



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

April 26, 2022

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

**RE: Notice of Exempt Modification for T-Mobile: CT11278A  
Crown Site ID# 876329  
28 Brewer Dive, Bloomfield, CT 06002  
Latitude: 41° 50' 6.57" / Longitude: -72° 44' 28.20"**

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 108-foot mount on the existing 120-foot monopole tower located at 28 Brewer Drive, Bloomfield, CT. The property is owned by the Town of Bloomfield and the tower is owned by Crown Castle. T-Mobile now intends to replace three (3) antennas and ancillary equipment at the 108ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

**Panned Modification:**

**Tower:**

Installed New:

- (3) Ericsson – AIR6419 B41 Antennas
- (3) Ericsson-Radio 4460 B25 + B66 RRU
- (1) 6x24 4AWG Hybrid Cable
- (3) Handrail support kits

Remove:

- (3) KCR118023-B2A\_B4P Antennas
- (3) Twin Style 1B AWS TMAs
- (6) Coaxial Cables (1-5/8")

**Ground:**

Install New:

- (1) 6160 Cabinet
- (1) B160 Battery Cabinet
- (1) Back Up Battery Unit

Melanie A. Bachman

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The facility was approved by the Town of Bloomfield Planner and Zoning Commission August 5, 1996.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Daniella Wong, Town of Bloomfield Mayor, Jennifer Valentino-Rodriguez, Town of Bloomfield Planning & Zoning Director. Town of Bloomfield is the property owner and Crown Castle is the tower owner.

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

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

Sincerely,



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

Melanie A. Bachman

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Attachments

cc:

Daniella Wong, Mayor  
Town Council Office  
800 Bloomfield Ave  
Bloomfield, CT 06002  
860-769-3500

Jennifer Valentino-Rodriguez, Director  
Planning & Zoning Office  
800 Bloomfield Ave  
Bloomfield, CT 06002  
860-769-3514

Town of Bloomfield – Property Owner

Crown Castle - Tower Owner

076

ZONING BOARD OF APPEALS

August 5, 1996

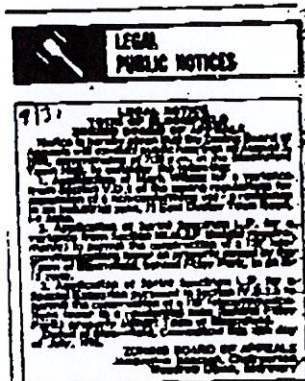
The Zoning Board of Appeals held a meeting on August 5, 1996, at 7:30 PM with the following members present.

Jacqueline Isaacson/Chairperson	Michael Kosilla/ZEO
Woodrow Dixon	Nancy Awalt/Recording Clerk
Joeannah Stinson	
Charles Strouse	

Absent: William Goldstein, Robert Horn, Valeria Caldwell-Gaines, Joel Neuwirth

The meeting was called to order at 7:36 PM. Ms. Isaacson explained that with only four (4) members present, the applicants would need 4 affirmative votes for the applications to carry. She also explained that due to the fact that items 2 and 3 needed a sign language interpreter, they would be taken out of order and heard first.

Mr. Dixon read the call for the first application.



Darryl Hendrickson was present regarding the application of Sprint Spectrum L.P. for a variance from Section III.M.4.P (height requirements) to permit the construction of a 120' telecommunication tower on property owned by the Town of Bloomfield, behind Filley Park, in an R-15 Zone. An additional application for a Special Exception pursuant to Section IV.B.2.b was also presented at this time. Steve Crotty was also present for this application.

**APPLICATION OF SPRINT SPECTRUM L.P.**

Mr. Hendrickson thanked Staff for helping them get to this point in the application especially Mr. Hooper, Mr. Chapman and Chief Mulhall. The proposal is for a 120' telecommunication facility for the Filley Park location. Sprint Spectrum is currently implementing PCS which stands for Personal Communication Service. It is the next cellular system that has been approved for an FCC license by the government. It will bring the existing cellular service up to a digital standard. These phones will enable the general consumer to enjoy 8-mail, paging, PBX, voice data, etc.

ZBA Meeting

2

August 7, 1996

There was a brief discussion regarding the exact location and then Mr. Hendrickson showed enlarged photo's of the site, taken from various views. The first photo was taken from the cul-de-sac in the Mountain View Cemetery looking north. He explained that they would be taking down a large, dead tree and erecting the tower approximately where the tree had been located. The second photo was taken from Brewer Road looking up the hill. He noted that they would be using this overgrown road off of Brewer for access for the construction trucks. There is also a pending easement agreement with Mountain View Cemetery that would allow Sprint to go through the Cemetery for their monthly inspections and maintenance of the tower so the use of the road off of Brewer would be for construction purposes only. Once completed the road would be allowed to go back to it's natural state. The third photo was taken from the entrance of Mountain View Cemetery off of Route 178. The purpose of the photo's was to show how the tower would look from different angles in Town. Sprint has worked with the Town very closely in choosing the location of this tower that would be beneficial to all the involved parties. Because of the elevation of this area, the tower will only be 120' high which is a relative low height for these towers. Sprint will also be installing an antenna for the Bloomfield Police Department to enhance their radio capabilities.

Mr. Hendrickson explained further the access road that would be used for trucks during construction. Because of the height of the weeds there might be a need to construct a temporary road but it would be allowed to grow back to its natural state when construction was complete. There is a requirement by Sprint to have a once a month maintenance visit to each tower and this would be done through the Cemetery as mentioned before.

The construction should take about 30-60 days to complete. The nearest house is no more than 600'-700' away. It was asked how the 120' height was arrived at and if the tower should fall would it hit any buildings. Steve Crotty showed graphic photos of the proposed Bloomfield site as well as other proposed and existing sites in surrounding towns. The maps showed the coverage of the town and the only non-coverage area was at the top of Avon Mountain. Mr. Crotty explained that locations are chosen so the services overlap so all areas are served. There had been a drive test done with a crane and the 120' height was what was needed to serve the Town of Bloomfield. He noted that the towers range from 100'-250' high. Because of the high elevation of this site, only 120' was all that was needed for this tower. He noted that Chief Mulhall had been extremely interested in having this installed stating that it would be a 40%-60% improvement in their radio transmissions. The tower would be delivered in sections and constructed on site. If the tower would fall it would collapse at the joint and fall into itself. At the worst case scenario, if the tower would fall straight, to the east or west it would fall on Town property, to the south it would fall on the Cemetery property and to the north it would fall on Alexandria Manor. There would be no buildings hit if the tower would fall.

Mr. Kosilla stated that there had been a meeting with the applicant, the Town Manager, The Town Planner and Chief Mulhall regarding this application and that he Town is very interested in this tower.

George Szala of 17 Downing Drive asked if the access road would be blocked off at the end of each working day. His concern was that because of the tracks made, it might encourage others to use this as a road. After a brief discussion Mr. Hendrickson stated that if the Town so wished, signs or road blocks of some sort could be used to deterred others from using the road. As mentioned before, they would let the road grow back to it's

ZBA Meeting

3

August 5, 1996

original state or if needed additional plantings would be done. Mr. Szala also asked the time schedule of this project and was told that assuming that all approvals are given, they should be going for the building permit by the end of September.

Attorney John Pinney, on behalf of the Mountain View Cemetery, stated that their first involvement with this project had been through the Town contacting them. In exchange for the access through the Cemetery, Sprint will be installing underground electric and phone wires to the existing building on the Cemetery property which had been unattainable before because of the costs. The existing building on the Cemetery property would then be used to house some of the records and the daily operations of the Cemetery. Mr. Pinney stated that the Cemetery Association supported both of the applications being presented by Sprint Spectrum L.P.

Mr. Hendrickson said that they would be leasing a 100' x 100' fenced area. The concrete slab for the tower would be 15' x 20'. There will also be a slab constructed at this time for the Town of Bloomfield's Police Department's equipment. There would also be room for future projects if needed. There would be three (3) five foot high, weatherproofed, electronic cabinets with the tower, on the slab. There was a brief discussion regarding hours of operation for the construction. Mr. Hendrickson stated that he didn't know the exact hours that Sprint used but it would probably be 7:30 AM - 5:30 PM. Mr. Hendrickson left handouts with the Board of an article from USA Today, July 17, 1996, talking about President Clintons plans to introduce cellular phones as the newest weapon in his community policing initiative.

The public hearing was closed and a brief discussion followed. Mr. Strouse then motioned to approve the application of Sprint Spectrum L. P. for a variance from Section III.M.4.P (height requirements) to permit the construction of a 120' telecommunication tower on property owned by the Town of Bloomfield, behind Filley Park, in an R-15 zone. Conditions of this approval are that the hours will be from 7:30 AM to 5:00 PM, Monday through Friday and that the access road be blocked off at the end of each working day. Ms. Scinson seconded the motion and it carried unanimously.

Ms. Stinson motioned to approve the application of Sprint Spectrum L.P. for a Special Exemption pursuant to Section IV.B.2.b to permit the construction of a 120' telecommunications tower in a residential zone (behind Filley Park) property owner: Town of Bloomfield. Mr. Dixon seconded the motion and it carried unanimously.

The call for the second hearing was read.



