TO City of Hartford
Luke Bronin, Mayor
550 Main Street, Room 200
HARTFORD, CT, US, 06103

REFERENCE 799001.7680

SHIPPER REFERENCE 799001.7680

SHIP DATE Thu 9/22/2022 05:45 PM

PACKAGING TYPE FedEx Envelope

ORIGIN WESTBOROUGH, MA, US, 01581

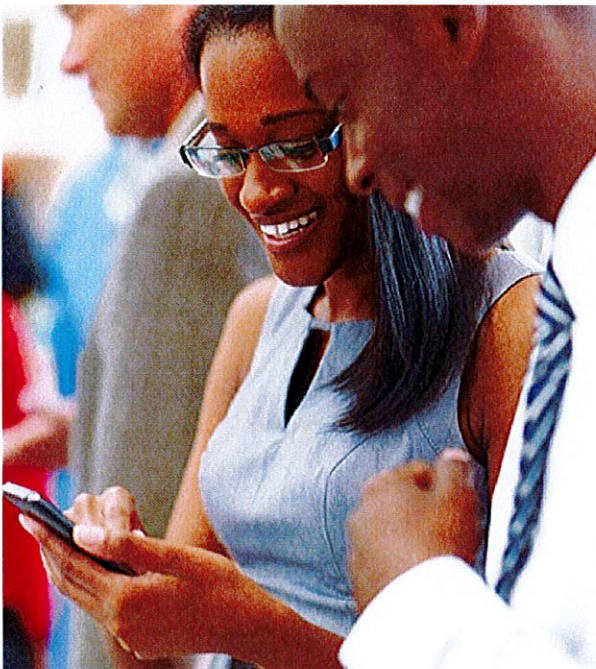
DESTINATION HARTFORD, CT, US, 06103

SPECIAL HANDLING Deliver Weekday

NUMBER OF PIECES 1

TOTAL SHIPMENT WEIGHT 0.50 LB

SERVICE TYPE FedEx Priority Overnight



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Delivered to 260 CONSTITUTION PLZ 1, HARTFORD, CT 06103

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TRACKING NUMBER [770011343699](#)

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

TO City of Hartford
Aimee Chambers, Dir of Planning
260 Constitutional Plaza
1st Floor
HARTFORD, CT, US, 06103

REFERENCE 799001.7680

SHIPPER REFERENCE 799001.7680

SHIP DATE Thu 9/22/2022 05:45 PM

PACKAGING TYPE FedEx Envelope

ORIGIN WESTBOROUGH, MA, US, 01581

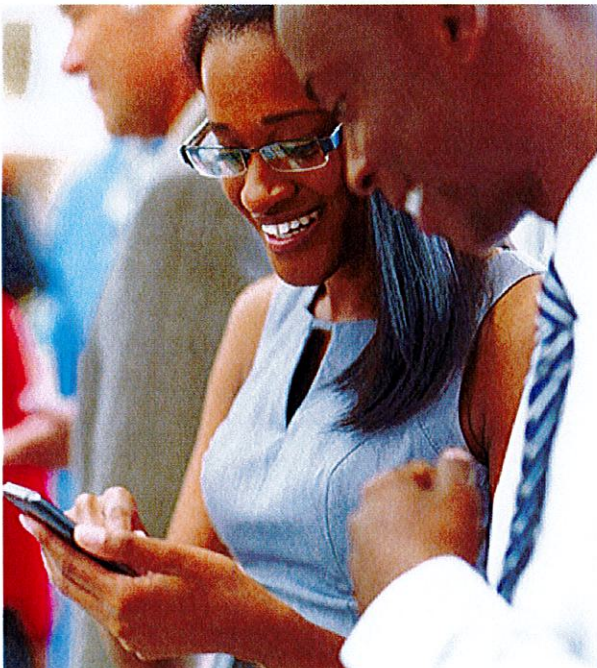
DESTINATION HARTFORD, CT, US, 06103

SPECIAL HANDLING Deliver Weekday

NUMBER OF PIECES 1

TOTAL SHIPMENT WEIGHT 0.50 LB

SERVICE TYPE FedEx Priority Overnight



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Hi. Your package was
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12:33pm.



Delivered to 337 FREEPORT ST, BOSTON, MA 02122
Received by V.VERTEX

[OBTAIN PROOF OF DELIVERY](#)

TRACKING NUMBER [770011378112](#)

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Freeport Realty V LLC Property Owner 337 Freeport Street BOSTON, MA, US, 02122
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 9/22/2022 05:45 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BOSTON, MA, US, 02122
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Date: July 29, 2022



Black & Veatch Corp.
11401 Lamar Avenue
Overland Park, KS 66211
(913) 458-6909

Subject: Structural Analysis Report

Carrier Designation: **Site Number:** CT11062B
Site Name: CT03XC064

Crown Castle Designation: **BU Number:** 876325
Site Name: WESTON SQUARE
JDE Job Number: 718794
Work Order Number: 2126991 Rev.1
Order Number: 619011 Rev. 0

Engineering Firm Designation: **Black & Veatch Corp. Project Number:** 406642

Site Data: **92 Weston Street, Hartford, Hartford County, CT**
Latitude 41° 47' 12.3", Longitude -72° 39' 44.42"
110 Foot - Monopole Tower

Black & Veatch Corp. 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

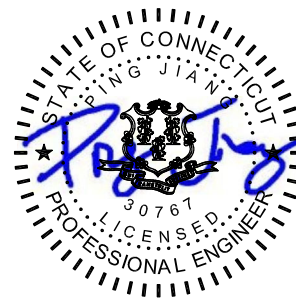
Sufficient Capacity - 92.6%

This analysis utilizes an ultimate 3-second gust wind speed of 117 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: Purich Sangpairroj

Respectfully submitted by:

Ping Jiang, P.E.
Professional Engineer



Jul 29, 2022

Digitally signed by Jiang, Ping
DN: CN="Jiang, Ping", O=Black Veatch, C=US
Date: 2022.07.29 07:56:29-05'00'

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1) INTRODUCTION

This tower is a 110 ft Monopole tower designed by Rohn Industries, Inc.

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

The tower has been modified per reinforcement drawings prepared by B&T Engineering, Inc., in December of 2008. Reinforcement consists of addition of reinforcement plates from 0.5' - 10.5', additional anchor rods and base plate stiffeners. Refer to Post Modification Inspection Report by B&T Engineering, Inc. in November of 2009. This modification has been considered effective in this analysis.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford and Company, in May of 2012. Reinforcement consists of addition of reinforcement plates from 30.5' - 40.5' and bridge stiffeners at 30'. Refer to Modification Inspection Report by Tower Engineering Professionals, Inc. in October of 2012. This modification has been considered effective in this analysis.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford and Company, in February of 2013. Reinforcement consists of addition of reinforcement plates from 6' - 21' and transition stiffeners. Refer to Modification Inspection Report by Tower Engineering Professionals, Inc. in August of 2013. This modification has been considered effective in this analysis.

The tower was later modified per reinforcement drawings prepared by Paul J. Ford and Company, in February of 2017. Reinforcement consists of addition of reinforcement plates from 4.5' - 26.5', jump plates at 30' and additional foundation reinforcement. Refer to Modification Inspection Report by Engineered Tower Solutions, PLLC. in August of 2017. This modification has been considered effective in this analysis.

The tower was later modified per reinforcement drawings prepared by Black & Veatch Corp, in January of 2020. Reinforcement consists of removing existing base plate grout, addition of anchor rods with bracket at elevation 0' and removing existing bracket and installing new anchor rods with bracket at elevation 0'. Refer to Modification Inspection Report by Engineered Tower Solutions, PLLC. in August of 2017. This modification has been considered effective in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.500 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.187
Seismic S1:	0.055
Service Wind Speed:	60 mph
Seismic Loading:	Does not control per engineering judgment

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)
107.0	108.0	3	commscope	VV-65B-R1_TMO w/ Mount Pipe	3	1-5/8
		3	ericsson	AIR 6419 B41_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	Radio 4480_TMOV2		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
	107.0	1	site pro 1	RMQP-369 + HRK12 12.5' Platform with Handrails		

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)
90.0	91.0	3	ericsson	AIR 6419 B77G w/ Mount Pipe	3 4 4 4	3/8 1 3/16 7/8 conduit
		3	ericsson	AIR 6449 N77 w/ Mount Pipe		
	90.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4415 B25		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS E2 B29		
		3	quintel technology	QD6616-7 w/ Mount Pipe		
		3	raycap	DC6-48-60-18-8F		
		1	raycap	DC6-48-60-18-8F		
	1	site pro 1	RMQLP-4120-H10			
76.0	76.0	3	commscope	SDX1926Q-43	6 3	7/8 1-5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		
		1	site pro 1	RMQP-xxx + HRK12 12.5' Platform with Handrails		
3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe				
64.0	64.0	3	commscope	BSAMNT-SBS-1-2 (Mount Bracket)	2	1-7/8
		6	commscope	NHH-65B-R2B		
		1	perfect vision	PV-VPP12M-HR-B		
		2	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	20W CBRS		
3	samsung telecommunications	RFV01U-D1A				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	samsung telecommunications	RFV01U-D2A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2192540	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1615433	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1615400	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2356066	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3187227	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	3667858	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6702634	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	8892341	CCISITES
4-POST-MODIFICATION INSPECTION	6996864	CCISITES
4-POST-MODIFICATION INSPECTION	4075332	CCISITES
4-POST-MODIFICATION INSPECTION	3355603	CCISITES
4-POST-MODIFICATION INSPECTION	2561266	CCISITES
4-POST-MODIFICATION INSPECTION	9756042	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

- 1) 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. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole Tower)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP24x24x0.25	Pole	3.4%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	8.9%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	14.8%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	21.0%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	22.0%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	30.4%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	39.9%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	51.3%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	63.3%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	77.7%	Pass
60 - 55	Pole	TP30x30x0.375	Pole	61.1%	Pass
55 - 50	Pole	TP30x30x0.375	Pole	71.0%	Pass
50 - 45	Pole	TP30x30x0.375	Pole	81.1%	Pass
45 - 40	Pole	TP30x30x0.375	Pole	91.3%	Pass
40 - 39.33	Pole	TP30x30x0.375	Pole	92.6%	Pass
39.33 - 39.08	Pole + Reinf.	TP30x30x0.4875	Pole	72.7%	Pass
39.08 - 34.08	Pole + Reinf.	TP30x30x0.4875	Pole	80.8%	Pass
34.08 - 30	Pole + Reinf.	TP30x30x0.4875	Pole	87.6%	Pass
30 - 29.75	Pole	TP30x30x0.5	Pole	81.8%	Pass
29.75 - 25	Pole	TP30x30x0.5	Pole	89.1%	Pass
25 - 24.75	Pole + Reinf.	TP30x30x0.5563	Pole	80.5%	Pass
24.75 - 19.75	Pole + Reinf.	TP30x30x0.5563	Pole	87.6%	Pass
19.75 - 18.58	Pole + Reinf.	TP30x30x0.5563	Pole	89.3%	Pass
18.58 - 18.33	Pole + Reinf.	TP30x30x0.6875	Pole	77.6%	Pass
18.33 - 13.33	Pole + Reinf.	TP30x30x0.6875	Pole	83.8%	Pass
13.33 - 8.42	Pole + Reinf.	TP30x30x0.6875	Pole	90.1%	Pass
8.42 - 8.07	Pole + Reinf.	TP30x30x1.3	Reinf. 1 Bolt Shear	61.6%	Pass
8.07 - 7.83	Pole + Reinf.	TP30x30x1.2	Pole	51.5%	Pass
7.83 - 6	Pole + Reinf.	TP30x30x1.2	Pole	52.9%	Pass
6 - 5.75	Pole + Reinf.	TP30x30x1.15	Reinf. 1 Tension Rupture	60.7%	Pass
5.75 - 2	Pole + Reinf.	TP30x30x1.15	Reinf. 1 Tension Rupture	63.9%	Pass
2 - 1.75	Pole + Reinf.	TP30x30x1.6	Reinf. 4 Weldment	62.7%	Pass
1.75 - 0	Pole + Reinf.	TP30x30x0.875	Pole	80.6%	Pass
				Summary	
			Pole	92.6%	Pass
			Reinforcement	81.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
			Overall	92.6%	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole Tower) - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1, 2	Flange Bolts	90	12.1	Pass
	Flange Plate		21.0	Pass
1, 2	Flange Bolts	60	41.1	Pass
	Flange Plate		77.7	Pass
1	Flange Bolts	30	19.1	Pass
	Flange Plate		18.0	Pass
	Flange Jump		59.1	Pass
1	Anchor Rods (Original)	0	67.0	Pass
1, 3	Anchor Rods (Existing Modification)		88.2	Pass
1	Base Plate		60.3	Pass
1	Base Foundation (Structure)	0	83.7	Pass
	Base Foundation (Soil Interaction)		23.8	Pass

Structure Rating (max from all components) =	92.6%
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Notes:

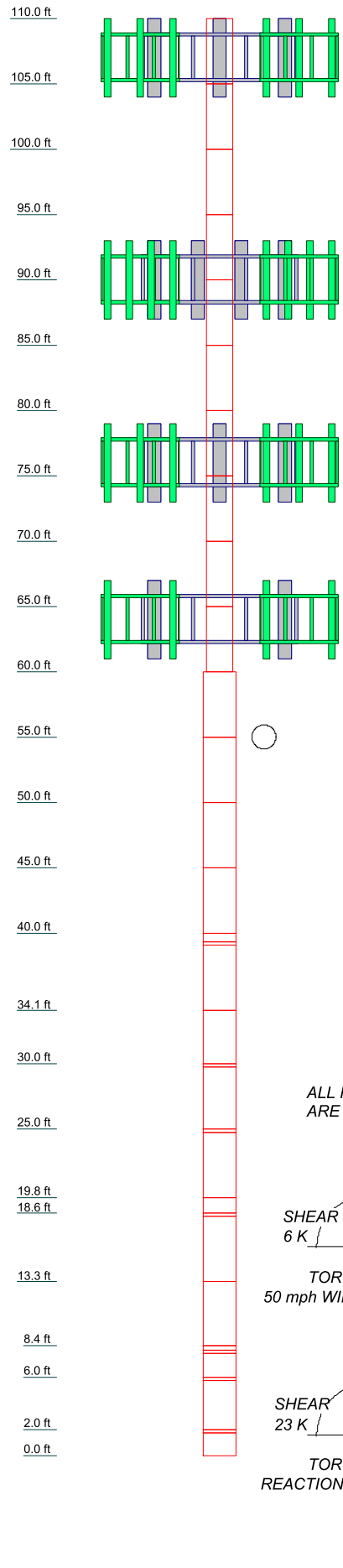
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.
- 2) Flange plates are assumed to have the same capacity as their respective splice bolts or shaft.
- 3) The anchor rod brackets were analyzed previously and found not to govern the design. The anchor rods will control the design.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33		
Size	P24x0.25	P24x0.25	P24x0.25	P24x0.25	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P30x0.375	P30x0.375	P30x0.375	P30x0.375	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487	P30x0.487		
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
Grade																																			
Weight (K)	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	



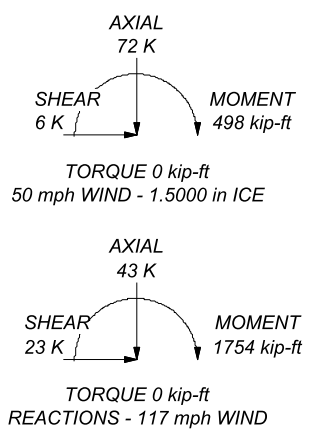
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 92.6%

ALL REACTIONS ARE FACTORED



BLACK & VEATCH Building a world of difference.	Black & Veatch Corp. 11401 Lamar Avenue Overland Park, KS 66211 Phone: (913) 458-6909 FAX:		Job: WESTON SQUARE (BU# 876325) Project: 406642 (876325.2018292) Client: Crown Castle Code: TIA-222-H Path:		Drawn by: Purich Sangpairoj Date: 07/29/22 App'd: Scale: NTS Dwg No. E-1	
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Tower Input Data

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

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 10.00 ft.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING: 92.6%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	110.00-105.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L2	105.00-100.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L3	100.00-95.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L4	95.00-90.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L5	90.00-85.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L6	85.00-80.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L7	80.00-75.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L8	75.00-70.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L9	70.00-65.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L10	65.00-60.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L11	60.00-55.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L12	55.00-50.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L13	50.00-45.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L14	45.00-40.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L15	40.00-39.33	0.67	P30x0.375	A53-B-42 (42 ksi)	
L16	39.33-39.08	0.25	P30x0.4875	A53-B-42 (42 ksi)	
L17	39.08-34.08	5.00	P30x0.4875	A53-B-42 (42 ksi)	
L18	34.08-30.00	4.08	P30x0.4875	A53-B-42 (42 ksi)	
L19	30.00-29.75	0.25	P30x0.5	A53-B-42 (42 ksi)	
L20	29.75-25.00	4.75	P30x0.5	A53-B-42 (42 ksi)	
L21	25.00-24.75	0.25	P30x0.55625	A53-B-42 (42 ksi)	
L22	24.75-19.75	5.00	P30x0.55625	A53-B-42 (42 ksi)	
L23	19.75-18.58	1.17	P30x0.55625	A53-B-42 (42 ksi)	
L24	18.58-18.33	0.25	P30x0.6875	A53-B-42 (42 ksi)	
L25	18.33-13.33	5.00	P30x0.6875	A53-B-42 (42 ksi)	
L26	13.33-8.42	4.91	P30x0.6875	A53-B-42 (42 ksi)	
L27	8.42-8.07	0.35	P30x1.3	A53-B-42 (42 ksi)	
L28	8.07-7.83	0.24	P30x1.2	A53-B-42 (42 ksi)	
L29	7.83-6.00	1.83	P30x1.2	A53-B-42 (42 ksi)	
L30	6.00-5.75	0.25	P30x1.15	A53-B-42 (42 ksi)	
L31	5.75-2.00	3.75	P30x1.15	A53-B-42 (42 ksi)	
L32	2.00-1.75	0.25	P30x1.6	A53-B-42 (42 ksi)	
L33	1.75-0.00	1.75	P30x0.875	A53-B-42 (42 ksi)	

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 110.00-105.00				1	1	1			
L2 105.00-100.00				1	1	1			
L3 100.00-95.00				1	1	1			
L4 95.00-90.00				1	1	1			
L5 90.00-85.00				1	1	1			
L6 85.00-80.00				1	1	1			
L7 80.00-75.00				1	1	1			
L8 75.00-70.00				1	1	1			
L9 70.00-65.00				1	1	1			
L10 65.00-60.00				1	1	1			
L11 60.00-55.00				1	1	1			
L12 55.00-50.00				1	1	1			
L13 50.00-45.00				1	1	1			
L14 45.00-40.00				1	1	1			
L15 40.00-39.33				1	1	1			
L16 39.33-39.08				1	1	0.965972			
L17 39.08-34.08				1	1	0.965972			
L18 34.08-30.00				1	1	0.965972			
L19 30.00-29.75				1	1	1			
L20 29.75-25.00				1	1	1			
L21 25.00-24.75				1	1	1.25043			
L22 24.75-19.75				1	1	1.25043			
L23 19.75-18.58				1	1	1.25043			
L24 18.58-18.33				1	1	1.28397			
L25 18.33-13.33				1	1	1.28397			
L26 13.33-8.42				1	1	1.28397			
L27 8.42-8.07				1	1	0.929056			
L28 8.07-7.83				1	1	1.00298			
L29 7.83-6.00				1	1	1.00298			
L30 6.00-5.75				1	1	0.872082			
L31 5.75-2.00				1	1	0.872082			
L32 2.00-1.75				1	1	0.820624			
L33 1.75-0.00				1	1	0.906659			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	B	No	Surface Ar (CaAa)	110.00 - 3.00	1	1	0.000 0.017	0.3750		0.22

HB158-21U6S24-xxM_TMO(1-5/8)	B	No	Surface Ar (CaAa)	107.00 - 0.00	3	3	-0.500 -0.289	1.9960		2.50

810921-001(7/8)	B	No	Surface Ar (CaAa)	76.00 - 0.00	6	6	-0.500 -0.232	1.1120		0.40
HCS 6X12 4AWG(1-5/8)	A	No	Surface Ar (CaAa)	76.00 - 0.00	1	1	0.433 0.500	1.6600		2.40
HCS 6X12 4AWG(1-5/8)	B	No	Surface Ar (CaAa)	76.00 - 0.00	1	1	-0.232 -0.165	1.6600		2.40
HB158-U12S24-160-LI(1-7/8)	C	No	Surface Ar (CaAa)	64.00 - 0.00	2	2	-0.500 -0.350	1.9760		3.20

FB-L98B-034-XXX(3/8)	A	No	Surface Ar (CaAa)	90.00 - 0.00	2	2	-0.500 0.010	0.0000		0.06
PWRT-608-S(13/16)	A	No	Surface Ar (CaAa)	90.00 - 0.00	4	4	-0.500 0.010	0.0000		0.62
PWRT-606-S(7/8)	A	No	Surface Ar (CaAa)	90.00 - 0.00	4	4	-0.500 0.010	0.0000		0.89
3" Flexible Conduit	A	No	Surface Ar (CaAa)	90.00 - 0.00	4	4	-0.500 0.010	3.0000		0.30

*** Existing Modifications ***										
Aero Channel MP305	A	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	B	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	10.50 - 0.50	1	1	0.000 0.000	5.3125	14.8400	0.00

Aero Channel MP303	A	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	B	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00
Aero Channel MP303	C	No	Surface Af (CaAa)	40.50 - 30.50	1	1	0.000 0.000	4.0625	11.2600	0.00

Aero Channel MP305	A	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	B	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00
Aero Channel MP305	C	No	Surface Af (CaAa)	21.00 - 6.00	1	1	0.000 0.000	5.3125	14.8400	0.00

CCI-SFP-045100	A	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	26.50 - 4.50	1	1	0.000 0.000	4.5000	11.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
HCS 6X12 4AWG(1-5/8)	B	No	No	Inside Pole	76.00 - 0.00	1	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
							2" Ice	0.00	2.40
FB-L98B-034- XXX(3/8)	A	No	No	Inside Pole	90.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.385	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
L2	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.182	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L3	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.182	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L4	95.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.182	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L5	90.00-85.00	A	0.000	0.000	6.000	0.000	0.04
		B	0.000	0.000	3.182	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L6	85.00-80.00	A	0.000	0.000	6.000	0.000	0.04
		B	0.000	0.000	3.182	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L7	80.00-75.00	A	0.000	0.000	6.166	0.000	0.04
		B	0.000	0.000	4.015	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L8	75.00-70.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
L9	70.00-65.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.00
L10	65.00-60.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	1.581	0.000	0.03
L11	60.00-55.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	1.976	0.000	0.03
L12	55.00-50.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	1.976	0.000	0.03
L13	50.00-45.00	A	0.000	0.000	6.830	0.000	0.05
		B	0.000	0.000	7.348	0.000	0.07
		C	0.000	0.000	1.976	0.000	0.03
L14	45.00-40.00	A	0.000	0.000	7.169	0.000	0.05
		B	0.000	0.000	7.686	0.000	0.07
		C	0.000	0.000	2.315	0.000	0.03
L15	40.00-39.33	A	0.000	0.000	1.369	0.000	0.01
		B	0.000	0.000	1.438	0.000	0.01
		C	0.000	0.000	0.718	0.000	0.00
L16	39.33-39.08	A	0.000	0.000	0.511	0.000	0.00

Tower Section	Tower Elevation	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
		B	0.000	0.000	0.537	0.000	0.00
		C	0.000	0.000	0.268	0.000	0.00
L17	39.08-34.08	A	0.000	0.000	10.215	0.000	0.05
		B	0.000	0.000	10.733	0.000	0.07
		C	0.000	0.000	5.361	0.000	0.03
L18	34.08-30.00	A	0.000	0.000	7.997	0.000	0.04
		B	0.000	0.000	8.420	0.000	0.06
		C	0.000	0.000	4.036	0.000	0.03
L19	30.00-29.75	A	0.000	0.000	0.342	0.000	0.00
		B	0.000	0.000	0.367	0.000	0.00
		C	0.000	0.000	0.099	0.000	0.00
L20	29.75-25.00	A	0.000	0.000	7.614	0.000	0.05
		B	0.000	0.000	8.105	0.000	0.07
		C	0.000	0.000	4.127	0.000	0.03
L21	25.00-24.75	A	0.000	0.000	0.529	0.000	0.00
		B	0.000	0.000	0.555	0.000	0.00
		C	0.000	0.000	0.474	0.000	0.00
L22	24.75-19.75	A	0.000	0.000	11.687	0.000	0.05
		B	0.000	0.000	12.204	0.000	0.07
		C	0.000	0.000	10.583	0.000	0.03
L23	19.75-18.58	A	0.000	0.000	3.512	0.000	0.01
		B	0.000	0.000	3.633	0.000	0.02
		C	0.000	0.000	3.253	0.000	0.01
L24	18.58-18.33	A	0.000	0.000	0.750	0.000	0.00
		B	0.000	0.000	0.776	0.000	0.00
		C	0.000	0.000	0.695	0.000	0.00
L25	18.33-13.33	A	0.000	0.000	15.007	0.000	0.05
		B	0.000	0.000	15.525	0.000	0.07
		C	0.000	0.000	13.903	0.000	0.03
L26	13.33-8.42	A	0.000	0.000	16.456	0.000	0.05
		B	0.000	0.000	16.964	0.000	0.07
		C	0.000	0.000	17.090	0.000	0.03
L27	8.42-8.07	A	0.000	0.000	1.340	0.000	0.00
		B	0.000	0.000	1.376	0.000	0.01
		C	0.000	0.000	1.552	0.000	0.00
L28	8.07-7.83	A	0.000	0.000	0.919	0.000	0.00
		B	0.000	0.000	0.944	0.000	0.00
		C	0.000	0.000	1.064	0.000	0.00
L29	7.83-6.00	A	0.000	0.000	7.005	0.000	0.02
		B	0.000	0.000	7.194	0.000	0.03
		C	0.000	0.000	8.113	0.000	0.01
L30	6.00-5.75	A	0.000	0.000	0.736	0.000	0.00
		B	0.000	0.000	0.761	0.000	0.00
		C	0.000	0.000	0.887	0.000	0.00
L31	5.75-2.00	A	0.000	0.000	9.159	0.000	0.04
		B	0.000	0.000	9.509	0.000	0.06
		C	0.000	0.000	9.555	0.000	0.02
L32	2.00-1.75	A	0.000	0.000	0.548	0.000	0.00
		B	0.000	0.000	0.565	0.000	0.00
		C	0.000	0.000	0.512	0.000	0.00
L33	1.75-0.00	A	0.000	0.000	3.423	0.000	0.02
		B	0.000	0.000	3.539	0.000	0.03
		C	0.000	0.000	2.757	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	110.00-105.00	A	1.435	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	3.837	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L2	105.00-100.00	A	1.428	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	7.143	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.00
L3	100.00-95.00	A	1.421	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B		0.000	0.000	7.127	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.00
L4	95.00-90.00	A	1.413	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	7.110	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.00
L5	90.00-85.00	A	1.406	0.000	0.000	14.528	0.000	0.17
		B		0.000	0.000	7.093	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.00
L6	85.00-80.00	A	1.397	0.000	0.000	14.487	0.000	0.17
		B		0.000	0.000	7.074	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.00
L7	80.00-75.00	A	1.389	0.000	0.000	14.887	0.000	0.18
		B		0.000	0.000	8.679	0.000	0.13
		C		0.000	0.000	0.000	0.000	0.00
L8	75.00-70.00	A	1.379	0.000	0.000	16.606	0.000	0.21
		B		0.000	0.000	15.137	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.00
L9	70.00-65.00	A	1.370	0.000	0.000	16.548	0.000	0.20
		B		0.000	0.000	15.093	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.00
L10	65.00-60.00	A	1.359	0.000	0.000	16.485	0.000	0.20
		B		0.000	0.000	15.046	0.000	0.22
		C		0.000	0.000	3.335	0.000	0.06
L11	60.00-55.00	A	1.348	0.000	0.000	16.417	0.000	0.20
		B		0.000	0.000	14.995	0.000	0.22
		C		0.000	0.000	4.155	0.000	0.07
L12	55.00-50.00	A	1.336	0.000	0.000	16.344	0.000	0.20
		B		0.000	0.000	14.940	0.000	0.22
		C		0.000	0.000	4.139	0.000	0.07
L13	50.00-45.00	A	1.322	0.000	0.000	16.264	0.000	0.20
		B		0.000	0.000	14.880	0.000	0.21
		C		0.000	0.000	4.123	0.000	0.07
L14	45.00-40.00	A	1.308	0.000	0.000	16.599	0.000	0.20
		B		0.000	0.000	15.237	0.000	0.22
		C		0.000	0.000	4.528	0.000	0.07
L15	40.00-39.33	A	1.299	0.000	0.000	2.726	0.000	0.03
		B		0.000	0.000	2.546	0.000	0.03
		C		0.000	0.000	1.115	0.000	0.01
L16	39.33-39.08	A	1.297	0.000	0.000	1.017	0.000	0.01
		B		0.000	0.000	0.950	0.000	0.01
		C		0.000	0.000	0.416	0.000	0.01
L17	39.08-34.08	A	1.288	0.000	0.000	20.279	0.000	0.23
		B		0.000	0.000	18.946	0.000	0.25
		C		0.000	0.000	8.300	0.000	0.11
L18	34.08-30.00	A	1.271	0.000	0.000	16.036	0.000	0.18
		B		0.000	0.000	14.970	0.000	0.20
		C		0.000	0.000	6.327	0.000	0.08
L19	30.00-29.75	A	1.262	0.000	0.000	0.795	0.000	0.01
		B		0.000	0.000	0.731	0.000	0.01
		C		0.000	0.000	0.202	0.000	0.00
L20	29.75-25.00	A	1.251	0.000	0.000	16.547	0.000	0.19
		B		0.000	0.000	15.334	0.000	0.21
		C		0.000	0.000	6.833	0.000	0.09
L21	25.00-24.75	A	1.239	0.000	0.000	1.038	0.000	0.01
		B		0.000	0.000	0.975	0.000	0.01
		C		0.000	0.000	0.700	0.000	0.01
L22	24.75-19.75	A	1.226	0.000	0.000	22.053	0.000	0.23
		B		0.000	0.000	20.814	0.000	0.25
		C		0.000	0.000	15.346	0.000	0.15
L23	19.75-18.58	A	1.208	0.000	0.000	6.106	0.000	0.06
		B		0.000	0.000	5.823	0.000	0.07
		C		0.000	0.000	4.553	0.000	0.04
L24	18.58-18.33	A	1.203	0.000	0.000	1.303	0.000	0.01
		B		0.000	0.000	1.243	0.000	0.01
		C		0.000	0.000	0.972	0.000	0.01
L25	18.33-13.33	A	1.185	0.000	0.000	25.923	0.000	0.26
		B		0.000	0.000	24.746	0.000	0.28
		C		0.000	0.000	19.370	0.000	0.18
L26	13.33-8.42	A	1.141	0.000	0.000	27.107	0.000	0.26

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B		0.000	0.000	26.016	0.000	0.28
		C		0.000	0.000	22.812	0.000	0.21
L27	8.42-8.07	A	1.110	0.000	0.000	2.106	0.000	0.02
		B		0.000	0.000	2.031	0.000	0.02
		C		0.000	0.000	1.999	0.000	0.02
L28	8.07-7.83	A	1.106	0.000	0.000	1.442	0.000	0.01
		B		0.000	0.000	1.392	0.000	0.01
		C		0.000	0.000	1.370	0.000	0.01
L29	7.83-6.00	A	1.091	0.000	0.000	10.952	0.000	0.10
		B		0.000	0.000	10.573	0.000	0.11
		C		0.000	0.000	10.414	0.000	0.09
L30	6.00-5.75	A	1.073	0.000	0.000	1.216	0.000	0.01
		B		0.000	0.000	1.165	0.000	0.01
		C		0.000	0.000	1.145	0.000	0.01
L31	5.75-2.00	A	1.029	0.000	0.000	15.597	0.000	0.15
		B		0.000	0.000	14.646	0.000	0.17
		C		0.000	0.000	12.254	0.000	0.12
L32	2.00-1.75	A	0.957	0.000	0.000	0.937	0.000	0.01
		B		0.000	0.000	0.838	0.000	0.01
		C		0.000	0.000	0.649	0.000	0.01
L33	1.75-0.00	A	0.887	0.000	0.000	5.933	0.000	0.06
		B		0.000	0.000	5.302	0.000	0.06
		C		0.000	0.000	3.564	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	110.00-105.00	0.7329	-2.2064	1.2769	-2.0371
L2	105.00-100.00	1.1471	-4.2560	1.3971	-3.3740
L3	100.00-95.00	1.1471	-4.2560	1.3947	-3.3720
L4	95.00-90.00	1.1471	-4.2560	1.3922	-3.3699
L5	90.00-85.00	-4.5078	-2.5541	-3.3143	-1.7284
L6	85.00-80.00	-4.5078	-2.5541	-3.3144	-1.7289
L7	80.00-75.00	-4.0308	-3.1158	-2.9989	-2.1377
L8	75.00-70.00	-2.5850	-4.8184	-2.0082	-3.4208
L9	70.00-65.00	-2.5850	-4.8184	-2.0085	-3.4215
L10	65.00-60.00	-1.6825	-3.8936	-1.3108	-2.6991
L11	60.00-55.00	-1.7012	-4.3479	-1.3544	-3.0005
L12	55.00-50.00	-1.7012	-4.3479	-1.3543	-3.0009
L13	50.00-45.00	-1.7012	-4.3479	-1.3541	-3.0013
L14	45.00-40.00	-1.6312	-4.1689	-1.3290	-2.9467
L15	40.00-39.33	-1.1902	-3.0418	-1.1403	-2.5287
L16	39.33-39.08	-1.1902	-3.0418	-1.1402	-2.5286
L17	39.08-34.08	-1.1902	-3.0418	-1.1398	-2.5282
L18	34.08-30.00	-1.2357	-3.1581	-1.1615	-2.5773
L19	30.00-29.75	-1.7012	-4.3479	-1.3532	-3.0033
L20	29.75-25.00	-1.4174	-2.9759	-1.2360	-2.4084
L21	25.00-24.75	-0.8631	-0.9592	-1.0343	-1.4066
L22	24.75-19.75	-0.8024	-0.8917	-0.9837	-1.3368
L23	19.75-18.58	-0.6626	-0.7363	-0.8577	-1.1646
L24	18.58-18.33	-0.6626	-0.7363	-0.8574	-1.1640
L25	18.33-13.33	-0.6626	-0.7363	-0.8562	-1.1612
L26	13.33-8.42	-0.5880	-0.2428	-0.7855	-0.7705
L27	8.42-8.07	-0.5099	0.2738	-0.7064	-0.3290
L28	8.07-7.83	-0.5099	0.2738	-0.7062	-0.3281
L29	7.83-6.00	-0.5099	0.2738	-0.7051	-0.3245
L30	6.00-5.75	-0.6209	0.3334	-0.8215	-0.3739
L31	5.75-2.00	-0.7600	-0.3116	-0.9982	-0.9537
L32	2.00-1.75	-0.8863	-0.7287	-1.2286	-1.2558
L33	1.75-0.00	-0.9933	-1.2573	-1.3131	-1.6376

