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

May 31, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CT11367C**
Crown Site ID# 876376
123 Campville Hill Road, Harwinton, CT 06791
Latitude: 41° 44′ 12.40″ / Longitude: -73° 5′ 49.40″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 167-foot mount on the existing 177-foot monopole tower located at 123 Campville Hill Road, Harwinton, CT. The property is owned by Harwinton Rod and Gun Club and the tower is owned by Crown Castle. T-Mobile now intends to replace three (3) antennas and ancillary equipment at the 167ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed New:
(3) RFS APXVAALL24_43_U-NA20 Antennas
(3) Ericsson-Radio 4480 B71+ B85 RRU
(1) Hybrid Cable 6x24
(1) Platform Mount w/handrail support kits

Remove:
(3) Andrew – LNX-6515DS-A1M Antennas
(9) Coaxial Cables (1-5/8")

Ground:

Install New:
(1) BB6648 IN E RBS 6201 ODE
(1.) PSU 4813 Voltage Booster

Remove:
(6) RUS01 B12

The facility was approved by the Town of Harwinton Zoning Commission by way of a Special Use Permit on June 26, 2000. The approval was given with Conditions which this exempt modification follows.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Michael R. Criss, First Selectman, Town of Harwinton, Polly Redmond, Land Use Coordinator, Town of Harwinton. Harwinton Rod & Gun Club, property owner 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.

Sincerely,

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

Attachments
cc:

Michael R. Criss, First Selectman
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791
860-485-9051

Polly Redmond, Land Use Coordinator
Town of Harwinton
100 Bentley Drive
Harwinton, CT 06791
860-485-2784

Harwinton Rod & Gun Club – Property Owner
PO Box 181
Harwinton, CT 06791

Crown Castle - Tower Owner

DECISION

The Zoning Commission, having reviewed the application and documentation, having heard the testimony at public hearing sessions held March 20, April 24, and May 1, and having viewed the premises and its surroundings in light of the proposed application, hereby finds as follows:

1. The applicant has proven that a tower is necessary to serve the Route 8 corridor south of Route 118 (Exit 42) to Campville Road (Exit 41). The applicant has also proven that its 180' tower at 123 Campville Road would serve this area, albeit to a greater degree of coverage and signal level than the Commission believes is required by the Telecommunications Act of 1996. Therefore, the applicant has satisfied the public interest, convenience or necessity requirement of §8.10.2.

2. On balance, the applicant has proven that the proposed location is necessary, and to a lesser degree, that alternate locations where similar special permit uses are located (or proposed to be located) are not available as required by §8.10.3.

3. The applicant has not demonstrated that the visual inconvenience of the proposed tower at this location is clearly less than the public necessity which requires the tower at this location, as required under §8.10.4; however, the visual impact of the tower will be lessened by landscaping, mature true planting, and mature tree line preservation imposed as a condition of approval under §8.10.3 and §8.1.1(a).

4. The tower and its support facilities would constitute a principal use or structure to be located on the same lot with an exiting principal building or use, in violation of §6.1; however, the applicant and the property owner have proposed a subdivision feasibility plan and agreed to subdivide (if necessary), as a condition of approval, so as to satisfy §6.1 in conjunction with the rear lot requirements of §5 and §8.6.

5. Subject to reasonable conditions of approval and site plan modifications imposed by the Commission, the application will more closely comply with the general requirements of §8.1.1(a).

THEREFORE, based on the foregoing regulations, findings of fact and reasons for decision, Application No. 3830 for a special permit to construct a 180' telecommunications tower at 123 Campville Hill Road, as shown on 4 sheets constituting the site plan and erosion control plan, dated 12/10/99, revised 12/21/99, as modified by the preliminary subdivision plan dated 4/24/00 is hereby APPROVED, subject to the following conditions and modifications:

1. Tower Manager: That a Tower Management firm be designated by name, address, contact person and telephone number as the person and firm responsible for the construction and operation of the tower, and be kept current and on file with the Commission at all times.

2. Tower Removal Bond: That the applicant file, prior to construction, a tower removal bond, in sufficient amount, and with sufficient surety, to guarantee the cost of removal of the tower, fence, and accessory structures, when the tower is no longer in service (other than for routine maintenance and testing), or its lease (and renewal options) expire, whichever occurs first. The bond shall protect both the Town of Harwinton and the landowner, and their heirs, successors and assigns, as per C.G.S. §8-3(g) and Zoning Regulation §7.4, and shall be subject to review and approval every five (5) years hereafter as to sufficiency and amount.

3. Landscaping and Fencing: That the tower site be fenced with a secure chain link fence with green webbing, and such fence be maintained in a safe condition at all times. The applicant shall plant a mature (16' tall) evergreen buffer around the tower compound, which shall be maintained and replanted as necessary, during the life of the tower. As much of the mature tree line around the tower as is possible shall be preserved as determined by the Commission or its agent at a pre-construction on-site meeting.

4. Security Alarm: That the tower be protected by a security alarm which shall be regularly tested and operational at all times.

5. EMF Certification: That each carrier shall certify that the EMF output of any antenna, combined with that of any previously installed antenna(s), is within FCC standards for public health and safety, and that the Tower Manager provide annual certification during the service life of the tower.

6. Tower Construction: That the monopole tower satisfy all structural requirements of the State Building Code, as certified by a Connecticut licensed

structural engineer; that the applicant comply with the threshold structural notification requirements of C.G.S. §29-276b and the Connecticut Supplement to the State Building Code; and that the monopole be of a matte gray finish with no lights or striping.

7. Fall Zone: That the property lines be maintained at all times while the tower is standing at a distance from the base of the tower not less than its total height.

8. Municipal, VFD and EMS Use: As offered by the applicant at the public hearing, that the Town of Harwinton, the Westside Volunteer Fire Department, the Harwinton Volunteer Fire Department and the Harwinton Ambulance Association be allowed to place their antenna(s) on the tower at no cost, provided that there is no proven signal interference and subject to such reasonable terms and conditions as the applicant or Tower Manager may impose.

9. Future structures and modifications: That any future structural additions or modifications, including accessory structures, be submitted to the Zoning Commission in accordance with the Zoning Regulations of the Commission then in effect, i.e., Regulations §A.8.10.1 - A.8.10.12, as amended, and any other land use regulations and ordinances as may then be in effect.

10. Recording and filing: That this special permit and the mylar site plans, be recorded in the Harwinton Land Records within fifteen (15) days, and shall run with the land described in the Harwinton Land Records in Volume 152 at Pages 53-54, Assessors Map A4-05-0002.

11. Subdivision approval: A five (5) acre rear lot shall be created solely for the tower and its accessory structure with its own 50' wide access way, on which no other principal uses or structures shall be permitted, in conformity with Regulations §§5, 6.1 and 8.6, and pursuant to subdivision approval, if required, (i.e., if "free split" privilege has been exhausted since September 30, 1961), as shown on the preliminary subdivision plan dated 4/24/00.

12. General requirements: The utility service to the property, including the tower, shall be buried underground, and the carriers' utility lockers or cabinets shall be enclosed within a wood, colonial style carriage shed type building to comply with Regulations §8.1.1(a).

Dated at Harwinton, Connecticut this 26 day of June, 2000.

HARWINTON ZONING COMMISSION

By: _____
John Byrnes
Its Chairman

A:\MDR.harwinton.2\HPC. notice of decison - 123 Campville Hill Road.wpd

qPublic.net™ Town of Harwinton, CT

Summary

ParcelId	1225
Account Number	2581
Location Address	123 CAMPVILLE HILL
Map-Block-Lot	A4 /05 /0002
Use Class/Description	1-1 RES LAND
Assessing Neighborhood	0001A
Census Tract	298400000000
Acreage	49
Utilities	

Owner

HARWINTON ROD & GUN CLUB
PO BOX 181
HARWINTON, CT 06791

Current Appraised Value

		2020	2019
+	Building Value	$196,600	$196,600
+	XF Value	$0	$0
+	OB Value	$6,270	$0
+	Land Value	$594,300	$594,300
+	Special Land Value		
+	Total Appraised Value	$797,170	$790,900
+	Net Appraised Value	$0	$790,900
+	Current Assessment	$329,040	$324,650

Assessment History

		2019	2017	2016
+	Building Value	$137,620	$143,780	$143,780
+	OB/Misc	$0	$0	$0
+	Land	$187,030	$76,290	$76,290
+	Total Assessment	$324,650	$220,070	$220,070

Land

Use	Class	Zoning	Area	Value
1-1 RES LAND	R	CR2	2 AC	$75,900
6-2 FOREST LD	R		47 AC	$338,400
3-1 IND LAND	I		1 BL	$180,000

Building Data

Building #	1
Style	Camp
Actual Year Built	1977
Effective Year Built	1980
Living Area	5892
Stories	1
Grade	Average
Exterior Wall	Wood on Sheath
Interior Wall	Wall Brd/Wood
Fireplaces	
Roof Cover	Asph/F Gls/Cmp
Roof Structure	Gable/Hip
Floor Type	Average
Heat Type	Forced Air-Duc
Fuel Type	Oil
AC	None
Bdrms/Ful Bth/Hlf Bth/Ttl Rm	0/1/0/2

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	5892	5892	5892
FST	Utility Storage	0	2400	1200
PTO	Patio	0	210	21
	Totals	5892	8502	7113

Out Buildings\Extra Features

Description	Sub Description	Area	Year Built	Value
OPEN PORCH		280S.F.	2019	$6,270

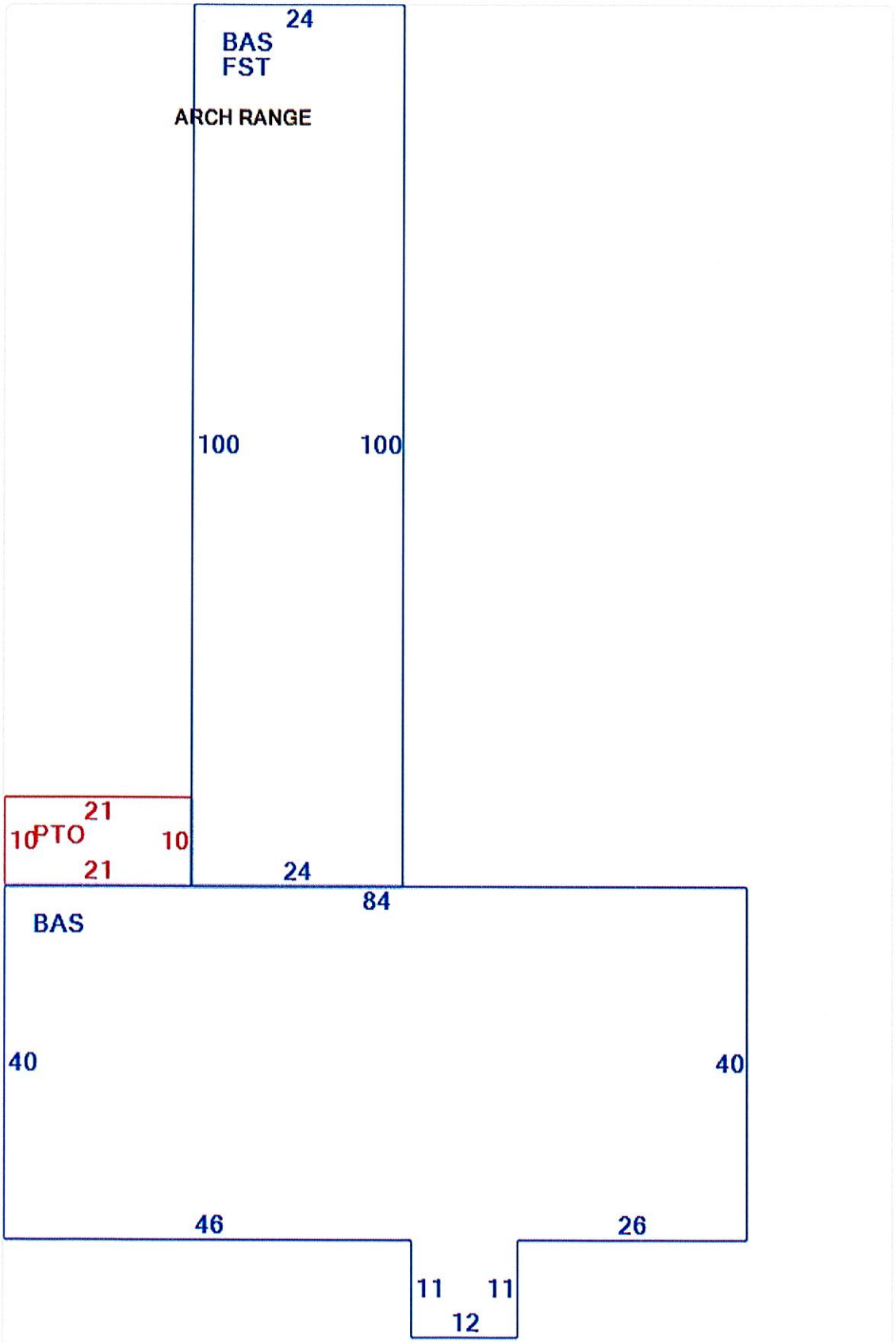
Sales History

Sales Date	Type of Document	Grantee	Vacant/Improved	Book/Page	Amount
12-30-1997	Q	HARWINTON ROD & GUN CLUB	Vacant	0152/0053	$50,000
07-08-1957		SLATE ALICE	Improved	0049/0488	$0

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
2112CA	08-11-2021	CO	CO ISSUED	$0		100		ANTENNA
20112B	08-20-2020	00	Undefined	$20,000		100		AT&T MODIFY ANTENNA
19171B	12-06-2019		14X20 PAVILLION	$6,000		100		
1864E	11-05-2019		STAND BY GENERATOR	$8,500		100		
198E	01-31-2019	EL	Electric	$2,500		100		
17164B	11-09-2017		ADD 3 ANTENNAS	$20,000		100		
176CA	02-06-2017	CO	CO ISSUED	$0		100		T-MOBILE
16146B	08-02-2016		CONCRETE PATIO 30X30	$6,175		0		
1647E	03-08-2016	EL	Electric	$2,500		0		
9416	10-24-2014		MODIFICATIONS	$20,000		0		
8760	01-17-2013		FACILITY MODIFICATIO	$25,000		0		
8757	01-02-2013		ANTENNA SWAP	$10,000		0		
8704	11-21-2012		ANTENNAS	$12,000		0		
8339	01-13-2012			$92		0		REPLACING 6 ANTENNAS WITH NEWER MODELS
7560	09-28-2009	DE	Demolish	$1,500		0		
0000	09-10-2009	CO	CO ISSUED	$0		0		
7495	07-14-2009	EL	Electric	$3,000		0		
7486	07-01-2009	AD	Addition	$31,395		0		CEL TOWER
	03-17-2009	EL	Electric	$0		0		INSTALLING ANTENNAS & RADIO
7201	07-09-2008			$28,000		0		NEW VINYL SIDING
6437	06-21-2008	EL	Electric	$8,000		0		

Sketch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PTO
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BAS
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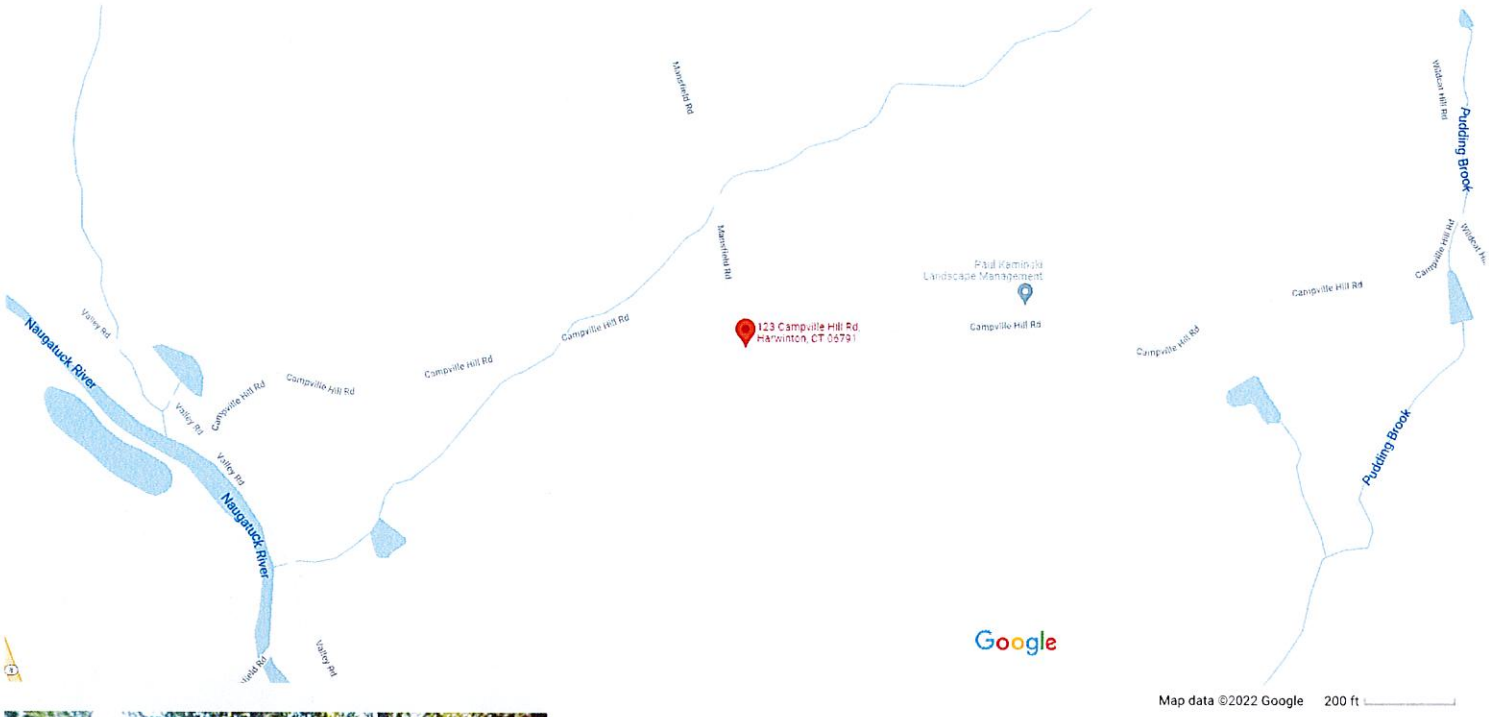
26
11
11
12

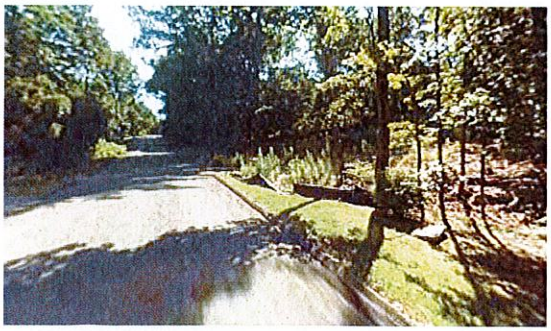
Photos

No data available for the following modules: Commercial Building.

Last Data Upload: 5/31/2022, 1:32:07 AM

123 Campville Hill Rd





123 Campville Hill Rd

Directions Save Nearby Send to phone Share

123 Campville Hill Rd, Harwinton, CT 06791

PWQ2+5J Harwinton, Connecticut

Photos

At this location

Harwinton Rod And Gun
4.7 (12)
Gun club · 123 Campville Hill Rd

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, June 1, 2022 10:13 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776998709357: Your package has been delivered

Hi. Your package was delivered Wed, 06/01/2022 at 10:12am.

Delivered to 100 BENTLEY DR, HARWINTON, CT 06791

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 776998709357

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Harwinton Michael Criss - First Selectman 100 Bentley Drive HARWINTON, CT, US, 06791
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 5/31/2022 05:13 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	HARWINTON, CT, US, 06791
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, June 1, 2022 10:14 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776998748387: Your package has been delivered

Hi. Your package was delivered Wed, 06/01/2022 at 10:12am.

Delivered to 100 BENTLEY DR, HARWINTON, CT 06791

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 776998748387

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Harwinton Polly Redmond, Land Use Coordinator 100 Bentley Drive HARWINTON, CT, US, 06791
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 5/31/2022 05:13 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	HARWINTON, CT, US, 06791
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

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Tracking Number: EI063984252US

Scheduled Delivery by

WEDNESDAY

1 JUNE 2022 ⓘ by **6:00pm** ⓘ

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Delivered, In/At Mailbox

June 1, 2022 at 12:34 pm
HARWINTON, CT 06791

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Text & Email Updates ∨

Proof of Delivery ∨

Tracking History ∨

USPS Tracking Plus® ∨

Product Information ∨

UNITED STATES POSTAL SERVICE.

NATICK STATION
15 COMMON ST
NATICK, MA 01760-4762
(800)275-8777

05/31/2022 04:39 PM

Product	Qty	Unit Price	Price
PM Express 1-Day Flat Rate Env	1		$26.95
Harwinton, CT 06791			
Flat Rate			
Signature Waiver			
Scheduled Delivery Date			
Wed 06/01/2022 06:00 PM			
Money Back Guarantee			
Tracking #:			
EI063984252US			
Insurance			$0.00
Up to $100.00 included			
Total			$26.95

Grand Total: $26.95

Credit Card Remitted $26.95
Card Name: VISA
Account #: XXXXXXXXXXXX5201
Approval #: 525896
Transaction #: 762
AID: A0000000980840 Chip
AL: US DEBIT
PIN: Not Required

****
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****

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or scan this code with your mobile device,

or call 1-800-410-7420

Date: **April 14, 2022**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11367C
	Site Name:	Litchfield1/RT 8
Crown Castle Designation:	**BU Number:**	876376
	Site Name:	Scoville Hill / Harwinton Rod
	JDE Job Number:	707820
	Work Order Number:	2100735
	Order Number:	607120 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	83609.012.01
Site Data:	**123 Campville Hill Rd., Harwinton, Litchfield County, CT** **Latitude *41° 44' 12.4"*, Longitude *-73° 5' 49.4"*** **177 Foot - Monopole**	

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

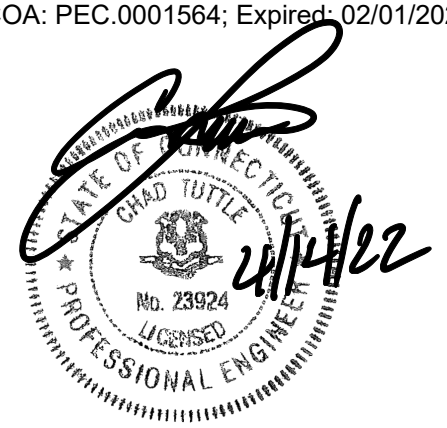
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 99.6%**

This analysis utilizes an ultimate 3-second gust wind speed of 115 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: Andrew Fisher

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expired: 02/01/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 177 ft Monopole designed by Summit in August of 2000.

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

Modifications designed by Hutter Trankina Engineering in August of 2004 are found to be ineffective and are considered for wind area only.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
167.0	167.0	3	Ericsson	KRY 112 75/1	4	1-5/8
		3	Ericsson	Radio 4480_TMOV2		
		3	RFS Celwave	APXV18-206516S-C-A20		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		1	Site Pro 1	RMQP-396 Platform w/ HRK12		

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)
177.0	179.0	3	Alcatel Lucent	1900MHZ RRH (65MHZ)	4	1-1/4
		3	Alcatel Lucent	800 External Notch Filter		
		3	Alcatel Lucent	800MHZ RRH		
		3	Alcatel Lucent	TD-RRH8x20-25		
		9	RFS Celwave	ACU-A20-N		
	177.0	3	RFS Celwave	APXVSPP18-C-A20		
		3	RFS Celwave	APXVTM14-C-120		
		1	--	Platform Mount [LP 1201-1]		
154.0	156.0	2	Antel	LPA-80063/6CF	7	1-5/8
		4	Antel	LPA-80080/6CF		
		6	Quintel Tech	QS6656-5D		
		1	RFS Celwave	DB-C1-12C-24AB-0Z		
		3	Samsung Telecom	MT6407-77A		
		3	Samsung Telecom	RFV01U-D1A		
		3	Samsung Telecom	RFV01U-D2A		
	154.0	1	--	Platform Mount [LP 303-1_HR-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
144.0	144.0	3	Fujitsu	TA08025-B604	1	1-1/2
		3	Fujitsu	TA08025-B605		
		3	JMA Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MC-PK8-DSH Platform		
127.0	129.0	3	CCI Antennas	DMP65R-BU4D	6 2 2 2	1-5/8 7/8 5/8 3/8
		3	CCI Antennas	OPA65R-BU4D		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Powerwave Tech	7770.00		
		6	Powerwave Tech	LGP21401		
		1	Raycap	DC6-48-60-18-8C-EV		
		1	Raycap	DC6-48-60-18-8F		
	127.0	1	--	Platform Mount [LP 303-1_HR-1]		
117.0	117.0	3	RFS Celwave	APXV18-206517S-C	6	1-5/8
79.0	80.0	1	Spectracom	8225	1	1/2
	79.0	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Reference	Source
Tower Manufacturing Drawings	1613568	CCI Sites
Tower Modification Drawings	1634507	CCI Sites
Legacy Modification Inspection	7041633	CCI Sites
Tower Modification Drawings	1623517	CCI Sites
Post Modification Inspection	2176310	CCI Sites
Tower Modification Drawings	2461486	CCI Sites
Post Modification Inspection	2461484	CCI Sites
Tower Modification Drawings	3384748	CCI Sites
Post Modification Inspection	3841069	CCI Sites
Foundation Drawings	1613623	CCI Sites
Geotech Report	1531965	CCI Sites
Crown CAD Package	Date: 04/07/2022	CCI Sites

3.1) Analysis Method

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

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	177 - 172	Pole	TP22.875x22x0.2188	1	-3.985	--	4.1	Pass
L2	172 - 167	Pole	TP23.75x22.875x0.2188	2	-4.297	--	7.2	Pass
L3	167 - 162	Pole	TP24.625x23.75x0.2188	3	-7.313	--	12.8	Pass
L4	162 - 157	Pole	TP25.5x24.625x0.2188	4	-7.687	--	17.7	Pass
L5	157 - 152	Pole	TP26.375x25.5x0.2188	5	-11.529	--	24.4	Pass
L6	152 - 147	Pole	TP27.25x26.375x0.2188	6	-11.990	--	31.2	Pass
L7	147 - 142	Pole	TP28.124x27.25x0.2188	7	-15.307	--	38.4	Pass
L8	142 - 137	Pole	TP28.999x28.124x0.2188	8	-15.835	--	45.9	Pass
L9	137 - 133.5	Pole	TP30.268x28.999x0.2188	9	-16.218	--	50.7	Pass
L10	133.5 - 128.5	Pole	TP30.049x29.174x0.25	10	-17.118	--	49.2	Pass
L11	128.5 - 123.5	Pole	TP30.924x30.049x0.25	11	-21.122	--	56.0	Pass
L12	123.5 - 118.58	Pole	TP31.785x30.924x0.25	12	-21.868	--	62.0	Pass
L13	118.58 - 118.33	Pole + Reinf.	TP31.828x31.785x0.3875	13	-21.928	--	56.2	Pass
L14	118.33 - 113.33	Pole + Reinf.	TP32.703x31.828x0.3875	14	-23.051	--	61.6	Pass
L15	113.33 - 108.33	Pole + Reinf.	TP33.578x32.703x0.3813	15	-24.307	--	66.8	Pass
L16	108.33 - 106.42	Pole + Reinf.	TP33.913x33.578x0.3813	16	-24.980	--	68.7	Pass
L17	106.42 - 106.17	Pole	TP33.957x33.913x0.25	17	-25.073	--	76.5	Pass
L18	106.17 - 101.17	Pole	TP34.832x33.957x0.25	18	-26.694	--	82.0	Pass
L19	101.17 - 96.17	Pole	TP35.707x34.832x0.25	19	-29.081	--	87.4	Pass
L20	96.17 - 91.17	Pole	TP36.582x35.707x0.25	20	-30.741	--	92.6	Pass
L21	91.17 - 88.75	Pole	TP37.836x36.582x0.25	21	-31.551	--	95.0	Pass
L22	88.75 - 83.75	Pole	TP37.38x36.505x0.3125	22	-33.883	--	75.7	Pass
L23	83.75 - 78.75	Pole	TP38.255x37.38x0.3125	23	-36.839	--	79.1	Pass
L24	78.75 - 73.75	Pole	TP39.13x38.255x0.3125	24	-38.810	--	82.5	Pass
L25	73.75 - 68.75	Pole	TP40.005x39.13x0.3125	25	-40.810	--	85.7	Pass
L26	68.75 - 63.75	Pole	TP40.88x40.005x0.3125	26	-42.838	--	88.8	Pass
L27	63.75 - 58.75	Pole	TP41.755x40.88x0.3125	27	-46.126	--	91.8	Pass
L28	58.75 - 53.75	Pole	TP42.63x41.755x0.3125	28	-48.211	--	94.7	Pass
L29	53.75 - 48.75	Pole	TP43.505x42.63x0.3125	29	-50.324	--	97.5	Pass
L30	48.75 - 45	Pole	TP45.167x43.505x0.3125	30	-52.330	--	99.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L31	45 - 38.25	Pole	TP44.717x43.536x0.375	31	-57.207	--	82.8	Pass
L32	38.25 - 33.25	Pole	TP45.592x44.717x0.375	32	-59.542	--	84.7	Pass
L33	33.25 - 28.25	Pole	TP46.467x45.592x0.375	33	-61.904	--	86.5	Pass
L34	28.25 - 23.25	Pole	TP47.342x46.467x0.375	34	-64.293	--	88.2	Pass
L35	23.25 - 18.25	Pole	TP48.217x47.342x0.375	35	-67.979	--	89.9	Pass
L36	18.25 - 13.25	Pole	TP49.091x48.217x0.375	36	-70.525	--	91.4	Pass
L37	13.25 - 8.25	Pole	TP49.966x49.091x0.375	37	-73.100	--	92.9	Pass
L38	8.25 - 3.25	Pole	TP50.841x49.966x0.375	38	-75.697	--	94.4	Pass
L39	3.25 - 0	Pole	TP51.41x50.841x0.375	39	-77.396	--	95.2	Pass
							Summary	
						Pole (L30)	99.6	Pass
						Reinforcement	68.7	Pass
						Rating =	99.6	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rod Brackets	Base	68.2	Pass
1,2	Anchor Rods	Base	68.0	Pass
1,2	Base Plate	Base	63.3	Pass
1,2	Base Foundation (Structure)	Base	52.7	Pass
1,2	Base Foundation (Soil Interaction)	Base	94.6	Pass
1,2	Concrete Breakout	Base	91.3	Pass

Structure Rating (max from all components) =	99.6%

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

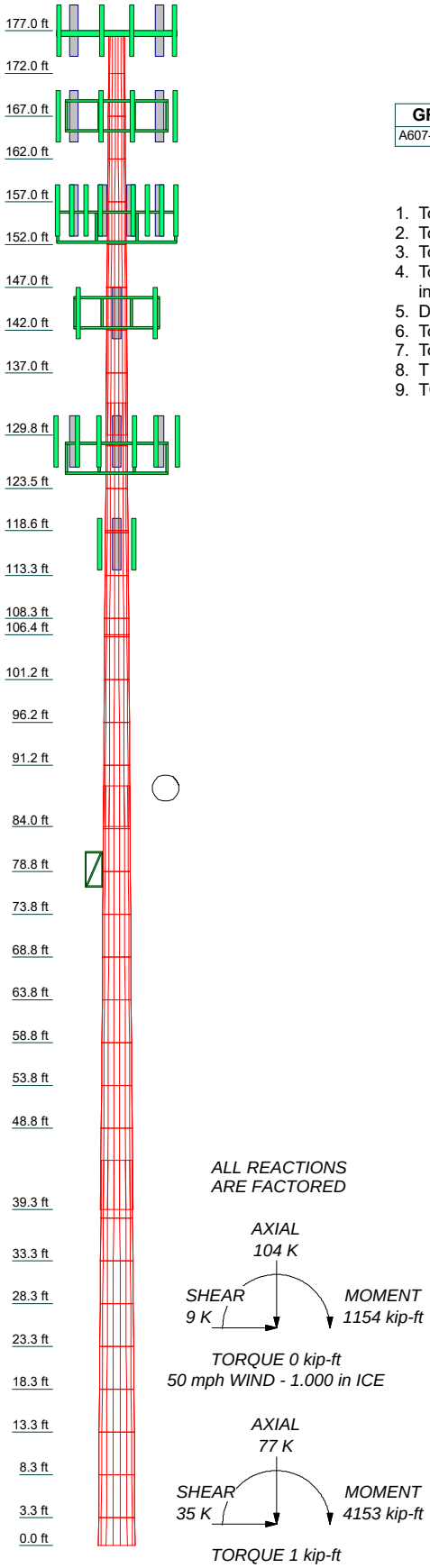
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	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	34	35	36	37	38	39
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	6.750	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	3.250
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.250	0.250	0.250	0.313	0.313	0.381	0.313	0.313	0.250	0.250	0.250	0.250	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.313	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375
Socket Length (ft)									3.750												4.750									5.750										
Top Dia (in)	22.000	22.875	23.750	24.625	25.500	26.375	27.250	28.124	28.999	29.874	30.749	31.624	32.500	33.375	34.250	35.125	36.000	36.875	37.750	38.625	39.500	40.375	41.250	42.125	43.000	43.875	44.750	45.625	46.500	47.375	48.250	49.125	50.000	50.875	51.750	52.625	53.500	54.375	55.250
Bot Dia (in)	22.875	23.750	24.625	25.500	26.375	27.250	28.124	28.999	29.874	30.749	31.624	32.500	33.375	34.250	35.125	36.000	36.875	37.750	38.625	39.500	40.375	41.250	42.125	43.000	43.875	44.750	45.625	46.500	47.375	48.250	49.125	50.000	50.875	51.750	52.625	53.500	54.375	55.250	56.125
Grade	A607-65																																						
Weight (K)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.4	0.6	0.6	0.7	0.3	0.5	0.5	0.5	0.5	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	1.4	1.2	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.7



ALL REACTIONS ARE FACTORED

AXIAL 104 K

SHEAR 9 K

MOMENT 1154 kip-ft

TORQUE 0 kip-ft
50 mph WIND - 1.000 in ICE

AXIAL 77 K

SHEAR 35 K

MOMENT 4153 kip-ft

TORQUE 1 kip-ft
REACTIONS - 115 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 99.6%

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

Job: **83609.012.01 - SCOVILLE HILL / HARWINTON ROD, CT (BU# 87637**			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 04/14/22	Scale: NTS	
Path: E:\Jobs\Pending\83609_876376_Scoville-----Jaydev-----Ramesh--QCD\83609_012_01_CCIpole\MODIFIED.eri		Dwg No. E-1	

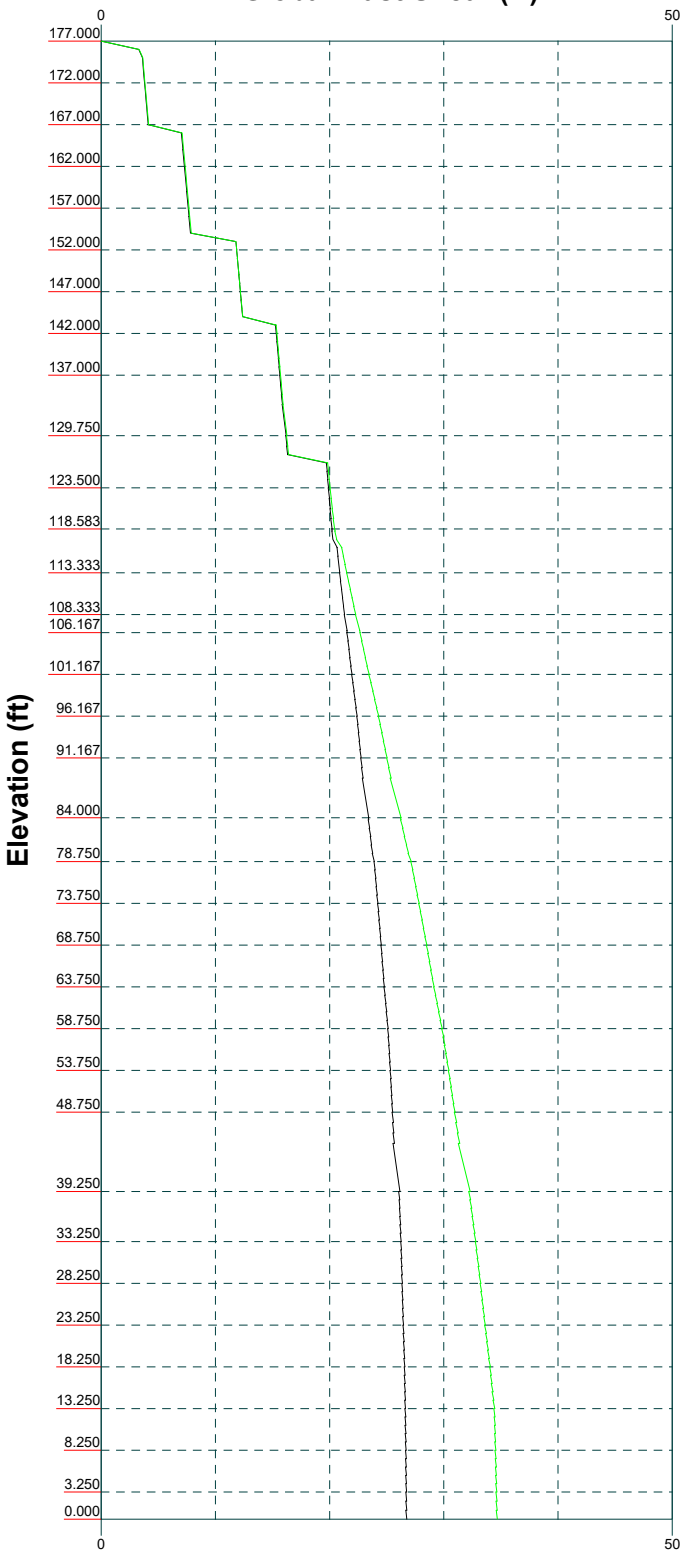
TIA-222-H - 115 mph/50 mph 1.000 in Ice Exposure B

