



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

May 16, 2024

Jeffrey Barbadora
Permitting Specialist
Crown Castle
1800 West Park Drive
Westborough, MA 01581
Jeff.Barbadora@crowncastle.com

RE: **EM-VER-014-230908** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 10 Sylvia Street, Branford, Connecticut.
Request for Project Change.

Dear Jeffrey Barbadora:

The Connecticut Siting Council (Council) is in receipt of the correspondence dated May 8, 2024 and the associated Structural Analysis dated October 17, 2023, regarding a project change for the above-referenced exempt modification request acknowledged by the Council on October 2, 2023.

Pursuant to Condition No. 1 of the Council's October 2, 2023 exempt modification approval, the request to increase the number of Kaelus interference mitigation filters to be installed from three to six is hereby approved.

This approval applies only to the project change in the correspondence dated May 8, 2024.

Thank you for your attention and cooperation.

Sincerely,

A handwritten signature in dark ink, appearing to read "Melanie A. Bachman".

Melanie A. Bachman
Executive Director

MAB/ANM/laf

c: The Honorable James B. Cosgrove, First Selectperson, Town of Branford (jcosgrove@branford-ct.gov)

From: Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>
Sent: Wednesday, May 8, 2024 10:30 AM
To: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: EM-VER-014-230908 - 10 Sylvia Street Branford CT

Good Morning,

Would the CSC please update the approval for EM-VER-008-230830 to include a total of 6 filters?

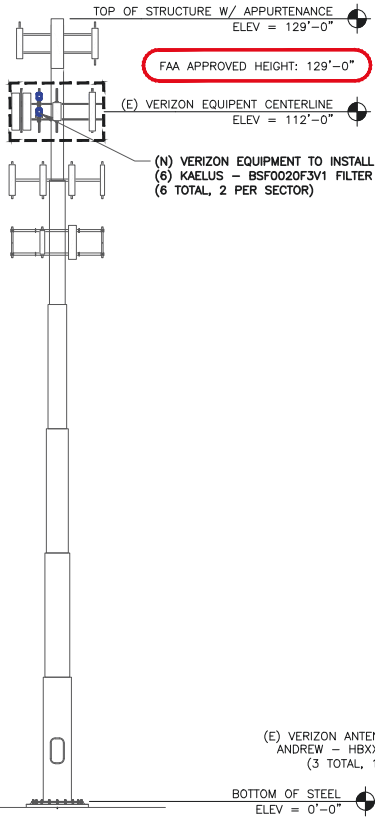
The original SA submitted with the application and dated 8/3/2023 stated only 3 filters and should have stated 6 filters.

Please see updated SA stating 6 filters and let me know if you have any questions

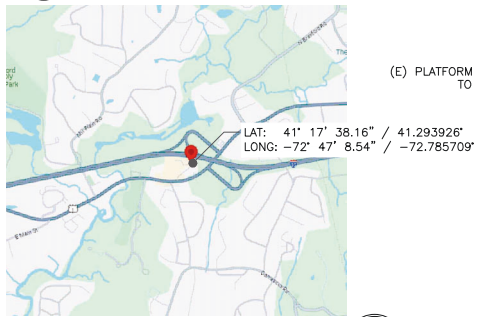
Thanks,

Jeffrey Barbadora
Permitting Specialist
781-970-0053

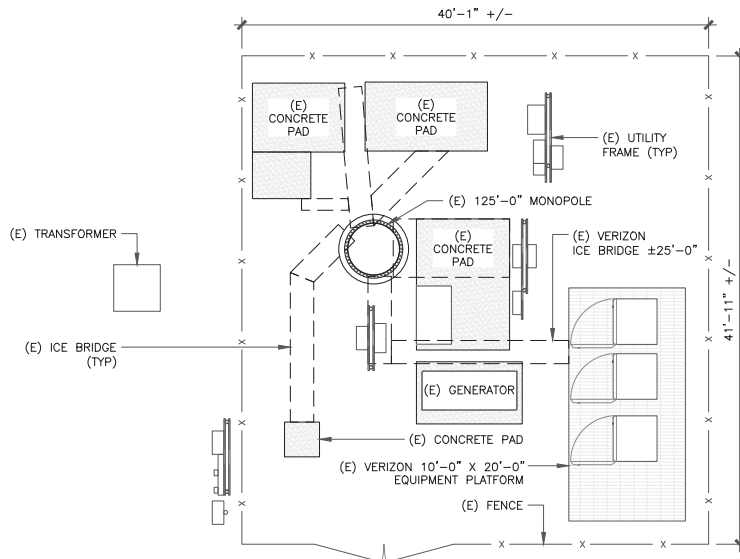
Crown Castle
1800 W. Park Drive, Suite 250
Westborough, MA 01581



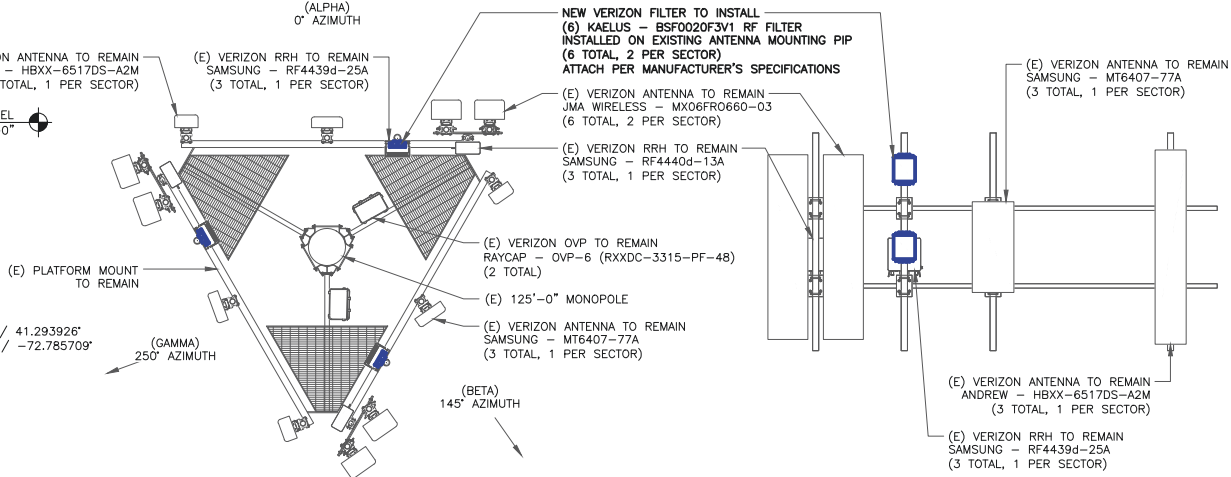
1 FINAL TOWER ELEVATION
SCALE: NOT TO SCALE



2 LOCATION MAP
SCALE: NOT TO SCALE



3 FINAL SITE PLAN
SCALE: 0' 4' 8' 16' 32'



4 FINAL ANTENNA PLAN
SCALE: 0' 4' 8' 16'

5 FINAL RF FILTER ELEVATION
SCALE: 0' 1' 2' 4' 10'

NOTE:
AN ANALYSIS OF THE CAPACITY OF THE STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS NOT BEEN COMPLETED BY CROWN CASTLE. DRAWINGS ARE SUBJECT TO CHANGE PENDING OUTCOME OF A STRUCTURAL ANALYSIS.

LEASE EXHIBIT:
THIS LEASE EXHIBIT IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF THE SITE SURVEY AND FACILITY DESIGN.



VERIZON SITE NUMBER:
5000386426

BU #: 822765

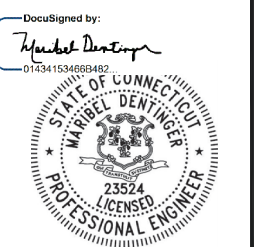
CROWN CASTLE SITE NAME
BRANFORD/1-95/X55/DTN1
VERIZON SITE NAME
BRANFORD_4_CT - A

10 SYLVIA STREET
BRANFORD, CT 06405

EXISTING 125'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES/QA
0	3/27/24	MDW	LEASE EXHIBIT	MD



3/28/2024 | 7:15:10 AM CD

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC0001101

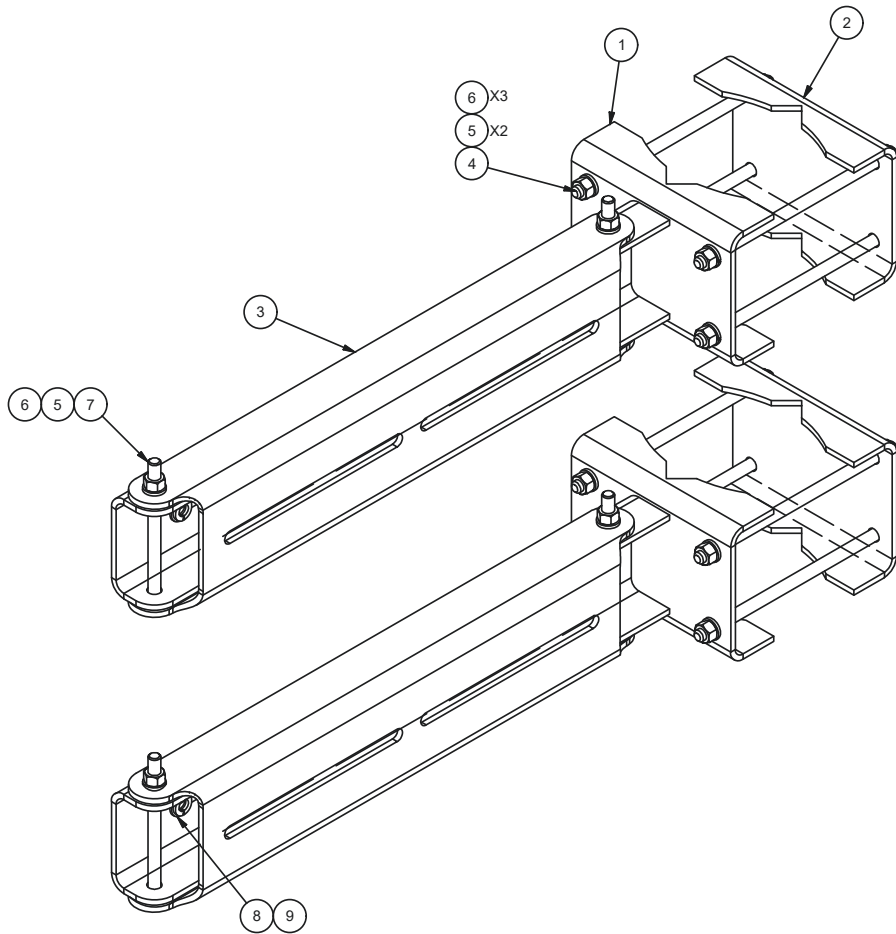
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER:
LE-1

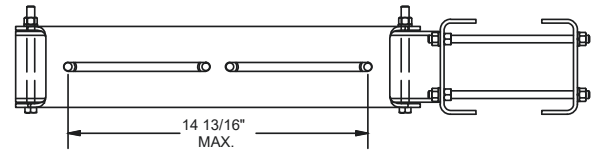
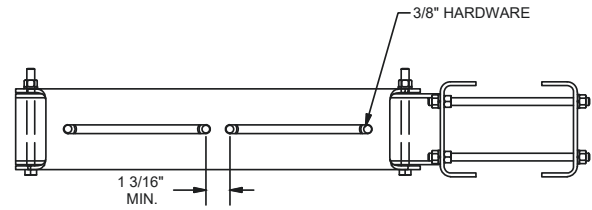
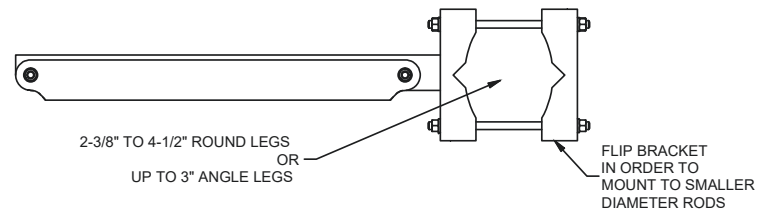
REVISION:
0

VERIZON_WIRELESS_TOWER_INSTALLATION_AMENDMENT

-82:1547Ä.7:36893Ä0-+Ä(/ \$/Ä. %/Ä\$\$#+Ä)%%Ä.+8%+8,(!!



PARTS LIST					
ITEM	QTY	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	MOUNTING ARM		8.99	17.97
2	2	CLAMP PLATE		2.35	4.69
3	2	SWIVEL MOUNT		6.65	13.30
4	8	3/8"-16 UNC X 8" GALV. THREADED ROD		0.25	2.00
5	20	3/8" GALV LOCK WASHER		0.01	0.13
6	28	3/8"-16 UNC GALV HEX NUT		0.02	0.52
7	4	3/8" X 5" GALV BOLT		0.18	0.71
8	8	3/8" SS FLAT WASHER		0.01	0.06
9	8	3/8" SS LOCK WASHER		0.01	0.05
				TOTAL WT. #	\$9.43



TOLERANCE NOTES

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

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

DESCRIPTION
**RRU
 DUAL SWIVEL MOUNT**

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

CPD NO.	DRAWN BY CEK	1/12/2015	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE SHOP	CHECKED BY BMC 2/3/2015

PART NO. RRUDSM	PAGE 1 OF 1
DWG. NO. RRUDSM	

Certificate Of Completion

Envelope Id: 8F04F411E05F443B9725EB765B6C8C11	Status: Completed
Subject: Complete with DocuSign: BRANFORD_4_CT-A_LE_3.27.24.pdf	
Source Envelope:	
Document Pages: 2	Signatures: 1
Certificate Pages: 4	Initials: 0
AutoNav: Enabled	Envelope Originator:
Enveloped Stamping: Enabled	Lisa McCabe
Time Zone: (UTC-06:00) Central Time (US & Canada)	2000 Corporate Drive
	Canonsburg, PA 15317
	Lisa.McCabe@crowncastle.com
	IP Address: 75.231.178.146

Record Tracking

Status: Original	Holder: Lisa McCabe	Location: DocuSign
3/27/2024 4:02:30 PM	Lisa.McCabe@crowncastle.com	

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 maribel.dentinger@crowncastle.com
 Crown Castle International Corp.
 Security Level: Email, Account Authentication (None)

Signature

DocuSigned by:

 01434153466B482...
 Signature Adoption: Drawn on Device
 Using IP Address: 64.213.130.18

Timestamp

Sent: 3/27/2024 4:04:11 PM
 Viewed: 3/28/2024 7:15:00 AM
 Signed: 3/28/2024 7:15:10 AM

Electronic Record and Signature Disclosure:
 Accepted: 9/20/2018 7:56:27 AM
 ID: 50d48a2f-ee52-4b02-9a1f-3c3a14f58c3b

In Person Signer Events	Signature	Timestamp
Editor Delivery Events	Status	Timestamp
Agent Delivery Events	Status	Timestamp
Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp
Carbon Copy Events	Status	Timestamp
Jordan Stanga Jordan.Stanga@crowncastle.com Crown Castle International Corp. Security Level: Email, Account Authentication (None)	COPIED	Sent: 3/27/2024 4:04:11 PM
Electronic Record and Signature Disclosure: Not Offered via DocuSign		
Witness Events	Signature	Timestamp
Notary Events	Signature	Timestamp
Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	3/27/2024 4:04:11 PM
Certified Delivered	Security Checked	3/28/2024 7:15:00 AM
Signing Complete	Security Checked	3/28/2024 7:15:10 AM
Completed	Security Checked	3/28/2024 7:15:10 AM

Payment Events	Status	Timestamps
Electronic Record and Signature Disclosure		

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You may contact us to let us know of any changes related to contacting you electronically, to request paper copies of documents for execution and other documents and records from us, and to withdraw your prior consent to receive documents for execution and other documents and records electronically as follows:

To contact us by phone call: 724-416-2000

To contact us by email, send messages to: esignature@CrownCastle.com

To contact us by paper mail, send correspondence to
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317

To advise Crown Castle and DocuSign of your new e-mail address

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In addition, you must notify DocuSign, Inc. to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in the DocuSign system.

Required hardware and software

Browsers:	Internet Explorer® 11 (Windows only); Windows Edge Current Version; Mozilla Firefox Current Version; Safari™ (Mac OS only) 6.2 or above; Google Chrome Current Version; Note : Pre-release (e.g., beta) versions of operating systems and browsers are not supported.
Mobile Signing:	Apple iOS 7.0 or above; Android 4.0 or above
PDF Reader:	Acrobat® Reader or similar software may be required to view and print PDF files
Screen Resolution:	1024 x 768

Enabled Security Settings:	Allow per session cookies
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These minimum requirements are subject to change. If these requirements change, you will be asked to re-accept the disclosure. Pre-release (e.g. beta) versions of operating systems and browsers are not supported.

Acknowledging your access and consent to receive documents electronically

Please confirm that you were able to access this disclosure electronically (which is similar to the manner in which we will deliver documents for execution and other documents and records) and that you were able to print this disclosure on paper or electronically save it for your future reference and access or that you were able to e-mail this disclosure to an address where you will be able to print it on paper or save it for your future reference and access. Further, if you consent to receiving documents for execution and other documents and records in electronic format on the terms described above, please let us know by clicking the "I agree" button below.

By checking the 'I agree' box, I confirm that:

- You can access and read this Electronic Record and Signature Disclosure; and
- As a recipient, you can read, electronically sign and act upon this message, and you agree not to forward it or any other DocuSign e-mail communications. In the event another party needs to be added to the DocuSign communication, you must make a request to the e-mail originator.

Date: **October 17, 2023**



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 5000386426
Site Name: BRANFORD_4_CT - A

Crown Castle Designation: **BU Number:** 822765
Site Name: Branford/ I-95/ X55/ Dtn1
JDE Job Number: 2103488
Work Order Number: 2264999
Order Number: 658795 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 2264999

Site Data: **10 Sylvania St., Branford, New Haven County, CT**
Latitude 41° 17' 38.16", Longitude -72° 47' 8.54"
125 Foot - Monopole Tower

Crown Castle 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-85.8%

This analysis has been performed in accordance with the 2021 International Building Code based upon an ultimate 3-second gust wind speed of 122 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Rohit Soni

Respectfully submitted by:

Rohit Soni, P.E.
Senior Project Engineer

Digitally signed
by Rohit Soni
Date: 2023.10.17
22:33:12 -04'00'

A circular professional seal for Rohit Soni, a Licensed Professional Engineer in the State of Connecticut. The seal features the state coat of arms in the center, surrounded by the text 'STATE OF CONNECTICUT' at the top and 'PROFESSIONAL ENGINEER' at the bottom. The name 'ROHIT SONI' and license number 'No. 0036005' are also visible within the seal. A red handwritten signature 'Rohit Soni' is written over the seal.