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L1	3	HB158-21U6S24-xxM_TMO(1-5/8)	105.00 - 107.00	1.0000	1.0000
L2	1	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L2	3	HB158-21U6S24-xxM_TMO(1-5/8)	100.00 - 105.00	1.0000	1.0000
L3	1	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L3	3	HB158-21U6S24-xxM_TMO(1-5/8)	95.00 - 100.00	1.0000	1.0000
L4	1	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L4	3	HB158-21U6S24-xxM_TMO(1-5/8)	90.00 - 95.00	1.0000	1.0000
L5	1	Safety Line 3/8	85.00 - 90.00	1.0000	1.0000
L5	3	HB158-21U6S24-xxM_TMO(1-5/8)	85.00 - 90.00	1.0000	1.0000
L5	17	FB-L98B-034-XXX(3/8)	85.00 - 90.00	1.0000	1.0000
L5	19	PWRT-608-S(13/16)	85.00 - 90.00	1.0000	1.0000
L5	20	PWRT-606-S(7/8)	85.00 - 90.00	1.0000	1.0000
L5	21	3" Flexible Conduit	85.00 - 90.00	1.0000	1.0000
L6	1	Safety Line 3/8	80.00 - 85.00	1.0000	1.0000
L6	3	HB158-21U6S24-xxM_TMO(1-5/8)	80.00 - 85.00	1.0000	1.0000
L6	17	FB-L98B-034-XXX(3/8)	80.00 - 85.00	1.0000	1.0000
L6	19	PWRT-608-S(13/16)	80.00 - 85.00	1.0000	1.0000
L6	20	PWRT-606-S(7/8)	80.00 - 85.00	1.0000	1.0000
L6	21	3" Flexible Conduit	80.00 - 85.00	1.0000	1.0000
L7	1	Safety Line 3/8	75.00 - 80.00	1.0000	1.0000
L7	3	HB158-21U6S24-xxM_TMO(1-5/8)	75.00 - 80.00	1.0000	1.0000
L7	9	810921-001(7/8)	75.00 - 76.00	1.0000	1.0000
L7	10	HCS 6X12 4AWG(1-5/8)	75.00 - 76.00	1.0000	1.0000
L7	11	HCS 6X12 4AWG(1-5/8)	75.00 - 76.00	1.0000	1.0000
L7	17	FB-L98B-034-XXX(3/8)	75.00 - 80.00	1.0000	1.0000
L7	19	PWRT-608-S(13/16)	75.00 - 80.00	1.0000	1.0000
L7	20	PWRT-606-S(7/8)	75.00 - 80.00	1.0000	1.0000
L7	21	3" Flexible Conduit	75.00 - 80.00	1.0000	1.0000
L8	1	Safety Line 3/8	70.00 - 75.00	1.0000	1.0000
L8	3	HB158-21U6S24-xxM_TMO(1-5/8)	70.00 - 75.00	1.0000	1.0000
L8	9	810921-001(7/8)	70.00 - 75.00	1.0000	1.0000
L8	10	HCS 6X12 4AWG(1-5/8)	70.00 - 75.00	1.0000	1.0000
L8	11	HCS 6X12 4AWG(1-5/8)	70.00 - 75.00	1.0000	1.0000
L8	17	FB-L98B-034-XXX(3/8)	70.00 - 75.00	1.0000	1.0000
L8	19	PWRT-608-S(13/16)	70.00 - 75.00	1.0000	1.0000
L8	20	PWRT-606-S(7/8)	70.00 - 75.00	1.0000	1.0000
L8	21	3" Flexible Conduit	70.00 - 75.00	1.0000	1.0000
L9	1	Safety Line 3/8	65.00 - 70.00	1.0000	1.0000
L9	3	HB158-21U6S24-xxM_TMO(1-5/8)	65.00 - 70.00	1.0000	1.0000
L9	9	810921-001(7/8)	65.00 - 70.00	1.0000	1.0000
L9	10	HCS 6X12 4AWG(1-5/8)	65.00 - 70.00	1.0000	1.0000
L9	11	HCS 6X12 4AWG(1-5/8)	65.00 - 70.00	1.0000	1.0000
L9	17	FB-L98B-034-XXX(3/8)	65.00 - 70.00	1.0000	1.0000
L9	19	PWRT-608-S(13/16)	65.00 - 70.00	1.0000	1.0000
L9	20	PWRT-606-S(7/8)	65.00 - 70.00	1.0000	1.0000
L9	21	3" Flexible Conduit	65.00 - 70.00	1.0000	1.0000
L10	1	Safety Line 3/8	60.00 - 65.00	1.0000	1.0000
L10	3	HB158-21U6S24-xxM_TMO(1-5/8)	60.00 - 65.00	1.0000	1.0000
L10	9	810921-001(7/8)	60.00 - 65.00	1.0000	1.0000
L10	10	HCS 6X12 4AWG(1-5/8)	60.00 - 65.00	1.0000	1.0000
L10	11	HCS 6X12 4AWG(1-5/8)	60.00 - 65.00	1.0000	1.0000
L10	13	HB158-U12S24-160-LI(1-7/8)	60.00 - 64.00	1.0000	1.0000
L10	17	FB-L98B-034-XXX(3/8)	60.00 - 65.00	1.0000	1.0000
L10	19	PWRT-608-S(13/16)	60.00 - 65.00	1.0000	1.0000
L10	20	PWRT-606-S(7/8)	60.00 - 65.00	1.0000	1.0000
L10	21	3" Flexible Conduit	60.00 - 65.00	1.0000	1.0000
L11	1	Safety Line 3/8	55.00 - 60.00	1.0000	1.0000
L11	3	HB158-21U6S24-xxM_TMO(1-5/8)	55.00 - 60.00	1.0000	1.0000
L11	9	810921-001(7/8)	55.00 - 60.00	1.0000	1.0000
L11	10	HCS 6X12 4AWG(1-5/8)	55.00 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L11	11	HCS 6X12 4AWG(1-5/8)	55.00 - 60.00	1.0000	1.0000
L11	13	HB158-U12S24-160-LI(1-7/8)	55.00 - 60.00	1.0000	1.0000
L11	17	FB-L98B-034-XXX(3/8)	55.00 - 60.00	1.0000	1.0000
L11	19	PWRT-608-S(13/16)	55.00 - 60.00	1.0000	1.0000
L11	20	PWRT-606-S(7/8)	55.00 - 60.00	1.0000	1.0000
L11	21	3" Flexible Conduit	55.00 - 60.00	1.0000	1.0000
L12	1	Safety Line 3/8	50.00 - 55.00	1.0000	1.0000
L12	3	HB158-21U6S24-xxM_TMO(1-5/8)	50.00 - 55.00	1.0000	1.0000
L12	9	810921-001(7/8)	50.00 - 55.00	1.0000	1.0000
L12	10	HCS 6X12 4AWG(1-5/8)	50.00 - 55.00	1.0000	1.0000
L12	11	HCS 6X12 4AWG(1-5/8)	50.00 - 55.00	1.0000	1.0000
L12	13	HB158-U12S24-160-LI(1-7/8)	50.00 - 55.00	1.0000	1.0000
L12	17	FB-L98B-034-XXX(3/8)	50.00 - 55.00	1.0000	1.0000
L12	19	PWRT-608-S(13/16)	50.00 - 55.00	1.0000	1.0000
L12	20	PWRT-606-S(7/8)	50.00 - 55.00	1.0000	1.0000
L12	21	3" Flexible Conduit	50.00 - 55.00	1.0000	1.0000
L13	1	Safety Line 3/8	45.00 - 50.00	1.0000	1.0000
L13	3	HB158-21U6S24-xxM_TMO(1-5/8)	45.00 - 50.00	1.0000	1.0000
L13	9	810921-001(7/8)	45.00 - 50.00	1.0000	1.0000
L13	10	HCS 6X12 4AWG(1-5/8)	45.00 - 50.00	1.0000	1.0000
L13	11	HCS 6X12 4AWG(1-5/8)	45.00 - 50.00	1.0000	1.0000
L13	13	HB158-U12S24-160-LI(1-7/8)	45.00 - 50.00	1.0000	1.0000
L13	17	FB-L98B-034-XXX(3/8)	45.00 - 50.00	1.0000	1.0000
L13	19	PWRT-608-S(13/16)	45.00 - 50.00	1.0000	1.0000
L13	20	PWRT-606-S(7/8)	45.00 - 50.00	1.0000	1.0000
L13	21	3" Flexible Conduit	45.00 - 50.00	1.0000	1.0000
L14	1	Safety Line 3/8	40.00 - 45.00	1.0000	1.0000
L14	3	HB158-21U6S24-xxM_TMO(1-5/8)	40.00 - 45.00	1.0000	1.0000
L14	9	810921-001(7/8)	40.00 - 45.00	1.0000	1.0000
L14	10	HCS 6X12 4AWG(1-5/8)	40.00 - 45.00	1.0000	1.0000
L14	11	HCS 6X12 4AWG(1-5/8)	40.00 - 45.00	1.0000	1.0000
L14	13	HB158-U12S24-160-LI(1-7/8)	40.00 - 45.00	1.0000	1.0000
L14	17	FB-L98B-034-XXX(3/8)	40.00 - 45.00	1.0000	1.0000
L14	19	PWRT-608-S(13/16)	40.00 - 45.00	1.0000	1.0000
L14	20	PWRT-606-S(7/8)	40.00 - 45.00	1.0000	1.0000
L14	21	3" Flexible Conduit	40.00 - 45.00	1.0000	1.0000
L14	35	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L14	36	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L14	37	Aero Channel MP303	40.00 - 40.50	1.0000	1.0000
L15	1	Safety Line 3/8	39.33 - 40.00	1.0000	1.0000
L15	3	HB158-21U6S24-xxM_TMO(1-5/8)	39.33 - 40.00	1.0000	1.0000
L15	9	810921-001(7/8)	39.33 - 40.00	1.0000	1.0000
L15	10	HCS 6X12 4AWG(1-5/8)	39.33 - 40.00	1.0000	1.0000
L15	11	HCS 6X12 4AWG(1-5/8)	39.33 - 40.00	1.0000	1.0000
L15	13	HB158-U12S24-160-LI(1-7/8)	39.33 - 40.00	1.0000	1.0000
L15	17	FB-L98B-034-XXX(3/8)	39.33 - 40.00	1.0000	1.0000
L15	19	PWRT-608-S(13/16)	39.33 - 40.00	1.0000	1.0000
L15	20	PWRT-606-S(7/8)	39.33 - 40.00	1.0000	1.0000
L15	21	3" Flexible Conduit	39.33 - 40.00	1.0000	1.0000
L15	35	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L15	36	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L15	37	Aero Channel MP303	39.33 - 40.00	1.0000	1.0000
L16	1	Safety Line 3/8	39.08 - 39.33	1.0000	1.0000
L16	3	HB158-21U6S24-xxM_TMO(1-5/8)	39.08 - 39.33	1.0000	1.0000
L16	9	810921-001(7/8)	39.08 - 39.33	1.0000	1.0000
L16	10	HCS 6X12 4AWG(1-5/8)	39.08 - 39.33	1.0000	1.0000
L16	11	HCS 6X12 4AWG(1-5/8)	39.08 - 39.33	1.0000	1.0000
L16	13	HB158-U12S24-160-LI(1-7/8)	39.08 - 39.33	1.0000	1.0000
L16	17	FB-L98B-034-XXX(3/8)	39.08 - 39.33	1.0000	1.0000
L16	19	PWRT-608-S(13/16)	39.08 - 39.33	1.0000	1.0000
L16	20	PWRT-606-S(7/8)	39.08 - 39.33	1.0000	1.0000
L16	21	3" Flexible Conduit	39.08 - 39.33	1.0000	1.0000
L16	35	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L16	36	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L16	37	Aero Channel MP303	39.08 - 39.33	1.0000	1.0000
L17	1	Safety Line 3/8	34.08 - 39.08	1.0000	1.0000
L17	3	HB158-21U6S24-xxM_TMO(1-5/8)	34.08 - 39.08	1.0000	1.0000
L17	9	810921-001(7/8)	34.08 - 39.08	1.0000	1.0000
L17	10	HCS 6X12 4AWG(1-5/8)	34.08 - 39.08	1.0000	1.0000
L17	11	HCS 6X12 4AWG(1-5/8)	34.08 - 39.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L17	13	HB158-U12S24-160-LI(1-7/8)	34.08 - 39.08	1.0000	1.0000
L17	17	FB-L98B-034-XXX(3/8)	34.08 - 39.08	1.0000	1.0000
L17	19	PWRT-608-S(13/16)	34.08 - 39.08	1.0000	1.0000
L17	20	PWRT-606-S(7/8)	34.08 - 39.08	1.0000	1.0000
L17	21	3" Flexible Conduit	34.08 - 39.08	1.0000	1.0000
L17	35	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L17	36	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L17	37	Aero Channel MP303	34.08 - 39.08	1.0000	1.0000
L18	1	Safety Line 3/8	30.00 - 34.08	1.0000	1.0000
L18	3	HB158-21U6S24-xxM_TMO(1-5/8)	30.00 - 34.08	1.0000	1.0000
L18	9	810921-001(7/8)	30.00 - 34.08	1.0000	1.0000
L18	10	HCS 6X12 4AWG(1-5/8)	30.00 - 34.08	1.0000	1.0000
L18	11	HCS 6X12 4AWG(1-5/8)	30.00 - 34.08	1.0000	1.0000
L18	13	HB158-U12S24-160-LI(1-7/8)	30.00 - 34.08	1.0000	1.0000
L18	17	FB-L98B-034-XXX(3/8)	30.00 - 34.08	1.0000	1.0000
L18	19	PWRT-608-S(13/16)	30.00 - 34.08	1.0000	1.0000
L18	20	PWRT-606-S(7/8)	30.00 - 34.08	1.0000	1.0000
L18	21	3" Flexible Conduit	30.00 - 34.08	1.0000	1.0000
L18	35	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L18	36	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L18	37	Aero Channel MP303	30.50 - 34.08	1.0000	1.0000
L19	1	Safety Line 3/8	29.75 - 30.00	1.0000	1.0000
L19	3	HB158-21U6S24-xxM_TMO(1-5/8)	29.75 - 30.00	1.0000	1.0000
L19	9	810921-001(7/8)	29.75 - 30.00	1.0000	1.0000
L19	10	HCS 6X12 4AWG(1-5/8)	29.75 - 30.00	1.0000	1.0000
L19	11	HCS 6X12 4AWG(1-5/8)	29.75 - 30.00	1.0000	1.0000
L19	13	HB158-U12S24-160-LI(1-7/8)	29.75 - 30.00	1.0000	1.0000
L19	17	FB-L98B-034-XXX(3/8)	29.75 - 30.00	1.0000	1.0000
L19	19	PWRT-608-S(13/16)	29.75 - 30.00	1.0000	1.0000
L19	20	PWRT-606-S(7/8)	29.75 - 30.00	1.0000	1.0000
L19	21	3" Flexible Conduit	29.75 - 30.00	1.0000	1.0000
L20	1	Safety Line 3/8	25.00 - 29.75	1.0000	1.0000
L20	3	HB158-21U6S24-xxM_TMO(1-5/8)	25.00 - 29.75	1.0000	1.0000
L20	9	810921-001(7/8)	25.00 - 29.75	1.0000	1.0000
L20	10	HCS 6X12 4AWG(1-5/8)	25.00 - 29.75	1.0000	1.0000
L20	11	HCS 6X12 4AWG(1-5/8)	25.00 - 29.75	1.0000	1.0000
L20	13	HB158-U12S24-160-LI(1-7/8)	25.00 - 29.75	1.0000	1.0000
L20	17	FB-L98B-034-XXX(3/8)	25.00 - 29.75	1.0000	1.0000
L20	19	PWRT-608-S(13/16)	25.00 - 29.75	1.0000	1.0000
L20	20	PWRT-606-S(7/8)	25.00 - 29.75	1.0000	1.0000
L20	21	3" Flexible Conduit	25.00 - 29.75	1.0000	1.0000
L20	43	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	44	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	45	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L20	46	CCI-SFP-045100	25.00 - 26.50	1.0000	1.0000
L21	1	Safety Line 3/8	24.75 - 25.00	1.0000	1.0000
L21	3	HB158-21U6S24-xxM_TMO(1-5/8)	24.75 - 25.00	1.0000	1.0000
L21	9	810921-001(7/8)	24.75 - 25.00	1.0000	1.0000
L21	10	HCS 6X12 4AWG(1-5/8)	24.75 - 25.00	1.0000	1.0000
L21	11	HCS 6X12 4AWG(1-5/8)	24.75 - 25.00	1.0000	1.0000
L21	13	HB158-U12S24-160-LI(1-7/8)	24.75 - 25.00	1.0000	1.0000
L21	17	FB-L98B-034-XXX(3/8)	24.75 - 25.00	1.0000	1.0000
L21	19	PWRT-608-S(13/16)	24.75 - 25.00	1.0000	1.0000
L21	20	PWRT-606-S(7/8)	24.75 - 25.00	1.0000	1.0000
L21	21	3" Flexible Conduit	24.75 - 25.00	1.0000	1.0000
L21	43	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	44	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	45	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L21	46	CCI-SFP-045100	24.75 - 25.00	1.0000	1.0000
L22	1	Safety Line 3/8	19.75 - 24.75	1.0000	1.0000
L22	3	HB158-21U6S24-xxM_TMO(1-5/8)	19.75 - 24.75	1.0000	1.0000
L22	9	810921-001(7/8)	19.75 - 24.75	1.0000	1.0000
L22	10	HCS 6X12 4AWG(1-5/8)	19.75 - 24.75	1.0000	1.0000
L22	11	HCS 6X12 4AWG(1-5/8)	19.75 - 24.75	1.0000	1.0000
L22	13	HB158-U12S24-160-LI(1-7/8)	19.75 - 24.75	1.0000	1.0000
L22	17	FB-L98B-034-XXX(3/8)	19.75 - 24.75	1.0000	1.0000
L22	19	PWRT-608-S(13/16)	19.75 - 24.75	1.0000	1.0000
L22	20	PWRT-606-S(7/8)	19.75 - 24.75	1.0000	1.0000
L22	21	3" Flexible Conduit	19.75 - 24.75	1.0000	1.0000
L22	39	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L22	40	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000
L22	41	Aero Channel MP305	19.75 - 21.00	1.0000	1.0000
L22	43	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	44	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	45	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L22	46	CCI-SFP-045100	19.75 - 24.75	1.0000	1.0000
L23	1	Safety Line 3/8	18.58 - 19.75	1.0000	1.0000
L23	3	HB158-21U6S24-xxM_TMO(1-5/8)	18.58 - 19.75	1.0000	1.0000
L23	9	810921-001(7/8)	18.58 - 19.75	1.0000	1.0000
L23	10	HCS 6X12 4AWG(1-5/8)	18.58 - 19.75	1.0000	1.0000
L23	11	HCS 6X12 4AWG(1-5/8)	18.58 - 19.75	1.0000	1.0000
L23	13	HB158-U12S24-160-LI(1-7/8)	18.58 - 19.75	1.0000	1.0000
L23	17	FB-L98B-034-XXX(3/8)	18.58 - 19.75	1.0000	1.0000
L23	19	PWRT-608-S(13/16)	18.58 - 19.75	1.0000	1.0000
L23	20	PWRT-606-S(7/8)	18.58 - 19.75	1.0000	1.0000
L23	21	3" Flexible Conduit	18.58 - 19.75	1.0000	1.0000
L23	39	Aero Channel MP305	18.58 - 19.75	1.0000	1.0000
L23	40	Aero Channel MP305	18.58 - 19.75	1.0000	1.0000
L23	41	Aero Channel MP305	18.58 - 19.75	1.0000	1.0000
L23	43	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	44	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	45	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L23	46	CCI-SFP-045100	18.58 - 19.75	1.0000	1.0000
L24	1	Safety Line 3/8	18.33 - 18.58	1.0000	1.0000
L24	3	HB158-21U6S24-xxM_TMO(1-5/8)	18.33 - 18.58	1.0000	1.0000
L24	9	810921-001(7/8)	18.33 - 18.58	1.0000	1.0000
L24	10	HCS 6X12 4AWG(1-5/8)	18.33 - 18.58	1.0000	1.0000
L24	11	HCS 6X12 4AWG(1-5/8)	18.33 - 18.58	1.0000	1.0000
L24	13	HB158-U12S24-160-LI(1-7/8)	18.33 - 18.58	1.0000	1.0000
L24	17	FB-L98B-034-XXX(3/8)	18.33 - 18.58	1.0000	1.0000
L24	19	PWRT-608-S(13/16)	18.33 - 18.58	1.0000	1.0000
L24	20	PWRT-606-S(7/8)	18.33 - 18.58	1.0000	1.0000
L24	21	3" Flexible Conduit	18.33 - 18.58	1.0000	1.0000
L24	39	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	40	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	41	Aero Channel MP305	18.33 - 18.58	1.0000	1.0000
L24	43	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	44	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	45	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L24	46	CCI-SFP-045100	18.33 - 18.58	1.0000	1.0000
L25	1	Safety Line 3/8	13.33 - 18.33	1.0000	1.0000
L25	3	HB158-21U6S24-xxM_TMO(1-5/8)	13.33 - 18.33	1.0000	1.0000
L25	9	810921-001(7/8)	13.33 - 18.33	1.0000	1.0000
L25	10	HCS 6X12 4AWG(1-5/8)	13.33 - 18.33	1.0000	1.0000
L25	11	HCS 6X12 4AWG(1-5/8)	13.33 - 18.33	1.0000	1.0000
L25	13	HB158-U12S24-160-LI(1-7/8)	13.33 - 18.33	1.0000	1.0000
L25	17	FB-L98B-034-XXX(3/8)	13.33 - 18.33	1.0000	1.0000
L25	19	PWRT-608-S(13/16)	13.33 - 18.33	1.0000	1.0000
L25	20	PWRT-606-S(7/8)	13.33 - 18.33	1.0000	1.0000
L25	21	3" Flexible Conduit	13.33 - 18.33	1.0000	1.0000
L25	39	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	40	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	41	Aero Channel MP305	13.33 - 18.33	1.0000	1.0000
L25	43	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	44	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	45	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L25	46	CCI-SFP-045100	13.33 - 18.33	1.0000	1.0000
L26	1	Safety Line 3/8	8.42 - 13.33	1.0000	1.0000
L26	3	HB158-21U6S24-xxM_TMO(1-5/8)	8.42 - 13.33	1.0000	1.0000
L26	9	810921-001(7/8)	8.42 - 13.33	1.0000	1.0000
L26	10	HCS 6X12 4AWG(1-5/8)	8.42 - 13.33	1.0000	1.0000
L26	11	HCS 6X12 4AWG(1-5/8)	8.42 - 13.33	1.0000	1.0000
L26	13	HB158-U12S24-160-LI(1-7/8)	8.42 - 13.33	1.0000	1.0000
L26	17	FB-L98B-034-XXX(3/8)	8.42 - 13.33	1.0000	1.0000
L26	19	PWRT-608-S(13/16)	8.42 - 13.33	1.0000	1.0000
L26	20	PWRT-606-S(7/8)	8.42 - 13.33	1.0000	1.0000
L26	21	3" Flexible Conduit	8.42 - 13.33	1.0000	1.0000
L26	30	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	31	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	32	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L26	33	Aero Channel MP305	8.42 - 10.50	1.0000	1.0000
L26	39	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	40	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	41	Aero Channel MP305	8.42 - 13.33	1.0000	1.0000
L26	43	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	44	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	45	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L26	46	CCI-SFP-045100	8.42 - 13.33	1.0000	1.0000
L27	1	Safety Line 3/8	8.07 - 8.42	1.0000	1.0000
L27	3	HB158-21U6S24-xxM_TMO(1-5/8)	8.07 - 8.42	1.0000	1.0000
L27	9	810921-001(7/8)	8.07 - 8.42	1.0000	1.0000
L27	10	HCS 6X12 4AWG(1-5/8)	8.07 - 8.42	1.0000	1.0000
L27	11	HCS 6X12 4AWG(1-5/8)	8.07 - 8.42	1.0000	1.0000
L27	13	HB158-U12S24-160-LI(1-7/8)	8.07 - 8.42	1.0000	1.0000
L27	17	FB-L98B-034-XXX(3/8)	8.07 - 8.42	1.0000	1.0000
L27	19	PWRT-608-S(13/16)	8.07 - 8.42	1.0000	1.0000
L27	20	PWRT-606-S(7/8)	8.07 - 8.42	1.0000	1.0000
L27	21	3" Flexible Conduit	8.07 - 8.42	1.0000	1.0000
L27	30	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	31	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	32	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	33	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	39	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	40	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	41	Aero Channel MP305	8.07 - 8.42	1.0000	1.0000
L27	43	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	44	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	45	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L27	46	CCI-SFP-045100	8.07 - 8.42	1.0000	1.0000
L28	1	Safety Line 3/8	7.83 - 8.07	1.0000	1.0000
L28	3	HB158-21U6S24-xxM_TMO(1-5/8)	7.83 - 8.07	1.0000	1.0000
L28	9	810921-001(7/8)	7.83 - 8.07	1.0000	1.0000
L28	10	HCS 6X12 4AWG(1-5/8)	7.83 - 8.07	1.0000	1.0000
L28	11	HCS 6X12 4AWG(1-5/8)	7.83 - 8.07	1.0000	1.0000
L28	13	HB158-U12S24-160-LI(1-7/8)	7.83 - 8.07	1.0000	1.0000
L28	17	FB-L98B-034-XXX(3/8)	7.83 - 8.07	1.0000	1.0000
L28	19	PWRT-608-S(13/16)	7.83 - 8.07	1.0000	1.0000
L28	20	PWRT-606-S(7/8)	7.83 - 8.07	1.0000	1.0000
L28	21	3" Flexible Conduit	7.83 - 8.07	1.0000	1.0000
L28	30	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	31	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	32	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	33	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	39	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	40	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	41	Aero Channel MP305	7.83 - 8.07	1.0000	1.0000
L28	43	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	44	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	45	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L28	46	CCI-SFP-045100	7.83 - 8.07	1.0000	1.0000
L29	1	Safety Line 3/8	6.00 - 7.83	1.0000	1.0000
L29	3	HB158-21U6S24-xxM_TMO(1-5/8)	6.00 - 7.83	1.0000	1.0000
L29	9	810921-001(7/8)	6.00 - 7.83	1.0000	1.0000
L29	10	HCS 6X12 4AWG(1-5/8)	6.00 - 7.83	1.0000	1.0000
L29	11	HCS 6X12 4AWG(1-5/8)	6.00 - 7.83	1.0000	1.0000
L29	13	HB158-U12S24-160-LI(1-7/8)	6.00 - 7.83	1.0000	1.0000
L29	17	FB-L98B-034-XXX(3/8)	6.00 - 7.83	1.0000	1.0000
L29	19	PWRT-608-S(13/16)	6.00 - 7.83	1.0000	1.0000
L29	20	PWRT-606-S(7/8)	6.00 - 7.83	1.0000	1.0000
L29	21	3" Flexible Conduit	6.00 - 7.83	1.0000	1.0000
L29	30	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	31	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	32	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	33	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	39	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	40	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	41	Aero Channel MP305	6.00 - 7.83	1.0000	1.0000
L29	43	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L29	44	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L29	45	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L29	46	CCI-SFP-045100	6.00 - 7.83	1.0000	1.0000
L30	1	Safety Line 3/8	5.75 - 6.00	1.0000	1.0000
L30	3	HB158-21U6S24-xxM_TMO(1-5/8)	5.75 - 6.00	1.0000	1.0000
L30	9	810921-001(7/8)	5.75 - 6.00	1.0000	1.0000
L30	10	HCS 6X12 4AWG(1-5/8)	5.75 - 6.00	1.0000	1.0000
L30	11	HCS 6X12 4AWG(1-5/8)	5.75 - 6.00	1.0000	1.0000
L30	13	HB158-U12S24-160-LI(1-7/8)	5.75 - 6.00	1.0000	1.0000
L30	17	FB-L98B-034-XXX(3/8)	5.75 - 6.00	1.0000	1.0000
L30	19	PWRT-608-S(13/16)	5.75 - 6.00	1.0000	1.0000
L30	20	PWRT-606-S(7/8)	5.75 - 6.00	1.0000	1.0000
L30	21	3" Flexible Conduit	5.75 - 6.00	1.0000	1.0000
L30	30	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	31	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	32	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	33	Aero Channel MP305	5.75 - 6.00	1.0000	1.0000
L30	43	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	44	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	45	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L30	46	CCI-SFP-045100	5.75 - 6.00	1.0000	1.0000
L31	1	Safety Line 3/8	3.00 - 5.75	1.0000	1.0000
L31	3	HB158-21U6S24-xxM_TMO(1-5/8)	2.00 - 5.75	1.0000	1.0000
L31	9	810921-001(7/8)	2.00 - 5.75	1.0000	1.0000
L31	10	HCS 6X12 4AWG(1-5/8)	2.00 - 5.75	1.0000	1.0000
L31	11	HCS 6X12 4AWG(1-5/8)	2.00 - 5.75	1.0000	1.0000
L31	13	HB158-U12S24-160-LI(1-7/8)	2.00 - 5.75	1.0000	1.0000
L31	17	FB-L98B-034-XXX(3/8)	2.00 - 5.75	1.0000	1.0000
L31	19	PWRT-608-S(13/16)	2.00 - 5.75	1.0000	1.0000
L31	20	PWRT-606-S(7/8)	2.00 - 5.75	1.0000	1.0000
L31	21	3" Flexible Conduit	2.00 - 5.75	1.0000	1.0000
L31	30	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	31	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	32	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	33	Aero Channel MP305	2.00 - 5.75	1.0000	1.0000
L31	43	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	44	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	45	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L31	46	CCI-SFP-045100	4.50 - 5.75	1.0000	1.0000
L32	3	HB158-21U6S24-xxM_TMO(1-5/8)	1.75 - 2.00	1.0000	1.0000
L32	9	810921-001(7/8)	1.75 - 2.00	1.0000	1.0000
L32	10	HCS 6X12 4AWG(1-5/8)	1.75 - 2.00	1.0000	1.0000
L32	11	HCS 6X12 4AWG(1-5/8)	1.75 - 2.00	1.0000	1.0000
L32	13	HB158-U12S24-160-LI(1-7/8)	1.75 - 2.00	1.0000	1.0000
L32	17	FB-L98B-034-XXX(3/8)	1.75 - 2.00	1.0000	1.0000
L32	19	PWRT-608-S(13/16)	1.75 - 2.00	1.0000	1.0000
L32	20	PWRT-606-S(7/8)	1.75 - 2.00	1.0000	1.0000
L32	21	3" Flexible Conduit	1.75 - 2.00	1.0000	1.0000
L32	30	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	31	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	32	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L32	33	Aero Channel MP305	1.75 - 2.00	1.0000	1.0000
L33	3	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 1.75	1.0000	1.0000
L33	9	810921-001(7/8)	0.00 - 1.75	1.0000	1.0000
L33	10	HCS 6X12 4AWG(1-5/8)	0.00 - 1.75	1.0000	1.0000
L33	11	HCS 6X12 4AWG(1-5/8)	0.00 - 1.75	1.0000	1.0000
L33	13	HB158-U12S24-160-LI(1-7/8)	0.00 - 1.75	1.0000	1.0000
L33	17	FB-L98B-034-XXX(3/8)	0.00 - 1.75	1.0000	1.0000
L33	19	PWRT-608-S(13/16)	0.00 - 1.75	1.0000	1.0000
L33	20	PWRT-606-S(7/8)	0.00 - 1.75	1.0000	1.0000
L33	21	3" Flexible Conduit	0.00 - 1.75	1.0000	1.0000
L33	30	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	31	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	32	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000
L33	33	Aero Channel MP305	0.50 - 1.75	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L14	35	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L14	36	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L14	37	Aero Channel MP303	40.00 - 40.50	Auto	1.0000
L15	35	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L15	36	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L15	37	Aero Channel MP303	39.33 - 40.00	Auto	1.0000
L16	35	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L16	36	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L16	37	Aero Channel MP303	39.08 - 39.33	Auto	1.0000
L17	35	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L17	36	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L17	37	Aero Channel MP303	34.08 - 39.08	Auto	1.0000
L18	35	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L18	36	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L18	37	Aero Channel MP303	30.50 - 34.08	Auto	1.0000
L20	43	CCI-SFP-045100	25.00 - 26.50	Auto	1.0000
L20	44	CCI-SFP-045100	25.00 - 26.50	Auto	1.0000
L20	45	CCI-SFP-045100	25.00 - 26.50	Auto	1.0000
L20	46	CCI-SFP-045100	25.00 - 26.50	Auto	1.0000
L21	43	CCI-SFP-045100	24.75 - 25.00	Auto	1.0000
L21	44	CCI-SFP-045100	24.75 - 25.00	Auto	1.0000
L21	45	CCI-SFP-045100	24.75 - 25.00	Auto	1.0000
L21	46	CCI-SFP-045100	24.75 - 25.00	Auto	1.0000
L22	39	Aero Channel MP305	19.75 - 21.00	Auto	1.0000
L22	40	Aero Channel MP305	19.75 - 21.00	Auto	1.0000
L22	41	Aero Channel MP305	19.75 - 21.00	Auto	1.0000
L22	43	CCI-SFP-045100	19.75 - 24.75	Auto	1.0000
L22	44	CCI-SFP-045100	19.75 - 24.75	Auto	1.0000
L22	45	CCI-SFP-045100	19.75 - 24.75	Auto	1.0000
L22	46	CCI-SFP-045100	19.75 - 24.75	Auto	1.0000
L23	39	Aero Channel MP305	18.58 - 19.75	Auto	1.0000
L23	40	Aero Channel MP305	18.58 - 19.75	Auto	1.0000
L23	41	Aero Channel MP305	18.58 - 19.75	Auto	1.0000
L23	43	CCI-SFP-045100	18.58 - 19.75	Auto	1.0000
L23	44	CCI-SFP-045100	18.58 - 19.75	Auto	1.0000
L23	45	CCI-SFP-045100	18.58 - 19.75	Auto	1.0000
L23	46	CCI-SFP-045100	18.58 - 19.75	Auto	1.0000
L24	39	Aero Channel MP305	18.33 - 18.58	Auto	1.0000
L24	40	Aero Channel MP305	18.33 - 18.58	Auto	1.0000
L24	41	Aero Channel MP305	18.33 - 18.58	Auto	1.0000
L24	43	CCI-SFP-045100	18.33 - 18.58	Auto	1.0000
L24	44	CCI-SFP-045100	18.33 - 18.58	Auto	1.0000
L24	45	CCI-SFP-045100	18.33 - 18.58	Auto	1.0000
L24	46	CCI-SFP-045100	18.33 - 18.58	Auto	1.0000
L25	39	Aero Channel MP305	13.33 - 18.33	Auto	1.0000
L25	40	Aero Channel MP305	13.33 - 18.33	Auto	1.0000
L25	41	Aero Channel MP305	13.33 - 18.33	Auto	1.0000
L25	43	CCI-SFP-045100	13.33 - 18.33	Auto	1.0000
L25	44	CCI-SFP-045100	13.33 - 18.33	Auto	1.0000
L25	45	CCI-SFP-045100	13.33 - 18.33	Auto	1.0000
L25	46	CCI-SFP-045100	13.33 - 18.33	Auto	1.0000
L26	30	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	31	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	32	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	33	Aero Channel MP305	8.42 - 10.50	Auto	1.0000
L26	39	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	40	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	41	Aero Channel MP305	8.42 - 13.33	Auto	1.0000
L26	43	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	44	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	45	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L26	46	CCI-SFP-045100	8.42 - 13.33	Auto	1.0000
L27	30	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	31	Aero Channel MP305	8.07 - 8.42	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	32	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	33	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	39	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	40	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	41	Aero Channel MP305	8.07 - 8.42	Auto	1.0000
L27	43	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	44	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	45	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L27	46	CCI-SFP-045100	8.07 - 8.42	Auto	1.0000
L28	30	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	31	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	32	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	33	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	39	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	40	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	41	Aero Channel MP305	7.83 - 8.07	Auto	1.0000
L28	43	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	44	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	45	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L28	46	CCI-SFP-045100	7.83 - 8.07	Auto	1.0000
L29	30	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	31	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	32	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	33	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	39	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	40	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	41	Aero Channel MP305	6.00 - 7.83	Auto	1.0000
L29	43	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	44	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	45	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L29	46	CCI-SFP-045100	6.00 - 7.83	Auto	1.0000
L30	30	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	31	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	32	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	33	Aero Channel MP305	5.75 - 6.00	Auto	1.0000
L30	43	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	44	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	45	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L30	46	CCI-SFP-045100	5.75 - 6.00	Auto	1.0000
L31	30	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	31	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	32	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	33	Aero Channel MP305	2.00 - 5.75	Auto	1.0000
L31	43	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	44	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	45	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L31	46	CCI-SFP-045100	4.50 - 5.75	Auto	1.0000
L32	30	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	31	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	32	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L32	33	Aero Channel MP305	1.75 - 2.00	Auto	1.0000
L33	30	Aero Channel MP305	0.50 - 1.75	Auto	1.0000
L33	31	Aero Channel MP305	0.50 - 1.75	Auto	1.0000
L33	32	Aero Channel MP305	0.50 - 1.75	Auto	1.0000
L33	33	Aero Channel MP305	0.50 - 1.75	Auto	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	C	None		0.00	107.00	No Ice	21.17	19.65	1.49
						1/2" Ice	25.84	24.18	1.83
						Ice	30.51	28.79	2.29
						1" Ice	39.85	37.77	2.85
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	6.58	3.50	0.11
						1/2" Ice	7.06	3.90	0.16
						Ice	7.57	4.32	0.22
						1" Ice	8.62	5.20	0.36
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	6.58	3.50	0.11
						1/2" Ice	7.06	3.90	0.16
						Ice	7.57	4.32	0.22
						1" Ice	8.62	5.20	0.36
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	6.58	3.50	0.11
						1/2" Ice	7.06	3.90	0.16
						Ice	7.57	4.32	0.22
						1" Ice	8.62	5.20	0.36
VV-65B-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	5.82	3.48	0.07
						1/2" Ice	6.37	4.00	0.12
						Ice	6.94	4.54	0.19
						1" Ice	8.12	5.65	0.35
VV-65B-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	5.82	3.48	0.07
						1/2" Ice	6.37	4.00	0.12
						Ice	6.94	4.54	0.19
						1" Ice	8.12	5.65	0.35
VV-65B-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	5.82	3.48	0.07
						1/2" Ice	6.37	4.00	0.12
						Ice	6.94	4.54	0.19
						1" Ice	8.12	5.65	0.35
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	14.69	6.87	0.18
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	14.69	6.87	0.18
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	14.69	6.87	0.18
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.45
						1" Ice	17.82	9.67	0.78
Radio 4480_TMOV2	A	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	2.88	1.40	0.08
						1/2" Ice	3.09	1.56	0.10
						Ice	3.31	1.73	0.13
						1" Ice	3.78	2.09	0.19
Radio 4480_TMOV2	B	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice	2.88	1.40	0.08
						1/2" Ice	3.09	1.56	0.10
						Ice	3.31	1.73	0.13
						1" Ice	3.78	2.09	0.19
Radio 4480_TMOV2	C	From Leg	4.00 0.00	0.00	107.00	No Ice	2.88	1.40	0.08
						1/2" Ice	3.09	1.56	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			1.00			Ice 3.31	1.73	0.13
						1" Ice 3.78	2.09	0.19
						2" Ice		
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice 2.14 1/2" 2.32 Ice 2.51 1" Ice 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice 2.14 1/2" 2.32 Ice 2.51 1" Ice 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 1.00	0.00	107.00	No Ice 2.14 1/2" 2.32 Ice 2.51 1" Ice 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
*** ***								
SitePro1 RMQLP-4120- H10	C	None		0.00	90.00	No Ice 21.41 1/2" 26.62 Ice 31.66 1" Ice 41.38 2" Ice	21.41 26.62 31.66 41.38	1.60 2.06 2.60 3.96
6'x2" Mount Pipe	A	From Leg	1.00 0.00 0.00	0.00	90.00	No Ice 1.43 1/2" 1.92 Ice 2.29 1" Ice 3.06 2" Ice	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	B	From Leg	1.00 0.00 0.00	0.00	90.00	No Ice 1.43 1/2" 1.92 Ice 2.29 1" Ice 3.06 2" Ice	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	C	From Leg	1.00 0.00 0.00	0.00	90.00	No Ice 1.43 1/2" 1.92 Ice 2.29 1" Ice 3.06 2" Ice	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
AIR 6449 N77 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.00	90.00	No Ice 3.65 1/2" 3.99 Ice 4.35 1" Ice 5.11 2" Ice	2.72 3.03 3.36 4.05	0.11 0.15 0.20 0.31
AIR 6449 N77 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.00	90.00	No Ice 3.65 1/2" 3.99 Ice 4.35 1" Ice 5.11 2" Ice	2.72 3.03 3.36 4.05	0.11 0.15 0.20 0.31
AIR 6449 N77 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.00	90.00	No Ice 3.65 1/2" 3.99 Ice 4.35 1" Ice 5.11 2" Ice	2.72 3.03 3.36 4.05	0.11 0.15 0.20 0.31
QD6616-7 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.00	90.00	No Ice 12.56 1/2" 13.30 Ice 14.06 1" Ice 15.63 2" Ice	6.93 7.60 8.28 9.68	0.16 0.25 0.36 0.61
QD6616-7 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.00	90.00	No Ice 12.56 1/2" 13.30 Ice 14.06 1" Ice 15.63 2" Ice	6.93 7.60 8.28 9.68	0.16 0.25 0.36 0.61