Vx Vz

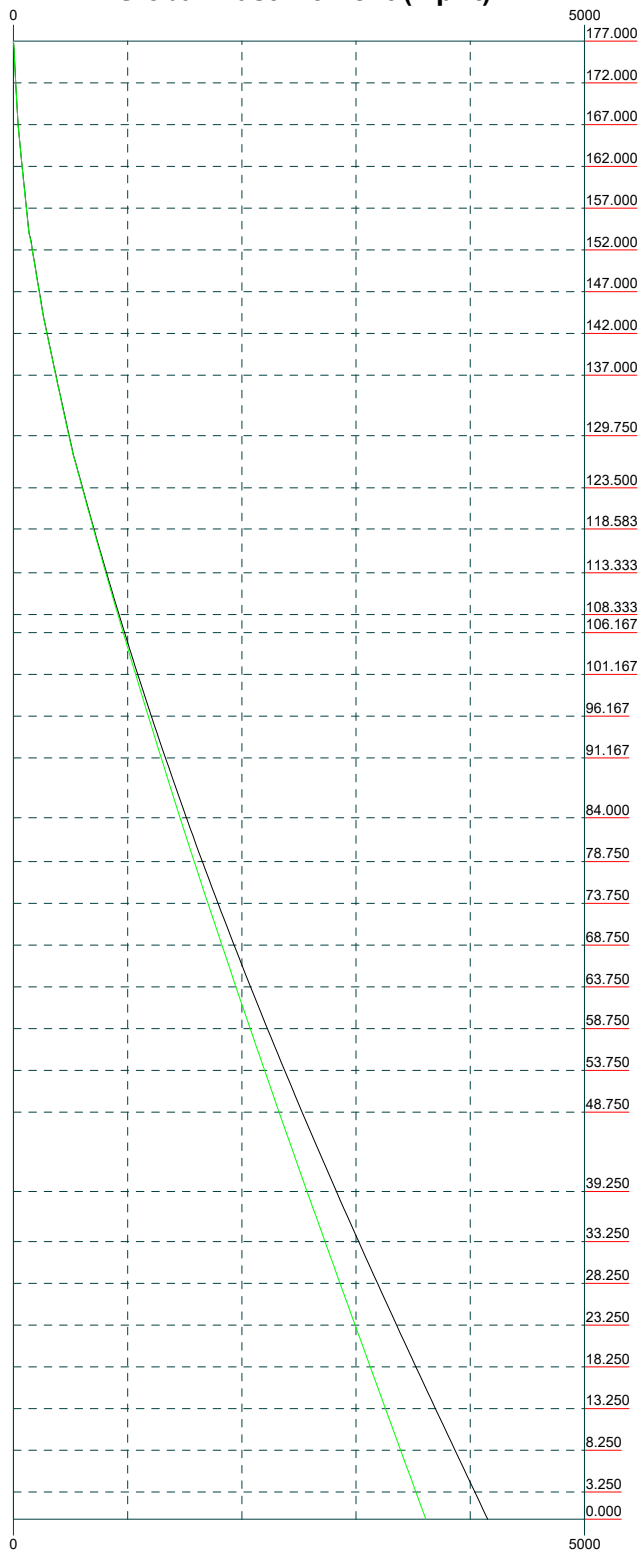
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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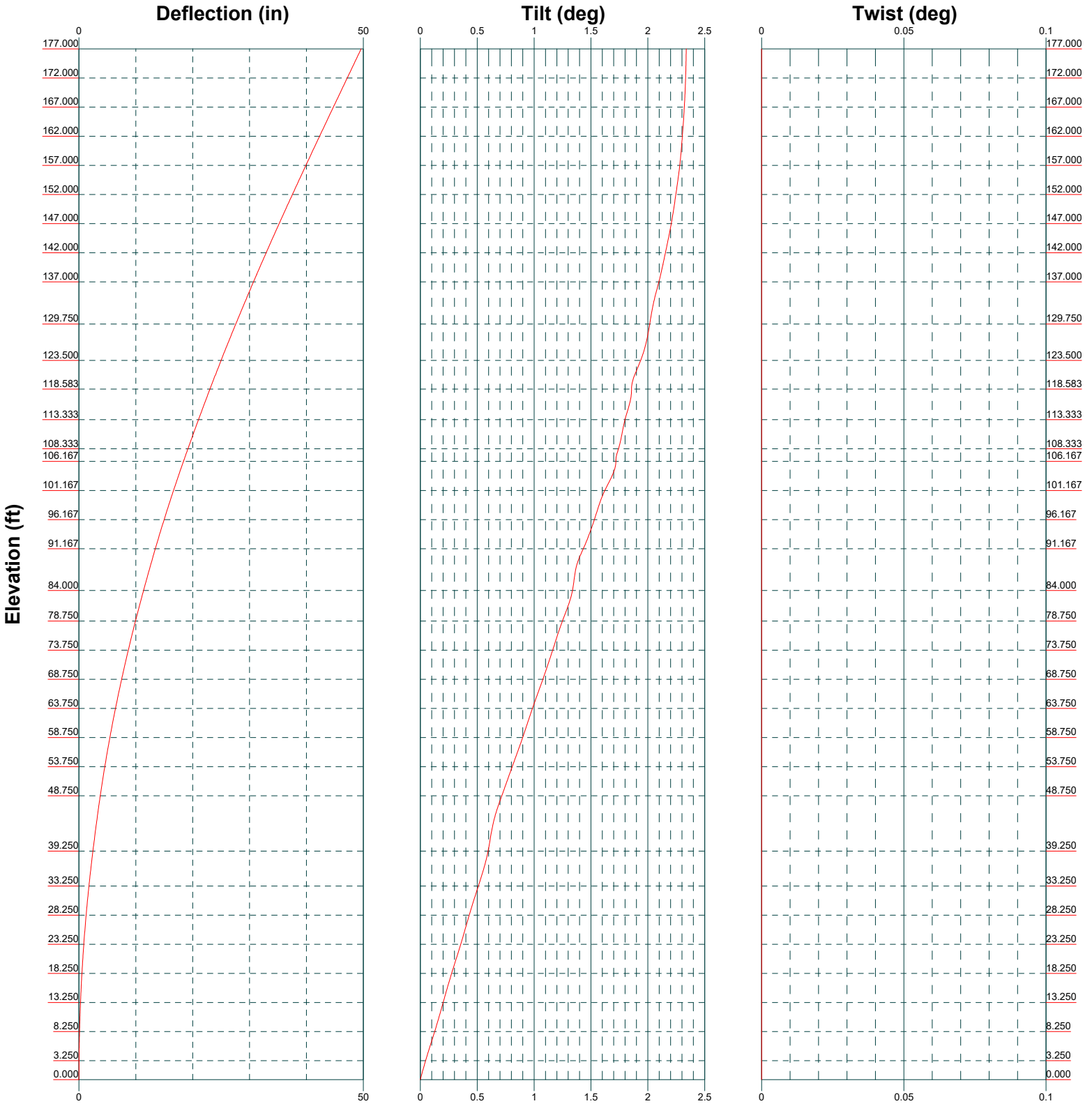
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 04/14/22	Scale: NTS	
Path: E:\Jobs\Pending\83609_876376_Scoville-----Jaydev-----Ramesh--QCD\83609_012_01_CCIpole\MODIFIED.eri		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



B+T GRP

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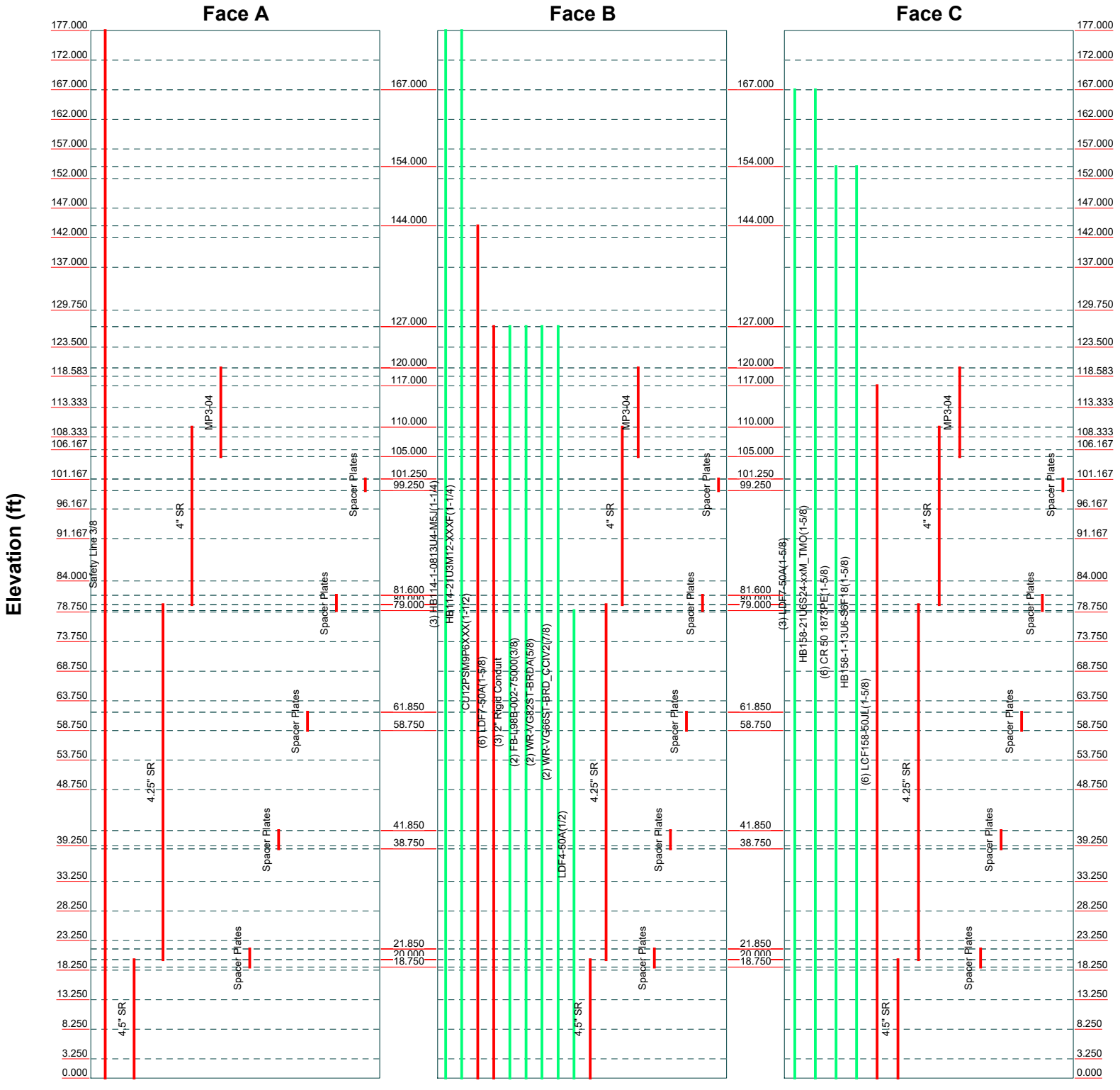
Job: ***83609.012.01 - SCOVILLE HILL / HARWINTON ROD, CT (BU# 87637***			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 04/14/22	Scale: NTS	
Path: E:\Jobs\Pending\83609_876376_Scoville-----Jaydev-----Ramesh--QCD\83609_012_01_CCIpole\MODIFIED.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 177'

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



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Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
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Path: E:\Jobs\Pending\83609_876376_Scoville-----Jaydev-----Ramesh--QCD\83609_012_01_CC\pole\MODIFIED.pri		Dwg No. E-7	

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 Litchfield County, Connecticut.
Tower base elevation above sea level: 735.000 ft.
Basic wind speed of 115 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	177.000-172.000	5.000	0.000	18	22.000	22.875	0.219	0.875	A607-65 (65 ksi)
L2	172.000-167.000	5.000	0.000	18	22.875	23.750	0.219	0.875	A607-65 (65 ksi)
L3	167.000-162.000	5.000	0.000	18	23.750	24.625	0.219	0.875	A607-65 (65 ksi)
L4	162.000-157.000	5.000	0.000	18	24.625	25.500	0.219	0.875	A607-65 (65 ksi)
L5	157.000-152.000	5.000	0.000	18	25.500	26.375	0.219	0.875	A607-65 (65 ksi)
L6	152.000-147.000	5.000	0.000	18	26.375	27.250	0.219	0.875	A607-65 (65 ksi)
L7	147.000-142.000	5.000	0.000	18	27.250	28.124	0.219	0.875	A607-65 (65 ksi)
L8	142.000-137.000	5.000	0.000	18	28.124	28.999	0.219	0.875	A607-65 (65 ksi)
L9	137.000-129.750	7.250	3.750	18	28.999	30.268	0.219	0.875	A607-65 (65 ksi)
L10	129.750-128.500	5.000	0.000	18	29.174	30.049	0.250	1.000	A607-65 (65 ksi)
L11	128.500-123.500	5.000	0.000	18	30.049	30.924	0.250	1.000	A607-65 (65 ksi)
L12	123.500-118.583	4.917	0.000	18	30.924	31.785	0.250	1.000	A607-65 (65 ksi)
L13	118.583-118.333	0.250	0.000	18	31.785	31.828	0.388	1.550	A607-65 (65 ksi)
L14	118.333-113.333	5.000	0.000	18	31.828	32.703	0.388	1.550	A607-65 (65 ksi)
L15	113.333-108.333	5.000	0.000	18	32.703	33.578	0.381	1.525	A607-65 (65 ksi)
L16	108.333-106.417	1.916	0.000	18	33.578	33.913	0.381	1.525	A607-65 (65 ksi)
L17	106.417-106.167	0.250	0.000	18	33.913	33.957	0.250	1.000	A607-65 (65 ksi)
L18	106.167-101.167	5.000	0.000	18	33.957	34.832	0.250	1.000	A607-65 (65 ksi)
L19	101.167-96.167	5.000	0.000	18	34.832	35.707	0.250	1.000	A607-65 (65 ksi)
L20	96.167-91.167	5.000	0.000	18	35.707	36.582	0.250	1.000	A607-65 (65 ksi)
L21	91.167-84.000	7.167	4.750	18	36.582	37.836	0.250	1.000	A607-65 (65 ksi)
L22	84.000-83.750	5.000	0.000	18	36.505	37.380	0.313	1.250	A607-65 (65 ksi)
L23	83.750-78.750	5.000	0.000	18	37.380	38.255	0.313	1.250	A607-65 (65 ksi)
L24	78.750-73.750	5.000	0.000	18	38.255	39.130	0.313	1.250	A607-65 (65 ksi)
L25	73.750-68.750	5.000	0.000	18	39.130	40.005	0.313	1.250	A607-65 (65 ksi)
L26	68.750-63.750	5.000	0.000	18	40.005	40.880	0.313	1.250	A607-65 (65 ksi)
L27	63.750-58.750	5.000	0.000	18	40.880	41.755	0.313	1.250	A607-65 (65 ksi)
L28	58.750-53.750	5.000	0.000	18	41.755	42.630	0.313	1.250	A607-65 (65 ksi)
L29	53.750-48.750	5.000	0.000	18	42.630	43.505	0.313	1.250	A607-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	48.750-39.250	9.500	5.750	18	43.505	45.167	0.313	1.250	A607-65 (65 ksi)
L31	39.250-38.250	6.750	0.000	18	43.536	44.717	0.375	1.500	A607-65 (65 ksi)
L32	38.250-33.250	5.000	0.000	18	44.717	45.592	0.375	1.500	A607-65 (65 ksi)
L33	33.250-28.250	5.000	0.000	18	45.592	46.467	0.375	1.500	A607-65 (65 ksi)
L34	28.250-23.250	5.000	0.000	18	46.467	47.342	0.375	1.500	A607-65 (65 ksi)
L35	23.250-18.250	5.000	0.000	18	47.342	48.217	0.375	1.500	A607-65 (65 ksi)
L36	18.250-13.250	5.000	0.000	18	48.217	49.091	0.375	1.500	A607-65 (65 ksi)
L37	13.250-8.250	5.000	0.000	18	49.091	49.966	0.375	1.500	A607-65 (65 ksi)
L38	8.250-3.250	5.000	0.000	18	49.966	50.841	0.375	1.500	A607-65 (65 ksi)
L39	3.250-0.000	3.250		18	50.841	51.410	0.375	1.500	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.306	15.123	906.444	7.732	11.176	81.106	1814.080	7.563	3.487	15.941
	23.194	15.730	1020.122	8.043	11.620	87.787	2041.586	7.867	3.641	16.645
L2	23.194	15.730	1020.122	8.043	11.620	87.787	2041.586	7.867	3.641	16.645
	24.082	16.338	1142.927	8.354	12.065	94.731	2287.359	8.171	3.795	17.348
L3	24.082	16.338	1142.927	8.354	12.065	94.731	2287.359	8.171	3.795	17.348
	24.971	16.945	1275.213	8.664	12.509	101.941	2552.105	8.474	3.949	18.052
L4	24.971	16.945	1275.213	8.664	12.509	101.941	2552.105	8.474	3.949	18.052
	25.859	17.553	1417.332	8.975	12.954	109.414	2836.530	8.778	4.103	18.756
L5	25.859	17.553	1417.332	8.975	12.954	109.414	2836.530	8.778	4.103	18.756
	26.748	18.160	1569.637	9.285	13.398	117.152	3141.338	9.082	4.257	19.46
L6	26.748	18.160	1569.637	9.285	13.398	117.152	3141.338	9.082	4.257	19.46
	27.636	18.768	1732.479	9.596	13.843	125.154	3467.237	9.386	4.411	20.164
L7	27.636	18.768	1732.479	9.596	13.843	125.154	3467.237	9.386	4.411	20.164
	28.525	19.375	1906.211	9.907	14.287	133.421	3814.930	9.689	4.565	20.868
L8	28.525	19.375	1906.211	9.907	14.287	133.421	3814.930	9.689	4.565	20.868
	29.413	19.983	2091.186	10.217	14.732	141.952	4185.123	9.993	4.719	21.572
L9	29.413	19.983	2091.186	10.217	14.732	141.952	4185.123	9.993	4.719	21.572
	30.701	20.864	2380.090	10.667	15.376	154.791	4763.311	10.434	4.942	22.593
L10	30.252	22.951	2425.903	10.268	14.821	163.685	4854.998	11.478	4.695	18.779
	30.474	23.646	2652.769	10.579	15.265	173.781	5309.028	11.825	4.849	19.395
L11	30.474	23.646	2652.769	10.579	15.265	173.781	5309.028	11.825	4.849	19.395
	31.363	24.340	2893.356	10.889	15.709	184.179	5790.518	12.172	5.003	20.011
L12	31.363	24.340	2893.356	10.889	15.709	184.179	5790.518	12.172	5.003	20.011
	32.236	25.023	3143.720	11.195	16.147	194.699	6291.578	12.514	5.154	20.616
L13	32.215	38.616	4809.304	11.146	16.147	297.853	9624.936	19.312	4.912	12.676
	32.260	38.670	4829.435	11.161	16.169	298.689	9665.224	19.339	4.920	12.696
L14	32.260	38.670	4829.435	11.161	16.169	298.689	9665.224	19.339	4.920	12.696
	33.148	39.746	5243.931	11.472	16.613	315.648	10494.762	19.877	5.074	13.094
L15	33.149	39.112	5162.346	11.474	16.613	310.737	10331.484	19.560	5.085	13.337
	34.037	40.171	5593.012	11.785	17.058	327.888	11193.384	20.089	5.239	13.741
L16	34.037	40.171	5593.012	11.785	17.058	327.888	11193.384	20.089	5.239	13.741

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	34.378	40.577	5764.188	11.904	17.228	334.582	11535.960	20.292	5.298	13.896
L17	34.398	26.712	3824.353	11.951	17.228	221.985	7653.739	13.358	5.529	22.115
	34.442	26.747	3839.282	11.966	17.250	222.564	7683.616	13.376	5.536	22.146
L18	34.442	26.747	3839.282	11.966	17.250	222.564	7683.616	13.376	5.536	22.146
	35.331	27.441	4146.072	12.277	17.695	234.312	8297.599	13.723	5.690	22.762
L19	35.331	27.441	4146.072	12.277	17.695	234.312	8297.599	13.723	5.690	22.762
	36.219	28.135	4468.784	12.587	18.139	246.361	8943.449	14.070	5.844	23.378
L20	36.219	28.135	4468.784	12.587	18.139	246.361	8943.449	14.070	5.844	23.378
	37.108	28.829	4807.822	12.898	18.584	258.713	9621.971	14.417	5.998	23.994
L21	37.108	28.829	4807.822	12.898	18.584	258.713	9621.971	14.417	5.998	23.994
	38.381	29.824	5323.077	13.343	19.221	276.945	10653.157	14.915	6.219	24.877
L22	37.864	35.898	5940.787	12.848	18.544	320.354	11889.390	17.953	5.875	18.8
	37.908	36.766	6382.151	13.159	18.989	336.098	12772.700	18.387	6.029	19.292
L23	37.908	36.766	6382.151	13.159	18.989	336.098	12772.700	18.387	6.029	19.292
	38.797	37.634	6844.852	13.470	19.433	352.221	13698.710	18.821	6.183	19.785
L24	38.797	37.634	6844.852	13.470	19.433	352.221	13698.710	18.821	6.183	19.785
	39.685	38.502	7329.392	13.780	19.878	368.721	14668.428	19.255	6.337	20.278
L25	39.685	38.502	7329.392	13.780	19.878	368.721	14668.428	19.255	6.337	20.278
	40.574	39.370	7836.276	14.091	20.322	385.598	15682.864	19.689	6.491	20.771
L26	40.574	39.370	7836.276	14.091	20.322	385.598	15682.864	19.689	6.491	20.771
	41.462	40.238	8366.008	14.401	20.767	402.854	16743.024	20.123	6.645	21.263
L27	41.462	40.238	8366.008	14.401	20.767	402.854	16743.024	20.123	6.645	21.263
	42.351	41.105	8919.090	14.712	21.211	420.487	17849.917	20.557	6.799	21.756
L28	42.351	41.105	8919.090	14.712	21.211	420.487	17849.917	20.557	6.799	21.756
	43.239	41.973	9496.028	15.023	21.656	438.497	19004.550	20.991	6.953	22.249
L29	43.239	41.973	9496.028	15.023	21.656	438.497	19004.550	20.991	6.953	22.249
	44.127	42.841	10097.323	15.333	22.100	456.886	20207.932	21.425	7.107	22.742
L30	44.127	42.841	10097.323	15.333	22.100	456.886	20207.932	21.425	7.107	22.742
	45.816	44.490	11308.694	15.923	22.945	492.864	22632.268	22.249	7.399	23.678
L31	45.171	51.372	12090.485	15.322	22.116	546.681	24196.880	25.691	7.002	18.673
	45.349	52.778	13110.496	15.741	22.716	577.143	26238.243	26.394	7.210	19.227
L32	45.349	52.778	13110.496	15.741	22.716	577.143	26238.243	26.394	7.210	19.227
	46.237	53.819	13901.960	16.052	23.161	600.240	27822.213	26.915	7.364	19.638
L33	46.237	53.819	13901.960	16.052	23.161	600.240	27822.213	26.915	7.364	19.638
	47.126	54.861	14724.654	16.363	23.605	623.791	29468.683	27.436	7.518	20.048
L34	47.126	54.861	14724.654	16.363	23.605	623.791	29468.683	27.436	7.518	20.048
	48.014	55.902	15579.180	16.673	24.050	647.795	31178.859	27.956	7.672	20.459
L35	48.014	55.902	15579.180	16.673	24.050	647.795	31178.859	27.956	7.672	20.459
	48.903	56.943	16466.144	16.984	24.494	672.252	32953.955	28.477	7.826	20.87
L36	48.903	56.943	16466.144	16.984	24.494	672.252	32953.955	28.477	7.826	20.87
	49.791	57.985	17386.149	17.294	24.938	697.162	34795.175	28.998	7.980	21.28
L37	49.791	57.985	17386.149	17.294	24.938	697.162	34795.175	28.998	7.980	21.28
	50.679	59.026	18339.801	17.605	25.383	722.525	36703.734	29.519	8.134	21.691
L38	50.679	59.026	18339.801	17.605	25.383	722.525	36703.734	29.519	8.134	21.691
	51.568	60.068	19327.702	17.916	25.827	748.341	38680.835	30.039	8.288	22.102
L39	51.568	60.068	19327.702	17.916	25.827	748.341	38680.835	30.039	8.288	22.102
	52.145	60.744	19988.490	18.117	26.116	765.365	40003.282	30.378	8.388	22.368

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 177.000-172.000				1	1	1			
L2 172.000-167.000				1	1	1			
L3 167.000-162.0				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
00									
L4				1	1	1			
162.000-157.0									
00									
L5				1	1	1			
157.000-152.0									
00									
L6				1	1	1			
152.000-147.0									
00									
L7				1	1	1			
147.000-142.0									
00									
L8				1	1	1			
142.000-137.0									
00									
L9				1	1	1			
137.000-129.7									
50									
L10				1	1	1			
129.750-128.5									
00									
L11				1	1	1			
128.500-123.5									
00									
L12				1	1	1			
123.500-118.5									
83									
L13				1	1	0.968399			
118.583-118.3									
33									
L14				1	1	0.959648			
118.333-113.3									
33									
L15				1	1	0.966772			
113.333-108.3									
33									
L16				1	1	0.963662			
108.333-106.4									
17									
L17				1	1	1			
106.417-106.1									
67									
L18				1	1	1			
106.167-101.1									
67									
L19				1	1	1			
101.167-96.16									
7									
L20				1	1	1			
96.167-91.167									
L21				1	1	1			
91.167-84.000									
L22				1	1	1			
84.000-83.750									
L23				1	1	1			
83.750-78.750									
L24				1	1	1			
78.750-73.750									

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L25 73.750-68.750				1	1	1			
L26 68.750-63.750				1	1	1			
L27 63.750-58.750				1	1	1			
L28 58.750-53.750				1	1	1			
L29 53.750-48.750				1	1	1			
L30 48.750-39.250				1	1	1			
L31 39.250-38.250				1	1	1			
L32 38.250-33.250				1	1	1			
L33 33.250-28.250				1	1	1			
L34 28.250-23.250				1	1	1			
L35 23.250-18.250				1	1	1			
L36 18.250-13.250				1	1	1			
L37 13.250-8.250				1	1	1			
L38 8.250-3.250				1	1	1			
L39 3.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
* CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	144.000 - 0.000	1	1	0.250 0.300	1.600		0.002
* LDF7-50A(1-5/8)	B	No	Surface Ar (CaAa)	127.000 - 0.000	6	4	0.000 0.250	1.980		0.001
* LCF158-50JL(1-5/8)	C	No	Surface Ar (CaAa)	117.000 - 0.000	6	6	0.000 0.250	1.980		0.001
* Safety Line 3/8	A	No	Surface Ar (CaAa)	177.000 - 0.000	1	1	0.500 0.500	0.375		0.000
* ** MODS ** 4.5" SR	A	No	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.300 0.350	4.500		0.054
4.5" SR	B	No	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.300 0.350	4.500		0.054

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 klf
4.5" SR	C	No	Surface Ar (CaAa)	20.000 - 0.000	1	1	0.300 0.350	4.500		0.054
4.25" SR	A	No	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.300 0.350	4.250		0.048
4.25" SR	B	No	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.300 0.350	4.250		0.048
4.25" SR	C	No	Surface Ar (CaAa)	80.000 - 20.000	1	1	0.300 0.350	4.250		0.048
4" SR	A	No	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.300 0.350	4.000		0.043
4" SR	B	No	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.300 0.350	4.000		0.043
4" SR	C	No	Surface Ar (CaAa)	110.000 - 80.000	1	1	0.300 0.350	4.000		0.043
*										
MP3-04	A	No	Surface Af (CaAa)	120.000 - 105.000	1	1	0.350 0.400	4.780	12.780	0.000
MP3-04	B	No	Surface Af (CaAa)	120.000 - 105.000	1	1	0.350 0.400	4.780	12.780	0.000
MP3-04	C	No	Surface Af (CaAa)	120.000 - 105.000	1	1	0.350 0.400	4.780	12.780	0.000
*										
Spacer Plates	A	No	Surface Af (CaAa)	21.850 - 18.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	B	No	Surface Af (CaAa)	21.850 - 18.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	C	No	Surface Af (CaAa)	21.850 - 18.750	1	1	0.300 0.350	16.250	36.500	0.111
*										
Spacer Plates	A	No	Surface Af (CaAa)	41.850 - 38.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	B	No	Surface Af (CaAa)	41.850 - 38.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	C	No	Surface Af (CaAa)	41.850 - 38.750	1	1	0.300 0.350	16.250	36.500	0.111
*										
Spacer Plates	A	No	Surface Af (CaAa)	61.850 - 58.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	B	No	Surface Af (CaAa)	61.850 - 58.750	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	C	No	Surface Af (CaAa)	61.850 - 58.750	1	1	0.300 0.350	16.250	36.500	0.111
*										
Spacer Plates	A	No	Surface Af (CaAa)	81.600 - 79.000	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	B	No	Surface Af (CaAa)	81.600 - 79.000	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	C	No	Surface Af (CaAa)	81.600 - 79.000	1	1	0.300 0.350	16.250	36.500	0.111
*										
Spacer Plates	A	No	Surface Af (CaAa)	101.250 - 99.250	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	B	No	Surface Af (CaAa)	101.250 - 99.250	1	1	0.300 0.350	16.250	36.500	0.111
Spacer Plates	C	No	Surface Af (CaAa)	101.250 - 99.250	1	1	0.300 0.350	16.250	36.500	0.111
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-0813U4-M5J(1-1/4)	B	No	No	Inside Pole	177.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
HB114-21U3M12-XXXF(1-1/4)	B	No	No	Inside Pole	177.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
*									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	167.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	167.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
*									
CR 50 1873PE(1-5/8)	C	No	No	Inside Pole	154.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
HB158-1-13U6-S6F18(1-5/8)	C	No	No	Inside Pole	154.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
2" Rigid Conduit	B	No	No	Inside Pole	127.000 - 0.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
FB-L98B-002-75000 (3/8)	B	No	No	Inside Pole	127.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
WR-VG82ST-BRDA(5/8)	B	No	No	Inside Pole	127.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
WR-VG66ST-BRD_CCIV2(7/8)	B	No	No	Inside Pole	127.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
*									
LDF4-50A(1/2)	B	No	No	Inside Pole	79.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
*									
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	177.000-172.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.000
L2	172.000-167.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.000
L3	167.000-162.000	A	0.000	0.000	0.188	0.000	0.001

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.025
L4	162.000-157.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.025
L5	157.000-152.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.039
L6	152.000-147.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.024
		C	0.000	0.000	0.000	0.000	0.059
L7	147.000-142.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.320	0.000	0.029
		C	0.000	0.000	0.000	0.000	0.059
L8	142.000-137.000	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.800	0.000	0.036
		C	0.000	0.000	0.000	0.000	0.059
L9	137.000-129.750	A	0.000	0.000	0.272	0.000	0.002
		B	0.000	0.000	1.160	0.000	0.052
		C	0.000	0.000	0.000	0.000	0.086
L10	129.750-128.500	A	0.000	0.000	0.047	0.000	0.000
		B	0.000	0.000	0.200	0.000	0.009
		C	0.000	0.000	0.000	0.000	0.015
L11	128.500-123.500	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	3.572	0.000	0.091
		C	0.000	0.000	0.000	0.000	0.059
L12	123.500-118.583	A	0.000	0.000	1.313	0.000	0.001
		B	0.000	0.000	5.810	0.000	0.113
		C	0.000	0.000	1.129	0.000	0.058
L13	118.583-118.333	A	0.000	0.000	0.209	0.000	0.000
		B	0.000	0.000	0.437	0.000	0.006
		C	0.000	0.000	0.199	0.000	0.003
L14	118.333-113.333	A	0.000	0.000	4.171	0.000	0.001
		B	0.000	0.000	8.743	0.000	0.115
		C	0.000	0.000	8.340	0.000	0.071
L15	113.333-108.333	A	0.000	0.000	4.838	0.000	0.072
		B	0.000	0.000	9.410	0.000	0.186
		C	0.000	0.000	10.590	0.000	0.146
L16	108.333-106.417	A	0.000	0.000	2.365	0.000	0.082
		B	0.000	0.000	4.117	0.000	0.126
		C	0.000	0.000	4.569	0.000	0.111
L17	106.417-106.167	A	0.000	0.000	0.309	0.000	0.011
		B	0.000	0.000	0.537	0.000	0.016
		C	0.000	0.000	0.596	0.000	0.014
L18	106.167-101.167	A	0.000	0.000	3.252	0.000	0.224
		B	0.000	0.000	7.825	0.000	0.338
		C	0.000	0.000	9.005	0.000	0.298
L19	101.167-96.167	A	0.000	0.000	5.303	0.000	0.427
		B	0.000	0.000	9.875	0.000	0.541
		C	0.000	0.000	11.055	0.000	0.501
L20	96.167-91.167	A	0.000	0.000	2.188	0.000	0.215
		B	0.000	0.000	6.760	0.000	0.329
		C	0.000	0.000	7.940	0.000	0.289
L21	91.167-84.000	A	0.000	0.000	3.136	0.000	0.308
		B	0.000	0.000	9.690	0.000	0.471
		C	0.000	0.000	11.381	0.000	0.414
L22	84.000-83.750	A	0.000	0.000	0.109	0.000	0.011
		B	0.000	0.000	0.338	0.000	0.016
		C	0.000	0.000	0.397	0.000	0.014
L23	83.750-78.750	A	0.000	0.000	6.444	0.000	0.509
		B	0.000	0.000	11.016	0.000	0.623

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	12.196	0.000	0.583
L24	78.750-73.750	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L25	73.750-68.750	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L26	68.750-63.750	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L27	63.750-58.750	A	0.000	0.000	7.350	0.000	0.585
		B	0.000	0.000	11.922	0.000	0.700
		C	0.000	0.000	13.102	0.000	0.659
L28	58.750-53.750	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L29	53.750-48.750	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L30	48.750-39.250	A	0.000	0.000	8.619	0.000	0.748
		B	0.000	0.000	17.307	0.000	0.966
		C	0.000	0.000	19.549	0.000	0.888
L31	39.250-38.250	A	0.000	0.000	1.275	0.000	0.104
		B	0.000	0.000	2.189	0.000	0.127
		C	0.000	0.000	2.426	0.000	0.119
L32	38.250-33.250	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L33	33.250-28.250	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L34	28.250-23.250	A	0.000	0.000	2.313	0.000	0.242
		B	0.000	0.000	6.885	0.000	0.357
		C	0.000	0.000	8.065	0.000	0.316
L35	23.250-18.250	A	0.000	0.000	7.394	0.000	0.596
		B	0.000	0.000	11.966	0.000	0.710
		C	0.000	0.000	13.146	0.000	0.669
L36	18.250-13.250	A	0.000	0.000	2.438	0.000	0.272
		B	0.000	0.000	7.010	0.000	0.386
		C	0.000	0.000	8.190	0.000	0.345
L37	13.250-8.250	A	0.000	0.000	2.438	0.000	0.272
		B	0.000	0.000	7.010	0.000	0.386
		C	0.000	0.000	8.190	0.000	0.345
L38	8.250-3.250	A	0.000	0.000	2.438	0.000	0.272
		B	0.000	0.000	7.010	0.000	0.386
		C	0.000	0.000	8.190	0.000	0.345
L39	3.250-0.000	A	0.000	0.000	1.584	0.000	0.177
		B	0.000	0.000	4.556	0.000	0.251
		C	0.000	0.000	5.324	0.000	0.225

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	177.000-172.000	A	1.004	0.000	0.000	1.192	0.000	0.010
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L2	172.000-167.000	A	1.001	0.000	0.000	1.189	0.000	0.010
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.000
L3	167.000-162.000	A	0.998	0.000	0.000	1.186	0.000	0.009
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.025
L4	162.000-157.000	A	0.995	0.000	0.000	1.183	0.000	0.009
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.025
L5	157.000-152.000	A	0.992	0.000	0.000	1.179	0.000	0.009
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.039
L6	152.000-147.000	A	0.989	0.000	0.000	1.176	0.000	0.009
		B		0.000	0.000	0.000	0.000	0.024
		C		0.000	0.000	0.000	0.000	0.059
L7	147.000-142.000	A	0.985	0.000	0.000	1.173	0.000	0.009
		B		0.000	0.000	0.714	0.000	0.035
		C		0.000	0.000	0.000	0.000	0.059
L8	142.000-137.000	A	0.982	0.000	0.000	1.169	0.000	0.009
		B		0.000	0.000	1.782	0.000	0.051
		C		0.000	0.000	0.000	0.000	0.059
L9	137.000-129.750	A	0.977	0.000	0.000	1.689	0.000	0.013
		B		0.000	0.000	2.577	0.000	0.074
		C		0.000	0.000	0.000	0.000	0.086
L10	129.750-128.500	A	0.974	0.000	0.000	0.291	0.000	0.002
		B		0.000	0.000	0.444	0.000	0.013
		C		0.000	0.000	0.000	0.000	0.015
L11	128.500-123.500	A	0.972	0.000	0.000	1.159	0.000	0.009
		B		0.000	0.000	6.087	0.000	0.144
		C		0.000	0.000	0.000	0.000	0.059
L12	123.500-118.583	A	0.968	0.000	0.000	2.539	0.000	0.018
		B		0.000	0.000	9.200	0.000	0.190
		C		0.000	0.000	1.403	0.000	0.067
L13	118.583-118.333	A	0.966	0.000	0.000	0.305	0.000	0.002
		B		0.000	0.000	0.644	0.000	0.011
		C		0.000	0.000	0.247	0.000	0.005
L14	118.333-113.333	A	0.964	0.000	0.000	6.098	0.000	0.040
		B		0.000	0.000	12.865	0.000	0.214
		C		0.000	0.000	11.276	0.000	0.147
L15	113.333-108.333	A	0.959	0.000	0.000	7.076	0.000	0.121
		B		0.000	0.000	13.838	0.000	0.295
		C		0.000	0.000	14.554	0.000	0.249
L16	108.333-106.417	A	0.956	0.000	0.000	3.464	0.000	0.108
		B		0.000	0.000	6.054	0.000	0.175
		C		0.000	0.000	6.329	0.000	0.157
L17	106.417-106.167	A	0.955	0.000	0.000	0.452	0.000	0.014
		B		0.000	0.000	0.790	0.000	0.023
		C		0.000	0.000	0.826	0.000	0.021
L18	106.167-101.167	A	0.953	0.000	0.000	5.390	0.000	0.269
		B		0.000	0.000	12.144	0.000	0.443
		C		0.000	0.000	12.866	0.000	0.397
L19	101.167-96.167	A	0.948	0.000	0.000	7.411	0.000	0.492
		B		0.000	0.000	14.159	0.000	0.665
		C		0.000	0.000	14.886	0.000	0.619
L20	96.167-91.167	A	0.943	0.000	0.000	4.074	0.000	0.251
		B		0.000	0.000	10.816	0.000	0.424
		C		0.000	0.000	11.548	0.000	0.378
L21	91.167-84.000	A	0.937	0.000	0.000	5.822	0.000	0.359
		B		0.000	0.000	15.475	0.000	0.607
		C		0.000	0.000	16.532	0.000	0.542
L22	84.000-83.750	A	0.933	0.000	0.000	0.203	0.000	0.013

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.540	0.000	0.021
		C		0.000	0.000	0.577	0.000	0.019
L23	83.750-78.750	A	0.930	0.000	0.000	8.586	0.000	0.583
		B		0.000	0.000	15.311	0.000	0.755
		C		0.000	0.000	16.056	0.000	0.710
L24	78.750-73.750	A	0.924	0.000	0.000	4.161	0.000	0.279
		B		0.000	0.000	10.879	0.000	0.452
		C		0.000	0.000	11.630	0.000	0.406
L25	73.750-68.750	A	0.918	0.000	0.000	4.148	0.000	0.279
		B		0.000	0.000	10.858	0.000	0.451
		C		0.000	0.000	11.615	0.000	0.405
L26	68.750-63.750	A	0.911	0.000	0.000	4.135	0.000	0.278
		B		0.000	0.000	10.837	0.000	0.451
		C		0.000	0.000	11.601	0.000	0.404
L27	63.750-58.750	A	0.904	0.000	0.000	9.485	0.000	0.664
		B		0.000	0.000	16.178	0.000	0.836
		C		0.000	0.000	16.949	0.000	0.790
L28	58.750-53.750	A	0.897	0.000	0.000	4.106	0.000	0.278
		B		0.000	0.000	10.789	0.000	0.449
		C		0.000	0.000	11.567	0.000	0.403
L29	53.750-48.750	A	0.888	0.000	0.000	4.089	0.000	0.277
		B		0.000	0.000	10.762	0.000	0.448
		C		0.000	0.000	11.549	0.000	0.402
L30	48.750-39.250	A	0.875	0.000	0.000	12.208	0.000	0.848
		B		0.000	0.000	24.854	0.000	1.171
		C		0.000	0.000	26.375	0.000	1.084
L31	39.250-38.250	A	0.864	0.000	0.000	1.676	0.000	0.117
		B		0.000	0.000	3.007	0.000	0.151
		C		0.000	0.000	3.167	0.000	0.142
L32	38.250-33.250	A	0.857	0.000	0.000	4.026	0.000	0.276
		B		0.000	0.000	10.660	0.000	0.445
		C		0.000	0.000	11.478	0.000	0.399
L33	33.250-28.250	A	0.844	0.000	0.000	4.000	0.000	0.275
		B		0.000	0.000	10.618	0.000	0.443
		C		0.000	0.000	11.449	0.000	0.398
L34	28.250-23.250	A	0.829	0.000	0.000	3.971	0.000	0.274
		B		0.000	0.000	10.570	0.000	0.442
		C		0.000	0.000	11.416	0.000	0.396
L35	23.250-18.250	A	0.811	0.000	0.000	9.310	0.000	0.666
		B		0.000	0.000	15.887	0.000	0.832
		C		0.000	0.000	16.750	0.000	0.787
L36	18.250-13.250	A	0.789	0.000	0.000	4.016	0.000	0.303
		B		0.000	0.000	10.565	0.000	0.468
		C		0.000	0.000	11.451	0.000	0.423
L37	13.250-8.250	A	0.760	0.000	0.000	3.957	0.000	0.301
		B		0.000	0.000	10.469	0.000	0.465
		C		0.000	0.000	11.384	0.000	0.420
L38	8.250-3.250	A	0.714	0.000	0.000	3.865	0.000	0.299
		B		0.000	0.000	10.319	0.000	0.460
		C		0.000	0.000	11.281	0.000	0.416
L39	3.250-0.000	A	0.629	0.000	0.000	2.402	0.000	0.192
		B		0.000	0.000	6.529	0.000	0.293
		C		0.000	0.000	7.208	0.000	0.265