# Town of Bloomfield, CT

## Property Listing Report

Map Block Lot 25-537

Building # 1 PID 7622 Old MBL 176-1-1168

### Property Information

Property Location	28 BREWER DR
Owner	BLOOMFIELD TOWN OF
Co-Owner	TOWN HALL
Mailing Address	800 BLOOMFIELD AVE BLOOMFIELD CT 06002
Land Use	921 Mun Lnd Res
Land Class	E
Zoning Code	R-15
Census Tract	

Site Index	5
Acreage	3.37
Utilities	
Lot Setting/Desc	
Fire District	C
Book / Page	0113/0751

### Primary Construction Details

Year Built	0
Building Desc.	Mun Lnd Res
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Bsmt Fin Area	0
Rec Rm Area	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)	
Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

### Photo



### Sketch









**Barbadora, Jeff**

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TRACKING NUMBER [776694011218](#)

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

TO Town of Bloomfield Town Council Off  
Daniella Wong - Mayor  
800 Bloomfield Ave  
BLOOMFIELD, CT, US, 06002

REFERENCE 799001.7680

SHIPPER REFERENCE 799001.7680

SHIP DATE Tue 4/26/2022 06:58 PM

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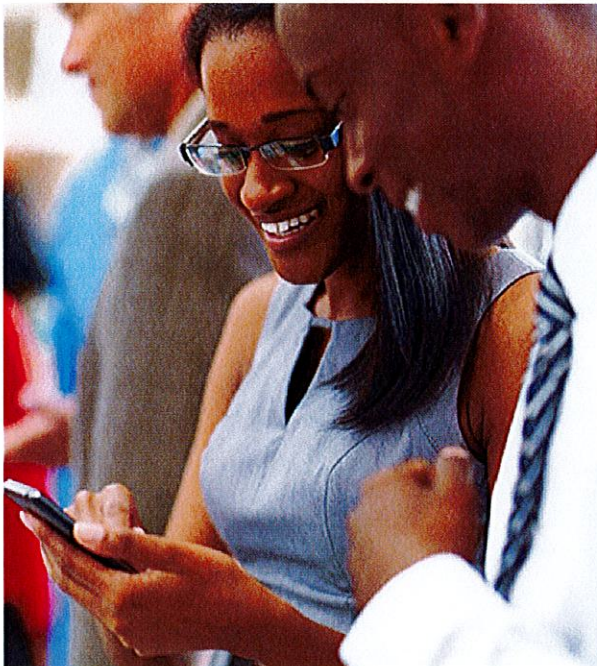
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TOTAL SHIPMENT WEIGHT 0.50 LB

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**Barbadora, Jeff**

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Received by S.SAM

[OBTAIN PROOF OF DELIVERY](#)

TRACKING NUMBER [776694059705](#)

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

TO Town of Bloomfield - Planning Zonin  
Jennifer Valentino-Rodriguez  
800 Bloomfield Ave  
BLOOMFIELD, CT, US, 06002

REFERENCE 799001.7680

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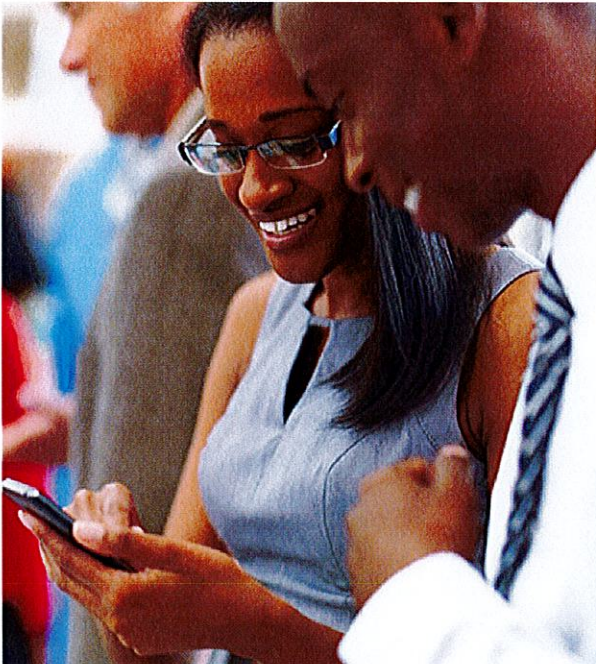
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Date: **March 31, 2022**



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

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **T-Mobile Co-Locate**  
**Site Number:** CT11278A

**Crown Castle Designation:** **BU Number:** 876329  
**Site Name:** MTN. VIEW CEM. (FILLEY PARK)  
**JDE Job Number:** 708426  
**Work Order Number:** 2088365  
**Order Number:** 607746 Rev. 0

**Engineering Firm Designation:** **Crown Castle Project Number:** 2088365

**Site Data:** **28 Brewer Dr., BLOOMFIELD, HARTFORD County, CT**  
**Latitude 41° 50' 6.57", Longitude -72° 44' 28.2"**  
**120 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**

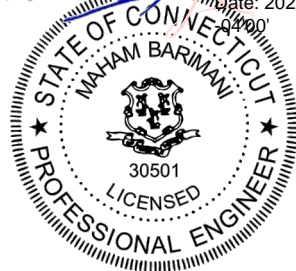
This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Mishka Stueber

Respectfully submitted by: *Barimani*

Digitally signed by Maham Barimani  
Date: 2022.04.01 15:49:03

Maham Barimani, P.E.  
Senior Project Engineer



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## 1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by ROHN. The tower has been modified multiple times to accommodate additional loading.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	121 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	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)
107.0	108.0	3	ericsson	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	1	1-3/8 1-5/8
		3	ericsson	AIR 6419 B41_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
	107.0	1	tower mounts	Platform Mount [LP 712-1_KCKR]	1	
		1	site pro 1	PRK-SFS		
48.0	50.0	1	gps	GPS_A	2	1/2
		1	lucent	KS24019-L112A		
	48.0	1	tower mounts	Side Arm Mount [SO 701-1]		

**Table 2 - Other Considered Equipment**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
118.0	120.0	1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe	2	1/2 5/8 1-1/4
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	118.0	3	alcatel lucent	TD-RRH8X20-25	3	
		1	tower mounts	Platform Mount [LP 502-1]		
	116.0	2	dragonwave	HORIZON COMPACT		
114.0	116.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-



Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	114.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER		
		1	tower mounts	Pipe Mount [PM 602-3]		
99.0	100.0	6	cci antennas	TPX-070821	2 4 12	3/8 3/4 7/8
		3	communication components inc.	DTMABP7819VG12A		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 8843 B2/B66A		
		6	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
	1	raycap	DC6-48-60-18-8F			
	99.0	1	tower mounts	Platform Mount [LP 502-1]		
89.0	89.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		
59.0	59.0	1	tower mounts	Side Arm Mount [SO 701-1]	-	-

### 3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1529722	CCISITES
4-POST-MODIFICATION INSPECTION	9094446	CCISITES
4-POST-MODIFICATION INSPECTION	6898999	CCISITES
4-POST-MODIFICATION INSPECTION	6693484	CCISITES
4-POST-MODIFICATION INSPECTION	4092494	CCISITES
4-POST-MODIFICATION INSPECTION	2343686	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1616549	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2158527	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	7922717	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	7736461	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	6413631	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2917489	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2343687	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2205450	CCISITES

### 3.1) Analysis Method

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

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

### 3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. 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
120 - 115	Pole	TP24x24x0.25	Pole	4.0%	Pass
115 - 110	Pole	TP24x24x0.25	Pole	9.6%	Pass
110 - 105	Pole	TP24x24x0.25	Pole	19.3%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	31.2%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	47.2%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	63.2%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	52.9%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	66.2%	Pass
80 - 79.75	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	63.5%	Pass
79.75 - 78.5	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	66.8%	Pass
78.5 - 78.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	36.1%	Pass
78.25 - 73.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	43.2%	Pass
73.25 - 68.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	50.6%	Pass
68.25 - 68	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	51.0%	Pass
68 - 67.75	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	51.4%	Pass
67.75 - 62.75	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	59.1%	Pass
62.75 - 60	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	63.5%	Pass
60 - 57.5	Pole + Reinf.	TP30x30x0.675	Pole	49.7%	Pass
57.5 - 57.25	Pole + Reinf.	TP30x30x0.675	Pole	50.1%	Pass
57.25 - 52.25	Pole + Reinf.	TP30x30x0.675	Pole	56.5%	Pass
52.25 - 47.25	Pole + Reinf.	TP30x30x0.675	Pole	63.1%	Pass

47.25 - 45.33	Pole + Reinf.	TP30x30x0.675	Pole	65.7%	Pass
45.33 - 45.08	Pole + Reinf.	TP30x30x0.8375	Pole	54.5%	Pass
45.08 - 40.08	Pole + Reinf.	TP30x30x0.8375	Pole	60.2%	Pass
40.08 - 35.08	Pole + Reinf.	TP30x30x0.8375	Pole	66.1%	Pass
35.08 - 33.58	Pole + Reinf.	TP30x30x0.8375	Pole	67.8%	Pass
33.58 - 33.33	Pole + Reinf.	TP30x30x1	Pole	58.1%	Pass
33.33 - 32.42	Pole + Reinf.	TP30x30x1	Pole	59.0%	Pass
32.42 - 32.17	Pole + Reinf.	TP30x30x0.675	Pole	84.2%	Pass
32.17 - 30	Pole + Reinf.	TP30x30x0.675	Pole	87.4%	Pass
30 - 26.75	Pole + Reinf.	TP36x36x0.625	Pole	71.4%	Pass
26.75 - 26.5	Pole + Reinf.	TP36x36x0.7125	Pole	62.7%	Pass
26.5 - 21.5	Pole + Reinf.	TP36x36x0.7125	Pole	68.1%	Pass
21.5 - 21.25	Pole + Reinf.	TP36x36x0.975	Pole	51.1%	Pass
21.25 - 16.25	Pole + Reinf.	TP36x36x0.975	Pole	55.3%	Pass
16.25 - 11.25	Pole + Reinf.	TP36x36x0.975	Pole	59.5%	Pass
11.25 - 6.25	Pole + Reinf.	TP36x36x0.975	Pole	63.8%	Pass
6.25 - 1.25	Pole + Reinf.	TP36x36x0.975	Pole	68.1%	Pass
1.25 - 0	Pole + Reinf.	TP36x36x0.975	Pole	69.2%	Pass
				Summary	
			Pole	87.4%	Pass
			Reinforcement	84.7%	Pass
			Overall	87.4%	Pass

**Table 5 - Tower Component Stresses vs. Capacity - LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	90	35.6	Pass
1	Flange Plate	90	43.3	Pass
1	Flange Bolts	60	17.3	Pass
1	Flange Plate	60	34.0	Pass
1	Bridge Stiffeners	60	36.1	Pass
1	Flange Bolts	30	18.0	Pass
1	Flange Plate	30	39.8	Pass
1	Bridge Stiffeners	30	39.9	Pass
1	Anchor Rods	0	82.4	Pass
1	Base Plate	0	56.5	Pass
1	Base Foundation (Structure)	0	73.2	Pass
1	Base Foundation (Soil Interaction)	0	29.4	Pass

<b>Structure Rating (max from all components) =</b>	<b>82.4%</b>
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

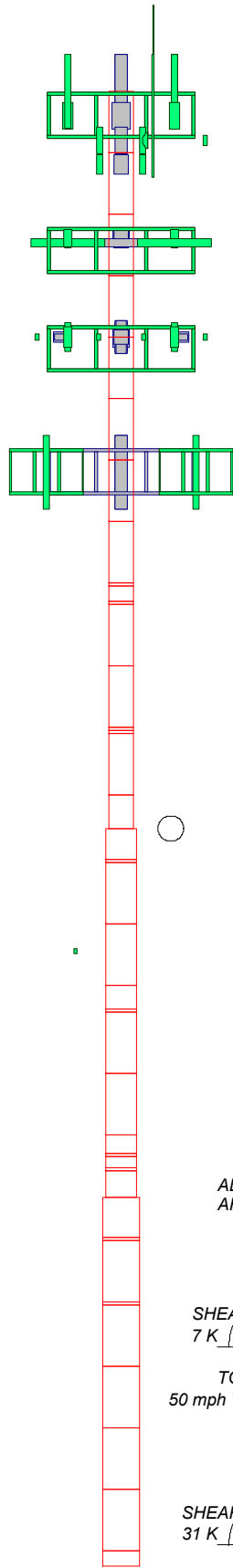
#### **4.1) Recommendations**

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	11.0	12	13	16	17	18	20	21	24	25	26	31	32	33	34	36	37	38	39	
Size	P24x0.25	P24x0.25	P24x0.25	P24x0.25	P24x0.25	P24x0.25	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375	P24x0.375
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
Grade	A53-B-42																											
Weight (K)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.3	1.3	1.7	1.7	1.7	1.7	22.2