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1) INTRODUCTION

This tower is a 125 ft Monopole tower designed by PIROD MANUFACTURES INC.. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	122 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)
112.0	113.0	3	andrew	HBXX-6517DS-A2M w/ Mount Pipe	2	1-5/8
		6	jma wireless	MX06FRO660-03 w/ Mount Pipe		
		2	raycap	RxxDC-3315-PF-48		
	112.0	6	kaelus	BSF0020F3V1		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
1	tower mounts	Platform Mount [LP 303-1_HR-1]				

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
121.0	124.0	3	ericsson	RADIO 4460 B2/B25 B66_TMO	3	1-5/8
	122.0	3	commscope	VV-65A-R1_TMO w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71/B85A		
	3	rfs celwave	APXVAALL24_43-U-NA20 w/ Mount Pipe			
121.0	1	tower mounts	Platform Mount [LP 405-1_HR-1]			
100.0	102.0	3	ericsson	AIR 6419 B77G_CCIV3 w/ Mount Pipe	3	3/8
	100.0	2	cci antennas	TPA65R-BU4D w/ Mount Pipe	6	13/16
		1	cci antennas	TPA65R-BU6DA-K w/ Mount Pipe	6	1-1/4
					1	conduit

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS 8843 B2/B66A		
		2	kathrein	80010964 w/ Mount Pipe		
		1	kathrein	80010965 w/ Mount Pipe		
		3	raycap	DC6-48-60-18-8F		
		1	tower mounts	T-Arm Mount [TA 602-3_KCKR]		
	98.0	3	ericsson	AIR 6449 B77D_CCVI2 w/ Mount Pipe		
90.0	90.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	4 3	1-1/4 1/2
		6	alcatel lucent	RRH2X50-800		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		3	dragonwave	AIRPAIR ODU		
		3	nokia	FZHN		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		1	tower mounts	Platform Mount [LP 303-1_KCKR-HR-1]		
	88.0	2	dragonwave	A-ANT-18G-2-C		
79.0	81.0	3	fujitsu	TA08025-B604	1	1-1/2
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
	79.0	1	tower mounts	Sabre_C10801018-32788		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	3552247	CCISITES
4-POST-MODIFICATION INSPECTION	6215120	CCISITES
4-POST-MODIFICATION INSPECTION	5937826	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	3910040	CCISITES
4-TOWER MANUFACTURER DRAWINGS	3552248	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	5952282	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.4.0), 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 included in Appendix C.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP24x24x0.375	Pole	1.5%	Pass
120 - 115	Pole	TP24x24x0.375	Pole	4.4%	Pass
115 - 110	Pole	TP24x24x0.375	Pole	9.2%	Pass
110 - 105	Pole	TP24x24x0.375	Pole	15.2%	Pass
105 - 100	Pole	TP24x24x0.375	Pole	21.4%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	21.0%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	27.5%	Pass
90 - 85	Pole	TP30x30x0.375	Pole	35.9%	Pass
85 - 80	Pole	TP30x30x0.375	Pole	44.2%	Pass
80 - 75.7	Pole	TP36x36x0.375	Pole	37.6%	Pass
75.7 - 75.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	29.8%	Pass
75.45 - 70.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	35.2%	Pass
70.45 - 65.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	40.8%	Pass
65.45 - 60.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	46.7%	Pass
60.45 - 60	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	47.2%	Pass
60 - 59.75	Pole + Reinf.	TP42x42x0.525	Pole	32.3%	Pass
59.75 - 54.75	Pole + Reinf.	TP42x42x0.525	Pole	36.4%	Pass
54.75 - 49.75	Pole + Reinf.	TP42x42x0.525	Pole	40.4%	Pass
49.75 - 44.75	Pole + Reinf.	TP42x42x0.525	Pole	44.6%	Pass
44.75 - 40	Pole + Reinf.	TP42x42x0.525	Pole	48.6%	Pass
40 - 39.75	Pole + Reinf.	TP48x48x0.5563	Pole	36.0%	Pass
39.75 - 34.75	Pole + Reinf.	TP48x48x0.5563	Pole	39.2%	Pass
34.75 - 29.75	Pole + Reinf.	TP48x48x0.5563	Pole	42.3%	Pass
29.75 - 24.75	Pole + Reinf.	TP48x48x0.5563	Pole	45.6%	Pass
24.75 - 20	Pole + Reinf.	TP48x48x0.5563	Pole	48.7%	Pass
20 - 19.75	Pole + Reinf.	TP54x54x0.5875	Pole	37.2%	Pass

19.75 - 14.75	Pole + Reinf.	TP54x54x0.5875	Pole	39.8%	Pass
14.75 - 9.75	Pole + Reinf.	TP54x54x0.5875	Pole	42.3%	Pass
9.75 - 4.75	Pole + Reinf.	TP54x54x0.5875	Pole	44.9%	Pass
4.75 - 4.38	Pole + Reinf.	TP54x54x0.5875	Pole	45.1%	Pass
4.38 - 4.13	Pole + Reinf.	TP54x54x0.4875	Pole	56.5%	Pass
4.13 - 0	Pole + Reinf.	TP54x54x0.4875	Pole	59.2%	Pass
				Summary	
			Pole	59.2%	Pass
			Reinforcement	47.2%	Pass
			Overall	59.2%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	45.0	Pass
1	Base Plate	0	85.8	Pass
1	Base Foundation (Structure)	0	65.0	Pass
1	Base Foundation (Soil Interaction)	0	50.4	Pass
1	Flange Bolts	100	19.7	Pass
1,2	Flange Plate	100	21.4	Pass
1	Flange Bolts	80	19.0	Pass
1	Flange Plate	80	36.5	Pass
1	Bridge Stiffener	80	48.1	Pass
1	Flange Bolts	60	25.4	Pass
1	Flange Plate	60	45.9	Pass
1	Bridge Stiffener	60	62.0	Pass
1	Flange Bolts	40	30.9	Pass
1	Flange Plate	40	55.2	Pass
1	Bridge Stiffener	40	73.9	Pass
1	Flange Bolts	20	26.3	Pass
1	Flange Plate	20	48.0	Pass
1	Bridge Stiffener	20	57.1	Pass

Structure Rating (max from all components) =	85.8%
---	--------------

Notes:

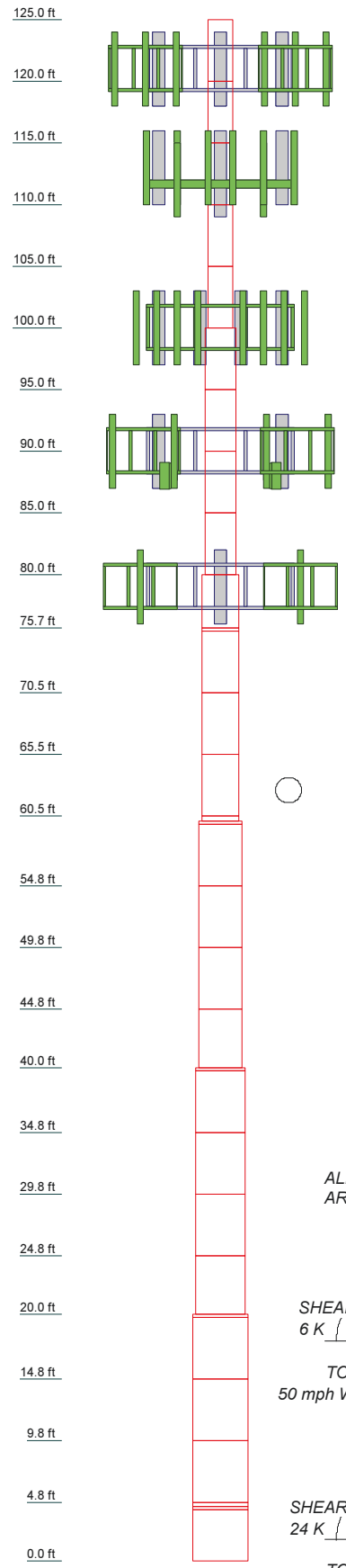
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

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		
Size																																		
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
Grade																																		
Weight (K)	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.4	1.4	1.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	

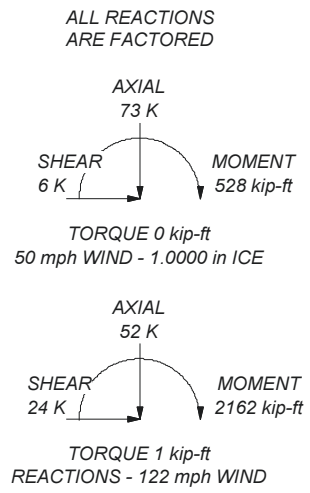


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 122 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 59.2%



Crown Castle		Job: 822765	
2000 Corporate Drive Canonsburg, PA 15317			
Project: Crown Castle	Client: Crown Castle	Drawn by: RSONI	App'd:
Code: TIA-222-H	Phone: (724) 416-2000	Date: 10/17/23	Scale: NTS
Path:	FAX:		Dwg No. E-1

C:\Users\rsoni\SAP\Work Area\822765\WO 2264999 - SAIProd\822765.dwg

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower base elevation above sea level: 56.00 ft.
- Basic wind speed of 122 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- TOWER RATING: 59.2%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs
 Consider Moments - Horizontals

Distribute Leg Loads As Uniform
 Assume Legs Pinned

Use ASCE 10 X-Brace Ly Rules
 Calculate Forces in Supporting Bracing Members

Consider Moments - Diagonals
 Use Moment Magnification
 ✓ Use Code Stress Ratios
 ✓ Use Code Safety Factors - Guys
 Escalate Ice
 Always Use Max Kz
 Use Special Wind Profile
 Include Bolts In Member Capacity
 Leg Bolts Are At Top Of Section
 Secondary Horizontal Braces Leg
 Use Diamond Inner Bracing (4 Sided)
 SR Members Have Cut Ends
 SR Members Are Concentric

✓ Assume Rigid Index Plate
 ✓ Use Clear Spans For Wind Area
 Use Clear Spans For KL/r
 Retension Guys To Initial Tension
 ✓ Bypass Mast Stability Checks
 ✓ Use Azimuth Dish Coefficients
 ✓ Project Wind Area of Appurt.
 Autocalc Torque Arm Areas
 Add IBC .6D+W Combination
 ✓ Sort Capacity Reports By Component
 Triangulate Diamond Inner Bracing
 Treat Feed Line Bundles As Cylinder
 Ignore KL/ry For 60 Deg. Angle Legs

Ignore Redundant Members in FEA
 SR Leg Bolts Resist Compression
 All Leg Panels Have Same Allowable
 Offset Girt At Foundation
 ✓ Consider Feed Line Torque
 Include Angle Block Shear Check
 Use TIA-222-H Bracing Resist. Exemption
 Use TIA-222-H Tension Splice Exemption
Poles
 ✓ Include Shear-Torsion Interaction
 Always Use Sub-Critical Flow
 Use Top Mounted Sockets
 Pole Without Linear Attachments
 Pole With Shroud Or No Appurtenances
 Outside and Inside Corner Radii Are Known

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	125.00-120.00	5.00	P24x0.375	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L2	120.00-115.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L3	115.00-110.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L4	110.00-105.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L5	105.00-100.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L6	100.00-95.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L7	95.00-90.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L8	90.00-85.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L9	85.00-80.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L10	80.00-75.70	4.30	P36x0.375	A53-B-42 (42 ksi)	
L11	75.70-75.45	0.25	P36x0.5625	A53-B-42 (42 ksi)	
L12	75.45-70.45	5.00	P36x0.5625	A53-B-42 (42 ksi)	
L13	70.45-65.45	5.00	P36x0.5625	A53-B-42 (42 ksi)	
L14	65.45-60.45	5.00	P36x0.5625	A53-B-42 (42 ksi)	
L15	60.45-60.00	0.45	P36x0.5625	A53-B-42 (42 ksi)	
L16	60.00-59.75	0.25	P42x0.525	A53-B-42 (42 ksi)	
L17	59.75-54.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L18	54.75-49.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L19	49.75-44.75	5.00	P42x0.525	A53-B-42 (42 ksi)	
L20	44.75-40.00	4.75	P42x0.525	A53-B-42 (42 ksi)	
L21	40.00-39.75	0.25	P48x0.55625	A53-B-42 (42 ksi)	
L22	39.75-34.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	
L23	34.75-29.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	
L24	29.75-24.75	5.00	P48x0.55625	A53-B-42 (42 ksi)	
L25	24.75-20.00	4.75	P48x0.55625	A53-B-42 (42 ksi)	
L26	20.00-19.75	0.25	P54x0.5875	A53-B-42 (42 ksi)	
L27	19.75-14.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L28	14.75-9.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L29	9.75-4.75	5.00	P54x0.5875	A53-B-42 (42 ksi)	
L30	4.75-4.38	0.37	P54x0.5875	A53-B-42 (42 ksi)	
L31	4.38-4.13	0.25	P54x0.4875	A53-B-42 (42 ksi)	
L32	4.13-0.00	4.13	P54x0.4875	A53-B-42 (42 ksi)	

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1 125.00-120.00				1	1	1			
L2 120.00-115.00				1	1	1			
L3 115.00-110.00				1	1	1			
L4 110.00-105.00				1	1	1			
L5 105.00-100.00				1	1	1			
L6 100.00-95.00				1	1	1			
L7 95.00-90.00				1	1	1			
L8 90.00-85.00				1	1	1			
L9 85.00-80.00				1	1	1			
L10 80.00-75.70				1	1	1			
L11 75.70-75.45				1	1	0.957627			
L12 75.45-70.45				1	1	0.957627			
L13 70.45-65.45				1	1	0.957627			
L14 65.45-60.45				1	1	0.957627			
L15 60.45-60.00				1	1	0.957627			
L16 60.00-59.75				1	1	0.980003			
L17 59.75-54.75				1	1	0.980003			
L18 54.75-49.75				1	1	0.980003			
L19 49.75-44.75				1	1	0.980003			
L20 44.75-40.00				1	1	0.980003			
L21 40.00-39.75				1	1	0.970732			
L22 39.75-34.75				1	1	0.970732			
L23 34.75-29.75				1	1	0.970732			
L24 29.75-24.75				1	1	0.970732			
L25 24.75-20.00				1	1	0.970732			
L26 20.00-19.75				1	1	0.96417			
L27 19.75-14.75				1	1	0.96417			
L28 14.75-9.75				1	1	0.96417			
L29 9.75-4.75				1	1	0.96417			
L30 4.75-4.38				1	1	0.96417			
L31 4.38-4.13				1	1	1.06826			
L32 4.13-0.00				1	1	1.06826			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
90										
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	90.00 - 0.00	3	2	0.250 0.250	0.6300		0.15
HB114-1-0813U4-M5J(1-1/4)	C	No	Surface Ar (CaAa)	90.00 - 0.00	4	2	0.250 0.250	1.5400		1.20
Mods										
(Area) CCI-65FP-085125 (H)	A	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	B	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
(Area) CCI-65FP-085125 (H)	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	8.5000	19.5000	0.00
**										
(Area) CCI-65FP-065125 (H)	A	No	Surface Af (CaAa)	40.50 - 20.50	1	1	0.000 0.000	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	B	No	Surface Af (CaAa)	40.50 - 20.50	1	1	0.000 0.000	6.5000	15.5000	0.00
(Area) CCI-65FP-065125 (H)	C	No	Surface Af (CaAa)	40.50 - 20.50	1	1	0.000 0.000	6.5000	15.5000	0.00
**										
(Area) CCI-65FP-060100 (H)	A	No	Surface Af (CaAa)	75.50 - 40.50	1	1	0.000 0.000	6.0000	14.0000	0.00
(Area) CCI-65FP-060100 (H)	B	No	Surface Af (CaAa)	75.50 - 40.50	1	1	0.000 0.000	6.0000	14.0000	0.00
(Area) CCI-65FP-060100 (H)	C	No	Surface Af (CaAa)	75.50 - 40.50	1	1	0.000 0.000	6.0000	14.0000	0.00
**										
Bridge Stiffener 78"x4.5"x1"	A	No	Surface Af (CaAa)	83.92 - 77.48	1	1	0.000 0.000	4.5000	11.0000	0.00
Bridge Stiffener 78"x4.5"x1"	B	No	Surface Af (CaAa)	83.92 - 77.48	1	1	0.000 0.000	4.5000	11.0000	0.00
Bridge Stiffener 78"x4.5"x1"	C	No	Surface Af (CaAa)	83.92 - 77.48	1	1	0.000 0.000	4.5000	11.0000	0.00

PWRT-608-S(13/16)	A	No	Surface Ar (CaAa)	100.00 - 0.00	7	7	-0.500 -0.400	0.8200		0.62

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CA _{AA} ft ² /ft	Weight plf
121									
HCS 6X12 4AWG(1-5/8)	B	No	No	Inside Pole	121.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	2.40 2.40 2.40
112									
HB158-1-08U8-S8J18(1-5/8)	B	No	No	Inside Pole	112.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.30 1.30 1.30
100									
LDF6-50A(1-1/4)	A	No	No	Inside Pole	100.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.60 0.60 0.60
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	100.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
100266(3/8)	A	No	No	Inside Pole	100.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.09 0.09 0.09
2" Flexible Conduit	A	No	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.34

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
79									
CU12PSM9P8XXX (1-3/8)	A	No	No	Inside Pole	79.00 - 0.00	1	No Ice	0.00	1.66
							1/2" Ice	0.00	1.66
							1" Ice	0.00	1.66

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L2	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L3	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L4	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L5	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L6	100.00-95.00	A	0.000	0.000	2.870	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L7	95.00-90.00	A	0.000	0.000	2.870	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
L8	90.00-85.00	A	0.000	0.000	2.870	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	2.170	0.000	0.03
L9	85.00-80.00	A	0.000	0.000	5.406	0.000	0.04
		B	0.000	0.000	2.536	0.000	0.05
		C	0.000	0.000	4.706	0.000	0.03
L10	80.00-75.70	A	0.000	0.000	4.099	0.000	0.04
		B	0.000	0.000	1.631	0.000	0.04
		C	0.000	0.000	3.497	0.000	0.02
L11	75.70-75.45	A	0.000	0.000	0.194	0.000	0.00
		B	0.000	0.000	0.050	0.000	0.00
		C	0.000	0.000	0.159	0.000	0.00
L12	75.45-70.45	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L13	70.45-65.45	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L14	65.45-60.45	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L15	60.45-60.00	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.450	0.000	0.00
		C	0.000	0.000	0.645	0.000	0.00
L16	60.00-59.75	A	0.000	0.000	0.394	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.358	0.000	0.00