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	177.000-172.000	0.000	-0.301	0.000	-1.001
L2	172.000-167.000	0.000	-0.301	0.000	-1.005
L3	167.000-162.000	0.000	-0.301	0.000	-1.008
L4	162.000-157.000	0.000	-0.301	0.000	-1.010
L5	157.000-152.000	0.000	-0.301	0.000	-1.013
L6	152.000-147.000	0.000	-0.301	0.000	-1.014
L7	147.000-142.000	0.522	-0.263	0.623	-0.940
L8	142.000-137.000	1.230	-0.212	1.457	-0.842
L9	137.000-129.750	1.232	-0.213	1.463	-0.846
L10	129.750-128.500	1.232	-0.213	1.466	-0.848
L11	128.500-123.500	4.124	-1.020	3.956	-1.406
L12	123.500-118.583	3.926	-0.992	4.105	-1.376
L13	118.583-118.333	2.476	-0.625	3.126	-1.047
L14	118.333-113.333	1.687	1.366	2.112	1.138
L15	113.333-108.333	1.389	1.905	1.747	1.706
L16	108.333-106.417	1.279	1.757	1.603	1.569
L17	106.417-106.167	1.283	1.762	1.608	1.575
L18	106.167-101.167	1.593	2.190	1.952	1.914
L19	101.167-96.167	1.385	1.908	1.778	1.749
L20	96.167-91.167	1.774	2.447	2.159	2.130
L21	91.167-84.000	1.793	2.478	2.191	2.170
L22	84.000-83.750	1.796	2.483	2.196	2.176
L23	83.750-78.750	1.332	1.843	1.745	1.734
L24	78.750-73.750	1.800	2.494	2.217	2.211
L25	73.750-68.750	1.815	2.518	2.242	2.242
L26	68.750-63.750	1.830	2.542	2.265	2.274
L27	63.750-58.750	1.321	1.838	1.756	1.769
L28	58.750-53.750	1.857	2.587	2.311	2.336
L29	53.750-48.750	1.871	2.608	2.332	2.367
L30	48.750-39.250	1.618	2.260	2.090	2.134
L31	39.250-38.250	1.451	2.027	1.915	1.956
L32	38.250-33.250	1.902	2.658	2.378	2.446
L33	33.250-28.250	1.914	2.679	2.396	2.478
L34	28.250-23.250	1.926	2.698	2.413	2.511
L35	23.250-18.250	1.418	1.987	1.880	1.971
L36	18.250-13.250	1.933	2.712	2.424	2.564
L37	13.250-8.250	2.225	3.124	2.433	2.603
L38	8.250-3.250	2.249	3.162	2.434	2.652
L39	3.250-0.000	2.270	3.193	2.414	2.718

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	24	Safety Line 3/8	172.00 - 177.00	1.0000	1.0000
L2	24	Safety Line 3/8	167.00 - 172.00	1.0000	1.0000
L3	24	Safety Line 3/8	162.00 - 167.00	1.0000	1.0000
L4	24	Safety Line 3/8	157.00 - 162.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L5	24	Safety Line 3/8	152.00 - 157.00	1.0000	1.0000
L6	24	Safety Line 3/8	147.00 - 152.00	1.0000	1.0000
L7	12	CU12PSM9P6XXX(1-1/2)	142.00 - 144.00	1.0000	1.0000
L7	24	Safety Line 3/8	142.00 - 147.00	1.0000	1.0000
L8	12	CU12PSM9P6XXX(1-1/2)	137.00 - 142.00	1.0000	1.0000
L8	24	Safety Line 3/8	137.00 - 142.00	1.0000	1.0000
L9	12	CU12PSM9P6XXX(1-1/2)	129.75 - 137.00	1.0000	1.0000
L9	24	Safety Line 3/8	129.75 - 137.00	1.0000	1.0000
L10	12	CU12PSM9P6XXX(1-1/2)	128.50 - 129.75	1.0000	1.0000
L10	24	Safety Line 3/8	128.50 - 129.75	1.0000	1.0000
L11	12	CU12PSM9P6XXX(1-1/2)	123.50 - 128.50	1.0000	1.0000
L11	14	LDF7-50A(1-5/8)	123.50 - 127.00	1.0000	1.0000
L11	24	Safety Line 3/8	123.50 - 128.50	1.0000	1.0000
L12	12	CU12PSM9P6XXX(1-1/2)	118.58 - 123.50	1.0000	1.0000
L12	14	LDF7-50A(1-5/8)	118.58 - 123.50	1.0000	1.0000
L12	24	Safety Line 3/8	118.58 - 123.50	1.0000	1.0000
L12	37	MP3-04	118.58 - 120.00	1.0000	1.0000
L12	38	MP3-04	118.58 - 120.00	1.0000	1.0000
L12	39	MP3-04	118.58 - 120.00	1.0000	1.0000
L13	12	CU12PSM9P6XXX(1-1/2)	118.33 - 118.58	1.0000	1.0000
L13	14	LDF7-50A(1-5/8)	118.33 - 118.58	1.0000	1.0000
L13	24	Safety Line 3/8	118.33 - 118.58	1.0000	1.0000
L13	37	MP3-04	118.33 - 118.58	1.0000	1.0000
L13	38	MP3-04	118.33 - 118.58	1.0000	1.0000
L13	39	MP3-04	118.33 - 118.58	1.0000	1.0000
L14	12	CU12PSM9P6XXX(1-1/2)	113.33 - 118.33	1.0000	1.0000
L14	14	LDF7-50A(1-5/8)	113.33 - 118.33	1.0000	1.0000
L14	20	LCF158-50JL(1-5/8)	113.33 - 117.00	1.0000	1.0000
L14	24	Safety Line 3/8	113.33 - 118.33	1.0000	1.0000
L14	37	MP3-04	113.33 - 118.33	1.0000	1.0000
L14	38	MP3-04	113.33 - 118.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L14	39	MP3-04	113.33 - 118.33	1.0000	1.0000
L15	12	CU12PSM9P6XXX(1-1/2)	108.33 - 113.33	1.0000	1.0000
L15	14	LDF7-50A(1-5/8)	108.33 - 113.33	1.0000	1.0000
L15	20	LCF158-50JL(1-5/8)	108.33 - 113.33	1.0000	1.0000
L15	24	Safety Line 3/8	108.33 - 113.33	1.0000	1.0000
L15	33	4" SR	108.33 - 110.00	1.0000	1.0000
L15	34	4" SR	108.33 - 110.00	1.0000	1.0000
L15	35	4" SR	108.33 - 110.00	1.0000	1.0000
L15	37	MP3-04	108.33 - 113.33	1.0000	1.0000
L15	38	MP3-04	108.33 - 113.33	1.0000	1.0000
L15	39	MP3-04	108.33 - 113.33	1.0000	1.0000
L16	12	CU12PSM9P6XXX(1-1/2)	106.42 - 108.33	1.0000	1.0000
L16	14	LDF7-50A(1-5/8)	106.42 - 108.33	1.0000	1.0000
L16	20	LCF158-50JL(1-5/8)	106.42 - 108.33	1.0000	1.0000
L16	24	Safety Line 3/8	106.42 - 108.33	1.0000	1.0000
L16	33	4" SR	106.42 - 108.33	1.0000	1.0000
L16	34	4" SR	106.42 - 108.33	1.0000	1.0000
L16	35	4" SR	106.42 - 108.33	1.0000	1.0000
L16	37	MP3-04	106.42 - 108.33	1.0000	1.0000
L16	38	MP3-04	106.42 - 108.33	1.0000	1.0000
L16	39	MP3-04	106.42 - 108.33	1.0000	1.0000
L17	12	CU12PSM9P6XXX(1-1/2)	106.17 - 106.42	1.0000	1.0000
L17	14	LDF7-50A(1-5/8)	106.17 - 106.42	1.0000	1.0000
L17	20	LCF158-50JL(1-5/8)	106.17 - 106.42	1.0000	1.0000
L17	24	Safety Line 3/8	106.17 - 106.42	1.0000	1.0000
L17	33	4" SR	106.17 - 106.42	1.0000	1.0000
L17	34	4" SR	106.17 - 106.42	1.0000	1.0000
L17	35	4" SR	106.17 - 106.42	1.0000	1.0000
L17	37	MP3-04	106.17 - 106.42	1.0000	1.0000
L17	38	MP3-04	106.17 - 106.42	1.0000	1.0000
L17	39	MP3-04	106.17 - 106.42	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L18	12	CU12PSM9P6XXX(1-1/2)	101.17 - 106.17	1.0000	1.0000
L18	14	LDF7-50A(1-5/8)	101.17 - 106.17	1.0000	1.0000
L18	20	LCF158-50JL(1-5/8)	101.17 - 106.17	1.0000	1.0000
L18	24	Safety Line 3/8	101.17 - 106.17	1.0000	1.0000
L18	33	4" SR	101.17 - 106.17	1.0000	1.0000
L18	34	4" SR	101.17 - 106.17	1.0000	1.0000
L18	35	4" SR	101.17 - 106.17	1.0000	1.0000
L18	37	MP3-04	105.00 - 106.17	1.0000	1.0000
L18	38	MP3-04	105.00 - 106.17	1.0000	1.0000
L18	39	MP3-04	105.00 - 106.17	1.0000	1.0000
L18	57	Spacer Plates	101.17 - 101.25	1.0000	1.0000
L18	58	Spacer Plates	101.17 - 101.25	1.0000	1.0000
L18	59	Spacer Plates	101.17 - 101.25	1.0000	1.0000
L19	12	CU12PSM9P6XXX(1-1/2)	96.17 - 101.17	1.0000	1.0000
L19	14	LDF7-50A(1-5/8)	96.17 - 101.17	1.0000	1.0000
L19	20	LCF158-50JL(1-5/8)	96.17 - 101.17	1.0000	1.0000
L19	24	Safety Line 3/8	96.17 - 101.17	1.0000	1.0000
L19	33	4" SR	96.17 - 101.17	1.0000	1.0000
L19	34	4" SR	96.17 - 101.17	1.0000	1.0000
L19	35	4" SR	96.17 - 101.17	1.0000	1.0000
L19	57	Spacer Plates	99.25 - 101.17	1.0000	1.0000
L19	58	Spacer Plates	99.25 - 101.17	1.0000	1.0000
L19	59	Spacer Plates	99.25 - 101.17	1.0000	1.0000
L20	12	CU12PSM9P6XXX(1-1/2)	91.17 - 96.17	1.0000	1.0000
L20	14	LDF7-50A(1-5/8)	91.17 - 96.17	1.0000	1.0000
L20	20	LCF158-50JL(1-5/8)	91.17 - 96.17	1.0000	1.0000
L20	24	Safety Line 3/8	91.17 - 96.17	1.0000	1.0000
L20	33	4" SR	91.17 - 96.17	1.0000	1.0000
L20	34	4" SR	91.17 - 96.17	1.0000	1.0000
L20	35	4" SR	91.17 - 96.17	1.0000	1.0000
L21	12	CU12PSM9P6XXX(1-1/2)	84.00 - 91.17	1.0000	1.0000
L21	14	LDF7-50A(1-5/8)	84.00 - 91.17	1.0000	1.0000
L21	20	LCF158-50JL(1-5/8)	84.00 - 91.17	1.0000	1.0000
L21	24	Safety Line 3/8	84.00 - 91.17	1.0000	1.0000
L21	33	4" SR	84.00 - 91.17	1.0000	1.0000
L21	34	4" SR	84.00 - 91.17	1.0000	1.0000
L21	35	4" SR	84.00 - 91.17	1.0000	1.0000
L22	12	CU12PSM9P6XXX(1-1/2)	83.75 - 84.00	1.0000	1.0000
L22	14	LDF7-50A(1-5/8)	83.75 - 84.00	1.0000	1.0000
L22	20	LCF158-50JL(1-5/8)	83.75 - 84.00	1.0000	1.0000
L22	24	Safety Line 3/8	83.75 - 84.00	1.0000	1.0000
L22	33	4" SR	83.75 - 84.00	1.0000	1.0000
L22	34	4" SR	83.75 - 84.00	1.0000	1.0000
L22	35	4" SR	83.75 - 84.00	1.0000	1.0000
L23	12	CU12PSM9P6XXX(1-1/2)	78.75 - 83.75	1.0000	1.0000
L23	14	LDF7-50A(1-5/8)	78.75 - 83.75	1.0000	1.0000
L23	20	LCF158-50JL(1-5/8)	78.75 - 83.75	1.0000	1.0000
L23	24	Safety Line 3/8	78.75 - 83.75	1.0000	1.0000
L23	30	4.25" SR	78.75 - 80.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L23	31	4.25" SR	78.75 - 80.00	1.0000	1.0000
L23	32	4.25" SR	78.75 - 80.00	1.0000	1.0000
L23	33	4" SR	80.00 - 83.75	1.0000	1.0000
L23	34	4" SR	80.00 - 83.75	1.0000	1.0000
L23	35	4" SR	80.00 - 83.75	1.0000	1.0000
L23	53	Spacer Plates	79.00 - 81.60	1.0000	1.0000
L23	54	Spacer Plates	79.00 - 81.60	1.0000	1.0000
L23	55	Spacer Plates	79.00 - 81.60	1.0000	1.0000
L24	12	CU12PSM9P6XXX(1-1/2)	73.75 - 78.75	1.0000	1.0000
L24	14	LDF7-50A(1-5/8)	73.75 - 78.75	1.0000	1.0000
L24	20	LCF158-50JL(1-5/8)	73.75 - 78.75	1.0000	1.0000
L24	24	Safety Line 3/8	73.75 - 78.75	1.0000	1.0000
L24	30	4.25" SR	73.75 - 78.75	1.0000	1.0000
L24	31	4.25" SR	73.75 - 78.75	1.0000	1.0000
L24	32	4.25" SR	73.75 - 78.75	1.0000	1.0000
L25	12	CU12PSM9P6XXX(1-1/2)	68.75 - 73.75	1.0000	1.0000
L25	14	LDF7-50A(1-5/8)	68.75 - 73.75	1.0000	1.0000
L25	20	LCF158-50JL(1-5/8)	68.75 - 73.75	1.0000	1.0000
L25	24	Safety Line 3/8	68.75 - 73.75	1.0000	1.0000
L25	30	4.25" SR	68.75 - 73.75	1.0000	1.0000
L25	31	4.25" SR	68.75 - 73.75	1.0000	1.0000
L25	32	4.25" SR	68.75 - 73.75	1.0000	1.0000
L26	12	CU12PSM9P6XXX(1-1/2)	63.75 - 68.75	1.0000	1.0000
L26	14	LDF7-50A(1-5/8)	63.75 - 68.75	1.0000	1.0000
L26	20	LCF158-50JL(1-5/8)	63.75 - 68.75	1.0000	1.0000
L26	24	Safety Line 3/8	63.75 - 68.75	1.0000	1.0000
L26	30	4.25" SR	63.75 - 68.75	1.0000	1.0000
L26	31	4.25" SR	63.75 - 68.75	1.0000	1.0000
L26	32	4.25" SR	63.75 - 68.75	1.0000	1.0000
L27	12	CU12PSM9P6XXX(1-1/2)	58.75 - 63.75	1.0000	1.0000
L27	14	LDF7-50A(1-5/8)	58.75 - 63.75	1.0000	1.0000
L27	20	LCF158-50JL(1-5/8)	58.75 - 63.75	1.0000	1.0000
L27	24	Safety Line 3/8	58.75 - 63.75	1.0000	1.0000
L27	30	4.25" SR	58.75 - 63.75	1.0000	1.0000
L27	31	4.25" SR	58.75 - 63.75	1.0000	1.0000
L27	32	4.25" SR	58.75 - 63.75	1.0000	1.0000
L27	49	Spacer Plates	58.75 - 61.85	1.0000	1.0000
L27	50	Spacer Plates	58.75 - 61.85	1.0000	1.0000
L27	51	Spacer Plates	58.75 - 61.85	1.0000	1.0000
L28	12	CU12PSM9P6XXX(1-1/2)	53.75 - 58.75	1.0000	1.0000
L28	14	LDF7-50A(1-5/8)	53.75 - 58.75	1.0000	1.0000
L28	20	LCF158-50JL(1-5/8)	53.75 - 58.75	1.0000	1.0000
L28	24	Safety Line 3/8	53.75 - 58.75	1.0000	1.0000
L28	30	4.25" SR	53.75 - 58.75	1.0000	1.0000
L28	31	4.25" SR	53.75 - 58.75	1.0000	1.0000
L28	32	4.25" SR	53.75 - 58.75	1.0000	1.0000
L29	12	CU12PSM9P6XXX(1-1/2)	48.75 - 53.75	1.0000	1.0000
L29	14	LDF7-50A(1-5/8)	48.75 - 53.75	1.0000	1.0000
L29	20	LCF158-50JL(1-5/8)	48.75 - 53.75	1.0000	1.0000
L29	24	Safety Line 3/8	48.75 - 53.75	1.0000	1.0000
L29	30	4.25" SR	48.75 - 53.75	1.0000	1.0000
L29	31	4.25" SR	48.75 - 53.75	1.0000	1.0000
L29	32	4.25" SR	48.75 - 53.75	1.0000	1.0000
L30	12	CU12PSM9P6XXX(1-1/2)	39.25 - 48.75	1.0000	1.0000
L30	14	LDF7-50A(1-5/8)	39.25 - 48.75	1.0000	1.0000
L30	20	LCF158-50JL(1-5/8)	39.25 - 48.75	1.0000	1.0000
L30	24	Safety Line 3/8	39.25 - 48.75	1.0000	1.0000
L30	30	4.25" SR	39.25 - 48.75	1.0000	1.0000
L30	31	4.25" SR	39.25 - 48.75	1.0000	1.0000
L30	32	4.25" SR	39.25 - 48.75	1.0000	1.0000
L30	45	Spacer Plates	39.25 - 41.85	1.0000	1.0000
L30	46	Spacer Plates	39.25 - 41.85	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L30	47	Spacer Plates	39.25 - 41.85	1.0000	1.0000
L31	12	CU12PSM9P6XXX(1-1/2)	38.25 - 39.25	1.0000	1.0000
L31	14	LDF7-50A(1-5/8)	38.25 - 39.25	1.0000	1.0000
L31	20	LCF158-50JL(1-5/8)	38.25 - 39.25	1.0000	1.0000
L31	24	Safety Line 3/8	38.25 - 39.25	1.0000	1.0000
L31	30	4.25" SR	38.25 - 39.25	1.0000	1.0000
L31	31	4.25" SR	38.25 - 39.25	1.0000	1.0000
L31	32	4.25" SR	38.25 - 39.25	1.0000	1.0000
L31	45	Spacer Plates	38.75 - 39.25	1.0000	1.0000
L31	46	Spacer Plates	38.75 - 39.25	1.0000	1.0000
L31	47	Spacer Plates	38.75 - 39.25	1.0000	1.0000
L32	12	CU12PSM9P6XXX(1-1/2)	33.25 - 38.25	1.0000	1.0000
L32	14	LDF7-50A(1-5/8)	33.25 - 38.25	1.0000	1.0000
L32	20	LCF158-50JL(1-5/8)	33.25 - 38.25	1.0000	1.0000
L32	24	Safety Line 3/8	33.25 - 38.25	1.0000	1.0000
L32	30	4.25" SR	33.25 - 38.25	1.0000	1.0000
L32	31	4.25" SR	33.25 - 38.25	1.0000	1.0000
L32	32	4.25" SR	33.25 - 38.25	1.0000	1.0000
L33	12	CU12PSM9P6XXX(1-1/2)	28.25 - 33.25	1.0000	1.0000
L33	14	LDF7-50A(1-5/8)	28.25 - 33.25	1.0000	1.0000
L33	20	LCF158-50JL(1-5/8)	28.25 - 33.25	1.0000	1.0000
L33	24	Safety Line 3/8	28.25 - 33.25	1.0000	1.0000
L33	30	4.25" SR	28.25 - 33.25	1.0000	1.0000
L33	31	4.25" SR	28.25 - 33.25	1.0000	1.0000
L33	32	4.25" SR	28.25 - 33.25	1.0000	1.0000
L34	12	CU12PSM9P6XXX(1-1/2)	23.25 - 28.25	1.0000	1.0000
L34	14	LDF7-50A(1-5/8)	23.25 - 28.25	1.0000	1.0000
L34	20	LCF158-50JL(1-5/8)	23.25 - 28.25	1.0000	1.0000
L34	24	Safety Line 3/8	23.25 - 28.25	1.0000	1.0000
L34	30	4.25" SR	23.25 - 28.25	1.0000	1.0000
L34	31	4.25" SR	23.25 - 28.25	1.0000	1.0000
L34	32	4.25" SR	23.25 - 28.25	1.0000	1.0000
L35	12	CU12PSM9P6XXX(1-1/2)	18.25 - 23.25	1.0000	1.0000
L35	14	LDF7-50A(1-5/8)	18.25 - 23.25	1.0000	1.0000
L35	20	LCF158-50JL(1-5/8)	18.25 - 23.25	1.0000	1.0000
L35	24	Safety Line 3/8	18.25 - 23.25	1.0000	1.0000
L35	27	4.5" SR	18.25 - 20.00	1.0000	1.0000
L35	28	4.5" SR	18.25 - 20.00	1.0000	1.0000
L35	29	4.5" SR	18.25 - 20.00	1.0000	1.0000
L35	30	4.25" SR	20.00 - 23.25	1.0000	1.0000
L35	31	4.25" SR	20.00 - 23.25	1.0000	1.0000
L35	32	4.25" SR	20.00 - 23.25	1.0000	1.0000
L35	41	Spacer Plates	18.75 - 21.85	1.0000	1.0000
L35	42	Spacer Plates	18.75 - 21.85	1.0000	1.0000
L35	43	Spacer Plates	18.75 - 21.85	1.0000	1.0000
L36	12	CU12PSM9P6XXX(1-1/2)	13.25 - 18.25	1.0000	1.0000
L36	14	LDF7-50A(1-5/8)	13.25 - 18.25	1.0000	1.0000
L36	20	LCF158-50JL(1-5/8)	13.25 - 18.25	1.0000	1.0000
L36	24	Safety Line 3/8	13.25 - 18.25	1.0000	1.0000
L36	27	4.5" SR	13.25 - 18.25	1.0000	1.0000
L36	28	4.5" SR	13.25 - 18.25	1.0000	1.0000
L36	29	4.5" SR	13.25 - 18.25	1.0000	1.0000
L37	12	CU12PSM9P6XXX(1-1/2)	8.25 - 13.25	1.0000	1.0000
L37	14	LDF7-50A(1-5/8)	8.25 - 13.25	1.0000	1.0000
L37	20	LCF158-50JL(1-5/8)	8.25 - 13.25	1.0000	1.0000
L37	24	Safety Line 3/8	8.25 - 13.25	1.0000	1.0000
L37	27	4.5" SR	8.25 - 13.25	1.0000	1.0000
L37	28	4.5" SR	8.25 - 13.25	1.0000	1.0000
L37	29	4.5" SR	8.25 - 13.25	1.0000	1.0000
L38	12	CU12PSM9P6XXX(1-1/2)	3.25 - 8.25	1.0000	1.0000
L38	14	LDF7-50A(1-5/8)	3.25 - 8.25	1.0000	1.0000
L38	20	LCF158-50JL(1-5/8)	3.25 - 8.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	24	Safety Line 3/8	3.25 - 8.25	1.0000	1.0000
L38	27	4.5" SR	3.25 - 8.25	1.0000	1.0000
L38	28	4.5" SR	3.25 - 8.25	1.0000	1.0000
L38	29	4.5" SR	3.25 - 8.25	1.0000	1.0000
L39	12	CU12PSM9P6XXX(1-1/2)	0.00 - 3.25	1.0000	1.0000
L39	14	LDF7-50A(1-5/8)	0.00 - 3.25	1.0000	1.0000
L39	20	LCF158-50JL(1-5/8)	0.00 - 3.25	1.0000	1.0000
L39	24	Safety Line 3/8	0.00 - 3.25	1.0000	1.0000
L39	27	4.5" SR	0.00 - 3.25	1.0000	1.0000
L39	28	4.5" SR	0.00 - 3.25	1.0000	1.0000
L39	29	4.5" SR	0.00 - 3.25	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
L12	37	MP3-04	118.58 - 120.00	Auto	0.0000
L12	38	MP3-04	118.58 - 120.00	Auto	0.0000
L12	39	MP3-04	118.58 - 120.00	Auto	0.0000
L13	37	MP3-04	118.33 - 118.58	Auto	0.0000
L13	38	MP3-04	118.33 - 118.58	Auto	0.0000
L13	39	MP3-04	118.33 - 118.58	Auto	0.0000
L14	37	MP3-04	113.33 - 118.33	Auto	0.0000
L14	38	MP3-04	113.33 - 118.33	Auto	0.0000
L14	39	MP3-04	113.33 - 118.33	Auto	0.0000
L15	37	MP3-04	108.33 - 113.33	Auto	0.0000
L15	38	MP3-04	108.33 - 113.33	Auto	0.0000
L15	39	MP3-04	108.33 - 113.33	Auto	0.0000
L16	37	MP3-04	106.42 - 108.33	Auto	0.0000
L16	38	MP3-04	106.42 - 108.33	Auto	0.0000
L16	39	MP3-04	106.42 - 108.33	Auto	0.0000
L17	37	MP3-04	106.17 - 106.42	Auto	0.0000
L17	38	MP3-04	106.17 - 106.42	Auto	0.0000
L17	39	MP3-04	106.17 - 106.42	Auto	0.0000
L18	37	MP3-04	105.00 -	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	38	MP3-04	106.17 105.00 - 106.17	Auto	0.0000
L18	39	MP3-04	105.00 - 106.17	Auto	0.0000
L18	57	Spacer Plates	101.17 - 101.25	Auto	0.6499
L18	58	Spacer Plates	101.17 - 101.25	Auto	0.6499
L18	59	Spacer Plates	101.17 - 101.25	Auto	0.6499
L19	57	Spacer Plates	99.25 - 101.17	Auto	0.6480
L19	58	Spacer Plates	99.25 - 101.17	Auto	0.6480
L19	59	Spacer Plates	99.25 - 101.17	Auto	0.6480
L23	53	Spacer Plates	79.00 - 81.60	Auto	0.6225
L23	54	Spacer Plates	79.00 - 81.60	Auto	0.6225
L23	55	Spacer Plates	79.00 - 81.60	Auto	0.6225
L27	49	Spacer Plates	58.75 - 61.85	Auto	0.5845
L27	50	Spacer Plates	58.75 - 61.85	Auto	0.5845
L27	51	Spacer Plates	58.75 - 61.85	Auto	0.5845
L30	45	Spacer Plates	39.25 - 41.85	Auto	0.5471
L30	46	Spacer Plates	39.25 - 41.85	Auto	0.5471
L30	47	Spacer Plates	39.25 - 41.85	Auto	0.5471
L31	45	Spacer Plates	38.75 - 39.25	Auto	0.5577
L31	46	Spacer Plates	38.75 - 39.25	Auto	0.5577
L31	47	Spacer Plates	38.75 - 39.25	Auto	0.5577
L35	41	Spacer Plates	18.75 - 21.85	Auto	0.5223
L35	42	Spacer Plates	18.75 - 21.85	Auto	0.5223
L35	43	Spacer Plates	18.75 - 21.85	Auto	0.5223

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Top Hat	C	None		0.000	178.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
*									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	177.000	No Ice 1/2" Ice	4.090 4.480	2.860 3.230	0.077 0.127

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	4.880	3.610	0.185
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	177.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			0.000			1" Ice	4.880	3.610	0.185
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	177.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			0.000			1" Ice	4.880	3.610	0.185
(3) ACU-A20-N	A	From Leg	1.000	0.000	177.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	1.000	0.000	177.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	C	From Leg	1.000	0.000	177.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000	0.000	177.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	1.000	0.000	177.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000	0.000	177.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
1900MHZ RRH (65MHZ)	A	From Leg	1.000	0.000	177.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
1900MHZ RRH (65MHZ)	B	From Leg	1.000	0.000	177.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
1900MHZ RRH (65MHZ)	C	From Leg	1.000	0.000	177.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			2.000			1" Ice	2.728	2.794	0.111
800MHZ RRH	A	From Leg	1.000	0.000	177.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
800MHZ RRH	B	From Leg	1.000	0.000	177.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
800MHZ RRH	C	From Leg	1.000	0.000	177.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			2.000			1" Ice	2.512	2.127	0.098
TD-RRH8x20-25	A	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	B	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
TD-RRH8x20-25	C	From Leg	4.000	0.000	177.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
5' x 2" Pipe Mount	A	From Leg	4.000	0.000	177.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			1.000			1" Ice	1.807	1.807	0.040
5' x 2" Pipe Mount	B	From Leg	4.000	0.000	177.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.000			1" Ice	1.807	1.807	0.040
5' x 2" Pipe Mount	C	From Leg	4.000	0.000	177.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			1.000			1" Ice	1.807	1.807	0.040
Platform Mount [LP 1201-1]	C	None		0.000	177.000	No Ice	18.380	18.380	2.100
						1/2" Ice	22.110	22.110	2.652
						1" Ice	25.870	25.870	3.263
4' x 2" Pipe Mount	A	From Leg	1.000	0.000	176.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			3.000			1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	B	From Leg	1.000	0.000	176.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			3.000			1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	C	From Leg	1.000	0.000	176.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			3.000			1" Ice	1.281	1.281	0.044
Side Arm Mount [SO 102-3]	C	None		0.000	176.000	No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
*									
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	167.000	No Ice	2.550	2.150	0.039
			0.000			1/2" Ice	2.960	2.550	0.068
			0.000			1" Ice	3.380	2.960	0.106
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.000	0.000	167.000	No Ice	2.550	2.150	0.039
			0.000			1/2" Ice	2.960	2.550	0.068
			0.000			1" Ice	3.380	2.960	0.106
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	167.000	No Ice	2.550	2.150	0.039
			0.000			1/2" Ice	2.960	2.550	0.068
			0.000			1" Ice	3.380	2.960	0.106
KRY 112 75/1	A	From Leg	4.000	0.000	167.000	No Ice	1.104	0.442	0.030
			0.000			1/2" Ice	1.235	0.534	0.039
			0.000			1" Ice	1.374	0.635	0.049
KRY 112 75/1	B	From Leg	4.000	0.000	167.000	No Ice	1.104	0.442	0.030
			0.000			1/2" Ice	1.235	0.534	0.039
			0.000			1" Ice	1.374	0.635	0.049
KRY 112 75/1	C	From Leg	4.000	0.000	167.000	No Ice	1.104	0.442	0.030
			0.000			1/2" Ice	1.235	0.534	0.039
			0.000			1" Ice	1.374	0.635	0.049
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000	0.000	167.000	No Ice	14.690	6.870	0.183
			0.000			1/2" Ice	15.460	7.550	0.311
			0.000			1" Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000	0.000	167.000	No Ice	14.690	6.870	0.183
			0.000			1/2" Ice	15.460	7.550	0.311
			0.000			1" Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000	0.000	167.000	No Ice	14.690	6.870	0.183
			0.000			1/2" Ice	15.460	7.550	0.311
			0.000			1" Ice	16.230	8.250	0.453
Radio 4480_TMOV2	A	From Leg	4.000	0.000	167.000	No Ice	2.878	1.397	0.081
			0.000			1/2" Ice	3.091	1.558	0.103
			0.000			1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	B	From Leg	4.000	0.000	167.000	No Ice	2.878	1.397	0.081
			0.000			1/2" Ice	3.091	1.558	0.103
			0.000			1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	C	From Leg	4.000	0.000	167.000	No Ice	2.878	1.397	0.081
			0.000			1/2" Ice	3.091	1.558	0.103
			0.000			1" Ice	3.312	1.727	0.128
8' x 2" Mount Pipe	A	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
8' x 2" Mount Pipe	B	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
8' x 2" Mount Pipe	C	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
Site Pro 1 RMQP-396 w/ HRK12	C	None		0.000	167.000	No Ice	21.170	21.170	1.485
						1/2" Ice	25.840	25.840	1.825
*						1" Ice	30.510	30.510	2.285
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	3.020	7.800	0.058
			0.000			1/2" Ice	3.570	8.420	0.119
			2.000			1" Ice	4.140	9.060	0.190
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	3.020	7.800	0.058
			0.000			1/2" Ice	3.570	8.420	0.119
			2.000			1" Ice	4.140	9.060	0.190
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	9.831	10.215	0.052
			0.000			1/2" Ice	10.400	11.384	0.145
			2.000			1" Ice	10.933	12.269	0.246
(2) QS6656-5D w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.114
			0.000			1/2" Ice	4.420	4.570	0.183
			2.000			1" Ice	4.820	4.970	0.264
(2) QS6656-5D w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.114
			0.000			1/2" Ice	4.420	4.570	0.183
			2.000			1" Ice	4.820	4.970	0.264
(2) QS6656-5D w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	4.040	4.180	0.114
			0.000			1/2" Ice	4.420	4.570	0.183
			2.000			1" Ice	4.820	4.970	0.264
MT6407-77A w/ Mount Pipe	A	From Leg	4.000	0.000	154.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	B	From Leg	4.000	0.000	154.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	C	From Leg	4.000	0.000	154.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			2.000			1" Ice	5.615	3.624	0.180
RFV01U-D1A	A	From Leg	4.000	0.000	154.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			2.000			1" Ice	2.223	1.543	0.124
RFV01U-D1A	B	From Leg	4.000	0.000	154.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			2.000			1" Ice	2.223	1.543	0.124
RFV01U-D1A	C	From Leg	4.000	0.000	154.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			2.000			1" Ice	2.223	1.543	0.124
RFV01U-D2A	A	From Leg	4.000	0.000	154.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			2.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	B	From Leg	4.000	0.000	154.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			2.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	C	From Leg	4.000	0.000	154.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			2.000			1" Ice	2.223	1.284	0.106

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DB-C1-12C-24AB-0Z	A	From Leg	4.000 0.000 2.000	0.000	154.000	No Ice 1/2" Ice 1" Ice	4.056 4.316 4.582	3.098 3.335 3.580	0.032 0.068 0.109
4' x 2" Pipe Mount	A	From Leg	2.000 0.000 0.000	0.000	154.000	No Ice 1/2" Ice 1" Ice	0.785 1.028 1.281	0.785 1.028 1.281	0.029 0.035 0.044
Platform Mount [LP 303-1_HR-1] *	C	None		0.000	154.000	No Ice 1/2" Ice 1" Ice	17.090 21.470 25.720	17.090 21.470 25.720	1.495 1.881 2.346
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.108 0.194 0.292
TA08025-B604	A	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	B	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	C	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B605	A	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	B	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	C	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
RDIDC-9181-PF-48	A	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	2.012 2.189 2.373	1.168 1.311 1.461	0.022 0.040 0.060
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
Commscope MC-PK8-DSH *	C	None		0.000	144.000	No Ice 1/2" Ice 1" Ice	34.240 62.950 91.660	34.240 62.950 91.660	1.749 2.099 2.450
DMP65R-BU4D w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	127.000	No Ice 1/2" Ice 1" Ice	7.530 8.040 8.570	3.790 4.230 4.680	0.095 0.156 0.225
DMP65R-BU4D w/ Mount	B	From Leg	4.000	0.000	127.000	No Ice	7.530	3.790	0.095

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.000			1/2" Ice	8.040	4.230	0.156
			2.000			1" Ice	8.570	4.680	0.225
DMP65R-BU4D w/ Mount Pipe	C	From Leg	4.000	0.000	127.000	No Ice	7.530	3.790	0.095
			0.000			1/2" Ice	8.040	4.230	0.156
			2.000			1" Ice	8.570	4.680	0.225
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	127.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	127.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	127.000	No Ice	5.746	4.254	0.055
			0.000			1/2" Ice	6.179	5.014	0.103
			2.000			1" Ice	6.607	5.711	0.157
OPA65R-BU4D w/ Mount Pipe	A	From Leg	4.000	0.000	127.000	No Ice	8.100	4.030	0.081
			0.000			1/2" Ice	8.650	4.500	0.142
			2.000			1" Ice	9.210	4.980	0.212
OPA65R-BU4D w/ Mount Pipe	B	From Leg	4.000	0.000	127.000	No Ice	8.100	4.030	0.081
			0.000			1/2" Ice	8.650	4.500	0.142
			2.000			1" Ice	9.210	4.980	0.212
OPA65R-BU4D w/ Mount Pipe	C	From Leg	4.000	0.000	127.000	No Ice	8.100	4.030	0.081
			0.000			1/2" Ice	8.650	4.500	0.142
			2.000			1" Ice	9.210	4.980	0.212
RRUS 4478 B14_CCIV2	A	From Leg	4.000	0.000	127.000	No Ice	2.021	1.246	0.059
			0.000			1/2" Ice	2.200	1.396	0.077
			2.000			1" Ice	2.386	1.554	0.097
RRUS 4478 B14_CCIV2	B	From Leg	4.000	0.000	127.000	No Ice	2.021	1.246	0.059
			0.000			1/2" Ice	2.200	1.396	0.077
			2.000			1" Ice	2.386	1.554	0.097
RRUS 4478 B14_CCIV2	C	From Leg	4.000	0.000	127.000	No Ice	2.021	1.246	0.059
			0.000			1/2" Ice	2.200	1.396	0.077
			2.000			1" Ice	2.386	1.554	0.097
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	127.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			2.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	127.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			2.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	127.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			2.000			1" Ice	2.328	1.727	0.111
RRUS 8843 B2/B66A	A	From Leg	4.000	0.000	127.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			2.000			1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	B	From Leg	4.000	0.000	127.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			2.000			1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	C	From Leg	4.000	0.000	127.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			2.000			1" Ice	1.966	1.655	0.110
DC6-48-60-18-8F	A	From Leg	2.000	0.000	127.000	No Ice	0.850	0.850	0.019
			0.000			1/2" Ice	1.356	1.356	0.036
			2.000			1" Ice	1.532	1.532	0.055
DC6-48-60-18-8C-EV	B	From Leg	2.000	0.000	127.000	No Ice	1.145	1.145	0.026
			0.000			1/2" Ice	1.792	1.792	0.047
			2.000			1" Ice	2.002	2.002	0.070
(2) LGP21401	A	From Leg	4.000	0.000	127.000	No Ice	1.104	0.207	0.014

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	1.239	0.274	0.021
			2.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	127.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			2.000			1" Ice	1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	127.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			2.000			1" Ice	1.381	0.348	0.030
(3) 5' x 2" Pipe Mount	A	From Leg	4.000	0.000	127.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			-3.000			1" Ice	1.807	1.807	0.040
(3) 5' x 2" Pipe Mount	B	From Leg	4.000	0.000	127.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			-3.000			1" Ice	1.807	1.807	0.040
(3) 5' x 2" Pipe Mount	C	From Leg	4.000	0.000	127.000	No Ice	1.188	1.188	0.018
			0.000			1/2" Ice	1.496	1.496	0.027
			-3.000			1" Ice	1.807	1.807	0.040
3' x 2" Pipe Mount	A	From Leg	2.000	0.000	127.000	No Ice	0.583	0.583	0.011
			0.000			1/2" Ice	0.770	0.770	0.017
			1.000			1" Ice	0.967	0.967	0.024
3' x 2" Pipe Mount	B	From Leg	2.000	0.000	127.000	No Ice	0.583	0.583	0.011
			0.000			1/2" Ice	0.770	0.770	0.017
			1.000			1" Ice	0.967	0.967	0.024
Platform Mount [LP 303-1_HR-1]	C	None		0.000	127.000	No Ice	17.090	17.090	1.495
						1/2" Ice	21.470	21.470	1.881
						1" Ice	25.720	25.720	2.346
*									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.000	0.000	117.000	No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
			0.000			1" Ice	4.990	4.350	0.145
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.000	0.000	117.000	No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
			0.000			1" Ice	4.990	4.350	0.145
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.000	0.000	117.000	No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
			0.000			1" Ice	4.990	4.350	0.145
*									
8225	C	From Leg	3.000	0.000	79.000	No Ice	0.894	0.894	0.001
			0.000			1/2" Ice	1.060	1.060	0.009
			1.000			1" Ice	1.230	1.230	0.018
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	79.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	177 - 172	Pole	Max Tension	39	0.000	-0.000	-0.000
			Max. Compression	26	-7.396	0.005	0.010
			Max. Mx	8	-4.018	-20.263	0.022
			Max. My	2	-3.985	-0.018	20.432
			Max. Vy	8	3.796	-20.263	0.022