120.0 ft  
115.0 ft  
110.0 ft  
105.0 ft  
100.0 ft  
95.0 ft  
90.0 ft  
85.0 ft  
80.0 ft  
78.5 ft  
73.3 ft  
68.3 ft  
62.8 ft  
60.0 ft  
57.5 ft  
52.3 ft  
47.3 ft  
45.3 ft  
40.1 ft  
35.1 ft  
33.6 ft  
32.2 ft  
30.0 ft  
26.8 ft  
21.5 ft  
16.3 ft  
11.3 ft  
6.3 ft  
1.3 ft  
0.0 ft



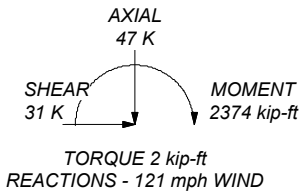
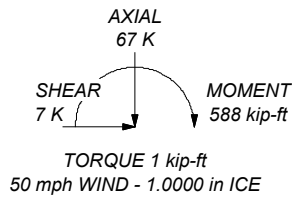
### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 87.4%

ALL REACTIONS  
ARE FACTORED



<b>Crown Castle</b> 2000 Corporate Drive Canonsburg, PA The Pathway to Possible Phone: (724) 416-2000 FAX:		Job: <b>876329</b>
		Project:
Client: Crown Castle	Drawn by: Mishka Stueber	App'd:
Code: TIA-222-H	Date: 03/31/22	Scale: NTS
Path: C:\Working\876329\WO 2088365 - SAIProd\876329-R.eri		Dwg No. E-1

## Tower Input Data

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

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 193.00 ft.
- Basic wind speed of 121 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 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: 87.4%.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

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

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	120.00-115.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L2	115.00-110.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L3	110.00-105.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L4	105.00-100.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L5	100.00-95.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L6	95.00-90.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L7	90.00-85.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L8	85.00-80.00	5.00	P24x0.375	A53-B-42 (42 ksi)	
L9	80.00-79.75	0.25	P24x0.625	A53-B-42 (42 ksi)	
L10	79.75-78.50	1.25	P24x0.625	A53-B-42 (42 ksi)	
L11	78.50-78.25	0.25	P24x0.775	A53-B-42 (42 ksi)	
L12	78.25-73.25	5.00	P24x0.775	A53-B-42 (42 ksi)	
L13	73.25-68.25	5.00	P24x0.775	A53-B-42 (42 ksi)	
L14	68.25-68.00	0.25	P24x0.775	A53-B-42 (42 ksi)	
L15	68.00-67.75	0.25	P24x0.775	A53-B-42 (42 ksi)	
L16	67.75-62.75	5.00	P24x0.775	A53-B-42 (42 ksi)	
L17	62.75-60.00	2.75	P24x0.775	A53-B-42 (42 ksi)	
L18	60.00-57.50	2.50	P30x0.675	A53-B-42 (42 ksi)	
L19	57.50-57.25	0.25	P30x0.675	A53-B-42 (42 ksi)	
L20	57.25-52.25	5.00	P30x0.675	A53-B-42 (42 ksi)	
L21	52.25-47.25	5.00	P30x0.675	A53-B-42 (42 ksi)	
L22	47.25-45.33	1.92	P30x0.675	A53-B-42 (42 ksi)	
L23	45.33-45.08	0.25	P30x0.8375	A53-B-42 (42 ksi)	
L24	45.08-40.08	5.00	P30x0.8375	A53-B-42 (42 ksi)	
L25	40.08-35.08	5.00	P30x0.8375	A53-B-42 (42 ksi)	
L26	35.08-33.58	1.50	P30x0.8375	A53-B-42 (42 ksi)	
L27	33.58-33.33	0.25	P30x1	A53-B-42 (42 ksi)	
L28	33.33-32.42	0.91	P30x1	A53-B-42 (42 ksi)	
L29	32.42-32.17	0.25	P30x0.675	A53-B-42 (42 ksi)	
L30	32.17-30.00	2.17	P30x0.675	A53-B-42 (42 ksi)	
L31	30.00-26.75	3.25	P36x0.625	A53-B-42 (42 ksi)	
L32	26.75-26.50	0.25	P36x0.7125	A53-B-42 (42 ksi)	
L33	26.50-21.50	5.00	P36x0.7125	A53-B-42 (42 ksi)	
L34	21.50-21.25	0.25	P36x0.975	A53-B-42 (42 ksi)	
L35	21.25-16.25	5.00	P36x0.975	A53-B-42	



Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L36	16.25-11.25	5.00	P36x0.975	(42 ksi) A53-B-42	
L37	11.25-6.25	5.00	P36x0.975	(42 ksi) A53-B-42	
L38	6.25-1.25	5.00	P36x0.975	(42 ksi) A53-B-42	
L39	1.25-0.00	1.25	P36x0.975	(42 ksi) A53-B-42	

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 120.00-115.00				1	1	1			
L2 115.00-110.00				1	1	1			
L3 110.00-105.00				1	1	1			
L4 105.00-100.00				1	1	1			
L5 100.00-95.00				1	1	1			
L6 95.00-90.00				1	1	1			
L7 90.00-85.00				1	1	1			
L8 85.00-80.00				1	1	1			
L9 80.00-79.75				1	1	0.933238			
L10 79.75-78.50				1	1	0.933238			
L11 78.50-78.25				1	1	0.916633			
L12 78.25-73.25				1	1	0.916633			
L13 73.25-68.25				1	1	0.916633			
L14 68.25-68.00				1	1	0.916633			
L15 68.00-67.75				1	1	0.916633			
L16 67.75-62.75				1	1	0.916633			
L17 62.75-60.00				1	1	0.916633			
L18 60.00-57.50				1	1	0.947179			
L19 57.50-57.25				1	1	0.947179			
L20 57.25-52.25				1	1	0.947179			
L21 52.25-47.25				1	1	0.947179			
L22 47.25-45.33				1	1	0.947179			
L23 45.33-45.08				1	1	0.919876			
L24 45.08-40.08				1	1	0.919876			
L25 40.08-35.08				1	1	0.919876			
L26 35.08-33.58				1	1	0.919876			

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 <sup>2</sup>	in							
L27 33.58-33.33				1	1	0.894573			
L28 33.33-32.42				1	1	0.894573			
L29 32.42-32.17				1	1	0.947179			
L30 32.17-30.00				1	1	0.947179			
L31 30.00-26.75				1	1	0.94977			
L32 26.75-26.50				1	1	0.94281			
L33 26.50-21.50				1	1	0.94281			
L34 21.50-21.25				1	1	0.917846			
L35 21.25-16.25				1	1	0.917846			
L36 16.25-11.25				1	1	0.917846			
L37 11.25-6.25				1	1	0.917846			
L38 6.25-1.25				1	1	0.917846			
L39 1.25-0.00				1	1	0.917846			

**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
FSJ4-50B(1/2)	B	No	Surface Ar (CaAa)	48.00 - 0.00	2	2	0.250 0.300	0.5300		0.14
FSJ4-50B(1/2)	B	No	Surface Ar (CaAa)	118.00 - 0.00	2	2	0.380 0.420	0.5300		0.14
****										
HCS 6X12 6AWG(1-3/8)	A	No	Surface Ar (CaAa)	107.00 - 0.00	1	1	-0.450 -0.450	1.3800		1.70
FLC 158-50J(1-5/8)	A	No	Surface Ar (CaAa)	107.00 - 0.00	7	7	-0.450 -0.300	2.0150		0.92
***										
CU12PSM9P8XXX(1-3/8)	C	No	Surface Ar (CaAa)	89.00 - 0.00	1	1	0.000 0.000	1.4110		1.66
3" x 1-1/4" Reinf. Bar	A	No	Surface Af (CaAa)	81.00 - 67.00	1	1	0.000 0.000	1.2500	8.5000	14.00
3" x 1-1/4" Reinf. Bar	B	No	Surface Af (CaAa)	81.00 - 67.00	1	1	0.300 0.300	1.2500	8.5000	14.00
3" x 1-1/4" Reinf. Bar	C	No	Surface Af (CaAa)	81.00 - 67.00	1	1	0.000 0.000	1.2500	8.5000	14.00
3" x 1-1/4" Reinf. Bar	C	No	Surface Af (CaAa)	81.00 - 67.00	1	1	0.300 0.300	1.2500	8.5000	14.00
MP3-05	A	No	Surface Af (CaAa)	36.00 - 30.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	B	No	Surface Af (CaAa)	36.00 - 30.00	1	1	0.300 0.300	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	36.00 - 30.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	36.00 - 30.00	1	1	0.300 0.300	5.3300	14.8400	0.00
MP3-03	A	No	Surface Af (CaAa)	46.50 - 36.50	1	1	0.000 0.000	4.0600	11.2600	0.00

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
MP3-03	B	No	Surface Af (CaAa)	46.50 - 36.50	1	1	0.300 0.300	4.0600	11.2600	0.00
MP3-03	C	No	Surface Af (CaAa)	46.50 - 36.50	1	1	0.000 0.000	4.0600	11.2600	0.00
MP3-03	C	No	Surface Af (CaAa)	46.50 - 36.50	1	1	0.300 0.300	4.0600	11.2600	0.00
CCI-65FP-060100	A	No	Surface Af (CaAa)	23.50 - 0.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	B	No	Surface Af (CaAa)	23.50 - 0.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	23.50 - 0.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	23.50 - 0.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-060100	A	No	Surface Af (CaAa)	59.50 - 30.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	B	No	Surface Af (CaAa)	59.50 - 30.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	59.50 - 30.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	59.50 - 30.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-060100	A	No	Surface Af (CaAa)	80.50 - 60.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	B	No	Surface Af (CaAa)	80.50 - 60.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	80.50 - 60.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-65FP-060100	C	No	Surface Af (CaAa)	80.50 - 60.50	1	1	0.300 0.300	6.0000	14.0000	0.00
CCI-65FP-065125	A	No	Surface Af (CaAa)	29.50 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-65FP-065125	B	No	Surface Af (CaAa)	29.50 - 0.00	1	1	0.300 0.300	6.5000	15.5000	0.00
CCI-65FP-065125	C	No	Surface Af (CaAa)	29.50 - 0.00	1	1	0.000 0.000	6.5000	15.5000	0.00
CCI-65FP-065125	C	No	Surface Af (CaAa)	29.50 - 0.00	1	1	0.300 0.300	6.5000	15.5000	0.00