Tower Section	Tower Elevation	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L17	59.75-54.75	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L18	54.75-49.75	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L19	49.75-44.75	A	0.000	0.000	7.870	0.000	0.05
		B	0.000	0.000	5.000	0.000	0.05
		C	0.000	0.000	7.170	0.000	0.03
L20	44.75-40.00	A	0.000	0.000	7.518	0.000	0.05
		B	0.000	0.000	4.792	0.000	0.05
		C	0.000	0.000	6.853	0.000	0.02
L21	40.00-39.75	A	0.000	0.000	0.414	0.000	0.00
		B	0.000	0.000	0.271	0.000	0.00
		C	0.000	0.000	0.379	0.000	0.00
L22	39.75-34.75	A	0.000	0.000	8.287	0.000	0.05
		B	0.000	0.000	5.417	0.000	0.05
		C	0.000	0.000	7.587	0.000	0.03
L23	34.75-29.75	A	0.000	0.000	8.287	0.000	0.05
		B	0.000	0.000	5.417	0.000	0.05
		C	0.000	0.000	7.587	0.000	0.03
L24	29.75-24.75	A	0.000	0.000	8.287	0.000	0.05
		B	0.000	0.000	5.417	0.000	0.05
		C	0.000	0.000	7.587	0.000	0.03
L25	24.75-20.00	A	0.000	0.000	8.039	0.000	0.05
		B	0.000	0.000	5.313	0.000	0.05
		C	0.000	0.000	7.374	0.000	0.02
L26	20.00-19.75	A	0.000	0.000	0.498	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.463	0.000	0.00
L27	19.75-14.75	A	0.000	0.000	9.953	0.000	0.05
		B	0.000	0.000	7.083	0.000	0.05
		C	0.000	0.000	9.253	0.000	0.03
L28	14.75-9.75	A	0.000	0.000	9.953	0.000	0.05
		B	0.000	0.000	7.083	0.000	0.05
		C	0.000	0.000	9.253	0.000	0.03
L29	9.75-4.75	A	0.000	0.000	9.953	0.000	0.05
		B	0.000	0.000	7.083	0.000	0.05
		C	0.000	0.000	9.253	0.000	0.03
L30	4.75-4.38	A	0.000	0.000	0.737	0.000	0.00
		B	0.000	0.000	0.524	0.000	0.00
		C	0.000	0.000	0.685	0.000	0.00
L31	4.38-4.13	A	0.000	0.000	0.498	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.463	0.000	0.00
L32	4.13-0.00	A	0.000	0.000	8.221	0.000	0.04
		B	0.000	0.000	5.851	0.000	0.04
		C	0.000	0.000	7.643	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	125.00-120.00	A	0.969	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L2	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.00
L3	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.00
L4	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L5	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L6	100.00-95.00	A	0.947	0.000	0.000	4.772	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L7	95.00-90.00	A	0.942	0.000	0.000	4.765	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
L8	90.00-85.00	A	0.937	0.000	0.000	4.759	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.05
		C		0.000	0.000	5.055	0.000	0.07
L9	85.00-80.00	A	0.932	0.000	0.000	7.682	0.000	0.09
		B		0.000	0.000	2.930	0.000	0.07
		C		0.000	0.000	7.971	0.000	0.09
L10	80.00-75.70	A	0.926	0.000	0.000	5.963	0.000	0.08
		B		0.000	0.000	1.882	0.000	0.06
		C		0.000	0.000	6.206	0.000	0.07
L11	75.70-75.45	A	0.923	0.000	0.000	0.296	0.000	0.00
		B		0.000	0.000	0.059	0.000	0.00
		C		0.000	0.000	0.310	0.000	0.00
L12	75.45-70.45	A	0.920	0.000	0.000	10.658	0.000	0.11
		B		0.000	0.000	5.920	0.000	0.08
		C		0.000	0.000	10.933	0.000	0.10
L13	70.45-65.45	A	0.914	0.000	0.000	10.643	0.000	0.11
		B		0.000	0.000	5.914	0.000	0.08
		C		0.000	0.000	10.910	0.000	0.10
L14	65.45-60.45	A	0.907	0.000	0.000	10.628	0.000	0.11
		B		0.000	0.000	5.907	0.000	0.08
		C		0.000	0.000	10.886	0.000	0.10
L15	60.45-60.00	A	0.903	0.000	0.000	0.956	0.000	0.01
		B		0.000	0.000	0.531	0.000	0.01
		C		0.000	0.000	0.978	0.000	0.01
L16	60.00-59.75	A	0.902	0.000	0.000	0.531	0.000	0.01
		B		0.000	0.000	0.295	0.000	0.00
		C		0.000	0.000	0.544	0.000	0.00
L17	59.75-54.75	A	0.898	0.000	0.000	10.608	0.000	0.11
		B		0.000	0.000	5.898	0.000	0.08
		C		0.000	0.000	10.856	0.000	0.10
L18	54.75-49.75	A	0.890	0.000	0.000	10.590	0.000	0.11
		B		0.000	0.000	5.890	0.000	0.08
		C		0.000	0.000	10.827	0.000	0.10
L19	49.75-44.75	A	0.881	0.000	0.000	10.570	0.000	0.11
		B		0.000	0.000	5.881	0.000	0.08
		C		0.000	0.000	10.796	0.000	0.09
L20	44.75-40.00	A	0.872	0.000	0.000	10.063	0.000	0.10
		B		0.000	0.000	5.620	0.000	0.07
		C		0.000	0.000	10.266	0.000	0.09
L21	40.00-39.75	A	0.866	0.000	0.000	0.548	0.000	0.01
		B		0.000	0.000	0.314	0.000	0.00
		C		0.000	0.000	0.558	0.000	0.00
L22	39.75-34.75	A	0.860	0.000	0.000	10.940	0.000	0.11
		B		0.000	0.000	6.277	0.000	0.08
		C		0.000	0.000	11.140	0.000	0.10
L23	34.75-29.75	A	0.848	0.000	0.000	10.912	0.000	0.11
		B		0.000	0.000	6.265	0.000	0.08
		C		0.000	0.000	11.097	0.000	0.09
L24	29.75-24.75	A	0.834	0.000	0.000	10.880	0.000	0.11
		B		0.000	0.000	6.251	0.000	0.08
		C		0.000	0.000	11.048	0.000	0.09
L25	24.75-20.00	A	0.818	0.000	0.000	10.467	0.000	0.10
		B		0.000	0.000	6.088	0.000	0.08
		C		0.000	0.000	10.607	0.000	0.09
L26	20.00-19.75	A	0.808	0.000	0.000	0.624	0.000	0.01
		B		0.000	0.000	0.394	0.000	0.00
		C		0.000	0.000	0.631	0.000	0.00
L27	19.75-14.75	A	0.797	0.000	0.000	12.453	0.000	0.11
		B		0.000	0.000	7.870	0.000	0.08
		C		0.000	0.000	12.574	0.000	0.10

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L28	14.75-9.75	A	0.770	0.000	0.000	12.395	0.000	0.11
		B		0.000	0.000	7.845	0.000	0.08
		C		0.000	0.000	12.482	0.000	0.09
L29	9.75-4.75	A	0.730	0.000	0.000	12.309	0.000	0.10
		B		0.000	0.000	7.809	0.000	0.08
		C		0.000	0.000	12.347	0.000	0.09
L30	4.75-4.38	A	0.697	0.000	0.000	0.906	0.000	0.01
		B		0.000	0.000	0.576	0.000	0.01
		C		0.000	0.000	0.905	0.000	0.01
L31	4.38-4.13	A	0.693	0.000	0.000	0.611	0.000	0.01
		B		0.000	0.000	0.389	0.000	0.00
		C		0.000	0.000	0.611	0.000	0.00
L32	4.13-0.00	A	0.644	0.000	0.000	10.011	0.000	0.08
		B		0.000	0.000	6.383	0.000	0.06
		C		0.000	0.000	9.954	0.000	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	125.00-120.00	0.0000	0.0000	0.0000	0.0000
L2	120.00-115.00	0.0000	0.0000	0.0000	0.0000
L3	115.00-110.00	0.0000	0.0000	0.0000	0.0000
L4	110.00-105.00	0.0000	0.0000	0.0000	0.0000
L5	105.00-100.00	0.0000	0.0000	0.0000	0.0000
L6	100.00-95.00	-3.8962	1.7347	-2.9967	1.3342
L7	95.00-90.00	-3.8962	1.7347	-2.9952	1.3335
L8	90.00-85.00	-4.6302	3.8736	-3.4660	3.2342
L9	85.00-80.00	-2.8816	2.4108	-2.7008	2.5192
L10	80.00-75.70	-3.5068	2.9255	-3.1533	2.9326
L11	75.70-75.45	-4.0600	3.3870	-3.4047	3.1658
L12	75.45-70.45	-2.3823	1.9874	-2.4691	2.2952
L13	70.45-65.45	-2.3823	1.9874	-2.4670	2.2921
L14	65.45-60.45	-2.3823	1.9874	-2.4648	2.2889
L15	60.45-60.00	-2.3823	1.9874	-2.4635	2.2870
L16	60.00-59.75	-2.6295	2.1891	-2.7014	2.5031
L17	59.75-54.75	-2.6295	2.1891	-2.6998	2.5009
L18	54.75-49.75	-2.6295	2.1891	-2.6966	2.4964
L19	49.75-44.75	-2.6295	2.1891	-2.6932	2.4914
L20	44.75-40.00	-2.6182	2.1797	-2.6830	2.4801
L21	40.00-39.75	-2.7463	2.2828	-2.8364	2.6171
L22	39.75-34.75	-2.7463	2.2828	-2.8337	2.6134
L23	34.75-29.75	-2.7463	2.2828	-2.8280	2.6057
L24	29.75-24.75	-2.7463	2.2828	-2.8215	2.5967
L25	24.75-20.00	-2.7036	2.2473	-2.7888	2.5632
L26	20.00-19.75	-2.5772	2.1396	-2.7686	2.5398
L27	19.75-14.75	-2.5772	2.1396	-2.7625	2.5318
L28	14.75-9.75	-2.5772	2.1396	-2.7480	2.5128
L29	9.75-4.75	-2.5772	2.1396	-2.7265	2.4847
L30	4.75-4.38	-2.5772	2.1396	-2.7083	2.4607
L31	4.38-4.13	-2.5772	2.1396	-2.7056	2.4572
L32	4.13-0.00	-2.5772	2.1396	-2.6785	2.4217

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
L6	41	PWRT-608-S(13/16)	95.00 - 100.00	1.0000	1.0000
L7	41	PWRT-608-S(13/16)	90.00 - 95.00	1.0000	1.0000
L8	15	LDF4-50A(1/2)	85.00 - 90.00	1.0000	1.0000
L8	16	HB114-1-0813U4-M5J(1- 1/4)	85.00 - 90.00	1.0000	1.0000
L8	41	PWRT-608-S(13/16)	85.00 - 90.00	1.0000	1.0000
L9	15	LDF4-50A(1/2)	80.00 - 85.00	1.0000	1.0000
L9	16	HB114-1-0813U4-M5J(1- 1/4)	80.00 - 85.00	1.0000	1.0000
L9	36	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	1.0000	1.0000
L9	37	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	1.0000	1.0000
L9	38	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	1.0000	1.0000
L9	41	PWRT-608-S(13/16)	80.00 - 85.00	1.0000	1.0000
L10	15	LDF4-50A(1/2)	75.70 - 80.00	1.0000	1.0000
L10	16	HB114-1-0813U4-M5J(1- 1/4)	75.70 - 80.00	1.0000	1.0000
L10	36	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	1.0000	1.0000
L10	37	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	1.0000	1.0000
L10	38	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	1.0000	1.0000
L10	41	PWRT-608-S(13/16)	75.70 - 80.00	1.0000	1.0000
L11	15	LDF4-50A(1/2)	75.45 - 75.70	1.0000	1.0000
L11	16	HB114-1-0813U4-M5J(1- 1/4)	75.45 - 75.70	1.0000	1.0000
L11	28	(Area) CCI-65FP-060100 (H)	75.45 - 75.50	1.0000	1.0000
L11	29	(Area) CCI-65FP-060100 (H)	75.45 - 75.50	1.0000	1.0000
L11	30	(Area) CCI-65FP-060100 (H)	75.45 - 75.50	1.0000	1.0000
L11	41	PWRT-608-S(13/16)	75.45 - 75.70	1.0000	1.0000
L12	15	LDF4-50A(1/2)	70.45 - 75.45	1.0000	1.0000
L12	16	HB114-1-0813U4-M5J(1- 1/4)	70.45 - 75.45	1.0000	1.0000
L12	28	(Area) CCI-65FP-060100 (H)	70.45 - 75.45	1.0000	1.0000
L12	29	(Area) CCI-65FP-060100 (H)	70.45 - 75.45	1.0000	1.0000
L12	30	(Area) CCI-65FP-060100 (H)	70.45 - 75.45	1.0000	1.0000
L12	41	PWRT-608-S(13/16)	70.45 - 75.45	1.0000	1.0000
L13	15	LDF4-50A(1/2)	65.45 - 70.45	1.0000	1.0000
L13	16	HB114-1-0813U4-M5J(1- 1/4)	65.45 - 70.45	1.0000	1.0000
L13	28	(Area) CCI-65FP-060100 (H)	65.45 - 70.45	1.0000	1.0000
L13	29	(Area) CCI-65FP-060100 (H)	65.45 - 70.45	1.0000	1.0000
L13	30	(Area) CCI-65FP-060100 (H)	65.45 - 70.45	1.0000	1.0000
L13	41	PWRT-608-S(13/16)	65.45 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			70.45		
L14	15	LDF4-50A(1/2)	60.45 -	1.0000	1.0000
			65.45		
L14	16	HB114-1-0813U4-M5J(1-1/4)	60.45 -	1.0000	1.0000
			65.45		
L14	28	(Area) CCI-65FP-060100 (H)	60.45 -	1.0000	1.0000
			65.45		
L14	29	(Area) CCI-65FP-060100 (H)	60.45 -	1.0000	1.0000
			65.45		
L14	30	(Area) CCI-65FP-060100 (H)	60.45 -	1.0000	1.0000
			65.45		
L14	41	PWRT-608-S(13/16)	60.45 -	1.0000	1.0000
			65.45		
L15	15	LDF4-50A(1/2)	60.00 -	1.0000	1.0000
			60.45		
L15	16	HB114-1-0813U4-M5J(1-1/4)	60.00 -	1.0000	1.0000
			60.45		
L15	28	(Area) CCI-65FP-060100 (H)	60.00 -	1.0000	1.0000
			60.45		
L15	29	(Area) CCI-65FP-060100 (H)	60.00 -	1.0000	1.0000
			60.45		
L15	30	(Area) CCI-65FP-060100 (H)	60.00 -	1.0000	1.0000
			60.45		
L15	41	PWRT-608-S(13/16)	60.00 -	1.0000	1.0000
			60.45		
L16	15	LDF4-50A(1/2)	59.75 -	1.0000	1.0000
			60.00		
L16	16	HB114-1-0813U4-M5J(1-1/4)	59.75 -	1.0000	1.0000
			60.00		
L16	28	(Area) CCI-65FP-060100 (H)	59.75 -	1.0000	1.0000
			60.00		
L16	29	(Area) CCI-65FP-060100 (H)	59.75 -	1.0000	1.0000
			60.00		
L16	30	(Area) CCI-65FP-060100 (H)	59.75 -	1.0000	1.0000
			60.00		
L16	41	PWRT-608-S(13/16)	59.75 -	1.0000	1.0000
			60.00		
L17	15	LDF4-50A(1/2)	54.75 -	1.0000	1.0000
			59.75		
L17	16	HB114-1-0813U4-M5J(1-1/4)	54.75 -	1.0000	1.0000
			59.75		
L17	28	(Area) CCI-65FP-060100 (H)	54.75 -	1.0000	1.0000
			59.75		
L17	29	(Area) CCI-65FP-060100 (H)	54.75 -	1.0000	1.0000
			59.75		
L17	30	(Area) CCI-65FP-060100 (H)	54.75 -	1.0000	1.0000
			59.75		
L17	41	PWRT-608-S(13/16)	54.75 -	1.0000	1.0000
			59.75		
L18	15	LDF4-50A(1/2)	49.75 -	1.0000	1.0000
			54.75		
L18	16	HB114-1-0813U4-M5J(1-1/4)	49.75 -	1.0000	1.0000
			54.75		
L18	28	(Area) CCI-65FP-060100 (H)	49.75 -	1.0000	1.0000
			54.75		
L18	29	(Area) CCI-65FP-060100 (H)	49.75 -	1.0000	1.0000
			54.75		
L18	30	(Area) CCI-65FP-060100 (H)	49.75 -	1.0000	1.0000
			54.75		
L18	41	PWRT-608-S(13/16)	49.75 -	1.0000	1.0000
			54.75		
L19	15	LDF4-50A(1/2)	44.75 -	1.0000	1.0000
			49.75		
L19	16	HB114-1-0813U4-M5J(1-1/4)	44.75 -	1.0000	1.0000
			49.75		
L19	28	(Area) CCI-65FP-060100 (H)	44.75 -	1.0000	1.0000
			49.75		
L19	29	(Area) CCI-65FP-060100 (H)	44.75 -	1.0000	1.0000
			49.75		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L19	30	(Area) CCI-65FP-060100 (H)	44.75 - 49.75	1.0000	1.0000
L19	41	PWRT-608-S(13/16)	44.75 - 49.75	1.0000	1.0000
L20	15	LDF4-50A(1/2)	40.00 - 44.75	1.0000	1.0000
L20	16	HB114-1-0813U4-M5J(1-1/4)	40.00 - 44.75	1.0000	1.0000
L20	24	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	1.0000	1.0000
L20	25	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	1.0000	1.0000
L20	26	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	1.0000	1.0000
L20	28	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	1.0000	1.0000
L20	29	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	1.0000	1.0000
L20	30	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	1.0000	1.0000
L20	41	PWRT-608-S(13/16)	40.00 - 44.75	1.0000	1.0000
L21	15	LDF4-50A(1/2)	39.75 - 40.00	1.0000	1.0000
L21	16	HB114-1-0813U4-M5J(1-1/4)	39.75 - 40.00	1.0000	1.0000
L21	24	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	1.0000	1.0000
L21	25	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	1.0000	1.0000
L21	26	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	1.0000	1.0000
L21	41	PWRT-608-S(13/16)	39.75 - 40.00	1.0000	1.0000
L22	15	LDF4-50A(1/2)	34.75 - 39.75	1.0000	1.0000
L22	16	HB114-1-0813U4-M5J(1-1/4)	34.75 - 39.75	1.0000	1.0000
L22	24	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	1.0000	1.0000
L22	25	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	1.0000	1.0000
L22	26	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	1.0000	1.0000
L22	41	PWRT-608-S(13/16)	34.75 - 39.75	1.0000	1.0000
L23	15	LDF4-50A(1/2)	29.75 - 34.75	1.0000	1.0000
L23	16	HB114-1-0813U4-M5J(1-1/4)	29.75 - 34.75	1.0000	1.0000
L23	24	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	1.0000	1.0000
L23	25	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	1.0000	1.0000
L23	26	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	1.0000	1.0000
L23	41	PWRT-608-S(13/16)	29.75 - 34.75	1.0000	1.0000
L24	15	LDF4-50A(1/2)	24.75 - 29.75	1.0000	1.0000
L24	16	HB114-1-0813U4-M5J(1-1/4)	24.75 - 29.75	1.0000	1.0000
L24	24	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	1.0000	1.0000
L24	25	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	1.0000	1.0000
L24	26	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	1.0000	1.0000
L24	41	PWRT-608-S(13/16)	24.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
			29.75		
L25	15	LDF4-50A(1/2)	20.00 - 24.75	1.0000	1.0000
L25	16	HB114-1-0813U4-M5J(1-1/4)	20.00 - 24.75	1.0000	1.0000
L25	20	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	1.0000	1.0000
L25	21	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	1.0000	1.0000
L25	22	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	1.0000	1.0000
L25	24	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	1.0000	1.0000
L25	25	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	1.0000	1.0000
L25	26	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	1.0000	1.0000
L25	41	PWRT-608-S(13/16)	20.00 - 24.75	1.0000	1.0000
L26	15	LDF4-50A(1/2)	19.75 - 20.00	1.0000	1.0000
L26	16	HB114-1-0813U4-M5J(1-1/4)	19.75 - 20.00	1.0000	1.0000
L26	20	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	1.0000	1.0000
L26	21	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	1.0000	1.0000
L26	22	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	1.0000	1.0000
L26	41	PWRT-608-S(13/16)	19.75 - 20.00	1.0000	1.0000
L27	15	LDF4-50A(1/2)	14.75 - 19.75	1.0000	1.0000
L27	16	HB114-1-0813U4-M5J(1-1/4)	14.75 - 19.75	1.0000	1.0000
L27	20	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	1.0000	1.0000
L27	21	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	1.0000	1.0000
L27	22	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	1.0000	1.0000
L27	41	PWRT-608-S(13/16)	14.75 - 19.75	1.0000	1.0000
L28	15	LDF4-50A(1/2)	9.75 - 14.75	1.0000	1.0000
L28	16	HB114-1-0813U4-M5J(1-1/4)	9.75 - 14.75	1.0000	1.0000
L28	20	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	1.0000	1.0000
L28	21	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	1.0000	1.0000
L28	22	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	1.0000	1.0000
L28	41	PWRT-608-S(13/16)	9.75 - 14.75	1.0000	1.0000
L29	15	LDF4-50A(1/2)	4.75 - 9.75	1.0000	1.0000
L29	16	HB114-1-0813U4-M5J(1-1/4)	4.75 - 9.75	1.0000	1.0000
L29	20	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	1.0000	1.0000
L29	21	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	1.0000	1.0000
L29	22	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	1.0000	1.0000
L29	41	PWRT-608-S(13/16)	4.75 - 9.75	1.0000	1.0000
L30	15	LDF4-50A(1/2)	4.38 - 4.75	1.0000	1.0000
L30	16	HB114-1-0813U4-M5J(1-1/4)	4.38 - 4.75	1.0000	1.0000
L30	20	(Area) CCI-65FP-085125 (H)	4.38 - 4.75	1.0000	1.0000
L30	21	(Area) CCI-65FP-085125 (H)	4.38 - 4.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L30	22	(H) (Area) CCI-65FP-085125	4.38 - 4.75	1.0000	1.0000
L30	41	(H) PWRT-608-S(13/16)	4.38 - 4.75	1.0000	1.0000
L31	15	LDF4-50A(1/2)	4.13 - 4.38	1.0000	1.0000
L31	16	HB114-1-0813U4-M5J(1-1/4)	4.13 - 4.38	1.0000	1.0000
L31	20	(Area) CCI-65FP-085125	4.13 - 4.38	1.0000	1.0000
L31	21	(H) (Area) CCI-65FP-085125	4.13 - 4.38	1.0000	1.0000
L31	22	(H) (Area) CCI-65FP-085125	4.13 - 4.38	1.0000	1.0000
L31	41	(H) PWRT-608-S(13/16)	4.13 - 4.38	1.0000	1.0000
L32	15	LDF4-50A(1/2)	0.00 - 4.13	1.0000	1.0000
L32	16	HB114-1-0813U4-M5J(1-1/4)	0.00 - 4.13	1.0000	1.0000
L32	20	(Area) CCI-65FP-085125	0.00 - 4.13	1.0000	1.0000
L32	21	(H) (Area) CCI-65FP-085125	0.00 - 4.13	1.0000	1.0000
L32	22	(H) (Area) CCI-65FP-085125	0.00 - 4.13	1.0000	1.0000
L32	41	(H) PWRT-608-S(13/16)	0.00 - 4.13	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
L9	36	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	Auto	1.0000
L9	37	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	Auto	1.0000
L9	38	Bridge Stiffener 78"x4.5"x1"	80.00 - 83.92	Auto	1.0000
L10	36	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	Auto	1.0000
L10	37	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	Auto	1.0000
L10	38	Bridge Stiffener 78"x4.5"x1"	77.48 - 80.00	Auto	1.0000
L11	28	(Area) CCI-65FP-060100	75.45 - 75.50	Auto	1.0000
L11	29	(H) (Area) CCI-65FP-060100	75.45 - 75.50	Auto	1.0000
L11	30	(H) (Area) CCI-65FP-060100	75.45 - 75.50	Auto	1.0000
L12	28	(Area) CCI-65FP-060100	70.45 - 75.45	Auto	1.0000
L12	29	(H) (Area) CCI-65FP-060100	70.45 - 75.45	Auto	1.0000
L12	30	(H) (Area) CCI-65FP-060100	70.45 - 75.45	Auto	1.0000
L13	28	(Area) CCI-65FP-060100	65.45 - 70.45	Auto	1.0000
L13	29	(H) (Area) CCI-65FP-060100	65.45 - 70.45	Auto	1.0000
L13	30	(H) (Area) CCI-65FP-060100	65.45 - 70.45	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L14	28	(Area) CCI-65FP-060100 (H)	60.45 - 65.45	Auto	1.0000
L14	29	(Area) CCI-65FP-060100 (H)	60.45 - 65.45	Auto	1.0000
L14	30	(Area) CCI-65FP-060100 (H)	60.45 - 65.45	Auto	1.0000
L15	28	(Area) CCI-65FP-060100 (H)	60.00 - 60.45	Auto	1.0000
L15	29	(Area) CCI-65FP-060100 (H)	60.00 - 60.45	Auto	1.0000
L15	30	(Area) CCI-65FP-060100 (H)	60.00 - 60.45	Auto	1.0000
L16	28	(Area) CCI-65FP-060100 (H)	59.75 - 60.00	Auto	1.0000
L16	29	(Area) CCI-65FP-060100 (H)	59.75 - 60.00	Auto	1.0000
L16	30	(Area) CCI-65FP-060100 (H)	59.75 - 60.00	Auto	1.0000
L17	28	(Area) CCI-65FP-060100 (H)	54.75 - 59.75	Auto	1.0000
L17	29	(Area) CCI-65FP-060100 (H)	54.75 - 59.75	Auto	1.0000
L17	30	(Area) CCI-65FP-060100 (H)	54.75 - 59.75	Auto	1.0000
L18	28	(Area) CCI-65FP-060100 (H)	49.75 - 54.75	Auto	1.0000
L18	29	(Area) CCI-65FP-060100 (H)	49.75 - 54.75	Auto	1.0000
L18	30	(Area) CCI-65FP-060100 (H)	49.75 - 54.75	Auto	1.0000
L19	28	(Area) CCI-65FP-060100 (H)	44.75 - 49.75	Auto	1.0000
L19	29	(Area) CCI-65FP-060100 (H)	44.75 - 49.75	Auto	1.0000
L19	30	(Area) CCI-65FP-060100 (H)	44.75 - 49.75	Auto	1.0000
L20	24	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	Auto	1.0000
L20	25	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	Auto	1.0000
L20	26	(Area) CCI-65FP-065125 (H)	40.00 - 40.50	Auto	1.0000
L20	28	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	Auto	1.0000
L20	29	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	Auto	1.0000
L20	30	(Area) CCI-65FP-060100 (H)	40.50 - 44.75	Auto	1.0000
L21	24	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	Auto	1.0000
L21	25	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	Auto	1.0000
L21	26	(Area) CCI-65FP-065125 (H)	39.75 - 40.00	Auto	1.0000
L22	24	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	Auto	1.0000
L22	25	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	Auto	1.0000
L22	26	(Area) CCI-65FP-065125 (H)	34.75 - 39.75	Auto	1.0000
L23	24	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	Auto	1.0000
L23	25	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	Auto	1.0000
L23	26	(Area) CCI-65FP-065125 (H)	29.75 - 34.75	Auto	1.0000
L24	24	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	25	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	Auto	1.0000
L24	26	(Area) CCI-65FP-065125 (H)	24.75 - 29.75	Auto	1.0000
L25	20	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	Auto	1.0000
L25	21	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	Auto	1.0000
L25	22	(Area) CCI-65FP-085125 (H)	20.00 - 20.50	Auto	1.0000
L25	24	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	Auto	1.0000
L25	25	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	Auto	1.0000
L25	26	(Area) CCI-65FP-065125 (H)	20.50 - 24.75	Auto	1.0000
L26	20	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	Auto	1.0000
L26	21	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	Auto	1.0000
L26	22	(Area) CCI-65FP-085125 (H)	19.75 - 20.00	Auto	1.0000
L27	20	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	Auto	1.0000
L27	21	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	Auto	1.0000
L27	22	(Area) CCI-65FP-085125 (H)	14.75 - 19.75	Auto	1.0000
L28	20	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	Auto	1.0000
L28	21	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	Auto	1.0000
L28	22	(Area) CCI-65FP-085125 (H)	9.75 - 14.75	Auto	1.0000
L29	20	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	Auto	1.0000
L29	21	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	Auto	1.0000
L29	22	(Area) CCI-65FP-085125 (H)	4.75 - 9.75	Auto	1.0000
L30	20	(Area) CCI-65FP-085125 (H)	4.38 - 4.75	Auto	1.0000
L30	21	(Area) CCI-65FP-085125 (H)	4.38 - 4.75	Auto	1.0000
L30	22	(Area) CCI-65FP-085125 (H)	4.38 - 4.75	Auto	1.0000
L31	20	(Area) CCI-65FP-085125 (H)	4.13 - 4.38	Auto	1.0000
L31	21	(Area) CCI-65FP-085125 (H)	4.13 - 4.38	Auto	1.0000
L31	22	(Area) CCI-65FP-085125 (H)	4.13 - 4.38	Auto	1.0000
L32	20	(Area) CCI-65FP-085125 (H)	0.00 - 4.13	Auto	1.0000
L32	21	(Area) CCI-65FP-085125 (H)	0.00 - 4.13	Auto	1.0000
L32	22	(Area) CCI-65FP-085125 (H)	0.00 - 4.13	Auto	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
121					
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	121.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	121.00
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	121.00
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	121.00
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	121.00
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	121.00
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	121.00
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	121.00
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	121.00
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 3.00	0.0000	121.00
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 3.00	0.0000	121.00
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 3.00	0.0000	121.00
RADIO 4449 B71/B85A	A	From Leg	4.00 0.00 1.00	0.0000	121.00
RADIO 4449 B71/B85A	B	From Leg	4.00 0.00 1.00	0.0000	121.00
RADIO 4449 B71/B85A	C	From Leg	4.00 0.00 1.00	0.0000	121.00
Platform Mount [LP 405-1_HR-1] **112**	C	None		0.0000	121.00
HBXX-6517DS-A2M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	112.00
HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	112.00
HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	0.0000	112.00
MT6407-77A w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	112.00
MT6407-77A w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	112.00
MT6407-77A w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00	0.0000	112.00