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-3.831	-0.018	20.432
			Max. Torque	2			0.002
L2	172 - 167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-7.912	0.011	0.020
			Max. Mx	8	-4.333	-40.035	0.046
			Max. My	2	-4.297	-0.038	40.386
			Max. Vy	8	4.115	-40.035	0.046
			Max. Vx	2	-4.153	-0.038	40.386
			Max. Torque	2			0.002
L3	167 - 162	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-13.670	0.016	0.035
			Max. Mx	8	-7.376	-75.648	0.087
			Max. My	2	-7.313	-0.072	76.312
			Max. Vy	8	7.288	-75.648	0.087
			Max. Vx	2	-7.352	-0.072	76.312
			Max. Torque	2			0.002
L4	162 - 157	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-14.251	0.020	0.050
			Max. Mx	8	-7.753	-112.906	0.130
			Max. My	2	-7.687	-0.107	113.899
			Max. Vy	8	7.619	-112.906	0.130
			Max. Vx	2	-7.687	-0.107	113.899
			Max. Torque	8			-0.002
L5	157 - 152	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-22.067	0.499	0.531
			Max. Mx	8	-11.617	-165.116	0.939
			Max. My	2	-11.529	-0.759	166.386
			Max. Vy	8	11.859	-165.116	0.939
			Max. Vx	2	-11.860	-0.759	166.386
			Max. Torque	16			-0.661
L6	152 - 147	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-22.723	0.500	0.551
			Max. Mx	8	-12.081	-225.225	1.564
			Max. My	2	-11.990	-1.375	226.508
			Max. Vy	8	12.192	-225.225	1.564
			Max. Vx	2	-12.196	-1.375	226.508
			Max. Torque	16			-0.661
L7	147 - 142	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-28.324	0.487	0.908
			Max. Mx	8	-15.428	-292.612	2.308
			Max. My	2	-15.307	-2.004	294.159
			Max. Vy	8	15.331	-292.612	2.308
			Max. Vx	2	-15.388	-2.004	294.159
			Max. Torque	16			-0.756
L8	142 - 137	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.044	0.453	0.948
			Max. Mx	8	-15.959	-370.045	2.957
			Max. My	2	-15.835	-2.651	371.881
			Max. Vy	8	15.649	-370.045	2.957
			Max. Vx	2	-15.711	-2.651	371.881
			Max. Torque	16			-0.756
L9	137 - 129.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.559	0.428	0.976
			Max. Mx	8	-16.344	-425.186	3.411
			Max. My	2	-16.218	-3.104	427.236
			Max. Vy	8	15.870	-425.186	3.411
			Max. Vx	2	-15.934	-3.104	427.236
			Max. Torque	16			-0.756
L10	129.75 - 128.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-30.814	0.391	1.016
			Max. Mx	8	-17.247	-505.527	4.060

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-17.117	-3.754	507.912
			Max. Vy	8	16.262	-505.527	4.060
			Max. Vx	2	-16.333	-3.754	507.912
			Max. Torque	16			-0.755
L11	128.5 - 123.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.074	-0.005	1.209
			Max. Mx	8	-21.288	-602.451	4.773
			Max. My	2	-21.122	-4.548	605.305
			Max. Vy	8	19.909	-602.451	4.773
			Max. Vx	2	-20.055	-4.548	605.305
			Max. Torque	16			-0.755
L12	123.5 - 118.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.069	-0.151	1.310
			Max. Mx	8	-22.047	-701.067	5.446
			Max. My	2	-21.868	-5.238	704.832
			Max. Vy	8	20.207	-701.067	5.446
			Max. Vx	2	-20.442	-5.238	704.832
			Max. Torque	16			-0.670
L13	118.583 - 118.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.136	-0.166	1.321
			Max. Mx	8	-22.109	-706.120	5.481
			Max. My	2	-21.928	-5.279	709.946
			Max. Vy	20	-20.222	705.381	-4.213
			Max. Vx	2	-20.478	-5.279	709.946
			Max. Torque	16			-0.669
L14	118.333 - 113.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.996	-0.312	1.334
			Max. Mx	8	-23.282	-809.251	6.145
			Max. My	2	-23.051	-5.973	815.208
			Max. Vy	8	20.888	-809.251	6.145
			Max. Vx	2	-21.506	-5.973	815.208
			Max. Torque	16			-0.669
L15	113.333 - 108.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.726	-0.467	1.320
			Max. Mx	8	-24.582	-914.760	6.804
			Max. My	2	-24.307	-6.675	924.650
			Max. Vy	8	21.312	-914.760	6.804
			Max. Vx	2	-22.290	-6.675	924.650
			Max. Torque	16			-0.669
L16	108.333 - 106.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.613	-0.527	1.313
			Max. Mx	8	-25.271	-955.792	7.057
			Max. My	2	-24.980	-6.944	967.667
			Max. Vy	8	21.526	-955.792	7.057
			Max. Vx	2	-22.641	-6.944	967.667
			Max. Torque	16			-0.668
L17	106.417 - 106.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.716	-0.540	1.317
			Max. Mx	8	-25.366	-961.175	7.091
			Max. My	2	-25.073	-6.983	973.329
			Max. Vy	20	-21.545	960.135	-5.738
			Max. Vx	2	-22.681	-6.983	973.329
			Max. Torque	16			-0.668
L18	106.167 - 101.167	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-45.758	-0.691	1.294
			Max. Mx	8	-27.024	-1069.909	7.750
			Max. My	2	-26.694	-7.684	1088.597
			Max. Vy	8	21.957	-1069.909	7.750
			Max. Vx	2	-23.461	-7.684	1088.597
			Max. Torque	16			-0.668
L19	101.167 - 96.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.607	-0.834	1.266
			Max. Mx	8	-29.443	-1180.832	8.409
			Max. My	2	-29.081	-8.391	1207.938
			Max. Vy	8	22.421	-1180.832	8.409
			Max. Vx	2	-24.309	-8.391	1207.938
			Max. Torque	16			-0.667
L20	96.167 - 91.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.625	-0.980	1.236
			Max. Mx	8	-31.127	-1293.776	9.068
			Max. My	2	-30.741	-9.098	1331.199
			Max. Vy	8	22.770	-1293.776	9.068
			Max. Vx	2	-25.034	-9.098	1331.199
			Max. Torque	16			-0.667
L21	91.167 - 84	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.607	-1.052	1.222
			Max. Mx	8	-31.947	-1348.982	9.385
			Max. My	2	-31.551	-9.439	1392.065
			Max. Vy	8	22.932	-1348.982	9.385
			Max. Vx	2	-25.377	-9.439	1392.065
			Max. Torque	16			-0.666
L22	84 - 83.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.569	-1.208	1.196
			Max. Mx	8	-34.306	-1464.833	10.042
			Max. My	2	-33.883	-10.149	1521.046
			Max. Vy	20	-23.420	1463.194	-8.570
			Max. Vx	2	-26.253	-10.149	1521.046
			Max. Torque	16			-0.665
L23	83.75 - 78.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.063	-1.007	0.961
			Max. Mx	8	-37.280	-1582.821	10.585
			Max. My	2	-36.839	-10.663	1654.189
			Max. Vy	8	23.921	-1582.821	10.585
			Max. Vx	2	-27.154	-10.663	1654.189
			Max. Torque	16			-0.803
L24	78.75 - 73.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.386	-1.160	0.930
			Max. Mx	8	-39.259	-1703.180	11.188
			Max. My	2	-38.810	-11.320	1791.584
			Max. Vy	8	24.239	-1703.180	11.188
			Max. Vx	2	-27.849	-11.320	1791.584
			Max. Torque	16			-0.803
L25	73.75 - 68.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.728	-1.316	0.899
			Max. Mx	8	-41.261	-1825.066	11.787
			Max. My	2	-40.809	-11.975	1932.384
			Max. Vy	8	24.534	-1825.066	11.787
			Max. Vx	2	-28.518	-11.975	1932.384
			Max. Torque	16			-0.802
L26	68.75 - 63.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.090	-1.475	0.867
			Max. Mx	8	-43.285	-1948.359	12.383
			Max. My	2	-42.838	-12.628	2076.456

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	24.804	-1948.359	12.383
			Max. Vx	2	-29.160	-12.628	2076.456
			Max. Torque	16			-0.802
L27	63.75 - 58.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.835	-1.636	0.835
			Max. Mx	8	-46.563	-2073.150	12.975
			Max. My	2	-46.126	-13.281	2223.908
			Max. Vy	8	25.133	-2073.150	12.975
			Max. Vx	2	-29.871	-13.281	2223.908
			Max. Torque	16			-0.801
L28	58.75 - 53.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.234	-1.800	0.802
			Max. Mx	8	-48.632	-2199.285	13.563
			Max. My	2	-48.211	-13.930	2374.562
			Max. Vy	8	25.346	-2199.285	13.563
			Max. Vx	2	-30.446	-13.930	2374.562
			Max. Torque	16			-0.801
L29	53.75 - 48.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.651	-1.966	0.768
			Max. Mx	8	-50.723	-2326.416	14.145
			Max. My	2	-50.324	-14.574	2528.004
			Max. Vy	8	25.533	-2326.416	14.145
			Max. Vx	2	-30.989	-14.574	2528.004
			Max. Torque	16			-0.800
L30	48.75 - 39.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-75.926	-2.092	0.743
			Max. Mx	8	-52.709	-2422.369	14.577
			Max. My	2	-52.330	-15.056	2644.845
			Max. Vy	8	25.678	-2422.369	14.577
			Max. Vx	2	-31.395	-15.056	2644.845
			Max. Torque	16			-0.800
L31	39.25 - 38.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-81.676	-2.321	0.697
			Max. Mx	8	-57.573	-2597.227	15.353
			Max. My	2	-57.207	-15.920	2859.863
			Max. Vy	8	26.135	-2597.227	15.353
			Max. Vx	2	-32.346	-15.920	2859.863
			Max. Torque	16			-0.799
L32	38.25 - 33.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-84.310	-2.491	0.663
			Max. Mx	8	-59.875	-2728.186	15.923
			Max. My	2	-59.542	-16.556	3022.607
			Max. Vy	8	26.274	-2728.186	15.923
			Max. Vx	2	-32.812	-16.556	3022.607
			Max. Torque	16			-0.799
L33	33.25 - 28.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.963	-2.663	0.629
			Max. Mx	8	-62.200	-2859.765	16.486
			Max. My	2	-61.904	-17.187	3187.569
			Max. Vy	8	26.385	-2859.765	16.486
			Max. Vx	2	-33.235	-17.187	3187.569
			Max. Torque	16			-0.799
L34	28.25 - 23.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-89.633	-2.836	0.595
			Max. Mx	8	-64.547	-2991.851	17.043
			Max. My	2	-64.293	-17.812	3354.601
			Max. Vy	8	26.478	-2991.851	17.043
			Max. Vx	2	-33.642	-17.812	3354.601
			Max. Torque	16			-0.799
L35	23.25 - 18.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-93.707	-3.010	0.561

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-68.187	-3124.453	17.592
			Max. My	2	-67.979	-18.432	3523.740
			Max. Vy	8	26.590	-3124.453	17.592
			Max. Vx	2	-34.078	-18.432	3523.740
			Max. Torque	16			-0.799
L36	18.25 - 13.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-96.516	-3.185	0.527
			Max. Mx	8	-70.684	-3257.487	18.134
			Max. My	2	-70.526	-19.045	3694.909
			Max. Vy	8	26.654	-3257.487	18.134
			Max. Vx	2	-34.459	-19.045	3694.909
			Max. Torque	16			-0.798
L37	13.25 - 8.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-99.333	-3.359	0.493
			Max. Mx	8	-73.202	-3390.802	18.668
			Max. My	2	-73.100	-19.651	3867.283
			Max. Vy	8	26.704	-3390.802	18.668
			Max. Vx	2	-34.561	-19.651	3867.283
			Max. Torque	16			-0.798
L38	8.25 - 3.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-102.149	-3.531	0.461
			Max. Mx	8	-75.741	-3524.332	19.193
			Max. My	2	-75.697	-20.249	4040.116
			Max. Vy	8	26.741	-3524.332	19.193
			Max. Vx	2	-34.644	-20.249	4040.116
			Max. Torque	16			-0.798
L39	3.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-103.961	-3.637	0.442
			Max. Mx	8	-77.403	-3611.209	19.529
			Max. My	2	-77.396	-20.633	4152.662
			Max. Vy	8	26.760	-3611.209	19.529
			Max. Vx	2	-34.692	-20.633	4152.662
			Max. Torque	16			-0.798

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	103.961	-0.013	8.524
	Max. H_x	20	77.416	26.722	-0.101
	Max. H_z	2	77.416	-0.101	34.649
	Max. M_x	2	4152.662	-0.101	34.649
	Max. M_z	8	3611.209	-26.722	0.101
	Max. Torsion	4	0.749	-13.121	22.569
	Min. Vert	5	58.062	-13.121	22.569
	Min. H_x	9	58.062	-26.722	0.101
	Min. H_z	15	58.062	0.101	-34.649
	Min. M_x	14	-4151.048	0.101	-34.649
	Min. M_z	20	-3607.393	26.722	-0.101
	Min. Torsion	16	-0.798	13.121	-22.569

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	64.513	0.000	0.000	-0.571	-1.443	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	77.416	0.101	-34.649	-4152.662	-20.633	0.322
0.9 Dead+1.0 Wind 0 deg - No Ice	58.062	0.101	-34.649	-4039.086	-19.511	0.319
1.2 Dead+1.0 Wind 30 deg - No Ice	77.416	13.121	-22.569	-3081.160	-1797.581	-0.749
0.9 Dead+1.0 Wind 30 deg - No Ice	58.062	13.121	-22.569	-2991.583	-1744.910	-0.743
1.2 Dead+1.0 Wind 60 deg - No Ice	77.416	22.724	-13.146	-1794.525	-3101.095	-0.630
0.9 Dead+1.0 Wind 60 deg - No Ice	58.062	22.724	-13.146	-1742.290	-3010.728	-0.616
1.2 Dead+1.0 Wind 90 deg - No Ice	77.416	26.722	-0.101	-19.529	-3611.209	-0.342
0.9 Dead+1.0 Wind 90 deg - No Ice	58.062	26.722	-0.101	-18.697	-3506.544	-0.323
1.2 Dead+1.0 Wind 120 deg - No Ice	77.416	24.147	13.851	1827.496	-3198.447	0.085
0.9 Dead+1.0 Wind 120 deg - No Ice	58.062	24.147	13.851	1775.528	-3106.540	0.102
1.2 Dead+1.0 Wind 150 deg - No Ice	77.416	14.092	24.453	3226.751	-1860.958	0.447
0.9 Dead+1.0 Wind 150 deg - No Ice	58.062	14.092	24.453	3135.015	-1807.469	0.458
1.2 Dead+1.0 Wind 180 deg - No Ice	77.416	-0.101	34.649	4151.048	16.781	-0.262
0.9 Dead+1.0 Wind 180 deg - No Ice	58.062	-0.101	34.649	4037.925	16.702	-0.261
1.2 Dead+1.0 Wind 210 deg - No Ice	77.416	-13.121	22.569	3079.570	1793.711	0.798
0.9 Dead+1.0 Wind 210 deg - No Ice	58.062	-13.121	22.569	2990.444	1742.088	0.790
1.2 Dead+1.0 Wind 240 deg - No Ice	77.416	-22.724	13.146	1792.939	3097.265	0.625
0.9 Dead+1.0 Wind 240 deg - No Ice	58.062	-22.724	13.146	1741.154	3007.933	0.611
1.2 Dead+1.0 Wind 270 deg - No Ice	77.416	-26.722	0.101	17.909	3607.393	0.287
0.9 Dead+1.0 Wind 270 deg - No Ice	58.062	-26.722	0.101	17.538	3503.765	0.270
1.2 Dead+1.0 Wind 300 deg - No Ice	77.416	-24.147	-13.851	-1829.155	3194.622	-0.135
0.9 Dead+1.0 Wind 300 deg - No Ice	58.062	-24.147	-13.851	-1776.713	3103.749	-0.151
1.2 Dead+1.0 Wind 330 deg - No Ice	77.416	-14.092	-24.453	-3228.411	1857.094	-0.442
0.9 Dead+1.0 Wind 330 deg - No Ice	58.062	-14.092	-24.453	-3136.200	1804.651	-0.453
1.2 Dead+1.0 Ice+1.0 Temp	103.961	0.000	-0.000	-0.442	-3.637	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	103.961	0.013	-8.524	-1154.108	-6.926	0.038
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	103.961	3.836	-6.625	-942.311	-550.154	-0.223
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	103.961	6.630	-3.833	-545.974	-947.032	-0.177
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	103.961	7.648	-0.013	-3.494	-1091.223	-0.084
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	103.961	6.667	3.839	543.178	-949.983	0.037

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	103.961	3.860	6.695	947.974	-550.659	0.134
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	103.961	-0.013	8.524	1153.008	-1.037	-0.036
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	103.961	-3.836	6.625	941.216	542.190	0.225
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	103.961	-6.630	3.833	544.880	939.073	0.176
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	103.961	-7.648	0.013	2.395	1083.268	0.081
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	103.961	-6.667	-3.839	-544.284	942.025	-0.040
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	103.961	-3.860	-6.695	-949.080	542.695	-0.134
Dead+Wind 0 deg - Service	64.513	0.026	-8.886	-1049.599	-6.286	0.080
Dead+Wind 30 deg - Service	64.513	3.365	-5.789	-777.885	-454.631	-0.196
Dead+Wind 60 deg - Service	64.513	5.828	-3.372	-453.260	-783.561	-0.161
Dead+Wind 90 deg - Service	64.513	6.854	-0.026	-5.380	-912.335	-0.082
Dead+Wind 120 deg - Service	64.513	6.193	3.552	460.784	-808.327	0.027
Dead+Wind 150 deg - Service	64.513	3.614	6.272	813.995	-470.805	0.114
Dead+Wind 180 deg - Service	64.513	-0.026	8.886	1048.266	3.140	-0.076
Dead+Wind 210 deg - Service	64.513	-3.365	5.789	776.554	451.483	0.199
Dead+Wind 240 deg - Service	64.513	-5.828	3.372	451.930	780.416	0.160
Dead+Wind 270 deg - Service	64.513	-6.854	0.026	4.047	909.191	0.079
Dead+Wind 300 deg - Service	64.513	-6.193	-3.552	-462.118	805.182	-0.030
Dead+Wind 330 deg - Service	64.513	-3.614	-6.272	-815.330	467.658	-0.113

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-64.513	0.000	0.000	64.513	0.000	0.000%
2	0.101	-77.416	-34.649	-0.101	77.416	34.649	0.000%
3	0.101	-58.062	-34.649	-0.101	58.062	34.649	0.000%
4	13.121	-77.416	-22.569	-13.121	77.416	22.569	0.000%
5	13.121	-58.062	-22.569	-13.121	58.062	22.569	0.000%
6	22.724	-77.416	-13.146	-22.724	77.416	13.146	0.000%
7	22.724	-58.062	-13.146	-22.724	58.062	13.146	0.000%
8	26.722	-77.416	-0.101	-26.722	77.416	0.101	0.000%
9	26.722	-58.062	-0.101	-26.722	58.062	0.101	0.000%
10	24.147	-77.416	13.851	-24.147	77.416	-13.851	0.000%
11	24.147	-58.062	13.851	-24.147	58.062	-13.851	0.000%
12	14.092	-77.416	24.453	-14.092	77.416	-24.453	0.000%
13	14.092	-58.062	24.453	-14.092	58.062	-24.453	0.000%
14	-0.101	-77.416	34.649	0.101	77.416	-34.649	0.000%
15	-0.101	-58.062	34.649	0.101	58.062	-34.649	0.000%
16	-13.121	-77.416	22.569	13.121	77.416	-22.569	0.000%
17	-13.121	-58.062	22.569	13.121	58.062	-22.569	0.000%
18	-22.724	-77.416	13.146	22.724	77.416	-13.146	0.000%
19	-22.724	-58.062	13.146	22.724	58.062	-13.146	0.000%
20	-26.722	-77.416	0.101	26.722	77.416	-0.101	0.000%
21	-26.722	-58.062	0.101	26.722	58.062	-0.101	0.000%
22	-24.147	-77.416	-13.851	24.147	77.416	13.851	0.000%
23	-24.147	-58.062	-13.851	24.147	58.062	13.851	0.000%
24	-14.092	-77.416	-24.453	14.092	77.416	24.453	0.000%
25	-14.092	-58.062	-24.453	14.092	58.062	24.453	0.000%
26	0.000	-103.961	0.000	-0.000	103.961	0.000	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
27	0.013	-103.961	-8.524	-0.013	103.961	8.524	0.000%
28	3.836	-103.961	-6.625	-3.836	103.961	6.625	0.000%
29	6.630	-103.961	-3.833	-6.630	103.961	3.833	0.000%
30	7.648	-103.961	-0.013	-7.648	103.961	0.013	0.000%
31	6.667	-103.961	3.839	-6.667	103.961	-3.839	0.000%
32	3.860	-103.961	6.695	-3.860	103.961	-6.695	0.000%
33	-0.013	-103.961	8.524	0.013	103.961	-8.524	0.000%
34	-3.836	-103.961	6.625	3.836	103.961	-6.625	0.000%
35	-6.630	-103.961	3.833	6.630	103.961	-3.833	0.000%
36	-7.648	-103.961	0.013	7.648	103.961	-0.013	0.000%
37	-6.667	-103.961	-3.839	6.667	103.961	3.839	0.000%
38	-3.860	-103.961	-6.695	3.860	103.961	6.695	0.000%
39	0.026	-64.513	-8.886	-0.026	64.513	8.886	0.000%
40	3.365	-64.513	-5.789	-3.365	64.513	5.789	0.000%
41	5.828	-64.513	-3.372	-5.828	64.513	3.372	0.000%
42	6.854	-64.513	-0.026	-6.854	64.513	0.026	0.000%
43	6.193	-64.513	3.552	-6.193	64.513	-3.552	0.000%
44	3.614	-64.513	6.272	-3.614	64.513	-6.272	0.000%
45	-0.026	-64.513	8.886	0.026	64.513	-8.886	0.000%
46	-3.365	-64.513	5.789	3.365	64.513	-5.789	0.000%
47	-5.828	-64.513	3.372	5.828	64.513	-3.372	0.000%
48	-6.854	-64.513	0.026	6.854	64.513	-0.026	0.000%
49	-6.193	-64.513	-3.552	6.193	64.513	3.552	0.000%
50	-3.614	-64.513	-6.272	3.614	64.513	6.272	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	6	0.00000001	0.00086053
3	Yes	6	0.00000001	0.00027763
4	Yes	8	0.00000001	0.00077420
5	Yes	8	0.00000001	0.00013982
6	Yes	8	0.00000001	0.00078740
7	Yes	8	0.00000001	0.00014247
8	Yes	7	0.00000001	0.00015342
9	Yes	6	0.00000001	0.00043264
10	Yes	8	0.00000001	0.00079300
11	Yes	8	0.00000001	0.00014285
12	Yes	8	0.00000001	0.00080309
13	Yes	8	0.00000001	0.00014394
14	Yes	7	0.00000001	0.00012337
15	Yes	6	0.00000001	0.00035079
16	Yes	8	0.00000001	0.00078363
17	Yes	8	0.00000001	0.00014209
18	Yes	8	0.00000001	0.00077526
19	Yes	8	0.00000001	0.00014006
20	Yes	6	0.00000001	0.00054847
21	Yes	6	0.00000001	0.00018128
22	Yes	8	0.00000001	0.00079291
23	Yes	8	0.00000001	0.00014277
24	Yes	8	0.00000001	0.00080833
25	Yes	8	0.00000001	0.00014516
26	Yes	4	0.00000001	0.00039054
27	Yes	8	0.00000001	0.00030211

28	Yes	8	0.00000001	0.00064420
29	Yes	8	0.00000001	0.00065055
30	Yes	8	0.00000001	0.00029329
31	Yes	8	0.00000001	0.00063973
32	Yes	8	0.00000001	0.00064283
33	Yes	8	0.00000001	0.00030091
34	Yes	8	0.00000001	0.00064111
35	Yes	8	0.00000001	0.00063537
36	Yes	8	0.00000001	0.00029166
37	Yes	8	0.00000001	0.00063917
38	Yes	8	0.00000001	0.00064328
39	Yes	5	0.00000001	0.00058913
40	Yes	6	0.00000001	0.00082174
41	Yes	6	0.00000001	0.00085571
42	Yes	5	0.00000001	0.00061094
43	Yes	6	0.00000001	0.00085464
44	Yes	6	0.00000001	0.00087045
45	Yes	5	0.00000001	0.00060245
46	Yes	6	0.00000001	0.00084222
47	Yes	6	0.00000001	0.00081724
48	Yes	5	0.00000001	0.00054865
49	Yes	6	0.00000001	0.00085456
50	Yes	6	0.00000001	0.00088324

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 172	49.612	39	2.337	0.002
L2	172 - 167	47.167	39	2.333	0.002
L3	167 - 162	44.730	39	2.323	0.002
L4	162 - 157	42.306	39	2.306	0.002
L5	157 - 152	39.905	39	2.281	0.002
L6	152 - 147	37.533	39	2.248	0.002
L7	147 - 142	35.201	39	2.205	0.002
L8	142 - 137	32.918	39	2.155	0.001
L9	137 - 129.75	30.693	39	2.095	0.001
L10	133.5 - 128.5	29.174	39	2.049	0.001
L11	128.5 - 123.5	27.048	39	2.006	0.001
L12	123.5 - 118.583	24.985	39	1.935	0.001
L13	118.583 - 118.333	23.032	39	1.858	0.001
L14	118.333 - 113.333	22.935	39	1.856	0.001
L15	113.333 - 108.333	21.020	39	1.801	0.001
L16	108.333 - 106.417	19.164	39	1.744	0.001
L17	106.417 - 106.167	18.469	39	1.721	0.001
L18	106.167 - 101.167	18.379	39	1.717	0.001
L19	101.167 - 96.167	16.629	39	1.624	0.001
L20	96.167 - 91.167	14.978	39	1.529	0.001
L21	91.167 - 84	13.429	39	1.431	0.001
L22	88.75 - 83.75	12.716	39	1.383	0.001
L23	83.75 - 78.75	11.292	39	1.335	0.001
L24	78.75 - 73.75	9.939	39	1.249	0.000
L25	73.75 - 68.75	8.677	39	1.162	0.000
L26	68.75 - 63.75	7.506	39	1.074	0.000
L27	63.75 - 58.75	6.427	39	0.986	0.000
L28	58.75 - 53.75	5.441	39	0.897	0.000
L29	53.75 - 48.75	4.549	39	0.807	0.000
L30	48.75 - 39.25	3.750	39	0.718	0.000
L31	45 - 38.25	3.213	39	0.651	0.000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L32	38.25 - 33.25	2.333	39	0.587	0.000
L33	33.25 - 28.25	1.760	39	0.509	0.000
L34	28.25 - 23.25	1.267	39	0.431	0.000
L35	23.25 - 18.25	0.856	39	0.354	0.000
L36	18.25 - 13.25	0.526	39	0.277	0.000
L37	13.25 - 8.25	0.277	39	0.200	0.000
L38	8.25 - 3.25	0.107	39	0.124	0.000
L39	3.25 - 0	0.017	39	0.049	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	Top Hat	39	49.612	2.337	0.002	40633
177.000	APXVSPP18-C-A20 w/ Mount Pipe	39	49.612	2.337	0.002	40633
176.000	4' x 2" Pipe Mount	39	49.123	2.336	0.002	40633
167.000	APXV18-206516S-C-A20 w/ Mount Pipe	39	44.730	2.323	0.002	21688
154.000	(2) LPA-80080/6CF w/ Mount Pipe	39	38.478	2.262	0.002	8459
144.000	MX08FRO665-21 w/ Mount Pipe	39	33.825	2.176	0.002	5595
127.000	DMP65R-BU4D w/ Mount Pipe	39	26.422	1.989	0.001	4401
117.000	APXV18-206517S-C w/ Mount Pipe	39	22.419	1.842	0.001	4804
79.000	8225	39	10.005	1.254	0.000	3340

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 172	196.522	2	9.285	0.008
L2	172 - 167	186.848	2	9.269	0.008
L3	167 - 162	177.202	2	9.229	0.008
L4	162 - 157	167.611	2	9.161	0.008
L5	157 - 152	158.108	2	9.061	0.008
L6	152 - 147	148.723	2	8.931	0.007
L7	147 - 142	139.493	2	8.762	0.006
L8	142 - 137	130.455	2	8.560	0.006
L9	137 - 129.75	121.645	2	8.323	0.005
L10	133.5 - 128.5	115.631	2	8.139	0.005
L11	128.5 - 123.5	107.210	2	7.970	0.004
L12	123.5 - 118.583	99.037	2	7.685	0.004
L13	118.583 - 118.333	91.299	2	7.382	0.004
L14	118.333 - 113.333	90.914	2	7.371	0.004
L15	113.333 - 108.333	83.327	2	7.156	0.003
L16	108.333 - 106.417	75.971	2	6.926	0.003
L17	106.417 - 106.167	73.217	2	6.836	0.003
L18	106.167 - 101.167	72.860	2	6.819	0.003
L19	101.167 - 96.167	65.926	2	6.451	0.003
L20	96.167 - 91.167	59.381	2	6.072	0.003
L21	91.167 - 84	53.237	2	5.683	0.002
L22	88.75 - 83.75	50.413	2	5.491	0.002

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L23	83.75 - 78.75	44.766	2	5.301	0.002
L24	78.75 - 73.75	39.400	2	4.959	0.002
L25	73.75 - 68.75	34.394	2	4.613	0.002
L26	68.75 - 63.75	29.750	2	4.264	0.002
L27	63.75 - 58.75	25.472	2	3.912	0.001
L28	58.75 - 53.75	21.564	2	3.558	0.001
L29	53.75 - 48.75	18.026	2	3.203	0.001
L30	48.75 - 39.25	14.860	2	2.847	0.001
L31	45 - 38.25	12.729	2	2.580	0.001
L32	38.25 - 33.25	9.243	2	2.327	0.001
L33	33.25 - 28.25	6.970	2	2.017	0.001
L34	28.25 - 23.25	5.019	2	1.708	0.000
L35	23.25 - 18.25	3.391	2	1.401	0.000
L36	18.25 - 13.25	2.084	2	1.096	0.000
L37	13.25 - 8.25	1.096	2	0.793	0.000
L38	8.25 - 3.25	0.424	2	0.491	0.000
L39	3.25 - 0	0.066	2	0.193	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	Top Hat	2	196.522	9.285	0.008	10696
177.000	APXVSPP18-C-A20 w/ Mount Pipe	2	196.522	9.285	0.008	10696
176.000	4' x 2" Pipe Mount	2	194.586	9.283	0.008	10696
167.000	APXV18-206516S-C-A20 w/ Mount Pipe	2	177.202	9.229	0.008	5700
154.000	(2) LPA-80080/6CF w/ Mount Pipe	2	152.460	8.987	0.007	2225
144.000	MX08FRO665-21 w/ Mount Pipe	2	134.045	8.644	0.006	1469
127.000	DMP65R-BU4D w/ Mount Pipe	2	104.729	7.900	0.004	1146
117.000	APXV18-206517S-C w/ Mount Pipe	2	88.870	7.316	0.004	1245
79.000	8225	2	39.660	4.978	0.002	852

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	177 - 172 (1)	TP22.875x22x0.219	5.000	0.000	0.0	15.731	-3.985	920.232	0.004
L2	172 - 167 (2)	TP23.75x22.875x0.219	5.000	0.000	0.0	16.338	-4.297	955.769	0.004
L3	167 - 162 (3)	TP24.625x23.75x0.219	5.000	0.000	0.0	16.945	-7.313	991.306	0.007
L4	162 - 157 (4)	TP25.5x24.625x0.219	5.000	0.000	0.0	17.553	-7.687	1026.840	0.007
L5	157 - 152 (5)	TP26.375x25.5x0.219	5.000	0.000	0.0	18.160	-11.529	1062.380	0.011
L6	152 - 147 (6)	TP27.25x26.375x0.219	5.000	0.000	0.0	18.768	-11.990	1097.920	0.011
L7	147 - 142 (7)	TP28.124x27.25x0.219	5.000	0.000	0.0	19.375	-15.307	1133.450	0.014
L8	142 - 137 (8)	TP28.999x28.124x0.219	5.000	0.000	0.0	19.983	-15.835	1168.990	0.014
L9	137 - 129.75	TP30.268x28.999x0.219	7.250	0.000	0.0	20.408	-16.218	1193.870	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L10	129.75 - 128.5 (10)	TP30.049x29.174x0.25	5.000	0.000	0.0	23.646	-17.118	1383.270	0.012
L11	128.5 - 123.5 (11)	TP30.924x30.049x0.25	5.000	0.000	0.0	24.340	-21.122	1423.890	0.015
L12	123.5 - 118.583 (12)	TP31.785x30.924x0.25	4.917	0.000	0.0	25.023	-21.868	1463.830	0.015
L13	118.583 - 118.333 (13)	TP31.828x31.785x0.388	0.250	0.000	0.0	38.670	-21.928	2262.180	0.010
L14	118.333 - 113.333 (14)	TP32.703x31.828x0.388	5.000	0.000	0.0	39.746	-23.051	2325.130	0.010
L15	113.333 - 108.333 (15)	TP33.578x32.703x0.381	5.000	0.000	0.0	40.171	-24.307	2350.010	0.010
L16	108.333 - 106.417 (16)	TP33.913x33.578x0.381	1.916	0.000	0.0	40.577	-24.980	2373.740	0.011
L17	106.417 - 106.167 (17)	TP33.957x33.913x0.25	0.250	0.000	0.0	26.747	-25.073	1564.680	0.016
L18	106.167 - 101.167 (18)	TP34.832x33.957x0.25	5.000	0.000	0.0	27.441	-26.694	1605.290	0.017
L19	101.167 - 96.167 (19)	TP35.707x34.832x0.25	5.000	0.000	0.0	28.135	-29.081	1645.900	0.018
L20	96.167 - 91.167 (20)	TP36.582x35.707x0.25	5.000	0.000	0.0	28.829	-30.741	1686.520	0.018
L21	91.167 - 84 (21)	TP37.836x36.582x0.25	7.167	0.000	0.0	29.165	-31.551	1706.150	0.018
L22	84 - 83.75 (22)	TP37.38x36.505x0.313	5.000	0.000	0.0	36.766	-33.883	2150.820	0.016
L23	83.75 - 78.75 (23)	TP38.255x37.38x0.313	5.000	0.000	0.0	37.634	-36.839	2201.590	0.017
L24	78.75 - 73.75 (24)	TP39.13x38.255x0.313	5.000	0.000	0.0	38.502	-38.810	2252.360	0.017
L25	73.75 - 68.75 (25)	TP40.005x39.13x0.313	5.000	0.000	0.0	39.370	-40.810	2303.130	0.018
L26	68.75 - 63.75 (26)	TP40.88x40.005x0.313	5.000	0.000	0.0	40.238	-42.838	2353.900	0.018
L27	63.75 - 58.75 (27)	TP41.755x40.88x0.313	5.000	0.000	0.0	41.105	-46.126	2404.670	0.019
L28	58.75 - 53.75 (28)	TP42.63x41.755x0.313	5.000	0.000	0.0	41.973	-48.211	2455.440	0.020
L29	53.75 - 48.75 (29)	TP43.505x42.63x0.313	5.000	0.000	0.0	42.841	-50.324	2506.210	0.020
L30	48.75 - 39.25 (30)	TP45.167x43.505x0.313	9.500	0.000	0.0	43.492	-52.330	2544.280	0.021
L31	39.25 - 38.25 (31)	TP44.717x43.536x0.375	6.750	0.000	0.0	52.778	-57.207	3087.510	0.019
L32	38.25 - 33.25 (32)	TP45.592x44.717x0.375	5.000	0.000	0.0	53.819	-59.542	3148.430	0.019
L33	33.25 - 28.25 (33)	TP46.467x45.592x0.375	5.000	0.000	0.0	54.861	-61.904	3209.350	0.019
L34	28.25 - 23.25 (34)	TP47.342x46.467x0.375	5.000	0.000	0.0	55.902	-64.293	3270.270	0.020
L35	23.25 - 18.25 (35)	TP48.217x47.342x0.375	5.000	0.000	0.0	56.943	-67.979	3331.190	0.020
L36	18.25 - 13.25 (36)	TP49.091x48.217x0.375	5.000	0.000	0.0	57.985	-70.525	3392.110	0.021
L37	13.25 - 8.25 (37)	TP49.966x49.091x0.375	5.000	0.000	0.0	59.026	-73.100	3453.030	0.021
L38	8.25 - 3.25 (38)	TP50.841x49.966x0.375	5.000	0.000	0.0	60.068	-75.697	3513.950	0.022
L39	3.25 - 0 (39)	TP51.41x50.841x0.375	3.250	0.000	0.0	60.744	-77.396	3553.550	0.022