\*\*\*\*\*  
 \*\*\*

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CaAa ft <sup>2</sup> /ft	Weight plf	
****									
HB058-M12-XXXF(5/8)	C	No	No	Inside Pole	118.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.24 0.24 0.24
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	118.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.08 1.08 1.08
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	99.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	99.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	99.00 - 0.00	4	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.58 0.58 0.58
*****									

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement ft	Total Number	C <sub>AA</sub> A ft <sup>2</sup> /ft	Weight plf
***								

**Feed Line/Linear Appurtenances Section Areas**

Tower Sectio n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> A In Face ft <sup>2</sup>	C <sub>AA</sub> A Out Face ft <sup>2</sup>	Weight K
L1	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.318	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	110.00-105.00	A	0.000	0.000	3.097	0.000	0.02
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L4	105.00-100.00	A	0.000	0.000	7.743	0.000	0.04
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L5	100.00-95.00	A	0.000	0.000	7.743	0.000	0.04
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L6	95.00-90.00	A	0.000	0.000	7.743	0.000	0.04
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L7	90.00-85.00	A	0.000	0.000	7.743	0.000	0.04
		B	0.000	0.000	0.530	0.000	0.00
		C	0.000	0.000	0.564	0.000	0.06
L8	85.00-80.00	A	0.000	0.000	8.451	0.000	0.05
		B	0.000	0.000	1.238	0.000	0.02
		C	0.000	0.000	2.122	0.000	0.09
L9	80.00-79.75	A	0.000	0.000	0.689	0.000	0.01
		B	0.000	0.000	0.329	0.000	0.00
		C	0.000	0.000	0.639	0.000	0.01
L10	79.75-78.50	A	0.000	0.000	3.446	0.000	0.03
		B	0.000	0.000	1.643	0.000	0.02
		C	0.000	0.000	3.197	0.000	0.05
L11	78.50-78.25	A	0.000	0.000	0.689	0.000	0.01
		B	0.000	0.000	0.329	0.000	0.00
		C	0.000	0.000	0.639	0.000	0.01
L12	78.25-73.25	A	0.000	0.000	13.784	0.000	0.11
		B	0.000	0.000	6.572	0.000	0.07
		C	0.000	0.000	12.789	0.000	0.20
L13	73.25-68.25	A	0.000	0.000	13.784	0.000	0.11
		B	0.000	0.000	6.572	0.000	0.07
		C	0.000	0.000	12.789	0.000	0.20
L14	68.25-68.00	A	0.000	0.000	0.689	0.000	0.01
		B	0.000	0.000	0.329	0.000	0.00
		C	0.000	0.000	0.639	0.000	0.01
L15	68.00-67.75	A	0.000	0.000	0.689	0.000	0.01
		B	0.000	0.000	0.329	0.000	0.00
		C	0.000	0.000	0.639	0.000	0.01
L16	67.75-62.75	A	0.000	0.000	12.899	0.000	0.05
		B	0.000	0.000	5.686	0.000	0.01
		C	0.000	0.000	11.018	0.000	0.08
L17	62.75-60.00	A	0.000	0.000	6.508	0.000	0.02
		B	0.000	0.000	2.542	0.000	0.00
		C	0.000	0.000	4.888	0.000	0.03
L18	60.00-57.50	A	0.000	0.000	5.871	0.000	0.02
		B	0.000	0.000	2.265	0.000	0.00
		C	0.000	0.000	4.353	0.000	0.03
L19	57.50-57.25	A	0.000	0.000	0.637	0.000	0.00

Tower Section	Tower Elevation	Face	A <sub>R</sub>	A <sub>F</sub>	C <sub>AA</sub> In Face	C <sub>AA</sub> Out Face	Weight
n	ft		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
		B	0.000	0.000	0.277	0.000	0.00
		C	0.000	0.000	0.535	0.000	0.00
L20	57.25-52.25	A	0.000	0.000	12.743	0.000	0.04
		B	0.000	0.000	5.530	0.000	0.00
		C	0.000	0.000	10.706	0.000	0.06
L21	52.25-47.25	A	0.000	0.000	12.743	0.000	0.04
		B	0.000	0.000	5.609	0.000	0.00
		C	0.000	0.000	10.706	0.000	0.06
L22	47.25-45.33	A	0.000	0.000	5.685	0.000	0.02
		B	0.000	0.000	3.119	0.000	0.00
		C	0.000	0.000	5.694	0.000	0.02
L23	45.33-45.08	A	0.000	0.000	0.806	0.000	0.00
		B	0.000	0.000	0.472	0.000	0.00
		C	0.000	0.000	0.874	0.000	0.00
L24	45.08-40.08	A	0.000	0.000	16.126	0.000	0.04
		B	0.000	0.000	9.443	0.000	0.00
		C	0.000	0.000	17.472	0.000	0.06
L25	40.08-35.08	A	0.000	0.000	15.813	0.000	0.04
		B	0.000	0.000	9.131	0.000	0.00
		C	0.000	0.000	16.847	0.000	0.06
L26	35.08-33.58	A	0.000	0.000	4.870	0.000	0.01
		B	0.000	0.000	2.869	0.000	0.00
		C	0.000	0.000	5.314	0.000	0.02
L27	33.58-33.33	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.887	0.000	0.00
L28	33.33-32.42	A	0.000	0.000	2.970	0.000	0.01
		B	0.000	0.000	1.750	0.000	0.00
		C	0.000	0.000	3.241	0.000	0.01
L29	32.42-32.17	A	0.000	0.000	0.813	0.000	0.00
		B	0.000	0.000	0.479	0.000	0.00
		C	0.000	0.000	0.887	0.000	0.00
L30	32.17-30.00	A	0.000	0.000	6.559	0.000	0.02
		B	0.000	0.000	3.659	0.000	0.00
		C	0.000	0.000	6.703	0.000	0.03
L31	30.00-26.75	A	0.000	0.000	8.012	0.000	0.03
		B	0.000	0.000	3.668	0.000	0.00
		C	0.000	0.000	6.417	0.000	0.04
L32	26.75-26.50	A	0.000	0.000	0.658	0.000	0.00
		B	0.000	0.000	0.324	0.000	0.00
		C	0.000	0.000	0.577	0.000	0.00
L33	26.50-21.50	A	0.000	0.000	15.159	0.000	0.04
		B	0.000	0.000	8.477	0.000	0.00
		C	0.000	0.000	15.539	0.000	0.06
L34	21.50-21.25	A	0.000	0.000	0.908	0.000	0.00
		B	0.000	0.000	0.574	0.000	0.00
		C	0.000	0.000	1.077	0.000	0.00
L35	21.25-16.25	A	0.000	0.000	18.159	0.000	0.04
		B	0.000	0.000	11.477	0.000	0.00
		C	0.000	0.000	21.539	0.000	0.06
L36	16.25-11.25	A	0.000	0.000	18.159	0.000	0.04
		B	0.000	0.000	11.477	0.000	0.00
		C	0.000	0.000	21.539	0.000	0.06
L37	11.25-6.25	A	0.000	0.000	18.159	0.000	0.04
		B	0.000	0.000	11.477	0.000	0.00
		C	0.000	0.000	21.539	0.000	0.06
L38	6.25-1.25	A	0.000	0.000	18.159	0.000	0.04
		B	0.000	0.000	11.477	0.000	0.00
		C	0.000	0.000	21.539	0.000	0.06
L39	1.25-0.00	A	0.000	0.000	4.040	0.000	0.01
		B	0.000	0.000	2.369	0.000	0.00
		C	0.000	0.000	4.385	0.000	0.01

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.121	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.01
L2	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.864	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.02
L3	110.00-105.00	A	0.957	0.000	0.000	4.663	0.000	0.05
		B		0.000	0.000	1.858	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.02
L4	105.00-100.00	A	0.952	0.000	0.000	11.648	0.000	0.13
		B		0.000	0.000	1.853	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.02
L5	100.00-95.00	A	0.947	0.000	0.000	11.637	0.000	0.13
		B		0.000	0.000	1.847	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.04
L6	95.00-90.00	A	0.942	0.000	0.000	11.626	0.000	0.13
		B		0.000	0.000	1.840	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.05
L7	90.00-85.00	A	0.937	0.000	0.000	11.614	0.000	0.13
		B		0.000	0.000	1.834	0.000	0.01
		C		0.000	0.000	1.314	0.000	0.07
L8	85.00-80.00	A	0.932	0.000	0.000	12.589	0.000	0.15
		B		0.000	0.000	2.815	0.000	0.03
		C		0.000	0.000	3.613	0.000	0.11
L9	80.00-79.75	A	0.929	0.000	0.000	0.975	0.000	0.01
		B		0.000	0.000	0.486	0.000	0.01
		C		0.000	0.000	0.872	0.000	0.02
L10	79.75-78.50	A	0.928	0.000	0.000	4.872	0.000	0.06
		B		0.000	0.000	2.430	0.000	0.03
		C		0.000	0.000	4.357	0.000	0.08
L11	78.50-78.25	A	0.927	0.000	0.000	0.974	0.000	0.01
		B		0.000	0.000	0.486	0.000	0.01
		C		0.000	0.000	0.871	0.000	0.02
L12	78.25-73.25	A	0.924	0.000	0.000	19.473	0.000	0.25
		B		0.000	0.000	9.706	0.000	0.13
		C		0.000	0.000	17.407	0.000	0.32
L13	73.25-68.25	A	0.917	0.000	0.000	19.446	0.000	0.25
		B		0.000	0.000	9.686	0.000	0.13
		C		0.000	0.000	17.376	0.000	0.32
L14	68.25-68.00	A	0.914	0.000	0.000	0.972	0.000	0.01
		B		0.000	0.000	0.484	0.000	0.01
		C		0.000	0.000	0.868	0.000	0.02
L15	68.00-67.75	A	0.914	0.000	0.000	0.971	0.000	0.01
		B		0.000	0.000	0.484	0.000	0.01
		C		0.000	0.000	0.868	0.000	0.02
L16	67.75-62.75	A	0.910	0.000	0.000	17.756	0.000	0.17
		B		0.000	0.000	8.003	0.000	0.06
		C		0.000	0.000	14.021	0.000	0.16
L17	62.75-60.00	A	0.904	0.000	0.000	9.004	0.000	0.08
		B		0.000	0.000	3.643	0.000	0.02
		C		0.000	0.000	6.199	0.000	0.07
L18	60.00-57.50	A	0.900	0.000	0.000	8.126	0.000	0.07
		B		0.000	0.000	3.254	0.000	0.02
		C		0.000	0.000	5.523	0.000	0.06
L19	57.50-57.25	A	0.898	0.000	0.000	0.871	0.000	0.01
		B		0.000	0.000	0.384	0.000	0.00
		C		0.000	0.000	0.670	0.000	0.01
L20	57.25-52.25	A	0.894	0.000	0.000	17.412	0.000	0.15
		B		0.000	0.000	7.674	0.000	0.04
		C		0.000	0.000	13.388	0.000	0.13
L21	52.25-47.25	A	0.886	0.000	0.000	17.384	0.000	0.15
		B		0.000	0.000	7.921	0.000	0.04
		C		0.000	0.000	13.362	0.000	0.13
L22	47.25-45.33	A	0.879	0.000	0.000	7.605	0.000	0.06
		B		0.000	0.000	4.548	0.000	0.03
		C		0.000	0.000	6.999	0.000	0.06
L23	45.33-45.08	A	0.877	0.000	0.000	1.068	0.000	0.01
		B		0.000	0.000	0.670	0.000	0.00
		C		0.000	0.000	1.067	0.000	0.01