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
QD6616-7 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	90.00	No Ice	12.56	6.93	0.16
			0.00				1/2"	13.30	7.60	0.25
			0.00				Ice	14.06	8.28	0.36
							1" Ice	15.63	9.68	0.61
							2" Ice			
AIR 6419 B77G w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	90.00	No Ice	4.32	2.49	0.08
			0.00				1/2"	4.74	2.84	0.11
			1.00				Ice	5.17	3.21	0.15
							1" Ice	6.09	4.00	0.24
							2" Ice			
AIR 6419 B77G w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	90.00	No Ice	4.32	2.49	0.08
			0.00				1/2"	4.74	2.84	0.11
			1.00				Ice	5.17	3.21	0.15
							1" Ice	6.09	4.00	0.24
							2" Ice			
AIR 6419 B77G w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	90.00	No Ice	4.32	2.49	0.08
			0.00				1/2"	4.74	2.84	0.11
			1.00				Ice	5.17	3.21	0.15
							1" Ice	6.09	4.00	0.24
							2" Ice			
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	90.00	No Ice	11.96	5.97	0.11
			0.00				1/2"	12.70	6.63	0.20
			0.00				Ice	13.46	7.30	0.30
							1" Ice	15.02	8.69	0.53
							2" Ice			
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	90.00	No Ice	11.96	5.97	0.11
			0.00				1/2"	12.70	6.63	0.20
			0.00				Ice	13.46	7.30	0.30
							1" Ice	15.02	8.69	0.53
							2" Ice			
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	90.00	No Ice	11.96	5.97	0.11
			0.00				1/2"	12.70	6.63	0.20
			0.00				Ice	13.46	7.30	0.30
							1" Ice	15.02	8.69	0.53
							2" Ice			
RRUS E2 B29	A	From Leg	4.00	0.00	0.00	90.00	No Ice	3.15	1.29	0.05
			0.00				1/2"	3.36	1.44	0.08
			0.00				Ice	3.59	1.60	0.10
							1" Ice	4.07	1.95	0.17
							2" Ice			
RRUS E2 B29	B	From Leg	4.00	0.00	0.00	90.00	No Ice	3.15	1.29	0.05
			0.00				1/2"	3.36	1.44	0.08
			0.00				Ice	3.59	1.60	0.10
							1" Ice	4.07	1.95	0.17
							2" Ice			
RRUS E2 B29	C	From Leg	4.00	0.00	0.00	90.00	No Ice	3.15	1.29	0.05
			0.00				1/2"	3.36	1.44	0.08
			0.00				Ice	3.59	1.60	0.10
							1" Ice	4.07	1.95	0.17
							2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.00	0.00	90.00	No Ice	0.92	0.92	0.02
			0.00				1/2"	1.46	1.46	0.04
			0.00				Ice	1.64	1.64	0.06
							1" Ice	2.04	2.04	0.11
							2" Ice			
RRUS 4449 B5/B12	A	From Leg	4.00	0.00	0.00	90.00	No Ice	1.97	1.41	0.07
			0.00				1/2"	2.14	1.56	0.09
			0.00				Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			
RRUS 4449 B5/B12	B	From Leg	4.00	0.00	0.00	90.00	No Ice	1.97	1.41	0.07
			0.00				1/2"	2.14	1.56	0.09
			0.00				Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						ft
			ft	ft	°	ft	ft ²	ft ²	K	
RRUS 4449 B5/B12	C	From Leg	4.00	0.00	0.00	90.00	No Ice	1.97	1.41	0.07
			0.00	0.00			1/2"	2.14	1.56	0.09
			0.00	0.00			Ice	2.33	1.73	0.11
							1" Ice	2.72	2.07	0.16
							2" Ice			
RRUS 32 B30	A	From Leg	4.00	0.00	0.00	90.00	No Ice	2.69	1.57	0.06
			0.00	0.00			1/2"	2.91	1.76	0.08
			0.00	0.00			Ice	3.14	1.95	0.10
							1" Ice	3.61	2.35	0.16
							2" Ice			
RRUS 32 B30	B	From Leg	4.00	0.00	0.00	90.00	No Ice	2.69	1.57	0.06
			0.00	0.00			1/2"	2.91	1.76	0.08
			0.00	0.00			Ice	3.14	1.95	0.10
							1" Ice	3.61	2.35	0.16
							2" Ice			
RRUS 32 B30	C	From Leg	4.00	0.00	0.00	90.00	No Ice	2.69	1.57	0.06
			0.00	0.00			1/2"	2.91	1.76	0.08
			0.00	0.00			Ice	3.14	1.95	0.10
							1" Ice	3.61	2.35	0.16
							2" Ice			
RRUS 32 B66A	A	From Leg	4.00	0.00	0.00	90.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
							1" Ice	3.81	2.59	0.16
							2" Ice			
RRUS 32 B66A	B	From Leg	4.00	0.00	0.00	90.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
							1" Ice	3.81	2.59	0.16
							2" Ice			
RRUS 32 B66A	C	From Leg	4.00	0.00	0.00	90.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
							1" Ice	3.81	2.59	0.16
							2" Ice			
RRUS 4415 B25	A	From Leg	4.00	0.00	0.00	90.00	No Ice	1.64	0.68	0.04
			0.00	0.00			1/2"	1.80	0.79	0.06
			0.00	0.00			Ice	1.97	0.91	0.07
							1" Ice	2.33	1.18	0.11
							2" Ice			
RRUS 4415 B25	B	From Leg	4.00	0.00	0.00	90.00	No Ice	1.64	0.68	0.04
			0.00	0.00			1/2"	1.80	0.79	0.06
			0.00	0.00			Ice	1.97	0.91	0.07
							1" Ice	2.33	1.18	0.11
							2" Ice			
RRUS 4415 B25	C	From Leg	4.00	0.00	0.00	90.00	No Ice	1.64	0.68	0.04
			0.00	0.00			1/2"	1.80	0.79	0.06
			0.00	0.00			Ice	1.97	0.91	0.07
							1" Ice	2.33	1.18	0.11
							2" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.00	0.00	90.00	No Ice	0.92	0.92	0.02
			0.00	0.00			1/2"	1.46	1.46	0.04
			0.00	0.00			Ice	1.64	1.64	0.06
							1" Ice	2.04	2.04	0.11
							2" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.00	0.00	90.00	No Ice	0.92	0.92	0.02
			0.00	0.00			1/2"	1.46	1.46	0.04
			0.00	0.00			Ice	1.64	1.64	0.06
							1" Ice	2.04	2.04	0.11
							2" Ice			
DC6-48-60-18-8F	C	From Leg	4.00	0.00	0.00	90.00	No Ice	0.92	0.92	0.02
			0.00	0.00			1/2"	1.46	1.46	0.04
			0.00	0.00			Ice	1.64	1.64	0.06
							1" Ice	2.04	2.04	0.11
							2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K

Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	C	None		0.00	76.00	No Ice	21.17	19.65	1.49
						1/2" Ice	25.84	24.18	1.83
						Ice	30.51	28.79	2.29
						1" Ice	39.85	37.77	2.85
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	14.69	6.87	0.19
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	14.69	6.87	0.19
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	14.69	6.87	0.19
						1/2" Ice	15.46	7.55	0.31
						Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						Ice	6.02	3.38	0.23
						1" Ice	6.90	4.12	0.35
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	3.76	3.15	0.19
						1/2" Ice	4.12	3.49	0.25
						Ice	4.48	3.84	0.32
						1" Ice	5.24	4.58	0.48
RADIO 4449 B71 B85A_T-MOBILE	A	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	1.97	1.59	0.07
						1/2" Ice	2.15	1.75	0.09
						Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
RADIO 4449 B71 B85A_T-MOBILE	B	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	1.97	1.59	0.07
						1/2" Ice	2.15	1.75	0.09
						Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
RADIO 4449 B71 B85A_T-MOBILE	C	From Face	4.00 0.00 0.00	0.00	76.00	No Ice	1.97	1.59	0.07
						1/2" Ice	2.15	1.75	0.09
						Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
RRUS 4415 B25	A	From Face	4.00	0.00	76.00	0.00	2" Ice	1.64	0.68	0.04
			0.00	0.00			No Ice	1.80	0.79	0.06
			0.00	0.00			1/2"	1.97	0.91	0.07
							Ice	2.33	1.18	0.11
							1" Ice			
RRUS 4415 B25	B	From Face	4.00	0.00	76.00	0.00	2" Ice	1.64	0.68	0.04
			0.00	0.00			No Ice	1.80	0.79	0.06
			0.00	0.00			1/2"	1.97	0.91	0.07
							Ice	2.33	1.18	0.11
							1" Ice			
RRUS 4415 B25	C	From Face	4.00	0.00	76.00	0.00	2" Ice	1.64	0.68	0.04
			0.00	0.00			No Ice	1.80	0.79	0.06
			0.00	0.00			1/2"	1.97	0.91	0.07
							Ice	2.33	1.18	0.11
							1" Ice			
SDX1926Q-43	A	From Face	4.00	0.00	76.00	0.00	2" Ice	0.24	0.10	0.01
			0.00	0.00			No Ice	0.31	0.14	0.01
			0.00	0.00			1/2"	0.38	0.19	0.01
							Ice	0.55	0.32	0.02
							1" Ice			
SDX1926Q-43	B	From Face	4.00	0.00	76.00	0.00	2" Ice	0.24	0.10	0.01
			0.00	0.00			No Ice	0.31	0.14	0.01
			0.00	0.00			1/2"	0.38	0.19	0.01
							Ice	0.55	0.32	0.02
							1" Ice			
SDX1926Q-43	C	From Face	4.00	0.00	76.00	0.00	2" Ice	0.24	0.10	0.01
			0.00	0.00			No Ice	0.31	0.14	0.01
			0.00	0.00			1/2"	0.38	0.19	0.01
							Ice	0.55	0.32	0.02
							1" Ice			
KRY 112 144/1	A	From Face	4.00	0.00	76.00	0.00	2" Ice	0.35	0.17	0.01
			0.00	0.00			No Ice	0.43	0.23	0.01
			0.00	0.00			1/2"	0.51	0.30	0.02
							Ice	0.70	0.46	0.03
							1" Ice			
KRY 112 144/1	B	From Face	4.00	0.00	76.00	0.00	2" Ice	0.35	0.17	0.01
			0.00	0.00			No Ice	0.43	0.23	0.01
			0.00	0.00			1/2"	0.51	0.30	0.02
							Ice	0.70	0.46	0.03
							1" Ice			
KRY 112 144/1	C	From Face	4.00	0.00	76.00	0.00	2" Ice	0.35	0.17	0.01
			0.00	0.00			No Ice	0.43	0.23	0.01
			0.00	0.00			1/2"	0.51	0.30	0.02
							Ice	0.70	0.46	0.03
							1" Ice			
***						2" Ice				
PV-VPP12M-HR-B	C	None			64.00	0.00	No Ice	17.09	17.09	1.50
							1/2"	21.47	21.47	1.88
							Ice	25.72	25.72	2.35
							1" Ice	33.96	33.96	3.52
							2" Ice			
(3) 8'x2" Mount Pipe	A	From Face	4.00	0.00	64.00	0.00	No Ice	1.90	1.90	0.03
			0.00	0.00			1/2"	2.73	2.73	0.04
			0.00	0.00			Ice	3.40	3.40	0.06
							1" Ice	4.40	4.40	0.12
							2" Ice			
(3) 8'x2" Mount Pipe	B	From Face	4.00	0.00	64.00	0.00	No Ice	1.90	1.90	0.03
			0.00	0.00			1/2"	2.73	2.73	0.04
			0.00	0.00			Ice	3.40	3.40	0.06
							1" Ice	4.40	4.40	0.12
							2" Ice			
(3) 8'x2" Mount Pipe	C	From Face	4.00	0.00	64.00	0.00	No Ice	1.90	1.90	0.03
			0.00	0.00			1/2"	2.73	2.73	0.04
			0.00	0.00			Ice	3.40	3.40	0.06

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
8'x2" Mount Pipe	A	From Face	4.00	0.00	64.00	0.00	1" Ice	4.40	4.40	0.12
							2" Ice	0.47	1.90	0.03
							No Ice	0.68	2.73	0.04
							1/2" Ice	0.85	3.40	0.06
							1" Ice	1.10	4.40	0.12
8'x2" Mount Pipe	B	From Face	4.00	0.00	64.00	0.00	2" Ice	0.47	1.90	0.03
							No Ice	0.68	2.73	0.04
							1/2" Ice	0.85	3.40	0.06
							1" Ice	1.10	4.40	0.12
							2" Ice	0.47	1.90	0.03
8'x2" Mount Pipe	C	From Face	4.00	0.00	64.00	0.00	No Ice	0.68	2.73	0.04
							1/2" Ice	0.85	3.40	0.06
							1" Ice	1.10	4.40	0.12
							2" Ice	0.47	1.90	0.03
							No Ice	0.00	0.00	0.03
BSAMNT-SBS-1-2 (Mount Bracket)	A	From Face	4.00	0.00	64.00	0.00	1/2" Ice	0.00	0.00	0.05
							Ice	0.00	0.00	0.07
							1" Ice	0.00	0.00	0.11
							2" Ice	0.00	0.00	0.03
							No Ice	0.00	0.00	0.05
BSAMNT-SBS-1-2 (Mount Bracket)	B	From Face	4.00	0.00	64.00	0.00	1/2" Ice	0.00	0.00	0.05
							Ice	0.00	0.00	0.07
							1" Ice	0.00	0.00	0.11
							2" Ice	0.00	0.00	0.03
							No Ice	0.00	0.00	0.05
BSAMNT-SBS-1-2 (Mount Bracket)	C	From Face	4.00	0.00	64.00	0.00	1/2" Ice	0.00	0.00	0.05
							Ice	0.00	0.00	0.07
							1" Ice	0.00	0.00	0.11
							2" Ice	0.00	0.00	0.03
							No Ice	0.00	0.00	0.05
(2) NHH-65B-R2B	A	From Face	4.00	0.00	64.00	0.00	1/2" Ice	4.16	2.49	0.04
							Ice	4.56	2.88	0.09
							1" Ice	4.98	3.27	0.15
							2" Ice	5.84	4.08	0.28
							No Ice	4.16	2.49	0.04
(2) NHH-65B-R2B	B	From Face	4.00	0.00	64.00	0.00	1/2" Ice	4.16	2.49	0.04
							Ice	4.56	2.88	0.09
							1" Ice	4.98	3.27	0.15
							2" Ice	5.84	4.08	0.28
							No Ice	4.16	2.49	0.04
(2) NHH-65B-R2B	C	From Face	4.00	0.00	64.00	0.00	1/2" Ice	4.16	2.49	0.04
							Ice	4.56	2.88	0.09
							1" Ice	4.98	3.27	0.15
							2" Ice	5.84	4.08	0.28
							No Ice	4.16	2.49	0.04
RVZDC-6627-PF-48	B	From Face	4.00	0.00	64.00	0.00	1/2" Ice	3.79	2.51	0.03
							Ice	4.04	2.73	0.06
							1" Ice	4.30	2.95	0.10
							2" Ice	4.84	3.42	0.18
							No Ice	3.79	2.51	0.03
RVZDC-6627-PF-48	C	From Face	4.00	0.00	64.00	0.00	1/2" Ice	4.04	2.73	0.06
							Ice	4.30	2.95	0.10
							1" Ice	4.84	3.42	0.18
							2" Ice	3.79	2.51	0.03
							No Ice	4.04	2.73	0.06
RFV01U-D1A	A	From Face	4.00	0.00	64.00	0.00	1/2" Ice	1.88	1.25	0.08
							Ice	2.05	1.39	0.10
							1" Ice	2.22	1.54	0.12
							2" Ice	2.60	1.86	0.18
							No Ice	1.88	1.25	0.08
RFV01U-D1A	B	From Face	4.00	0.00	64.00	0.00	1/2" Ice	1.88	1.25	0.08
							Ice	2.05	1.39	0.10
							1" Ice	2.22	1.54	0.12
							2" Ice	1.88	1.25	0.08
							No Ice	2.05	1.39	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
RFV01U-D1A	C	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	2.60	1.86	0.18
						2" Ice			
						No Ice	1.88	1.25	0.08
						1/2" Ice	2.05	1.39	0.10
						Ice	2.22	1.54	0.12
RFV01U-D2A	A	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	2.60	1.86	0.18
						2" Ice			
						No Ice	1.88	1.01	0.07
						1/2" Ice	2.05	1.14	0.09
						Ice	2.22	1.28	0.11
RFV01U-D2A	B	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	2.60	1.59	0.15
						2" Ice			
						No Ice	1.88	1.01	0.07
						1/2" Ice	2.05	1.14	0.09
						Ice	2.22	1.28	0.11
RFV01U-D2A	C	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	2.60	1.59	0.15
						2" Ice			
						No Ice	1.88	1.01	0.07
						1/2" Ice	2.05	1.14	0.09
						Ice	2.22	1.28	0.11
20W CBRS	A	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	2.60	1.59	0.15
						2" Ice			
						No Ice	0.86	0.42	0.02
						1/2" Ice	0.98	0.51	0.03
						Ice	1.10	0.61	0.03
20W CBRS	B	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	1.37	0.83	0.06
						2" Ice			
						No Ice	0.86	0.42	0.02
						1/2" Ice	0.98	0.51	0.03
						Ice	1.10	0.61	0.03
20W CBRS	C	From Face	4.00 0.00 0.00	0.00	64.00	1" Ice	1.37	0.83	0.06
						2" Ice			
						No Ice	0.86	0.42	0.02
						1/2" Ice	0.98	0.51	0.03
						Ice	1.10	0.61	0.03
*** ***									
*** Flange Modifications ***									
Bridge Stiffener 72" x 1.25" x 11"	A	From Face	0.00 0.00 0.00	0.00	30.00	No Ice	1.13	8.99	0.28
						1/2" Ice	2.07	9.70	0.33
						Ice	3.02	10.41	0.37
						1" Ice	5.02	11.89	0.46
						2" Ice			
Bridge Stiffener 72" x 1.25" x 11"	B	From Face	0.00 0.00 0.00	0.00	30.00	No Ice	1.13	8.99	0.28
						1/2" Ice	2.07	9.70	0.33
						Ice	3.02	10.41	0.37
						1" Ice	5.02	11.89	0.46
						2" Ice			
Bridge Stiffener 72" x 1.25" x 11"	C	From Face	0.00 0.00 0.00	0.00	30.00	No Ice	1.13	8.99	0.28
						1/2" Ice	2.07	9.70	0.33
						Ice	3.02	10.41	0.37
						1" Ice	5.02	11.89	0.46
						2" Ice			

Jump Plate 116" x 6.25" x 1"	A	From Face	0.00 0.00 0.00	0.00	30.00	No Ice	8.99	7.79	1.07
						1/2" Ice	10.52	8.74	1.15
						Ice	12.07	9.70	1.20
						1" Ice	15.25	11.66	1.32
						2" Ice			
Jump Plate 116" x 6.25" x 1"	B	From Face	0.00 0.00 0.00	0.00	30.00	No Ice	8.99	7.79	1.07
						1/2" Ice	10.52	8.74	1.15
						Ice	12.07	9.70	1.20
						1" Ice	15.25	11.66	1.32
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Jump Plate 116" x 6.25" x 1"	C	From Face	0.00 0.00 0.00	0.00	30.00	2" Ice			
						No Ice	8.99	7.79	1.07
						1/2" Ice	10.52	8.74	1.15
						1" Ice	12.07	9.70	1.20
						2" Ice	15.25	11.66	1.32

Load Combinations

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

Comb. No.	Description
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	110 - 105	Pole	Max Tension	48	0.00	-0.00	-0.00
			Max. Compression	26	-8.23	-0.05	0.03
			Max. Mx	8	-3.83	-11.75	0.01
			Max. My	2	-3.83	-0.02	11.74
			Max. Vy	8	4.37	-11.75	0.01
			Max. Vx	14	4.37	-0.02	-11.72
			Max. Torque	24			0.00
L2	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.95	-0.17	0.11
			Max. Mx	8	-4.24	-34.39	0.04
			Max. My	2	-4.24	-0.06	34.34
			Max. Vy	8	4.67	-34.39	0.04
			Max. Vx	14	4.66	-0.06	-34.27
			Max. Torque	24			0.00
L3	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.67	-0.28	0.18
			Max. Mx	8	-4.65	-58.50	0.07
			Max. My	2	-4.65	-0.11	58.42
			Max. Vy	8	4.96	-58.50	0.07
			Max. Vx	14	4.96	-0.11	-58.30
			Max. Torque	24			0.00
L4	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.39	-0.39	0.26
			Max. Mx	8	-5.06	-84.06	0.09
			Max. My	2	-5.06	-0.16	83.94
			Max. Vy	8	5.25	-84.06	0.09
			Max. Vx	14	5.24	-0.15	-83.77
			Max. Torque	24			0.00
L5	90 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.58	-0.34	0.84
			Max. Mx	8	-10.08	-137.43	0.26
			Max. My	2	-10.09	-0.17	137.49
			Max. Vy	8	10.68	-137.43	0.26
			Max. Vx	14	10.70	-0.16	-136.98
			Max. Torque	20			-0.17
L6	85 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.66	-0.29	1.03
			Max. Mx	8	-10.74	-191.55	0.31
			Max. My	2	-10.74	-0.18	191.75
			Max. Vy	8	10.96	-191.55	0.31
			Max. Vx	14	11.00	-0.16	-191.16
			Max. Torque	20			-0.17
L7	80 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.46	-0.26	1.22
			Max. Mx	8	-15.26	-250.36	0.37
			Max. My	2	-15.27	-0.19	250.79
			Max. Vy	8	14.55	-250.36	0.37
			Max. Vx	14	14.59	-0.17	-250.10
			Max. Torque	20			-0.17
L8	75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.70	-0.27	1.49
			Max. Mx	8	-16.01	-323.87	0.44
			Max. My	2	-16.02	-0.22	324.43
			Max. Vy	8	14.86	-323.87	0.44
			Max. Vx	14	14.85	-0.19	-323.59
			Max. Torque	22			-0.19
L9	70 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.93	-0.29	1.75

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L10	65 - 60	Pole	Max. Mx	8	-16.77	-398.87	0.52
			Max. My	2	-16.78	-0.24	399.28
			Max. Vy	8	15.15	-398.87	0.52
			Max. Vx	14	15.08	-0.21	-398.31
			Max. Torque	22			-0.24
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.14	-0.89	1.61
			Max. Mx	8	-20.75	-486.27	0.56
			Max. My	2	-20.77	-0.47	486.04
			Max. Vy	8	18.12	-486.27	0.56
L11	60 - 55	Pole	Max. Vx	14	18.02	-0.30	-485.19
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.64	-0.91	1.82
			Max. Mx	8	-21.69	-577.64	0.69
			Max. My	2	-21.71	-0.59	576.78
			Max. Vy	8	18.44	-577.64	0.69
			Max. Vx	14	18.28	-0.23	-575.86
			Max. Torque	14			0.36
			L12	55 - 50	Pole	Max Tension	1
Max. Compression	26	-45.12				-0.93	2.03
Max. Mx	8	-22.65				-670.55	0.82
Max. My	2	-22.67				-0.71	668.79
Max. Vy	8	18.73				-670.55	0.82
Max. Vx	14	18.53				-0.16	-667.81
Max. Torque	14						0.36
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-46.60				-0.94	2.23
L13	50 - 45	Pole				Max. Mx	8
			Max. My	2	-23.64	-0.82	761.96
			Max. Vy	8	19.00	-764.86	0.96
			Max. Vx	14	18.75	-0.10	-760.92
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.08	-0.96	2.43
			Max. Mx	8	-24.60	-860.44	1.09
			Max. My	2	-24.63	-0.94	856.13
			Max. Vy	8	19.24	-860.44	1.09
L14	45 - 40	Pole	Max. Vx	14	18.93	-0.03	-855.03
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.30	-0.96	2.45
			Max. Mx	8	-24.74	-873.35	1.10
			Max. My	2	-24.76	-0.96	868.81
			Max. Vy	8	19.32	-873.35	1.10
			Max. Vx	14	18.99	-0.02	-867.72
			Max. Torque	14			0.36
			L15	40 - 39.33	Pole	Max Tension	1
Max. Compression	26	-48.39				-0.96	2.46
Max. Mx	8	-24.80				-878.18	1.11
Max. My	2	-24.83				-0.96	873.55
Max. Vy	8	19.34				-878.18	1.11
Max. Vx	14	19.01				-0.02	-872.46
Max. Torque	14						0.36
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-50.15				-0.97	2.63
L16	39.33 - 39.08	Pole				Max. Mx	8
			Max. My	2	-25.97	-1.08	968.82
			Max. Vy	8	19.95	-976.39	1.24
			Max. Vx	14	19.47	0.05	-968.60
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.56	-0.97	2.77
			Max. Mx	8	-26.88	-1058.65	1.35
			Max. My	14	-26.91	0.11	-1048.25
			L17	39.08 - 34.08	Pole	Max. Vy	8
Max. Vx	14	19.61				0.11	-1048.25
Max. Torque	14						0.36
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-51.56				-0.97	2.77
Max. Mx	8	-26.88				-1058.65	1.35
Max. My	14	-26.91				0.11	-1048.25
Max. Vy	8	20.40				-1058.65	1.35
Max. Vx	14	19.61				0.11	-1048.25
L18	34.08 - 30	Pole				Max. Torque	14
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.56	-0.97	2.77
			Max. Mx	8	-26.88	-1058.65	1.35
			Max. My	14	-26.91	0.11	-1048.25
			Max. Vy	8	20.40	-1058.65	1.35
			Max. Vx	14	19.61	0.11	-1048.25
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.56	-0.97	2.77

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L19	30 - 29.75	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.33	-0.97	2.78
			Max. Mx	8	-31.81	-1063.79	1.35
			Max. My	14	-31.85	0.11	-1053.18
			Max. Vy	8	20.54	-1063.79	1.35
			Max. Vx	14	19.74	0.11	-1053.18
L20	29.75 - 25	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.97	-0.98	2.92
			Max. Mx	8	-32.98	-1161.72	1.48
			Max. My	14	-33.01	0.18	-1147.15
			Max. Vy	8	20.71	-1161.72	1.48
			Max. Vx	14	19.86	0.18	-1147.15
L21	25 - 24.75	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.08	-0.98	2.92
			Max. Mx	8	-33.07	-1166.90	1.48
			Max. My	14	-33.10	0.18	-1152.11
			Max. Vy	8	20.72	-1166.90	1.48
			Max. Vx	14	19.86	0.18	-1152.11
L22	24.75 - 19.75	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.30	-0.99	3.04
			Max. Mx	8	-34.66	-1271.69	1.61
			Max. My	14	-34.69	0.25	-1252.22
			Max. Vy	8	21.21	-1271.69	1.61
			Max. Vx	14	20.22	0.25	-1252.22
L23	19.75 - 18.58	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.83	-0.99	3.06
			Max. Mx	8	-35.03	-1296.55	1.64
			Max. My	14	-35.06	0.26	-1275.89
			Max. Vy	8	21.33	-1296.55	1.64
			Max. Vx	14	20.30	0.26	-1275.89
L24	18.58 - 18.33	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.97	-0.99	3.07
			Max. Mx	8	-35.14	-1301.88	1.65
			Max. My	14	-35.17	0.27	-1280.96
			Max. Vy	8	21.33	-1301.88	1.65
			Max. Vx	14	20.30	0.27	-1280.96
L25	18.33 - 13.33	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.60	-1.00	3.18
			Max. Mx	8	-37.08	-1409.76	1.78
			Max. My	14	-37.10	0.34	-1383.28
			Max. Vy	8	21.83	-1409.76	1.78
			Max. Vx	14	20.66	0.34	-1383.28
L26	13.33 - 8.42	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.22	-1.01	3.26
			Max. Mx	8	-39.00	-1518.03	1.90
			Max. My	14	-39.01	0.40	-1485.36
			Max. Vy	8	22.31	-1518.03	1.90
			Max. Vx	14	20.98	0.40	-1485.36
L27	8.42 - 8.07	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.45	-1.01	3.27
			Max. Mx	8	-39.18	-1525.84	1.91
			Max. My	14	-39.19	0.41	-1492.70
			Max. Vy	8	22.33	-1525.84	1.91
			Max. Vx	14	20.99	0.41	-1492.70
L28	8.07 - 7.83	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L29	7.83 - 6	Pole	Max. Compression	26	-67.61	-1.01	3.27
			Max. Mx	8	-39.30	-1531.20	1.91
			Max. My	14	-39.31	0.41	-1497.73
			Max. Vy	8	22.36	-1531.20	1.91
			Max. Vx	14	21.01	0.41	-1497.73
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.81	-1.01	3.29
			Max. Mx	8	-40.20	-1572.33	1.96
			Max. My	14	-40.21	0.44	-1536.29
L30	6 - 5.75	Pole	Max. Vy	8	22.60	-1572.33	1.96
			Max. Vx	14	21.18	0.44	-1536.29
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.95	-1.01	3.29
			Max. Mx	8	-40.32	-1577.98	1.97
			Max. My	14	-40.33	0.44	-1541.58
			Max. Vy	8	22.61	-1577.98	1.97
			Max. Vx	14	21.17	0.44	-1541.58
			Max. Torque	14			0.36
L31	5.75 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.95	-1.02	3.35
			Max. Mx	8	-41.90	-1663.44	2.06
			Max. My	14	-41.91	0.49	-1621.39
			Max. Vy	8	22.99	-1663.44	2.06
			Max. Vx	14	21.43	0.49	-1621.39
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.11	-1.02	3.35
			Max. Mx	8	-42.04	-1669.19	2.07
L32	2 - 1.75	Pole	Max. My	14	-42.05	0.49	-1626.75
			Max. Vy	8	22.99	-1669.19	2.07
			Max. Vx	14	21.43	0.49	-1626.75
			Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.85	-1.02	3.38
			Max. Mx	8	-42.65	-1709.54	2.11
			Max. My	14	-42.65	0.52	-1664.31
			Max. Vy	8	23.16	-1709.54	2.11
			Max. Vx	14	21.55	0.52	-1664.31
L33	1.75 - 0	Pole	Max. Torque	14			0.36
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.85	-1.02	3.38
			Max. Mx	8	-42.65	-1709.54	2.11
			Max. My	14	-42.65	0.52	-1664.31
			Max. Vy	8	23.16	-1709.54	2.11
Max. Vx	14	21.55	0.52	-1664.31			
Max. Torque	14			0.36			

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	28	71.85	-3.14	5.44
	Max. H _x	20	42.67	23.12	-0.02
	Max. H _z	2	42.67	-0.02	21.21
	Max. M _x	2	1654.14	-0.02	21.21
	Max. M _z	8	1709.54	-23.12	0.02
	Max. Torsion	14	0.36	0.02	-21.51
	Min. Vert	19	32.00	17.86	-10.33
	Min. H _x	8	42.67	-23.12	0.02
	Min. H _z	14	42.67	0.02	-21.51
	Min. M _x	14	-1664.31	0.02	-21.51
	Min. M _z	20	-1708.22	23.12	-0.02
	Min. Torsion	2	-0.36	-0.02	21.21