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	177 - 172 (1)	TP22.875x22x0.219	20.432	531.913	0.038	0.000	531.913	0.000
L2	172 - 167 (2)	TP23.75x22.875x0.219	40.386	568.109	0.071	0.000	568.109	0.000
L3	167 - 162 (3)	TP24.625x23.75x0.219	76.312	605.013	0.126	0.000	605.013	0.000
L4	162 - 157 (4)	TP25.5x24.625x0.219	113.899	642.573	0.177	0.000	642.573	0.000
L5	157 - 152 (5)	TP26.375x25.5x0.219	166.387	680.742	0.244	0.000	680.742	0.000
L6	152 - 147 (6)	TP27.25x26.375x0.219	226.512	719.470	0.315	0.000	719.470	0.000
L7	147 - 142 (7)	TP28.124x27.25x0.219	294.166	758.707	0.388	0.000	758.707	0.000
L8	142 - 137 (8)	TP28.999x28.124x0.219	371.890	798.404	0.466	0.000	798.404	0.000
L9	137 - 129.75 (9)	TP30.268x28.999x0.219	427.247	826.440	0.517	0.000	826.440	0.000
L10	129.75 - 128.5 (10)	TP30.049x29.174x0.25	507.926	1010.808	0.502	0.000	1010.808	0.000
L11	128.5 - 123.5 (11)	TP30.924x30.049x0.25	605.322	1061.283	0.570	0.000	1061.283	0.000
L12	123.5 - 118.583 (12)	TP31.785x30.924x0.25	704.851	1111.500	0.634	0.000	1111.500	0.000
L13	118.583 - 118.333 (13)	TP31.828x31.785x0.388	709.965	1849.258	0.384	0.000	1849.258	0.000
L14	118.333 - 113.333 (14)	TP32.703x31.828x0.388	815.229	1954.258	0.417	0.000	1954.258	0.000
L15	113.333 - 108.333 (15)	TP33.578x32.703x0.381	924.675	2030.033	0.455	0.000	2030.033	0.000
L16	108.333 - 106.417 (16)	TP33.913x33.578x0.381	967.692	2071.483	0.467	0.000	2071.483	0.000
L17	106.417 - 106.167 (17)	TP33.957x33.913x0.25	973.350	1240.542	0.785	0.000	1240.542	0.000
L18	106.167 - 101.167 (18)	TP34.832x33.957x0.25	1088.625	1293.292	0.842	0.000	1293.292	0.000
L19	101.167 - 96.167 (19)	TP35.707x34.832x0.25	1207.967	1346.417	0.897	0.000	1346.417	0.000
L20	96.167 - 91.167 (20)	TP36.582x35.707x0.25	1331.233	1399.867	0.951	0.000	1399.867	0.000
L21	91.167 - 84 (21)	TP37.836x36.582x0.25	1392.100	1425.800	0.976	0.000	1425.800	0.000
L22	84 - 83.75 (22)	TP37.38x36.505x0.313	1521.083	1957.967	0.777	0.000	1957.967	0.000
L23	83.75 - 78.75 (23)	TP38.255x37.38x0.313	1654.225	2036.583	0.812	0.000	2036.583	0.000
L24	78.75 - 73.75 (24)	TP39.13x38.255x0.313	1791.617	2115.958	0.847	0.000	2115.958	0.000
L25	73.75 - 68.75 (25)	TP40.005x39.13x0.313	1932.425	2196.050	0.880	0.000	2196.050	0.000
L26	68.75 - 63.75 (26)	TP40.88x40.005x0.313	2076.492	2276.808	0.912	0.000	2276.808	0.000
L27	63.75 - 58.75 (27)	TP41.755x40.88x0.313	2223.950	2358.192	0.943	0.000	2358.192	0.000
L28	58.75 - 53.75 (28)	TP42.63x41.755x0.313	2374.600	2440.133	0.973	0.000	2440.133	0.000
L29	53.75 - 48.75 (29)	TP43.505x42.63x0.313	2528.042	2522.600	1.002	0.000	2522.600	0.000
L30	48.75 - 39.25 (30)	TP45.167x43.505x0.313	2644.892	2584.767	1.023	0.000	2584.767	0.000
L31	39.25 - 38.25 (31)	TP44.717x43.536x0.375	2859.908	3365.508	0.850	0.000	3365.508	0.000
L32	38.25 - 33.25 (32)	TP45.592x44.717x0.375	3022.650	3478.458	0.869	0.000	3478.458	0.000
L33	33.25 - 28.25	TP46.467x45.592x0.375	3187.617	3592.342	0.887	0.000	3592.342	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L34	28.25 - 23.25 (33)	TP47.342x46.467x0.375	3354.650	3707.108	0.905	0.000	3707.108	0.000
L35	23.25 - 18.25 (34)	TP48.217x47.342x0.375	3523.792	3822.717	0.922	0.000	3822.717	0.000
L36	18.25 - 13.25 (35)	TP49.091x48.217x0.375	3694.958	3939.117	0.938	0.000	3939.117	0.000
L37	13.25 - 8.25 (36)	TP49.966x49.091x0.375	3867.333	4056.250	0.953	0.000	4056.250	0.000
L38	8.25 - 3.25 (37)	TP50.841x49.966x0.375	4040.167	4174.083	0.968	0.000	4174.083	0.000
L39	3.25 - 0 (38)	TP51.41x50.841x0.375	4152.717	4251.017	0.977	0.000	4251.017	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	177 - 172 (1)	TP22.875x22x0.219	3.831	276.070	0.014	0.002	547.753	0.000
L2	172 - 167 (2)	TP23.75x22.875x0.219	4.153	286.731	0.014	0.002	590.876	0.000
L3	167 - 162 (3)	TP24.625x23.75x0.219	7.352	297.392	0.025	0.002	635.632	0.000
L4	162 - 157 (4)	TP25.5x24.625x0.219	7.687	308.053	0.025	0.002	682.022	0.000
L5	157 - 152 (5)	TP26.375x25.5x0.219	11.861	318.714	0.037	0.580	730.046	0.001
L6	152 - 147 (6)	TP27.25x26.375x0.219	12.197	329.375	0.037	0.579	779.702	0.001
L7	147 - 142 (7)	TP28.124x27.25x0.219	15.388	340.036	0.045	0.579	830.994	0.001
L8	142 - 137 (8)	TP28.999x28.124x0.219	15.711	350.697	0.045	0.579	883.917	0.001
L9	137 - 129.75 (9)	TP30.268x28.999x0.219	15.934	358.160	0.044	0.579	921.942	0.001
L10	129.75 - 128.5 (10)	TP30.049x29.174x0.25	16.334	414.982	0.039	0.578	1082.967	0.001
L11	128.5 - 123.5 (11)	TP30.924x30.049x0.25	20.055	427.166	0.047	0.451	1147.492	0.000
L12	123.5 - 118.583 (12)	TP31.785x30.924x0.25	20.442	439.148	0.047	0.451	1212.767	0.000
L13	118.583 - 118.333 (13)	TP31.828x31.785x0.388	20.479	678.655	0.030	0.450	1868.625	0.000
L14	118.333 - 113.333 (14)	TP32.703x31.828x0.388	21.507	697.540	0.031	0.419	1974.075	0.000
L15	113.333 - 108.333 (15)	TP33.578x32.703x0.381	22.290	705.003	0.032	0.386	2049.600	0.000
L16	108.333 - 106.417 (16)	TP33.913x33.578x0.381	22.641	712.123	0.032	0.379	2091.208	0.000
L17	106.417 - 106.167 (17)	TP33.957x33.913x0.25	22.681	469.403	0.048	0.365	1385.633	0.000
L18	106.167 - 101.167 (18)	TP34.832x33.957x0.25	23.461	481.587	0.049	0.324	1458.500	0.000
L19	101.167 - 96.167 (19)	TP35.707x34.832x0.25	24.309	493.771	0.049	0.282	1533.233	0.000
L20	96.167 - 91.167 (20)	TP36.582x35.707x0.25	25.035	505.955	0.049	0.228	1609.833	0.000
L21	91.167 - 84 (21)	TP37.836x36.582x0.25	25.377	511.845	0.050	0.202	1647.525	0.000
L22	84 - 83.75 (22)	TP37.38x36.505x0.313	26.254	645.245	0.041	0.133	2094.575	0.000
L23	83.75 - 78.75 (23)	TP38.255x37.38x0.313	27.154	657.430	0.041	0.334	2194.625	0.000
L24	78.75 - 73.75 (24)	TP39.13x38.255x0.313	27.849	675.707	0.041	0.287	2297.008	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L25	73.75 - 68.75 (25)	TP40.005x39.13x0.313	28.518	690.938	0.041	0.229	2401.733	0.000
L26	68.75 - 63.75 (26)	TP40.88x40.005x0.313	29.160	706.169	0.041	0.172	2508.783	0.000
L27	63.75 - 58.75 (27)	TP41.755x40.88x0.313	29.871	721.400	0.041	0.132	2618.175	0.000
L28	58.75 - 53.75 (28)	TP42.63x41.755x0.313	30.447	736.631	0.041	0.080	2729.892	0.000
L29	53.75 - 48.75 (29)	TP43.505x42.63x0.313	30.989	751.862	0.041	0.023	2843.950	0.000
L30	48.75 - 39.25 (30)	TP45.167x43.505x0.313	31.395	763.285	0.041	0.020	2931.025	0.000
L31	39.25 - 38.25 (31)	TP44.717x43.536x0.375	32.346	926.253	0.035	0.076	3596.867	0.000
L32	38.25 - 33.25 (32)	TP45.592x44.717x0.375	32.812	944.529	0.035	0.130	3740.208	0.000
L33	33.25 - 28.25 (33)	TP46.467x45.592x0.375	33.236	962.805	0.035	0.182	3886.350	0.000
L34	28.25 - 23.25 (34)	TP47.342x46.467x0.375	33.642	981.081	0.034	0.235	4035.292	0.000
L35	23.25 - 18.25 (35)	TP48.217x47.342x0.375	34.078	999.357	0.034	0.267	4187.033	0.000
L36	18.25 - 13.25 (36)	TP49.091x48.217x0.375	34.459	1017.630	0.034	0.322	4341.575	0.000
L37	13.25 - 8.25 (37)	TP49.966x49.091x0.375	34.561	1035.910	0.033	0.322	4498.917	0.000
L38	8.25 - 3.25 (38)	TP50.841x49.966x0.375	34.645	1054.190	0.033	0.322	4659.058	0.000
L39	3.25 - 0 (39)	TP51.41x50.841x0.375	34.693	1066.060	0.033	0.322	4764.658	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	177 - 172 (1)	0.004	0.038	0.000	0.014	0.000	0.043 ✔	1.050	4.8.2 ✔
L2	172 - 167 (2)	0.004	0.071	0.000	0.014	0.000	0.076 ✔	1.050	4.8.2 ✔
L3	167 - 162 (3)	0.007	0.126	0.000	0.025	0.000	0.134 ✔	1.050	4.8.2 ✔
L4	162 - 157 (4)	0.007	0.177	0.000	0.025	0.000	0.185 ✔	1.050	4.8.2 ✔
L5	157 - 152 (5)	0.011	0.244	0.000	0.037	0.001	0.257 ✔	1.050	4.8.2 ✔
L6	152 - 147 (6)	0.011	0.315	0.000	0.037	0.001	0.327 ✔	1.050	4.8.2 ✔
L7	147 - 142 (7)	0.014	0.388	0.000	0.045	0.001	0.403 ✔	1.050	4.8.2 ✔
L8	142 - 137 (8)	0.014	0.466	0.000	0.045	0.001	0.481 ✔	1.050	4.8.2 ✔
L9	137 - 129.75 (9)	0.014	0.517	0.000	0.044	0.001	0.533 ✔	1.050	4.8.2 ✔
L10	129.75 - 128.5 (10)	0.012	0.502	0.000	0.039	0.001	0.516 ✔	1.050	4.8.2 ✔
L11	128.5 - 123.5 (11)	0.015	0.570	0.000	0.047	0.000	0.587 ✔	1.050	4.8.2 ✔
L12	123.5 - 118.583 (12)	0.015	0.634	0.000	0.047	0.000	0.651 ✔	1.050	4.8.2 ✔

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
L13	118.583 - 118.333 (13)	0.010	0.384	0.000	0.030	0.000	0.395 ✔	1.050	4.8.2 ✔
L14	118.333 - 113.333 (14)	0.010	0.417	0.000	0.031	0.000	0.428 ✔	1.050	4.8.2 ✔
L15	113.333 - 108.333 (15)	0.010	0.455	0.000	0.032	0.000	0.467 ✔	1.050	4.8.2 ✔
L16	108.333 - 106.417 (16)	0.011	0.467	0.000	0.032	0.000	0.479 ✔	1.050	4.8.2 ✔
L17	106.417 - 106.167 (17)	0.016	0.785	0.000	0.048	0.000	0.803 ✔	1.050	4.8.2 ✔
L18	106.167 - 101.167 (18)	0.017	0.842	0.000	0.049	0.000	0.861 ✔	1.050	4.8.2 ✔
L19	101.167 - 96.167 (19)	0.018	0.897	0.000	0.049	0.000	0.917 ✔	1.050	4.8.2 ✔
L20	96.167 - 91.167 (20)	0.018	0.951	0.000	0.049	0.000	0.972 ✔	1.050	4.8.2 ✔
L21	91.167 - 84 (21)	0.018	0.976	0.000	0.050	0.000	0.997 ✔	1.050	4.8.2 ✔
L22	84 - 83.75 (22)	0.016	0.777	0.000	0.041	0.000	0.794 ✔	1.050	4.8.2 ✔
L23	83.75 - 78.75 (23)	0.017	0.812	0.000	0.041	0.000	0.831 ✔	1.050	4.8.2 ✔
L24	78.75 - 73.75 (24)	0.017	0.847	0.000	0.041	0.000	0.866 ✔	1.050	4.8.2 ✔
L25	73.75 - 68.75 (25)	0.018	0.880	0.000	0.041	0.000	0.899 ✔	1.050	4.8.2 ✔
L26	68.75 - 63.75 (26)	0.018	0.912	0.000	0.041	0.000	0.932 ✔	1.050	4.8.2 ✔
L27	63.75 - 58.75 (27)	0.019	0.943	0.000	0.041	0.000	0.964 ✔	1.050	4.8.2 ✔
L28	58.75 - 53.75 (28)	0.020	0.973	0.000	0.041	0.000	0.994 ✔	1.050	4.8.2 ✔
L29	53.75 - 48.75 (29)	0.020	1.002	0.000	0.041	0.000	1.024 ✔	1.050	4.8.2 ✔
L30	48.75 - 39.25 (30)	0.021	1.023	0.000	0.041	0.000	1.046 ✔	1.050	4.8.2 ✔
L31	39.25 - 38.25 (31)	0.019	0.850	0.000	0.035	0.000	0.870 ✔	1.050	4.8.2 ✔
L32	38.25 - 33.25 (32)	0.019	0.869	0.000	0.035	0.000	0.889 ✔	1.050	4.8.2 ✔
L33	33.25 - 28.25 (33)	0.019	0.887	0.000	0.035	0.000	0.908 ✔	1.050	4.8.2 ✔
L34	28.25 - 23.25 (34)	0.020	0.905	0.000	0.034	0.000	0.926 ✔	1.050	4.8.2 ✔
L35	23.25 - 18.25 (35)	0.020	0.922	0.000	0.034	0.000	0.943 ✔	1.050	4.8.2 ✔
L36	18.25 - 13.25 (36)	0.021	0.938	0.000	0.034	0.000	0.960 ✔	1.050	4.8.2 ✔
L37	13.25 - 8.25 (37)	0.021	0.953	0.000	0.033	0.000	0.976 ✔	1.050	4.8.2 ✔
L38	8.25 - 3.25 (38)	0.022	0.968	0.000	0.033	0.000	0.991 ✔	1.050	4.8.2 ✔
L39	3.25 - 0 (39)	0.022	0.977	0.000	0.033	0.000	1.000 ✔	1.050	4.8.2 ✔

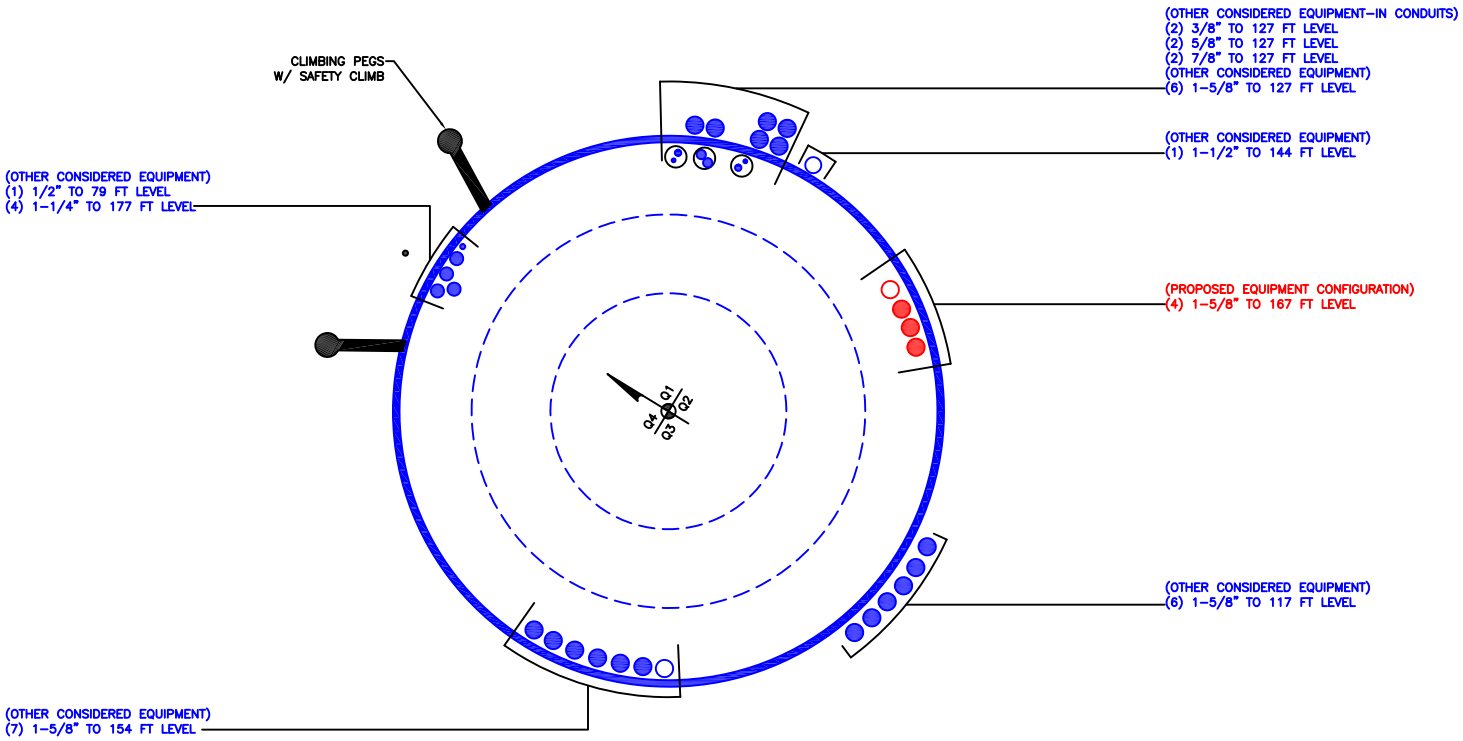
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	177 - 172	Pole	TP22.875x22x0.219	1	-3.985	966.244	**	**
L2	172 - 167	Pole	TP23.75x22.875x0.219	2	-4.297	1003.557	**	**
L3	167 - 162	Pole	TP24.625x23.75x0.219	3	-7.313	1040.871	**	**
L4	162 - 157	Pole	TP25.5x24.625x0.219	4	-7.687	1078.182	**	**
L5	157 - 152	Pole	TP26.375x25.5x0.219	5	-11.529	1115.499	**	**
L6	152 - 147	Pole	TP27.25x26.375x0.219	6	-11.990	1152.816	**	**
L7	147 - 142	Pole	TP28.124x27.25x0.219	7	-15.307	1190.122	**	**
L8	142 - 137	Pole	TP28.999x28.124x0.219	8	-15.835	1227.439	**	**
L9	137 - 129.75	Pole	TP30.268x28.999x0.219	9	-16.218	1253.563	**	**
L10	129.75 - 128.5	Pole	TP30.049x29.174x0.25	10	-17.118	1452.433	**	**
L11	128.5 - 123.5	Pole	TP30.924x30.049x0.25	11	-21.122	1495.084	**	**
L12	123.5 - 118.583	Pole	TP31.785x30.924x0.25	12	-21.868	1537.021	**	**
L13	118.583 - 118.333	Pole	TP31.828x31.785x0.388	13	-21.928	2375.289	**	**
L14	118.333 - 113.333	Pole	TP32.703x31.828x0.388	14	-23.051	2441.386	**	**
L15	113.333 - 108.333	Pole	TP33.578x32.703x0.381	15	-24.307	2467.510	**	**
L16	108.333 - 106.417	Pole	TP33.913x33.578x0.381	16	-24.980	2492.427	**	**
L17	106.417 - 106.167	Pole	TP33.957x33.913x0.25	17	-25.073	1642.914	**	**
L18	106.167 - 101.167	Pole	TP34.832x33.957x0.25	18	-26.694	1685.554	**	**
L19	101.167 - 96.167	Pole	TP35.707x34.832x0.25	19	-29.081	1728.195	**	**
L20	96.167 - 91.167	Pole	TP36.582x35.707x0.25	20	-30.741	1770.846	**	**
L21	91.167 - 84	Pole	TP37.836x36.582x0.25	21	-31.551	1791.457	**	**
L22	84 - 83.75	Pole	TP37.38x36.505x0.313	22	-33.883	2258.361	**	**
L23	83.75 - 78.75	Pole	TP38.255x37.38x0.313	23	-36.839	2311.669	**	**
L24	78.75 - 73.75	Pole	TP39.13x38.255x0.313	24	-38.810	2364.978	**	**
L25	73.75 - 68.75	Pole	TP40.005x39.13x0.313	25	-40.810	2418.286	**	**
L26	68.75 - 63.75	Pole	TP40.88x40.005x0.313	26	-42.838	2471.595	**	**
L27	63.75 - 58.75	Pole	TP41.755x40.88x0.313	27	-46.126	2524.903	**	**
L28	58.75 - 53.75	Pole	TP42.63x41.755x0.313	28	-48.211	2578.212	**	**
L29	53.75 - 48.75	Pole	TP43.505x42.63x0.313	29	-50.324	2631.520	**	**
L30	48.75 - 39.25	Pole	TP45.167x43.505x0.313	30	-52.330	2671.494	**	**
L31	39.25 - 38.25	Pole	TP44.717x43.536x0.375	31	-57.207	3241.885	**	**
L32	38.25 - 33.25	Pole	TP45.592x44.717x0.375	32	-59.542	3305.851	**	**
L33	33.25 - 28.25	Pole	TP46.467x45.592x0.375	33	-61.904	3369.817	**	**
L34	28.25 - 23.25	Pole	TP47.342x46.467x0.375	34	-64.293	3433.783	**	**
L35	23.25 - 18.25	Pole	TP48.217x47.342x0.375	35	-67.979	3497.749	**	**
L36	18.25 - 13.25	Pole	TP49.091x48.217x0.375	36	-70.525	3561.715	**	**
L37	13.25 - 8.25	Pole	TP49.966x49.091x0.375	37	-73.100	3625.681	**	**
L38	8.25 - 3.25	Pole	TP50.841x49.966x0.375	38	-75.697	3689.647	**	**
L39	3.25 - 0	Pole	TP51.41x50.841x0.375	39	-77.396	3731.227	**	**
							Summary	
						Pole (L30)	**	**
						RATING =	**	**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876376

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876376

Work Order: 2100735

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	177	47.25	3.75	18	22	30.268	0.21875	Auto	A607-65
2	133.5	49.5	4.75	18	29.17	37.836	0.25	Auto	A607-65
3	88.75	49.5	5.75	18	36.50	45.167	0.3125	Auto	A607-65
4	45	45	0	18	43.54	51.41	0.375	Auto	A607-65

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	106.417	118.583	channel	MP3-04 (1.1875in)	3	E4						E4						E4					
2																							
3																							
4																							
5																							
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 (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.78	1.61	4.13	0.61	PC 8.8 - M20 (100)	17	PC 8.8 - M20 (100)	17.000	18.000	3.593	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5 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	177 - 172	5		18	22.000	22.875	0.21875	A607-65	1.000
2	172 - 167	5		18	22.875	23.750	0.21875	A607-65	1.000
3	167 - 162	5		18	23.750	24.625	0.21875	A607-65	1.000
4	162 - 157	5		18	24.625	25.500	0.21875	A607-65	1.000
5	157 - 152	5		18	25.500	26.375	0.21875	A607-65	1.000
6	152 - 147	5		18	26.375	27.250	0.21875	A607-65	1.000
7	147 - 142	5		18	27.250	28.124	0.21875	A607-65	1.000
8	142 - 137	5		18	28.124	28.999	0.21875	A607-65	1.000
9	137 - 133.5	7.25	3.75	18	28.999	30.268	0.21875	A607-65	1.000
10	133.5 - 128.5	5		18	29.174	30.049	0.25	A607-65	1.000
11	128.5 - 123.5	5		18	30.049	30.924	0.25	A607-65	1.000
12	123.5 - 118.583	4.917		18	30.924	31.785	0.25	A607-65	1.000
13	118.583 - 118.333	0.25		18	31.785	31.828	0.3875	A607-65	0.968
14	118.333 - 113.333	5		18	31.828	32.703	0.3875	A607-65	0.960
15	113.333 - 108.333	5		18	32.703	33.578	0.38125	A607-65	0.967
16	108.333 - 106.417	1.916		18	33.578	33.913	0.38125	A607-65	0.964
17	106.417 - 106.167	0.25		18	33.913	33.957	0.25	A607-65	1.000
18	106.167 - 101.167	5		18	33.957	34.832	0.25	A607-65	1.000
19	101.167 - 96.167	5		18	34.832	35.707	0.25	A607-65	1.000
20	96.167 - 91.167	5		18	35.707	36.582	0.25	A607-65	1.000
21	91.167 - 88.75	7.167	4.75	18	36.582	37.836	0.25	A607-65	1.000
22	88.75 - 83.75	5		18	36.505	37.380	0.3125	A607-65	1.000
23	83.75 - 78.75	5		18	37.380	38.255	0.3125	A607-65	1.000
24	78.75 - 73.75	5		18	38.255	39.130	0.3125	A607-65	1.000
25	73.75 - 68.75	5		18	39.130	40.005	0.3125	A607-65	1.000
26	68.75 - 63.75	5		18	40.005	40.880	0.3125	A607-65	1.000
27	63.75 - 58.75	5		18	40.880	41.755	0.3125	A607-65	1.000
28	58.75 - 53.75	5		18	41.755	42.630	0.3125	A607-65	1.000
29	53.75 - 48.75	5		18	42.630	43.505	0.3125	A607-65	1.000
30	48.75 - 45	9.5	5.75	18	43.505	45.167	0.3125	A607-65	1.000
31	45 - 38.25	6.75		18	43.536	44.717	0.375	A607-65	1.000
32	38.25 - 33.25	5		18	44.717	45.592	0.375	A607-65	1.000
33	33.25 - 28.25	5		18	45.592	46.467	0.375	A607-65	1.000
34	28.25 - 23.25	5		18	46.467	47.342	0.375	A607-65	1.000
35	23.25 - 18.25	5		18	47.342	48.217	0.375	A607-65	1.000
36	18.25 - 13.25	5		18	48.217	49.091	0.375	A607-65	1.000
37	13.25 - 8.25	5		18	49.091	49.966	0.375	A607-65	1.000
38	8.25 - 3.25	5		18	49.966	50.841	0.375	A607-65	1.000
39	3.25 - 0	3.25		18	50.841	51.410	0.375	A607-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	177 - 172	3.99	20.43	3.83
2	172 - 167	4.30	40.39	4.15
3	167 - 162	7.31	76.31	7.35
4	162 - 157	7.69	113.90	7.69
5	157 - 152	11.53	166.39	11.86
6	152 - 147	11.99	226.51	12.20
7	147 - 142	15.31	294.17	15.39
8	142 - 137	15.84	371.89	15.71
9	137 - 133.5	16.22	427.25	15.93
10	133.5 - 128.5	17.12	507.93	16.33
11	128.5 - 123.5	21.12	605.32	20.06
12	123.5 - 118.583	21.87	704.85	20.44
13	118.583 - 118.333	21.93	709.97	20.48
14	118.333 - 113.333	23.05	815.23	21.51
15	113.333 - 108.333	24.31	924.67	22.29
16	108.333 - 106.417	24.98	967.69	22.64
17	106.417 - 106.167	25.07	973.35	22.68
18	106.167 - 101.167	26.69	1088.62	23.46
19	101.167 - 96.167	29.08	1207.97	24.31
20	96.167 - 91.167	30.74	1331.23	25.03
21	91.167 - 88.75	31.55	1392.10	25.38
22	88.75 - 83.75	33.88	1521.08	26.25
23	83.75 - 78.75	36.84	1654.22	27.15
24	78.75 - 73.75	38.81	1791.62	27.85
25	73.75 - 68.75	40.81	1932.42	28.52
26	68.75 - 63.75	42.84	2076.49	29.16
27	63.75 - 58.75	46.13	2223.95	29.87
28	58.75 - 53.75	48.21	2374.60	30.45
29	53.75 - 48.75	50.32	2528.05	30.99
30	48.75 - 45	52.33	2644.89	31.40
31	45 - 38.25	57.21	2859.91	32.35
32	38.25 - 33.25	59.54	3022.65	32.81
33	33.25 - 28.25	61.90	3187.62	33.24
34	28.25 - 23.25	64.29	3354.65	33.64
35	23.25 - 18.25	67.98	3523.79	34.08
36	18.25 - 13.25	70.53	3694.96	34.46
37	13.25 - 8.25	73.10	3867.33	34.56
38	8.25 - 3.25	75.70	4040.17	34.64
39	3.25 - 0	77.40	4152.71	34.69

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
177 - 172	Pole	TP22.875x22x0.2188	Pole	4.1%	Pass
172 - 167	Pole	TP23.75x22.875x0.2188	Pole	7.2%	Pass
167 - 162	Pole	TP24.625x23.75x0.2188	Pole	12.8%	Pass
162 - 157	Pole	TP25.5x24.625x0.2188	Pole	17.7%	Pass
157 - 152	Pole	TP26.375x25.5x0.2188	Pole	24.4%	Pass
152 - 147	Pole	TP27.25x26.375x0.2188	Pole	31.2%	Pass
147 - 142	Pole	TP28.124x27.25x0.2188	Pole	38.4%	Pass
142 - 137	Pole	TP28.999x28.124x0.2188	Pole	45.9%	Pass
137 - 133.5	Pole	TP30.268x28.999x0.2188	Pole	50.7%	Pass
133.5 - 128.5	Pole	TP30.049x29.174x0.25	Pole	49.2%	Pass
128.5 - 123.5	Pole	TP30.924x30.049x0.25	Pole	56.0%	Pass
123.5 - 118.58	Pole	TP31.785x30.924x0.25	Pole	62.0%	Pass
118.58 - 118.33	Pole + Reinf.	TP31.828x31.785x0.3875	Reinf. 1 Tension Rupture	56.2%	Pass
118.33 - 113.33	Pole + Reinf.	TP32.703x31.828x0.3875	Reinf. 1 Tension Rupture	61.6%	Pass
113.33 - 108.33	Pole + Reinf.	TP33.578x32.703x0.3813	Reinf. 1 Tension Rupture	66.8%	Pass
108.33 - 106.42	Pole + Reinf.	TP33.913x33.578x0.3813	Reinf. 1 Tension Rupture	68.7%	Pass
106.42 - 106.17	Pole	TP33.957x33.913x0.25	Pole	76.5%	Pass
106.17 - 101.17	Pole	TP34.832x33.957x0.25	Pole	82.0%	Pass
101.17 - 96.17	Pole	TP35.707x34.832x0.25	Pole	87.4%	Pass
96.17 - 91.17	Pole	TP36.582x35.707x0.25	Pole	92.6%	Pass
91.17 - 88.75	Pole	TP37.836x36.582x0.25	Pole	95.0%	Pass
88.75 - 83.75	Pole	TP37.38x36.505x0.3125	Pole	75.7%	Pass
83.75 - 78.75	Pole	TP38.255x37.38x0.3125	Pole	79.1%	Pass
78.75 - 73.75	Pole	TP39.13x38.255x0.3125	Pole	82.5%	Pass
73.75 - 68.75	Pole	TP40.005x39.13x0.3125	Pole	85.7%	Pass
68.75 - 63.75	Pole	TP40.88x40.005x0.3125	Pole	88.8%	Pass
63.75 - 58.75	Pole	TP41.755x40.88x0.3125	Pole	91.8%	Pass
58.75 - 53.75	Pole	TP42.63x41.755x0.3125	Pole	94.7%	Pass
53.75 - 48.75	Pole	TP43.505x42.63x0.3125	Pole	97.5%	Pass
48.75 - 45	Pole	TP45.167x43.505x0.3125	Pole	99.6%	Pass
45 - 38.25	Pole	TP44.717x43.536x0.375	Pole	82.8%	Pass
38.25 - 33.25	Pole	TP45.592x44.717x0.375	Pole	84.7%	Pass
33.25 - 28.25	Pole	TP46.467x45.592x0.375	Pole	86.5%	Pass
28.25 - 23.25	Pole	TP47.342x46.467x0.375	Pole	88.2%	Pass
23.25 - 18.25	Pole	TP48.217x47.342x0.375	Pole	89.9%	Pass
18.25 - 13.25	Pole	TP49.091x48.217x0.375	Pole	91.4%	Pass
13.25 - 8.25	Pole	TP49.966x49.091x0.375	Pole	92.9%	Pass
8.25 - 3.25	Pole	TP50.841x49.966x0.375	Pole	94.4%	Pass
3.25 - 0	Pole	TP51.41x50.841x0.375	Pole	95.2%	Pass
				Summary	
			Pole	99.6%	Pass
			Reinforcement	68.7%	Pass
			Overall	99.6%	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
177 - 172	1020	n/a	1020	15.73	n/a	15.73	4.1%	
172 - 167	1143	n/a	1143	16.34	n/a	16.34	7.2%	
167 - 162	1275	n/a	1275	16.94	n/a	16.94	12.8%	
162 - 157	1417	n/a	1417	17.55	n/a	17.55	17.7%	
157 - 152	1569	n/a	1569	18.16	n/a	18.16	24.4%	
152 - 147	1732	n/a	1732	18.77	n/a	18.77	31.2%	
147 - 142	1906	n/a	1906	19.37	n/a	19.37	38.4%	
142 - 137	2090	n/a	2090	19.98	n/a	19.98	45.9%	
137 - 133.5	2227	n/a	2227	20.41	n/a	20.41	50.7%	
133.5 - 128.5	2652	n/a	2652	23.64	n/a	23.64	49.2%	
128.5 - 123.5	2892	n/a	2892	24.34	n/a	24.34	56.0%	
123.5 - 118.58	3143	n/a	3143	25.02	n/a	25.02	62.0%	
118.58 - 118.33	3156	1698	4854	25.06	12.39	37.45	39.9%	56.2%
118.33 - 113.33	3425	1789	5214	25.75	12.39	38.14	44.2%	61.6%
113.33 - 108.33	3710	1882	5592	26.44	12.39	38.83	48.4%	66.8%
108.33 - 106.42	3823	1918	5741	26.71	12.39	39.10	50.0%	68.7%
106.42 - 106.17	3838	n/a	3838	26.75	n/a	26.75	76.5%	
106.17 - 101.17	4145	n/a	4145	27.44	n/a	27.44	82.0%	
101.17 - 96.17	4467	n/a	4467	28.13	n/a	28.13	87.4%	
96.17 - 91.17	4806	n/a	4806	28.83	n/a	28.83	92.6%	
91.17 - 88.75	4976	n/a	4976	29.16	n/a	29.16	95.0%	
88.75 - 83.75	6380	n/a	6380	36.76	n/a	36.76	75.7%	
83.75 - 78.75	6842	n/a	6842	37.63	n/a	37.63	79.1%	
78.75 - 73.75	7327	n/a	7327	38.50	n/a	38.50	82.5%	
73.75 - 68.75	7833	n/a	7833	39.37	n/a	39.37	85.7%	
68.75 - 63.75	8363	n/a	8363	40.24	n/a	40.24	88.8%	
63.75 - 58.75	8916	n/a	8916	41.10	n/a	41.10	91.8%	
58.75 - 53.75	9493	n/a	9493	41.97	n/a	41.97	94.7%	
53.75 - 48.75	10094	n/a	10094	42.84	n/a	42.84	97.5%	
48.75 - 45	10561	n/a	10561	43.49	n/a	43.49	99.6%	
45 - 38.25	13106	n/a	13106	52.78	n/a	52.78	82.8%	
38.25 - 33.25	13897	n/a	13897	53.82	n/a	53.82	84.7%	
33.25 - 28.25	14719	n/a	14719	54.86	n/a	54.86	86.5%	
28.25 - 23.25	15574	n/a	15574	55.90	n/a	55.90	88.2%	
23.25 - 18.25	16460	n/a	16460	56.94	n/a	56.94	89.9%	
18.25 - 13.25	17380	n/a	17380	57.98	n/a	57.98	91.4%	
13.25 - 8.25	18333	n/a	18333	59.02	n/a	59.02	92.9%	
8.25 - 3.25	19321	n/a	19321	60.07	n/a	60.07	94.4%	
3.25 - 0	19981	n/a	19981	60.74	n/a	60.74	95.2%	

Note: Section capacity checked using 5 degree increments.

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

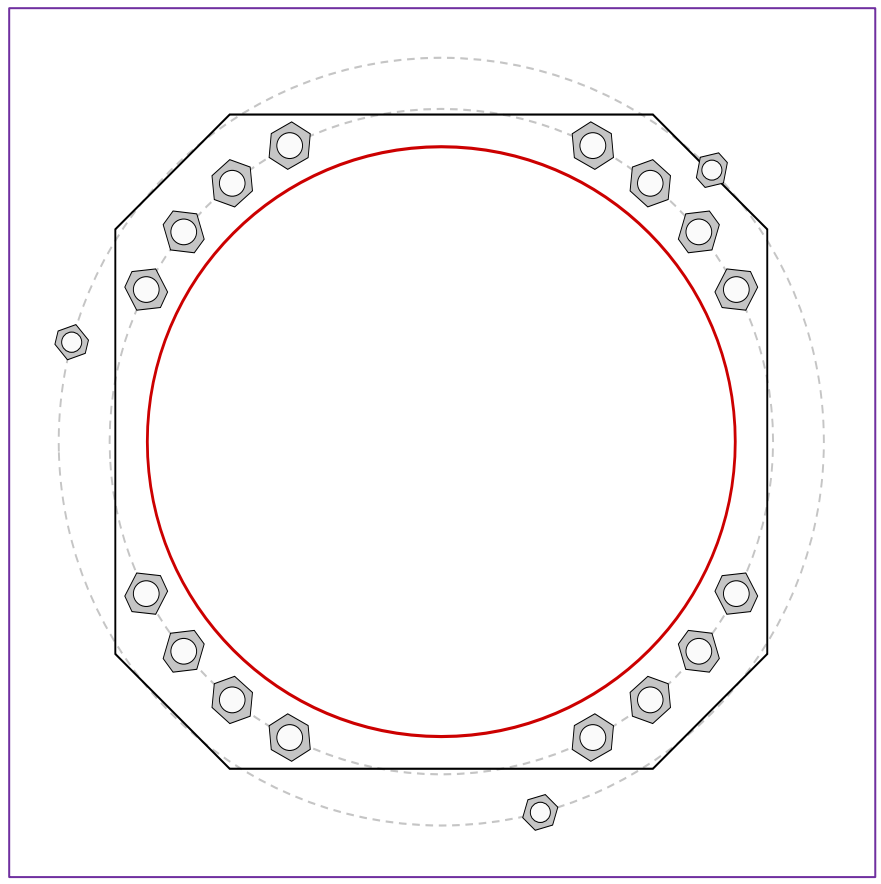
Monopole Base Plate Connection

Site Info	
BU #	876376
Site Name	LE HILL /HARWINTON F
Order #	607120, Rev# 0

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

Applied Loads	
Moment (kip-ft)	4152.71
Axial Force (kips)	77.40
Shear Force (kips)	34.69

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 58" BC

Anchor Spacing: 6 in

GROUP 2: (3) 1-3/4" ø bolts (A722 N; Fy=127.7 ksi, Fu=125 ksi) on 66.91" BC

Base Plate Data

57" W x 2.75" Plate (A572-55; Fy=55 ksi, Fu=70 ksi); Clip: 10 in

Stiffener Data

N/A

Pole Data

51.41" x 0.375" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 174.09	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.17	ϕVn = 149.1	**68.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 165.15	ϕPn_t = 243.75	**Stress Rating**
Vu = 0	ϕVn = 121.88	**64.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	32.88	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	**63.3%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

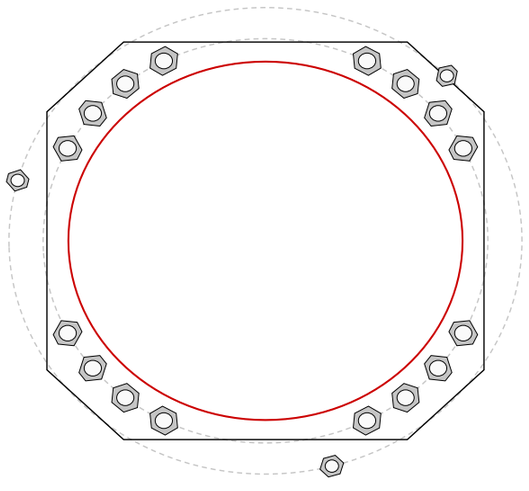
note: Bending interaction not considered when Grout Considered = "Yes"

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	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	27.186683	2.25	A615-75	58	0.5	0	N-Included		No
2	1	39.062228	2.25	A615-75	58	0.5	0	N-Included		No
3	1	50.937772	2.25	A615-75	58	0.5	0	N-Included		No
4	1	62.813317	2.25	A615-75	58	0.5	0	N-Included		No
5	1	117.18668	2.25	A615-75	58	0.5	0	N-Included		No
6	1	129.06223	2.25	A615-75	58	0.5	0	N-Included		No
7	1	140.93777	2.25	A615-75	58	0.5	0	N-Included		No
8	1	152.81332	2.25	A615-75	58	0.5	0	N-Included		No
9	1	207.18668	2.25	A615-75	58	0.5	0	N-Included		No
10	1	219.06223	2.25	A615-75	58	0.5	0	N-Included		No
11	1	230.93777	2.25	A615-75	58	0.5	0	N-Included		No
12	1	242.81332	2.25	A615-75	58	0.5	0	N-Included		No
13	1	297.18668	2.25	A615-75	58	0.5	0	N-Included		No
14	1	309.06223	2.25	A615-75	58	0.5	0	N-Included		No
15	1	320.93777	2.25	A615-75	58	0.5	0	N-Included		No
16	1	332.81332	2.25	A615-75	58	0.5	0	N-Included		No
17	2	45	1.75	A722	66.91	0.5	0	N-Included	2.6	No
18	2	165	1.75	A722	66.91	0.5	0	N-Included	2.6	No
19	2	285	1.75	A722	66.91	0.5	0	N-Included	2.6	No

Plot Graphic



PROJECT	**83609.012.01 - SCOVILLE HILL /HARWINTON ROD, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**04/14/22**
v4.6.1	

TIA-222 Rev.	H	
Apply TIA-222-H Section 15.5?	Yes	

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	165.15	kips
AR Capacity	361.1	kips

Tower Type	Monopole	

Manufacturers Tower Prop.		
Pole Thickness	0.375	in
Pole Grade	A572-65	
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	Custom	
Fy	55	ksi
Fu	70	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1 3/4 - 150	in
Grade	'22-150 (William	
Fy	127.7	ksi
Fu	150	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	42.6%	-
Tube Compression	63.9%	-
Gusset Shear	33.3%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	51.2%	-
Welds: Gusset to Tube	68.2%	-
Welds: Geometry	N/A	
Tower Punching	30.1%	-
Tube Punching	42.7%	-
Utilization	**68.2%**	

Bracket Properties

Gusset		
Thickness	1.25	in
Width at Tube	6	in
Height at Pole	30	in
Height at Tube	10.5	in
Grade	A572-65	
Fy	65	ksi
Fu	80	ksi

Pipe/Tube		
Size	3 XXS Pipe	
Total Length	10.5	in
Length above Gusset	0	in
Length below Gusset	0	in
Grade	Custom	
Fy	50	50 ksi
Fu	65	65 ksi

Weld - Gusset to Pipe/Tube		
FEXX	70	ksi
Weld Type	PJP - Double Bevel	
Fillet Size	3/8	in
Bevel Depth	3/8	in

Weld - Gusset to Tower		
FEXX	70	ksi
Weld Type	Double Fillet	
Fillet Size	3/8	in

Weld - Gusset to Base Plate		
FEXX	70	ksi
Weld Type	PJP - Double Bevel	
Fillet Size	1/2	in
Bevel Depth	1/2	in
Gap	0	in
Notch (horiz)	0.75	in
Notch (vert)	0.75	in
Pipe/Tube Welded to Base/Footpad?	Yes	
Fillet Size	1/2	in