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz	Lateral		
			ft	ft	°	ft
(2) MX06FRO660-03 w/ Mount Pipe	A	From Centroid-Leg	0.00	4.00	0.0000	112.00
			0.00	1.00		
(2) MX06FRO660-03 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	1.00		
(2) MX06FRO660-03 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	1.00		
(2) BSF0020F3V1	A	From Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
(2) BSF0020F3V1	B	From Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
(2) BSF0020F3V1	C	From Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D1A	A	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D1A	B	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D1A	C	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D2A	A	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D2A	B	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RFV01U-D2A	C	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	0.00		
RxxDC-3315-PF-48	A	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	1.00		
RxxDC-3315-PF-48	B	From Centroid-Leg	4.00	0.00	0.0000	112.00
			0.00	1.00		
Platform Mount [LP 303-1_HR-1] **100**	C	None			0.0000	112.00
TPA65R-BU4D w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	100.00
			0.00	0.00		
TPA65R-BU4D w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	100.00
			0.00	0.00		
TPA65R-BU6DA-K w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	100.00
			0.00	0.00		
AIR 6419 B77G_CCIV3 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	100.00
			0.00	2.00		
AIR 6419 B77G_CCIV3 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	100.00
			0.00	2.00		
AIR 6419 B77G_CCIV3 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	100.00
			0.00	2.00		
AIR 6449 B77D_CCIV2 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	100.00
			0.00	2.00		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
AIR 6449 B77D_CCIV2 w/ Mount Pipe	B	From Leg	-2.00 4.00 0.00	0.0000	100.00
AIR 6449 B77D_CCIV2 w/ Mount Pipe	C	From Leg	-2.00 4.00 0.00	0.0000	100.00
RRUS 4478 B14_CCIV2	A	From Leg	-2.00 4.00 0.00	0.0000	100.00
RRUS 4478 B14_CCIV2	B	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 4478 B14_CCIV2	C	From Leg	0.00 4.00 0.00	0.0000	100.00
80010964 w/ Mount Pipe	B	From Leg	0.00 4.00 0.00	0.0000	100.00
80010964 w/ Mount Pipe	C	From Leg	0.00 4.00 0.00	0.0000	100.00
80010965 w/ Mount Pipe	A	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 32 B30	A	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 32 B30	B	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 32 B30	C	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 4449 B5/B12	A	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 4449 B5/B12	B	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 4449 B5/B12	C	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 8843 B2/B66A	A	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 8843 B2/B66A	B	From Leg	0.00 4.00 0.00	0.0000	100.00
RRUS 8843 B2/B66A	C	From Leg	0.00 4.00 0.00	0.0000	100.00
(2) DC6-48-60-18-8F	A	From Leg	0.00 4.00 0.00	0.0000	100.00
DC6-48-60-18-8F	B	From Leg	0.00 4.00 0.00	0.0000	100.00
T-Arm Mount [TA 602-3_KCKR]	C	None		0.0000	100.00
Miscellaneous [NA 507-1]	C	None		0.0000	100.00
(2) 12.5' x 2.375" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00
(2) 12.5' x 2.375" Mount Pipe	B	From Leg	0.00 4.00 0.00	0.0000	100.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
(2) 12.5' x 2.375" Mount Pipe	C	From Leg	0.00 4.00 0.00 0.00	0.0000	100.00
90 NNVV-65B-R4 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
NNVV-65B-R4 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
NNVV-65B-R4 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
PCS 1900MHZ 4X45W-65MHZ	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) PCS 1900MHZ 4X45W-65MHZ	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) RRH2X50-800	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) RRH2X50-800	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) RRH2X50-800	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
FZHN	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
FZHN	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
FZHN	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) AIRPAIR ODU	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
AIRPAIR ODU	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) 2.4" Dia x 6-ft Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
(2) 2.4" Dia x 6-ft Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	90.00
Platform Mount [LP 303-1_KCKR-HR-1] **79**	C	None		0.0000	90.00
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	79.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			2.00		
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B604	A	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B604	B	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B604	C	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B605	A	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B605	B	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
TA08025-B605	C	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
RDIDC-9181-PF-48	A	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			2.00		
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			0.00		
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			0.00		
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Centroid-Leg	4.00	0.0000	79.00
			0.00		
			0.00		
Sabre_C10801018-32788	C	None		0.0000	79.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
90								
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Centroid-Leg	4.00 0.00	90.0000		90.00	2.17
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Centroid-Leg	-2.00 4.00 0.00	30.0000		90.00	2.17
				-2.00				

**								

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
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	125 - 120	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-8.01	0.00	0.00
			Max. Mx	8	-4.88	-6.53	0.00
			Max. My	14	-4.88	-0.00	-6.53
			Max. Vy	8	3.59	-6.53	0.00
			Max. Vx	14	3.60	-0.00	-6.53
			Max. Torque	30			-0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.77	0.00	0.00
			Max. Mx	8	-5.49	-25.13	0.00
			Max. My	14	-5.48	-0.00	-25.14
			Max. Vy	8	3.85	-25.13	0.00
			Max. Vx	14	3.85	-0.00	-25.14
L3	115 - 110	Pole	Max. Torque	30			-0.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.28	-0.29	0.17
			Max. Mx	8	-9.87	-54.06	0.00
			Max. My	2	-9.86	-0.03	54.10
			Max. Vy	8	7.63	-54.06	0.00
L4	110 - 105	Pole	Max. Vx	14	7.65	-0.13	-54.03
			Max. Torque	12			0.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.06	-0.29	0.17
			Max. Mx	8	-10.49	-92.81	-0.07
			Max. My	2	-10.49	0.04	92.94
L5	105 - 100	Pole	Max. Vy	8	7.87	-92.81	-0.07
			Max. Vx	14	7.89	-0.21	-92.89
			Max. Torque	12			0.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.83	-0.29	0.17
			Max. Mx	8	-11.12	-132.73	-0.15
L6	100 - 95	Pole	Max. My	2	-11.12	0.12	132.96
			Max. Vy	8	8.10	-132.73	-0.15
			Max. Vx	14	8.13	-0.29	-132.94
			Max. Torque	12			0.27
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.13	-0.48	1.29
L7	95 - 90	Pole	Max. Mx	8	-15.96	-194.89	0.15
			Max. My	2	-15.96	0.12	196.20
			Max. Vy	8	12.56	-194.89	0.15
			Max. Vx	14	12.72	-0.44	-195.41
			Max. Torque	22			-0.99
			Max Tension	1	0.00	0.00	0.00
L8	90 - 85	Pole	Max. Compression	26	-27.16	-0.42	1.33
			Max. Mx	8	-16.80	-258.34	0.09
			Max. My	2	-16.79	0.22	260.45
			Max. Vy	8	12.83	-258.34	0.09
			Max. Vx	14	12.99	-0.49	-259.66
			Max. Torque	22			-0.99
L9	85 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.70	-1.27	0.79
			Max. Mx	8	-21.35	-338.68	0.01
			Max. My	2	-21.35	-0.26	340.57
			Max. Vy	8	16.21	-338.68	0.01
			Max. Vx	2	-16.30	-0.26	340.57
L10	80 - 75.7	Pole	Max. Torque	24			-1.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.86	-1.21	0.73
			Max. Mx	8	-22.24	-420.25	0.30
			Max. My	2	-22.23	-0.31	422.61
			Max. Vy	8	16.44	-420.25	0.30
L11	75.7 - 75.45	Pole	Max. Vx	2	-16.53	-0.31	422.61
			Max. Torque	24			-1.26
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.44	-1.15	0.91
			Max. Mx	8	-26.01	-500.07	0.63
			Max. My	2	-26.01	-0.35	503.06
L11	75.7 - 75.45	Pole	Max. Vy	8	18.82	-500.07	0.63
			Max. Vx	2	-18.94	-0.35	503.06
			Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.53	-1.15	0.91
			Max. Mx	8	-26.09	-504.78	0.64
L11	75.7 - 75.45	Pole	Max. My	2	-26.08	-0.35	507.79
			Max. Vy	8	18.84	-504.78	0.64
			Max. Vx	2	-18.95	-0.35	507.79

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L12	75.45 - 70.45	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.27	-1.07	0.83
			Max. Mx	8	-27.48	-599.66	0.92
			Max. My	14	-27.46	-0.35	-603.32
			Max. Vy	8	19.14	-599.66	0.92
			Max. Vx	14	19.54	-0.35	-603.32
L13	70.45 - 65.45	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.02	-1.00	0.76
			Max. Mx	8	-28.88	-696.00	1.19
			Max. My	14	-28.85	-0.15	-702.51
			Max. Vy	8	19.42	-696.00	1.19
			Max. Vx	14	20.13	-0.15	-702.51
L14	65.45 - 60.45	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.76	-0.93	0.69
			Max. Mx	8	-30.28	-793.71	1.47
			Max. My	14	-30.26	0.05	-804.58
			Max. Vy	8	19.69	-793.71	1.47
			Max. Vx	14	20.69	0.05	-804.58
L15	60.45 - 60	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.92	-0.92	0.68
			Max. Mx	8	-30.41	-802.57	1.50
			Max. My	14	-30.38	0.07	-813.90
			Max. Vy	8	19.71	-802.57	1.50
			Max. Vx	14	20.74	0.07	-813.90
L16	60 - 59.75	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.01	-0.92	0.67
			Max. Mx	8	-30.49	-807.50	1.51
			Max. My	14	-30.46	0.08	-819.09
			Max. Vy	8	19.73	-807.50	1.51
			Max. Vx	14	20.75	0.08	-819.09
L17	59.75 - 54.75	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.93	-0.83	0.59
			Max. Mx	8	-32.03	-906.85	1.78
			Max. My	14	-32.00	0.29	-923.68
			Max. Vy	8	20.04	-906.85	1.78
			Max. Vx	14	21.07	0.29	-923.68
L18	54.75 - 49.75	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.84	-0.75	0.51
			Max. Mx	8	-33.58	-1007.74	2.05
			Max. My	14	-33.55	0.50	-1029.80
			Max. Vy	8	20.34	-1007.74	2.05
			Max. Vx	14	21.37	0.50	-1029.80
L19	49.75 - 44.75	Pole	Max. Torque	24			-1.33
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.74	-0.67	0.42
			Max. Mx	8	-35.13	-1110.06	2.32
			Max. My	14	-35.11	0.71	-1137.35
			Max. Vy	8	20.62	-1110.06	2.32
			Max. Vx	14	21.65	0.71	-1137.35
L20	44.75 - 40	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.55	-0.59	0.35
			Max. Mx	8	-36.61	-1208.50	2.58
			Max. My	14	-36.59	0.91	-1240.75
			Max. Vy	8	20.86	-1208.50	2.58
			Max. Vx	14	21.89	0.91	-1240.75