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	35.56	0.00	0.00	-0.73	-0.52	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	42.67	0.02	-21.21	-1654.14	-1.84	0.36
0.9 Dead+1.0 Wind 0 deg - No Ice	32.00	0.02	-21.21	-1632.55	-1.66	0.35
1.2 Dead+1.0 Wind 30 deg - No Ice	42.67	11.56	-20.02	-1480.74	-855.03	0.18
0.9 Dead+1.0 Wind 30 deg - No Ice	32.00	11.56	-20.02	-1461.72	-844.02	0.18
1.2 Dead+1.0 Wind 60 deg - No Ice	42.67	18.61	-10.77	-830.85	-1435.76	0.21
0.9 Dead+1.0 Wind 60 deg - No Ice	32.00	18.61	-10.77	-819.93	-1417.13	0.21
1.2 Dead+1.0 Wind 90 deg - No Ice	42.67	23.12	-0.02	-2.11	-1709.54	-0.10
0.9 Dead+1.0 Wind 90 deg - No Ice	32.00	23.12	-0.02	-1.85	-1687.69	-0.10
1.2 Dead+1.0 Wind 120 deg - No Ice	42.67	19.29	11.14	867.92	-1505.56	-0.28
0.9 Dead+1.0 Wind 120 deg - No Ice	32.00	19.29	11.14	857.05	-1486.14	-0.27
1.2 Dead+1.0 Wind 150 deg - No Ice	42.67	10.85	18.83	1449.20	-836.53	-0.27
0.9 Dead+1.0 Wind 150 deg - No Ice	32.00	10.85	18.83	1430.80	-825.61	-0.26
1.2 Dead+1.0 Wind 180 deg - No Ice	42.67	-0.02	21.51	1664.31	0.52	-0.36
0.9 Dead+1.0 Wind 180 deg - No Ice	32.00	-0.02	21.51	1643.14	0.68	-0.35
1.2 Dead+1.0 Wind 210 deg - No Ice	42.67	-11.49	19.89	1477.35	852.82	-0.18
0.9 Dead+1.0 Wind 210 deg - No Ice	32.00	-11.49	19.89	1458.82	842.16	-0.18
1.2 Dead+1.0 Wind 240 deg - No Ice	42.67	-17.86	10.33	818.72	1416.65	-0.21
0.9 Dead+1.0 Wind 240 deg - No Ice	32.00	-17.86	10.33	808.34	1398.45	-0.21
1.2 Dead+1.0 Wind 270 deg - No Ice	42.67	-23.12	0.02	0.25	1708.22	0.10
0.9 Dead+1.0 Wind 270 deg - No Ice	32.00	-23.12	0.02	0.48	1686.72	0.10
1.2 Dead+1.0 Wind 300 deg - No Ice	42.67	-19.92	-11.50	-878.01	1518.48	0.28
0.9 Dead+1.0 Wind 300 deg - No Ice	32.00	-19.92	-11.50	-866.61	1499.34	0.27
1.2 Dead+1.0 Wind 330 deg - No Ice	42.67	-11.05	-19.17	-1456.16	838.15	0.27
0.9 Dead+1.0 Wind 330 deg - No Ice	32.00	-11.05	-19.17	-1437.25	827.56	0.26
1.2 Dead+1.0 Ice+1.0 Temp	71.85	0.00	-0.00	-3.38	-1.02	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	71.85	0.00	-5.90	-489.19	-1.30	0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	71.85	3.14	-5.44	-430.83	-247.78	0.01
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	71.85	5.12	-2.96	-246.66	-421.76	0.03
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	71.85	6.24	-0.00	-3.73	-493.13	-0.07
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	71.85	5.22	3.01	244.71	-430.93	-0.09
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	71.85	3.03	5.26	418.76	-244.55	-0.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	71.85	-0.00	5.90	482.23	-0.81	-0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	71.85	-3.13	5.42	423.60	245.52	-0.01
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	71.85	-5.09	2.94	239.43	419.19	-0.03
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	71.85	-6.24	0.00	-3.24	491.03	0.07

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
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	71.85	-5.25	-3.03	-251.94	429.29	0.09
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	71.85	-3.05	-5.28	-425.99	242.60	0.08
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	35.56	0.00	-5.26	-407.48	-0.84	0.09
Dead+Wind 30 deg - Service	35.56	2.86	-4.96	-364.87	-210.76	0.04
Dead+Wind 60 deg - Service	35.56	4.61	-2.67	-204.94	-353.61	0.05
Dead+Wind 90 deg - Service	35.56	5.73	-0.00	-1.06	-421.01	-0.03
Dead+Wind 120 deg - Service	35.56	4.78	2.76	213.00	-370.81	-0.07
Dead+Wind 150 deg - Service	35.56	2.69	4.67	356.00	-206.19	-0.07
Dead+Wind 180 deg - Service	35.56	-0.00	5.33	408.91	-0.26	-0.09
Dead+Wind 210 deg - Service	35.56	-2.85	4.93	362.95	209.45	-0.04
Dead+Wind 240 deg - Service	35.56	-4.43	2.56	200.87	348.12	-0.05
Dead+Wind 270 deg - Service	35.56	-5.73	0.00	-0.48	419.91	0.03
Dead+Wind 300 deg - Service	35.56	-4.94	-2.85	-216.57	373.23	0.07
Dead+Wind 330 deg - Service	35.56	-2.74	-4.75	-358.79	205.82	0.07

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.56	0.00	0.00	35.56	0.00	0.000%
2	0.02	-42.67	-21.21	-0.02	42.67	21.21	0.000%
3	0.02	-32.00	-21.21	-0.02	32.00	21.21	0.000%
4	11.56	-42.67	-20.02	-11.56	42.67	20.02	0.000%
5	11.56	-32.00	-20.02	-11.56	32.00	20.02	0.000%
6	18.61	-42.67	-10.77	-18.61	42.67	10.77	0.000%
7	18.61	-32.00	-10.77	-18.61	32.00	10.77	0.000%
8	23.12	-42.67	-0.02	-23.12	42.67	0.02	0.000%
9	23.12	-32.00	-0.02	-23.12	32.00	0.02	0.000%
10	19.29	-42.67	11.14	-19.29	42.67	-11.14	0.000%
11	19.29	-32.00	11.14	-19.29	32.00	-11.14	0.000%
12	10.85	-42.67	18.83	-10.85	42.67	-18.83	0.000%
13	10.85	-32.00	18.83	-10.85	32.00	-18.83	0.000%
14	-0.02	-42.67	21.51	0.02	42.67	-21.51	0.000%
15	-0.02	-32.00	21.51	0.02	32.00	-21.51	0.000%
16	-11.49	-42.67	19.89	11.49	42.67	-19.89	0.000%
17	-11.49	-32.00	19.89	11.49	32.00	-19.89	0.000%
18	-17.86	-42.67	10.33	17.86	42.67	-10.33	0.000%
19	-17.86	-32.00	10.33	17.86	32.00	-10.33	0.000%
20	-23.12	-42.67	0.02	23.12	42.67	-0.02	0.000%
21	-23.12	-32.00	0.02	23.12	32.00	-0.02	0.000%
22	-19.92	-42.67	-11.50	19.92	42.67	11.50	0.000%
23	-19.92	-32.00	-11.50	19.92	32.00	11.50	0.000%
24	-11.05	-42.67	-19.17	11.05	42.67	19.17	0.000%
25	-11.05	-32.00	-19.17	11.05	32.00	19.17	0.000%
26	0.00	-71.85	0.00	-0.00	71.85	0.00	0.000%
27	0.00	-71.85	-5.90	-0.00	71.85	5.90	0.000%
28	3.14	-71.85	-5.44	-3.14	71.85	5.44	0.000%
29	5.12	-71.85	-2.96	-5.12	71.85	2.96	0.000%
30	6.24	-71.85	-0.00	-6.24	71.85	0.00	0.000%
31	5.22	-71.85	3.01	-5.22	71.85	-3.01	0.000%
32	3.03	-71.85	5.26	-3.03	71.85	-5.26	0.000%
33	-0.00	-71.85	5.90	0.00	71.85	-5.90	0.000%
34	-3.13	-71.85	5.42	3.13	71.85	-5.42	0.000%
35	-5.09	-71.85	2.94	5.09	71.85	-2.94	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
36	-6.24	-71.85	0.00	6.24	71.85	-0.00	0.000%
37	-5.25	-71.85	-3.03	5.25	71.85	3.03	0.000%
38	-3.05	-71.85	-5.28	3.05	71.85	5.28	0.000%
39	0.00	-35.56	-5.26	-0.00	35.56	5.26	0.000%
40	2.86	-35.56	-4.96	-2.86	35.56	4.96	0.000%
41	4.61	-35.56	-2.67	-4.61	35.56	2.67	0.000%
42	5.73	-35.56	-0.00	-5.73	35.56	0.00	0.000%
43	4.78	-35.56	2.76	-4.78	35.56	-2.76	0.000%
44	2.69	-35.56	4.67	-2.69	35.56	-4.67	0.000%
45	-0.00	-35.56	5.33	0.00	35.56	-5.33	0.000%
46	-2.85	-35.56	4.93	2.85	35.56	-4.93	0.000%
47	-4.43	-35.56	2.56	4.43	35.56	-2.56	0.000%
48	-5.73	-35.56	0.00	5.73	35.56	-0.00	0.000%
49	-4.94	-35.56	-2.85	4.94	35.56	2.85	0.000%
50	-2.74	-35.56	-4.75	2.74	35.56	4.75	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00018226
3	Yes	5	0.00000001	0.00007615
4	Yes	6	0.00000001	0.00028722
5	Yes	6	0.00000001	0.00009924
6	Yes	6	0.00000001	0.00027538
7	Yes	6	0.00000001	0.00009563
8	Yes	5	0.00000001	0.00015115
9	Yes	5	0.00000001	0.00005693
10	Yes	6	0.00000001	0.00029907
11	Yes	6	0.00000001	0.00010271
12	Yes	6	0.00000001	0.00028416
13	Yes	6	0.00000001	0.00009863
14	Yes	5	0.00000001	0.00017442
15	Yes	5	0.00000001	0.00007163
16	Yes	6	0.00000001	0.00028200
17	Yes	6	0.00000001	0.00009747
18	Yes	6	0.00000001	0.00027503
19	Yes	6	0.00000001	0.00009595
20	Yes	5	0.00000001	0.00014857
21	Yes	5	0.00000001	0.00005547
22	Yes	6	0.00000001	0.00030612
23	Yes	6	0.00000001	0.00010507
24	Yes	6	0.00000001	0.00027949
25	Yes	6	0.00000001	0.00009679
26	Yes	4	0.00000001	0.00026616
27	Yes	6	0.00000001	0.00043723
28	Yes	6	0.00000001	0.00048678
29	Yes	6	0.00000001	0.00048356
30	Yes	6	0.00000001	0.00043599
31	Yes	6	0.00000001	0.00048668
32	Yes	6	0.00000001	0.00047581
33	Yes	6	0.00000001	0.00042904
34	Yes	6	0.00000001	0.00047562
35	Yes	6	0.00000001	0.00047360
36	Yes	6	0.00000001	0.00043302
37	Yes	6	0.00000001	0.00049143
38	Yes	6	0.00000001	0.00048126
39	Yes	4	0.00000001	0.00053564
40	Yes	5	0.00000001	0.00008856
41	Yes	5	0.00000001	0.00008325
42	Yes	4	0.00000001	0.00053235
43	Yes	5	0.00000001	0.00009010
44	Yes	5	0.00000001	0.00008703
45	Yes	4	0.00000001	0.00053371

46	Yes	5	0.00000001	0.00008469
47	Yes	5	0.00000001	0.00008279
48	Yes	4	0.00000001	0.00053021
49	Yes	5	0.00000001	0.00009505
50	Yes	5	0.00000001	0.00008377

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	16.2924	49	1.14	0.00
L2	105 - 100	15.0940	49	1.14	0.00
L3	100 - 95	13.8990	49	1.14	0.00
L4	95 - 90	12.7135	49	1.13	0.00
L5	90 - 85	11.5443	49	1.11	0.00
L6	85 - 80	10.3951	49	1.09	0.00
L7	80 - 75	9.2717	49	1.06	0.00
L8	75 - 70	8.1845	49	1.02	0.00
L9	70 - 65	7.1447	49	0.97	0.00
L10	65 - 60	6.1661	49	0.90	0.00
L11	60 - 55	5.2636	49	0.82	0.00
L12	55 - 50	4.4296	49	0.77	0.00
L13	50 - 45	3.6518	49	0.71	0.00
L14	45 - 40	2.9397	49	0.65	0.00
L15	40 - 39.33	2.3028	49	0.57	0.00
L16	39.33 - 39.08	2.2236	49	0.56	0.00
L17	39.08 - 34.08	2.1945	49	0.56	0.00
L18	34.08 - 30	1.6480	49	0.49	0.00
L19	30 - 29.75	1.2572	49	0.43	0.00
L20	29.75 - 25	1.2350	49	0.42	0.00
L21	25 - 24.75	0.8517	49	0.35	0.00
L22	24.75 - 19.75	0.8336	49	0.34	0.00
L23	19.75 - 18.58	0.5149	49	0.26	0.00
L24	18.58 - 18.33	0.4525	49	0.24	0.00
L25	18.33 - 13.33	0.4398	49	0.24	0.00
L26	13.33 - 8.42	0.2240	49	0.17	0.00
L27	8.42 - 8.07	0.0882	49	0.09	0.00
L28	8.07 - 7.83	0.0815	49	0.09	0.00
L29	7.83 - 6	0.0770	49	0.09	0.00
L30	6 - 5.75	0.0467	49	0.07	0.00
L31	5.75 - 2	0.0432	49	0.07	0.00
L32	2 - 1.75	0.0060	49	0.03	0.00
L33	1.75 - 0	0.0046	49	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	49	15.5732	1.14	0.00	88660
90.00	SitePro1 RMQLP-4120-H10	49	11.5443	1.11	0.00	14866
76.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	49	8.3985	1.03	0.00	6618
64.00	PV-VPP12M-HR-B	49	5.9794	0.88	0.00	3928
30.00	Bridge Stiffener 72" x 1.25" x 11"	49	1.2572	0.43	0.00	3735

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	110 - 105	66.2864	22	4.66	0.00
L2	105 - 100	61.4118	22	4.66	0.00
L3	100 - 95	56.5508	22	4.64	0.00
L4	95 - 90	51.7287	22	4.59	0.00
L5	90 - 85	46.9725	22	4.51	0.00
L6	85 - 80	42.2977	22	4.43	0.00
L7	80 - 75	37.7279	22	4.31	0.00
L8	75 - 70	33.3046	22	4.15	0.00
L9	70 - 65	29.0740	22	3.94	0.00
L10	65 - 60	25.0921	22	3.67	0.00
L11	60 - 55	21.4191	22	3.34	0.00
L12	55 - 50	18.0249	22	3.14	0.00
L13	50 - 45	14.8598	22	2.90	0.00
L14	45 - 40	11.9618	22	2.63	0.00
L15	40 - 39.33	9.3695	22	2.32	0.00
L16	39.33 - 39.08	9.0475	22	2.27	0.00
L17	39.08 - 34.08	8.9288	22	2.26	0.00
L18	34.08 - 30	6.7048	22	1.98	0.00
L19	30 - 29.75	5.1147	22	1.74	0.00
L20	29.75 - 25	5.0243	22	1.72	0.00
L21	25 - 24.75	3.4644	22	1.41	0.00
L22	24.75 - 19.75	3.3908	22	1.40	0.00
L23	19.75 - 18.58	2.0942	22	1.08	0.00
L24	18.58 - 18.33	1.8404	22	1.00	0.00
L25	18.33 - 13.33	1.7886	22	0.98	0.00
L26	13.33 - 8.42	0.9110	22	0.69	0.00
L27	8.42 - 8.07	0.3588	22	0.38	0.00
L28	8.07 - 7.83	0.3314	22	0.37	0.00
L29	7.83 - 6	0.3132	22	0.36	0.00
L30	6 - 5.75	0.1900	22	0.28	0.00
L31	5.75 - 2	0.1754	22	0.27	0.00
L32	2 - 1.75	0.0242	22	0.11	0.00
L33	1.75 - 0	0.0187	22	0.10	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	22	63.3609	4.66	0.00	22134
90.00	SitePro1 RMQLP-4120-H10	22	46.9725	4.51	0.00	3706
76.00	Site Pro 1 RMQP-xxx + HRK12 12.5' Platform with Handrails	22	34.1754	4.18	0.00	1646
64.00	PV-VPP12M-HR-B	22	24.3325	3.60	0.00	972
30.00	Bridge Stiffener 72" x 1.25" x 11"	22	5.1147	1.74	0.00	919

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	110 - 105 (1)	P24x0.25	5.00	0.00	0.0	18.653 2	-3.82	662.26	0.006
L2	105 - 100 (2)	P24x0.25	5.00	0.00	0.0	18.653 2	-4.23	662.26	0.006

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L3	100 - 95 (3)	P24x0.25	5.00	0.00	0.0	18.653	-4.64	662.26	0.007
L4	95 - 90 (4)	P24x0.25	5.00	0.00	0.0	18.653	-5.05	662.26	0.008
L5	90 - 85 (5)	P24x0.375	5.00	0.00	0.0	27.832	-10.08	1052.07	0.010
L6	85 - 80 (6)	P24x0.375	5.00	0.00	0.0	27.832	-10.74	1052.07	0.010
L7	80 - 75 (7)	P24x0.375	5.00	0.00	0.0	27.832	-15.26	1052.07	0.015
L8	75 - 70 (8)	P24x0.375	5.00	0.00	0.0	27.832	-15.96	1052.07	0.015
L9	70 - 65 (9)	P24x0.375	5.00	0.00	0.0	27.832	-16.70	1052.07	0.016
L10	65 - 60 (10)	P24x0.375	5.00	0.00	0.0	27.832	-20.66	1052.07	0.020
L11	60 - 55 (11)	P30x0.375	5.00	0.00	0.0	34.901	-21.61	1311.06	0.016
L12	55 - 50 (12)	P30x0.375	5.00	0.00	0.0	34.901	-22.57	1311.06	0.017
L13	50 - 45 (13)	P30x0.375	5.00	0.00	0.0	34.901	-23.55	1311.06	0.018
L14	45 - 40 (14)	P30x0.375	5.00	0.00	0.0	34.901	-24.54	1311.06	0.019
L15	40 - 39.33 (15)	P30x0.375	0.67	0.00	0.0	34.901	-24.68	1311.06	0.019
L16	39.33 - 39.08 (16)	P30x0.4875	0.25	0.00	0.0	45.199	-24.74	1708.53	0.014
L17	39.08 - 34.08 (17)	P30x0.4875	5.00	0.00	0.0	45.199	-25.89	1708.53	0.015
L18	34.08 - 30 (18)	P30x0.4875	4.08	0.00	0.0	45.199	-26.85	1708.53	0.016
L19	30 - 29.75 (19)	P30x0.5	0.25	0.00	0.0	46.338	-31.78	1751.60	0.018
L20	29.75 - 25 (20)	P30x0.5	4.75	0.00	0.0	46.338	-32.95	1751.60	0.019
L21	25 - 24.75 (21)	P30x0.55625	0.25	0.00	0.0	51.453	-33.04	1944.93	0.017
L22	24.75 - 19.75 (22)	P30x0.55625	5.00	0.00	0.0	51.453	-34.64	1944.93	0.018
L23	19.75 - 18.58 (23)	P30x0.55625	1.17	0.00	0.0	51.453	-35.02	1944.93	0.018
L24	18.58 - 18.33 (24)	P30x0.6875	0.25	0.00	0.0	63.310	-35.13	2393.14	0.015
L25	18.33 - 13.33 (25)	P30x0.6875	5.00	0.00	0.0	63.310	-37.07	2393.14	0.015
L26	13.33 - 8.42 (26)	P30x0.6875	4.91	0.00	0.0	63.310	-38.99	2393.14	0.016
L27	8.42 - 8.07 (27)	P30x1.3	0.35	0.00	0.0	117.21	-39.18	4430.64	0.009
L28	8.07 - 7.83 (28)	P30x1.2	0.24	0.00	0.0	108.57	-39.30	4104.08	0.010
L29	7.83 - 6 (29)	P30x1.2	1.83	0.00	0.0	108.57	-40.20	4104.08	0.010
L30	6 - 5.75 (30)	P30x1.15	0.25	0.00	0.0	104.23	-40.31	3939.90	0.010
L31	5.75 - 2 (31)	P30x1.15	3.75	0.00	0.0	104.23	-41.90	3939.90	0.011
L32	2 - 1.75 (32)	P30x1.6	0.25	0.00	0.0	142.75	-42.04	5396.10	0.008
L33	1.75 - 0 (33)	P30x0.875	1.75	0.00	0.0	80.061	-42.65	3026.33	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	Ratio	M_{uy}	ϕM_{ny}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L1	110 - 105 (1)	P24x0.25	11.76	396.68	0.030	0.00	396.68	0.000
L2	105 - 100 (2)	P24x0.25	34.41	396.68	0.087	0.00	396.68	0.000
L3	100 - 95 (3)	P24x0.25	58.54	396.68	0.148	0.00	396.68	0.000
L4	95 - 90 (4)	P24x0.25	84.12	396.68	0.212	0.00	396.68	0.000
L5	90 - 85 (5)	P24x0.375	137.63	623.72	0.221	0.00	623.72	0.000
L6	85 - 80 (6)	P24x0.375	191.93	623.72	0.308	0.00	623.72	0.000
L7	80 - 75 (7)	P24x0.375	251.06	623.72	0.403	0.00	623.72	0.000
L8	75 - 70 (8)	P24x0.375	325.33	623.72	0.522	0.00	623.72	0.000
L9	70 - 65 (9)	P24x0.375	402.91	623.72	0.646	0.00	623.72	0.000
L10	65 - 60 (10)	P24x0.375	494.16	623.72	0.792	0.00	623.72	0.000
L11	60 - 55 (11)	P30x0.375	590.34	947.86	0.623	0.00	947.86	0.000
L12	55 - 50 (12)	P30x0.375	688.15	947.86	0.726	0.00	947.86	0.000
L13	50 - 45 (13)	P30x0.375	787.42	947.86	0.831	0.00	947.86	0.000
L14	45 - 40 (14)	P30x0.375	888.02	947.86	0.937	0.00	947.86	0.000
L15	40 - 39.33 (15)	P30x0.375	901.58	947.86	0.951	0.00	947.86	0.000
L16	39.33 - 39.08 (16)	P30x0.4875	906.65	1273.78	0.712	0.00	1273.78	0.000
L17	39.08 - 34.08 (17)	P30x0.4875	1009.39	1273.78	0.792	0.00	1273.78	0.000
L18	34.08 - 30 (18)	P30x0.4875	1094.55	1273.78	0.859	0.00	1273.78	0.000
L19	30 - 29.75 (19)	P30x0.5	1099.83	1311.10	0.839	0.00	1311.10	0.000
L20	29.75 - 25 (20)	P30x0.5	1200.47	1311.10	0.916	0.00	1311.10	0.000
L21	25 - 24.75 (21)	P30x0.55625	1205.79	1481.77	0.814	0.00	1481.77	0.000
L22	24.75 - 19.75 (22)	P30x0.55625	1313.08	1481.77	0.886	0.00	1481.77	0.000
L23	19.75 - 18.58 (23)	P30x0.55625	1338.43	1481.77	0.903	0.00	1481.77	0.000
L24	18.58 - 18.33 (24)	P30x0.6875	1343.87	1861.09	0.722	0.00	1861.09	0.000
L25	18.33 - 13.33 (25)	P30x0.6875	1453.41	1861.09	0.781	0.00	1861.09	0.000
L26	13.33 - 8.42 (26)	P30x0.6875	1562.64	1861.09	0.840	0.00	1861.09	0.000
L27	8.42 - 8.07 (27)	P30x1.3	1570.49	3375.32	0.465	0.00	3375.32	0.000
L28	8.07 - 7.83 (28)	P30x1.2	1575.88	3137.10	0.502	0.00	3137.10	0.000
L29	7.83 - 6 (29)	P30x1.2	1617.13	3137.10	0.515	0.00	3137.10	0.000
L30	6 - 5.75 (30)	P30x1.15	1622.78	3016.68	0.538	0.00	3016.68	0.000
L31	5.75 - 2 (31)	P30x1.15	1708.15	3016.68	0.566	0.00	3016.68	0.000
L32	2 - 1.75 (32)	P30x1.6	1713.88	4069.37	0.421	0.00	4069.37	0.000
L33	1.75 - 0 (33)	P30x0.875	1754.05	2338.73	0.750	0.00	2338.73	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
			V_u K	K	$\frac{V_u}{\phi V_n}$	T_u kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	110 - 105 (1)	P24x0.25	4.38	201.86	0.022	0.00	324.23	0.000
L2	105 - 100 (2)	P24x0.25	4.68	201.86	0.023	0.00	324.23	0.000
L3	100 - 95 (3)	P24x0.25	4.97	201.86	0.025	0.00	324.23	0.000
L4	95 - 90 (4)	P24x0.25	5.25	201.86	0.026	0.00	324.23	0.000
L5	90 - 85 (5)	P24x0.375	10.70	315.62	0.034	0.08	655.57	0.000
L6	85 - 80 (6)	P24x0.375	11.00	315.62	0.035	0.08	655.57	0.000
L7	80 - 75 (7)	P24x0.375	14.64	315.62	0.046	0.08	655.57	0.000
L8	75 - 70 (8)	P24x0.375	15.22	315.62	0.048	0.19	655.57	0.000
L9	70 - 65 (9)	P24x0.375	15.81	315.62	0.050	0.24	655.57	0.000
L10	65 - 60 (10)	P24x0.375	19.08	315.62	0.060	0.28	655.57	0.000
L11	60 - 55 (11)	P30x0.375	19.41	395.78	0.049	0.28	994.73	0.000
L12	55 - 50 (12)	P30x0.375	19.72	395.78	0.050	0.28	994.73	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L13	50 - 45 (13)	P30x0.375	20.00	395.78	0.051	0.28	994.73	0.000
L14	45 - 40 (14)	P30x0.375	20.25	395.78	0.051	0.28	994.73	0.000
L15	40 - 39.33 (15)	P30x0.375	20.28	395.78	0.051	0.28	994.73	0.000
L16	39.33 - 39.08 (16)	P30x0.4875	20.29	512.56	0.040	0.28	1329.93	0.000
L17	39.08 - 34.08 (17)	P30x0.4875	20.80	512.56	0.041	0.28	1329.93	0.000
L18	34.08 - 30 (18)	P30x0.4875	20.97	512.56	0.041	0.28	1329.93	0.000
L19	30 - 29.75 (19)	P30x0.5	21.12	525.48	0.040	0.28	1362.88	0.000
L20	29.75 - 25 (20)	P30x0.5	21.28	525.48	0.041	0.28	1362.88	0.000
L21	25 - 24.75 (21)	P30x0.55625	21.28	583.48	0.036	0.28	1510.43	0.000
L22	24.75 - 19.75 (22)	P30x0.55625	21.65	583.48	0.037	0.28	1510.43	0.000
L23	19.75 - 18.58 (23)	P30x0.55625	21.74	583.48	0.037	0.28	1510.43	0.000
L24	18.58 - 18.33 (24)	P30x0.6875	21.74	717.94	0.030	0.28	1850.21	0.000
L25	18.33 - 13.33 (25)	P30x0.6875	22.10	717.94	0.031	0.28	1850.21	0.000
L26	13.33 - 8.42 (26)	P30x0.6875	22.44	717.94	0.031	0.28	1850.21	0.000
L27	8.42 - 8.07 (27)	P30x1.3	22.44	1329.19	0.017	0.28	3353.90	0.000
L28	8.07 - 7.83 (28)	P30x1.2	22.46	1231.22	0.018	0.28	3117.52	0.000
L29	7.83 - 6 (29)	P30x1.2	22.64	1231.22	0.018	0.28	3117.52	0.000
L30	6 - 5.75 (30)	P30x1.15	22.64	1181.97	0.019	0.28	2998.00	0.000
L31	5.75 - 2 (31)	P30x1.15	22.91	1181.97	0.019	0.28	2998.00	0.000
L32	2 - 1.75 (32)	P30x1.6	22.91	1618.83	0.014	0.28	4042.03	0.000
L33	1.75 - 0 (33)	P30x0.875	23.04	907.90	0.025	0.28	2324.78	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	110 - 105 (1)	0.006	0.030	0.000	0.022	0.000	0.036	1.050	4.8.2
L2	105 - 100 (2)	0.006	0.087	0.000	0.023	0.000	0.094	1.050	4.8.2
L3	100 - 95 (3)	0.007	0.148	0.000	0.025	0.000	0.155	1.050	4.8.2
L4	95 - 90 (4)	0.008	0.212	0.000	0.026	0.000	0.220	1.050	4.8.2
L5	90 - 85 (5)	0.010	0.221	0.000	0.034	0.000	0.231	1.050	4.8.2
L6	85 - 80 (6)	0.010	0.308	0.000	0.035	0.000	0.319	1.050	4.8.2
L7	80 - 75 (7)	0.015	0.403	0.000	0.046	0.000	0.419	1.050	4.8.2
L8	75 - 70 (8)	0.015	0.522	0.000	0.048	0.000	0.539	1.050	4.8.2
L9	70 - 65 (9)	0.016	0.646	0.000	0.050	0.000	0.664	1.050	4.8.2
L10	65 - 60 (10)	0.020	0.792	0.000	0.060	0.000	0.816	1.050	4.8.2
L11	60 - 55 (11)	0.016	0.623	0.000	0.049	0.000	0.642	1.050	4.8.2
L12	55 - 50 (12)	0.017	0.726	0.000	0.050	0.000	0.746	1.050	4.8.2
L13	50 - 45 (13)	0.018	0.831	0.000	0.051	0.000	0.851	1.050	4.8.2
L14	45 - 40 (14)	0.019	0.937	0.000	0.051	0.000	0.958	1.050	4.8.2
L15	40 - 39.33 (15)	0.019	0.951	0.000	0.051	0.000	0.973	1.050	4.8.2
L16	39.33 - 39.08 (16)	0.014	0.712	0.000	0.040	0.000	0.728	1.050	4.8.2
L17	39.08 - 34.08 (17)	0.015	0.792	0.000	0.041	0.000	0.809	1.050	4.8.2
L18	34.08 - 30 (18)	0.016	0.859	0.000	0.041	0.000	0.877	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L19	30 - 29.75 (19)	0.018	0.839	0.000	0.040	0.000	0.859	1.050	4.8.2
L20	29.75 - 25 (20)	0.019	0.916	0.000	0.041	0.000	0.936	1.050	4.8.2
L21	25 - 24.75 (21)	0.017	0.814	0.000	0.036	0.000	0.832	1.050	4.8.2
L22	24.75 - 19.75 (22)	0.018	0.886	0.000	0.037	0.000	0.905	1.050	4.8.2
L23	19.75 - 18.58 (23)	0.018	0.903	0.000	0.037	0.000	0.923	1.050	4.8.2
L24	18.58 - 18.33 (24)	0.015	0.722	0.000	0.030	0.000	0.738	1.050	4.8.2
L25	18.33 - 13.33 (25)	0.015	0.781	0.000	0.031	0.000	0.797	1.050	4.8.2
L26	13.33 - 8.42 (26)	0.016	0.840	0.000	0.031	0.000	0.857	1.050	4.8.2
L27	8.42 - 8.07 (27)	0.009	0.465	0.000	0.017	0.000	0.474	1.050	4.8.2
L28	8.07 - 7.83 (28)	0.010	0.502	0.000	0.018	0.000	0.512	1.050	4.8.2
L29	7.83 - 6 (29)	0.010	0.515	0.000	0.018	0.000	0.526	1.050	4.8.2
L30	6 - 5.75 (30)	0.010	0.538	0.000	0.019	0.000	0.549	1.050	4.8.2
L31	5.75 - 2 (31)	0.011	0.566	0.000	0.019	0.000	0.577	1.050	4.8.2
L32	2 - 1.75 (32)	0.008	0.421	0.000	0.014	0.000	0.429	1.050	4.8.2
L33	1.75 - 0 (33)	0.014	0.750	0.000	0.025	0.000	0.765	1.050	4.8.2

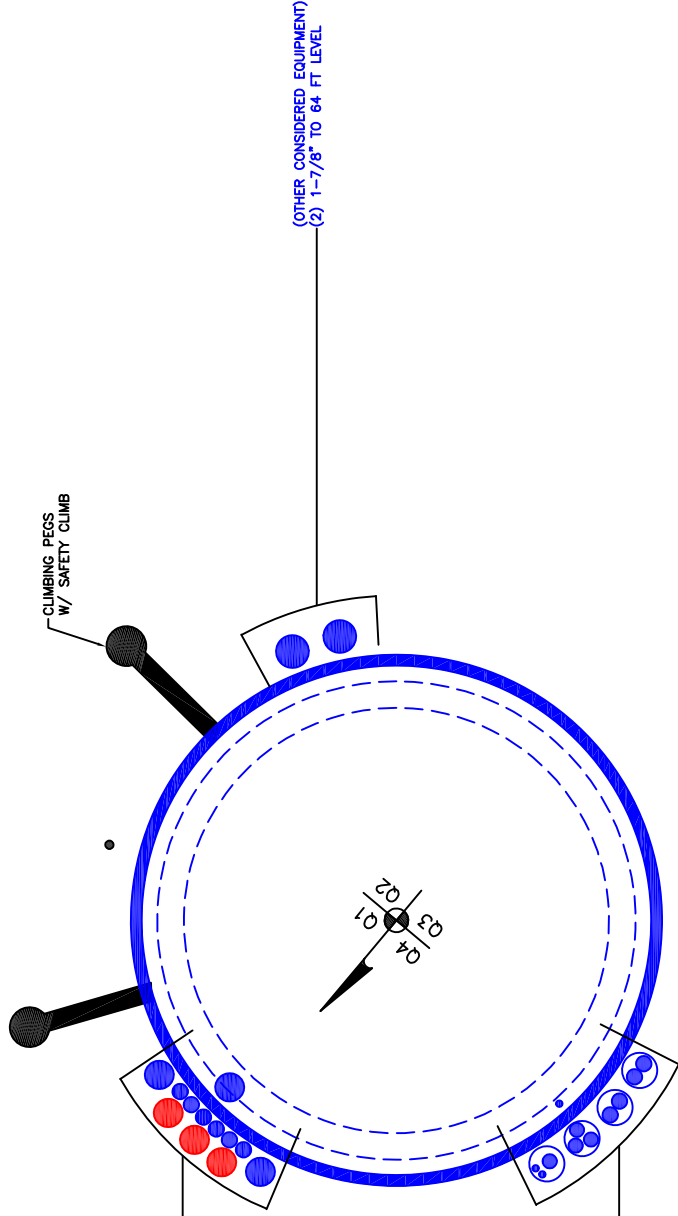
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	110 - 105	Pole	P24x0.25	1	-3.82	695.38	3.4	Pass
L2	105 - 100	Pole	P24x0.25	2	-4.23	695.38	8.9	Pass
L3	100 - 95	Pole	P24x0.25	3	-4.64	695.38	14.8	Pass
L4	95 - 90	Pole	P24x0.25	4	-5.05	695.38	21.0	Pass
L5	90 - 85	Pole	P24x0.375	5	-10.08	1104.67	22.0	Pass
L6	85 - 80	Pole	P24x0.375	6	-10.74	1104.67	30.4	Pass
L7	80 - 75	Pole	P24x0.375	7	-15.26	1104.67	39.9	Pass
L8	75 - 70	Pole	P24x0.375	8	-15.96	1104.67	51.3	Pass
L9	70 - 65	Pole	P24x0.375	9	-16.70	1104.67	63.3	Pass
L10	65 - 60	Pole	P24x0.375	10	-20.66	1104.67	77.7	Pass
L11	60 - 55	Pole	P30x0.375	11	-21.61	1376.61	61.1	Pass
L12	55 - 50	Pole	P30x0.375	12	-22.57	1376.61	71.0	Pass
L13	50 - 45	Pole	P30x0.375	13	-23.55	1376.61	81.1	Pass
L14	45 - 40	Pole	P30x0.375	14	-24.54	1376.61	91.3	Pass
L15	40 - 39.33	Pole	P30x0.375	15	-24.68	1376.61	92.6	Pass
L16	39.33 - 39.08	Pole	P30x0.4875	16	-24.74	1793.96	69.3	Pass
L17	39.08 - 34.08	Pole	P30x0.4875	17	-25.89	1793.96	77.1	Pass
L18	34.08 - 30	Pole	P30x0.4875	18	-26.85	1793.96	83.5	Pass
L19	30 - 29.75	Pole	P30x0.5	19	-31.78	1839.18	81.8	Pass
L20	29.75 - 25	Pole	P30x0.5	20	-32.95	1839.18	89.2	Pass
L21	25 - 24.75	Pole	P30x0.55625	21	-33.04	2042.18	79.2	Pass
L22	24.75 - 19.75	Pole	P30x0.55625	22	-34.64	2042.18	86.2	Pass
L23	19.75 - 18.58	Pole	P30x0.55625	23	-35.02	2042.18	87.9	Pass
L24	18.58 - 18.33	Pole	P30x0.6875	24	-35.13	2512.80	70.3	Pass
L25	18.33 - 13.33	Pole	P30x0.6875	25	-37.07	2512.80	75.9	Pass
L26	13.33 - 8.42	Pole	P30x0.6875	26	-38.99	2512.80	81.6	Pass
L27	8.42 - 8.07	Pole	P30x1.3	27	-39.18	4652.17	45.2	Pass
L28	8.07 - 7.83	Pole	P30x1.2	28	-39.30	4309.28	48.8	Pass
L29	7.83 - 6	Pole	P30x1.2	29	-40.20	4309.28	50.1	Pass
L30	6 - 5.75	Pole	P30x1.15	30	-40.31	4136.89	52.2	Pass
L31	5.75 - 2	Pole	P30x1.15	31	-41.90	4136.89	55.0	Pass
L32	2 - 1.75	Pole	P30x1.6	32	-42.04	5665.90	40.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L33	1.75 - 0	Pole	P30x0.875	33	-42.65	3177.65	72.8	Pass	
							Summary		
							Pole (L15)	92.6	Pass
							RATING =	92.6	Pass