Pier and Pad Foundation

BU # :	876376
Site Name:	SCOVILLE HILL /H
App. Number:	607120, Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	77.4	kips
Base Shear, Vu_comp:	34.69	kips
Moment, M_u:	4152.71	ft-kips
Tower Height, **H**:	177	ft
BP Dist. Above Fdn, bp_{dist}:	3.75	in
Bolt Circle / Bearing Plate Width, **BC**:	58	in

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	204.65	34.69	**16.1%**	**Pass**
Bearing Pressure (ksf)	30.00	10.47	**34.9%**	**Pass**
*Overturning (kip*ft)*	4549.62	4302.31	**94.6%**	**Pass**
*Pad Flexure (kip*ft)*	4945.31	2739.06	**52.7%**	**Pass**
Pad Shear - 1-way (kips)	1046.09	299.84	**27.3%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4775.51	0.00	**0.0%**	**Pass**

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

Structural Rating*:	**52.7%**
Soil Rating*:	**94.6%**

Pad Properties		
Depth, **D**:	3.5	ft
Pad Width, W_1:	24.5	ft
Pad Thickness, **T**:	4	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	26	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	40.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.7	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Company:	B+T Grp	Page:	1
Address:	1717 S. Boulder,Suite 300	Specifier:	Pavithra
Phone I Fax:	| 918-587-4630	E-Mail:	
Design:	83609_876376_Scoville_CB	Date:	4/14/2022
Fastening point:			

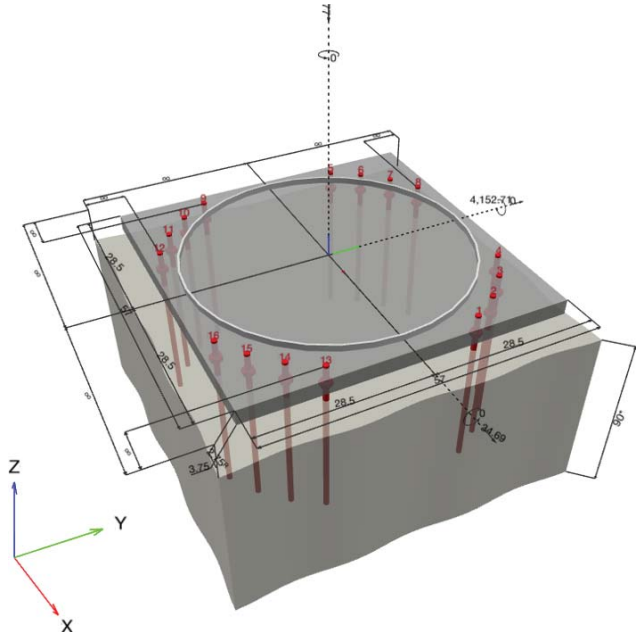
Specifier's comments:

1 Input data

Anchor type and diameter:	**Heavy Hex Head** 2.25in dia AR
Item number:	not available
Effective embedment depth:	h_{ef} = 80in
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-08 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 1.00; e_b = 3.750 in.; t = 2.750 in.
Anchor plate[R] :	l_x x l_y x t = 57.000 in. x 57.000 in. x 2.750 in.; (Recommended plate thickness: not calculated)
Profile:	Steel pipe, ; (L x W x T) = 51.410 in. x 51.410 in. x 0.375 in.
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 90.000 in.
Reinforcement:	tension: condition B, shear: condition B; edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	no

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [kip, ft.kip]

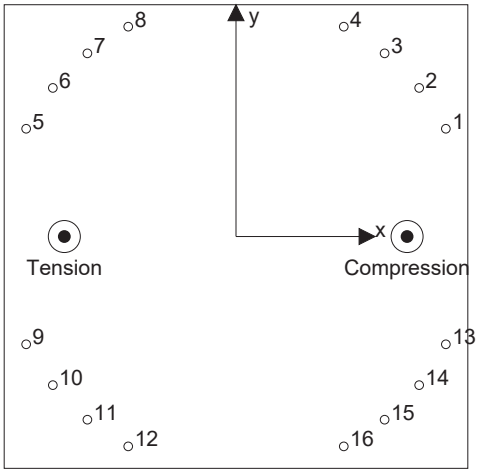


Company:	B+T Grp	Page:	2
Address:	1717 S. Boulder,Suite 300	Specifier:	Pavithra
Phone I Fax:	| 918-587-4630	E-Mail:	
Design:	83609_876376_Scoville_CB	Date:	4/14/2022
Fastening point:			

1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -77.000; V_x = 34.690; V_y = 0.000; M_x = 0.00000; M_y = 4,152.71000; M_z = 0.00000;	no	∞

2 Load case/Resulting anchor forces



Anchor reactions [kip]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	-195.890	2.168	2.168	0.000
2	-171.598	2.168	2.168	0.000
3	-140.122	2.168	2.168	0.000
4	-102.943	2.168	2.168	0.000
5	186.265	2.168	2.168	0.000
6	161.973	2.168	2.168	0.000
7	130.497	2.168	2.168	0.000
8	93.318	2.168	2.168	0.000
9	186.265	2.168	2.168	0.000
10	161.973	2.168	2.168	0.000
11	130.497	2.168	2.168	0.000
12	93.318	2.168	2.168	0.000
13	-195.890	2.168	2.168	0.000
14	-171.598	2.168	2.168	0.000
15	-140.122	2.168	2.168	0.000
16	-102.943	2.168	2.168	0.000

max. concrete compressive strain: - [‰]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(-21.106/0.000): 1,144.105 [kip]
resulting compression force in (x/y)=(21.034/0.000): 1,221.105 [kip]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [kip]	Capacity ϕ N_n [kip]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Rev H Rating
Steel Strength*	-195.890	304.6875	64.29%	61.23%
Concrete Breakout Failure**	1,144.105	1194.055	95.82%	91.25%

Governing rating

Company:	B+T Grp	Page:	3
Address:	1717 S. Boulder,Suite 300	Specifier:	Pavithra
Phone I Fax:	| 918-587-4630	E-Mail:	
Design:	83609_876376_Scoville_CB	Date:	4/14/2022
Fastening point:			

3.1 Steel Strength

$N_{sa} = A_{se,N} f_{uta}$ ACI 318-08 Eq. (D-3)
$\phi N_{sa} \geq N_{ua}$ ACI 318-08 Eq. (D-1)

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
3.25	125000

Calculations

N_{sa} [kip]
406.25

Results

N_{sa} [kip]	ϕ_{steel}	ϕN_{sa} [kip]	N_{ua} [kip]
406.25	0.750	304.6875	-195.890

The steel proof was done for the highest absolute force per anchor - in this case compression loading. Please be aware that buckling should be verified separately

Company:	B+T Grp	Page:	4
Address:	1717 S. Boulder,Suite 300	Specifier:	Pavithra
Phone I Fax:	| 918-587-4630	E-Mail:	
Design:	83609_876376_Scoville_CB	Date:	4/14/2022
Fastening point:			

3.3 Concrete Breakout Failure

$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ec,N}\ \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ ACI 318-08 Eq. (D-5)

$\phi\ N_{cbg} \geq N_{ua}$ ACI 318-08 Eq. (D-1)

A_{Nc} see ACI 318-08, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9\ h_{ef}^2$ ACI 318-08 Eq. (D-6)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2\ e'_N}{3\ h_{ef}}}\right) \leq 1.0$ ACI 318-08 Eq. (D-9)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}}\right) \leq 1.0$ ACI 318-08 Eq. (D-11)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-08 Eq. (D-13)

$N_b = 16\ \lambda\ \sqrt{f'_c}\ h_{ef}^{5/3}$ ACI 318-08 Eq. (D-8)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
80	1.146	0.000	∞	1.000

c_{ac} [in.]	k_c	λ	f'_c [psi]
-	16	1	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
88804	57600	0.85	1.000	1.000	1.000	1301.659

Results

N_{cbg} [kip]	$\phi_{concrete}$	$\phi\ N_{cbg}$ [kip]	N_{ua} [kip]
1705.793	0.700	1194.055	1,144.105

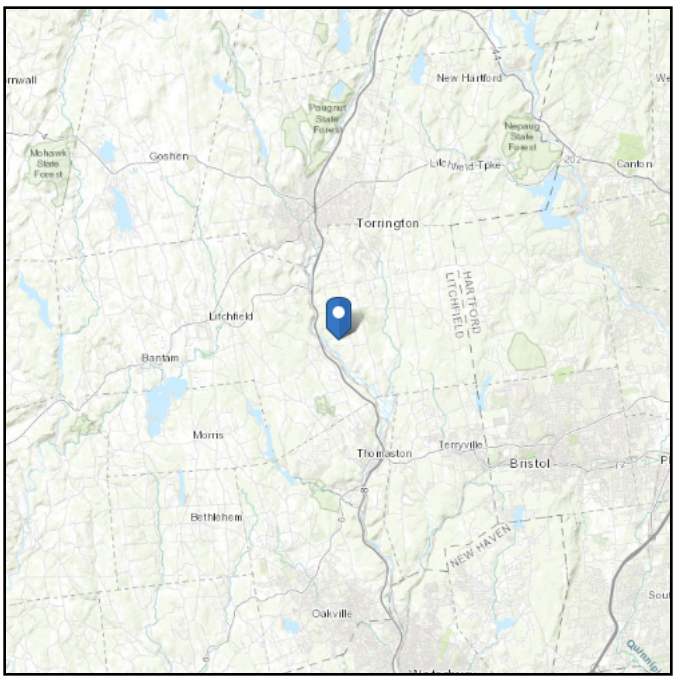
***Please refer excel tool for calculation

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: 734.96 ft (NAVD 88)
Latitude: 41.736778
Longitude: -73.097056



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 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 Apr 13 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 not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

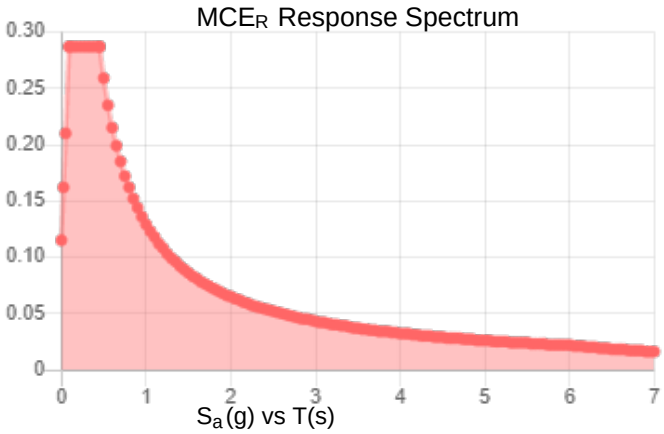
Seismic

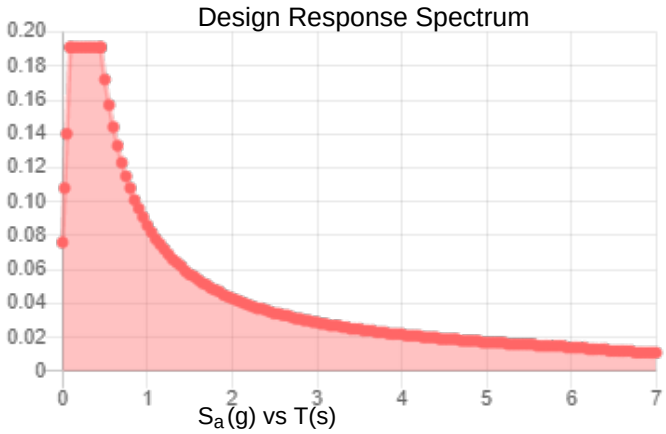
Site Soil Class: D - Default (see Section 11.4.3)

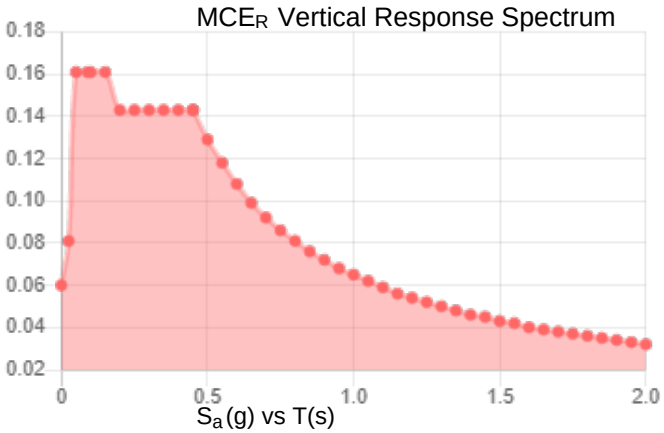
Results:

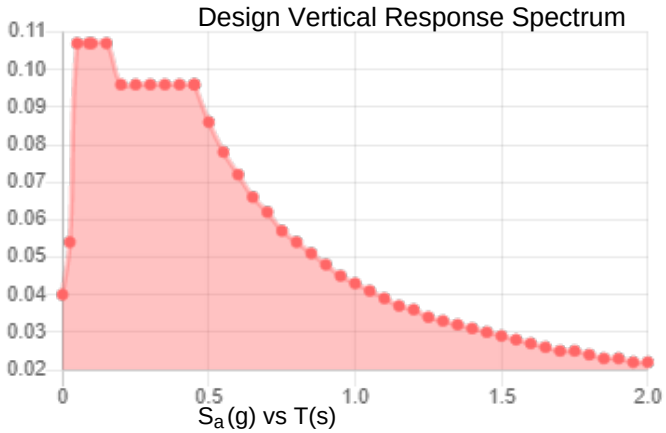
S_S :	0.179	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.096
F_v :	2.4	PGA_M :	0.154
S_{MS} :	0.287	F_{PGA} :	1.6
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.191	C_v :	0.7

Seismic Design Category B









Data Accessed: **Wed Apr 13 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Apr 13 2022

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

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

Date: **April 11, 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:	CT11367C
	Carrier Site Name:	LITCHFIELD1/RT 8
Crown Castle Designation:	**BU Number:**	876376
	Site Name:	Scoville Hill / Harwinton Rod
	JDE Job Number:	707820
	Order Number:	607120 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	206943
Site Data:	**123 Campville Hill Rd., Harwinton, Litchfield County, CT, 06791**	
	Latitude 41°44'12.40" Longitude -73°5'49.40"	
Structure Information:	**Tower Height & Type:**	**177.0 ft Monopole**
	Mount Elevation:	**167.0 ft**
	Mount Width & Type:	**12.5 ft Platform**

Trylon is pleased to submit this **"Mount Replacement Analysis"** 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 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.

Mount analysis prepared by: Vladimir Negoita

Respectfully Submitted by:
Cliff Abernathy, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 12.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.184
Seismic S_1:	0.065
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
167.0	167.0	3	RFS/CELWAVE	APXV18-206516S-C-A20	12.5 ft Platform [Site Pro 1, RMQP-396 w/ HRK12]
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	KRY 112 75/1	
		3	ERICSSON	Radio 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	607120 Rev. 0	CCI Sites
RFDS	T-Mobile	CT11367C_L600_4	TSA
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 Trylon 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 B).

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	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. Trylon should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP9	167.0	41.0	Pass
	Horizontal(s)	H3		17.8	Pass
	Standoff(s)	M3		34.7	Pass
	Bracing(s)	M73A		17.0	Pass
	Handrail(s)	M68		26.8	Pass
	Mount Connection(s)	--		27.9	Pass

Structure Rating (max from all components) =	41.0%

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) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

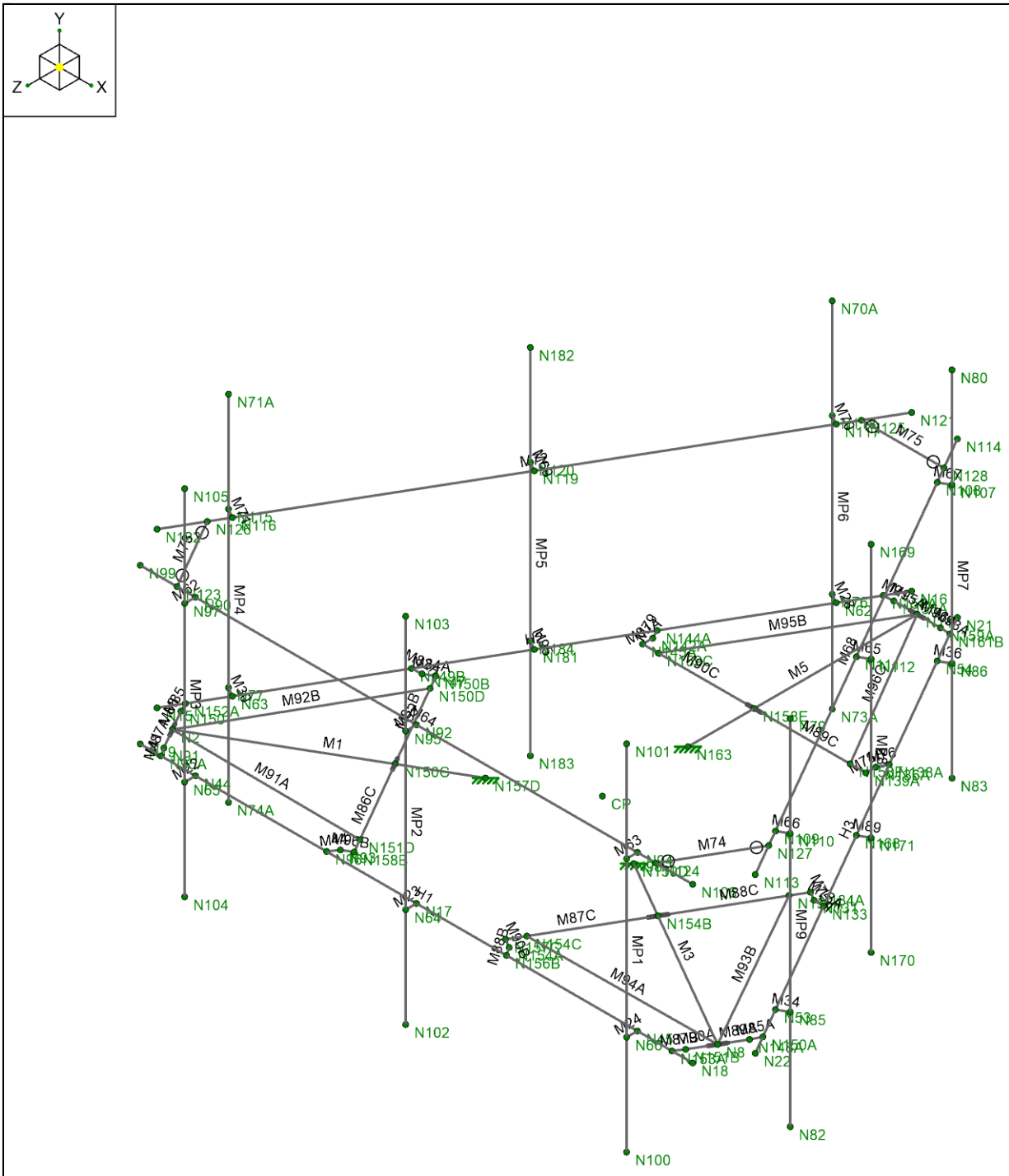
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

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

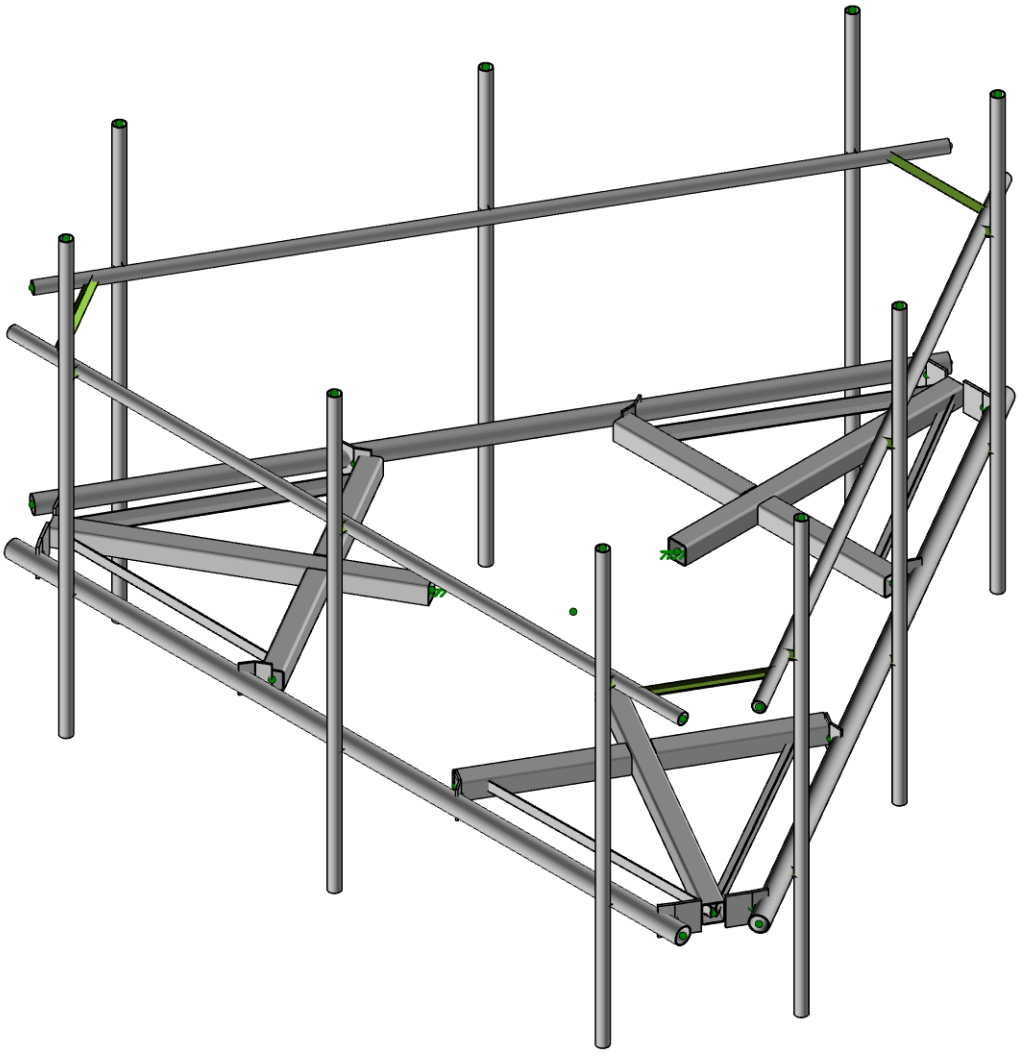
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Trylon	876376_607120	SK-1
VN		Apr 11, 2022
206943		876376_607120_RMQP-396_lo…



Trylon	876376_607120	SK-2
VN		Apr 11, 2022
206943		876376_607120_RMQP-396_lo…

APPENDIX B

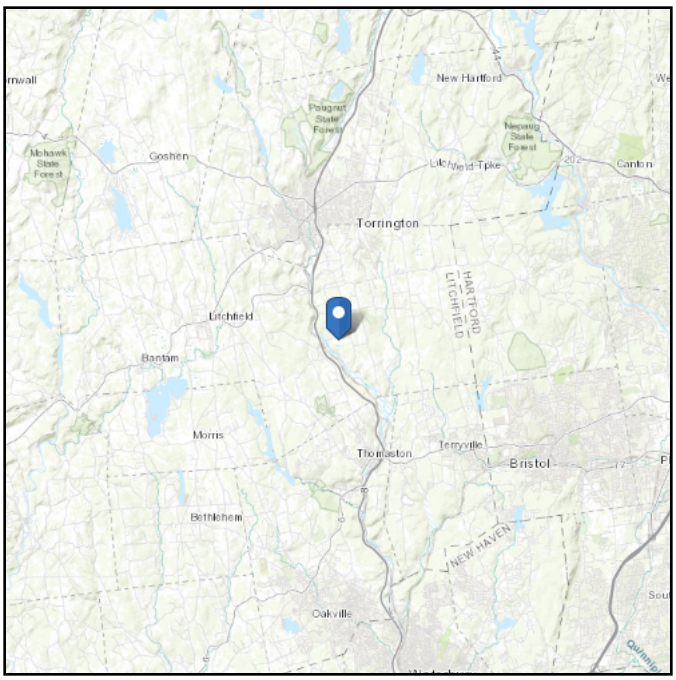
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 734.96 ft (NAVD 88)
Latitude: 41.736778
Longitude: -73.097056



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

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

Date Accessed: Mon Apr 11 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 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

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

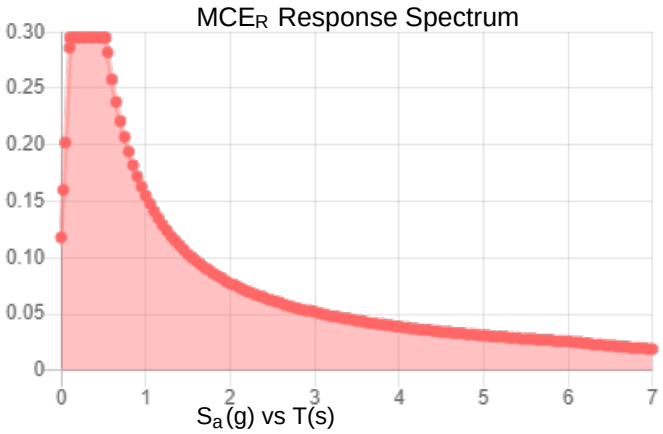
Seismic

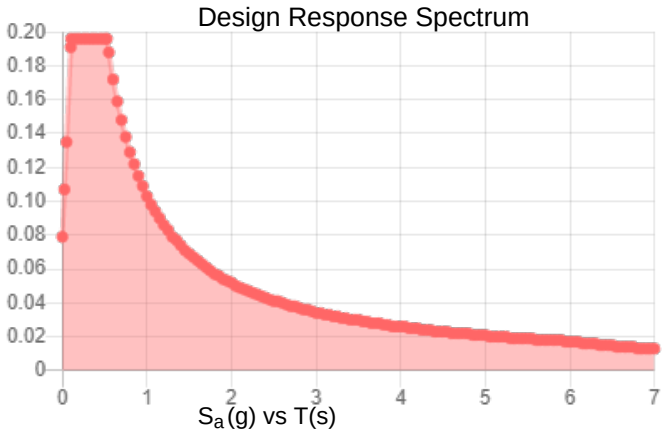
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.184	S_{DS} :	0.196
S_1 :	0.065	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.093
S_{MS} :	0.295	PGA_M :	0.15
S_{M1} :	0.155	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: **Mon Apr 11 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Apr 11 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 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	206943
Carrier Site ID:	CT11367C
Carrier Site Name:	LITCHFIELD1/RT 8

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	Connecticut State Building
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	167.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	177.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	734.96	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):	1.14	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	37.09	psf
Ground Elevation Factor (K_e):	0.97	--

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}):	6.96	psf
Mount Ice Thickness (t_{iz}):		in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	66.76	psf
Round Member Pressure:	40.06	psf
Ice Wind Pressure:	7.52	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.07	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	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

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
APXV18-206516S-C-A20	3	167	No Ice	2.56	1.21	18.70
--	--	--	w/ Ice	3.96	2.54	90.40
KRY 112 75/1	3	167	No Ice	1.10	0.42	25.35
--	--	--	w/ Ice	1.44	0.67	39.51
APXVAALL24_43-U-NA20_TMO	3	167	No Ice	14.67	5.32	149.90
--	--	--	w/ Ice	17.04	7.41	432.90
RADIO 4480_TMOV2	3	167	No Ice	2.88	1.40	81.00
--	--	--	w/ Ice	3.40	1.82	91.48
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
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			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
APXV18-206516S-C-A20	3	167	1.00	1.14	0.95	1.76	37.09	6.77
KRY 112 75/1	3	167	1.00	1.14	0.95	1.76	37.09	6.77
XVAALL24_43-U-NA20_TI	3	167	1.00	1.14	0.95	1.76	37.09	6.77
RADIO 4480_TMOV2	3	167	1.00	1.14	0.95	1.76	37.09	6.77

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
APXV18-206516S-C-A20	3	No Ice	85.46	51.66	74.19	40.39	74.19	51.66
--	--	w/ Ice	24.17	17.64	22.00	15.47	22.00	17.64
KRY 112 75/1	3	No Ice	36.84	19.81	31.16	14.14	31.16	19.81
--	--	w/ Ice	8.78	5.26	7.61	4.09	7.61	5.26
APXVAALL24_43-U-NA20_TMO	3	No Ice	489.72	255.62	411.69	177.59	411.69	255.62
--	--	w/ Ice	103.87	59.83	89.19	45.15	89.19	59.83
RADIO 4480_TMOV2	3	No Ice	96.09	59.00	83.72	46.64	83.72	59.00
--	--	w/ Ice	20.75	13.52	18.34	11.12	18.34	13.52
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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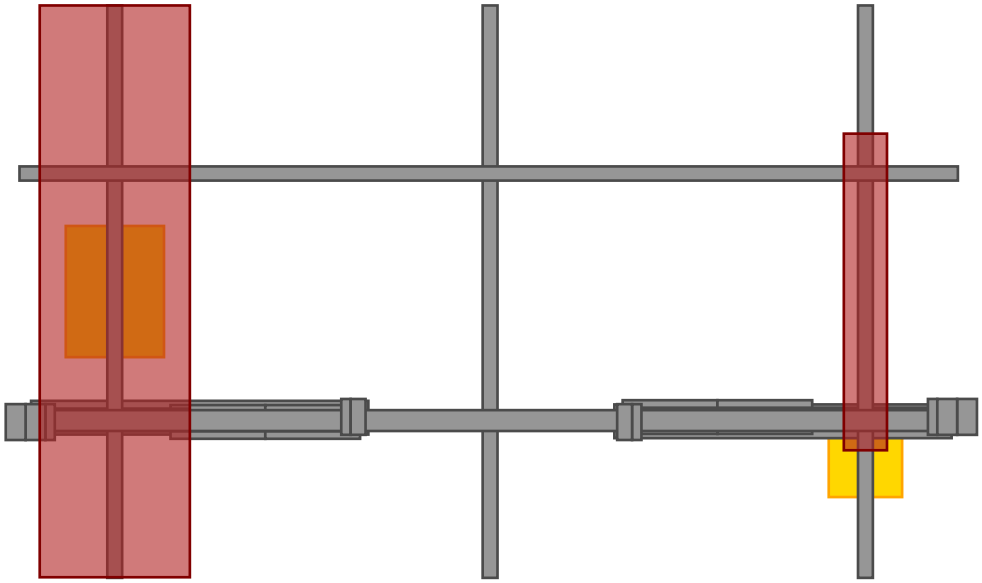
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
APXV18-206516S-C-A20	3	167	18.7	2.20
KRY 112 75/1	3	167	25.35	2.99
APXVAALL24_43-U-NA20_TMO	3	167	149.9	17.65
RADIO 4480_TMOV2	3	167	81	9.54

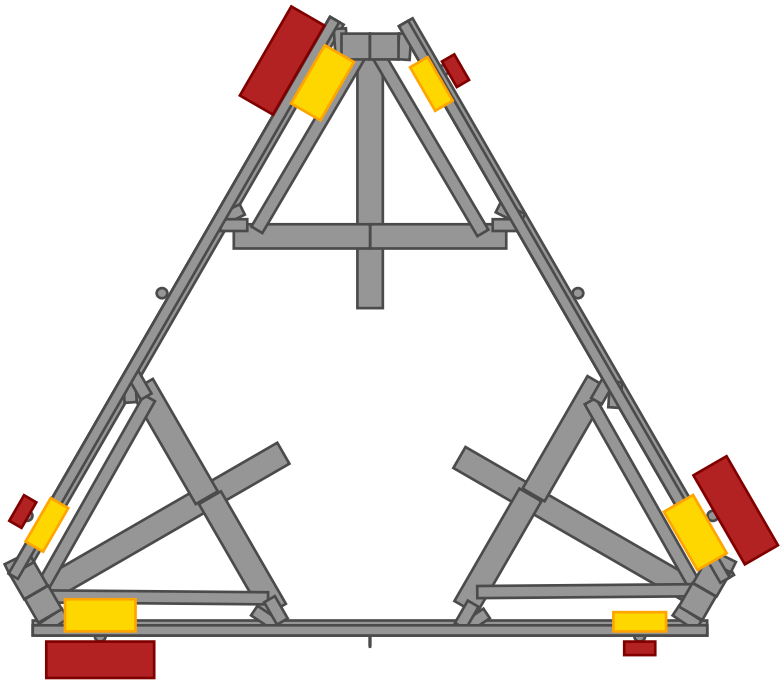
ELEVATION VIEW



MP3 MP2 MP1

*Elevation View Shows Only One Sector

PLAN VIEW



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
APXV18-206516S-C-A20	3	167	MP1/MP4/MP7	0/120/240
KRY 112 75/1	3	167	MP1/MP4/MP7	0/120/240
APXVAALL24_43-U-NA20_TMO	3	167	MP3/MP6/MP9	0/120/240
RADIO 4480_TMOV2	3	167	MP3/MP6/MP9	0/120/240

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Concrete

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	1
C_dX	1
ρ Z	1
ρ X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	Q235-GB	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2
9	Q345	29000	11154	0.3	0.65	0.49	36	1.1	58	1.1

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Fu [ksi]
1	A653 SS Gr33	29500	11346	0.3	0.65	0.49	33	45
2	A653 SS Gr50/1	29500	11346	0.3	0.65	0.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Standoffs	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	Horizontals	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	Platform Angle	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
4	Mount Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
5	Corner Plate	6"x1/2" Plate	Beam	RECT	A36 Gr.36	Typical	3	0.063	9	0.237
6	Handrail Horizontal	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Angle Handrail Corner Plate	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
8	Platform Braces	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
9	Connection Plates	PL6x.375	Beam	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr33	Typical	0.581	0.057	4.41	0.00063

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N163	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N157D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N159D	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
1	Self Weight	DL		-1		18		3
2	Structure Wind Z	WLZ					75	
3	Structure Wind X	WLX					75	
4	Wind Load 0 AZI	WLZ				36		
5	Wind Load 30 AZI	None				36		
6	Wind Load 45 AZI	None				36		
7	Wind Load 60 AZI	None				36		
8	Wind Load 90 AZI	WLX				36		
9	Wind Load 120 AZI	None				36		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
10	Wind Load 135 AZI	None				36		
11	Wind Load 150 AZI	None				36		
12	Ice Weight	OL1				18	75	3
13	Ice Structure Wind Z	OL2					75	
14	Ice Structure Wind X	OL3					75	
15	Ice Wind Load 0 AZI	OL2				36		
16	Ice Wind Load 30 AZI	None				36		
17	Ice Wind Load 45 AZI	None				36		
18	Ice Wind Load 60 AZI	None				36		
19	Ice Wind Load 90 AZI	OL3				36		
20	Ice Wind Load 120 AZI	None				36		
21	Ice Wind Load 135 AZI	None				36		
22	Ice Wind Load 150 AZI	None				36		
23	Seismic Load Z	ELZ			-0.118	18		
24	Seismic Load X	ELX	-0.118			18		
25	Live Load 1 (Lv)	None				1		
26	Live Load 2 (Lv)	None				1		
27	Live Load 3 (Lv)	None				1		
28	Live Load 4 (Lv)	None				1		
29	Live Load 5 (Lv)	None				1		
30	Live Load 6 (Lv)	None				1		
31	Live Load 7 (Lv)	None				1		
32	Live Load 8 (Lv)	None				1		
33	Live Load 9 (Lv)	None				1		
34	Maintenance Load 1 (Lm)	None				1		
35	Maintenance Load 2 (Lm)	None				1		
36	Maintenance Load 3 (Lm)	None				1		
37	Maintenance Load 4 (Lm)	None				1		
38	Maintenance Load 5 (Lm)	None				1		
39	Maintenance Load 6 (Lm)	None				1		
40	Maintenance Load 7 (Lm)	None				1		
41	Maintenance Load 8 (Lm)	None				1		
42	Maintenance Load 9 (Lm)	None				1		
43	BLC 1 Transient Area Loads	None					21	
44	BLC 12 Transient Area Loads	None					21	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	DL	1.4								
2	1.2DL + 1WL 0 AZI	Yes	Y	DL	1.2	2	1	3		4	1		
3	1.2DL + 1WL 30 AZI	Yes	Y	DL	1.2	2	0.866	3	0.5	5	1		
4	1.2DL + 1WL 45 AZI	Yes	Y	DL	1.2	2	0.707	3	0.707	6	1		
5	1.2DL + 1WL 60 AZI	Yes	Y	DL	1.2	2	0.5	3	0.866	7	1		
6	1.2DL + 1WL 90 AZI	Yes	Y	DL	1.2	2		3	1	8	1		
7	1.2DL + 1WL 120 AZI	Yes	Y	DL	1.2	2	-0.5	3	0.866	9	1		
8	1.2DL + 1WL 135 AZI	Yes	Y	DL	1.2	2	-0.707	3	0.707	10	1		
9	1.2DL + 1WL 150 AZI	Yes	Y	DL	1.2	2	-0.866	3	0.5	11	1		
10	1.2DL + 1WL 180 AZI	Yes	Y	DL	1.2	2	-1	3		4	-1		
11	1.2DL + 1WL 210 AZI	Yes	Y	DL	1.2	2	-0.866	3	-0.5	5	-1		
12	1.2DL + 1WL 225 AZI	Yes	Y	DL	1.2	2	-0.707	3	-0.707	6	-1		
13	1.2DL + 1WL 240 AZI	Yes	Y	DL	1.2	2	-0.5	3	-0.866	7	-1		
14	1.2DL + 1WL 270 AZI	Yes	Y	DL	1.2	2		3	-1	8	-1		
15	1.2DL + 1WL 300 AZI	Yes	Y	DL	1.2	2	0.5	3	-0.866	9	-1		
16	1.2DL + 1WL 315 AZI	Yes	Y	DL	1.2	2	0.707	3	-0.707	10	-1		
17	1.2DL + 1WL 330 AZI	Yes	Y	DL	1.2	2	0.866	3	-0.5	11	-1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
18	0.9DL + 1WL 0 AZI	Yes	Y	DL	0.9	2	1	3		4	1		
19	0.9DL + 1WL 30 AZI	Yes	Y	DL	0.9	2	0.866	3	0.5	5	1		
20	0.9DL + 1WL 45 AZI	Yes	Y	DL	0.9	2	0.707	3	0.707	6	1		
21	0.9DL + 1WL 60 AZI	Yes	Y	DL	0.9	2	0.5	3	0.866	7	1		
22	0.9DL + 1WL 90 AZI	Yes	Y	DL	0.9	2		3	1	8	1		
23	0.9DL + 1WL 120 AZI	Yes	Y	DL	0.9	2	-0.5	3	0.866	9	1		
24	0.9DL + 1WL 135 AZI	Yes	Y	DL	0.9	2	-0.707	3	0.707	10	1		
25	0.9DL + 1WL 150 AZI	Yes	Y	DL	0.9	2	-0.866	3	0.5	11	1		
26	0.9DL + 1WL 180 AZI	Yes	Y	DL	0.9	2	-1	3		4	-1		
27	0.9DL + 1WL 210 AZI	Yes	Y	DL	0.9	2	-0.866	3	-0.5	5	-1		
28	0.9DL + 1WL 225 AZI	Yes	Y	DL	0.9	2	-0.707	3	-0.707	6	-1		
29	0.9DL + 1WL 240 AZI	Yes	Y	DL	0.9	2	-0.5	3	-0.866	7	-1		
30	0.9DL + 1WL 270 AZI	Yes	Y	DL	0.9	2		3	-1	8	-1		
31	0.9DL + 1WL 300 AZI	Yes	Y	DL	0.9	2	0.5	3	-0.866	9	-1		
32	0.9DL + 1WL 315 AZI	Yes	Y	DL	0.9	2	0.707	3	-0.707	10	-1		
33	0.9DL + 1WL 330 AZI	Yes	Y	DL	0.9	2	0.866	3	-0.5	11	-1		
34	1.2DL + 1DLi + 1WLi 0 AZI	Yes	Y	DL	1.2	OL1	1	13	1	14		15	1
35	1.2DL + 1DLi + 1WLi 30 AZI	Yes	Y	DL	1.2	OL1	1	13	0.866	14	0.5	16	1
36	1.2DL + 1DLi + 1WLi 45 AZI	Yes	Y	DL	1.2	OL1	1	13	0.707	14	0.707	17	1
37	1.2DL + 1DLi + 1WLi 60 AZI	Yes	Y	DL	1.2	OL1	1	13	0.5	14	0.866	18	1
38	1.2DL + 1DLi + 1WLi 90 AZI	Yes	Y	DL	1.2	OL1	1	13		14	1	19	1
39	1.2DL + 1DLi + 1WLi 120 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.5	14	0.866	20	1
40	1.2DL + 1DLi + 1WLi 135 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.707	14	0.707	21	1
41	1.2DL + 1DLi + 1WLi 150 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.866	14	0.5	22	1
42	1.2DL + 1DLi + 1WLi 180 AZI	Yes	Y	DL	1.2	OL1	1	13	-1	14		15	-1
43	1.2DL + 1DLi + 1WLi 210 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.866	14	-0.5	16	-1
44	1.2DL + 1DLi + 1WLi 225 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.707	14	-0.707	17	-1
45	1.2DL + 1DLi + 1WLi 240 AZI	Yes	Y	DL	1.2	OL1	1	13	-0.5	14	-0.866	18	-1
46	1.2DL + 1DLi + 1WLi 270 AZI	Yes	Y	DL	1.2	OL1	1	13		14	-1	19	-1
47	1.2DL + 1DLi + 1WLi 300 AZI	Yes	Y	DL	1.2	OL1	1	13	0.5	14	-0.866	20	-1
48	1.2DL + 1DLi + 1WLi 315 AZI	Yes	Y	DL	1.2	OL1	1	13	0.707	14	-0.707	21	-1
49	1.2DL + 1DLi + 1WLi 330 AZI	Yes	Y	DL	1.2	OL1	1	13	0.866	14	-0.5	22	-1
50	(1.2+0.2Sds)DL + 1E 0 AZI	Yes	Y	DL	1.239	23	1	24					
51	(1.2+0.2Sds)DL + 1E 30 AZI	Yes	Y	DL	1.239	23	0.866	24	0.5				
52	(1.2+0.2Sds)DL + 1E 45 AZI	Yes	Y	DL	1.239	23	0.707	24	0.707				
53	(1.2+0.2Sds)DL + 1E 60 AZI	Yes	Y	DL	1.239	23	0.5	24	0.866				
54	(1.2+0.2Sds)DL + 1E 90 AZI	Yes	Y	DL	1.239	23		24	1				
55	(1.2+0.2Sds)DL + 1E 120 AZI	Yes	Y	DL	1.239	23	-0.5	24	0.866				
56	(1.2+0.2Sds)DL + 1E 135 AZI	Yes	Y	DL	1.239	23	-0.707	24	0.707				
57	(1.2+0.2Sds)DL + 1E 150 AZI	Yes	Y	DL	1.239	23	-0.866	24	0.5				
58	(1.2+0.2Sds)DL + 1E 180 AZI	Yes	Y	DL	1.239	23	-1	24					
59	(1.2+0.2Sds)DL + 1E 210 AZI	Yes	Y	DL	1.239	23	-0.866	24	-0.5				
60	(1.2+0.2Sds)DL + 1E 225 AZI	Yes	Y	DL	1.239	23	-0.707	24	-0.707				
61	(1.2+0.2Sds)DL + 1E 240 AZI	Yes	Y	DL	1.239	23	-0.5	24	-0.866				
62	(1.2+0.2Sds)DL + 1E 270 AZI	Yes	Y	DL	1.239	23		24	-1				
63	(1.2+0.2Sds)DL + 1E 300 AZI	Yes	Y	DL	1.239	23	0.5	24	-0.866				
64	(1.2+0.2Sds)DL + 1E 315 AZI	Yes	Y	DL	1.239	23	0.707	24	-0.707				
65	(1.2+0.2Sds)DL + 1E 330 AZI	Yes	Y	DL	1.239	23	0.866	24	-0.5				
66	(0.9-0.2Sds)DL + 1E 0 AZI	Yes	Y	DL	0.861	23	1	24					
67	(0.9-0.2Sds)DL + 1E 30 AZI	Yes	Y	DL	0.861	23	0.866	24	0.5				
68	(0.9-0.2Sds)DL + 1E 45 AZI	Yes	Y	DL	0.861	23	0.707	24	0.707				
69	(0.9-0.2Sds)DL + 1E 60 AZI	Yes	Y	DL	0.861	23	0.5	24	0.866				
70	(0.9-0.2Sds)DL + 1E 90 AZI	Yes	Y	DL	0.861	23		24	1				
71	(0.9-0.2Sds)DL + 1E 120 AZI	Yes	Y	DL	0.861	23	-0.5	24	0.866				
72	(0.9-0.2Sds)DL + 1E 135 AZI	Yes	Y	DL	0.861	23	-0.707	24	0.707				