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L21	40 - 39.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.66	-0.58	0.34
			Max. Mx	8	-36.70	-1213.71	2.59
			Max. My	14	-36.68	0.92	-1246.23
			Max. Vy	8	20.87	-1213.71	2.59
			Max. Vx	14	21.90	0.92	-1246.23
L22	39.75 - 34.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.87	-0.49	0.25
			Max. Mx	8	-38.52	-1318.77	2.86
			Max. My	14	-38.50	1.14	-1356.52
			Max. Vy	8	21.18	-1318.77	2.86
			Max. Vx	14	22.21	1.14	-1356.52
L23	34.75 - 29.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.07	-0.40	0.16
			Max. Mx	8	-40.34	-1425.31	3.12
			Max. My	14	-40.32	1.35	-1468.29
			Max. Vy	8	21.46	-1425.31	3.12
			Max. Vx	14	22.49	1.35	-1468.29
L24	29.75 - 24.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.27	-0.31	0.07
			Max. Mx	8	-42.16	-1533.22	3.39
			Max. My	14	-42.15	1.57	-1581.42
			Max. Vy	8	21.73	-1533.22	3.39
			Max. Vx	14	22.76	1.57	-1581.42
L25	24.75 - 20	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.35	-0.22	-0.02
			Max. Mx	8	-43.90	-1636.94	3.64
			Max. My	14	-43.89	1.77	-1690.10
			Max. Vy	8	21.98	-1636.94	3.64
			Max. Vx	14	23.00	1.77	-1690.10
L26	20 - 19.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.47	-0.21	-0.02
			Max. Mx	8	-44.01	-1642.43	3.65
			Max. My	14	-44.00	1.78	-1695.85
			Max. Vy	8	21.99	-1642.43	3.65
			Max. Vx	14	23.01	1.78	-1695.85
L27	19.75 - 14.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.00	-0.11	-0.12
			Max. Mx	8	-46.12	-1753.08	3.91
			Max. My	14	-46.12	2.00	-1811.71
			Max. Vy	8	22.30	-1753.08	3.91
			Max. Vx	14	23.32	2.00	-1811.71
L28	14.75 - 9.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.50	-0.01	-0.22
			Max. Mx	8	-48.24	-1865.27	4.17
			Max. My	14	-48.24	2.22	-1929.11
			Max. Vy	8	22.61	-1865.27	4.17
			Max. Vx	14	23.63	2.22	-1929.11
L29	9.75 - 4.75	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.99	0.08	-0.31
			Max. Mx	8	-50.36	-1978.95	4.43
			Max. My	14	-50.36	2.44	-2047.99
			Max. Vy	8	22.90	-1978.95	4.43
			Max. Vx	14	23.92	2.44	-2047.99
L30	4.75 - 4.38	Pole	Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L31	4.38 - 4.13	Pole	Max. Compression	26	-71.17	0.09	-0.32
			Max. Mx	8	-50.52	-1987.42	4.45
			Max. My	14	-50.52	2.46	-2056.85
			Max. Vy	8	22.92	-1987.42	4.45
			Max. Vx	14	23.94	2.46	-2056.85
			Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.29	0.09	-0.32
			Max. Mx	8	-50.62	-1993.15	4.46
			Max. My	14	-50.62	2.47	-2062.83
L32	4.13 - 0	Pole	Max. Vy	8	22.93	-1993.15	4.46
			Max. Vx	14	23.95	2.47	-2062.83
			Max. Torque	24			-1.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.17	0.17	-0.39
			Max. Mx	8	-52.25	-2088.27	4.67
			Max. My	14	-52.25	2.65	-2162.23
			Max. Vy	8	23.16	-2088.27	4.67
			Max. Vx	14	24.18	2.65	-2162.23
			Max. Torque	24			-1.32

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	73.17	0.00	0.00
	Max. H _x	20	52.26	23.11	-0.03
	Max. H _z	3	39.19	-0.01	23.26
	Max. M _x	2	2100.08	-0.01	23.26
	Max. M _z	8	2088.27	-23.15	0.06
	Max. Torsion	12	1.17	-11.59	-20.11
	Min. Vert	19	39.19	20.01	-11.61
	Min. H _x	8	52.26	-23.15	0.06
	Min. H _z	15	39.19	0.03	-24.17
	Min. M _x	14	-2162.23	0.03	-24.17
	Min. M _z	20	-2084.76	23.11	-0.03
	Min. Torsion	24	-1.32	11.53	20.15

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	43.55	0.00	0.00	0.27	0.06	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	52.26	0.01	-23.26	-2100.08	-0.81	1.18
0.9 Dead+1.0 Wind 0 deg - No Ice	39.19	0.01	-23.26	-2087.56	-0.82	1.17
1.2 Dead+1.0 Wind 30 deg - No Ice	52.26	11.63	-20.12	-1816.26	-1048.42	1.01
0.9 Dead+1.0 Wind 30 deg - No Ice	39.19	11.63	-20.12	-1805.44	-1042.15	1.01
1.2 Dead+1.0 Wind 60 deg - No Ice	52.26	20.88	-12.12	-1083.10	-1865.95	0.44
0.9 Dead+1.0 Wind 60 deg - No Ice	39.19	20.88	-12.12	-1076.74	-1854.88	0.43
1.2 Dead+1.0 Wind 90 deg - No Ice	52.26	23.15	-0.06	-4.67	-2088.27	-0.15
0.9 Dead+1.0 Wind 90 deg - No Ice	39.19	23.15	-0.06	-4.73	-2075.76	-0.15

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 120 deg - No Ice	52.26	20.19	11.70	1055.85	-1819.41	-0.90
0.9 Dead+1.0 Wind 120 deg - No Ice	39.19	20.19	11.70	1049.45	-1808.52	-0.90
1.2 Dead+1.0 Wind 150 deg - No Ice	52.26	11.59	20.11	1816.44	-1045.70	-1.17
0.9 Dead+1.0 Wind 150 deg - No Ice	39.19	11.59	20.11	1805.46	-1039.45	-1.16
1.2 Dead+1.0 Wind 180 deg - No Ice	52.26	-0.03	24.17	2162.23	2.65	-1.07
0.9 Dead+1.0 Wind 180 deg - No Ice	39.19	-0.03	24.17	2149.30	2.63	-1.06
1.2 Dead+1.0 Wind 210 deg - No Ice	52.26	-11.58	20.10	1815.17	1044.25	-0.75
0.9 Dead+1.0 Wind 210 deg - No Ice	39.19	-11.58	20.10	1804.21	1037.98	-0.75
1.2 Dead+1.0 Wind 240 deg - No Ice	52.26	-20.01	11.61	1048.48	1805.01	-0.26
0.9 Dead+1.0 Wind 240 deg - No Ice	39.19	-20.01	11.61	1042.11	1794.17	-0.26
1.2 Dead+1.0 Wind 270 deg - No Ice	52.26	-23.11	0.03	2.44	2084.76	0.31
0.9 Dead+1.0 Wind 270 deg - No Ice	39.19	-23.11	0.03	2.35	2072.24	0.31
1.2 Dead+1.0 Wind 300 deg - No Ice	52.26	-20.93	-12.11	-1082.52	1870.26	0.85
0.9 Dead+1.0 Wind 300 deg - No Ice	39.19	-20.93	-12.11	-1076.17	1859.14	0.84
1.2 Dead+1.0 Wind 330 deg - No Ice	52.26	-11.53	-20.15	-1818.67	1040.87	1.32
0.9 Dead+1.0 Wind 330 deg - No Ice	39.19	-11.53	-20.15	-1807.83	1034.61	1.32
1.2 Dead+1.0 Ice+1.0 Temp	73.17	0.00	0.00	0.39	0.17	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	73.17	0.00	-6.11	-527.67	-0.09	0.25
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	73.17	3.06	-5.29	-456.48	-264.03	0.21
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	73.17	5.28	-3.06	-263.93	-456.31	0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	73.17	6.10	-0.01	-0.65	-526.43	-0.04
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	73.17	5.28	3.05	264.19	-455.94	-0.20
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	73.17	3.05	5.28	457.06	-263.44	-0.25
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	73.17	-0.01	6.11	527.91	0.66	-0.23
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	73.17	-3.05	5.28	456.85	263.43	-0.16
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	73.17	-5.27	3.05	264.01	455.44	-0.05
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	73.17	-6.09	0.01	0.81	525.96	0.07
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	73.17	-5.28	-3.05	-262.95	455.93	0.19
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	73.17	-3.04	-5.29	-456.91	262.71	0.28
Dead+Wind 0 deg - Service	43.55	0.00	-5.30	-476.70	-0.15	0.27
Dead+Wind 30 deg - Service	43.55	2.65	-4.59	-412.25	-238.04	0.23
Dead+Wind 60 deg - Service	43.55	4.76	-2.76	-245.77	-423.69	0.09
Dead+Wind 90 deg - Service	43.55	5.28	-0.01	-0.87	-474.17	-0.04
Dead+Wind 120 deg - Service	43.55	4.60	2.67	239.96	-413.12	-0.21
Dead+Wind 150 deg - Service	43.55	2.64	4.58	412.67	-237.42	-0.27
Dead+Wind 180 deg - Service	43.55	-0.01	5.51	491.21	0.64	-0.25
Dead+Wind 210 deg - Service	43.55	-2.64	4.58	412.39	237.17	-0.17

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - Service	43.55	-4.56	2.65	238.28	409.93	-0.05
Dead+Wind 270 deg - Service	43.55	-5.27	0.01	0.75	473.45	0.08
Dead+Wind 300 deg - Service	43.55	-4.77	-2.76	-245.64	424.75	0.20
Dead+Wind 330 deg - Service	43.55	-2.63	-4.59	-412.79	236.40	0.31

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-43.55	0.00	0.00	43.55	0.00	0.000%
2	0.01	-52.26	-23.26	-0.01	52.26	23.26	0.000%
3	0.01	-39.19	-23.26	-0.01	39.19	23.26	0.000%
4	11.63	-52.26	-20.12	-11.63	52.26	20.12	0.000%
5	11.63	-39.19	-20.12	-11.63	39.19	20.12	0.000%
6	20.88	-52.26	-12.12	-20.88	52.26	12.12	0.000%
7	20.88	-39.19	-12.12	-20.88	39.19	12.12	0.000%
8	23.15	-52.26	-0.06	-23.15	52.26	0.06	0.000%
9	23.15	-39.19	-0.06	-23.15	39.19	0.06	0.000%
10	20.19	-52.26	11.70	-20.19	52.26	-11.70	0.000%
11	20.19	-39.19	11.70	-20.19	39.19	-11.70	0.000%
12	11.59	-52.26	20.11	-11.59	52.26	-20.11	0.000%
13	11.59	-39.19	20.11	-11.59	39.19	-20.11	0.000%
14	-0.03	-52.26	24.17	0.03	52.26	-24.17	0.000%
15	-0.03	-39.19	24.17	0.03	39.19	-24.17	0.000%
16	-11.58	-52.26	20.10	11.58	52.26	-20.10	0.000%
17	-11.58	-39.19	20.10	11.58	39.19	-20.10	0.000%
18	-20.01	-52.26	11.61	20.01	52.26	-11.61	0.000%
19	-20.01	-39.19	11.61	20.01	39.19	-11.61	0.000%
20	-23.11	-52.26	0.03	23.11	52.26	-0.03	0.000%
21	-23.11	-39.19	0.03	23.11	39.19	-0.03	0.000%
22	-20.93	-52.26	-12.11	20.93	52.26	12.11	0.000%
23	-20.93	-39.19	-12.11	20.93	39.19	12.11	0.000%
24	-11.53	-52.26	-20.15	11.53	52.26	20.15	0.000%
25	-11.53	-39.19	-20.15	11.53	39.19	20.15	0.000%
26	0.00	-73.17	0.00	0.00	73.17	0.00	0.000%
27	0.00	-73.17	-6.11	-0.00	73.17	6.11	0.000%
28	3.06	-73.17	-5.29	-3.06	73.17	5.29	0.000%
29	5.28	-73.17	-3.06	-5.28	73.17	3.06	0.000%
30	6.10	-73.17	-0.01	-6.10	73.17	0.01	0.000%
31	5.28	-73.17	3.05	-5.28	73.17	-3.05	0.000%
32	3.05	-73.17	5.28	-3.05	73.17	-5.28	0.000%
33	-0.01	-73.17	6.11	0.01	73.17	-6.11	0.000%
34	-3.05	-73.17	5.28	3.05	73.17	-5.28	0.000%
35	-5.27	-73.17	3.05	5.27	73.17	-3.05	0.000%
36	-6.09	-73.17	0.01	6.09	73.17	-0.01	0.000%
37	-5.28	-73.17	-3.05	5.28	73.17	3.05	0.000%
38	-3.04	-73.17	-5.29	3.04	73.17	5.29	0.000%
39	0.00	-43.55	-5.30	-0.00	43.55	5.30	0.000%
40	2.65	-43.55	-4.59	-2.65	43.55	4.59	0.000%
41	4.76	-43.55	-2.76	-4.76	43.55	2.76	0.000%
42	5.28	-43.55	-0.01	-5.28	43.55	0.01	0.000%
43	4.60	-43.55	2.67	-4.60	43.55	-2.67	0.000%
44	2.64	-43.55	4.58	-2.64	43.55	-4.58	0.000%
45	-0.01	-43.55	5.51	0.01	43.55	-5.51	0.000%
46	-2.64	-43.55	4.58	2.64	43.55	-4.58	0.000%
47	-4.56	-43.55	2.65	4.56	43.55	-2.65	0.000%
48	-5.27	-43.55	0.01	5.27	43.55	-0.01	0.000%
49	-4.77	-43.55	-2.76	4.77	43.55	2.76	0.000%
50	-2.63	-43.55	-4.59	2.63	43.55	4.59	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00003492
3	Yes	4	0.00000001	0.00070366
4	Yes	5	0.00000001	0.00022589
5	Yes	5	0.00000001	0.00011253
6	Yes	5	0.00000001	0.00021813
7	Yes	5	0.00000001	0.00010778
8	Yes	4	0.00000001	0.00062657
9	Yes	4	0.00000001	0.00033203
10	Yes	5	0.00000001	0.00020515
11	Yes	5	0.00000001	0.00010157
12	Yes	5	0.00000001	0.00022784
13	Yes	5	0.00000001	0.00011359
14	Yes	5	0.00000001	0.00003248
15	Yes	4	0.00000001	0.00064325
16	Yes	5	0.00000001	0.00020361
17	Yes	5	0.00000001	0.00010095
18	Yes	5	0.00000001	0.00021381
19	Yes	5	0.00000001	0.00010635
20	Yes	4	0.00000001	0.00064860
21	Yes	4	0.00000001	0.00035226
22	Yes	5	0.00000001	0.00023382
23	Yes	5	0.00000001	0.00011599
24	Yes	5	0.00000001	0.00019847
25	Yes	5	0.00000001	0.00009824
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00031541
28	Yes	5	0.00000001	0.00032209
29	Yes	5	0.00000001	0.00032186
30	Yes	5	0.00000001	0.00031476
31	Yes	5	0.00000001	0.00032070
32	Yes	5	0.00000001	0.00032041
33	Yes	5	0.00000001	0.00031334
34	Yes	5	0.00000001	0.00031871
35	Yes	5	0.00000001	0.00031815
36	Yes	5	0.00000001	0.00031206
37	Yes	5	0.00000001	0.00031943
38	Yes	5	0.00000001	0.00032058
39	Yes	4	0.00000001	0.00012150
40	Yes	4	0.00000001	0.00018335
41	Yes	4	0.00000001	0.00017417
42	Yes	4	0.00000001	0.00011206
43	Yes	4	0.00000001	0.00016818
44	Yes	4	0.00000001	0.00018637
45	Yes	4	0.00000001	0.00012177
46	Yes	4	0.00000001	0.00016631
47	Yes	4	0.00000001	0.00017153
48	Yes	4	0.00000001	0.00011207
49	Yes	4	0.00000001	0.00018718
50	Yes	4	0.00000001	0.00016719

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	6.694	45	0.4615	0.0012
L2	120 - 115	6.211	45	0.4614	0.0012
L3	115 - 110	5.729	45	0.4587	0.0012
L4	110 - 105	5.252	45	0.4526	0.0011

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	105 - 100	4.784	45	0.4404	0.0011
L6	100 - 95	4.333	45	0.4217	0.0010
L7	95 - 90	3.898	45	0.4078	0.0009
L8	90 - 85	3.481	45	0.3887	0.0009
L9	85 - 80	3.086	45	0.3636	0.0007
L10	80 - 75.7	2.722	45	0.3316	0.0006
L11	75.7 - 75.45	2.431	45	0.3124	0.0005
L12	75.45 - 70.45	2.415	45	0.3116	0.0005
L13	70.45 - 65.45	2.098	45	0.2934	0.0004
L14	65.45 - 60.45	1.802	45	0.2720	0.0004
L15	60.45 - 60	1.529	45	0.2473	0.0003
L16	60 - 59.75	1.506	45	0.2449	0.0003
L17	59.75 - 54.75	1.493	45	0.2441	0.0003
L18	54.75 - 49.75	1.248	45	0.2250	0.0003
L19	49.75 - 44.75	1.023	45	0.2036	0.0002
L20	44.75 - 40	0.822	45	0.1798	0.0002
L21	40 - 39.75	0.655	45	0.1551	0.0002
L22	39.75 - 34.75	0.647	45	0.1542	0.0002
L23	34.75 - 29.75	0.495	45	0.1362	0.0001
L24	29.75 - 24.75	0.363	45	0.1167	0.0001
L25	24.75 - 20	0.251	45	0.0956	0.0001
L26	20 - 19.75	0.167	45	0.0741	0.0001
L27	19.75 - 14.75	0.163	45	0.0733	0.0001
L28	14.75 - 9.75	0.094	45	0.0572	0.0001
L29	9.75 - 4.75	0.043	45	0.0400	0.0000
L30	4.75 - 4.38	0.011	45	0.0217	0.0000
L31	4.38 - 4.13	0.009	45	0.0204	0.0000
L32	4.13 - 0	0.008	45	0.0192	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	45	6.307	0.4615	0.0012	238107
112.00	HBXX-6517DS-A2M w/ Mount Pipe	45	5.442	0.4556	0.0012	42129
100.00	TPA65R-BU4D w/ Mount Pipe	45	4.333	0.4217	0.0010	17430
90.00	NNVV-65B-R4 w/ Mount Pipe	45	3.481	0.3887	0.0009	12907
88.00	A-ANT-18G-2-C	45	3.320	0.3796	0.0008	11360
79.00	MX08FRO665-21 w/ Mount Pipe	45	2.652	0.3261	0.0006	10975

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	29.530	14	2.0366	0.0050
L2	120 - 115	27.397	14	2.0359	0.0050
L3	115 - 110	25.271	14	2.0244	0.0050
L4	110 - 105	23.164	14	1.9971	0.0049
L5	105 - 100	21.098	14	1.9434	0.0047
L6	100 - 95	19.104	14	1.8608	0.0044
L7	95 - 90	17.186	14	1.7999	0.0040
L8	90 - 85	15.343	14	1.7154	0.0036
L9	85 - 80	13.603	14	1.6041	0.0031
L10	80 - 75.7	11.995	14	1.4625	0.0025
L11	75.7 - 75.45	10.715	14	1.3777	0.0021
L12	75.45 - 70.45	10.643	14	1.3740	0.0021
L13	70.45 - 65.45	9.245	14	1.2937	0.0019

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L14	65.45 - 60.45	7.939	14	1.1993	0.0016
L15	60.45 - 60	6.739	14	1.0903	0.0014
L16	60 - 59.75	6.636	14	1.0798	0.0014
L17	59.75 - 54.75	6.580	14	1.0759	0.0014
L18	54.75 - 49.75	5.497	14	0.9916	0.0012
L19	49.75 - 44.75	4.507	14	0.8972	0.0010
L20	44.75 - 40	3.621	14	0.7924	0.0009
L21	40 - 39.75	2.887	14	0.6832	0.0007
L22	39.75 - 34.75	2.851	14	0.6794	0.0007
L23	34.75 - 29.75	2.180	14	0.6001	0.0006
L24	29.75 - 24.75	1.597	14	0.5139	0.0005
L25	24.75 - 20	1.106	14	0.4210	0.0004
L26	20 - 19.75	0.734	14	0.3262	0.0003
L27	19.75 - 14.75	0.717	14	0.3228	0.0003
L28	14.75 - 9.75	0.416	14	0.2519	0.0002
L29	9.75 - 4.75	0.191	14	0.1762	0.0001
L30	4.75 - 4.38	0.049	14	0.0957	0.0001
L31	4.38 - 4.13	0.041	14	0.0896	0.0001
L32	4.13 - 0	0.037	14	0.0846	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	14	27.824	2.0366	0.0050	54014
112.00	HBXX-6517DS-A2M w/ Mount Pipe	14	24.003	2.0103	0.0050	9582
100.00	TPA65R-BU4D w/ Mount Pipe	14	19.104	1.8608	0.0044	3965
90.00	NNVV-65B-R4 w/ Mount Pipe	14	15.343	1.7154	0.0036	2939
88.00	A-ANT-18G-2-C	14	14.633	1.6751	0.0034	2584
79.00	MX08FRO665-21 w/ Mount Pipe	14	11.690	1.4386	0.0024	2492