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L24	45.08-40.08	A	0.872	0.000	0.000	21.342	0.000	0.17
		B		0.000	0.000	13.380	0.000	0.08
		C		0.000	0.000	21.327	0.000	0.18
L25	40.08-35.08	A	0.861	0.000	0.000	20.902	0.000	0.17
		B		0.000	0.000	12.937	0.000	0.07
		C		0.000	0.000	20.485	0.000	0.17
L26	35.08-33.58	A	0.853	0.000	0.000	6.369	0.000	0.05
		B		0.000	0.000	3.984	0.000	0.02
		C		0.000	0.000	6.364	0.000	0.06
L27	33.58-33.33	A	0.851	0.000	0.000	1.063	0.000	0.01
		B		0.000	0.000	0.665	0.000	0.00
		C		0.000	0.000	1.062	0.000	0.01
L28	33.33-32.42	A	0.850	0.000	0.000	3.882	0.000	0.03
		B		0.000	0.000	2.427	0.000	0.01
		C		0.000	0.000	3.878	0.000	0.03
L29	32.42-32.17	A	0.848	0.000	0.000	1.063	0.000	0.01
		B		0.000	0.000	0.664	0.000	0.00
		C		0.000	0.000	1.062	0.000	0.01
L30	32.17-30.00	A	0.845	0.000	0.000	8.635	0.000	0.07
		B		0.000	0.000	5.176	0.000	0.03
		C		0.000	0.000	8.041	0.000	0.07
L31	30.00-26.75	A	0.837	0.000	0.000	10.843	0.000	0.09
		B		0.000	0.000	5.661	0.000	0.03
		C		0.000	0.000	7.882	0.000	0.08
L32	26.75-26.50	A	0.832	0.000	0.000	0.881	0.000	0.01
		B		0.000	0.000	0.483	0.000	0.00
		C		0.000	0.000	0.702	0.000	0.01
L33	26.50-21.50	A	0.823	0.000	0.000	19.928	0.000	0.16
		B		0.000	0.000	11.953	0.000	0.06
		C		0.000	0.000	18.668	0.000	0.15
L34	21.50-21.25	A	0.814	0.000	0.000	1.169	0.000	0.01
		B		0.000	0.000	0.770	0.000	0.00
		C		0.000	0.000	1.280	0.000	0.01
L35	21.25-16.25	A	0.803	0.000	0.000	23.336	0.000	0.17
		B		0.000	0.000	15.356	0.000	0.08
		C		0.000	0.000	25.555	0.000	0.18
L36	16.25-11.25	A	0.779	0.000	0.000	23.232	0.000	0.16
		B		0.000	0.000	15.246	0.000	0.07
		C		0.000	0.000	25.433	0.000	0.18
L37	11.25-6.25	A	0.744	0.000	0.000	23.086	0.000	0.16
		B		0.000	0.000	15.091	0.000	0.07
		C		0.000	0.000	25.261	0.000	0.17
L38	6.25-1.25	A	0.684	0.000	0.000	22.829	0.000	0.15
		B		0.000	0.000	14.819	0.000	0.06
		C		0.000	0.000	24.958	0.000	0.16
L39	1.25-0.00	A	0.572	0.000	0.000	5.031	0.000	0.03
		B		0.000	0.000	3.021	0.000	0.01
		C		0.000	0.000	4.985	0.000	0.03

### Feed Line Center of Pressure

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice	Ice
		in	in	in	in
L1	120.00-115.00	0.5871	0.1908	0.8715	0.2832
L2	115.00-110.00	0.9468	0.3076	1.3290	0.4318
L3	110.00-105.00	-3.3981	1.3548	-1.6772	1.1003
L4	105.00-100.00	-6.2488	2.0309	-4.0969	1.6385
L5	100.00-95.00	-6.2488	2.0309	-4.0993	1.6381
L6	95.00-90.00	-6.2488	2.0309	-4.1018	1.6376
L7	90.00-85.00	-6.0158	2.4289	-3.9339	2.0968
L8	85.00-80.00	-5.3221	2.8477	-3.8115	2.5442
L9	80.00-79.75	-3.4901	3.4589	-3.3675	3.5677
L10	79.75-78.50	-3.4901	3.4589	-3.3677	3.5675
L11	78.50-78.25	-3.4901	3.4589	-3.3679	3.5673

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L12	78.25-73.25	-3.4901	3.4589	-3.3687	3.5668
L13	73.25-68.25	-3.4901	3.4589	-3.3702	3.5656
L14	68.25-68.00	-3.4901	3.4589	-3.3710	3.5650
L15	68.00-67.75	-3.4901	3.4589	-3.3711	3.5649
L16	67.75-62.75	-3.5913	3.3669	-3.4514	3.4055
L17	62.75-60.00	-3.6969	3.2100	-3.5280	3.2515
L18	60.00-57.50	-4.2592	3.6821	-4.1339	3.8010
L19	57.50-57.25	-4.1830	3.8893	-4.0807	3.9787
L20	57.25-52.25	-4.1830	3.8893	-4.0820	3.9780
L21	52.25-47.25	-4.1488	3.8839	-3.9839	3.9479
L22	47.25-45.33	-3.8734	4.1818	-3.4543	4.1010
L23	45.33-45.08	-3.8330	4.3399	-3.4590	4.2540
L24	45.08-40.08	-3.8330	4.3399	-3.4615	4.2538
L25	40.08-35.08	-3.8379	4.3034	-3.4626	4.2150
L26	35.08-33.58	-3.8086	4.3445	-3.4529	4.2433
L27	33.58-33.33	-3.8086	4.3445	-3.4539	4.2432
L28	33.33-32.42	-3.8086	4.3445	-3.4546	4.2431
L29	32.42-32.17	-3.8086	4.3445	-3.4553	4.2431
L30	32.17-30.00	-3.8380	4.2141	-3.4525	4.1153
L31	30.00-26.75	-4.4495	4.2408	-3.9393	4.2332
L32	26.75-26.50	-4.4292	4.4395	-3.9598	4.4092
L33	26.50-21.50	-4.3899	4.8107	-3.9973	4.7525
L34	21.50-21.25	-4.3489	5.1979	-4.0363	5.1250
L35	21.25-16.25	-4.3489	5.1979	-4.0412	5.1242
L36	16.25-11.25	-4.3489	5.1979	-4.0526	5.1224
L37	11.25-6.25	-4.3489	5.1979	-4.0688	5.1199
L38	6.25-1.25	-4.3489	5.1979	-4.0978	5.1153
L39	1.25-0.00	-4.3743	4.9577	-4.1486	4.8701