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
73	(0.9-0.2Sds)DL + 1E 150 AZI	Yes	Y	DL	0.861	23	-0.866	24	0.5				
74	(0.9-0.2Sds)DL + 1E 180 AZI	Yes	Y	DL	0.861	23	-1	24					
75	(0.9-0.2Sds)DL + 1E 210 AZI	Yes	Y	DL	0.861	23	-0.866	24	-0.5				
76	(0.9-0.2Sds)DL + 1E 225 AZI	Yes	Y	DL	0.861	23	-0.707	24	-0.707				
77	(0.9-0.2Sds)DL + 1E 240 AZI	Yes	Y	DL	0.861	23	-0.5	24	-0.866				
78	(0.9-0.2Sds)DL + 1E 270 AZI	Yes	Y	DL	0.861	23		24	-1				
79	(0.9-0.2Sds)DL + 1E 300 AZI	Yes	Y	DL	0.861	23	0.5	24	-0.866				
80	(0.9-0.2Sds)DL + 1E 315 AZI	Yes	Y	DL	0.861	23	0.707	24	-0.707				
81	(0.9-0.2Sds)DL + 1E 330 AZI	Yes	Y	DL	0.861	23	0.866	24	-0.5				
82	1.2DL + 1Lv1	Yes	Y	DL	1.2	25	1.5						
83	1.2DL + 1Lv2	Yes	Y	DL	1.2	26	1.5						
84	1.2DL + 1Lv3	Yes	Y	DL	1.2	27	1.5						
85	1.2DL + 1Lv4	Yes	Y	DL	1.2	28	1.5						
86	1.2DL + 1Lv5	Yes	Y	DL	1.2	29	1.5						
87	1.2DL + 1Lv6	Yes	Y	DL	1.2	30	1.5						
88	1.2DL + 1Lv7	Yes	Y	DL	1.2	31	1.5						
89	1.2DL + 1Lv8	Yes	Y	DL	1.2	32	1.5						
90	1.2DL + 1Lv9	Yes	Y	DL	1.2	33	1.5						
91	1.2DL + 1.5Lm + 1Wm 0 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.066	3		4	0.066
92	1.2DL + 1.5Lm + 1Wm 30 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.057	3	0.033	5	0.066
93	1.2DL + 1.5Lm + 1Wm 45 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.046	3	0.046	6	0.066
94	1.2DL + 1.5Lm + 1Wm 60 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.033	3	0.057	7	0.066
95	1.2DL + 1.5Lm + 1Wm 90 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2		3	0.066	8	0.066
96	1.2DL + 1.5Lm + 1Wm 120 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.033	3	0.057	9	0.066
97	1.2DL + 1.5Lm + 1Wm 135 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.046	3	0.046	10	0.066
98	1.2DL + 1.5Lm + 1Wm 150 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.057	3	0.033	11	0.066
99	1.2DL + 1.5Lm + 1Wm 180 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.066	3		4	-0.066
100	1.2DL + 1.5Lm + 1Wm 210 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.057	3	-0.033	5	-0.066
101	1.2DL + 1.5Lm + 1Wm 225 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.046	3	-0.046	6	-0.066
102	1.2DL + 1.5Lm + 1Wm 240 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	-0.033	3	-0.057	7	-0.066
103	1.2DL + 1.5Lm + 1Wm 270 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2		3	-0.066	8	-0.066
104	1.2DL + 1.5Lm + 1Wm 300 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.033	3	-0.057	9	-0.066
105	1.2DL + 1.5Lm + 1Wm 315 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.046	3	-0.046	10	-0.066
106	1.2DL + 1.5Lm + 1Wm 330 AZI - MP1	Yes	Y	DL	1.2	34	1.5	2	0.057	3	-0.033	11	-0.066
107	1.2DL + 1.5Lm + 1Wm 0 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.066	3		4	0.066
108	1.2DL + 1.5Lm + 1Wm 30 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.057	3	0.033	5	0.066
109	1.2DL + 1.5Lm + 1Wm 45 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.046	3	0.046	6	0.066
110	1.2DL + 1.5Lm + 1Wm 60 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.033	3	0.057	7	0.066
111	1.2DL + 1.5Lm + 1Wm 90 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2		3	0.066	8	0.066
112	1.2DL + 1.5Lm + 1Wm 120 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.033	3	0.057	9	0.066
113	1.2DL + 1.5Lm + 1Wm 135 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.046	3	0.046	10	0.066
114	1.2DL + 1.5Lm + 1Wm 150 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.057	3	0.033	11	0.066
115	1.2DL + 1.5Lm + 1Wm 180 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.066	3		4	-0.066
116	1.2DL + 1.5Lm + 1Wm 210 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.057	3	-0.033	5	-0.066
117	1.2DL + 1.5Lm + 1Wm 225 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.046	3	-0.046	6	-0.066
118	1.2DL + 1.5Lm + 1Wm 240 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	-0.033	3	-0.057	7	-0.066
119	1.2DL + 1.5Lm + 1Wm 270 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2		3	-0.066	8	-0.066
120	1.2DL + 1.5Lm + 1Wm 300 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.033	3	-0.057	9	-0.066
121	1.2DL + 1.5Lm + 1Wm 315 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.046	3	-0.046	10	-0.066
122	1.2DL + 1.5Lm + 1Wm 330 AZI - MP2	Yes	Y	DL	1.2	35	1.5	2	0.057	3	-0.033	11	-0.066
123	1.2DL + 1.5Lm + 1Wm 0 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.066	3		4	0.066
124	1.2DL + 1.5Lm + 1Wm 30 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.057	3	0.033	5	0.066
125	1.2DL + 1.5Lm + 1Wm 45 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.046	3	0.046	6	0.066
126	1.2DL + 1.5Lm + 1Wm 60 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.033	3	0.057	7	0.066
127	1.2DL + 1.5Lm + 1Wm 90 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2		3	0.066	8	0.066

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
128	1.2DL + 1.5Lm + 1Wm 120 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.033	3	0.057	9	0.066
129	1.2DL + 1.5Lm + 1Wm 135 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.046	3	0.046	10	0.066
130	1.2DL + 1.5Lm + 1Wm 150 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.057	3	0.033	11	0.066
131	1.2DL + 1.5Lm + 1Wm 180 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.066	3		4	-0.066
132	1.2DL + 1.5Lm + 1Wm 210 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.057	3	-0.033	5	-0.066
133	1.2DL + 1.5Lm + 1Wm 225 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.046	3	-0.046	6	-0.066
134	1.2DL + 1.5Lm + 1Wm 240 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	-0.033	3	-0.057	7	-0.066
135	1.2DL + 1.5Lm + 1Wm 270 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2		3	-0.066	8	-0.066
136	1.2DL + 1.5Lm + 1Wm 300 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.033	3	-0.057	9	-0.066
137	1.2DL + 1.5Lm + 1Wm 315 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.046	3	-0.046	10	-0.066
138	1.2DL + 1.5Lm + 1Wm 330 AZI - MP3	Yes	Y	DL	1.2	36	1.5	2	0.057	3	-0.033	11	-0.066
139	1.2DL + 1.5Lm + 1Wm 0 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.066	3		4	0.066
140	1.2DL + 1.5Lm + 1Wm 30 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.057	3	0.033	5	0.066
141	1.2DL + 1.5Lm + 1Wm 45 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.046	3	0.046	6	0.066
142	1.2DL + 1.5Lm + 1Wm 60 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.033	3	0.057	7	0.066
143	1.2DL + 1.5Lm + 1Wm 90 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2		3	0.066	8	0.066
144	1.2DL + 1.5Lm + 1Wm 120 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.033	3	0.057	9	0.066
145	1.2DL + 1.5Lm + 1Wm 135 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.046	3	0.046	10	0.066
146	1.2DL + 1.5Lm + 1Wm 150 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.057	3	0.033	11	0.066
147	1.2DL + 1.5Lm + 1Wm 180 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.066	3		4	-0.066
148	1.2DL + 1.5Lm + 1Wm 210 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.057	3	-0.033	5	-0.066
149	1.2DL + 1.5Lm + 1Wm 225 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.046	3	-0.046	6	-0.066
150	1.2DL + 1.5Lm + 1Wm 240 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	-0.033	3	-0.057	7	-0.066
151	1.2DL + 1.5Lm + 1Wm 270 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2		3	-0.066	8	-0.066
152	1.2DL + 1.5Lm + 1Wm 300 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.033	3	-0.057	9	-0.066
153	1.2DL + 1.5Lm + 1Wm 315 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.046	3	-0.046	10	-0.066
154	1.2DL + 1.5Lm + 1Wm 330 AZI - MP4	Yes	Y	DL	1.2	37	1.5	2	0.057	3	-0.033	11	-0.066
155	1.2DL + 1.5Lm + 1Wm 0 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.066	3		4	0.066
156	1.2DL + 1.5Lm + 1Wm 30 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.057	3	0.033	5	0.066
157	1.2DL + 1.5Lm + 1Wm 45 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.046	3	0.046	6	0.066
158	1.2DL + 1.5Lm + 1Wm 60 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.033	3	0.057	7	0.066
159	1.2DL + 1.5Lm + 1Wm 90 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2		3	0.066	8	0.066
160	1.2DL + 1.5Lm + 1Wm 120 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.033	3	0.057	9	0.066
161	1.2DL + 1.5Lm + 1Wm 135 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.046	3	0.046	10	0.066
162	1.2DL + 1.5Lm + 1Wm 150 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.057	3	0.033	11	0.066
163	1.2DL + 1.5Lm + 1Wm 180 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.066	3		4	-0.066
164	1.2DL + 1.5Lm + 1Wm 210 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.057	3	-0.033	5	-0.066
165	1.2DL + 1.5Lm + 1Wm 225 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.046	3	-0.046	6	-0.066
166	1.2DL + 1.5Lm + 1Wm 240 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	-0.033	3	-0.057	7	-0.066
167	1.2DL + 1.5Lm + 1Wm 270 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2		3	-0.066	8	-0.066
168	1.2DL + 1.5Lm + 1Wm 300 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.033	3	-0.057	9	-0.066
169	1.2DL + 1.5Lm + 1Wm 315 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.046	3	-0.046	10	-0.066
170	1.2DL + 1.5Lm + 1Wm 330 AZI - MP6	Yes	Y	DL	1.2	38	1.5	2	0.057	3	-0.033	11	-0.066
171	1.2DL + 1.5Lm + 1Wm 0 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.066	3		4	0.066
172	1.2DL + 1.5Lm + 1Wm 30 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.057	3	0.033	5	0.066
173	1.2DL + 1.5Lm + 1Wm 45 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.046	3	0.046	6	0.066
174	1.2DL + 1.5Lm + 1Wm 60 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.033	3	0.057	7	0.066
175	1.2DL + 1.5Lm + 1Wm 90 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2		3	0.066	8	0.066
176	1.2DL + 1.5Lm + 1Wm 120 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.033	3	0.057	9	0.066
177	1.2DL + 1.5Lm + 1Wm 135 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.046	3	0.046	10	0.066
178	1.2DL + 1.5Lm + 1Wm 150 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.057	3	0.033	11	0.066
179	1.2DL + 1.5Lm + 1Wm 180 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.066	3		4	-0.066
180	1.2DL + 1.5Lm + 1Wm 210 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.057	3	-0.033	5	-0.066
181	1.2DL + 1.5Lm + 1Wm 225 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.046	3	-0.046	6	-0.066
182	1.2DL + 1.5Lm + 1Wm 240 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	-0.033	3	-0.057	7	-0.066

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
183	1.2DL + 1.5Lm + 1Wm 270 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2		3	-0.066	8	-0.066
184	1.2DL + 1.5Lm + 1Wm 300 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.033	3	-0.057	9	-0.066
185	1.2DL + 1.5Lm + 1Wm 315 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.046	3	-0.046	10	-0.066
186	1.2DL + 1.5Lm + 1Wm 330 AZI - MP7	Yes	Y	DL	1.2	39	1.5	2	0.057	3	-0.033	11	-0.066
187	1.2DL + 1.5Lm + 1Wm 0 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.066	3		4	0.066
188	1.2DL + 1.5Lm + 1Wm 30 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.057	3	0.033	5	0.066
189	1.2DL + 1.5Lm + 1Wm 45 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.046	3	0.046	6	0.066
190	1.2DL + 1.5Lm + 1Wm 60 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.033	3	0.057	7	0.066
191	1.2DL + 1.5Lm + 1Wm 90 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2		3	0.066	8	0.066
192	1.2DL + 1.5Lm + 1Wm 120 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.033	3	0.057	9	0.066
193	1.2DL + 1.5Lm + 1Wm 135 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.046	3	0.046	10	0.066
194	1.2DL + 1.5Lm + 1Wm 150 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.057	3	0.033	11	0.066
195	1.2DL + 1.5Lm + 1Wm 180 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.066	3		4	-0.066
196	1.2DL + 1.5Lm + 1Wm 210 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.057	3	-0.033	5	-0.066
197	1.2DL + 1.5Lm + 1Wm 225 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.046	3	-0.046	6	-0.066
198	1.2DL + 1.5Lm + 1Wm 240 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	-0.033	3	-0.057	7	-0.066
199	1.2DL + 1.5Lm + 1Wm 270 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2		3	-0.066	8	-0.066
200	1.2DL + 1.5Lm + 1Wm 300 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.033	3	-0.057	9	-0.066
201	1.2DL + 1.5Lm + 1Wm 315 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.046	3	-0.046	10	-0.066
202	1.2DL + 1.5Lm + 1Wm 330 AZI - MP9	Yes	Y	DL	1.2	40	1.5	2	0.057	3	-0.033	11	-0.066
203	1.2DL + 1.5Lm + 1Wm 0 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.066	3		4	0.066
204	1.2DL + 1.5Lm + 1Wm 30 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.057	3	0.033	5	0.066
205	1.2DL + 1.5Lm + 1Wm 45 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.046	3	0.046	6	0.066
206	1.2DL + 1.5Lm + 1Wm 60 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.033	3	0.057	7	0.066
207	1.2DL + 1.5Lm + 1Wm 90 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2		3	0.066	8	0.066
208	1.2DL + 1.5Lm + 1Wm 120 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.033	3	0.057	9	0.066
209	1.2DL + 1.5Lm + 1Wm 135 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.046	3	0.046	10	0.066
210	1.2DL + 1.5Lm + 1Wm 150 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.057	3	0.033	11	0.066
211	1.2DL + 1.5Lm + 1Wm 180 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.066	3		4	-0.066
212	1.2DL + 1.5Lm + 1Wm 210 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.057	3	-0.033	5	-0.066
213	1.2DL + 1.5Lm + 1Wm 225 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.046	3	-0.046	6	-0.066
214	1.2DL + 1.5Lm + 1Wm 240 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	-0.033	3	-0.057	7	-0.066
215	1.2DL + 1.5Lm + 1Wm 270 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2		3	-0.066	8	-0.066
216	1.2DL + 1.5Lm + 1Wm 300 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.033	3	-0.057	9	-0.066
217	1.2DL + 1.5Lm + 1Wm 315 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.046	3	-0.046	10	-0.066
218	1.2DL + 1.5Lm + 1Wm 330 AZI - MP8	Yes	Y	DL	1.2	41	1.5	2	0.057	3	-0.033	11	-0.066
219	1.2DL + 1.5Lm + 1Wm 0 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.066	3		4	0.066
220	1.2DL + 1.5Lm + 1Wm 30 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.057	3	0.033	5	0.066
221	1.2DL + 1.5Lm + 1Wm 45 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.046	3	0.046	6	0.066
222	1.2DL + 1.5Lm + 1Wm 60 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.033	3	0.057	7	0.066
223	1.2DL + 1.5Lm + 1Wm 90 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2		3	0.066	8	0.066
224	1.2DL + 1.5Lm + 1Wm 120 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.033	3	0.057	9	0.066
225	1.2DL + 1.5Lm + 1Wm 135 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.046	3	0.046	10	0.066
226	1.2DL + 1.5Lm + 1Wm 150 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.057	3	0.033	11	0.066
227	1.2DL + 1.5Lm + 1Wm 180 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.066	3		4	-0.066
228	1.2DL + 1.5Lm + 1Wm 210 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.057	3	-0.033	5	-0.066
229	1.2DL + 1.5Lm + 1Wm 225 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.046	3	-0.046	6	-0.066
230	1.2DL + 1.5Lm + 1Wm 240 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	-0.033	3	-0.057	7	-0.066
231	1.2DL + 1.5Lm + 1Wm 270 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2		3	-0.066	8	-0.066
232	1.2DL + 1.5Lm + 1Wm 300 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.033	3	-0.057	9	-0.066
233	1.2DL + 1.5Lm + 1Wm 315 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.046	3	-0.046	10	-0.066
234	1.2DL + 1.5Lm + 1Wm 330 AZI - MP5	Yes	Y	DL	1.2	42	1.5	2	0.057	3	-0.033	11	-0.066

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N163	max	835.69	22	2511.393	34	1440.04	18	5804.834	34	1122.033	14	577.183	213
2		min	-835.176	30	41.462	26	-1480.076	10	-81.232	26	-1124.331	22	-741.794	221
3	N157D	max	1233.266	23	2506.971	39	1095.407	2	121.729	32	875.197	3	23.502	31
4		min	-1268.546	15	50.957	31	-1075.554	26	-3131	40	-877.11	27	-4892.686	39
5	N159D	max	1285.8	6	2506.95	45	829.445	4	24.04	20	883.653	24	5145.346	45
6		min	-1251.414	30	50.957	21	-808.395	28	-2693.807	44	-884.581	32	-82.12	21
7	Totals:	max	3180.522	6	6991.505	41	3276.705	18						
8		min	-3180.518	30	1719.296	81	-3276.707	10						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	MP9	PIPE_2.0	0.43	69	7	0.057	27		42	14916.096	32130	1871.625	1871.625	1.646	H1-1b
2	MP6	PIPE_2.0	0.408	69	13	0.054	27		46	14916.096	32130	1871.625	1871.625	1.178	H1-1b
3	MP3	PIPE_2.0	0.407	69	2	0.057	27		38	14916.096	32130	1871.625	1871.625	3	H1-1b
4	MP1	PIPE_2.0	0.365	69	8	0.085	69		15	14916.096	32130	1871.625	1871.625	2.795	H1-1b
5	MP7	PIPE_2.0	0.365	69	13	0.082	69		5	14916.096	32130	1871.625	1871.625	3	H1-1b
6	M3	HSS4X4X4	0.364	0	45	0.088	0	y	215	131968.715	139518	16180.5	16180.5	1	H1-1b
7	M5	HSS4X4X4	0.363	0	36	0.088	0	y	220	131968.715	139518	16180.5	16180.5	1	H1-1b
8	M1	HSS4X4X4	0.363	0	40	0.088	0	y	114	131968.715	139518	16180.5	16180.5	1	H1-1b
9	MP4	PIPE_2.0	0.362	69	2	0.087	69		10	14916.096	32130	1871.625	1871.625	3	H1-1b
10	MP8	PIPE_2.0	0.302	69	5	0.047	69		4	14916.096	32130	1871.625	1871.625	3	H1-1b
11	MP5	PIPE_2.0	0.293	69	10	0.046	69		6	14916.096	32130	1871.625	1871.625	3	H1-1b
12	MP2	PIPE_2.0	0.287	69	16	0.043	69		11	14916.096	32130	1871.625	1871.625	3	H1-1b
13	M68	PIPE_2.0	0.281	134.375	13	0.19	10.937		15	25978.809	32130	1871.625	1871.625	1	H1-1b
14	M72	PIPE_2.0	0.279	134.375	2	0.189	135.937		10	25978.809	32130	1871.625	1871.625	1	H1-1b
15	M64	PIPE_2.0	0.272	134.375	7	0.191	135.937		15	25978.809	32130	1871.625	1871.625	1	H1-1b
16	H3	PIPE_3.0	0.187	98.438	35	0.104	143.75		14	59302.836	65205	5748.75	5748.75	1	H1-1b
17	H1	PIPE_3.0	0.187	98.437	45	0.108	143.75		8	59302.836	65205	5748.75	5748.75	1	H1-1b
18	H2	PIPE_3.0	0.187	98.437	40	0.103	135.937		3	59302.836	65205	5748.75	5748.75	1	H1-1b
19	M73A	PL6x.375	0.178	2.704	6	0.106	0	y	200	70396.734	72900	569.533	9112.5	1.038	H1-1b
20	M79	PL6x.375	0.158	2.704	11	0.106	0	y	158	70396.734	72900	569.533	9112.5	1.036	H1-1b
21	M44	PL6x.375	0.155	2.704	17	0.106	0	y	131	70396.734	72900	569.533	9112.5	1.036	H1-1b
22	M82A	PL6x.375	0.151	2.704	14	0.123	0	y	42	70396.734	72900	569.533	9112.5	1.046	H1-1b
23	M91A	L2x2x3	0.146	51.353	26	0.009	51.353	z	43	9346.076	23392.8	557.717	1154.025	1.5	H2-1
24	M95B	L2x2x3	0.144	51.353	36	0.009	51.353	z	38	9346.157	23392.8	557.717	1154.026	1.5	H2-1
25	M93B	L2x2x3	0.142	51.353	46	0.009	51.353	z	49	9346.076	23392.8	557.717	1154.025	1.5	H2-1
26	M76	PL6x.375	0.13	2.704	9	0.124	0	y	37	70396.734	72900	569.533	9112.5	1.045	H1-1b
27	M88C	HSS4X4X4	0.13	0	45	0.046	0	y	46	136307.765	139518	16180.5	16180.5	1.72	H1-1b
28	M86C	HSS4X4X4	0.13	0	40	0.046	0	y	41	136307.765	139518	16180.5	16180.5	1.716	H1-1b
29	M90C	HSS4X4X4	0.129	0	34	0.046	0	y	36	136307.745	139518	16180.5	16180.5	1.72	H1-1b
30	M94A	L2x2x3	0.128	51.353	43	0.01	51.353	y	48	9346.209	23392.8	557.717	1154.027	1.5	H2-1
31	M85B	HSS4X4X4	0.128	28.301	38	0.036	28.301	y	37	136307.906	139518	16180.5	16180.5	1.72	H1-1b
32	M88B	PL6x.375	0.128	2.704	3	0.124	0	y	48	70396.734	72900	569.533	9112.5	1.045	H1-1b
33	M87C	HSS4X4X4	0.127	28.301	44	0.036	28.301	y	42	136307.906	139518	16180.5	16180.5	1.724	H1-1b
34	M89C	HSS4X4X4	0.127	28.3	49	0.036	28.3	y	47	136307.925	139518	16180.5	16180.5	1.721	H1-1b
35	M96C	L2x2x3	0.127	51.353	49	0.01	51.353	y	37	9346.27	23392.8	557.717	1154.028	1.5	H2-1
36	M92B	L2x2x3	0.126	51.353	38	0.01	51.353	y	43	9346.21	23392.8	557.717	1154.027	1.5	H2-1
37	M89A	6"x1/2" Plate	0.121	4.338	14	0.089	4.338	y	41	92686.461	97200	1012.5	12150	1.126	H1-1b
38	M95A	6"x1/2" Plate	0.118	4.338	3	0.089	4.338	y	46	92685.858	97200	1012.5	12150	1.119	H1-1b
39	M87A	6"x1/2" Plate	0.116	4.338	9	0.089	4.338	y	35	92686.458	97200	1012.5	12150	1.114	H1-1b
40	M88	6"x1/2" Plate	0.107	0	6	0.082	4.338	y	43	92686.458	97200	1012.5	12150	1.012	H1-1b
41	M75A	PL6x.375	0.107	2.75	14	0.2	2.75	y	8	70317.804	72900	569.533	9112.5	1.173	H1-1b
42	M96A	6"x1/2" Plate	0.105	0	17	0.081	4.338	y	38	92687.058	97200	1012.5	12150	1.016	H1-1b
43	M90A	6"x1/2" Plate	0.103	0	11	0.085	0	y	16	92686.455	97200	1012.5	12150	1.018	H1-1b

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
44	M85	6"x1/2" Plate	0.1	2.704	6	0.112	0	y	11	95420.398	97200	1012.5	12150	1.008	H1-1b
45	M85A	6"x1/2" Plate	0.099	2.704	14	0.085	0	y	9	95420.398	97200	1012.5	12150	1.104	H1-1b
46	M93A	6"x1/2" Plate	0.099	2.704	17	0.112	0	y	6	95420.398	97200	1012.5	12150	1.011	H1-1b
47	M91	6"x1/2" Plate	0.098	2.704	3	0.084	0	y	14	95420.398	97200	1012.5	12150	1.097	H1-1b
48	M87B	6"x1/2" Plate	0.097	2.704	11	0.117	0	y	16	95420.398	97200	1012.5	12150	1.012	H1-1b
49	M41	6"x1/2" Plate	0.096	2.704	9	0.085	0	y	3	95420.398	97200	1012.5	12150	1.091	H1-1b
50	M84A	PL6x.375	0.092	2.75	6	0.251	2.75	y	11	70317.804	72900	569.533	9112.5	1.272	H1-1b
51	M81A	PL6x.375	0.091	2.75	3	0.196	2.75	y	14	70318.438	72900	569.533	9112.5	1.176	H1-1b
52	M96B	PL6x.375	0.087	2.75	9	0.199	2.75	y	3	70317.804	72900	569.533	9112.5	1.173	H1-1b
53	M78A	PL6x.375	0.076	2.75	17	0.253	2.75	y	6	70317.804	72900	569.533	9112.5	1.279	H1-1b
54	M90B	PL6x.375	0.073	2.75	11	0.255	2.75	y	17	70317.804	72900	569.533	9112.5	1.27	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

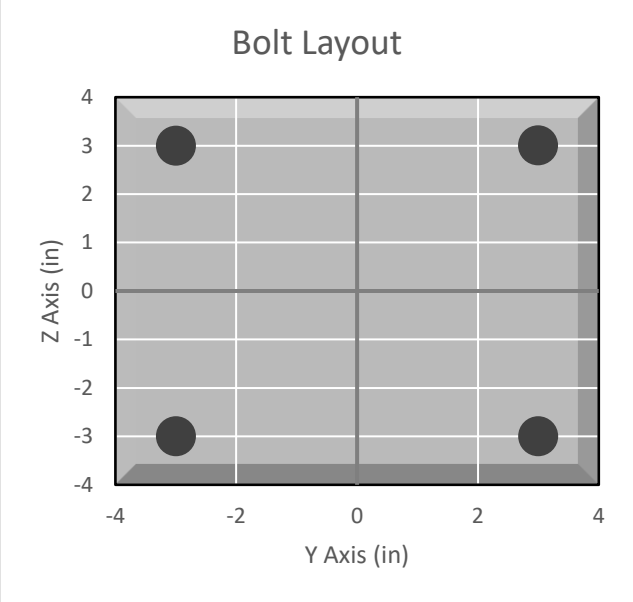
Analysis date: 4/11/2022

BOLT TOOL 1.5.2

Project Data	
Job Code:	206943
Carrier Site ID:	CT11367C
Carrier Site Name:	LITCHFIELD1/RT 8

Code	
Design Standard:	TIA-222-H
Slip Check:	-
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
Platform to Collar Connection

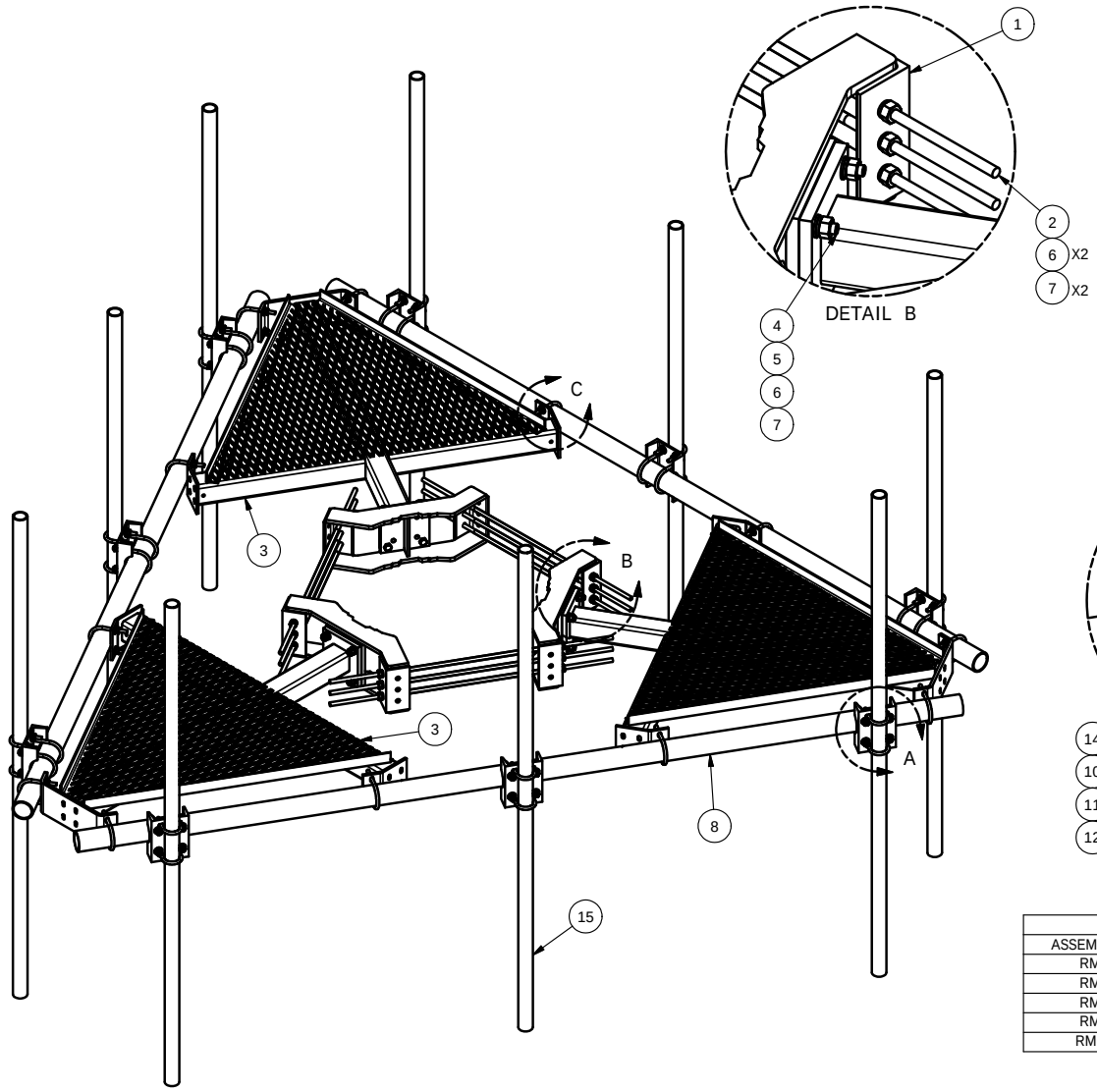
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	5968.5	lbs
Shear Force (V_u):	765.3	lbs
Tension Usage:	27.9%	--
Shear Usage:	5.3%	--
Interaction:	27.9%	Pass
Controlling Member:	M3	--
Controlling LC:	45	--

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

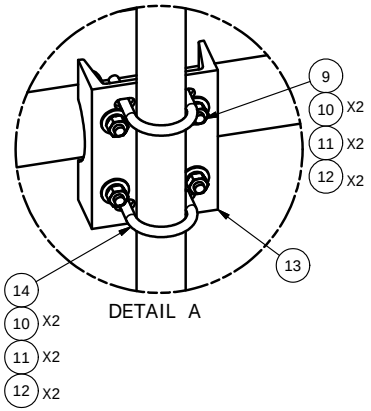
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

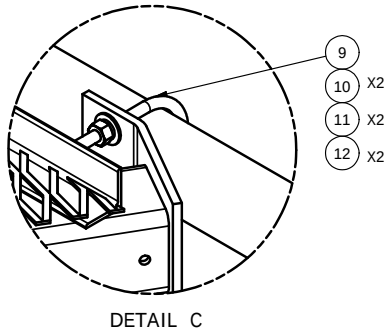
APPENDIX E

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

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

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")

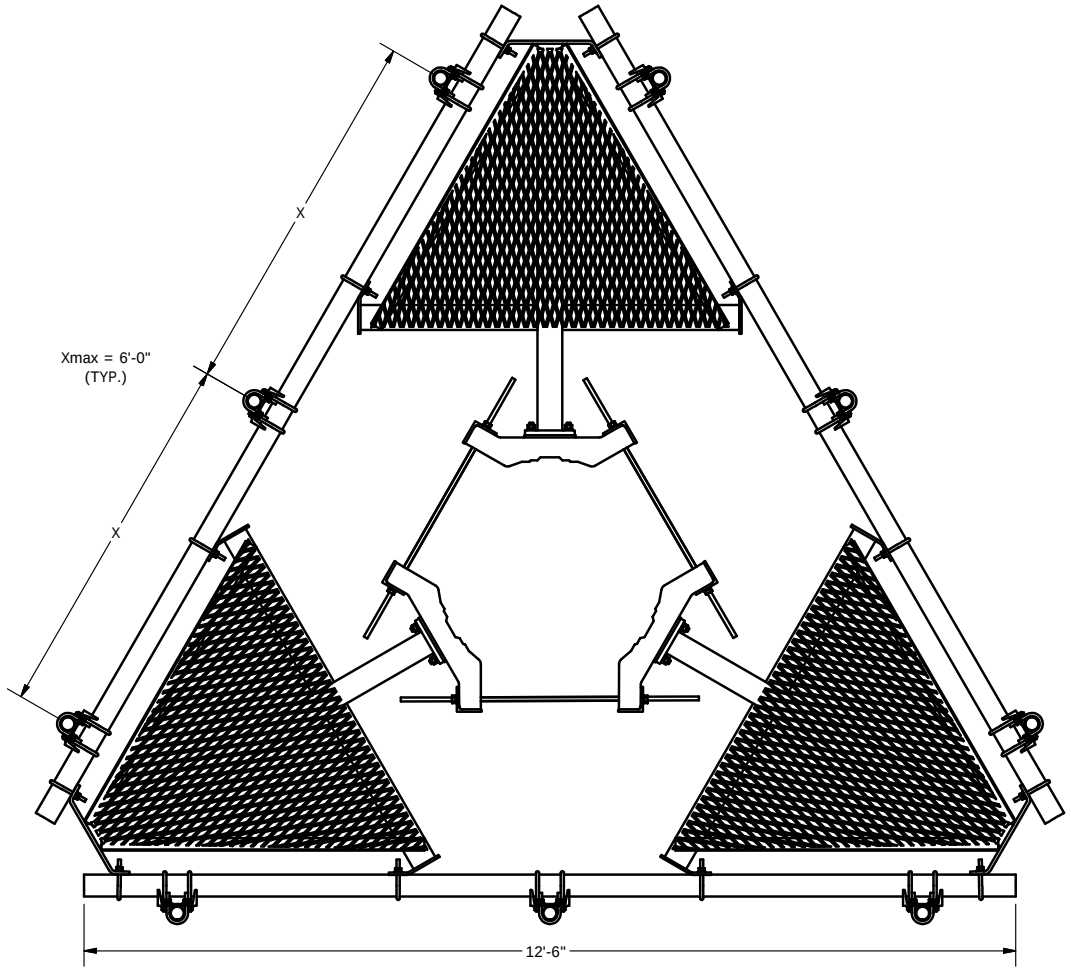
DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

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

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/19/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY		DWG. NO.
	BMC 1/23/2012		RMQP-3XX



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
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BENDS ARE ± 1/2 DEGREE - ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

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

REVISION HISTORY

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

DRAWN BY	CPD NO.	DRAWING USAGE
CEK 1/19/2012	semb	CUSTOMER

ENG. APPROVAL	CHECKED BY
	BMC 1/23/2012

SITE PRO 1
A valmont COMPANY

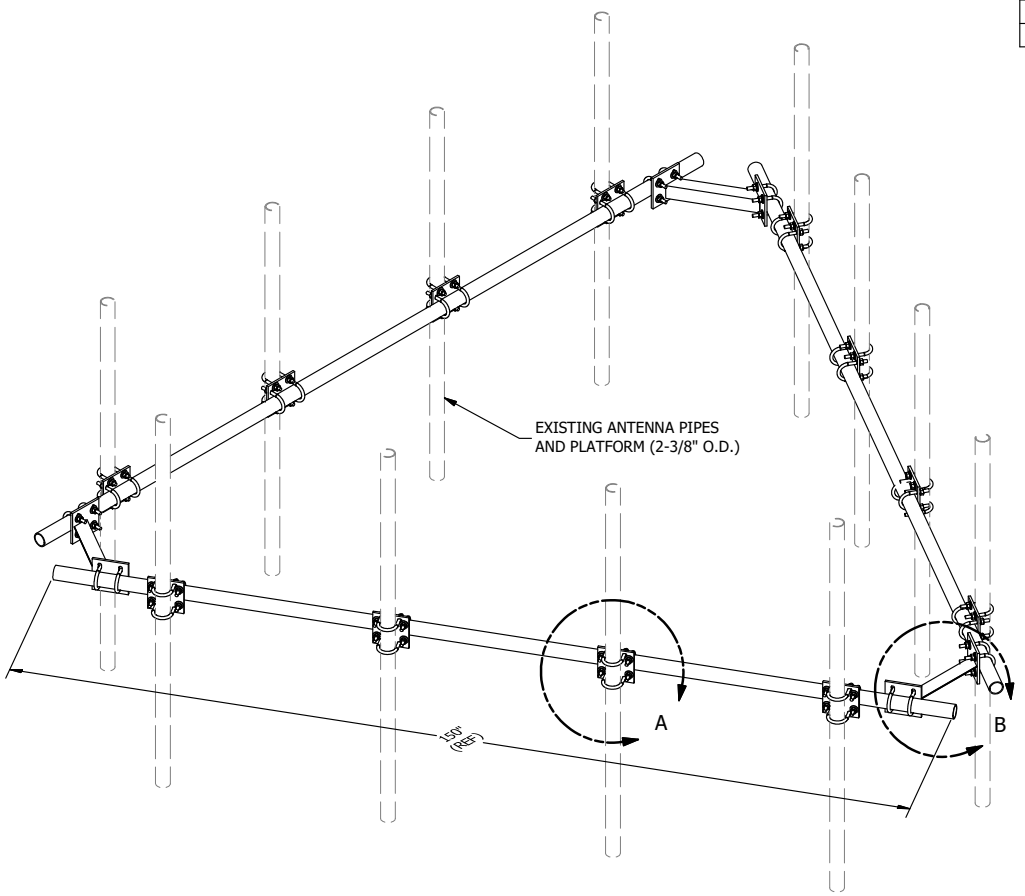
Engineering
Support Team:
1-888-753-7446

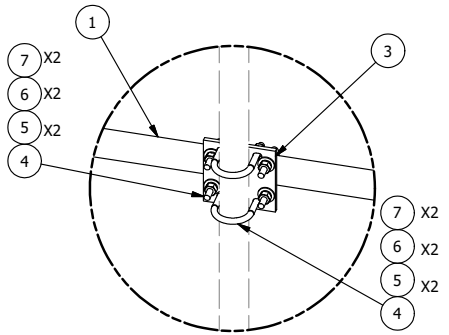
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

PART NO. SEE ASSEMBLY NO. "A"

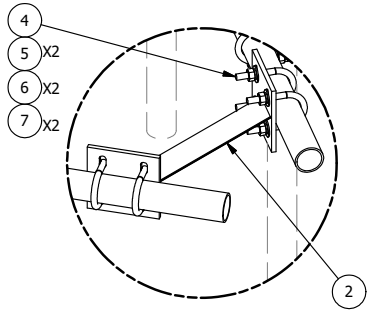
DWG. NO. RMQP-3XX

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 *(± 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")*

DESCRIPTION: **HANDRAIL KIT FOR 12'-6" FACE**

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	KC8 5/30/2012		HRK12

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 7/13/2014	HRK12

EBI Consulting

environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11367C

LITCHFIELD1/RT 8
123 Campville Hill Road
Harwinton, Connecticut 06791

May 30, 2022

EBI Project Number: 6222003449

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**19.40%**

May 30, 2022

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

Emissions Analysis for Site: CT11367C - LITCHFIELD1/RT 8

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **123 Campville Hill Road** in **Harwinton, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 123 Campville Hill Road in Harwinton, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated

value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

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

8) The antennas used in this modeling are the RFS APXV18-206516S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector A, the RFS APXV18-206516S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector B, the RFS APXV18-206516S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is 167 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20
Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz
Gain:	16.3 dBd / 16.3 dBd	Gain:	16.3 dBd / 16.3 dBd	Gain:	16.3 dBd / 16.3 dBd
Height (AGL):	167 feet	Height (AGL):	167 feet	Height (AGL):	167 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	10,237.91	ERP (W):	10,237.91	ERP (W):	10,237.91
Antenna A1 MPE %:	**1.42%**	Antenna B1 MPE %:	**1.42%**	Antenna C1 MPE %:	**1.42%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	167 feet	Height (AGL):	167 feet	Height (AGL):	167 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A2 MPE %:	**1.37%**	Antenna B2 MPE %:	**1.37%**	Antenna C2 MPE %:	**1.37%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	2.79%
Dish	1.24%
Metro PCS	0.55%
Sprint	1.82%
Verizon	7.77%
Nextel	0.44%
AT&T	4.79%
Site Total MPE % :	19.40%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	2.79%
T-Mobile Sector B Total:	2.79%
T-Mobile Sector C Total:	2.79%
Site Total MPE % :	19.40%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1279.74	167.0	7.10	1900 MHz GSM	1000	0.71%
T-Mobile 1900 MHz LTE	2	2559.48	167.0	7.10	1900 MHz LTE	1000	0.71%
T-Mobile 600 MHz LTE	2	591.73	167.0	1.64	600 MHz LTE	400	0.41%
T-Mobile 600 MHz NR	1	1577.94	167.0	2.19	600 MHz NR	400	0.55%
T-Mobile 700 MHz LTE	2	695.22	167.0	1.93	700 MHz LTE	467	0.41%
						Total:	**2.79%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	2.79%
Sector B:	2.79%
Sector C:	2.79%
T-Mobile Maximum MPE % (Sector A):	2.79%
Site Total:	19.40%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **19.40%** 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.