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C**

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1-5/8" TO 107 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 76 FT LEVEL
(3) 1-5/8" TO 76 FT LEVEL

(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(3) 3/8" TO 90 FT LEVEL
(4) 13/16" TO 90 FT LEVEL
(4) 7/8" TO 90 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(2) 1-7/8" TO 64 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 876325
Work Order: 2126991

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	110	20		0	24	24	0.25		A53-B-42
2	90	30		0	24.00	24	0.375		A53-B-42
3	60	30		0	30.00	30	0.375		A53-B-42
4	30	30		0	30.00	30	0.5		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	8.08	plate	MP3-05 (Bottom Weld)	4	45	135	225	315														
2	30	39.33	channel	MP3-03 (1.1875in)	3					105	225	345											
3	8.42	18.58	channel	MP3-05 (1.1875in)	3								0	90	270								
4	0	2	plate	TS 7"x1.25"	3										110	248	345						
5	6	25	plate	CCI-SFP-045100	4													70	110	250	290		
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	11.1397	1.045	Welded	n/a	PC 8.8 - M20 (100)	29.000	18.000	8.527	1.1875	A572-65
2	4.06	1.57	2.92	0.59	PC 8.8 - M20 (100)	14	PC 8.8 - M20 (100)	14.000	18.000	2.545	1.1875	A572-65
3	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
4	1.25	7	8.75	3.5	Welded	n/a	Welded	n/a	0.000	8.750	0.0000	A572-65
5	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
MP3-05 (Bottom Weld)	Top	10	N	3	2	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	None	-	-	-	-	12	0.375	-
TS 7"x1.25"	Top	-	-	-	-	80	None	-	-	-	-	18	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	12.5	0.625	45	0.625	-	-	-

TNX Geometry Input

Increment (ft): [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	110 - 105	5		0	24.000	24.000	0.25	A53-B-42	1.000
2	105 - 100	5		0	24.000	24.000	0.25	A53-B-42	1.000
3	100 - 95	5		0	24.000	24.000	0.25	A53-B-42	1.000
4	95 - 90	5	0	0	24.000	24.000	0.25	A53-B-42	1.000
5	90 - 85	5		0	24.000	24.000	0.375	A53-B-42	1.000
6	85 - 80	5		0	24.000	24.000	0.375	A53-B-42	1.000
7	80 - 75	5		0	24.000	24.000	0.375	A53-B-42	1.000
8	75 - 70	5		0	24.000	24.000	0.375	A53-B-42	1.000
9	70 - 65	5		0	24.000	24.000	0.375	A53-B-42	1.000
10	65 - 60	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
11	60 - 55	5		0	30.000	30.000	0.375	A53-B-42	1.000
12	55 - 50	5		0	30.000	30.000	0.375	A53-B-42	1.000
13	50 - 45	5		0	30.000	30.000	0.375	A53-B-42	1.000
14	45 - 40	5		0	30.000	30.000	0.375	A53-B-42	1.000
15	40 - 39.33	0.67		0	30.000	30.000	0.375	A53-B-42	1.000
16	39.33 - 39.08	0.25		0	30.000	30.000	0.4875	A53-B-42	0.966
17	39.08 - 34.08	5		0	30.000	30.000	0.4875	A53-B-42	0.966
18	34.08 - 30	4.08	0	0	30.000	30.000	0.4875	A53-B-42	0.966
19	30 - 29.75	0.25		0	30.000	30.000	0.5	A53-B-42	1.000
20	29.75 - 25	4.75		0	30.000	30.000	0.5	A53-B-42	1.000
21	25 - 24.75	0.25		0	30.000	30.000	0.55625	A53-B-42	1.250
22	24.75 - 19.75	5		0	30.000	30.000	0.55625	A53-B-42	1.250
23	19.75 - 18.58	1.17		0	30.000	30.000	0.55625	A53-B-42	1.250
24	18.58 - 18.33	0.25		0	30.000	30.000	0.6875	A53-B-42	1.284
25	18.33 - 13.33	5		0	30.000	30.000	0.6875	A53-B-42	1.284
26	13.33 - 8.42	4.91		0	30.000	30.000	0.6875	A53-B-42	1.284
27	8.42 - 8.07	0.35		0	30.000	30.000	1.3	A53-B-42	0.929
28	8.07 - 7.83	0.24		0	30.000	30.000	1.2	A53-B-42	1.003
29	7.83 - 6	1.83		0	30.000	30.000	1.2	A53-B-42	1.003
30	6 - 5.75	0.25		0	30.000	30.000	1.15	A53-B-42	0.872
31	5.75 - 2	3.75		0	30.000	30.000	1.15	A53-B-42	0.872
32	2 - 1.75	0.25		0	30.000	30.000	1.6	A53-B-42	0.821
33	1.75 - 0	1.75		0	30.000	30.000	0.875	A53-B-42	0.907

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1		110 - 105	3.82	11.75	4.38
2		105 - 100	4.23	34.41	4.68
3		100 - 95	4.64	58.54	4.97
4		95 - 90	5.05	84.12	5.25
5		90 - 85	10.08	137.62	10.70
6		85 - 80	10.74	191.93	11.00
7		80 - 75	15.26	251.06	14.64
8		75 - 70	15.96	325.33	15.22
9		70 - 65	16.70	402.91	15.81
10		65 - 60	20.66	494.16	19.08
11		60 - 55	21.61	590.34	19.41
12		55 - 50	22.57	688.15	19.72
13		50 - 45	23.55	787.42	20.00
14		45 - 40	24.54	888.01	20.25
15		40 - 39.33	24.68	901.58	20.28
16		39.33 - 39.08	24.74	906.65	20.29
17		39.08 - 34.08	25.89	1009.39	20.79
18		34.08 - 30	26.85	1094.55	20.97
19		30 - 29.75	31.78	1099.82	21.12
20		29.75 - 25	32.95	1200.47	21.28
21		25 - 24.75	33.04	1205.79	21.28
22		24.75 - 19.75	34.64	1313.08	21.65
23		19.75 - 18.58	35.02	1338.44	21.74
24		18.58 - 18.33	35.13	1343.87	21.74
25		18.33 - 13.33	37.07	1453.41	22.10
26		13.33 - 8.42	38.99	1562.64	22.44
27		8.42 - 8.07	39.18	1570.49	22.44
28		8.07 - 7.83	39.30	1575.88	22.46
29		7.83 - 6	40.20	1617.12	22.64
30		6 - 5.75	40.31	1622.78	22.64
31		5.75 - 2	41.90	1708.15	22.91
32		2 - 1.75	42.04	1713.88	22.91
33		1.75 - 0	42.65	1754.05	23.04

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
110 - 105	Pole	TP24x24x0.25	Pole	3.4%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	8.9%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	14.8%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	21.0%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	22.0%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	30.4%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	39.9%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	51.3%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	63.3%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	77.7%	Pass
60 - 55	Pole	TP30x30x0.375	Pole	61.1%	Pass
55 - 50	Pole	TP30x30x0.375	Pole	71.0%	Pass
50 - 45	Pole	TP30x30x0.375	Pole	81.1%	Pass
45 - 40	Pole	TP30x30x0.375	Pole	91.3%	Pass
40 - 39.33	Pole	TP30x30x0.375	Pole	92.6%	Pass
39.33 - 39.08	Pole + Reinf.	TP30x30x0.4875	Pole	72.7%	Pass
39.08 - 34.08	Pole + Reinf.	TP30x30x0.4875	Pole	80.8%	Pass
34.08 - 30	Pole + Reinf.	TP30x30x0.4875	Pole	87.6%	Pass
30 - 29.75	Pole	TP30x30x0.5	Pole	81.8%	Pass
29.75 - 25	Pole	TP30x30x0.5	Pole	89.1%	Pass
25 - 24.75	Pole + Reinf.	TP30x30x0.5563	Pole	80.5%	Pass
24.75 - 19.75	Pole + Reinf.	TP30x30x0.5563	Pole	87.6%	Pass
19.75 - 18.58	Pole + Reinf.	TP30x30x0.5563	Pole	89.3%	Pass
18.58 - 18.33	Pole + Reinf.	TP30x30x0.6875	Pole	77.6%	Pass
18.33 - 13.33	Pole + Reinf.	TP30x30x0.6875	Pole	83.8%	Pass
13.33 - 8.42	Pole + Reinf.	TP30x30x0.6875	Pole	90.1%	Pass
8.42 - 8.07	Pole + Reinf.	TP30x30x1.3	Reinf. 1 Bolt Shear	61.6%	Pass
8.07 - 7.83	Pole + Reinf.	TP30x30x1.2	Pole	51.5%	Pass
7.83 - 6	Pole + Reinf.	TP30x30x1.2	Pole	52.9%	Pass
6 - 5.75	Pole + Reinf.	TP30x30x1.15	Reinf. 1 Tension Rupture	60.7%	Pass
5.75 - 2	Pole + Reinf.	TP30x30x1.15	Reinf. 1 Tension Rupture	63.9%	Pass
2 - 1.75	Pole + Reinf.	TP30x30x1.6	Reinf. 4 Weldment	62.7%	Pass
1.75 - 0	Pole + Reinf.	TP30x30x0.875	Pole	80.6%	Pass
				Summary	
			Pole	92.6%	Pass
			Reinforcement	81.7%	Pass
			Overall	92.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity* (100% Max. Allowable)					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
110 - 105	1315	n/a	1315	18.65	n/a	18.65	3.4%					
105 - 100	1315	n/a	1315	18.65	n/a	18.65	8.9%					
100 - 95	1315	n/a	1315	18.65	n/a	18.65	14.8%					
95 - 90	1315	n/a	1315	18.65	n/a	18.65	21.0%					
90 - 85	1942	n/a	1942	27.83	n/a	27.83	22.0%					
85 - 80	1942	n/a	1942	27.83	n/a	27.83	30.4%					
80 - 75	1942	n/a	1942	27.83	n/a	27.83	39.9%					
75 - 70	1942	n/a	1942	27.83	n/a	27.83	51.3%					
70 - 65	1942	n/a	1942	27.83	n/a	27.83	63.3%					
65 - 60	1942	n/a	1942	27.83	n/a	27.83	77.7%					
60 - 55	3829	n/a	3829	34.90	n/a	34.90	61.1%					
55 - 50	3829	n/a	3829	34.90	n/a	34.90	71.0%					
50 - 45	3829	n/a	3829	34.90	n/a	34.90	81.1%					
45 - 40	3829	n/a	3829	34.90	n/a	34.90	91.3%					
40 - 39.33	3829	n/a	3829	34.90	n/a	34.90	92.6%					
39.33 - 39.08	3829	1067	4897	34.90	8.76	43.66	72.7%		67.8%			
39.08 - 34.08	3829	1067	4897	34.90	8.76	43.66	80.8%		75.4%			
34.08 - 30	3829	1067	4897	34.90	8.76	43.66	87.6%		81.7%			
30 - 29.75	5042	n/a	5042	46.34	n/a	46.34	81.8%					
29.75 - 25	5042	n/a	5042	46.34	n/a	46.34	89.1%					
25 - 24.75	5042	533	5575	46.34	18.00	64.34	80.5%					63.1%
24.75 - 19.75	5042	533	5575	46.34	18.00	64.34	87.6%					68.7%
19.75 - 18.58	5042	533	5575	46.34	18.00	64.34	89.3%					70.0%
18.58 - 18.33	5098	1801	6899	46.34	34.95	81.29	77.6%			64.1%		57.9%
18.33 - 13.33	5098	1801	6899	46.34	34.95	81.29	83.8%			69.3%		62.6%
13.33 - 8.42	5098	1801	6899	46.34	34.95	81.29	90.1%			74.5%		67.3%
8.42 - 8.07	5042	7152	12194	46.34	62.56	108.90	47.9%	61.6%				46.4%
8.07 - 7.83	5042	6329	11372	46.34	62.56	108.90	51.5%	50.6%				46.6%
7.83 - 6	5042	6329	11372	46.34	62.56	108.90	52.9%	51.9%				47.8%
6 - 5.75	5042	5797	10839	46.34	44.56	90.90	55.8%	60.7%				
5.75 - 2	5042	5797	10839	46.34	44.56	90.90	58.7%	63.9%				
2 - 1.75	5049	9515	14564	46.34	70.81	117.15	45.1%	47.9%			62.7%	
1.75 - 0	5049	3377	8426	46.34	26.25	72.59	80.6%				72.1%	

Note: Section capacity checked using 5 degree increments.

*Rating per TIA-222-H Section 15.5.

Monopole Flange Plate Connection

Elevation = 90 ft.

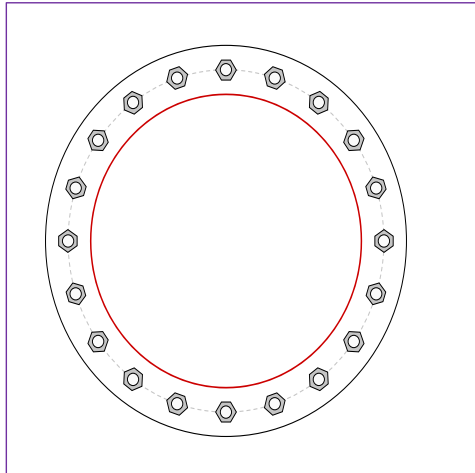


BU #	876325
Site Name	WESTON SQUARE
Order #	619011 Rev. 0
TIA-222 Revision	
	H

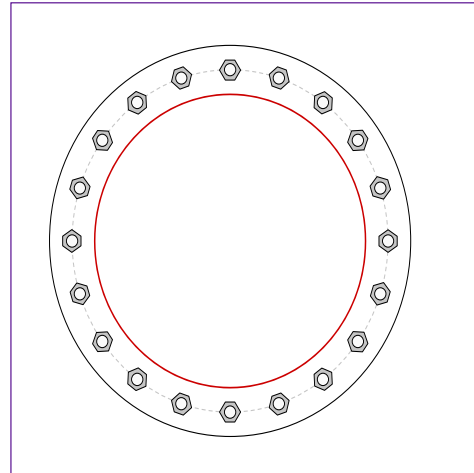
Applied Loads	
Moment (kip-ft)	84.12
Axial Force (kips)	5.05
Shear Force (kips)	5.25

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(20) 1" \varnothing bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 28" BC

Top Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

24" x 0.25" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

32" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	6.95
Allowable (kips)	54.54
Stress Rating:	12.1% Pass

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	Rohn OK
Tension Side Stress Rating:	Rohn OK

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	Rohn OK
Tension Side Stress Rating:	Rohn OK

Monopole Flange Plate Connection

Elevation = 60 ft.

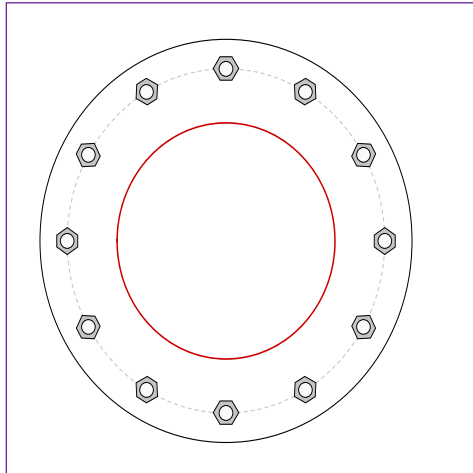


BU #	876325
Site Name	WESTON SQUARE
Order #	619011 Rev. 0
TIA-222 Revision	
	H

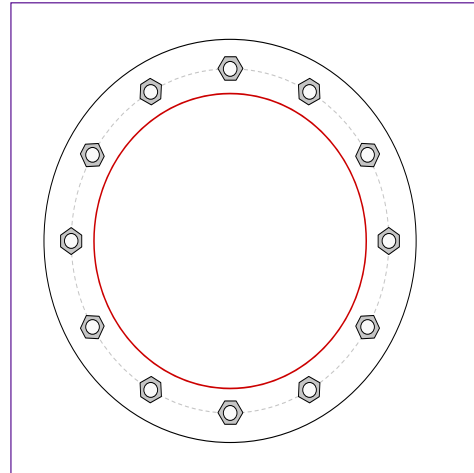
Applied Loads	
Moment (kip-ft)	494.16
Axial Force (kips)	20.66
Shear Force (kips)	19.08

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1-1/2" \varnothing bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 35" BC

Top Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	54.71
Allowable (kips)	126.87
Stress Rating:	41.1% Pass

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	Rohn OK
Tension Side Stress Rating:	Rohn OK

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	Rohn OK
Tension Side Stress Rating:	Rohn OK

Monopole Flange Plate Connection

Elevation = 30 ft.



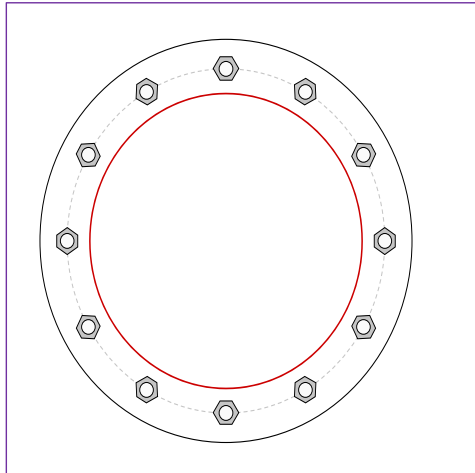
BU #	876325
Site Name	WESTON SQUARE
Order #	619011 Rev. 0

TIA-222 Revision	H
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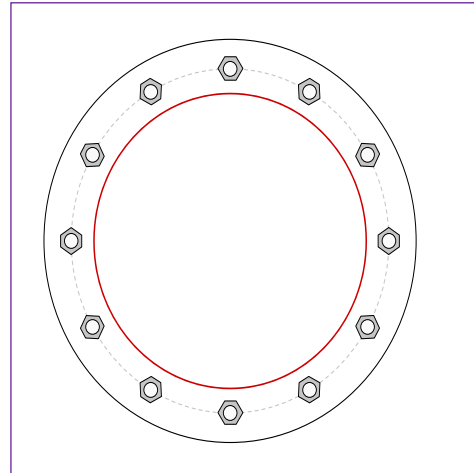
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	242.21	Moment (kip-ft)	852.33
Axial Force (kips)	26.85	Axial Force (kips)	0.00
Shear Force (kips)	20.97	Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1-1/2" ϕ bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 35" BC

Top Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 1 Data

(3) Welded, 5"x1.25", A572-65, Lu=4.125", Upper Plate Width=11", Lower Plate Width=11", Neglect Flange in MOI: No

Bottom Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

30" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 2 Data

(3) Bolted, 6.25"x1", A572-65, Lu=20", Neglect Flange in MOI: No

Analysis Results

Bolt Capacity

Max Load (kips)	25.42
Allowable (kips)	126.87
Stress Rating:	19.1% Pass

Top Plate Capacity

Max Stress (ksi):	6.12	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	18.0%	Pass
Tension Side Stress Rating:	5.7%	Pass

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	164.77	
Max Tension (kip):	164.77	
Comp. Capacity (kip):	361.11	
Tens. Capacity (kip):	365.63	(Yield)
Comp. Stress Rating:	43.5%	Pass
Tens. Stress Rating:	42.9%	Pass

Bottom Plate Capacity

Max Stress (ksi):	6.12	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	18.0%	Pass
Tension Side Stress Rating:	5.7%	Pass

Bridge Stiffener Group 2 Analysis Capacity

Max Compression (kip):	143.74	
Max Tension (kip):	143.74	
Comp. Capacity (kip):	231.68	
Tens. Capacity (kip):	300.00	(Rupture)
Comp. Stress Rating:	59.1%	Pass
Tens. Stress Rating:	45.6%	Pass

Welded Bridge Stiffener Design

Elevation = 30 ft.

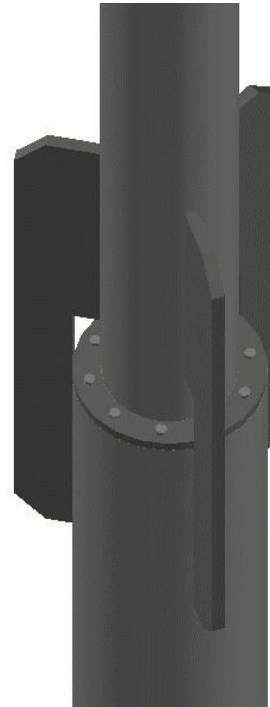
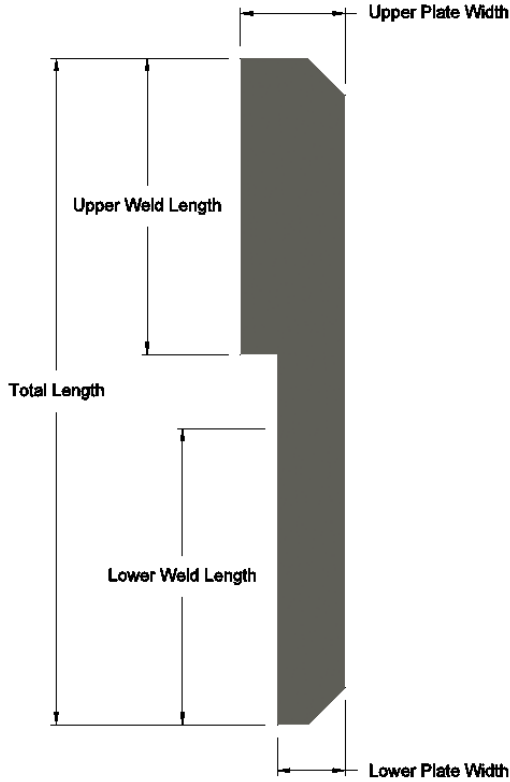


BU #	876325
Site Name	WESTON SQUARE
Order #	619011 Rev. 0

TIA-222 Revision	H
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Applied Loads to Design Groups	
Moment (kip-ft)	484.01
Axial Force (kips)	0.00
Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied



Design Properties

Bridge Stiffener Group 1 Data

(3) Welded, 5"x1.25", A572-65, Lu=4.125", Upper Plate Width=11", Lower Plate Width=11", Neglect Flange in MOI: No

Total Length:	72 in	Upper Weld Size:	Good
Weld Type:	Fillet (both sides)	Upper Weld Rating:	29.24%
Weld Size:	0.375 in	Lower Weld Size:	Good
Exx:	80 ksi	Lower Weld Rating:	31.15%
Upper Weld Length:	34.75 in	Top Plate Lateral-Torsional Buckling Rating:	6.62%
Upper Plate Width:	11 in	Top Plate Tension Yield Rating:	9.26%
Lower Weld Length:	33.125 in	Top Plate Tension Rupture Rating:	10.04%
Lower Plate Width:	11 in	Top Plate Interaction Rating:	7.67%
Stiffener Front EPA (No Ice):	6.74 ft ²	Bottom Plate Lateral-Torsional Buckling Rating:	7.24%
Stiffener Side EPA (No Ice):	1.25 ft ²	Bottom Plate Tension Yield Rating:	9.72%
Stiffener Front EPA (1/2" Ice):	7.13 ft ²	Bottom Plate Tension Rupture Rating:	10.53%
Stiffener Side EPA (1/2" Ice):	2.28 ft ²	Bottom Plate Interaction Rating:	8.41%
Stiffener Weight (No Ice):	0.249 kip	Top Pole Punching Shear Rating:	23.38%
Stiffener Weight (1/2" Ice):	0.275 kip	Bottom Pole Punching Shear Rating:	19.30%

Monopole Base Plate Connection

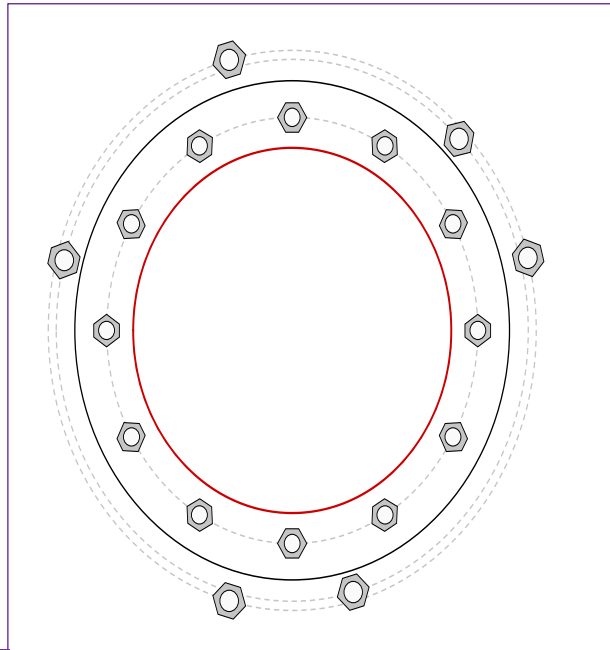


Site Info	
BU #	876325
Site Name	WESTON SQUARE
Order #	619011 Rev. 0

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

Applied Loads	
Moment (kip-ft)	1754.05
Axial Force (kips)	42.65
Shear Force (kips)	23.04

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data

GROUP 1: (12) 1-1/2" ϕ bolts (A354-BC N; $F_y=109$ ksi, $F_u=125$ ksi) on 35" BC
 GROUP 2: (3) 1-3/4" ϕ bolts (A722 N; $F_y=120$ ksi, $F_u=125$ ksi) on 44.5" BC
 GROUP 3: (3) 1-3/4" ϕ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 46" BC
pos. (deg): 15, 105, 255

Base Plate Data

41" OD x 2" Plate (A36; $F_y=36$ ksi, $F_u=58$ ksi)

Stiffener Data

N/A

Pole Data

30" x 0.5" round pole (A53-B-42; $F_y=42$ ksi, $F_u=63$ ksi)

Anchor Rod Summary

(units of kips, kip-in)

GROUP	$P_{u,t}$	$\phi P_{n,t}$	Stress Rating
GROUP 1:	$P_{u,t} = 92.93$ $V_u = 1.92$ $M_u = n/a$	$\phi P_{n,t} = 132.19$ $\phi V_n = 82.83$ $\phi M_n = n/a$	67.0% Pass
GROUP 2:	$P_{u,t} = 225.69$ $V_u = 0$ $M_u = 0$	$\phi P_{n,t} = 243.75$ $\phi V_n = 121.88$ $\phi M_n = 108.42$	88.2% Pass
GROUP 3:	$P_{u,t} = 155.97$ $V_u = 0$ $M_u = n/a$	$\phi P_{n,t} = 178.13$ $\phi V_n = 112.75$ $\phi M_n = n/a$	83.4% Pass

Base Plate Summary

Max Stress (ksi):	20.53	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	60.3%	Pass

CClplate

Elevation (ft) 0 (Base)

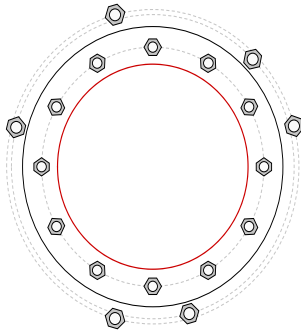
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η :	I_{br} (in):	Thread Type	Area Override, in ²	Tension Only
1	1	0	1.5	A354-BC	35	0.5	0.75	N-Included		No
2	1	30	1.5	A354-BC	35	0.5	0.75	N-Included		No
3	1	60	1.5	A354-BC	35	0.5	0.75	N-Included		No
4	1	90	1.5	A354-BC	35	0.5	0.75	N-Included		No
5	1	120	1.5	A354-BC	35	0.5	0.75	N-Included		No
6	1	150	1.5	A354-BC	35	0.5	0.75	N-Included		No
7	1	180	1.5	A354-BC	35	0.5	0.75	N-Included		No
8	1	210	1.5	A354-BC	35	0.5	0.75	N-Included		No
9	1	240	1.5	A354-BC	35	0.5	0.75	N-Included		No
10	1	270	1.5	A354-BC	35	0.5	0.75	N-Included		No
11	1	300	1.5	A354-BC	35	0.5	0.75	N-Included		No
12	1	330	1.5	A354-BC	35	0.5	0.75	N-Included		No
13	2	45	1.75	A722	44.5	0.5	2	N-Included	2.6	No
14	2	165	1.75	A722	44.5	0.5	2	N-Included	2.6	No
15	2	285	1.75	A722	44.5	0.5	2	N-Included	2.6	No
16	3	15	1.75	A193 Gr. B7	46	0.5	1	N-Included		No
17	3	105	1.75	A193 Gr. B7	46	0.5	1	N-Included		No
18	3	255	1.75	A193 Gr. B7	46	0.5	1	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # : 876325
Site Name: WESTON SQUARE
Order Number: 679011 Rev. 0
TIA-222 Revision: H
Tower Type: Monopole



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
	N/A
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input checked="" type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Lateral Check			Analysis Results	
	Compression	Uplift		
D ₁₋₃ (ft from TOC)	8.81	-		
Soil Safety Factor	5.81	-		
Max Moment (kip-ft)	1924.97	-		
Rating*	21.8%	-		

Soil Vertical Check			Analysis Results	
	Compression	Uplift		
Skin Friction (kips)	395.02	-		
End Bearing (kips)	175.72	-		
Weight of Concrete (kips)	100.17	-		
Total Capacity (kips)	570.73	-		
Axial (kips)	142.84	-		
Rating*	23.8%	-		

Reinforced Concrete Flexure			Analysis Results	
	Compression	Uplift		
Critical Depth (ft from TOC)	8.48	-		
Critical Moment (kip-ft)	1924.67	-		
Critical Moment Capacity	2189.18	-		
Rating*	83.7%	-		

Reinforced Concrete Shear			Analysis Results	
	Compression	Uplift		
Critical Depth (ft from TOC)	23.10	-		
Critical Shear (kip)	167.23	-		
Critical Shear Capacity	1008.00	-		
Rating*	15.8%	-		

Structural Foundation Rating*			Analysis Results	
	Compression	Uplift		
Soil interaction Rating*	83.7%	-		
	23.8%	-		

*Rating per TIA-222-H Section 15.5

Applied Loads			Analysis Results	
	Compression	Uplift		
Moment (kip-ft)	1754.05	-		
Axial Force (kips)	42.67	-		
Shear Force (kips)	23	-		

Material Properties			Analysis Results	
	Compression	Uplift		
Concrete Strength, f' _c	3 ksi	-		
Rebar Strength, F _y	60 ksi	-		
Tie Yield Strength, F _t	60 ksi	-		

Pier Design Data			Analysis Results	
	Compression	Uplift		
Depth	37 ft	-		
Ext. Above Grade	0.5 ft	-		
Pier Section 1				
<i>From 0.5' above grade to 24.67' below grade</i>				
Pier Diameter	5 ft	-		
Rebar Quantity	16	-		
Rebar Size	9	-		
Clear Cover to Ties	3 in	-		
Tie Size	4	-		
Tie Spacing	12 in	-		

Pier Design Data			Analysis Results	
	Compression	Uplift		
Rebar Quantity	3	-		
Rebar Size	10	-		
Rebar Cage Diameter	44.5 in	-		
Pier Section 2				
<i>From 24.67' below grade to 37' below grade</i>				
Pier Diameter	5 ft	-		
Rebar Quantity	16	-		
Rebar Size	9	-		
Clear Cover to Ties	3 in	-		
Tie Size	4	-		
Tie Spacing	12 in	-		

Rebar & Pier Options			Analysis Results	
	Compression	Uplift		
Rebar 4, F _y Override (ksi)	-	-		
Embedded Pole Inputs	-	-		
Belled Pier Inputs	-	-		

*Rating per TIA-222-H Section 15.5

Soil Profile									
Groundwater Depth	15	# of Layers		8					

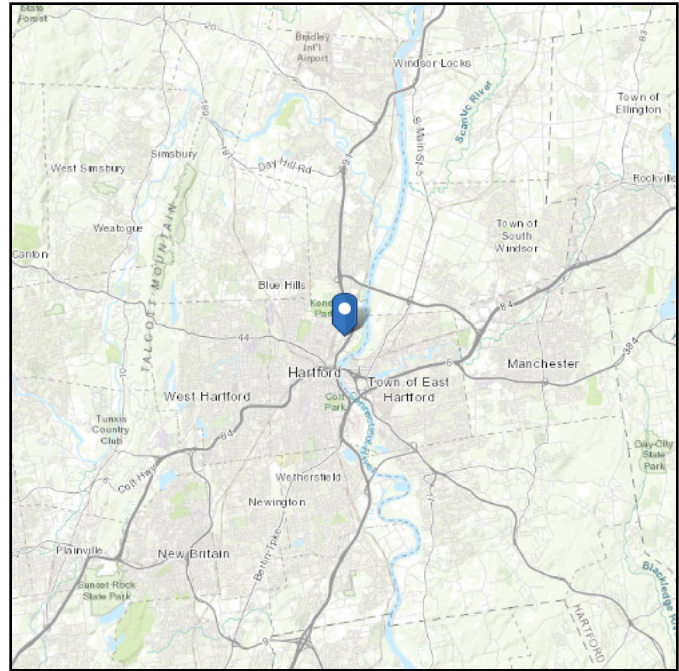
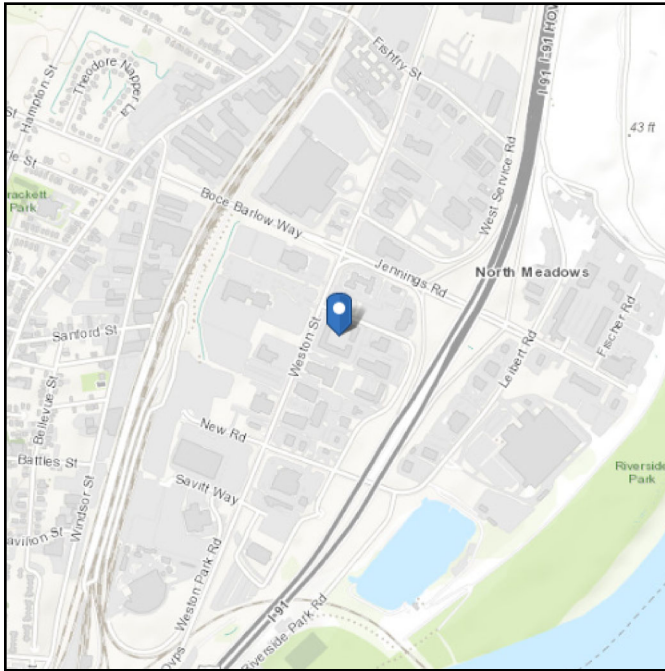
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	V _{soil} (pcf)	V _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	3.33	1.33	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	3.33	6	2.67	110	150	0	30	0.000	0.000	0.00	0.00			Cohesionless
4	6	13	7	110	150	0.75	0	0.413	0.413	0.40	0.40			Cohesive
5	13	15	2	105	150	0	30	0.000	0.000	1.70	1.70			Cohesionless
6	15	28	13	52.6	87.6	0	32	0.000	0.000	1.70	1.70			Cohesionless
7	28	33	5	37.6	87.6	0.75	0	0.41	0.41	0.39	0.39			Cohesive
8	33	37	4	57.6	87.6	1.5	0	0.83	0.83	0.79	0.79	9.17		Cohesive

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: 10.46 ft (NAVD 88)
Latitude: 41.78675
Longitude: -72.662339



Wind

Results:

Wind Speed	117 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: Fri Jun 17 2022

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

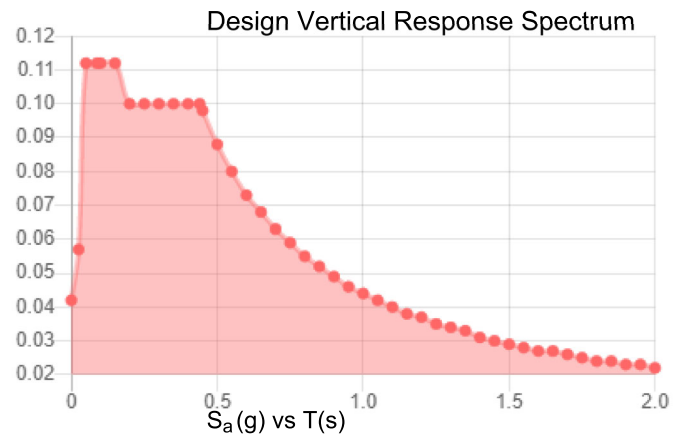
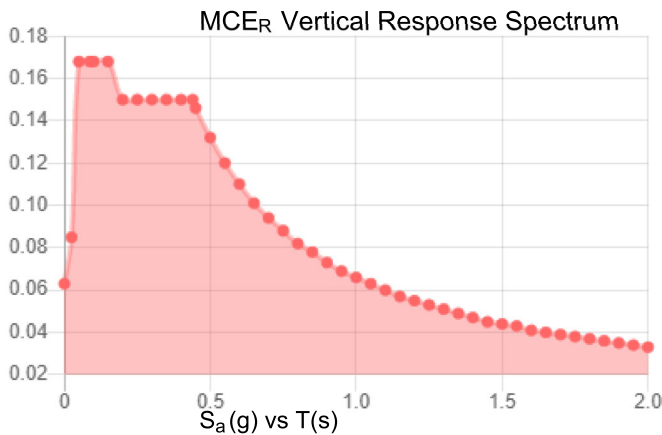
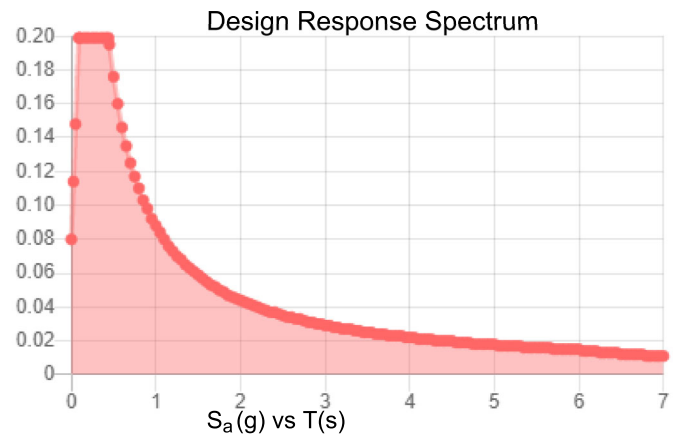
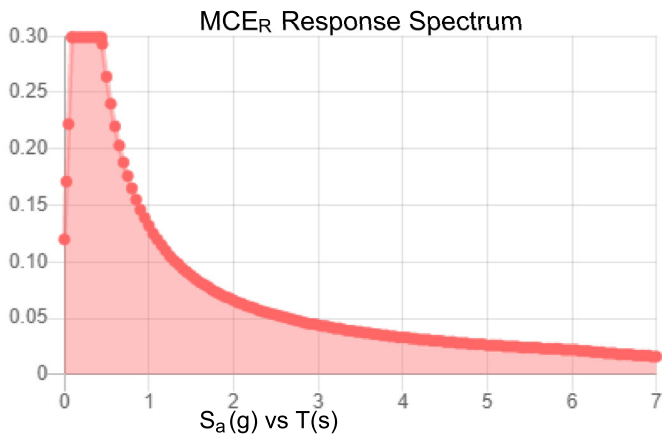
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.187	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.1
F_v :	2.4	PGA _M :	0.161
S_{MS} :	0.299	F_{PGA} :	1.599
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.199	C_v :	0.7

Seismic Design Category B



Data Accessed: Fri Jun 17 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 5 F
Gust Speed 50 mph

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

Date Accessed: Fri Jun 17 2022

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

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

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Date: **June 8, 2022**



Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject: **Mount Replacement Analysis Report**

Carrier Designation: **T-Mobile Equipment Change Out**
Carrier Site Number: CT11062B
Carrier Site Name: CT03XC064

Crown Castle Designation: **BU Number:** 876325
Site Name: WESTON SQUARE
JDE Job Number: 718794
Order Number: 619011 Rev. 0

Engineering Firm Designation: **Trylon Report Designation:** 211323

Site Data: **92 Weston Street, Hartford, Hartford County, CT, 06103-1217**
Latitude 41°47'12.30" Longitude -72°39'44.42"

Structure Information: **Tower Height & Type:** **110.0 ft Monopole**
Mount Elevation: **107.0 ft**
Mount Width & Type: **12.5 ft Platform**

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

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

Platform

Sufficient*

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

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 117 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Steve Mustaro, P.E.