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	125 - 120 (1)	P24x0.375	5.00	0.00	0.0	27.832 5	-4.88	1052.07	0.005
L2	120 - 115 (2)	P24x0.375	5.00	0.00	0.0	27.832 5	-5.48	1052.07	0.005
L3	115 - 110 (3)	P24x0.375	5.00	0.00	0.0	27.832 5	-9.86	1052.07	0.009
L4	110 - 105 (4)	P24x0.375	5.00	0.00	0.0	27.832 5	-10.49	1052.07	0.010
L5	105 - 100 (5)	P24x0.375	5.00	0.00	0.0	27.832 5	-11.12	1052.07	0.011
L6	100 - 95 (6)	P30x0.375	5.00	0.00	0.0	34.901 1	-15.96	1311.06	0.012
L7	95 - 90 (7)	P30x0.375	5.00	0.00	0.0	34.901 1	-16.79	1311.06	0.013
L8	90 - 85 (8)	P30x0.375	5.00	0.00	0.0	34.901 1	-21.35	1311.06	0.016
L9	85 - 80 (9)	P30x0.375	5.00	0.00	0.0	34.901 1	-22.23	1311.06	0.017

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L10	80 - 75.7 (10)	P36x0.375	4.30	0.00	0.0	41.969	-26.01	1490.10	0.017
L11	75.7 - 75.45 (11)	P36x0.5625	0.25	0.00	0.0	62.623	-26.08	2367.16	0.011
L12	75.45 - 70.45 (12)	P36x0.5625	5.00	0.00	0.0	62.623	-27.46	2367.16	0.012
L13	70.45 - 65.45 (13)	P36x0.5625	5.00	0.00	0.0	62.623	-28.85	2367.16	0.012
L14	65.45 - 60.45 (14)	P36x0.5625	5.00	0.00	0.0	62.623	-30.26	2367.16	0.013
L15	60.45 - 60 (15)	P36x0.5625	0.45	0.00	0.0	62.623	-30.38	2367.16	0.013
L16	60 - 59.75 (16)	P42x0.525	0.25	0.00	0.0	68.406	-30.46	2569.67	0.012
L17	59.75 - 54.75 (17)	P42x0.525	5.00	0.00	0.0	68.406	-32.00	2569.67	0.012
L18	54.75 - 49.75 (18)	P42x0.525	5.00	0.00	0.0	68.406	-33.55	2569.67	0.013
L19	49.75 - 44.75 (19)	P42x0.525	5.00	0.00	0.0	68.406	-35.11	2569.67	0.014
L20	44.75 - 40 (20)	P42x0.525	4.75	0.00	0.0	68.406	-36.59	2569.67	0.014
L21	40 - 39.75 (21)	P48x0.55625	0.25	0.00	0.0	82.908	-36.68	3039.70	0.012
L22	39.75 - 34.75 (22)	P48x0.55625	5.00	0.00	0.0	82.908	-38.50	3039.70	0.013
L23	34.75 - 29.75 (23)	P48x0.55625	5.00	0.00	0.0	82.908	-40.32	3039.70	0.013
L24	29.75 - 24.75 (24)	P48x0.55625	5.00	0.00	0.0	82.908	-42.15	3039.70	0.014
L25	24.75 - 20 (25)	P48x0.55625	4.75	0.00	0.0	82.908	-43.89	3039.70	0.014
L26	20 - 19.75 (26)	P54x0.5875	0.25	0.00	0.0	98.582	-44.00	3545.23	0.012
L27	19.75 - 14.75 (27)	P54x0.5875	5.00	0.00	0.0	98.582	-46.12	3545.23	0.013
L28	14.75 - 9.75 (28)	P54x0.5875	5.00	0.00	0.0	98.582	-48.24	3545.23	0.014
L29	9.75 - 4.75 (29)	P54x0.5875	5.00	0.00	0.0	98.582	-50.36	3545.23	0.014
L30	4.75 - 4.38 (30)	P54x0.5875	0.37	0.00	0.0	98.582	-50.52	3545.23	0.014
L31	4.38 - 4.13 (31)	P54x0.4875	0.25	0.00	0.0	81.955	-50.62	2797.17	0.018
L32	4.13 - 0 (32)	P54x0.4875	4.13	0.00	0.0	81.955	-52.25	2797.17	0.019

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio M _{ux} / φM _{nx}	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio M _{uy} / φM _{ny}
L1	125 - 120 (1)	P24x0.375	6.53	623.72	0.010	0.00	623.72	0.000
L2	120 - 115 (2)	P24x0.375	25.14	623.72	0.040	0.00	623.72	0.000
L3	115 - 110 (3)	P24x0.375	54.10	623.72	0.087	0.00	623.72	0.000
L4	110 - 105 (4)	P24x0.375	92.96	623.72	0.149	0.00	623.72	0.000
L5	105 - 100 (5)	P24x0.375	133.02	623.72	0.213	0.00	623.72	0.000
L6	100 - 95 (6)	P30x0.375	196.20	947.86	0.207	0.00	947.86	0.000
L7	95 - 90 (7)	P30x0.375	260.45	947.86	0.275	0.00	947.86	0.000
L8	90 - 85 (8)	P30x0.375	340.57	947.86	0.359	0.00	947.86	0.000
L9	85 - 80 (9)	P30x0.375	422.61	947.86	0.446	0.00	947.86	0.000
L10	80 - 75.7 (10)	P36x0.375	503.06	1338.81	0.376	0.00	1338.81	0.000
L11	75.7 - 75.45 (11)	P36x0.5625	507.79	2105.04	0.241	0.00	2105.04	0.000

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	Ratio	M_{uy}	ϕM_{ny}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L12	75.45 - 70.45 (12)	P36x0.5625	603.32	2105.04	0.287	0.00	2105.04	0.000
L13	70.45 - 65.45 (13)	P36x0.5625	702.51	2105.04	0.334	0.00	2105.04	0.000
L14	65.45 - 60.45 (14)	P36x0.5625	804.58	2105.04	0.382	0.00	2105.04	0.000
L15	60.45 - 60 (15)	P36x0.5625	813.90	2105.04	0.387	0.00	2105.04	0.000
L16	60 - 59.75 (16)	P42x0.525	819.09	2600.93	0.315	0.00	2600.93	0.000
L17	59.75 - 54.75 (17)	P42x0.525	923.67	2600.93	0.355	0.00	2600.93	0.000
L18	54.75 - 49.75 (18)	P42x0.525	1029.80	2600.93	0.396	0.00	2600.93	0.000
L19	49.75 - 44.75 (19)	P42x0.525	1137.35	2600.93	0.437	0.00	2600.93	0.000
L20	44.75 - 40 (20)	P42x0.525	1240.76	2600.93	0.477	0.00	2600.93	0.000
L21	40 - 39.75 (21)	P48x0.55625	1246.22	3569.34	0.349	0.00	3569.34	0.000
L22	39.75 - 34.75 (22)	P48x0.55625	1356.53	3569.34	0.380	0.00	3569.34	0.000
L23	34.75 - 29.75 (23)	P48x0.55625	1468.29	3569.34	0.411	0.00	3569.34	0.000
L24	29.75 - 24.75 (24)	P48x0.55625	1581.43	3569.34	0.443	0.00	3569.34	0.000
L25	24.75 - 20 (25)	P48x0.55625	1690.10	3569.34	0.474	0.00	3569.34	0.000
L26	20 - 19.75 (26)	P54x0.5875	1695.85	4739.87	0.358	0.00	4739.87	0.000
L27	19.75 - 14.75 (27)	P54x0.5875	1811.72	4739.87	0.382	0.00	4739.87	0.000
L28	14.75 - 9.75 (28)	P54x0.5875	1929.11	4739.87	0.407	0.00	4739.87	0.000
L29	9.75 - 4.75 (29)	P54x0.5875	2047.99	4739.87	0.432	0.00	4739.87	0.000
L30	4.75 - 4.38 (30)	P54x0.5875	2056.85	4739.87	0.434	0.00	4739.87	0.000
L31	4.38 - 4.13 (31)	P54x0.4875	2062.83	3864.47	0.534	0.00	3864.47	0.000
L32	4.13 - 0 (32)	P54x0.4875	2162.23	3864.47	0.560	0.00	3864.47	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	V_u	ϕV_n	Ratio	T_u	ϕT_n	Ratio
			K	K	$\frac{V_u}{\phi V_n}$	kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	125 - 120 (1)	P24x0.375	3.60	315.62	0.011	0.00	655.57	0.000
L2	120 - 115 (2)	P24x0.375	3.85	315.62	0.012	0.00	655.57	0.000
L3	115 - 110 (3)	P24x0.375	7.65	315.62	0.024	0.24	655.57	0.000
L4	110 - 105 (4)	P24x0.375	7.90	315.62	0.025	0.27	655.57	0.000
L5	105 - 100 (5)	P24x0.375	8.13	315.62	0.026	0.27	655.57	0.000
L6	100 - 95 (6)	P30x0.375	12.71	395.78	0.032	0.35	994.73	0.000
L7	95 - 90 (7)	P30x0.375	12.99	395.78	0.033	0.35	994.73	0.000
L8	90 - 85 (8)	P30x0.375	16.30	395.78	0.041	1.18	994.73	0.001
L9	85 - 80 (9)	P30x0.375	16.53	395.78	0.042	1.18	994.73	0.001
L10	80 - 75.7 (10)	P36x0.375	18.94	454.19	0.042	1.18	1094.28	0.001
L11	75.7 - 75.45 (11)	P36x0.5625	18.95	710.15	0.027	1.18	2212.54	0.001
L12	75.45 - 70.45 (12)	P36x0.5625	19.54	710.15	0.028	1.07	2212.54	0.000
L13	70.45 - 65.45 (13)	P36x0.5625	20.13	710.15	0.028	1.07	2212.54	0.000
L14	65.45 - 60.45 (14)	P36x0.5625	20.69	710.15	0.029	1.07	2212.54	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 $\frac{T_u}{\phi T_n}$
L15	60.45 - 60 (15)	P36x0.5625	20.74	710.15	0.029	1.07	2212.54	0.000
L16	60 - 59.75 (16)	P42x0.525	20.75	775.73	0.027	1.07	2800.23	0.000
L17	59.75 - 54.75 (17)	P42x0.525	21.07	775.73	0.027	1.07	2800.23	0.000
L18	54.75 - 49.75 (18)	P42x0.525	21.37	775.73	0.028	1.07	2800.23	0.000
L19	49.75 - 44.75 (19)	P42x0.525	21.65	775.73	0.028	1.07	2800.23	0.000
L20	44.75 - 40 (20)	P42x0.525	21.89	775.73	0.028	1.07	2800.23	0.000
L21	40 - 39.75 (21)	P48x0.55625	21.90	940.18	0.023	1.07	3775.58	0.000
L22	39.75 - 34.75 (22)	P48x0.55625	22.21	940.18	0.024	1.07	3775.58	0.000
L23	34.75 - 29.75 (23)	P48x0.55625	22.49	940.18	0.024	1.07	3775.58	0.000
L24	29.75 - 24.75 (24)	P48x0.55625	22.76	940.18	0.024	1.07	3775.58	0.000
L25	24.75 - 20 (25)	P48x0.55625	23.00	940.18	0.024	1.07	3775.58	0.000
L26	20 - 19.75 (26)	P54x0.5875	23.01	1117.93	0.021	1.07	4954.02	0.000
L27	19.75 - 14.75 (27)	P54x0.5875	23.32	1117.93	0.021	1.07	4954.02	0.000
L28	14.75 - 9.75 (28)	P54x0.5875	23.63	1117.93	0.021	1.07	4954.02	0.000
L29	9.75 - 4.75 (29)	P54x0.5875	23.92	1117.93	0.021	1.07	4954.02	0.000
L30	4.75 - 4.38 (30)	P54x0.5875	23.94	1117.93	0.021	1.07	4954.02	0.000
L31	4.38 - 4.13 (31)	P54x0.4875	23.95	903.52	0.027	1.07	3267.82	0.000
L32	4.13 - 0 (32)	P54x0.4875	24.18	903.52	0.027	1.07	3267.82	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	125 - 120 (1)	0.005	0.010	0.000	0.011	0.000	0.015	1.050	4.8.2
L2	120 - 115 (2)	0.005	0.040	0.000	0.012	0.000	0.046	1.050	4.8.2
L3	115 - 110 (3)	0.009	0.087	0.000	0.024	0.000	0.097	1.050	4.8.2
L4	110 - 105 (4)	0.010	0.149	0.000	0.025	0.000	0.160	1.050	4.8.2
L5	105 - 100 (5)	0.011	0.213	0.000	0.026	0.000	0.225	1.050	4.8.2
L6	100 - 95 (6)	0.012	0.207	0.000	0.032	0.000	0.220	1.050	4.8.2
L7	95 - 90 (7)	0.013	0.275	0.000	0.033	0.000	0.289	1.050	4.8.2
L8	90 - 85 (8)	0.016	0.359	0.000	0.041	0.001	0.377	1.050	4.8.2
L9	85 - 80 (9)	0.017	0.446	0.000	0.042	0.001	0.465	1.050	4.8.2
L10	80 - 75.7 (10)	0.017	0.376	0.000	0.042	0.001	0.395	1.050	4.8.2
L11	75.7 - 75.45 (11)	0.011	0.241	0.000	0.027	0.001	0.253	1.050	4.8.2
L12	75.45 - 70.45 (12)	0.012	0.287	0.000	0.028	0.000	0.299	1.050	4.8.2
L13	70.45 - 65.45 (13)	0.012	0.334	0.000	0.028	0.000	0.347	1.050	4.8.2
L14	65.45 - 60.45 (14)	0.013	0.382	0.000	0.029	0.000	0.396	1.050	4.8.2
L15	60.45 - 60 (15)	0.013	0.387	0.000	0.029	0.000	0.400	1.050	4.8.2
L16	60 - 59.75 (16)	0.012	0.315	0.000	0.027	0.000	0.328	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L17	59.75 - 54.75 (17)	0.012	0.355	0.000	0.027	0.000	0.368	1.050	4.8.2
L18	54.75 - 49.75 (18)	0.013	0.396	0.000	0.028	0.000	0.410	1.050	4.8.2
L19	49.75 - 44.75 (19)	0.014	0.437	0.000	0.028	0.000	0.452	1.050	4.8.2
L20	44.75 - 40 (20)	0.014	0.477	0.000	0.028	0.000	0.492	1.050	4.8.2
L21	40 - 39.75 (21)	0.012	0.349	0.000	0.023	0.000	0.362	1.050	4.8.2
L22	39.75 - 34.75 (22)	0.013	0.380	0.000	0.024	0.000	0.393	1.050	4.8.2
L23	34.75 - 29.75 (23)	0.013	0.411	0.000	0.024	0.000	0.425	1.050	4.8.2
L24	29.75 - 24.75 (24)	0.014	0.443	0.000	0.024	0.000	0.458	1.050	4.8.2
L25	24.75 - 20 (25)	0.014	0.474	0.000	0.024	0.000	0.489	1.050	4.8.2
L26	20 - 19.75 (26)	0.012	0.358	0.000	0.021	0.000	0.371	1.050	4.8.2
L27	19.75 - 14.75 (27)	0.013	0.382	0.000	0.021	0.000	0.396	1.050	4.8.2
L28	14.75 - 9.75 (28)	0.014	0.407	0.000	0.021	0.000	0.421	1.050	4.8.2
L29	9.75 - 4.75 (29)	0.014	0.432	0.000	0.021	0.000	0.447	1.050	4.8.2
L30	4.75 - 4.38 (30)	0.014	0.434	0.000	0.021	0.000	0.449	1.050	4.8.2
L31	4.38 - 4.13 (31)	0.018	0.534	0.000	0.027	0.000	0.553	1.050	4.8.2
L32	4.13 - 0 (32)	0.019	0.560	0.000	0.027	0.000	0.579	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	125 - 120	Pole	P24x0.375	1	-4.88	1104.67	1.5	Pass
L2	120 - 115	Pole	P24x0.375	2	-5.48	1104.67	4.4	Pass
L3	115 - 110	Pole	P24x0.375	3	-9.86	1104.67	9.2	Pass
L4	110 - 105	Pole	P24x0.375	4	-10.49	1104.67	15.2	Pass
L5	105 - 100	Pole	P24x0.375	5	-11.12	1104.67	21.4	Pass
L6	100 - 95	Pole	P30x0.375	6	-15.96	1376.61	21.0	Pass
L7	95 - 90	Pole	P30x0.375	7	-16.79	1376.61	27.5	Pass
L8	90 - 85	Pole	P30x0.375	8	-21.35	1376.61	35.9	Pass
L9	85 - 80	Pole	P30x0.375	9	-22.23	1376.61	44.3	Pass
L10	80 - 75.7	Pole	P36x0.375	10	-26.01	1564.60	37.6	Pass
L11	75.7 - 75.45	Pole	P36x0.5625	11	-26.08	2485.52	24.1	Pass
L12	75.45 - 70.45	Pole	P36x0.5625	12	-27.46	2485.52	28.5	Pass
L13	70.45 - 65.45	Pole	P36x0.5625	13	-28.85	2485.52	33.0	Pass
L14	65.45 - 60.45	Pole	P36x0.5625	14	-30.26	2485.52	37.7	Pass
L15	60.45 - 60	Pole	P36x0.5625	15	-30.38	2485.52	38.1	Pass
L16	60 - 59.75	Pole	P42x0.525	16	-30.46	2698.15	31.2	Pass
L17	59.75 - 54.75	Pole	P42x0.525	17	-32.00	2698.15	35.1	Pass
L18	54.75 - 49.75	Pole	P42x0.525	18	-33.55	2698.15	39.0	Pass
L19	49.75 - 44.75	Pole	P42x0.525	19	-35.11	2698.15	43.0	Pass
L20	44.75 - 40	Pole	P42x0.525	20	-36.59	2698.15	46.9	Pass
L21	40 - 39.75	Pole	P48x0.55625	21	-36.68	3191.68	34.5	Pass
L22	39.75 - 34.75	Pole	P48x0.55625	22	-38.50	3191.68	37.5	Pass
L23	34.75 - 29.75	Pole	P48x0.55625	23	-40.32	3191.68	40.5	Pass
L24	29.75 - 24.75	Pole	P48x0.55625	24	-42.15	3191.68	43.6	Pass
L25	24.75 - 20	Pole	P48x0.55625	25	-43.89	3191.68	46.5	Pass
L26	20 - 19.75	Pole	P54x0.5875	26	-44.00	3722.49	35.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L27	19.75 - 14.75	Pole	P54x0.5875	27	-46.12	3722.49	37.7	Pass	
L28	14.75 - 9.75	Pole	P54x0.5875	28	-48.24	3722.49	40.1	Pass	
L29	9.75 - 4.75	Pole	P54x0.5875	29	-50.36	3722.49	42.5	Pass	
L30	4.75 - 4.38	Pole	P54x0.5875	30	-50.52	3722.49	42.7	Pass	
L31	4.38 - 4.13	Pole	P54x0.4875	31	-50.62	2937.03	52.6	Pass	
L32	4.13 - 0	Pole	P54x0.4875	32	-52.25	2937.03	55.1	Pass	
							Summary		
							Pole (L32)	55.1	Pass
							RATING =	55.1	Pass

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

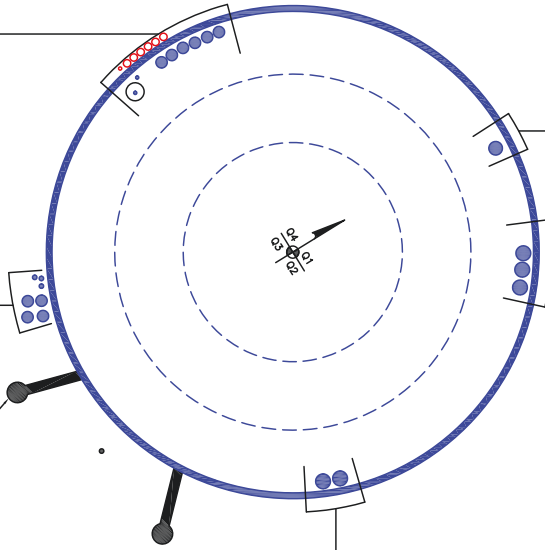
APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT-IN
CONDUIT-586264)
(1) 3/8" TO 100 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-586264)
(2) 3/8" TO 100 FT LEVEL
(6) 13/16" TO 100 FT LEVEL
(6) 1-1/4" TO 100 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(3) 1/2" TO 90 FT LEVEL
(4) 1-1/4" TO 90 FT LEVEL