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 <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	5	FSJ4-50B(1/2)	115.00 - 118.00	1.0000	1.0000
L2	5	FSJ4-50B(1/2)	110.00 - 115.00	1.0000	1.0000
L3	5	FSJ4-50B(1/2)	105.00 - 110.00	1.0000	1.0000
L3	16	HCS 6X12 6AWG(1-3/8)	105.00 - 107.00	1.0000	1.0000
L3	17	FLC 158-50J(1-5/8)	105.00 - 107.00	1.0000	1.0000
L4	5	FSJ4-50B(1/2)	100.00 - 105.00	1.0000	1.0000
L4	16	HCS 6X12 6AWG(1-3/8)	100.00 - 105.00	1.0000	1.0000
L4	17	FLC 158-50J(1-5/8)	100.00 - 105.00	1.0000	1.0000
L5	5	FSJ4-50B(1/2)	95.00 - 100.00	1.0000	1.0000
L5	16	HCS 6X12 6AWG(1-3/8)	95.00 - 100.00	1.0000	1.0000
L5	17	FLC 158-50J(1-5/8)	95.00 - 100.00	1.0000	1.0000
L6	5	FSJ4-50B(1/2)	90.00 - 95.00	1.0000	1.0000
L6	16	HCS 6X12 6AWG(1-3/8)	90.00 - 95.00	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L6	17	FLC 158-50J(1-5/8)	90.00 - 95.00	1.0000	1.0000
L7	5	FSJ4-50B(1/2)	85.00 - 90.00	1.0000	1.0000
L7	16	HCS 6X12 6AWG(1-3/8)	85.00 - 90.00	1.0000	1.0000
L7	17	FLC 158-50J(1-5/8)	85.00 - 90.00	1.0000	1.0000
L7	19	CU12PSM9P8XXX(1-3/8)	85.00 - 89.00	1.0000	1.0000
L8	5	FSJ4-50B(1/2)	80.00 - 85.00	1.0000	1.0000
L8	16	HCS 6X12 6AWG(1-3/8)	80.00 - 85.00	1.0000	1.0000
L8	17	FLC 158-50J(1-5/8)	80.00 - 85.00	1.0000	1.0000
L8	19	CU12PSM9P8XXX(1-3/8)	80.00 - 85.00	1.0000	1.0000
L8	21	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	1.0000	1.0000
L8	22	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	1.0000	1.0000
L8	23	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	1.0000	1.0000
L8	24	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	1.0000	1.0000
L8	41	CCI-65FP-060100	80.00 - 80.50	1.0000	1.0000
L8	42	CCI-65FP-060100	80.00 - 80.50	1.0000	1.0000
L8	43	CCI-65FP-060100	80.00 - 80.50	1.0000	1.0000
L8	44	CCI-65FP-060100	80.00 - 80.50	1.0000	1.0000
L9	5	FSJ4-50B(1/2)	79.75 - 80.00	1.0000	1.0000
L9	16	HCS 6X12 6AWG(1-3/8)	79.75 - 80.00	1.0000	1.0000
L9	17	FLC 158-50J(1-5/8)	79.75 - 80.00	1.0000	1.0000
L9	19	CU12PSM9P8XXX(1-3/8)	79.75 - 80.00	1.0000	1.0000
L9	21	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	1.0000	1.0000
L9	22	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	1.0000	1.0000
L9	23	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	1.0000	1.0000
L9	24	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	1.0000	1.0000
L9	41	CCI-65FP-060100	79.75 - 80.00	1.0000	1.0000
L9	42	CCI-65FP-060100	79.75 - 80.00	1.0000	1.0000
L9	43	CCI-65FP-060100	79.75 - 80.00	1.0000	1.0000
L9	44	CCI-65FP-060100	79.75 - 80.00	1.0000	1.0000
L10	5	FSJ4-50B(1/2)	78.50 - 79.75	1.0000	1.0000
L10	16	HCS 6X12 6AWG(1-3/8)	78.50 - 79.75	1.0000	1.0000
L10	17	FLC 158-50J(1-5/8)	78.50 - 79.75	1.0000	1.0000
L10	19	CU12PSM9P8XXX(1-3/8)	78.50 - 79.75	1.0000	1.0000
L10	21	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	1.0000	1.0000
L10	22	3" x 1-1/4" Reinf. Bar	78.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L10	23	3" x 1-1/4" Reinf. Bar	79.75 78.50 - 79.75	1.0000	1.0000
L10	24	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	1.0000	1.0000
L10	41	CCI-65FP-060100	78.50 - 79.75	1.0000	1.0000
L10	42	CCI-65FP-060100	78.50 - 79.75	1.0000	1.0000
L10	43	CCI-65FP-060100	78.50 - 79.75	1.0000	1.0000
L10	44	CCI-65FP-060100	78.50 - 79.75	1.0000	1.0000
L11	5	FSJ4-50B(1/2)	78.25 - 78.50	1.0000	1.0000
L11	16	HCS 6X12 6AWG(1-3/8)	78.25 - 78.50	1.0000	1.0000
L11	17	FLC 158-50J(1-5/8)	78.25 - 78.50	1.0000	1.0000
L11	19	CU12PSM9P8XXX(1-3/8)	78.25 - 78.50	1.0000	1.0000
L11	21	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	1.0000	1.0000
L11	22	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	1.0000	1.0000
L11	23	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	1.0000	1.0000
L11	24	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	1.0000	1.0000
L11	41	CCI-65FP-060100	78.25 - 78.50	1.0000	1.0000
L11	42	CCI-65FP-060100	78.25 - 78.50	1.0000	1.0000
L11	43	CCI-65FP-060100	78.25 - 78.50	1.0000	1.0000
L11	44	CCI-65FP-060100	78.25 - 78.50	1.0000	1.0000
L12	5	FSJ4-50B(1/2)	73.25 - 78.25	1.0000	1.0000
L12	16	HCS 6X12 6AWG(1-3/8)	73.25 - 78.25	1.0000	1.0000
L12	17	FLC 158-50J(1-5/8)	73.25 - 78.25	1.0000	1.0000
L12	19	CU12PSM9P8XXX(1-3/8)	73.25 - 78.25	1.0000	1.0000
L12	21	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	1.0000	1.0000
L12	22	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	1.0000	1.0000
L12	23	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	1.0000	1.0000
L12	24	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	1.0000	1.0000
L12	41	CCI-65FP-060100	73.25 - 78.25	1.0000	1.0000
L12	42	CCI-65FP-060100	73.25 - 78.25	1.0000	1.0000
L12	43	CCI-65FP-060100	73.25 - 78.25	1.0000	1.0000
L12	44	CCI-65FP-060100	73.25 - 78.25	1.0000	1.0000
L13	5	FSJ4-50B(1/2)	68.25 - 73.25	1.0000	1.0000
L13	16	HCS 6X12 6AWG(1-3/8)	68.25 - 73.25	1.0000	1.0000
L13	17	FLC 158-50J(1-5/8)	68.25 - 73.25	1.0000	1.0000
L13	19	CU12PSM9P8XXX(1-3/8)	68.25 - 73.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L13	21	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	1.0000	1.0000
L13	22	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	1.0000	1.0000
L13	23	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	1.0000	1.0000
L13	24	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	1.0000	1.0000
L13	41	CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L13	42	CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L13	43	CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L13	44	CCI-65FP-060100	68.25 - 73.25	1.0000	1.0000
L14	5	FSJ4-50B(1/2)	68.00 - 68.25	1.0000	1.0000
L14	16	HCS 6X12 6AWG(1-3/8)	68.00 - 68.25	1.0000	1.0000
L14	17	FLC 158-50J(1-5/8)	68.00 - 68.25	1.0000	1.0000
L14	19	CU12PSM9P8XXX(1-3/8)	68.00 - 68.25	1.0000	1.0000
L14	21	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	1.0000	1.0000
L14	22	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	1.0000	1.0000
L14	23	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	1.0000	1.0000
L14	24	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	1.0000	1.0000
L14	41	CCI-65FP-060100	68.00 - 68.25	1.0000	1.0000
L14	42	CCI-65FP-060100	68.00 - 68.25	1.0000	1.0000
L14	43	CCI-65FP-060100	68.00 - 68.25	1.0000	1.0000
L14	44	CCI-65FP-060100	68.00 - 68.25	1.0000	1.0000
L15	5	FSJ4-50B(1/2)	67.75 - 68.00	1.0000	1.0000
L15	16	HCS 6X12 6AWG(1-3/8)	67.75 - 68.00	1.0000	1.0000
L15	17	FLC 158-50J(1-5/8)	67.75 - 68.00	1.0000	1.0000
L15	19	CU12PSM9P8XXX(1-3/8)	67.75 - 68.00	1.0000	1.0000
L15	21	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	1.0000	1.0000
L15	22	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	1.0000	1.0000
L15	23	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	1.0000	1.0000
L15	24	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	1.0000	1.0000
L15	41	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L15	42	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L15	43	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L15	44	CCI-65FP-060100	67.75 - 68.00	1.0000	1.0000
L16	5	FSJ4-50B(1/2)	62.75 - 67.75	1.0000	1.0000
L16	16	HCS 6X12 6AWG(1-3/8)	62.75 - 67.75	1.0000	1.0000
L16	17	FLC 158-50J(1-5/8)	62.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L16	19	CU12PSM9P8XXX(1-3/8)	67.75 - 62.75	1.0000	1.0000
L16	21	3" x 1-1/4" Reinf. Bar	67.75 - 67.00	1.0000	1.0000
L16	22	3" x 1-1/4" Reinf. Bar	67.75 - 67.00	1.0000	1.0000
L16	23	3" x 1-1/4" Reinf. Bar	67.75 - 67.00	1.0000	1.0000
L16	24	3" x 1-1/4" Reinf. Bar	67.75 - 67.00	1.0000	1.0000
L16	41	CCI-65FP-060100	67.75 - 62.75	1.0000	1.0000
L16	42	CCI-65FP-060100	67.75 - 62.75	1.0000	1.0000
L16	43	CCI-65FP-060100	67.75 - 62.75	1.0000	1.0000
L16	44	CCI-65FP-060100	67.75 - 62.75	1.0000	1.0000
L17	5	FSJ4-50B(1/2)	62.75 - 60.00	1.0000	1.0000
L17	16	HCS 6X12 6AWG(1-3/8)	62.75 - 60.00	1.0000	1.0000
L17	17	FLC 158-50J(1-5/8)	62.75 - 60.00	1.0000	1.0000
L17	19	CU12PSM9P8XXX(1-3/8)	62.75 - 60.00	1.0000	1.0000
L17	41	CCI-65FP-060100	62.75 - 60.50	1.0000	1.0000
L17	42	CCI-65FP-060100	62.75 - 60.50	1.0000	1.0000