Respectfully Submitted by:
Cliff Abernathy, P.E.

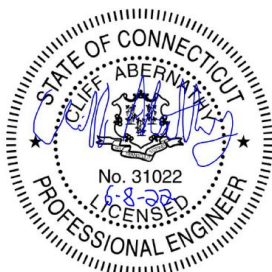


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Additional Calculations

9) APPENDIX E

Supplemental Drawings

1) INTRODUCTION

This is a proposed three sector 12.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code: 2018 CSBC
TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 117 mph
Exposure Category: C
Topographic Factor at Base: 1.0
Topographic Factor at Mount: 1.0
Ice Thickness: 1.5 in
Wind Speed with Ice: 50 mph
Seismic S_s: 0.187
Seismic S₁: 0.055
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
107.0	108.0	3	COMMSCOPE	VV-65B-R1_TMO	12.5 ft Platform [Site Pro 1 RMQP-396 w/ HRK12]
		3	ERICSSON	AIR 6419 B41_TMO	
		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
Crown Application	Click or tap here to enter text. Application	Click or tap here to enter text.	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP-396	Trylon
Mount Manufacturer Drawings	Site Pro 1	HRK12	Trylon

3.1) Analysis Method

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

A tool internally developed, using Microsoft Excel, by Tylon 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 *Tower Mount Analysis* (Revision E).

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3, 4	Mount Pipe(s)	MP5	107.0	62.0	Pass
	Horizontal(s)	H3		21.6	Pass
	Standoff(s)	M3		42.9	Pass
	Bracing(s)	M55		20.7	Pass
	Handrail(s)	M74		58.6	Pass
	Mount Connection(s)	-		34.5	Pass

Structure Rating (max from all components) =	62.0%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) See additional documentation in "Appendix D – Additional Calculations" for detailed mount connection calculations.
- 3) All sectors are typical
- 4) Rating per TIA-222-H, Section 15.5

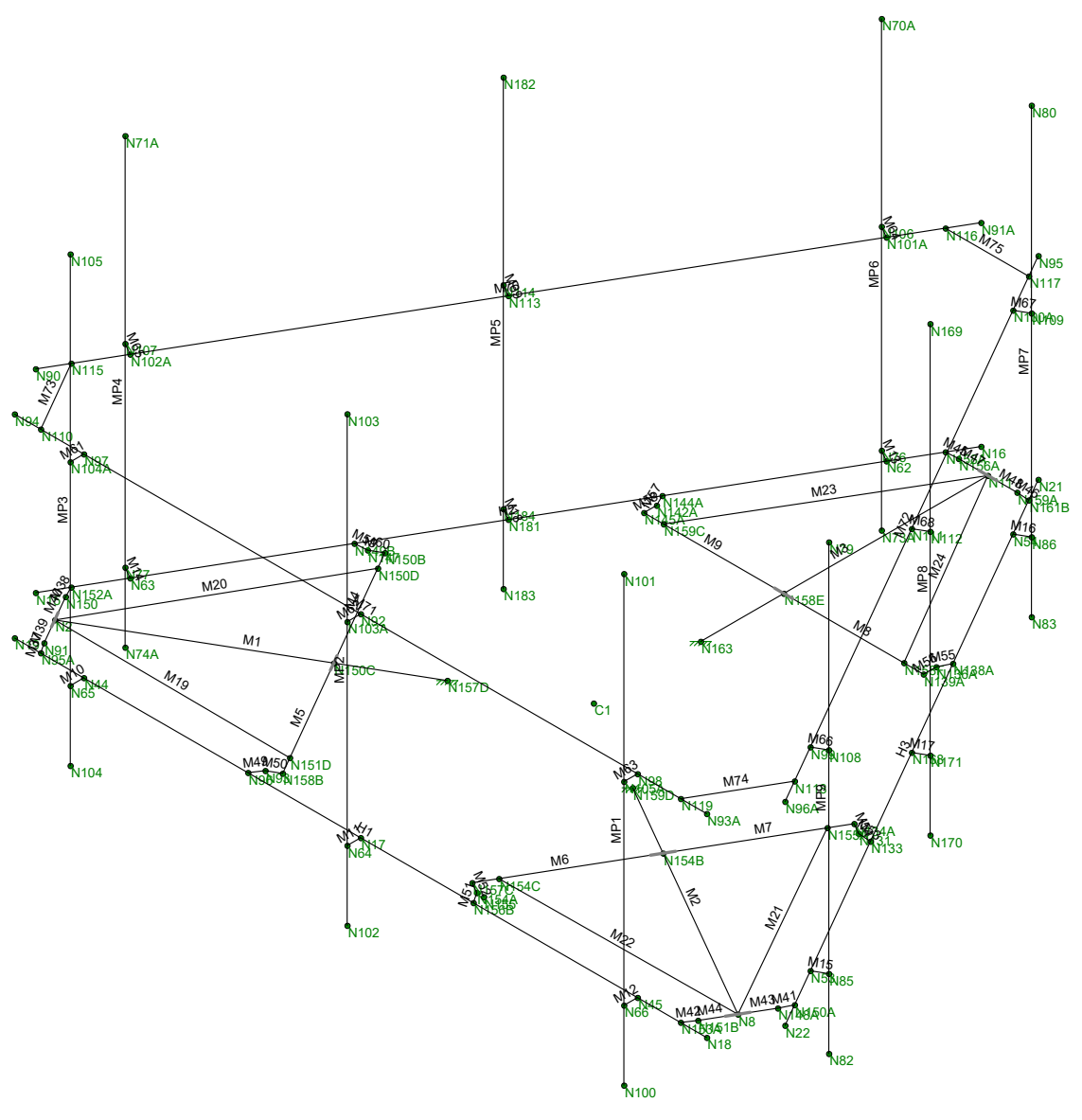
4.1) Recommendations

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

1. Site Pro 1 RMQP-396 w/ HRK12. Install handrail kit 42" above platform horizontal.

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

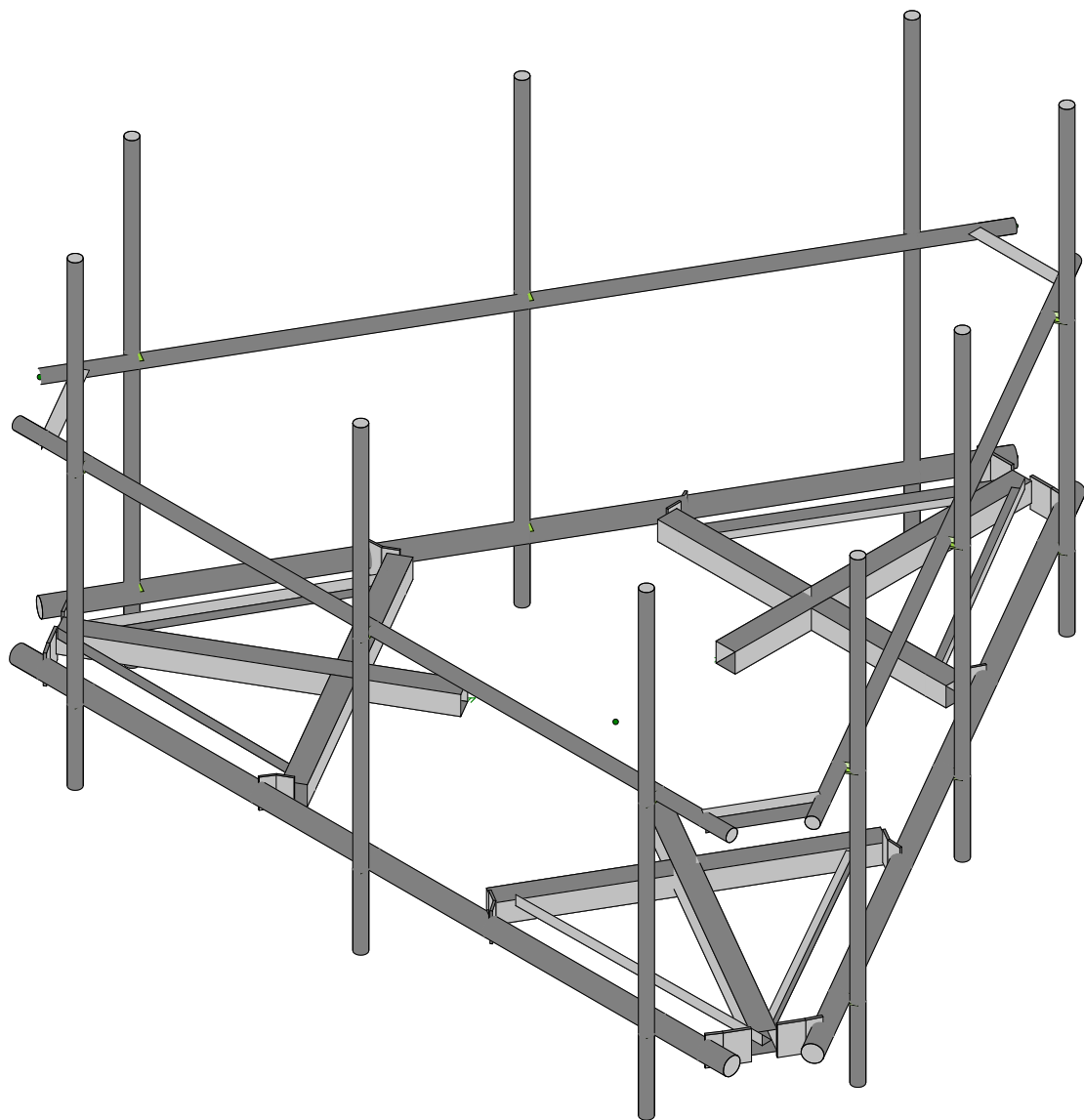
APPENDIX A
WIRE FRAME AND RENDERED MODELS



Trylon
SMM
211323

876325

Wireframe
June 8, 2022 at 1:54 PM
876325_loaded.r3d



Trylon

SMM

211323

876325

Render

June 8, 2022 at 1:54 PM

876325_loaded.r3d

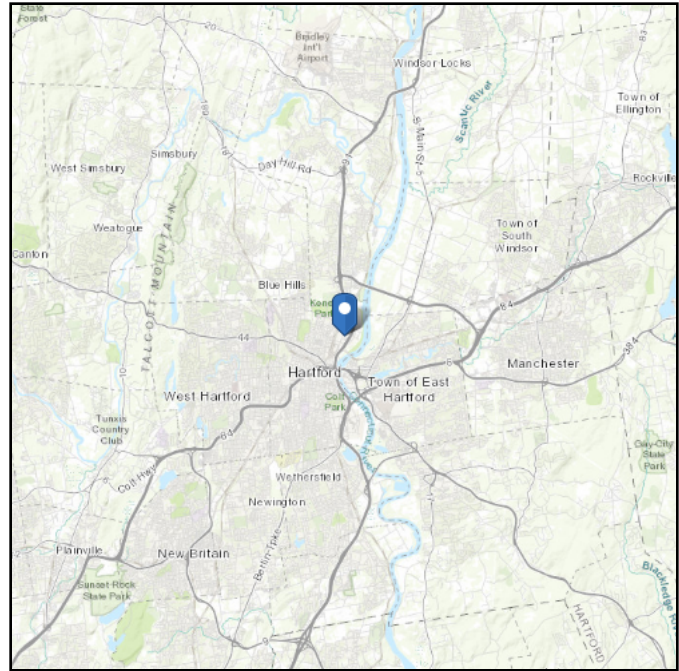
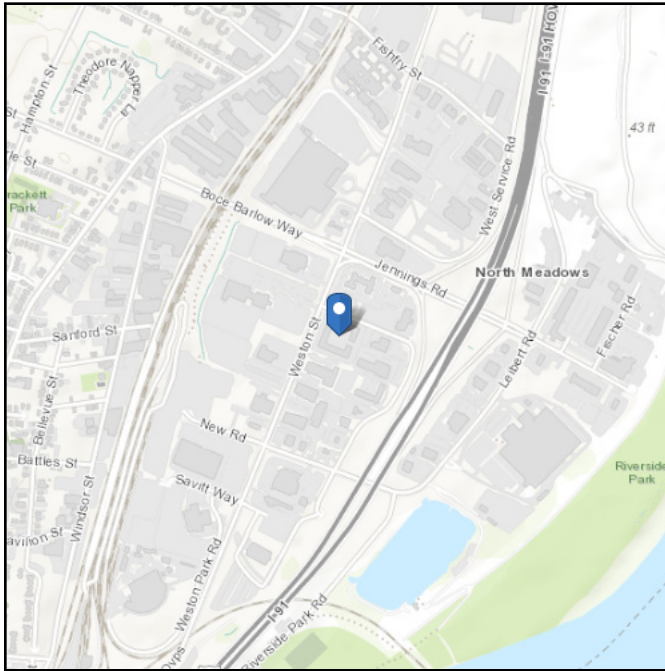
APPENDIX B
SOFTWARE INPUT CALCULATIONS

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: 10.46 ft (NAVD 88)
Latitude: 41.78675
Longitude: -72.662339



Wind

Results:

Wind Speed	117 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: Wed Jun 08 2022

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

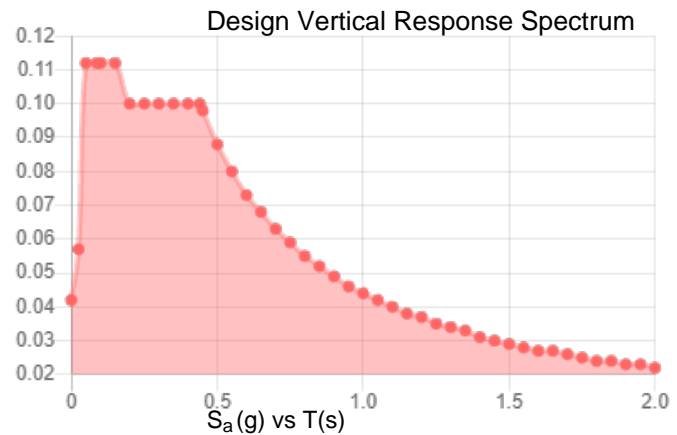
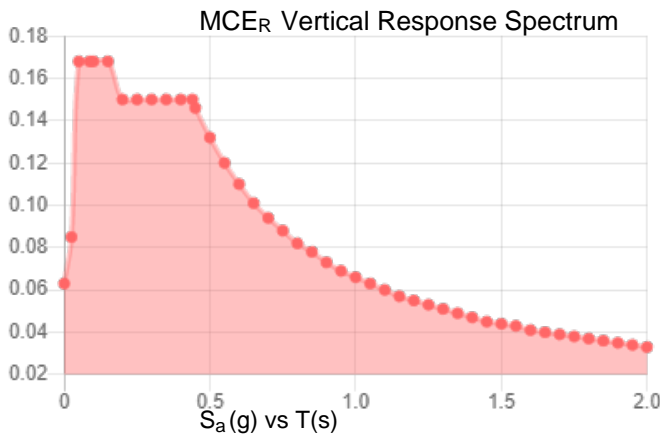
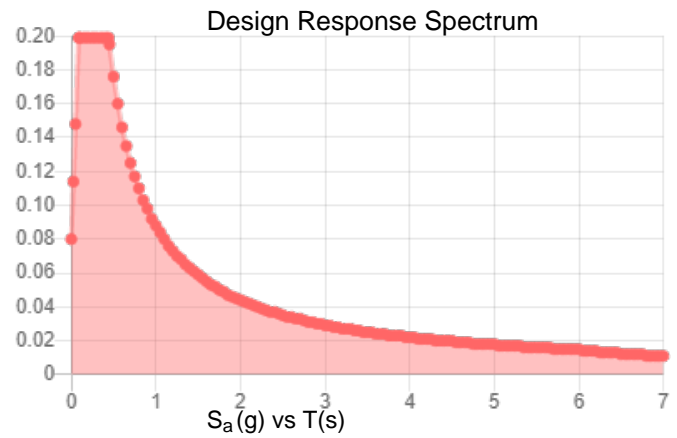
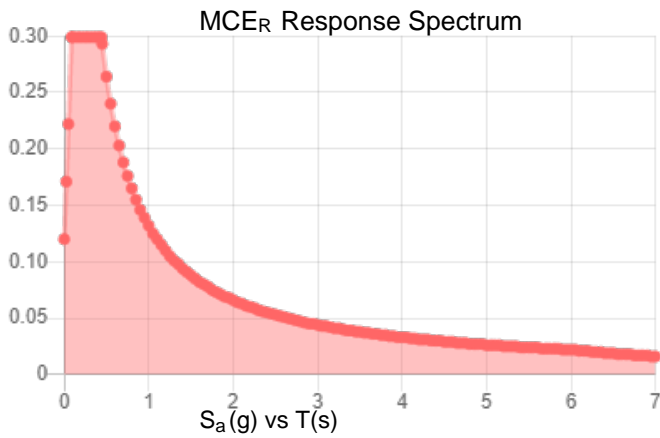
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.187	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.1
F_v :	2.4	PGA _M :	0.161
S_{MS} :	0.299	F_{PGA} :	1.599
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.199	C_v :	0.7

Seismic Design Category B



Data Accessed: Wed Jun 08 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 5 F
Gust Speed 50 mph

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

Date Accessed: Wed Jun 08 2022

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

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

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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Trylon

1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	211323
Carrier Site ID:	BU 876325
Carrier Site Name:	WESTON SQUARE

CODES AND STANDARDS	
Building Code:	2018 IBC
Local Building Code:	2018 CSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	107.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	110.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	10.46	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	117	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.28	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (G _h):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	42.72	psf
Ground Elevation Factor (K_g):	1.00	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	6.84	psf
Mount Ice Thickness (t_{iz}):	1.69	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	76.90	psf
Round Member Pressure:	46.14	psf
Ice Wind Pressure:	7.38	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel. (S_s):	0.19	g
1 Second Accel. (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.09	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (C_s):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

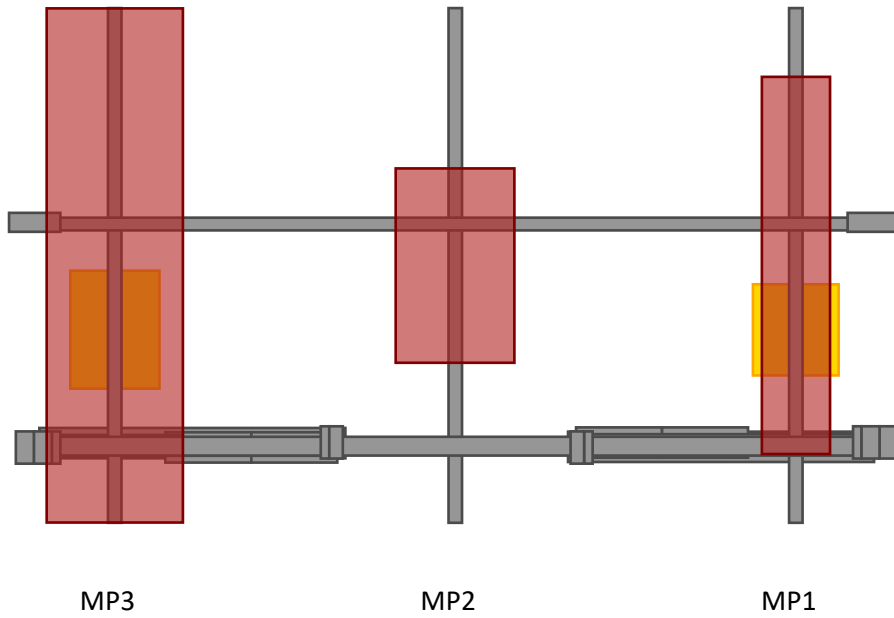
#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING [CONT.]

<i>Appurtenance Name</i>	<i>Qty.</i>	<i>Elevation [ft]</i>	<i>--</i>	<i>EPA_N (ft²)</i>	<i>EPA_T (ft²)</i>	<i>Weight (lbs)</i>
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

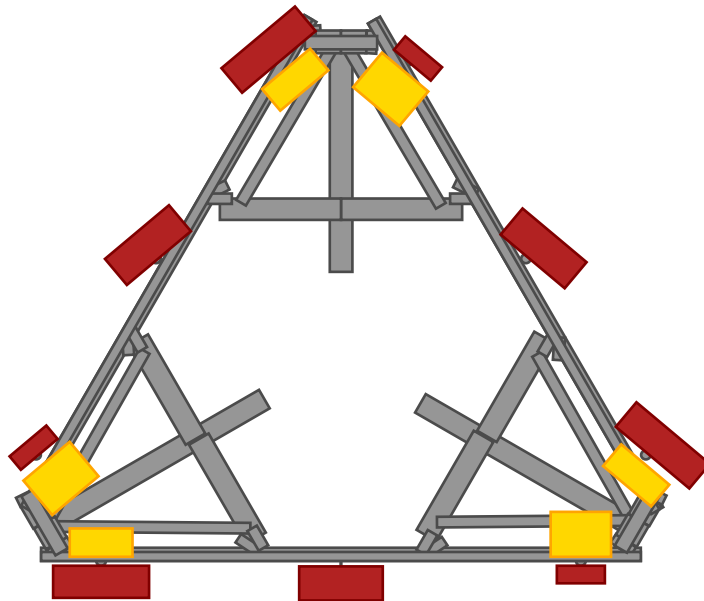
ELEVATION VIEW



*these drawings are intended to show approximate locations of equipment on the mount and should not be used to determine exact placement of equipment or additional hardware

**Elevation View Shows Only One Sector

PLAN VIEW



APPENDIX C
SOFTWARE ANALYSIS OUTPUT

APPENDIX D
ADDITIONAL CALCULATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	211323
Carrier Site ID:	BU 876325
Carrier Site Name:	WESTON SQUARE

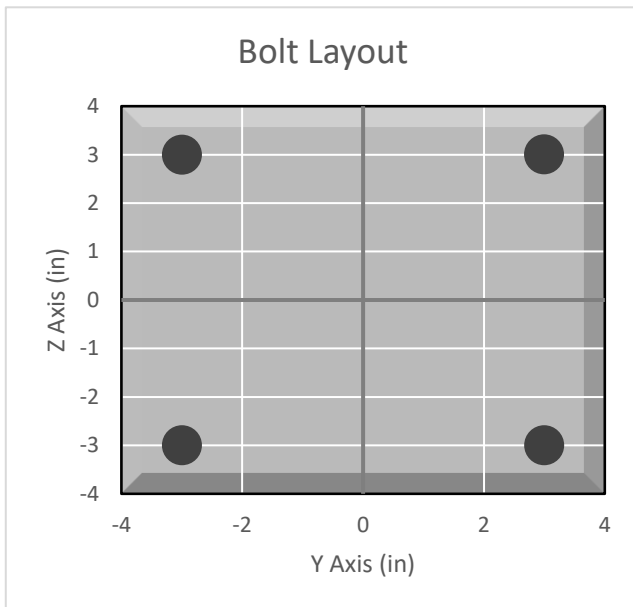
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

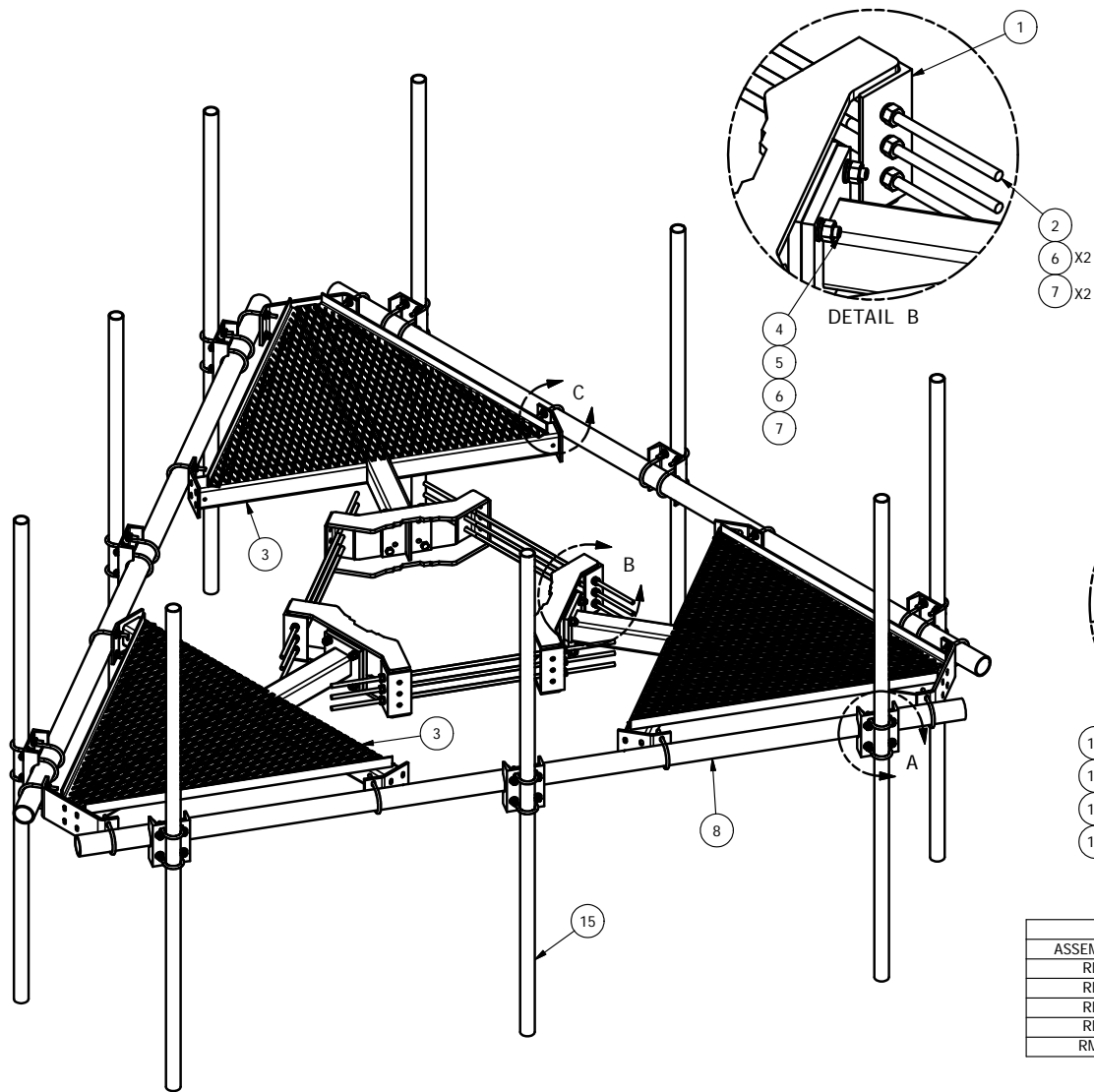
Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	7377.9	lbs
Shear Force (V_u):	852.0	lbs
Tension Usage:	34.5%	--
Shear Usage:	5.9%	--
Interaction:	34.5%	Pass
Controlling Member:	M3	--
Controlling LC:	34	--

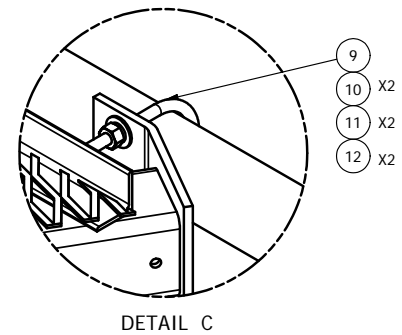
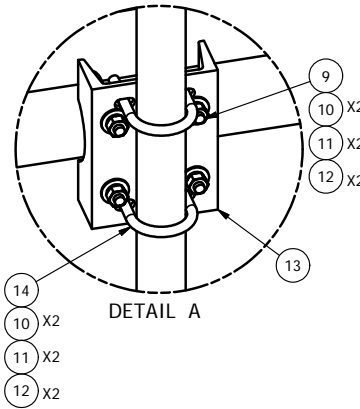
*Rating per TIA-222-H Section 15.5



APPENDIX E
SUPPLEMENTAL DRAWINGS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	30	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	7.71
10	96	G12FW	1/2" HDG USS FLATWASHER		0.03	3.27
11	96	G12LW	1/2" HDG LOCKWASHER		0.01	1.33
12	96	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	6.88
13	9	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	77.50
14	18	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	4.63
15	9	B	ANTENNA MOUNTING PIPE	C	D	E



2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-363	P263	63"	20.18	181.62	1494.37
RMQP-372	P272	72"	23.07	207.63	1520.38
RMQP-384	P284	84"	26.91	242.19	1554.94
RMQP-396	P296	96"	30.76	276.84	1589.59
RMQP-3126	P2126	126"	40.75	366.75	1679.50

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES	CEK		7/7/2015
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				

TOLERANCE NOTE
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
 LOW PROFILE CO-LOCATION PLATFORM
 FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH
 FOR 12" - 38" DIAMETER POLES

DRAWN BY
 CEK 1/19/2012

CPD NO.
 semb

DRAWING USAGE
 CUSTOMER

ENG. APPROVAL
 BMC

CHECKED BY
 1/23/2012

A valmont COMPANY

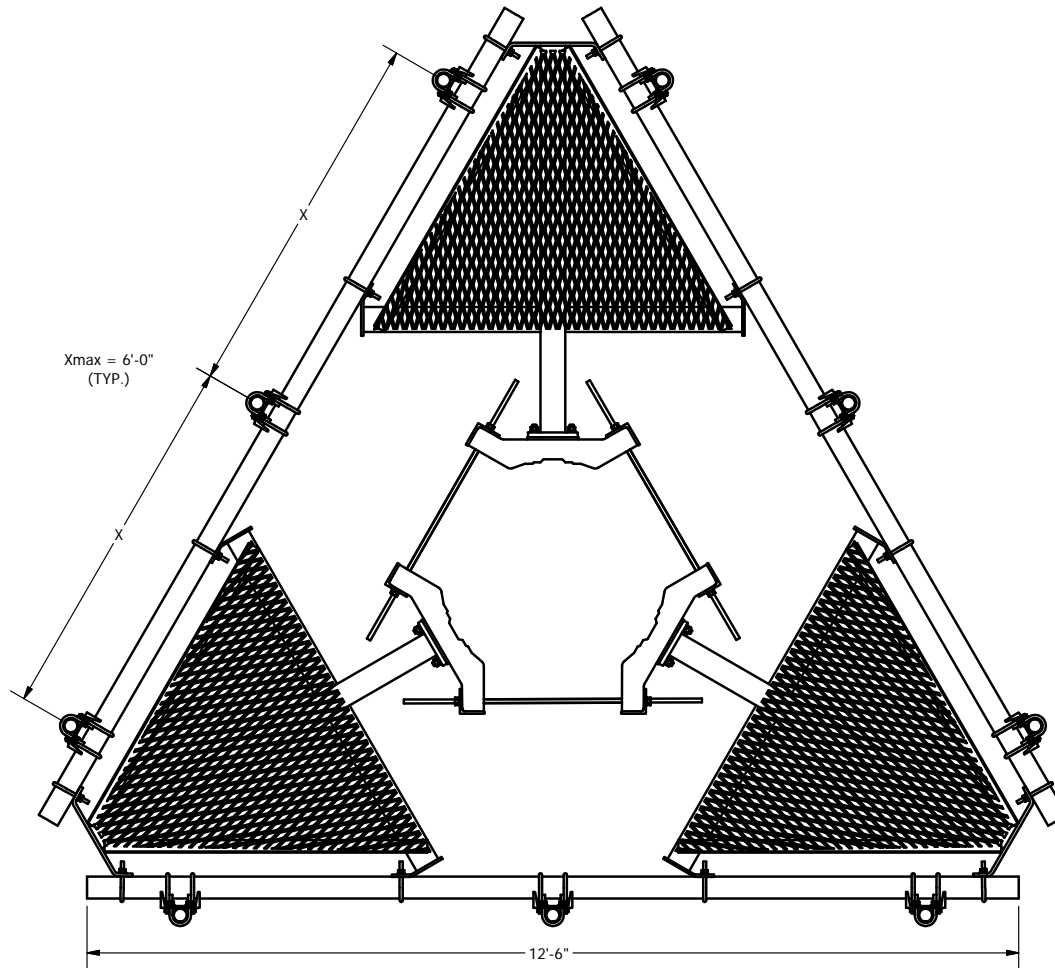
Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