CLIMBING PEGS
W/ SAFETY CLIMB



(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 79 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(3) 1-5/8" TO 121 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-5/8" TO 112 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 822765
Work Order: 2246887

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	125	25		0	24	24	0.375		A53-B-42
2	100	20		0	30.00	30	0.375		A53-B-42
3	80	20		0	36.00	36	0.375		A53-B-42
4	60	20		0	42.00	42	0.375		A53-B-42
5	40	20		0	48.00	48	0.375		A53-B-42
6	20	20		0	54.00	54	0.375		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	4.38	20	plate	CCI-CFP-085125	3	0					120						240						
2	20	40	plate	CCI-SFP-065125	3	0					120						240						
3	40	60	plate	CCI-SFP-060100	3	0					120						240						
4	60	75.7	plate	CCI-CFP-060100 24in L	3	0					120						240						
5	0	4.38	plate	TS 6.5x1.25	3								139			221							349
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	45	PC 8.8 - M20 (100)	45.000	24.000	9.063	1.1875	A572-65
2	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
3	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
4	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	24.000	4.750	1.1875	A572-65
5	1.25	6.5	8.125	3.25	Welded	n/a	Welded	n/a	0.000	8.125	0.0000	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
TS 6.5x1.25	Top	-	-	-	-	80	None	-	-	-	-	48	0.375	-
	Bottom	-	-	-	-	80	CJP Groove	6	0.5	45	0.5	12	0.375	-
CCI-CFP-060100 24in Lu	Top	8	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	3	-	-	-	-	-	-	-	-	-
CCI-CFP-085125	Top	15	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	15	N	3	3	-	-	-	-	-	-	-	-	-

TNX Geometry Input

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

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	125 - 120	5		0	24.000	24.000	0.375	A53-B-42	1.000
2	120 - 115	5		0	24.000	24.000	0.375	A53-B-42	1.000
3	115 - 110	5		0	24.000	24.000	0.375	A53-B-42	1.000
4	110 - 105	5		0	24.000	24.000	0.375	A53-B-42	1.000
5	105 - 100	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
6	100 - 95	5		0	30.000	30.000	0.375	A53-B-42	1.000
7	95 - 90	5		0	30.000	30.000	0.375	A53-B-42	1.000
8	90 - 85	5		0	30.000	30.000	0.375	A53-B-42	1.000
9	85 - 80	5	0	0	30.000	30.000	0.375	A53-B-42	1.000
10	80 - 75.7	4.3		0	36.000	36.000	0.375	A53-B-42	1.000
11	75.7 - 75.45	0.25		0	36.000	36.000	0.5625	A53-B-42	0.958
12	75.45 - 70.45	5		0	36.000	36.000	0.5625	A53-B-42	0.958
13	70.45 - 65.45	5		0	36.000	36.000	0.5625	A53-B-42	0.958
14	65.45 - 60.45	5		0	36.000	36.000	0.5625	A53-B-42	0.958
15	60.45 - 60	0.45	0	0	36.000	36.000	0.5625	A53-B-42	0.958
16	60 - 59.75	0.25		0	42.000	42.000	0.525	A53-B-42	0.980
17	59.75 - 54.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
18	54.75 - 49.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
19	49.75 - 44.75	5		0	42.000	42.000	0.525	A53-B-42	0.980
20	44.75 - 40	4.75	0	0	42.000	42.000	0.525	A53-B-42	0.980
21	40 - 39.75	0.25		0	48.000	48.000	0.55625	A53-B-42	0.971
22	39.75 - 34.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
23	34.75 - 29.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
24	29.75 - 24.75	5		0	48.000	48.000	0.55625	A53-B-42	0.971
25	24.75 - 20	4.75	0	0	48.000	48.000	0.55625	A53-B-42	0.971
26	20 - 19.75	0.25		0	54.000	54.000	0.5875	A53-B-42	0.964
27	19.75 - 14.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
28	14.75 - 9.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
29	9.75 - 4.75	5		0	54.000	54.000	0.5875	A53-B-42	0.964
30	4.75 - 4.38	0.37		0	54.000	54.000	0.5875	A53-B-42	0.964
31	4.38 - 4.13	0.25		0	54.000	54.000	0.4875	A53-B-42	1.068
32	4.13 - 0	4.13		0	54.000	54.000	0.4875	A53-B-42	1.068

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	125 - 120	4.88	6.53	3.60	
2	120 - 115	5.48	25.14	3.85	
3	115 - 110	9.86	54.10	7.65	
4	110 - 105	10.49	92.96	7.90	
5	105 - 100	11.12	133.02	8.13	
6	100 - 95	15.96	196.20	12.71	
7	95 - 90	16.79	260.45	12.99	
8	90 - 85	21.35	340.57	16.30	
9	85 - 80	22.23	422.61	16.53	
10	80 - 75.7	26.01	503.06	18.94	
11	75.7 - 75.45	26.08	507.79	18.95	
12	75.45 - 70.45	27.46	603.32	19.54	
13	70.45 - 65.45	28.85	702.51	20.13	
14	65.45 - 60.45	30.26	804.58	20.69	
15	60.45 - 60	30.38	813.90	20.74	
16	60 - 59.75	30.46	819.09	20.75	
17	59.75 - 54.75	32.00	923.68	21.07	
18	54.75 - 49.75	33.55	1029.80	21.37	
19	49.75 - 44.75	35.11	1137.35	21.65	
20	44.75 - 40	36.59	1240.75	21.89	
21	40 - 39.75	36.68	1246.23	21.90	
22	39.75 - 34.75	38.50	1356.52	22.21	
23	34.75 - 29.75	40.32	1468.29	22.49	
24	29.75 - 24.75	42.15	1581.42	22.76	
25	24.75 - 20	43.89	1690.10	23.00	
26	20 - 19.75	44.00	1695.85	23.01	
27	19.75 - 14.75	46.12	1811.71	23.32	
28	14.75 - 9.75	48.24	1929.11	23.63	
29	9.75 - 4.75	50.36	2047.99	23.92	
30	4.75 - 4.38	50.52	2056.85	23.94	
31	4.38 - 4.13	50.62	2062.84	23.95	
32	4.13 - 0	52.25	2162.23	24.18	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP24x24x0.375	Pole	1.5%	Pass
120 - 115	Pole	TP24x24x0.375	Pole	4.4%	Pass
115 - 110	Pole	TP24x24x0.375	Pole	9.2%	Pass
110 - 105	Pole	TP24x24x0.375	Pole	15.2%	Pass
105 - 100	Pole	TP24x24x0.375	Pole	21.4%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	21.0%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	27.5%	Pass
90 - 85	Pole	TP30x30x0.375	Pole	35.9%	Pass
85 - 80	Pole	TP30x30x0.375	Pole	44.2%	Pass
80 - 75.7	Pole	TP36x36x0.375	Pole	37.6%	Pass
75.7 - 75.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	29.8%	Pass
75.45 - 70.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	35.2%	Pass
70.45 - 65.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	40.8%	Pass
65.45 - 60.45	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	46.7%	Pass
60.45 - 60	Pole + Reinf.	TP36x36x0.5625	Reinf. 4 Compression	47.2%	Pass
60 - 59.75	Pole + Reinf.	TP42x42x0.525	Pole	32.3%	Pass
59.75 - 54.75	Pole + Reinf.	TP42x42x0.525	Pole	36.4%	Pass
54.75 - 49.75	Pole + Reinf.	TP42x42x0.525	Pole	40.4%	Pass
49.75 - 44.75	Pole + Reinf.	TP42x42x0.525	Pole	44.6%	Pass
44.75 - 40	Pole + Reinf.	TP42x42x0.525	Pole	48.6%	Pass
40 - 39.75	Pole + Reinf.	TP48x48x0.5563	Pole	36.0%	Pass
39.75 - 34.75	Pole + Reinf.	TP48x48x0.5563	Pole	39.2%	Pass
34.75 - 29.75	Pole + Reinf.	TP48x48x0.5563	Pole	42.3%	Pass
29.75 - 24.75	Pole + Reinf.	TP48x48x0.5563	Pole	45.6%	Pass
24.75 - 20	Pole + Reinf.	TP48x48x0.5563	Pole	48.7%	Pass
20 - 19.75	Pole + Reinf.	TP54x54x0.5875	Pole	37.2%	Pass
19.75 - 14.75	Pole + Reinf.	TP54x54x0.5875	Pole	39.8%	Pass
14.75 - 9.75	Pole + Reinf.	TP54x54x0.5875	Pole	42.3%	Pass
9.75 - 4.75	Pole + Reinf.	TP54x54x0.5875	Pole	44.9%	Pass
4.75 - 4.38	Pole + Reinf.	TP54x54x0.5875	Pole	45.1%	Pass
4.38 - 4.13	Pole + Reinf.	TP54x54x0.4875	Pole	56.5%	Pass
4.13 - 0	Pole + Reinf.	TP54x54x0.4875	Pole	59.2%	Pass
				Summary	
			Pole	59.2%	Pass
			Reinforcement	47.2%	Pass
			Overall	59.2%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity* (100% Max. Allowable)					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
125 - 120	1942	n/a	1942	27.83	n/a	27.83	1.5%					
120 - 115	1942	n/a	1942	27.83	n/a	27.83	4.4%					
115 - 110	1942	n/a	1942	27.83	n/a	27.83	9.2%					
110 - 105	1942	n/a	1942	27.83	n/a	27.83	15.2%					
105 - 100	1942	n/a	1942	27.83	n/a	27.83	21.4%					
100 - 95	3829	n/a	3829	34.90	n/a	34.90	21.0%					
95 - 90	3829	n/a	3829	34.90	n/a	34.90	27.5%					
90 - 85	3829	n/a	3829	34.90	n/a	34.90	35.9%					
85 - 80	3829	n/a	3829	34.90	n/a	34.90	44.2%					
80 - 75.7	6659	n/a	6659	41.97	n/a	41.97	37.6%					
75.7 - 75.45	6659	3108	9767	41.97	18.00	59.97	25.8%				29.8%	
75.45 - 70.45	6659	3108	9767	41.97	18.00	59.97	30.5%				35.2%	
70.45 - 65.45	6659	3108	9767	41.97	18.00	59.97	35.4%				40.8%	
65.45 - 60.45	6659	3108	9767	41.97	18.00	59.97	40.4%				46.7%	
60.45 - 60	6659	3108	9767	41.97	18.00	59.97	40.8%				47.2%	
60 - 59.75	10622	4188	14810	49.04	18.00	67.04	32.3%			29.8%		
59.75 - 54.75	10622	4188	14810	49.04	18.00	67.04	36.4%			33.5%		
54.75 - 49.75	10622	4188	14810	49.04	18.00	67.04	40.4%			37.3%		
49.75 - 44.75	10622	4188	14810	49.04	18.00	67.04	44.6%			41.1%		
44.75 - 40	10622	4188	14810	49.04	18.00	67.04	48.6%			44.7%		
40 - 39.75	15908	7435	23343	56.11	24.38	80.48	36.0%		32.2%			
39.75 - 34.75	15908	7435	23343	56.11	24.38	80.48	39.2%		35.0%			
34.75 - 29.75	15908	7435	23343	56.11	24.38	80.48	42.3%		37.8%			
29.75 - 24.75	15908	7435	23343	56.11	24.38	80.48	45.6%		40.7%			
24.75 - 20	15908	7435	23343	56.11	24.38	80.48	48.7%		43.4%			
20 - 19.75	22710	12261	34970	63.18	31.88	95.05	37.2%	35.5%				
19.75 - 14.75	22710	12261	34970	63.18	31.88	95.05	39.8%	37.9%				
14.75 - 9.75	22710	12261	34970	63.18	31.88	95.05	42.3%	40.3%				
9.75 - 4.75	22710	12261	34970	63.18	31.88	95.05	44.9%	42.8%				
4.75 - 4.38	22710	12261	34970	63.18	31.88	95.05	45.1%	42.9%				
4.38 - 4.13	22761	6480	29241	63.18	24.38	87.55	56.5%					39.0%
4.13 - 0	22761	6480	29241	63.18	24.38	87.55	59.2%					45.8%

Note: Section capacity checked using 5 degree increments.

*Rating per TIA-222-H Section 15.5.

Monopole Flange Plate Connection

Elevation = 100 ft.

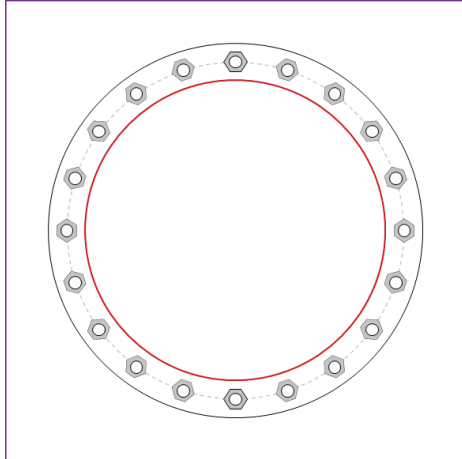


BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0
TIA-222 Revision	H

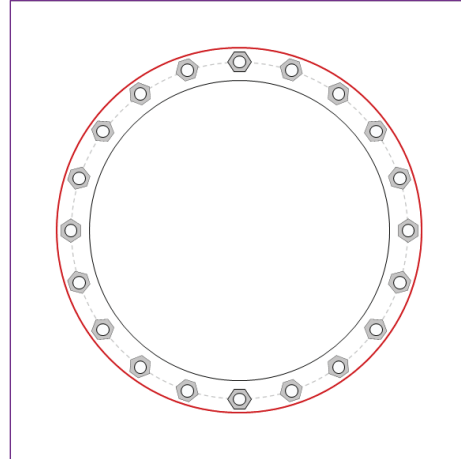
Applied Loads	
Moment (kip-ft)	133.02
Axial Force (kips)	11.12
Shear Force (kips)	8.13

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(20) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 27" BC

Top Plate Data

30" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

24" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	11.26
Allowable (kips)	54.54
Stress Rating:	19.7% Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 80 ft.

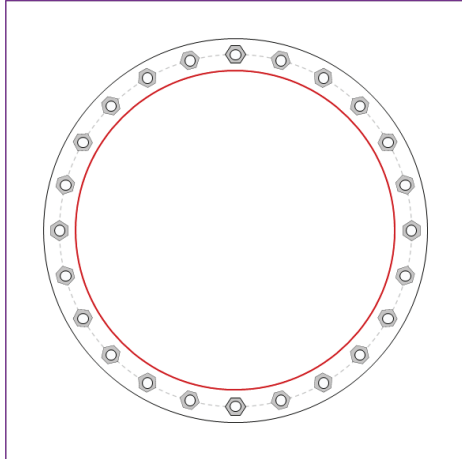


BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0
TIA-222 Revision H	

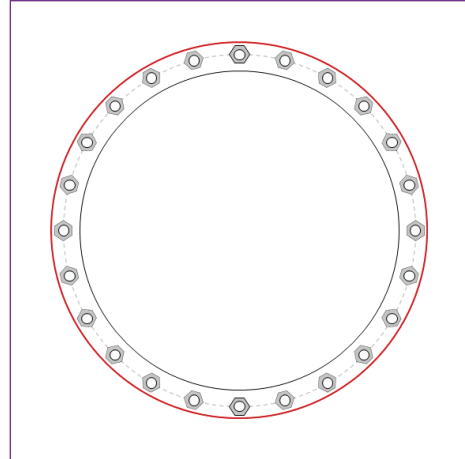
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	195.03	Moment (kip-ft)	227.58
Axial Force (kips)	22.23	Axial Force (kips)	0.00
Shear Force (kips)	16.53	Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(24) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 33" BC

Top Plate Data

36" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

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

Bridge Stiffener Group 1 Data

(3) Bolted, 4.5"x1", A572-65, Lu=16", Neglect Flange in MOI: No

Bottom Plate Data

30" ID x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	10.89
Allowable (kips)	54.53
Stress Rating:	19.0% Pass

Top Plate Capacity

Max Stress (ksi):	12.30	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	36.1%	Pass
Tension Side Stress Rating:	11.7%	Pass

Bottom Plate Capacity

Max Stress (ksi):	12.43	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	36.5%	Pass
Tension Side Stress Rating:	N/A	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	98.41
Max Tension (kip):	98.41
Comp. Capacity (kip):	196.59
Tens. Capacity (kip):	195.00 (Rupture)
Comp. Stress Rating:	47.7% Pass
Tens. Stress Rating:	48.1% Pass

Monopole Flange Plate Connection

Elevation = 60 ft.

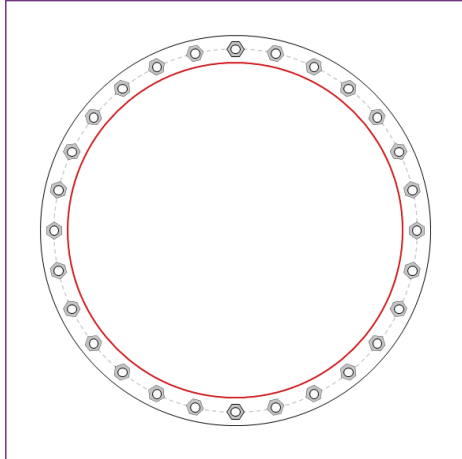


BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0
TIA-222 Revision	
	H

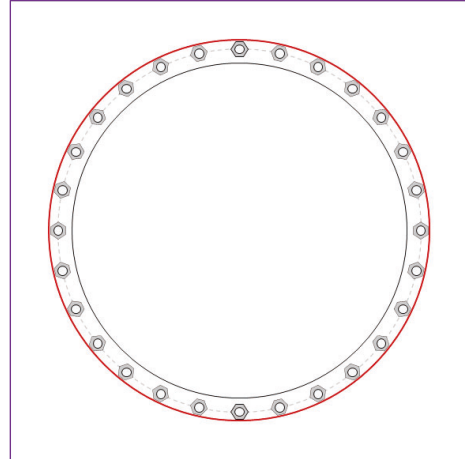
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	355.48	Moment (kip-ft)	458.42
Axial Force (kips)	30.38	Axial Force (kips)	0.00
Shear Force (kips)	20.74	Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(28) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 39" BC

Top Plate Data

42" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

36" x 0.5625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 1 Data

(3) Bolted, 6"x1", A572-65, Lu=16", Neglect Flange in MOI: No

Bottom Plate Data

36" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

42" x 0.525" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	14.54
Allowable (kips)	54.53
Stress Rating:	25.4% Pass

Top Plate Capacity

Max Stress (ksi):	15.63	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	45.9%	Pass
Tension Side Stress Rating:	15.1%	Pass

Bottom Plate Capacity

Max Stress (ksi):	9.08	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	26.7%	Pass
Tension Side Stress Rating:	N/A	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	170.58
Max Tension (kip):	170.58
Comp. Capacity (kip):	262.12
Tens. Capacity (kip):	285.00 (Rupture)
Comp. Stress Rating:	62.0% Pass
Tens. Stress Rating:	57.0% Pass

Monopole Flange Plate Connection

Elevation = 40 ft.