308587

CROWN CASTLE - STA PROPERTY
8000 AVALON BLVD., SUITE 700
ALPHARETTA, GA 30009

DATE 6-1-22 32-61/1110

PAY TO THE ORDER OF Connecticut Sitting Council $ 625.00

Six hundred twenty five dollars DOLLARS

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T-Mobile

T-MOBILE SITE NUMBER: CT11367C
T-MOBILE SITE NAME: LITCHFIELD1/RT 8
SITE TYPE: MONOPOLE
TOWER HEIGHT: 177'-0"

BUSINESS UNIT #: 876376
SITE ADDRESS: 123 CAMPVILLE HILL RD. HARWINTON, CT 06791
COUNTY: LITCHFIELD
JURISDICTION: LITCHFIELD COUNTY

T-MOBILE L600 SITE CONFIGURATION: 67E04G_1DP+1OP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	SCOVILLE HILL/HARWINTON ROD
SITE ADDRESS:	123 CAMPVILLE HILL RD. HARWINTON, CT 06791
COUNTY:	LITCHFIELD
MAP/PARCEL #:	VERIFY
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.73674600° (41° 44' 12.40")
LONGITUDE:	-73.09706500° (-73° 05' 49.40")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	±728 FT
CURRENT ZONING:	TBD
JURISDICTION:	LITCHFIELD 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 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DRIVE / SUITE 150 FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065
	PATRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM
	JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM

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
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

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

PROJECT DESCRIPTION

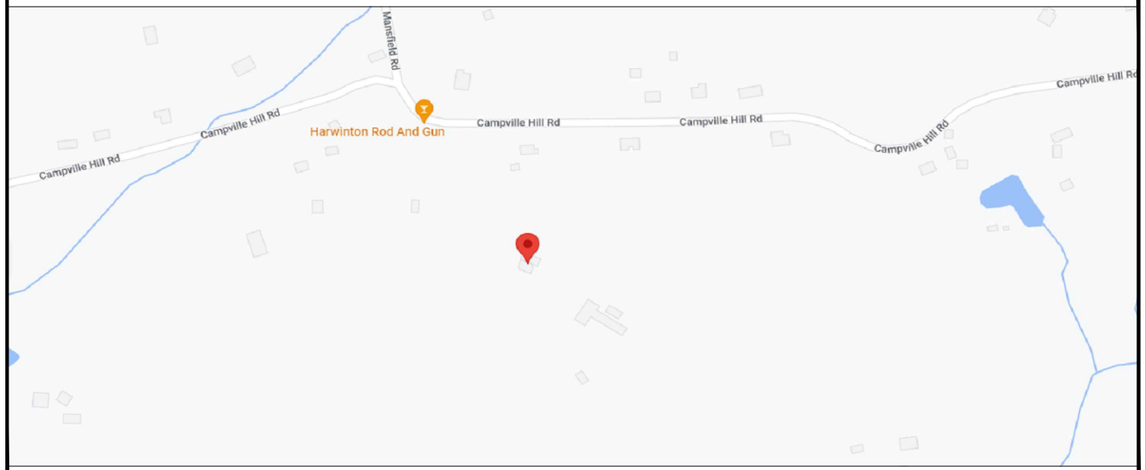
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (3) ANTENNAS
- REMOVE EXISTING ANTENNA MOUNTS
- INSTALL (3) ANTENNAS
- INSTALL (3) RRHS
- INSTALL (1) PLATFORM MOUNT SITE PRO 1, RMQP-396 W/ HRK12 HANDRAIL KIT
- INSTALL (1) HYBRID CABLE

GROUND SCOPE OF WORK:
- REMOVE (6) RUS01 B12 IN (E) RBS 6201 ODE
- INSTALL (1) BB6648 IN (E) RBS 6201 ODE CABINET
- INSTALL (1) PSU4813 VOLTAGE BOOSTER IN (E) RBS 6201 ODE CABINET

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

LOCATION MAP



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

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

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B & T GROUP
DATED:	04/14/2022
MOUNT ANALYSIS:	TRYLON
DATED:	04/11/2022
RFDS REVISION:	4
DATED:	03/09/2022
ORDER ID:	607120
REVISION:	0

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APPROVALS

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

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

T-Mobile
12920 SE 38TH STREET
BELLEVUE, WA 98006

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

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T-MOBILE SITE NUMBER:
CT11367C

BU #: **876376**
SCOVILLE HILL/HARWINTON ROD

123 CAMPVILLE HILL RD.
HARWINTON, CT 06791

EXISTING 177'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	04/27/22	RCD	PRELIMINARY	SS
0	05/16/22	CB	100% FINALS	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED
PROFESSIONAL ENGINEER

05/16/22

SHEET NUMBER: T-1
REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

GREENFIELD GROUNDING NOTES:

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

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EXISTING 177'-0" MONOPOLE

ISSUED FOR:

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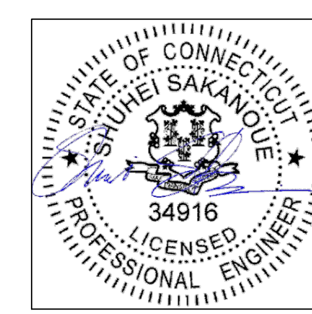


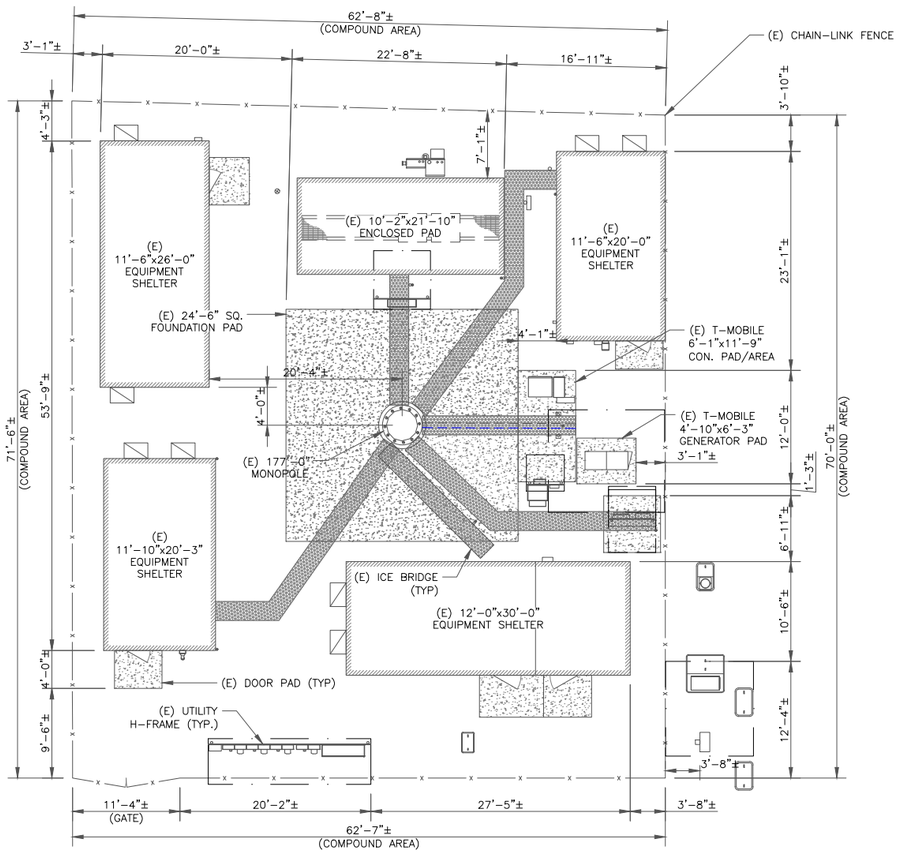
05/16/22

SHEET NUMBER: T-2

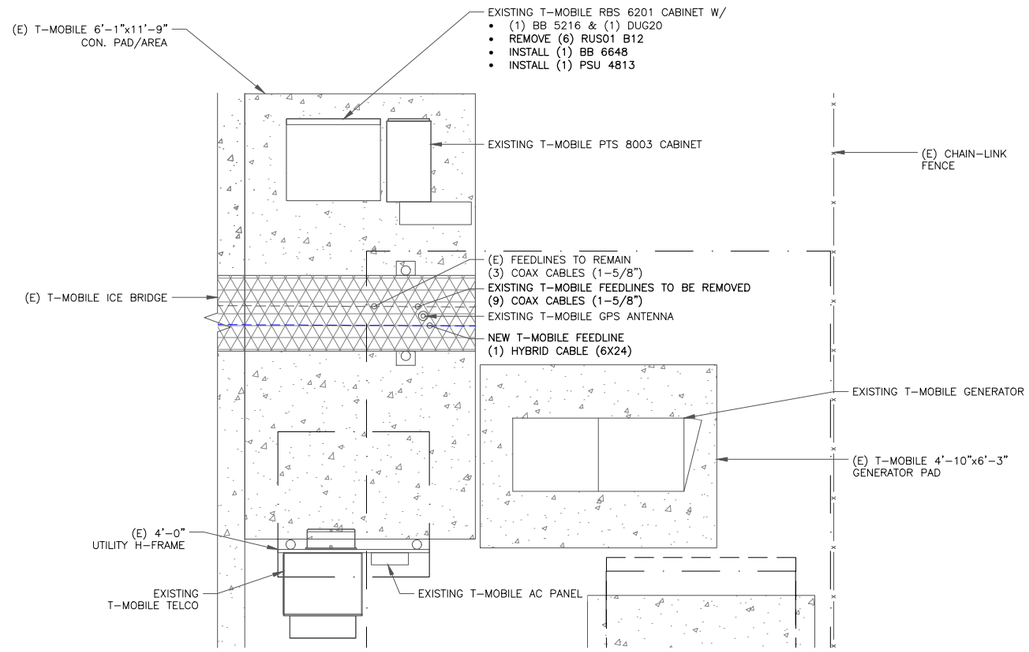
REVISION: 0

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: 8' 6' 4' 2' 0 8' 1/8"=1'-0" (FULL SIZE) 1/16"=1'-0" (11x17)



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

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SHEET NUMBER: C-1
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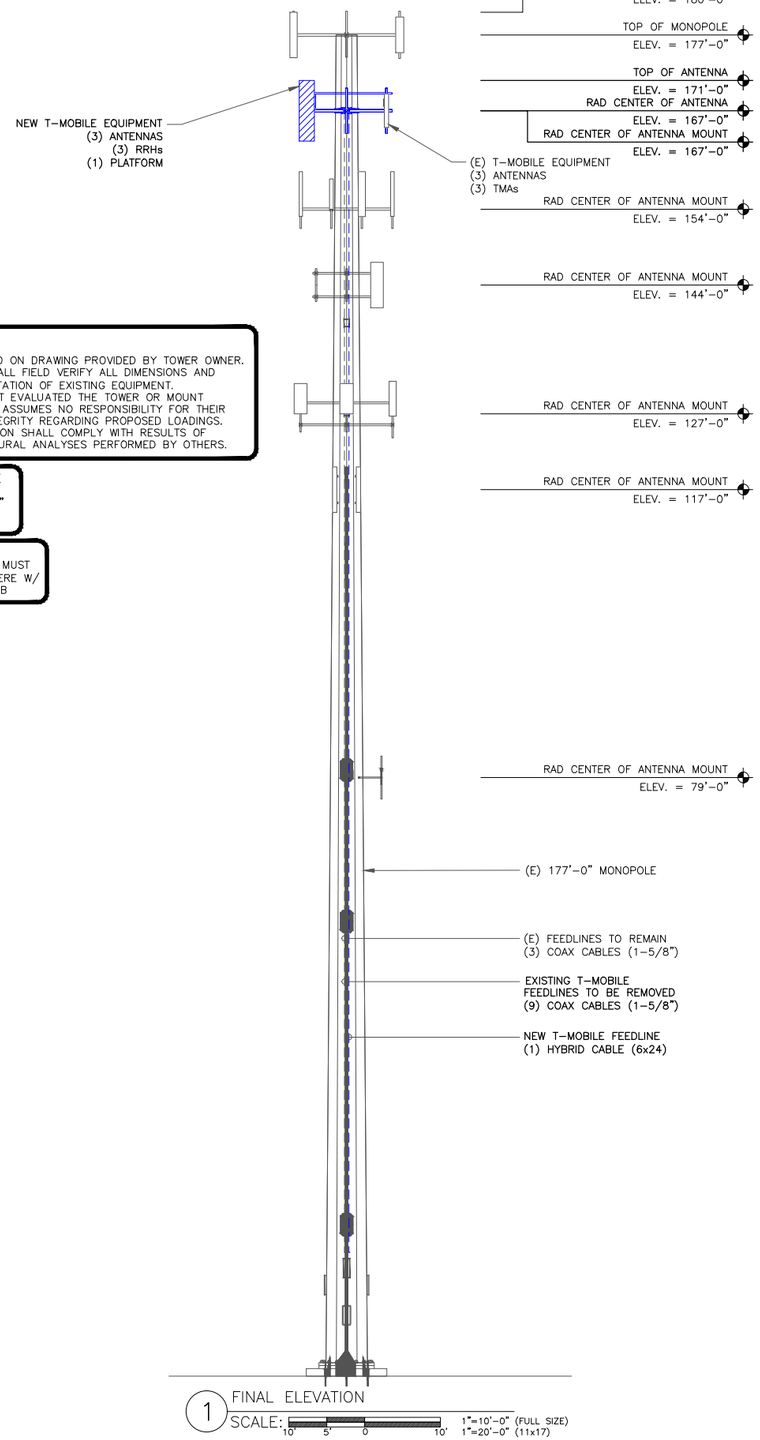


NOTES:

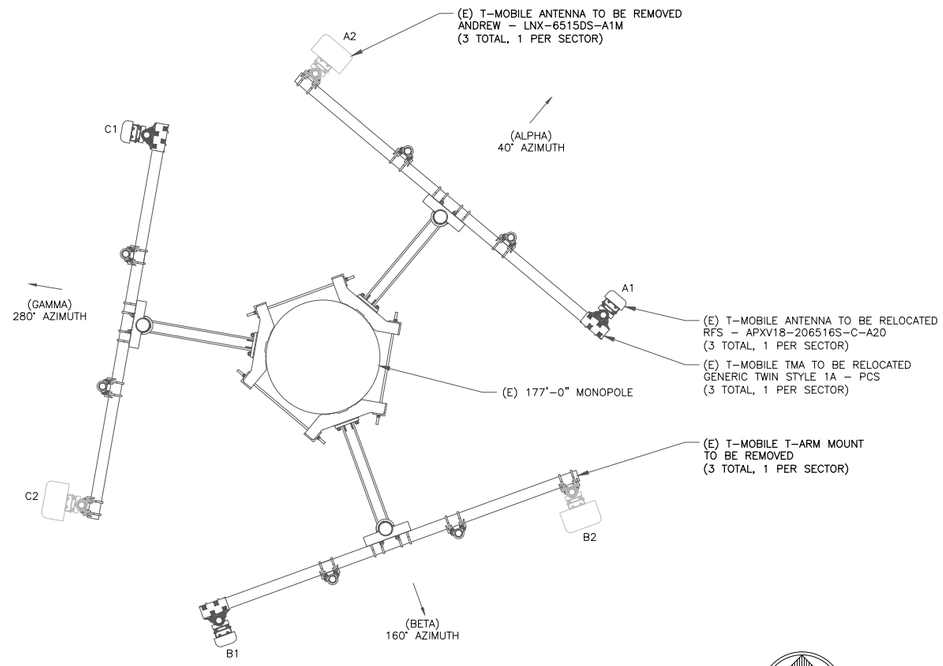
1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL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

T-MOBILE EQUIPMENT

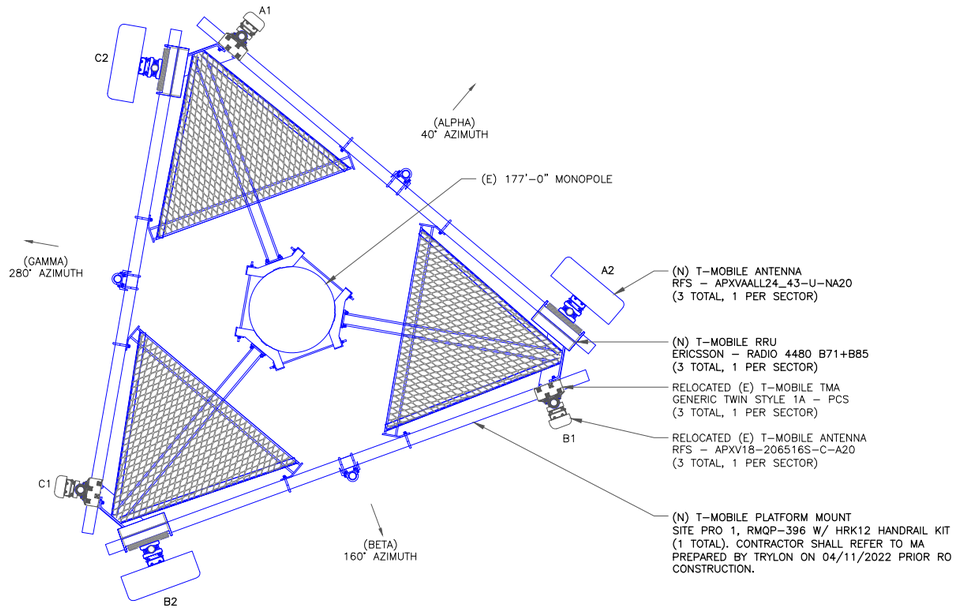
ANTENNA CL: 167'-0"
MOUNT CL: 167'-0"

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

1 FINAL ELEVATION
SCALE: 10' 5' 0 10' 1"=10'-0" (FULL SIZE) 1"=20'-0" (11x17)



2 EXISTING ANTENNA LAYOUT
SCALE: 1' 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)



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

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05/16/22

SHEET NUMBER: C-2

REVISION: 0

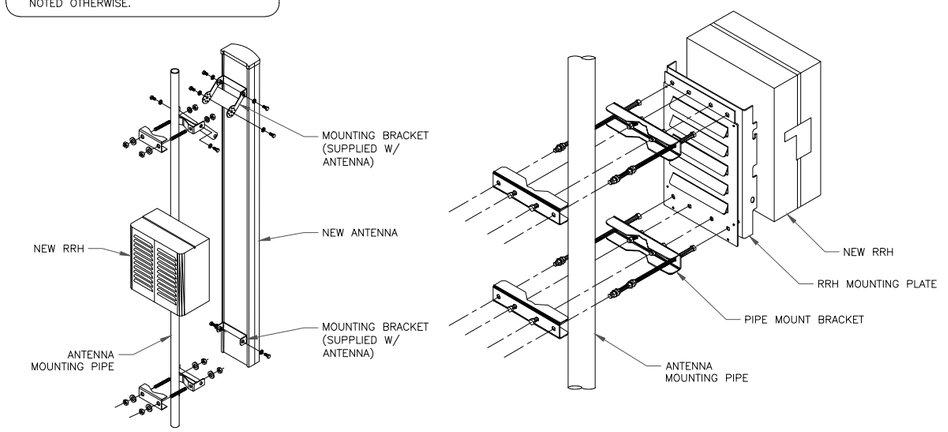
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L1900, G1900	167'-0"	40°	RFS	APXV18-206516S-C-A20	–	–	(1) GENERIC TWIN STYLE 1A – PCS	(1) 1-5/8" COAX
ALPHA	A2	L600, L700, N600	167'-0"	40°	RFS	APXVAALL24_43-U-NA20	–	–	(1) ERICSSON – RRUS 4480 B71+B85	(1) 6X24 HYBRID 70M IN LENGTH
BETA	B1	L1900, G1900	167'-0"	160°	RFS	APXV18-206516S-C-A20	–	–	(1) GENERIC TWIN STYLE 1A – PCS	(1) 1-5/8" COAX
BETA	B2	L600, L700, N600	167'-0"	160°	RFS	APXVAALL24_43-U-NA20	–	–	(1) ERICSSON – RRUS 4480 B71+B85	–
GAMMA	C1	L1900, G1900	167'-0"	280°	RFS	APXV18-206516S-C-A20	–	–	(1) GENERIC TWIN STYLE 1A – PCS	(1) 1-5/8" COAX
GAMMA	C2	L600, L700, N600	167'-0"	280°	RFS	APXVAALL24_43-U-NA20	–	–	(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.



2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

NOTE:

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

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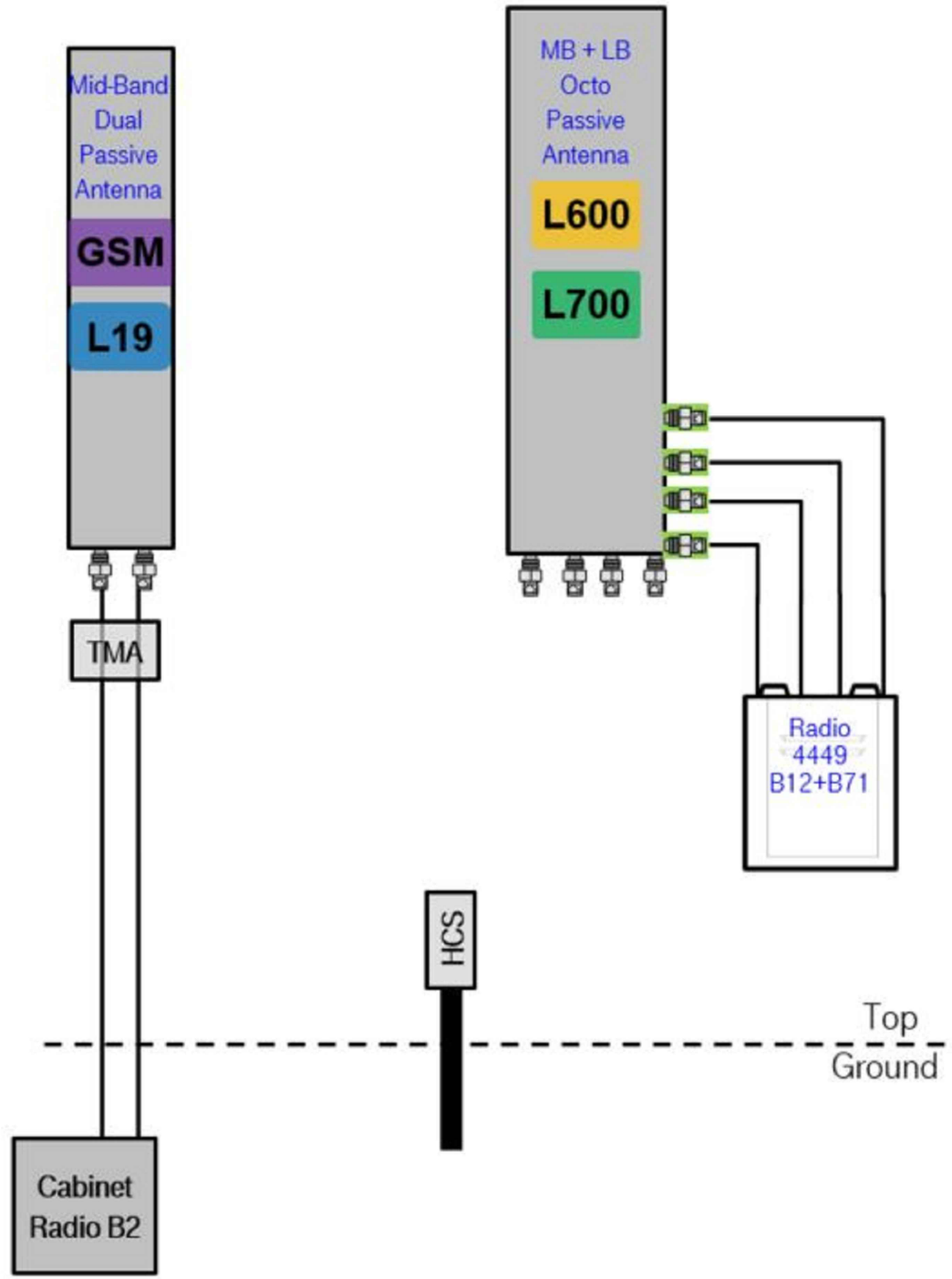
SHEET NUMBER: C-3

REVISION: 0



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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SHEET NUMBER: C-4

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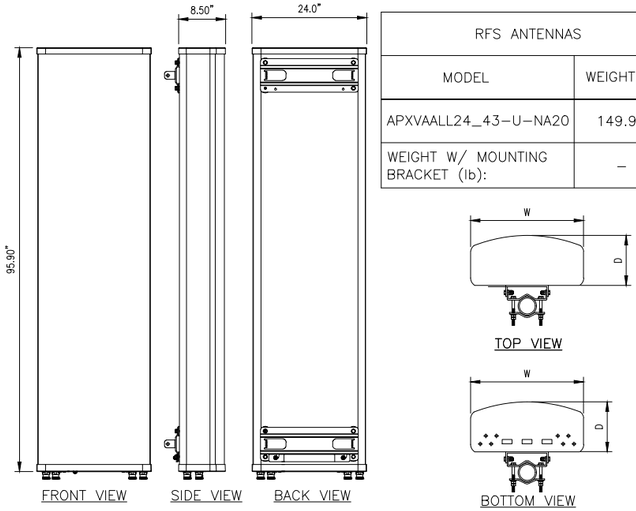
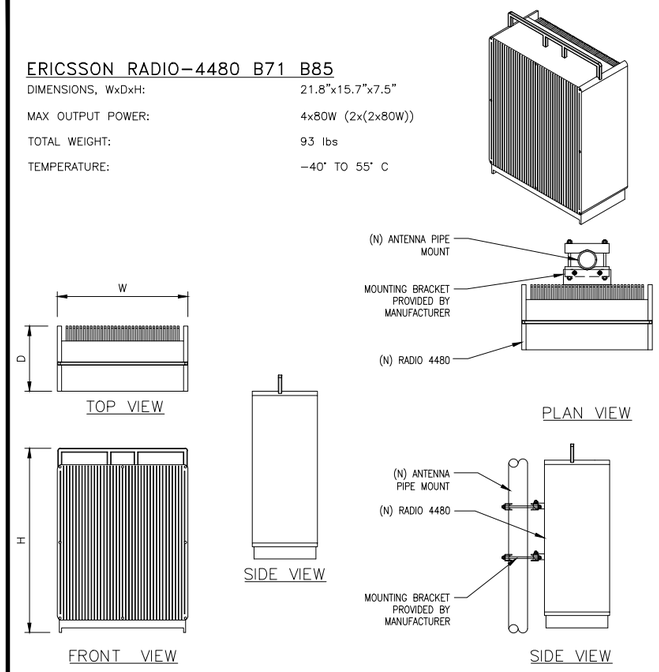


RFS ANTENNAS	
MODEL	WEIGHT (lb)
APXVAALL24_43-U-NA20	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	–

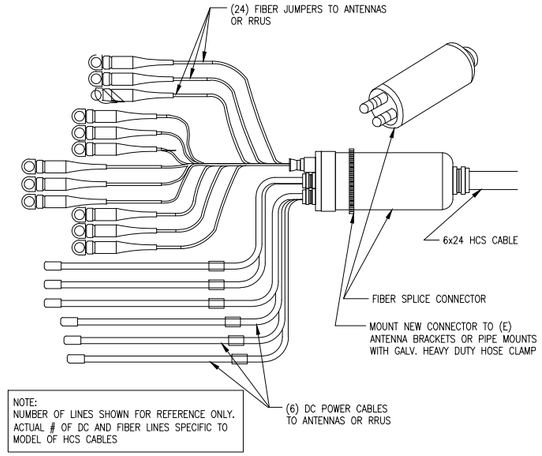
1 (N) APXVAALL24_43-U-NA20 ANTENNA SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

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



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



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

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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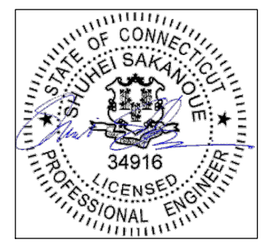


05/16/22

SHEET NUMBER: C-5

REVISION: 0

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) A	PHASE LOADS (VA) B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
6201	2500	C	60	1	2680		2	20	C	180	GFI
	2500	C		3		2500	4				
				5	0		6				
				7		0	8				
				9	0		10				
				11		0	12				
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
				BASE LOAD (VA) =	2680	2500					
				25% OF CONTINUOUS LOAD (VA) =	1750	1800					
				TOTAL LOAD (VA) =	4430	4300					
				TOTAL LOAD (A) =	37	36					

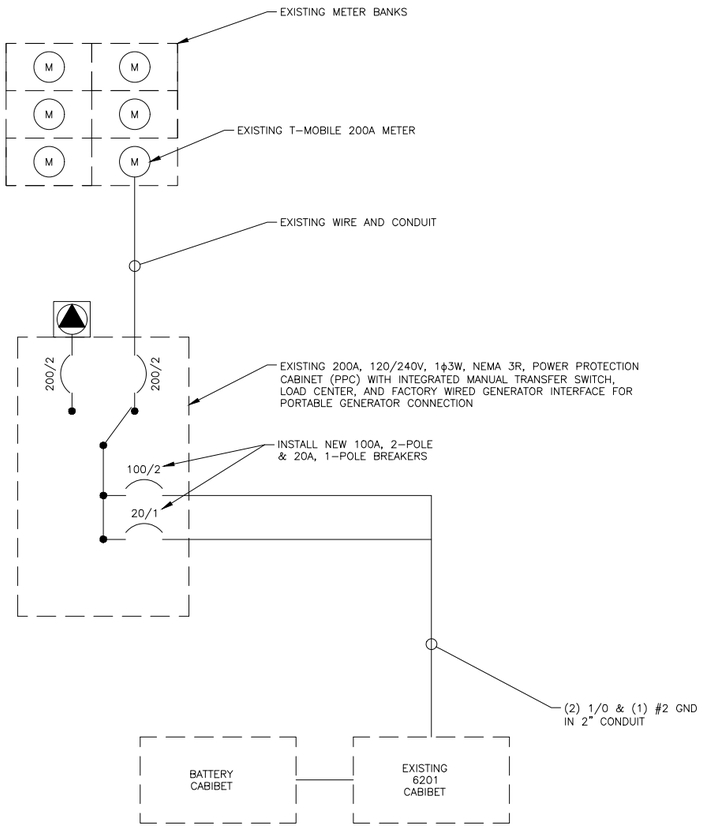
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

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



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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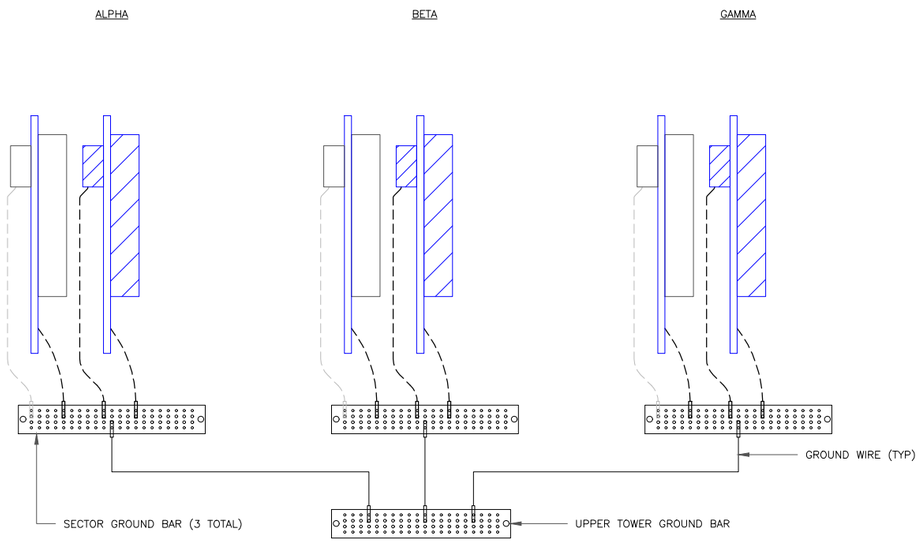

NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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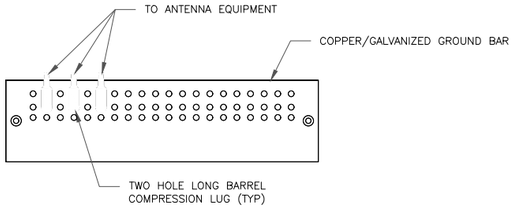
SHEET NUMBER: G-1

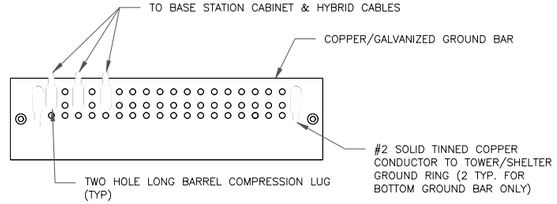
REVISION: 0



NOTES:

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

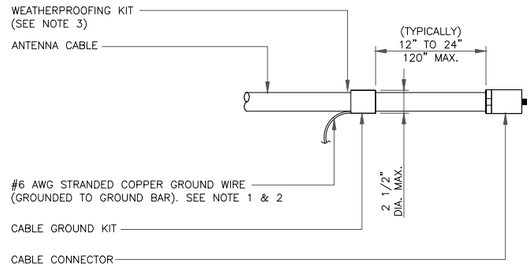
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

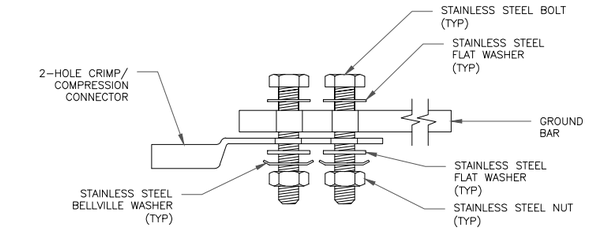
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



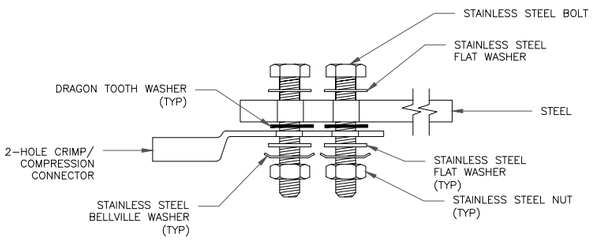
NOTES:

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

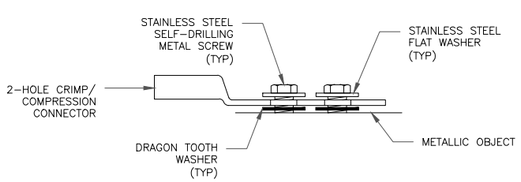
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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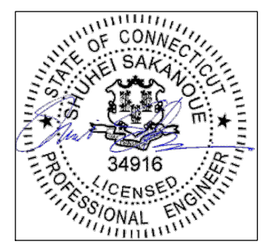
HARWINTON, CT 06791

EXISTING 177'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	04/27/22	RCD	PRELIMINARY	SS
0	05/16/22	CB	100% FINALS	SS



05/16/22

SHEET NUMBER: G-2

REVISION: 0