Engineering Support Team:
 1-888-753-7446

PART NO. SEE ASSEMBLY NO. "A"

DWG. NO. RMQP-3XX

PAGE 1 OF 2



A	ADDED 10' 6" ANTENNA MOUNTING PIPES	CEK	7/7/2015
REV	DESCRIPTION OF REVISIONS	CPD	BY DATE
REVISION HISTORY			

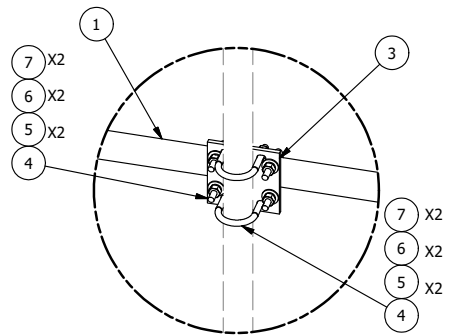
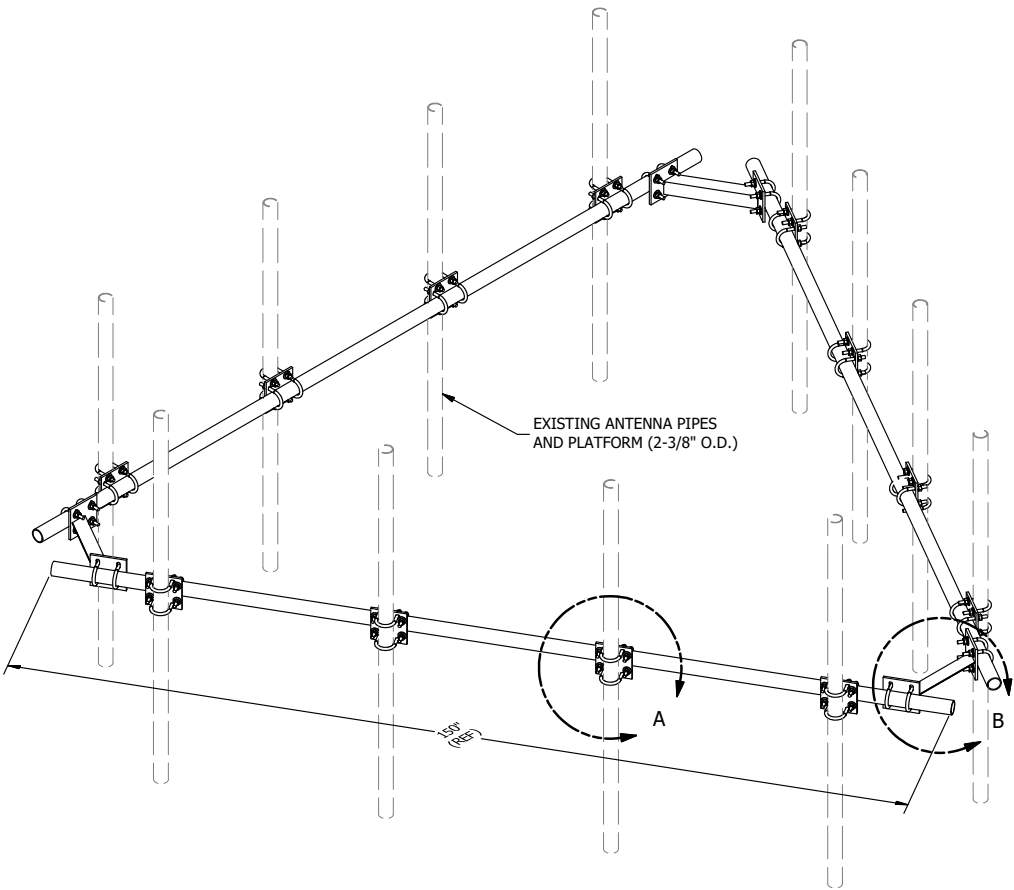
TOLERANCE NOTE
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
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 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE
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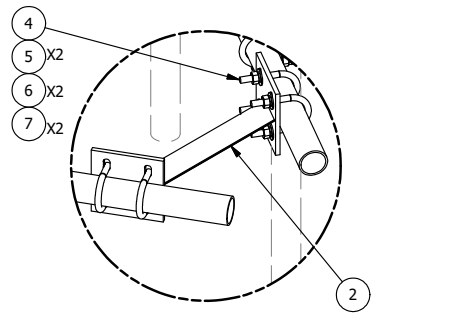
DESCRIPTION LOW PROFILE CO-LOCATION PLATFORM FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH FOR 12" - 38" DIAMETER POLES	
DRAWN BY CEK 1/19/2012	CPD NO. semb
ENG. APPROVAL	CHECKED BY BMC 1/23/2012
DRAWING USAGE CUSTOMER	

	Engineering Support Team: 1-888-753-7446	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	A valmont COMPANY	
PART NO.	SEE ASSEMBLY NO. "A"	
DWG. NO.	RMQP-3XX	

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
TOTAL WT. #						272.43



DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	CEK		7/10/2014
REVISION HISTORY				

TOLERANCE NOTES
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
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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			
HANDRAIL KIT FOR 12'-6" FACE			
CPD NO.	DRAWN BY	ENG. APPROVAL	
	KC8 5/30/2012		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER	BMC 7/13/2014

SITE PRO 1 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	HRK12
DWG. NO.	HRK12



FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

T Mobile™

Site ID: CT11062B

Windsor/ I-91/ X35
92 Weston Street
Hartford, CT 06103

August 30, 2022

Fox Hill Telecom Project Number: 221555

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	66.05 %



August 30, 2022

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CT11062B – Windsor/ I-91/ X35**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **92 Weston Street, Hartford, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



FOX HILL TELECOM

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 performed for the proposed upgrades to the T-MOBILE antenna facility located at **92 Weston Street, Hartford, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	108
A	2	Commscope VV-65B-R1	108
A	3	Ericsson AIR6419 B41	108
B	1	RFS APXVAALL24_43-U-NA20	108
B	2	Commscope VV-65B-R1	108
B	3	Ericsson AIR6419 B41	108
C	1	RFS APXVAALL24_43-U-NA20	108
C	2	Commscope VV-65B-R1	108
C	3	Ericsson AIR6419 B41	108

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	2.32
Antenna A2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	5.41
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	7.81
Sector A Composite MPE%							15.54
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	2.32
Antenna B2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	5.41
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	7.81
Sector B Composite MPE%							15.54
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	2.32
Antenna C2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	5.41
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	7.81
Sector C Composite MPE%							15.54

Table 3: T-MOBILE Emissions Levels



FOX HILL TELECOM

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	15.54 %
DISH	6.89 %
Verizon Wireless	26.67 %
AT&T	16.95 %
Site Total MPE %:	66.05 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	15.54 %
T-MOBILE Sector B Total:	15.54 %
T-MOBILE Sector C Total:	15.54 %
Site Total:	66.05 %

Table 5: Site MPE Summary



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FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	108	6.41	600 MHz	400	1.60%
T-Mobile 700 MHz LTE	2	485.32	108	3.35	700 MHz	467	0.72%
T-Mobile 1900 MHz (PCS) LTE	4	1,807.42	108	24.98	1900 MHz (PCS)	1000	2.50%
T-Mobile 1900 MHz (PCS) GSM	1	677.78	108	2.34	1900 MHz (PCS)	1000	0.23%
T-Mobile 2100 MHz (AWS) LTE	4	1,936.69	108	26.77	2100 MHz (AWS)	1000	2.68%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	108	78.10	2500 MHz (BRS)	1000	7.81%
						Total:	15.54 %

Table 6: T-MOBILE Maximum Sector MPE Power Values



Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	15.54 %
Sector B:	15.54 %
Sector C:	15.54 %
T-MOBILE Maximum Total (per sector):	15.54 %
Site Total:	66.05 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **66.05 %** 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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998



T-MOBILE SITE NUMBER: CT11062B
T-MOBILE SITE NAME: WINDSOR/ I-91/ X35
SITE TYPE: MONOPOLE
TOWER HEIGHT: 110'-0"

BUSINESS UNIT #: 876325
SITE ADDRESS: 92 WESTON STREET
COUNTY: HARTFORD
JURISDICTION: HARTFORD COUNTY

CT11062B _ANCHOR: 67E5998E_1XAIR+1OP+1QP

T-Mobile
 35 GRIFFIN ROAD
 BLOOMFIELD, CT 06002

CROWN CASTLE
 1500 CORPORATE DRIVE
 CANONSBURG, PA 15317

INFINIGY
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 Suite 150 | Fort Washington, PA 19034
 www.infinigy.com

T-MOBILE SITE NUMBER:
CT11062B
BU #: 876325
WESTON SQUARE
 92 WESTON STREET
 HARTFORD, CT 06103-1217
 EXISTING 110'-0"
 MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/11/22	RCD	PRELIMINARY	SS
B	08/19/22	RCD	PRELIMINARY	SS
0	09/01/22	RCD	100% FINALS	SS

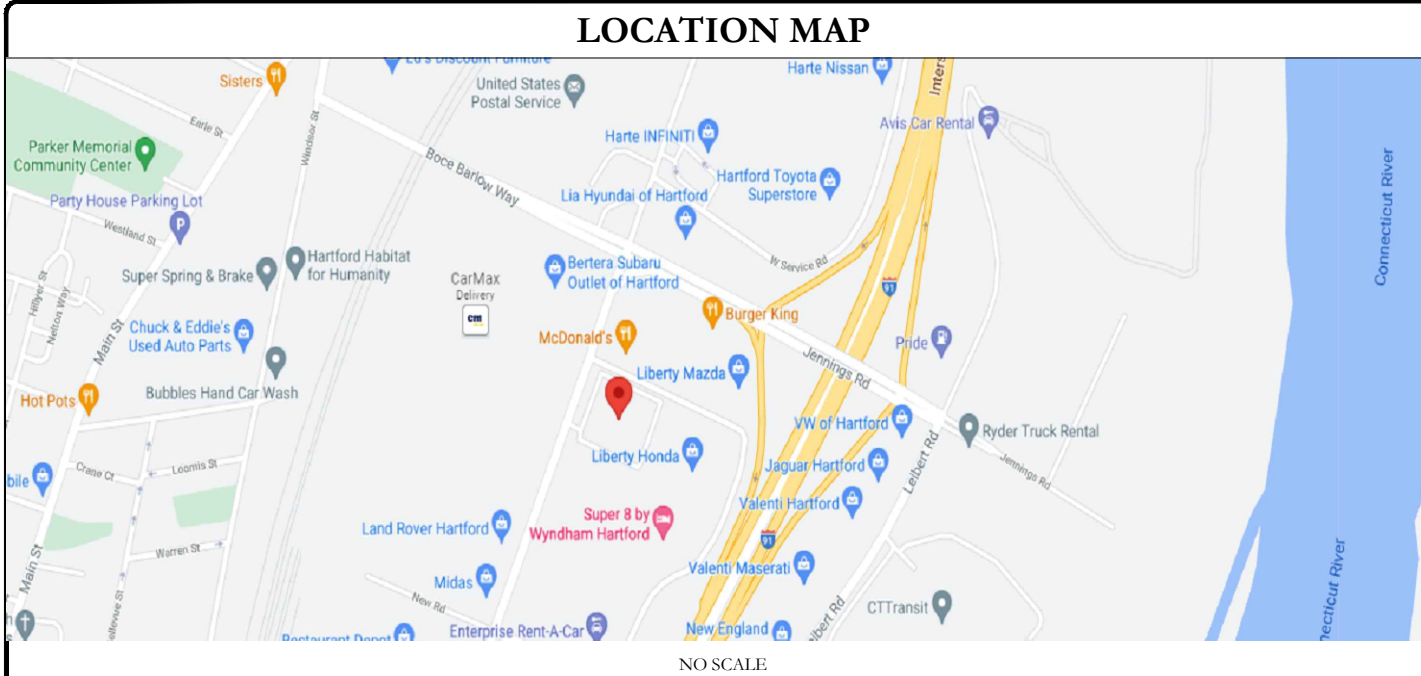
SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WESTON SQUARE
SITE ADDRESS:	92 WESTON STREET HARTFORD, CT 06103-1217
COUNTY:	HARTFORD
MAP/PARCEL #:	VERIFY
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.78672500° (41° 47' 12.30")
LONGITUDE:	-72.66228600° (-72° 39' 44.42")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	±9.8 FT
CURRENT ZONING:	TBD
JURISDICTION:	HARTFORD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TBD
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

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 TEAM

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DR. SUITE 150, FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1500 CORPORATE DRIVE CANONSBURG, PA 15317
	TBD - PROJECT MANAGER
	TBD - CONSTRUCTION MANAGER

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 (9) ANTENNAS
- REMOVE (3) RRHS
- REMOVE (6) COAX CABLES
- REMOVE ANTENNA MOUNT
- INSTALL (9) ANTENNAS
- INSTALL (6) RRHS
- INSTALL (3) HYBRID CABLES
- INSTALL PLATFORM MOUNT

GROUND SCOPE OF WORK:

- REMOVE (1) EQUIPMENT 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 (1) RP6651 IN (P) CABINET
- INSTALL (1) AAV CABINET

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

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 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BLACK AND VEATCH CORP.
DATED:	06/17/2022
MOUNT ANALYSIS:	TRYLON
DATED:	06/08/2022
RFDS REVISION:	6
DATED:	04/26/2022
ORDER ID:	619011
REVISION:	0

CALL CONNECTICUT ONE CALL
 (800) 922-4455 CBYD.COM
 CALL 2 WORKING DAYS
 BEFORE YOU DIG!

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.

SHUHEI SAKANoue
 STATE OF CONNECTICUT
 LICENSED PROFESSIONAL ENGINEER
 34916
 09/01/22

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

SHEET NUMBER: T-1	REVISION: 0
------------------------------------	------------------------------

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

- 1. NOTICE TO PROCEED- NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED-STD-10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED-STD-10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS." 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.
6. 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.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
9. 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.
10. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
11. 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.
12. 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.
13. 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.
14. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
15. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
16. 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.
17. 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.
18. 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.
19. 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.
20. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
21. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GREENFIELD GROUNDING NOTES:

- 1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OFF-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 GROUNDING 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 ANTI-OXIDANT 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 NON-FERROUS METAL PIPING ONLY).

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- 1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 316, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90° AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS: #4 BARS AND SMALLER.....40 ksi #5 BARS AND LARGER.....60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS: CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3" CONCRETE EXPOSED TO EARTH OR WEATHER: #6 BARS AND LARGER.....2" #5 BARS AND SMALLER.....1-1/2" CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLAB AND WALLS.....3/4" BEAMS AND COLUMNS.....1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

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

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

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

ABBREVIATIONS:

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

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EXISTING 110'-0"
MONOPOLE

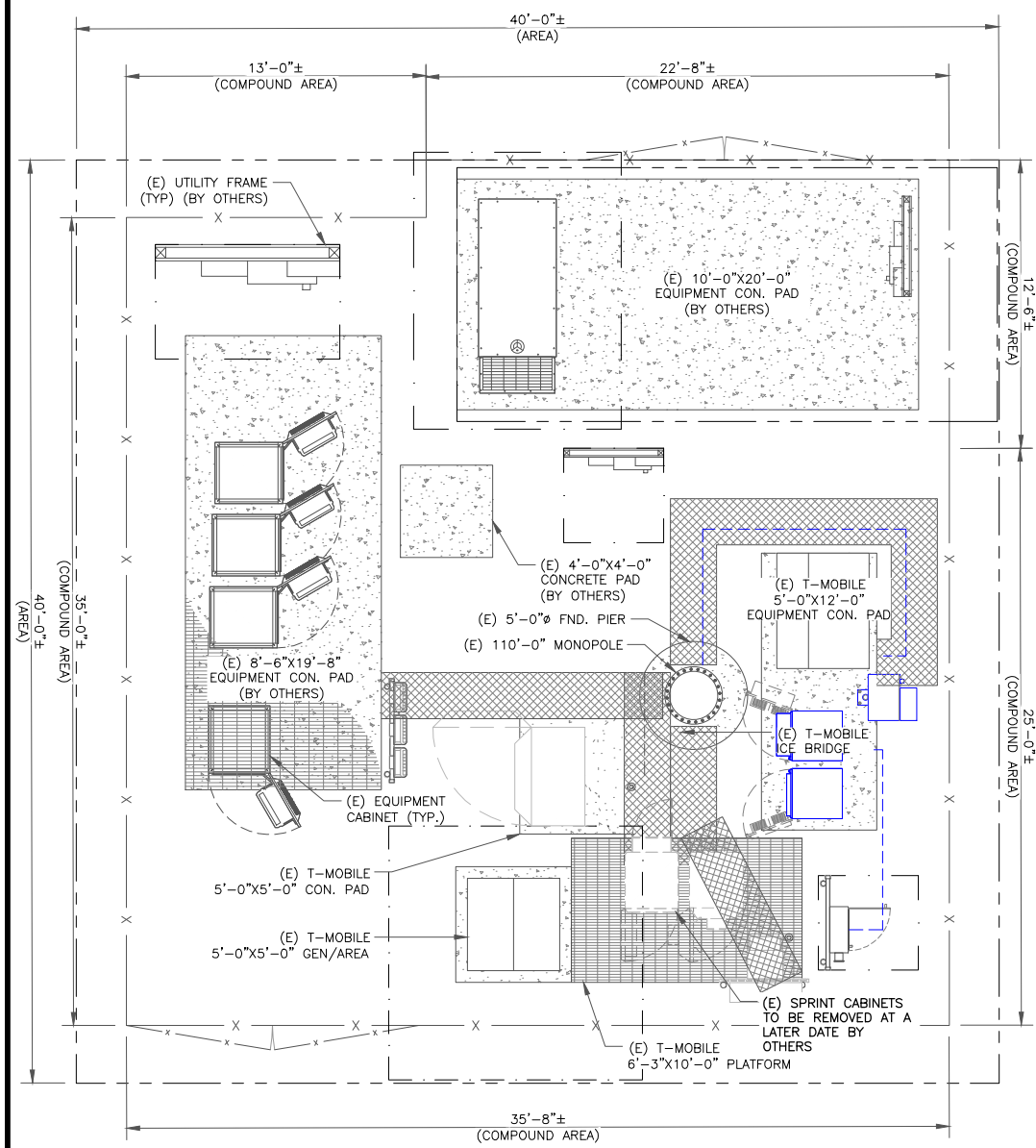
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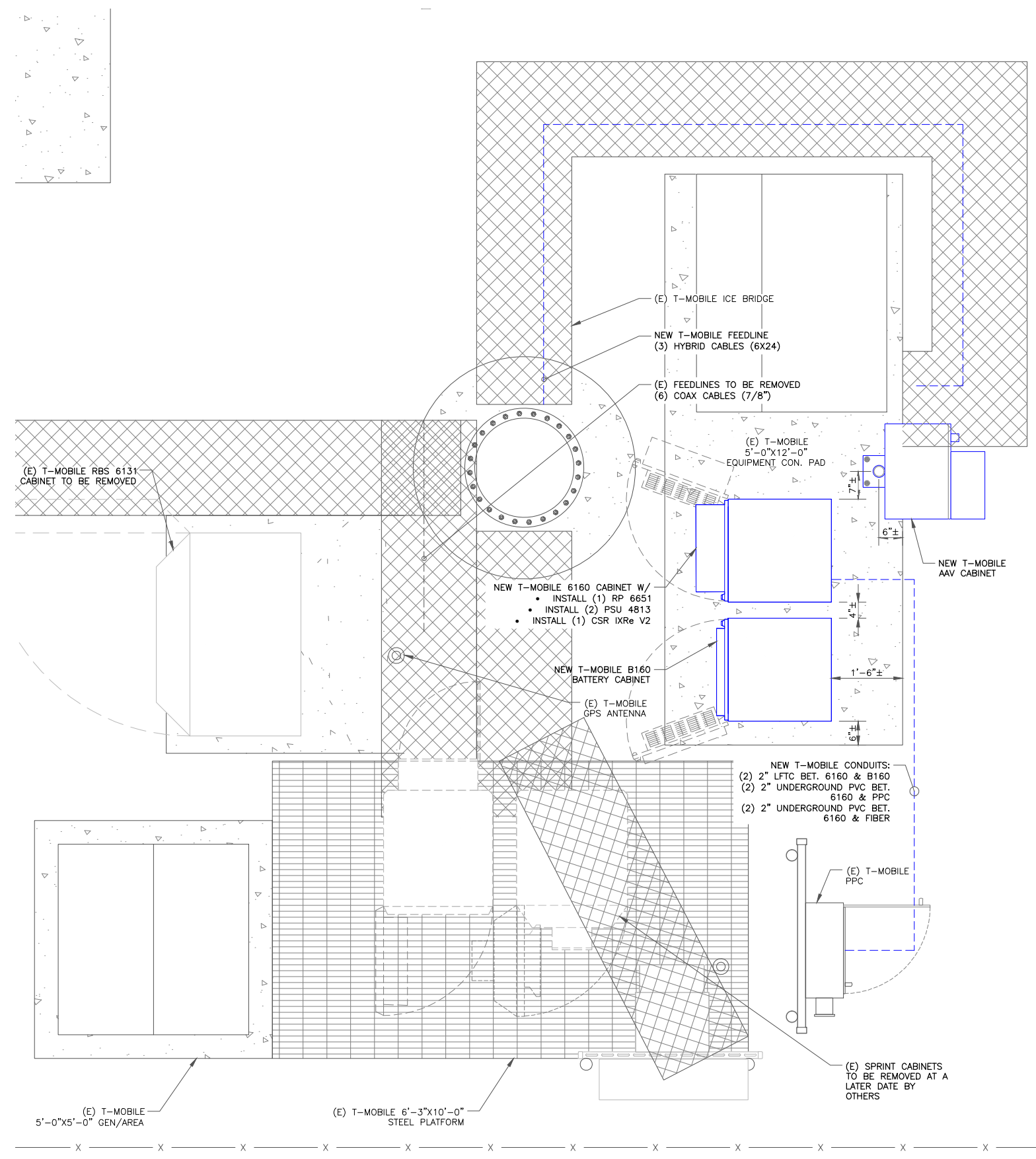
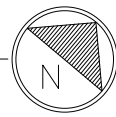
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SHEET NUMBER: **T-2** **REVISION:** **0**

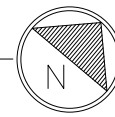
NOTE:
 1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T-MOBILE EQUIPMENT.



1 SITE PLAN
 SCALE: 1/4"=1'-0" (FULL SIZE)
 1/8"=1'-0" (11x17)



2 ENLARGED SITE PLAN
 SCALE: 3/4"=1'-0" (FULL SIZE)
 3/8"=1'-0" (11x17)



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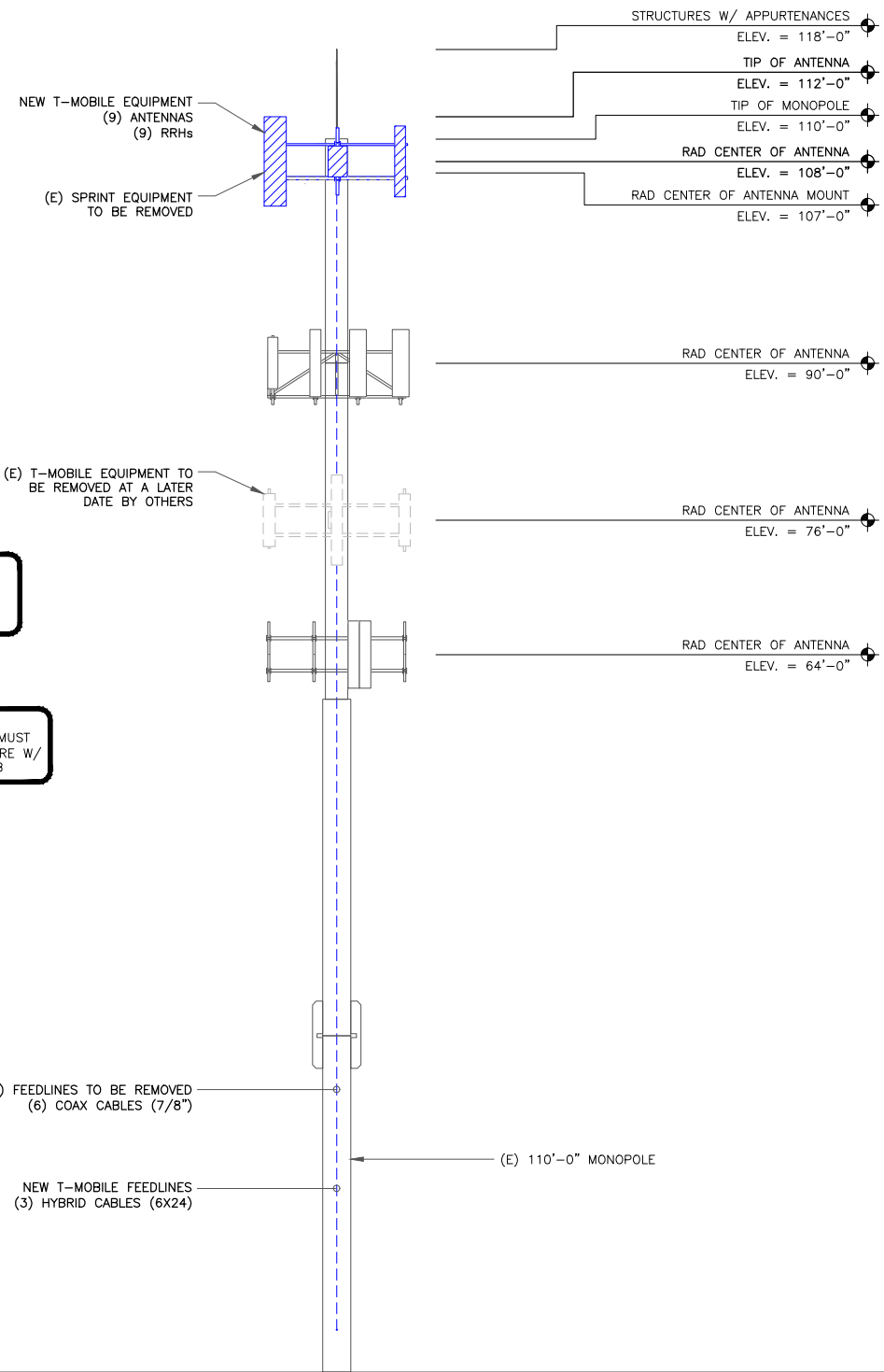


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SHEET NUMBER: **C-1**
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NOTES:

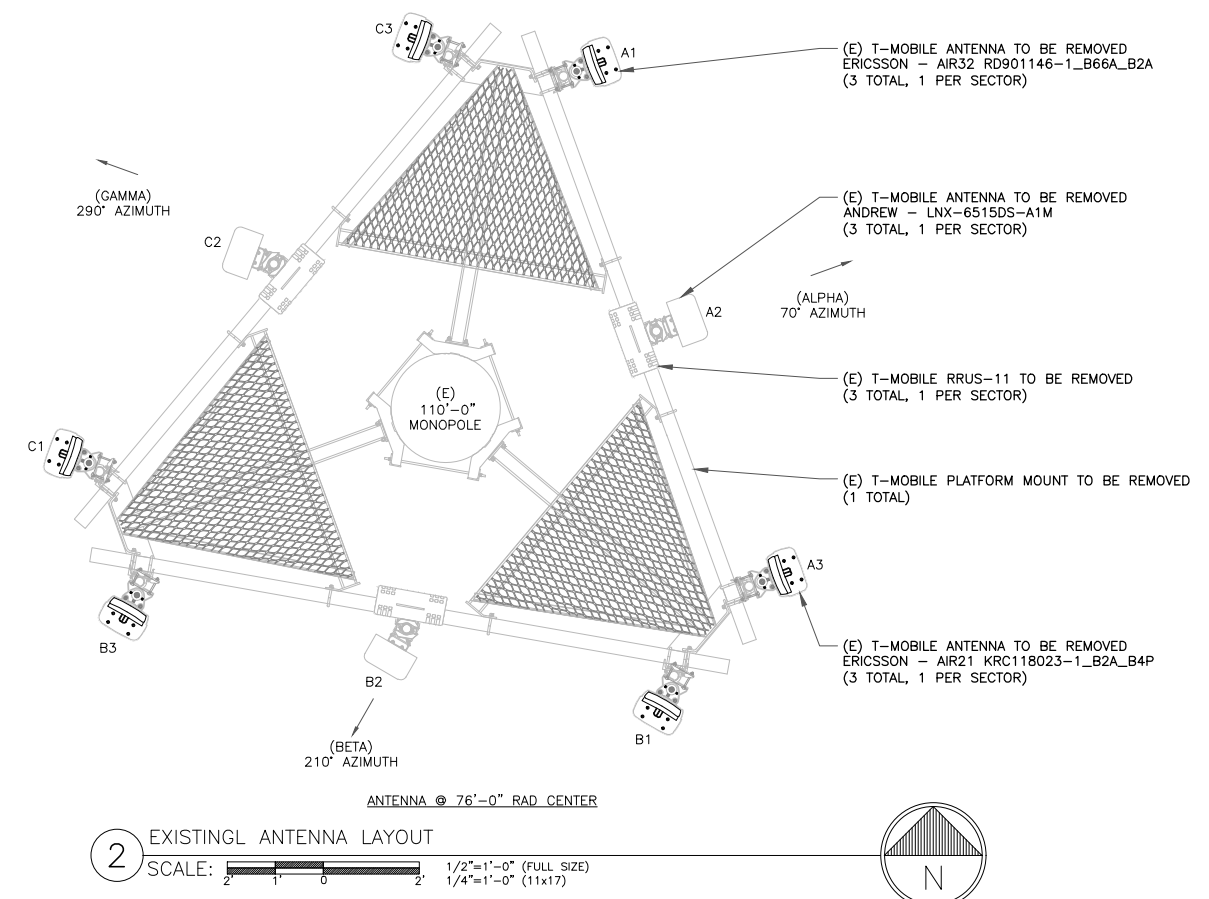
- ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
- INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL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



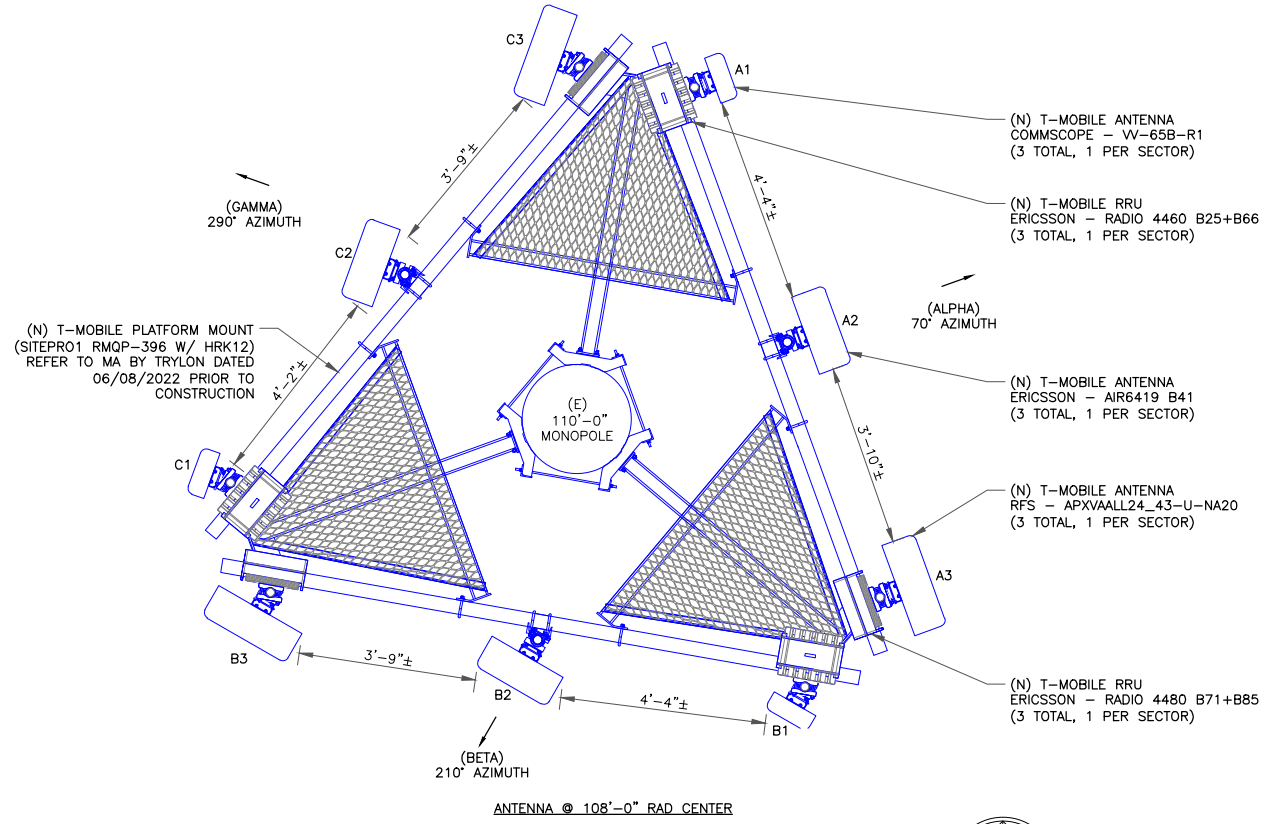
T-MOBILE EQUIPMENT
ANTENNA CL: 108'-0"
MOUNT CL: 107'-0"

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

1 FINAL ELEVATION
SCALE: 3/16"=1'-0" (FULL SIZE)
3/32"=1'-0" (11x17)



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



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

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STATE OF CONNECTICUT
SHUHEI SAKANoue
34916
LICENSED PROFESSIONAL ENGINEER
09/01/22

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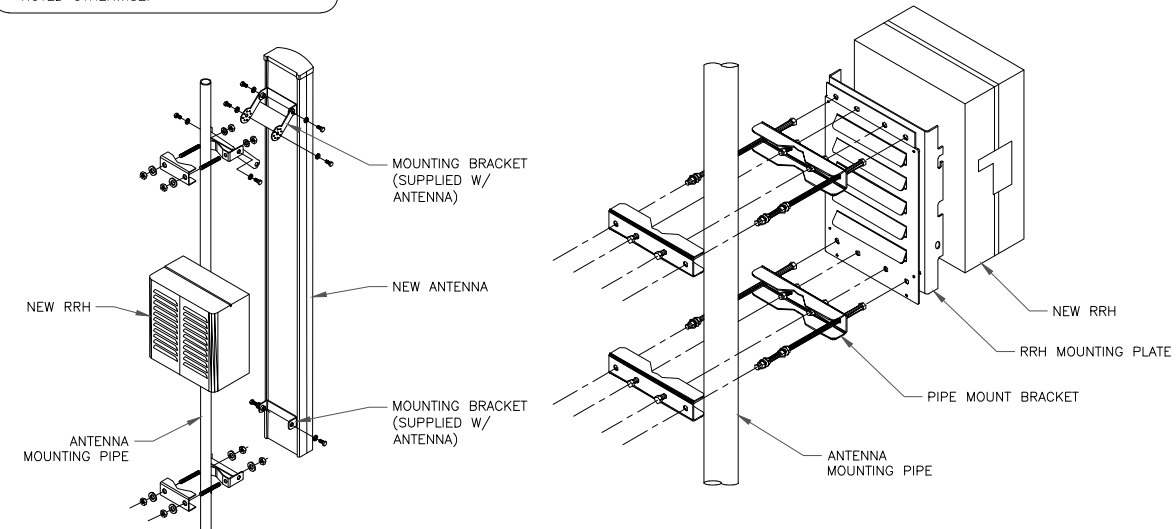
EXISTING 110'-0"
MONOPOLE

ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L1900, G1900, L2100,	108'-0"	70°	COMMSCOPE	W-65B-R1	0	-	(1) ERICSSON - RRUS 4460 B25+B66	(1) 6X24 HYBRID 50M IN LENGTH
ALPHA	A2	L2500, N2500	108'-0"	70°	ERICSSON	ERICSSON - AIR6419 B41	0	-	-	-
ALPHA	A3	L700, L600, N600	108'-0"	70°	RFS	APXVAALL24_43-U-NA20	0	-	(1) ERICSSON - RRUS 4480 B71+B85	-
BETA	B1	L1900, G1900, L2100,	108'-0"	210°	COMMSCOPE	W-65B-R1	0	-	(1) ERICSSON - RRUS 4460 B25+B66	(1) 6X24 HYBRID 50M IN LENGTH
BETA	B2	L2500, N2500	108'-0"	210°	ERICSSON	ERICSSON - AIR6419 B41	0	-	-	-
BETA	B3	L700, L600, N600	108'-0"	210°	RFS	APXVAALL24_43-U-NA20	0	-	(1) ERICSSON - RRUS 4480 B71+B85	-
GAMMA	C1	L1900, G1900, L2100,	108'-0"	290°	COMMSCOPE	W-65B-R1	0	-	(1) ERICSSON - RRUS 4460 B25+B66	(1) 6X24 HYBRID 50M IN LENGTH
GAMMA	C2	L2500, N2500	108'-0"	290°	ERICSSON	ERICSSON - AIR6419 B41	0	-	-	-
GAMMA	C3	L700, L600, N600	108'-0"	290°	RFS	APXVAALL24_43-U-NA20	0	-	(1) ERICSSON - RRUS 4480 B71+B85	-

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.