L17	43	CCI-65FP-060100	62.75 - 60.50	1.0000	1.0000
L17	44	CCI-65FP-060100	62.75 - 60.50	1.0000	1.0000
L18	5	FSJ4-50B(1/2)	60.00 - 57.50	1.0000	1.0000
L18	16	HCS 6X12 6AWG(1-3/8)	60.00 - 57.50	1.0000	1.0000
L18	17	FLC 158-50J(1-5/8)	60.00 - 57.50	1.0000	1.0000
L18	19	CU12PSM9P8XXX(1-3/8)	60.00 - 57.50	1.0000	1.0000
L18	37	CCI-65FP-060100	59.50 - 57.50	1.0000	1.0000
L18	38	CCI-65FP-060100	59.50 - 57.50	1.0000	1.0000
L18	39	CCI-65FP-060100	59.50 - 57.50	1.0000	1.0000
L18	40	CCI-65FP-060100	59.50 - 57.50	1.0000	1.0000
L19	5	FSJ4-50B(1/2)	57.50 - 57.25	1.0000	1.0000
L19	16	HCS 6X12 6AWG(1-3/8)	57.50 - 57.25	1.0000	1.0000
L19	17	FLC 158-50J(1-5/8)	57.50 - 57.25	1.0000	1.0000
L19	19	CU12PSM9P8XXX(1-3/8)	57.50 - 57.25	1.0000	1.0000
L19	37	CCI-65FP-060100	57.50 - 57.25	1.0000	1.0000
L19	38	CCI-65FP-060100	57.50 - 57.25	1.0000	1.0000
L19	39	CCI-65FP-060100	57.50 - 57.25	1.0000	1.0000
L19	40	CCI-65FP-060100	57.50 - 57.25	1.0000	1.0000
L20	5	FSJ4-50B(1/2)	57.50 - 52.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L20	16	HCS 6X12 6AWG(1-3/8)	52.25 - 57.25	1.0000	1.0000
L20	17	FLC 158-50J(1-5/8)	52.25 - 57.25	1.0000	1.0000
L20	19	CU12PSM9P8XXX(1-3/8)	52.25 - 57.25	1.0000	1.0000
L20	37	CCI-65FP-060100	52.25 - 57.25	1.0000	1.0000
L20	38	CCI-65FP-060100	52.25 - 57.25	1.0000	1.0000
L20	39	CCI-65FP-060100	52.25 - 57.25	1.0000	1.0000
L20	40	CCI-65FP-060100	52.25 - 57.25	1.0000	1.0000
L21	4	FSJ4-50B(1/2)	47.25 - 48.00	1.0000	1.0000
L21	5	FSJ4-50B(1/2)	47.25 - 52.25	1.0000	1.0000
L21	16	HCS 6X12 6AWG(1-3/8)	47.25 - 52.25	1.0000	1.0000
L21	17	FLC 158-50J(1-5/8)	47.25 - 52.25	1.0000	1.0000
L21	19	CU12PSM9P8XXX(1-3/8)	47.25 - 52.25	1.0000	1.0000
L21	37	CCI-65FP-060100	47.25 - 52.25	1.0000	1.0000
L21	38	CCI-65FP-060100	47.25 - 52.25	1.0000	1.0000
L21	39	CCI-65FP-060100	47.25 - 52.25	1.0000	1.0000
L21	40	CCI-65FP-060100	47.25 - 52.25	1.0000	1.0000
L22	4	FSJ4-50B(1/2)	45.33 - 47.25	1.0000	1.0000
L22	5	FSJ4-50B(1/2)	45.33 - 47.25	1.0000	1.0000
L22	16	HCS 6X12 6AWG(1-3/8)	45.33 - 47.25	1.0000	1.0000
L22	17	FLC 158-50J(1-5/8)	45.33 - 47.25	1.0000	1.0000
L22	19	CU12PSM9P8XXX(1-3/8)	45.33 - 47.25	1.0000	1.0000
L22	29	MP3-03	45.33 - 46.50	1.0000	1.0000
L22	30	MP3-03	45.33 - 46.50	1.0000	1.0000
L22	31	MP3-03	45.33 - 46.50	1.0000	1.0000
L22	32	MP3-03	45.33 - 46.50	1.0000	1.0000
L22	37	CCI-65FP-060100	45.33 - 47.25	1.0000	1.0000
L22	38	CCI-65FP-060100	45.33 - 47.25	1.0000	1.0000
L22	39	CCI-65FP-060100	45.33 - 47.25	1.0000	1.0000
L22	40	CCI-65FP-060100	45.33 - 47.25	1.0000	1.0000
L23	4	FSJ4-50B(1/2)	45.08 - 45.33	1.0000	1.0000
L23	5	FSJ4-50B(1/2)	45.08 - 45.33	1.0000	1.0000
L23	16	HCS 6X12 6AWG(1-3/8)	45.08 - 45.33	1.0000	1.0000
L23	17	FLC 158-50J(1-5/8)	45.08 - 45.33	1.0000	1.0000
L23	19	CU12PSM9P8XXX(1-3/8)	45.08 - 45.33	1.0000	1.0000
L23	29	MP3-03	45.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L23	30	MP3-03	45.33 45.08 -	1.0000	1.0000
L23	31	MP3-03	45.33 45.08 -	1.0000	1.0000
L23	32	MP3-03	45.33 45.08 -	1.0000	1.0000
L23	37	CCI-65FP-060100	45.33 45.08 -	1.0000	1.0000
L23	38	CCI-65FP-060100	45.33 45.08 -	1.0000	1.0000
L23	39	CCI-65FP-060100	45.33 45.08 -	1.0000	1.0000
L23	40	CCI-65FP-060100	45.33 45.08 -	1.0000	1.0000
L24	4	FSJ4-50B(1/2)	45.33 40.08 -	1.0000	1.0000
L24	5	FSJ4-50B(1/2)	45.08 40.08 -	1.0000	1.0000
L24	16	HCS 6X12 6AWG(1-3/8)	45.08 40.08 -	1.0000	1.0000
L24	17	FLC 158-50J(1-5/8)	45.08 40.08 -	1.0000	1.0000
L24	19	CU12PSM9P8XXX(1-3/8)	45.08 40.08 -	1.0000	1.0000
L24	29	MP3-03	45.08 40.08 -	1.0000	1.0000
L24	30	MP3-03	45.08 40.08 -	1.0000	1.0000
L24	31	MP3-03	45.08 40.08 -	1.0000	1.0000
L24	32	MP3-03	45.08 40.08 -	1.0000	1.0000
L24	37	CCI-65FP-060100	45.08 40.08 -	1.0000	1.0000
L24	38	CCI-65FP-060100	45.08 40.08 -	1.0000	1.0000
L24	39	CCI-65FP-060100	45.08 40.08 -	1.0000	1.0000
L24	40	CCI-65FP-060100	45.08 40.08 -	1.0000	1.0000
L25	4	FSJ4-50B(1/2)	45.08 35.08 -	1.0000	1.0000
L25	5	FSJ4-50B(1/2)	40.08 35.08 -	1.0000	1.0000
L25	16	HCS 6X12 6AWG(1-3/8)	40.08 35.08 -	1.0000	1.0000
L25	17	FLC 158-50J(1-5/8)	40.08 35.08 -	1.0000	1.0000
L25	19	CU12PSM9P8XXX(1-3/8)	40.08 35.08 -	1.0000	1.0000
L25	25	MP3-05	40.08 35.08 -	1.0000	1.0000
L25	26	MP3-05	36.00 35.08 -	1.0000	1.0000
L25	27	MP3-05	36.00 35.08 -	1.0000	1.0000
L25	28	MP3-05	36.00 35.08 -	1.0000	1.0000
L25	29	MP3-03	36.00 36.50 -	1.0000	1.0000
L25	30	MP3-03	40.08 36.50 -	1.0000	1.0000
L25	31	MP3-03	40.08 36.50 -	1.0000	1.0000
L25	32	MP3-03	40.08 36.50 -	1.0000	1.0000
L25	37	CCI-65FP-060100	40.08 35.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L25	38	CCI-65FP-060100	35.08 - 40.08	1.0000	1.0000
L25	39	CCI-65FP-060100	35.08 - 40.08	1.0000	1.0000
L25	40	CCI-65FP-060100	35.08 - 40.08	1.0000	1.0000
L26	4	FSJ4-50B(1/2)	33.58 - 35.08	1.0000	1.0000
L26	5	FSJ4-50B(1/2)	33.58 - 35.08	1.0000	1.0000
L26	16	HCS 6X12 6AWG(1-3/8)	33.58 - 35.08	1.0000	1.0000
L26	17	FLC 158-50J(1-5/8)	33.58 - 35.08	1.0000	1.0000
L26	19	CU12PSM9P8XXX(1-3/8)	33.58 - 35.08	1.0000	1.0000
L26	25	MP3-05	33.58 - 35.08	1.0000	1.0000
L26	26	MP3-05	33.58 - 35.08	1.0000	1.0000
L26	27	MP3-05	33.58 - 35.08	1.0000	1.0000
L26	28	MP3-05	33.58 - 35.08	1.0000	1.0000
L26	37	CCI-65FP-060100	33.58 - 35.08	1.0000	1.0000
L26	38	CCI-65FP-060100	33.58 - 35.08	1.0000	1.0000
L26	39	CCI-65FP-060100	33.58 - 35.08	1.0000	1.0000
L26	40	CCI-65FP-060100	33.58 - 35.08	1.0000	1.0000
L27	4	FSJ4-50B(1/2)	33.33 - 33.58	1.0000	1.0000
L27	5	FSJ4-50B(1/2)	33.33 - 33.58	1.0000	1.0000
L27	16	HCS 6X12 6AWG(1-3/8)	33.33 - 33.58	1.0000	1.0000
L27	17	FLC 158-50J(1-5/8)	33.33 - 33.58	1.0000	1.0000
L27	19	CU12PSM9P8XXX(1-3/8)	33.33 - 33.58	1.0000	1.0000
L27	25	MP3-05	33.33 - 33.58	1.0000	1.0000
L27	26	MP3-05	33.33 - 33.58	1.0000	1.0000
L27	27	MP3-05	33.33 - 33.58	1.0000	1.0000
L27	28	MP3-05	33.33 - 33.58	1.0000	1.0000
L27	37	CCI-65FP-060100	33.33 - 33.58	1.0000	1.0000
L27	38	CCI-65FP-060100	33.33 - 33.58	1.0000	1.0000
L27	39	CCI-65FP-060100	33.33 - 33.58	1.0000	1.0000
L27	40	CCI-65FP-060100	33.33 - 33.58	1.0000	1.0000
L28	4	FSJ4-50B(1/2)	32.42 - 33.33	1.0000	1.0000
L28	5	FSJ4-50B(1/2)	32.42 - 33.33	1.0000	1.0000
L28	16	HCS 6X12 6AWG(1-3/8)	32.42 - 33.33	1.0000	1.0000
L28	17	FLC 158-50J(1-5/8)	32.42 - 33.33	1.0000	1.0000
L28	19	CU12PSM9P8XXX(1-3/8)	32.42 - 33.33	1.0000	1.0000
L28	25	MP3-05	32.42 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L28	26	MP3-05	33.33 32.42 -	1.0000	1.0000
L28	27	MP3-05	33.33 32.42 -	1.0000	1.0000
L28	28	MP3-05	33.33 32.42 -	1.0000	1.0000
L28	37	CCI-65FP-060100	33.33 32.42 -	1.0000	1.0000
L28	38	CCI-65FP-060100	33.33 32.42 -	1.0000	1.0000
L28	39	CCI-65FP-060100	33.33 32.42 -	1.0000	1.0000
L28	40	CCI-65FP-060100	33.33 32.42 -	1.0000	1.0000
L29	4	FSJ4-50B(1/2)	32.17 - 32.42	1.0000	1.0000
L29	5	FSJ4-50B(1/2)	32.17 - 32.42	1.0000	1.0000
L29	16	HCS 6X12 6AWG(1-3/8)	32.17 - 32.42	1.0000	1.0000
L29	17	FLC 158-50J(1-5/8)	32.17 - 32.42	1.0000	1.0000
L29	19	CU12PSM9P8XXX(1-3/8)	32.17 - 32.42	1.0000	1.0000
L29	25	MP3-05	32.17 - 32.42	1.0000	1.0000
L29	26	MP3-05	32.17 - 32.42	1.0000	1.0000
L29	27	MP3-05	32.17 - 32.42	1.0000	1.0000
L29	28	MP3-05	32.17 - 32.42	1.0000	1.0000
L29	37	CCI-65FP-060100	32.17 - 32.42	1.0000	1.0000
L29	38	CCI-65FP-060100	32.17 - 32.42	1.0000	1.0000
L29	39	CCI-65FP-060100	32.17 - 32.42	1.0000	1.0000
L29	40	CCI-65FP-060100	32.17 - 32.42	1.0000	1.0000
L30	4	FSJ4-50B(1/2)	30.00 - 32.17	1.0000	1.0000
L30	5	FSJ4-50B(1/2)	30.00 - 32.17	1.0000	1.0000
L30	16	HCS 6X12 6AWG(1-3/8)	30.00 - 32.17	1.0000	1.0000
L30	17	FLC 158-50J(1-5/8)	30.00 - 32.17	1.0000	1.0000
L30	19	CU12PSM9P8XXX(1-3/8)	30.00 - 32.17	1.0000	1.0000
L30	25	MP3-05	30.00 - 32.17	1.0000	1.0000
L30	26	MP3-05	30.00 - 32.17	1.0000	1.0000
L30	27	MP3-05	30.00 - 32.17	1.0000	1.0000
L30	28	MP3-05	30.00 - 32.17	1.0000	1.0000
L30	37	CCI-65FP-060100	30.50 - 32.17	1.0000	1.0000
L30	38	CCI-65FP-060100	30.50 - 32.17	1.0000	1.0000
L30	39	CCI-65FP-060100	30.50 - 32.17	1.0000	1.0000
L30	40	CCI-65FP-060100	30.50 - 32.17	1.0000	1.0000
L31	4	FSJ4-50B(1/2)	26.75 - 30.00	1.0000	1.0000