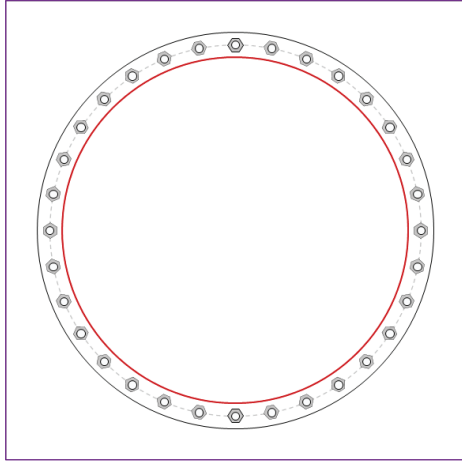


BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0
TIA-222 Revision H	

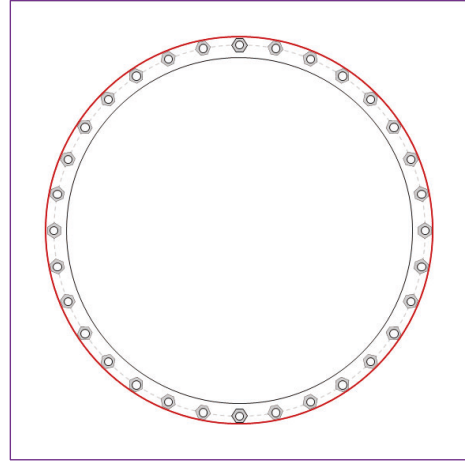
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	565.96	Moment (kip-ft)	674.79
Axial Force (kips)	36.59	Axial Force (kips)	0.00
Shear Force (kips)	21.89	Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(32) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 45" BC

Top Plate Data

48" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

42" x 0.525" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 1 Data

(3) Bolted, 6.5"x1", A572-65, Lu=16", Neglect Flange in MOI: No

Bottom Plate Data

42" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

48" x 0.55625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	17.72
Allowable (kips)	54.53
Stress Rating:	30.9% Pass

Top Plate Capacity

Max Stress (ksi):	18.77	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	55.2%	Pass
Tension Side Stress Rating:	18.0%	Pass

Bottom Plate Capacity

Max Stress (ksi):	10.50	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	30.9%	Pass
Tension Side Stress Rating:	N/A	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	220.34
Max Tension (kip):	220.34
Comp. Capacity (kip):	283.96
Tens. Capacity (kip):	315.00 (Rupture)
Comp. Stress Rating:	73.9% Pass
Tens. Stress Rating:	66.6% Pass

Monopole Flange Plate Connection

Elevation = 20 ft.

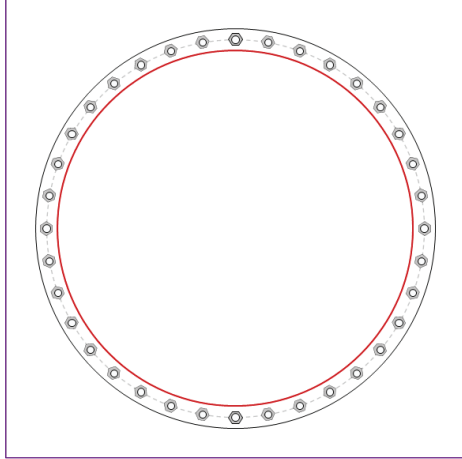


BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0
TIA-222 Revision H	

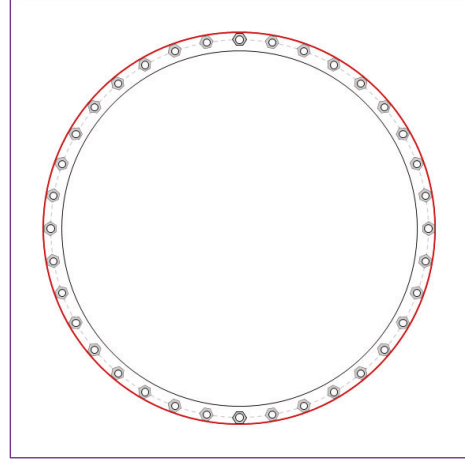
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	622.56	Moment (kip-ft)	1067.54
Axial Force (kips)	43.89	Axial Force (kips)	0.00
Shear Force (kips)	23.00	Shear Force (kips)	0.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(36) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 51" BC

Top Plate Data

54" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Top Pole Data

48" x 0.55625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bridge Stiffener Group 1 Data

(3) Bolted, 8.5"x1.25", A572-65, Lu=16", Neglect Flange in MOI: No

Bottom Plate Data

48" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

54" x 0.5875" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	15.05
Allowable (kips)	54.53
Stress Rating:	26.3% Pass

Top Plate Capacity

Max Stress (ksi):	16.31	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	48.0%	Pass
Tension Side Stress Rating:	15.0%	Pass

Bottom Plate Capacity

Max Stress (ksi):	8.86	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	26.1%	Pass
Tension Side Stress Rating:	N/A	

Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	309.15
Max Tension (kip):	309.15
Comp. Capacity (kip):	515.61
Tens. Capacity (kip):	543.75 (Rupture)
Comp. Stress Rating:	57.1% Pass
Tens. Stress Rating:	54.1% Pass

Monopole Base Plate Connection

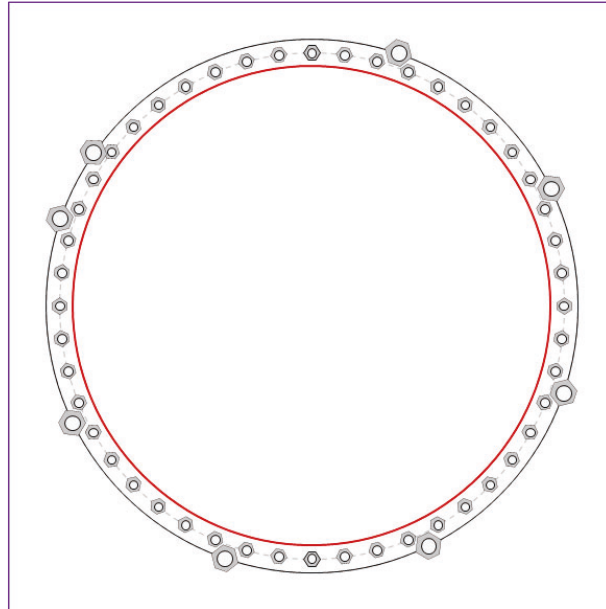


Site Info	
BU #	822765
Site Name	Branford (I-95/X55)
Order #	654626 Rev. 0

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

Applied Loads	
Moment (kip-ft)	2162.23
Axial Force (kips)	52.25
Shear Force (kips)	24.18

*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
GROUP 1: (48) 1" ϕ bolts (A687 N; $F_y=105$ ksi, $F_u=125$ ksi) on 57" BC
GROUP 2: (8) 1-3/4" ϕ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 60.25" BC <i>pos. (deg): 26, 71, 145, 161, 206, 251, 296, 341</i>
Base Plate Data
60.125" OD x 1" Plate (A36; $F_y=36$ ksi, $F_u=58$ ksi)
Stiffener Data
N/A
Pole Data
54" x 0.4875" round pole (A53-B-42; $F_y=42$ ksi, $F_u=63$ ksi)

Anchor Rod Summary (units of kips, kip-in)		
GROUP 1:		
$Pu_t = 24.39$	$\phi Pn_t = 56.81$	Stress Rating
$Vu = 0.5$	$\phi Vn = 36.82$	40.9%
$Mu = n/a$	$\phi Mn = n/a$	Pass
GROUP 2:		
$Pu_t = 84.14$	$\phi Pn_t = 178.13$	Stress Rating
$Vu = 0$	$\phi Vn = 112.75$	45.0%
$Mu = n/a$	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	29.2	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	85.8%	Pass

CCIplate

Elevation (ft) 0 (Base)

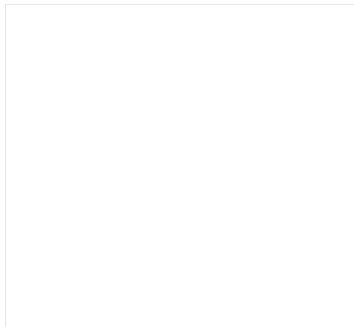
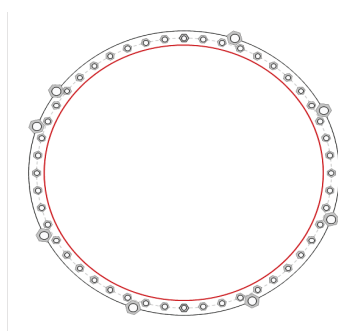
note: Bending interaction not considered when Grout Considered = "Yes"

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

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η :	l_w (in):	Thread Type	Area Override, in ²	Tension Only
1	1	0	1	A687	57	0.5	2.5	N-Included		No
2	1	7.5	1	A687	57	0.5	2.5	N-Included		No
3	1	15	1	A687	57	0.5	2.5	N-Included		No
4	1	22.5	1	A687	57	0.5	2.5	N-Included		No
5	1	30	1	A687	57	0.5	2.5	N-Included		No
6	1	37.5	1	A687	57	0.5	2.5	N-Included		No
7	1	45	1	A687	57	0.5	2.5	N-Included		No
8	1	52.5	1	A687	57	0.5	2.5	N-Included		No
9	1	60	1	A687	57	0.5	2.5	N-Included		No
10	1	67.5	1	A687	57	0.5	2.5	N-Included		No
11	1	75	1	A687	57	0.5	2.5	N-Included		No
12	1	82.5	1	A687	57	0.5	2.5	N-Included		No
13	1	90	1	A687	57	0.5	2.5	N-Included		No
14	1	97.5	1	A687	57	0.5	2.5	N-Included		No
15	1	105	1	A687	57	0.5	2.5	N-Included		No
16	1	112.5	1	A687	57	0.5	2.5	N-Included		No
17	1	120	1	A687	57	0.5	2.5	N-Included		No
18	1	127.5	1	A687	57	0.5	2.5	N-Included		No
19	1	135	1	A687	57	0.5	2.5	N-Included		No
20	1	142.5	1	A687	57	0.5	2.5	N-Included		No
21	1	150	1	A687	57	0.5	2.5	N-Included		No
22	1	157.5	1	A687	57	0.5	2.5	N-Included		No
23	1	165	1	A687	57	0.5	2.5	N-Included		No
24	1	172.5	1	A687	57	0.5	2.5	N-Included		No
25	1	180	1	A687	57	0.5	2.5	N-Included		No
26	1	187.5	1	A687	57	0.5	2.5	N-Included		No
27	1	195	1	A687	57	0.5	2.5	N-Included		No
28	1	202.5	1	A687	57	0.5	2.5	N-Included		No
29	1	210	1	A687	57	0.5	2.5	N-Included		No
30	1	217.5	1	A687	57	0.5	2.5	N-Included		No
31	1	225	1	A687	57	0.5	2.5	N-Included		No
32	1	232.5	1	A687	57	0.5	2.5	N-Included		No
33	1	240	1	A687	57	0.5	2.5	N-Included		No
34	1	247.5	1	A687	57	0.5	2.5	N-Included		No
35	1	255	1	A687	57	0.5	2.5	N-Included		No
36	1	262.5	1	A687	57	0.5	2.5	N-Included		No
37	1	270	1	A687	57	0.5	2.5	N-Included		No
38	1	277.5	1	A687	57	0.5	2.5	N-Included		No
39	1	285	1	A687	57	0.5	2.5	N-Included		No
40	1	292.5	1	A687	57	0.5	2.5	N-Included		No
41	1	300	1	A687	57	0.5	2.5	N-Included		No
42	1	307.5	1	A687	57	0.5	2.5	N-Included		No
43	1	315	1	A687	57	0.5	2.5	N-Included		No
44	1	322.5	1	A687	57	0.5	2.5	N-Included		No
45	1	330	1	A687	57	0.5	2.5	N-Included		No
46	1	337.5	1	A687	57	0.5	2.5	N-Included		No
47	1	345	1	A687	57	0.5	2.5	N-Included		No
48	1	352.5	1	A687	57	0.5	2.5	N-Included		No
49	2	26	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
50	2	71	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
51	2	145	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
52	2	161	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
53	2	206	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
54	2	251	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
55	2	296	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No
56	2	341	1.75	A193 Gr. B7	60.25	0.5	1.75	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	822765
Site Name:	Branford / I-95 / X55
Order Number:	654626 Rev. 0
TIA-222 Revison:	H
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2162.23	
Axial Force (kips)	52.26	
Shear Force (kips)	24.17	

Material Properties	
Concrete Strength, fc:	4 ksi
Rebar Strength, Fy:	60 ksi
Tie Yield Strength, Fyt:	60 ksi

Pier Design Data	
Depth	21 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
<i>From 0.5' above grade to 21' below grade</i>	
Pier Diameter	6 ft
Rebar Quantity	24
Rebar Size	9
Clear Cover to Ties	3 in
Tie Size	5
Tie Spacing	18 in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{req} (ft from TOC)	5.69	-
Soil Safety Factor	2.51	-
Max Moment (kip-ft)	2327.98	-
Rating*	50.5%	-
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	387.07	-
End Bearing (kips)	254.47	-
Weight of Concrete (kips)	109.42	-
Total Capacity (kips)	641.54	-
Axial (kips)	161.68	-
Rating*	24.0%	-
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	5.67	-
Critical Moment (kip-ft)	2327.97	-
Critical Moment Capacity	3403.00	-
Rating*	65.2%	-
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	15.97	-
Critical Shear (kip)	323.47	-
Critical Shear Capacity	489.88	-
Rating*	62.9%	-

Structural Foundation Rating*	65.2%
Soil Interaction Rating*	50.5%

*Rating per TIA-222-H Section 15.5

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

[Go to Soil Calculations](#)

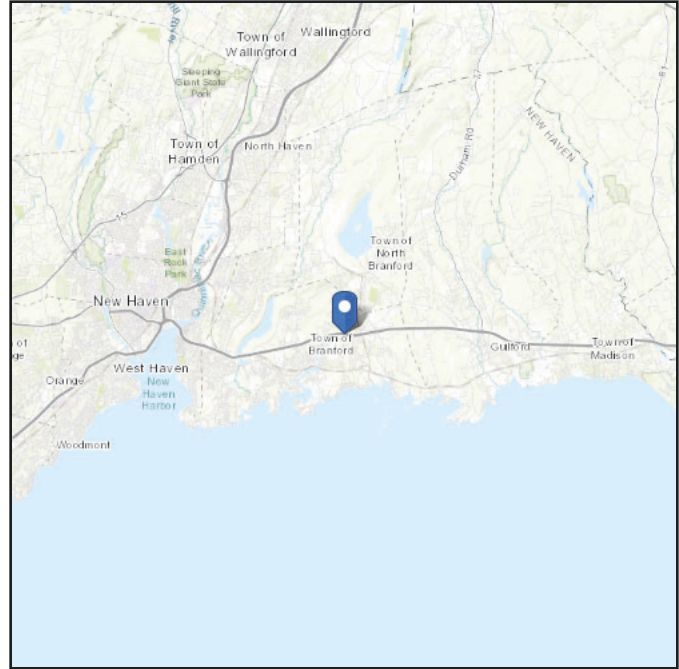
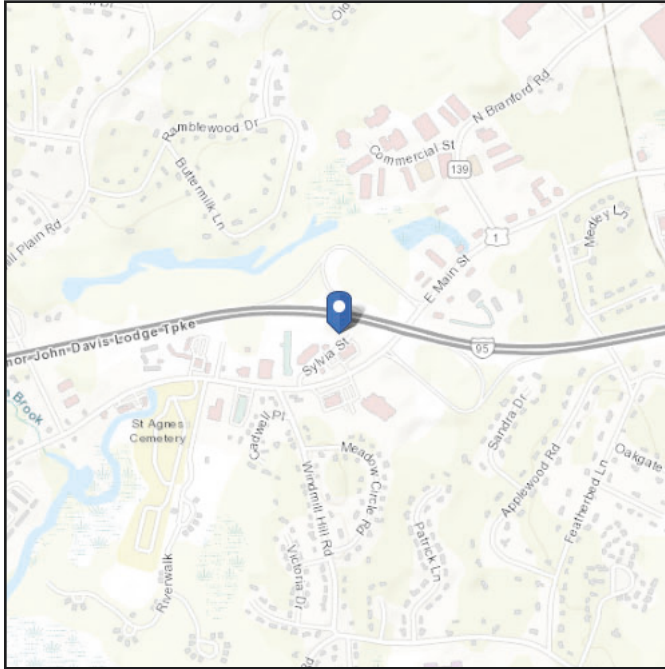
Soil Profile															
Groundwater Depth		N/A		# of Layers		3									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type	
1	0	3.333	3.333	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless	
2	3.333	11	7.667	120	150	0	34	0.979	0.979				65	Cohesionless	
3	11	21	10	150	150	0	33	1.987	1.987				12	100	Cohesionless

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: 56.16 ft (NAVD 88)
Latitude: 41.293933
Longitude: -72.785706



Wind

Results:

Wind Speed	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	93 Vmph
100-year MRI	99 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: Mon Apr 25 2022

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

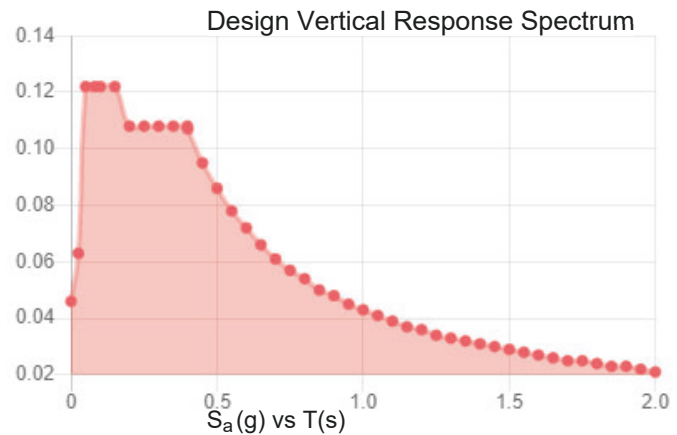
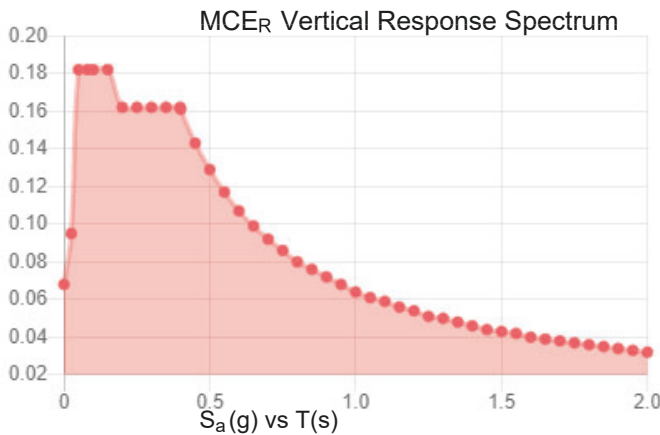
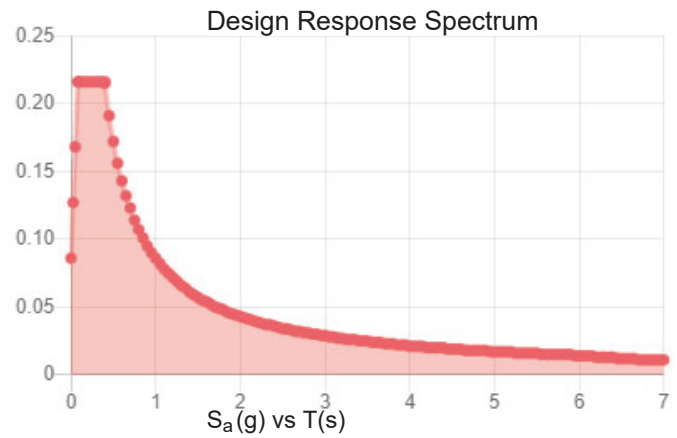
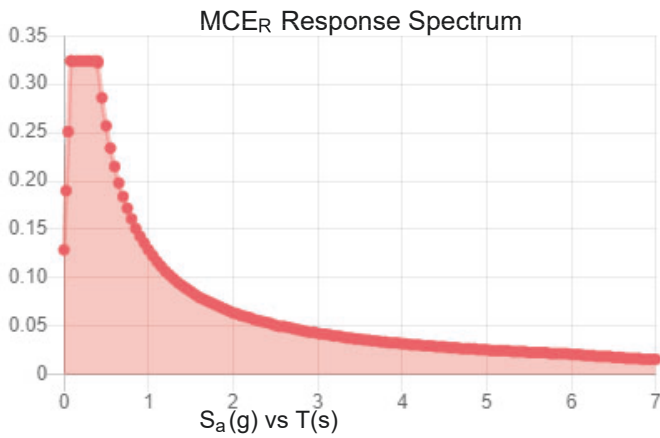
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_s :	0.202	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA _M :	0.178
S_{MS} :	0.324	F_{PGA} :	1.574
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.216	C_v :	0.704

Seismic Design Category B



Data Accessed: Mon Apr 25 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: 15 F
Gust Speed 50 mph

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

Date Accessed: Mon Apr 25 2022

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

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

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