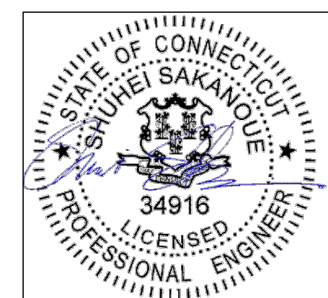
NOTE:

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

2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

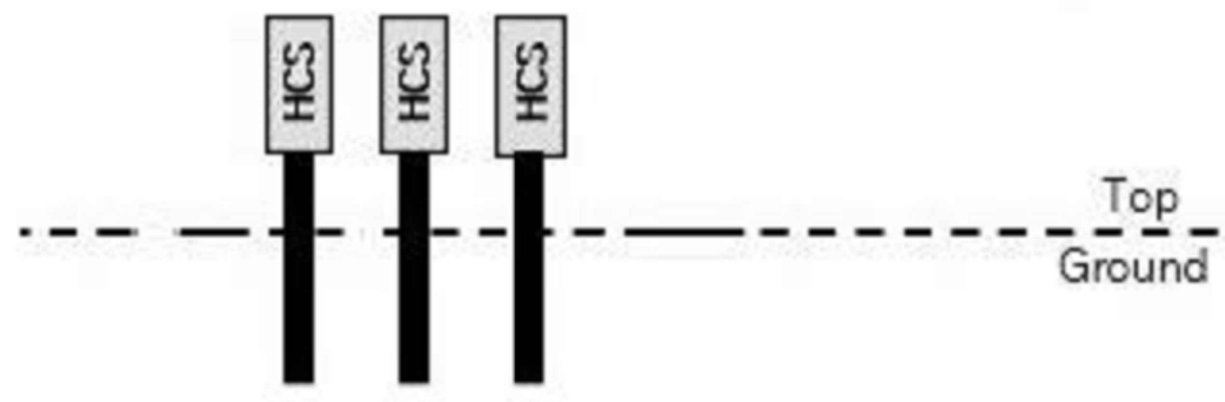
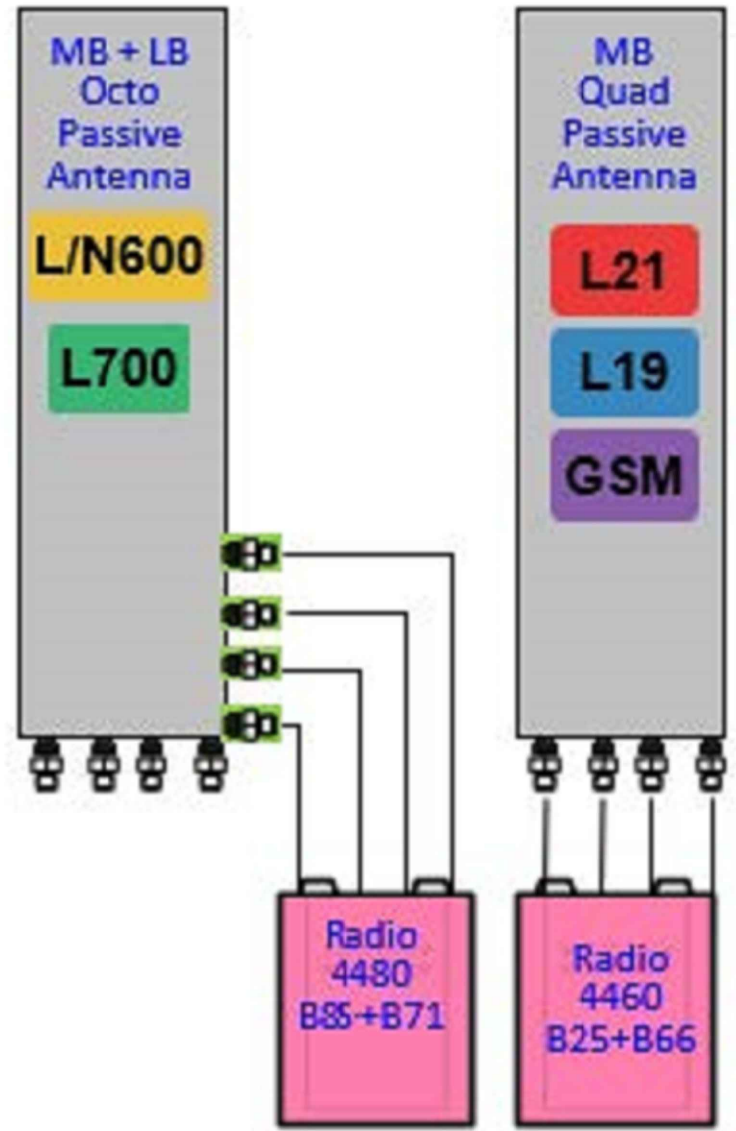
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1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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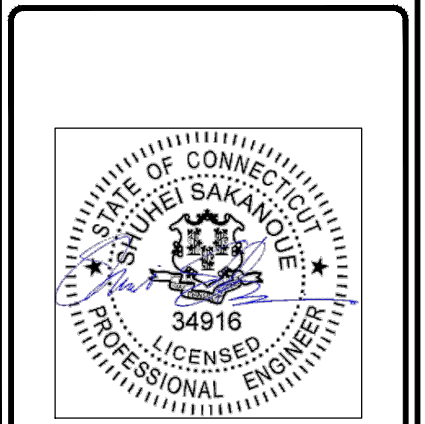
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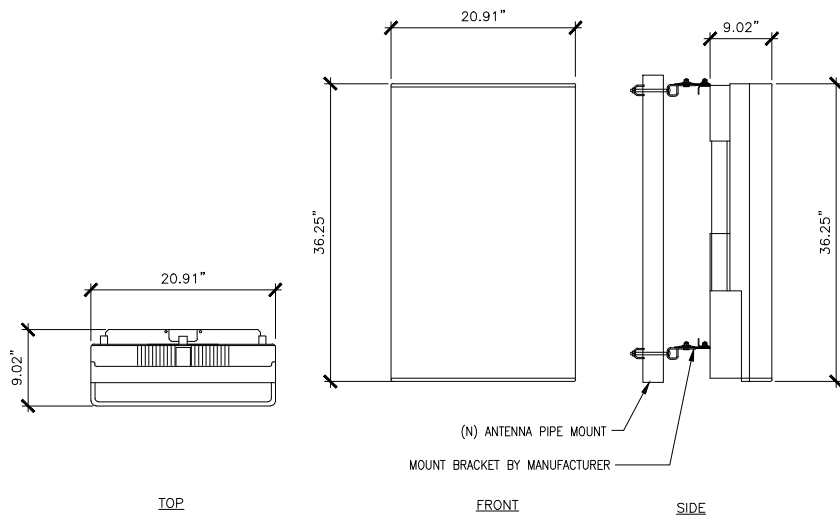


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SHEET NUMBER: **C-4** REVISION: **0**

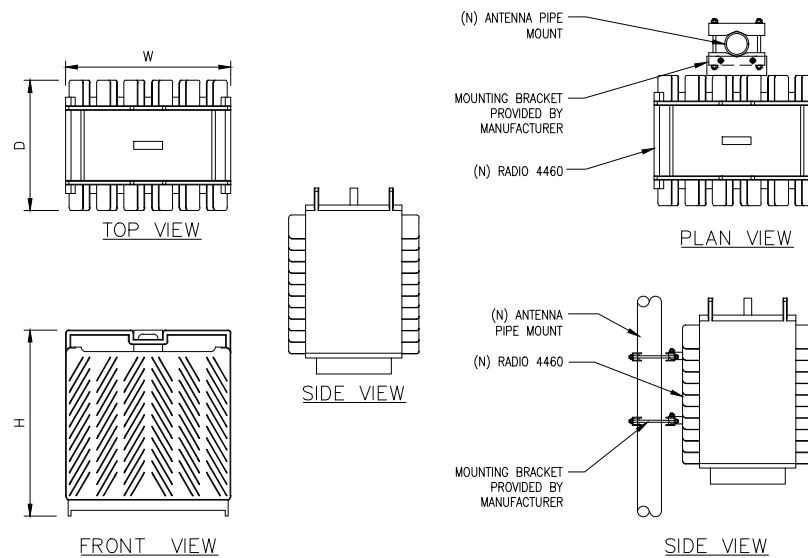
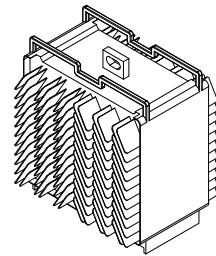
MANUFACTURER: ERICSSON
 MODEL: AIR6419 B41
 WEIGHT: 96.5 LBS (W/ MOUNT BRACKET 113)
 DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.
 FREQUENCY: REFER TO RF DATA SHEET



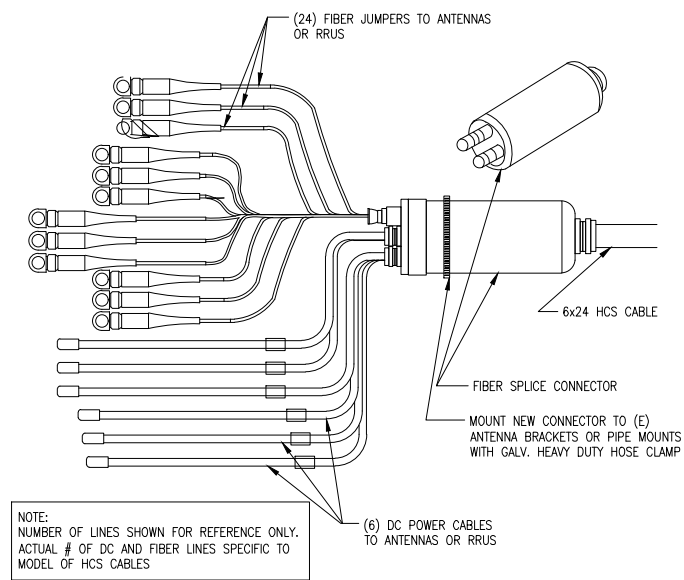
1 (N) AIR6419 B41 ANTENNA SPEC
 SCALE: NOT TO SCALE

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



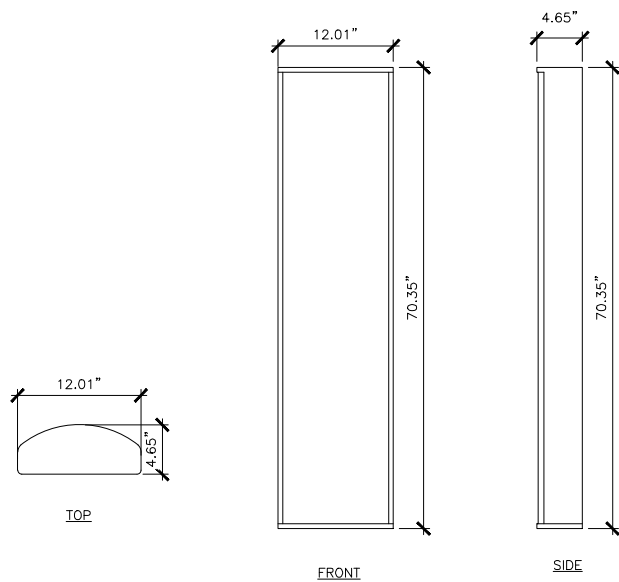
2 (N) RADIO 4460 SPEC
 SCALE: NOT TO SCALE



NOTE:
 NUMBER OF LINES SHOWN FOR REFERENCE ONLY.
 ACTUAL # OF DC AND FIBER LINES SPECIFIC TO
 MODEL OF HCS CABLES

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

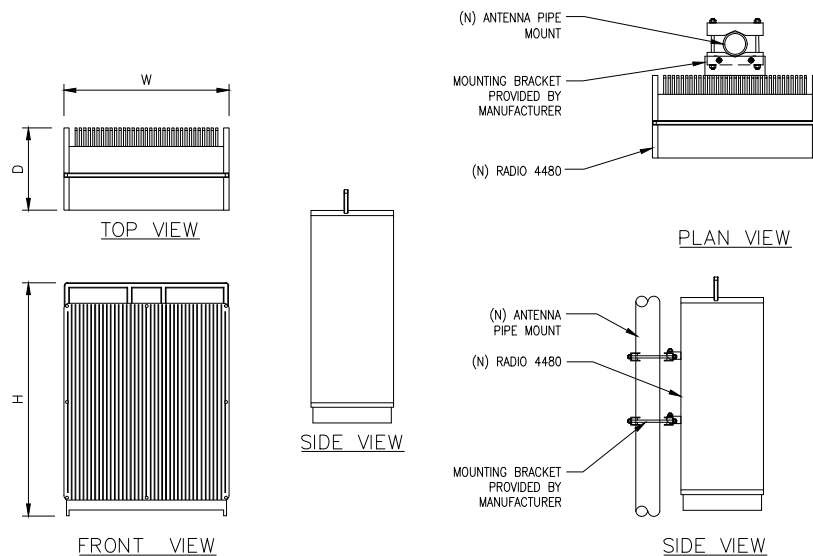
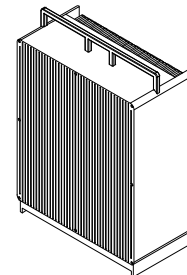
MANUFACTURER: COMMSCOPE
 MODEL: WV-65B-R1
 WEIGHT: 41.67 LBS
 DIMENSIONS: 70.35"H. X 12.01"W. X 4.65"D.
 FREQUENCY: REFER TO RF DATA SHEET



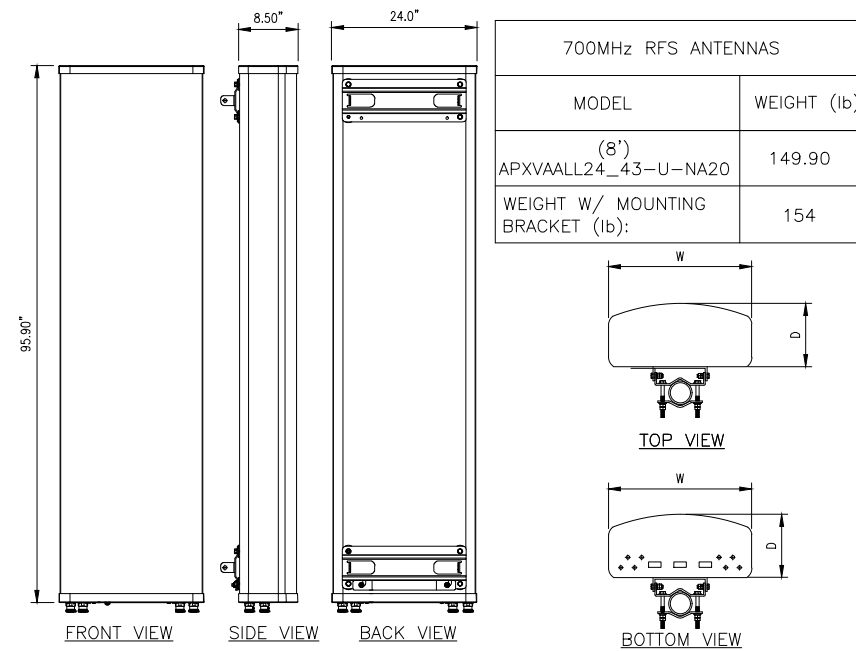
4 (N) COMMSCOPE WV-65B-R1 ANTENNA SPEC
 SCALE: NOT TO SCALE

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



6 (N) APXVAALL24_43-U-NA20 ANTENNA SPEC
 SCALE: NOT TO SCALE

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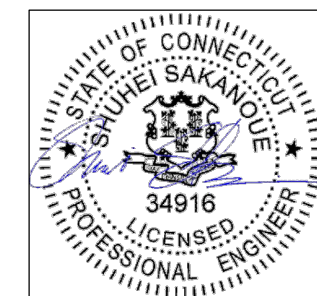
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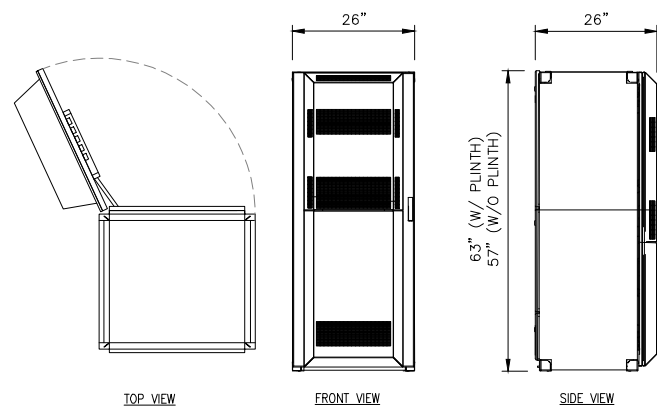
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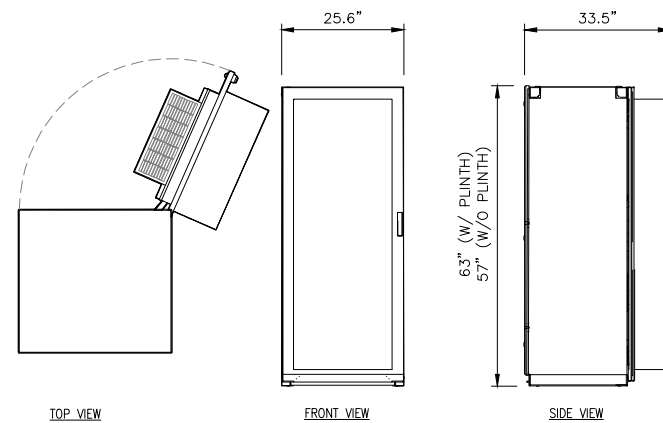
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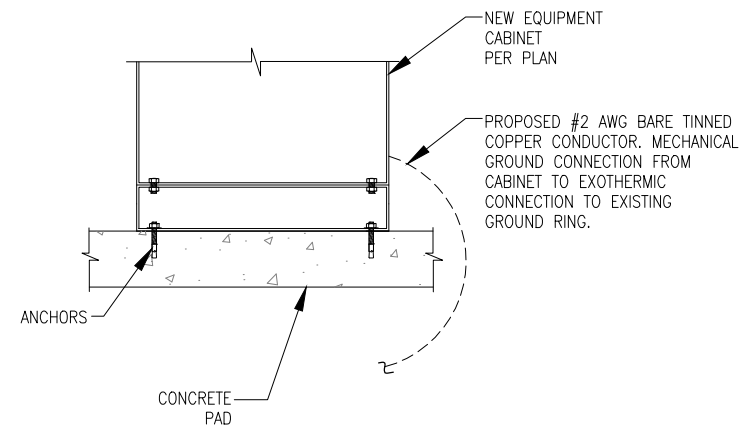
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

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

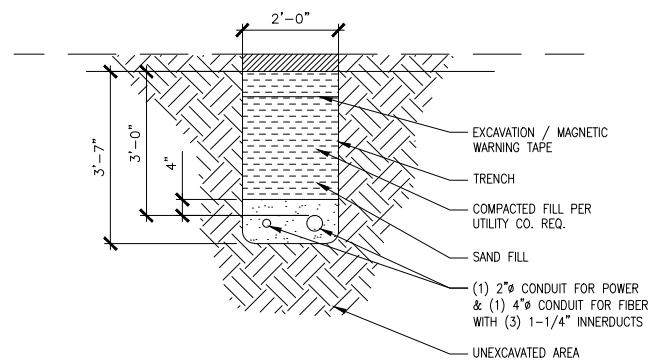


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

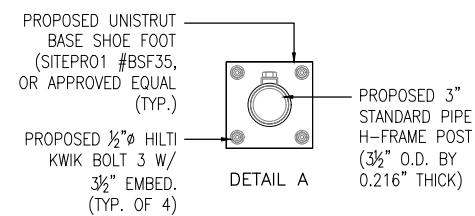
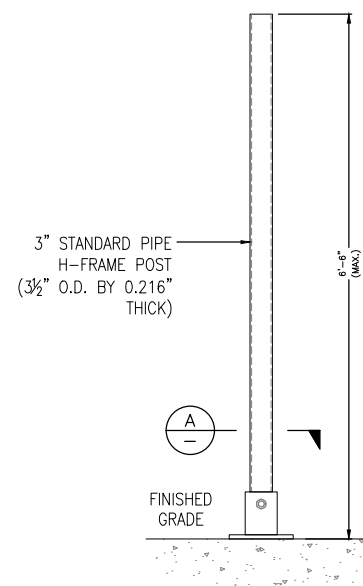
2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



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

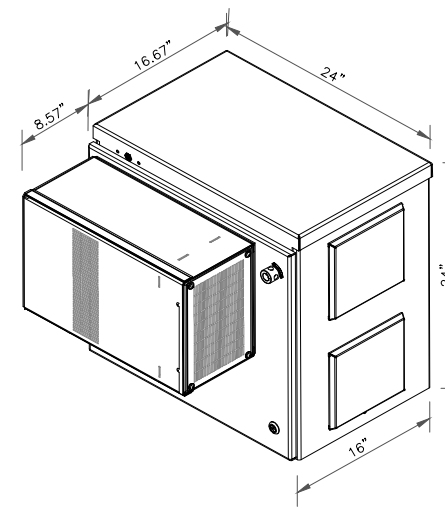


4 (N) CONDUIT TRENCH DETAIL
SCALE: NOT TO SCALE



5 H-FRAME POST DETAIL
SCALE: NOT TO SCALE

VERTIX
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6 (N) AAV CABINET
SCALE: NOT TO SCALE

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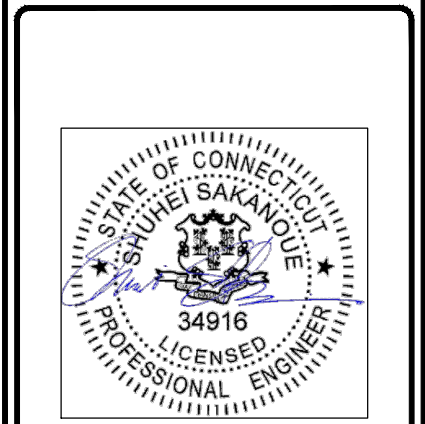
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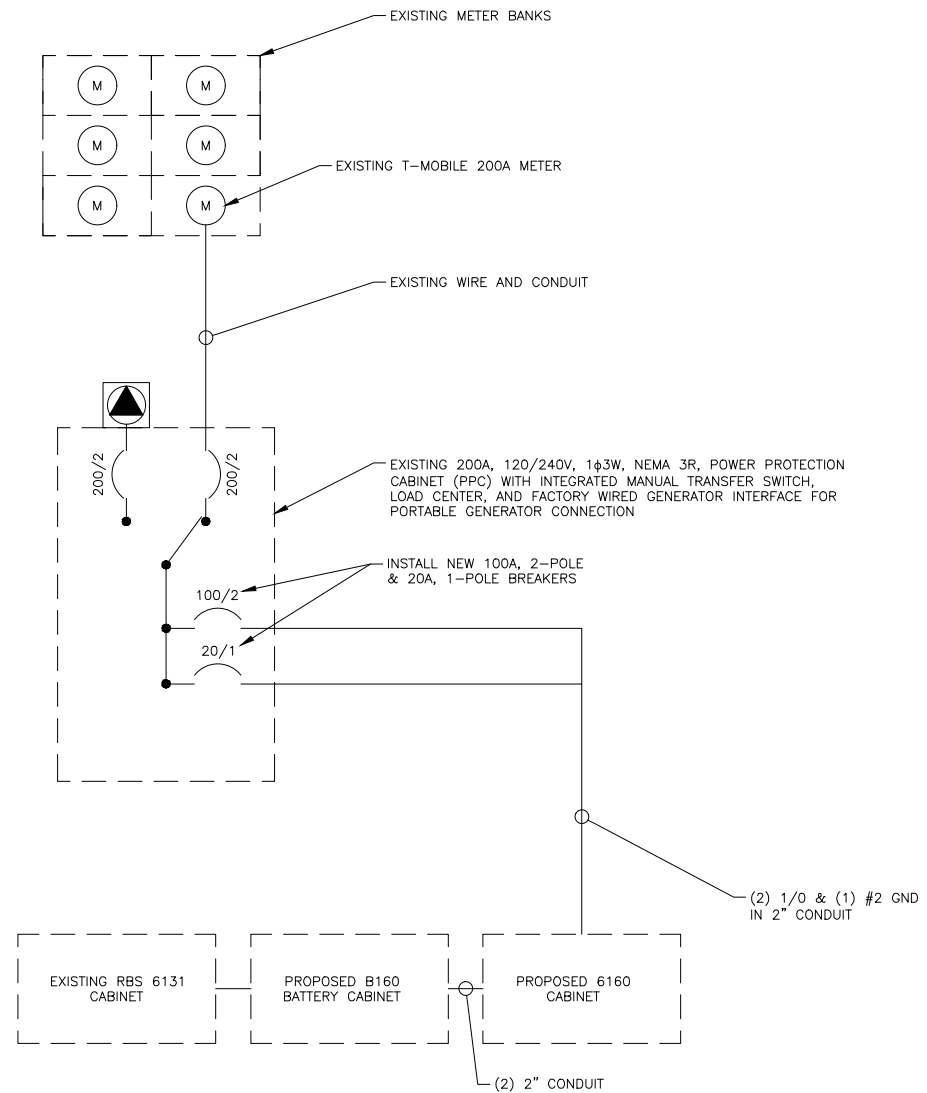
NOTES:

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

NOTES:

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

T-MOBILE PANEL SCHEDULE											
MAIN: 200A MAIN BREAKER			VOTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE				SHORT CIRCUIT CURRENT RATING: --				
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES				
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	PHASE LOADS (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
					A	B					
POWER CAB	3500	C	100	1	3500		7	60	NC		SURGE ARRESTOR
	3500	C		2		3500	8				
6160 GFI	180	NC	20	3	180		9	60	NC	0	SPARE
6160	3500	C	100	4		3500	10				
	3500	C		5	3680		11	20	NC	180	TELCO GFI
FAN	200	C	10	6		200	12				
BASE LOAD (VA) =					7360	7200	C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD				
25% OF CONTINUOUS LOAD (VA) =					2188	2188	NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.				
TOTAL LOAD (VA) =					9548	9388					
TOTAL LOAD (A) =					80	78					



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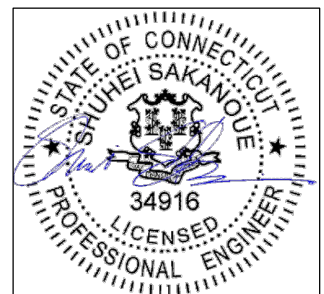
BU #: 876325
WESTON SQUARE

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EXISTING 110'-0"
MONOPOLE

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SHEET NUMBER:

E-1

REVISION:

0

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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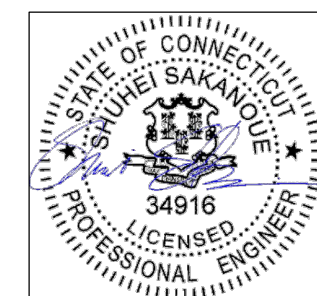
BU #: 876325
WESTON SQUARE

92 WESTON STREET
HARTFORD, CT 06103-1217

EXISTING 110'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07/11/22	RCD	PRELIMINARY	SS
B	08/19/22	RCD	PRELIMINARY	SS
0	09/01/22	RCD	100% FINALS	SS

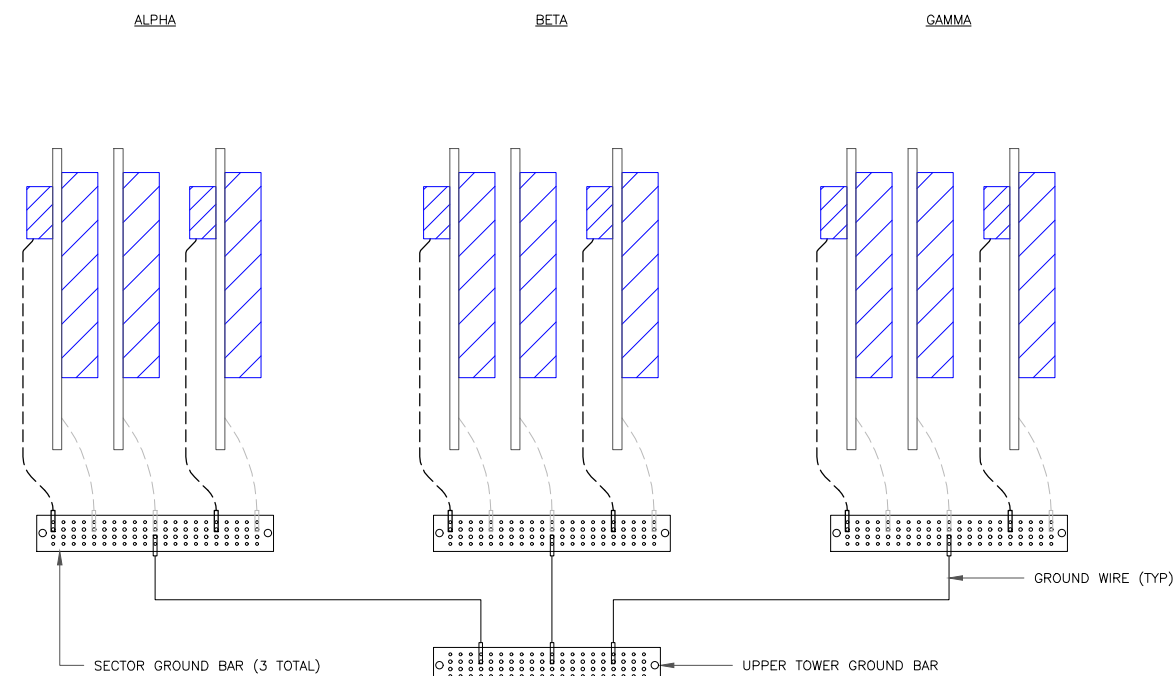


09/01/22

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TO ALTER THIS DOCUMENT.

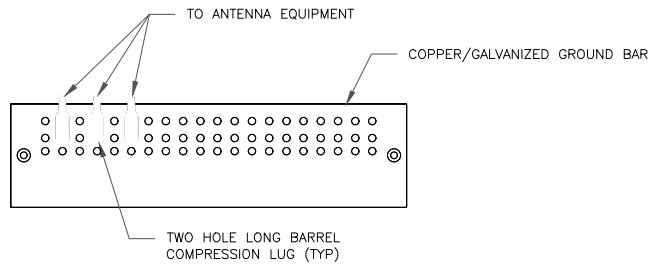
SHEET NUMBER: REVISION:

G-1 0



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

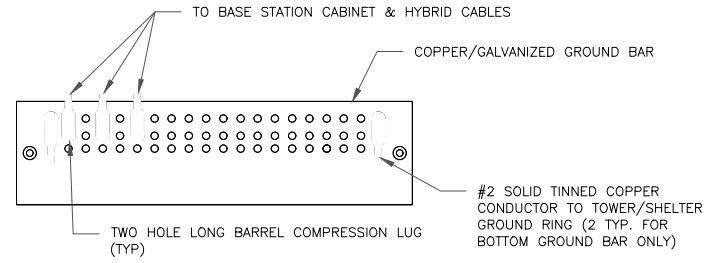
1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



NOTES:

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

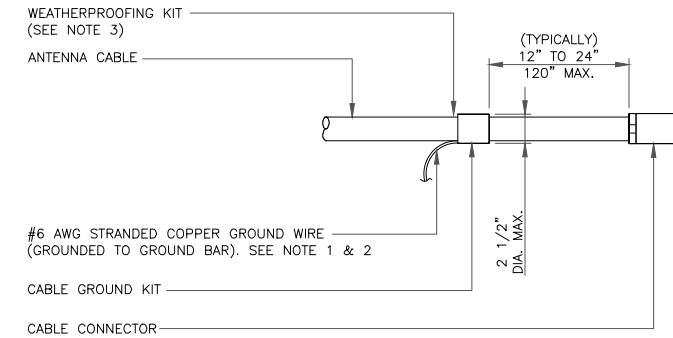
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

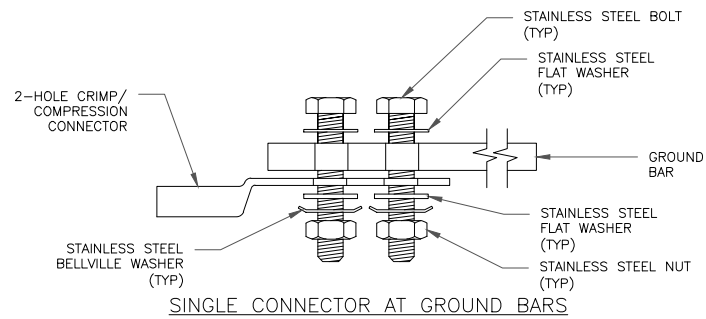
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



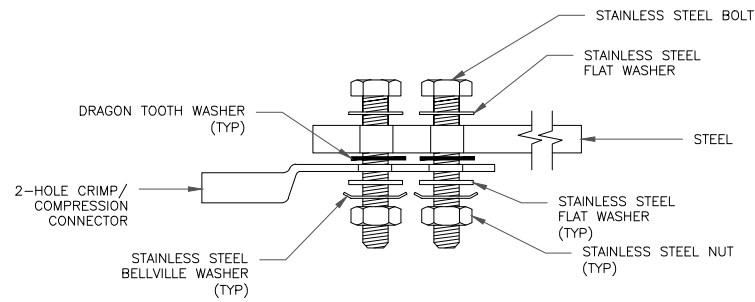
NOTES:

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

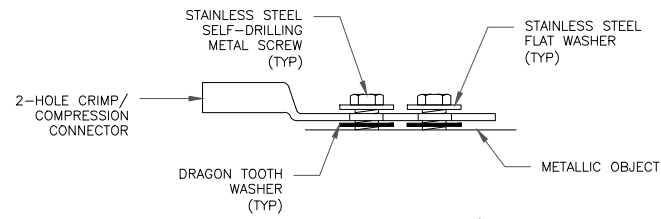
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



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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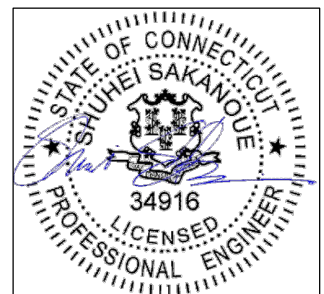
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