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L31	5	FSJ4-50B(1/2)	26.75 - 30.00	1.0000	1.0000
L31	16	HCS 6X12 6AWG(1-3/8)	26.75 - 30.00	1.0000	1.0000
L31	17	FLC 158-50J(1-5/8)	26.75 - 30.00	1.0000	1.0000
L31	19	CU12PSM9P8XXX(1-3/8)	26.75 - 30.00	1.0000	1.0000
L31	45	CCI-65FP-065125	26.75 - 29.50	1.0000	1.0000
L31	46	CCI-65FP-065125	26.75 - 29.50	1.0000	1.0000
L31	47	CCI-65FP-065125	26.75 - 29.50	1.0000	1.0000
L31	48	CCI-65FP-065125	26.75 - 29.50	1.0000	1.0000
L32	4	FSJ4-50B(1/2)	26.50 - 26.75	1.0000	1.0000
L32	5	FSJ4-50B(1/2)	26.50 - 26.75	1.0000	1.0000
L32	16	HCS 6X12 6AWG(1-3/8)	26.50 - 26.75	1.0000	1.0000
L32	17	FLC 158-50J(1-5/8)	26.50 - 26.75	1.0000	1.0000
L32	19	CU12PSM9P8XXX(1-3/8)	26.50 - 26.75	1.0000	1.0000
L32	45	CCI-65FP-065125	26.50 - 26.75	1.0000	1.0000
L32	46	CCI-65FP-065125	26.50 - 26.75	1.0000	1.0000
L32	47	CCI-65FP-065125	26.50 - 26.75	1.0000	1.0000
L32	48	CCI-65FP-065125	26.50 - 26.75	1.0000	1.0000
L33	4	FSJ4-50B(1/2)	21.50 - 26.50	1.0000	1.0000
L33	5	FSJ4-50B(1/2)	21.50 - 26.50	1.0000	1.0000
L33	16	HCS 6X12 6AWG(1-3/8)	21.50 - 26.50	1.0000	1.0000
L33	17	FLC 158-50J(1-5/8)	21.50 - 26.50	1.0000	1.0000
L33	19	CU12PSM9P8XXX(1-3/8)	21.50 - 26.50	1.0000	1.0000
L33	33	CCI-65FP-060100	21.50 - 23.50	1.0000	1.0000
L33	34	CCI-65FP-060100	21.50 - 23.50	1.0000	1.0000
L33	35	CCI-65FP-060100	21.50 - 23.50	1.0000	1.0000
L33	36	CCI-65FP-060100	21.50 - 23.50	1.0000	1.0000
L33	45	CCI-65FP-065125	21.50 - 26.50	1.0000	1.0000
L33	46	CCI-65FP-065125	21.50 - 26.50	1.0000	1.0000
L33	47	CCI-65FP-065125	21.50 - 26.50	1.0000	1.0000
L33	48	CCI-65FP-065125	21.50 - 26.50	1.0000	1.0000
L34	4	FSJ4-50B(1/2)	21.25 - 21.50	1.0000	1.0000
L34	5	FSJ4-50B(1/2)	21.25 - 21.50	1.0000	1.0000
L34	16	HCS 6X12 6AWG(1-3/8)	21.25 - 21.50	1.0000	1.0000
L34	17	FLC 158-50J(1-5/8)	21.25 - 21.50	1.0000	1.0000
L34	19	CU12PSM9P8XXX(1-3/8)	21.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L34	33	CCI-65FP-060100	21.50 21.25 - 21.50	1.0000	1.0000
L34	34	CCI-65FP-060100	21.25 - 21.50	1.0000	1.0000
L34	35	CCI-65FP-060100	21.25 - 21.50	1.0000	1.0000
L34	36	CCI-65FP-060100	21.25 - 21.50	1.0000	1.0000
L34	45	CCI-65FP-065125	21.25 - 21.50	1.0000	1.0000
L34	46	CCI-65FP-065125	21.25 - 21.50	1.0000	1.0000
L34	47	CCI-65FP-065125	21.25 - 21.50	1.0000	1.0000
L34	48	CCI-65FP-065125	21.25 - 21.50	1.0000	1.0000
L35	4	FSJ4-50B(1/2)	16.25 - 21.25	1.0000	1.0000
L35	5	FSJ4-50B(1/2)	16.25 - 21.25	1.0000	1.0000
L35	16	HCS 6X12 6AWG(1-3/8)	16.25 - 21.25	1.0000	1.0000
L35	17	FLC 158-50J(1-5/8)	16.25 - 21.25	1.0000	1.0000
L35	19	CU12PSM9P8XXX(1-3/8)	16.25 - 21.25	1.0000	1.0000
L35	33	CCI-65FP-060100	16.25 - 21.25	1.0000	1.0000
L35	34	CCI-65FP-060100	16.25 - 21.25	1.0000	1.0000
L35	35	CCI-65FP-060100	16.25 - 21.25	1.0000	1.0000
L35	36	CCI-65FP-060100	16.25 - 21.25	1.0000	1.0000
L35	45	CCI-65FP-065125	16.25 - 21.25	1.0000	1.0000
L35	46	CCI-65FP-065125	16.25 - 21.25	1.0000	1.0000
L35	47	CCI-65FP-065125	16.25 - 21.25	1.0000	1.0000
L35	48	CCI-65FP-065125	16.25 - 21.25	1.0000	1.0000
L36	4	FSJ4-50B(1/2)	11.25 - 16.25	1.0000	1.0000
L36	5	FSJ4-50B(1/2)	11.25 - 16.25	1.0000	1.0000
L36	16	HCS 6X12 6AWG(1-3/8)	11.25 - 16.25	1.0000	1.0000
L36	17	FLC 158-50J(1-5/8)	11.25 - 16.25	1.0000	1.0000
L36	19	CU12PSM9P8XXX(1-3/8)	11.25 - 16.25	1.0000	1.0000
L36	33	CCI-65FP-060100	11.25 - 16.25	1.0000	1.0000
L36	34	CCI-65FP-060100	11.25 - 16.25	1.0000	1.0000
L36	35	CCI-65FP-060100	11.25 - 16.25	1.0000	1.0000
L36	36	CCI-65FP-060100	11.25 - 16.25	1.0000	1.0000
L36	45	CCI-65FP-065125	11.25 - 16.25	1.0000	1.0000
L36	46	CCI-65FP-065125	11.25 - 16.25	1.0000	1.0000
L36	47	CCI-65FP-065125	11.25 - 16.25	1.0000	1.0000
L36	48	CCI-65FP-065125	11.25 - 16.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L37	4	FSJ4-50B(1/2)	6.25 - 11.25	1.0000	1.0000
L37	5	FSJ4-50B(1/2)	6.25 - 11.25	1.0000	1.0000
L37	16	HCS 6X12 6AWG(1-3/8)	6.25 - 11.25	1.0000	1.0000
L37	17	FLC 158-50J(1-5/8)	6.25 - 11.25	1.0000	1.0000
L37	19	CU12PSM9P8XXX(1-3/8)	6.25 - 11.25	1.0000	1.0000
L37	33	CCI-65FP-060100	6.25 - 11.25	1.0000	1.0000
L37	34	CCI-65FP-060100	6.25 - 11.25	1.0000	1.0000
L37	35	CCI-65FP-060100	6.25 - 11.25	1.0000	1.0000
L37	36	CCI-65FP-060100	6.25 - 11.25	1.0000	1.0000
L37	45	CCI-65FP-065125	6.25 - 11.25	1.0000	1.0000
L37	46	CCI-65FP-065125	6.25 - 11.25	1.0000	1.0000
L37	47	CCI-65FP-065125	6.25 - 11.25	1.0000	1.0000
L37	48	CCI-65FP-065125	6.25 - 11.25	1.0000	1.0000
L38	4	FSJ4-50B(1/2)	1.25 - 6.25	1.0000	1.0000
L38	5	FSJ4-50B(1/2)	1.25 - 6.25	1.0000	1.0000
L38	16	HCS 6X12 6AWG(1-3/8)	1.25 - 6.25	1.0000	1.0000
L38	17	FLC 158-50J(1-5/8)	1.25 - 6.25	1.0000	1.0000
L38	19	CU12PSM9P8XXX(1-3/8)	1.25 - 6.25	1.0000	1.0000
L38	33	CCI-65FP-060100	1.25 - 6.25	1.0000	1.0000
L38	34	CCI-65FP-060100	1.25 - 6.25	1.0000	1.0000
L38	35	CCI-65FP-060100	1.25 - 6.25	1.0000	1.0000
L38	36	CCI-65FP-060100	1.25 - 6.25	1.0000	1.0000
L38	45	CCI-65FP-065125	1.25 - 6.25	1.0000	1.0000
L38	46	CCI-65FP-065125	1.25 - 6.25	1.0000	1.0000
L38	47	CCI-65FP-065125	1.25 - 6.25	1.0000	1.0000
L38	48	CCI-65FP-065125	1.25 - 6.25	1.0000	1.0000
L39	4	FSJ4-50B(1/2)	0.00 - 1.25	1.0000	1.0000
L39	5	FSJ4-50B(1/2)	0.00 - 1.25	1.0000	1.0000
L39	16	HCS 6X12 6AWG(1-3/8)	0.00 - 1.25	1.0000	1.0000
L39	17	FLC 158-50J(1-5/8)	0.00 - 1.25	1.0000	1.0000
L39	19	CU12PSM9P8XXX(1-3/8)	0.00 - 1.25	1.0000	1.0000
L39	33	CCI-65FP-060100	0.50 - 1.25	1.0000	1.0000
L39	34	CCI-65FP-060100	0.50 - 1.25	1.0000	1.0000
L39	35	CCI-65FP-060100	0.50 - 1.25	1.0000	1.0000
L39	36	CCI-65FP-060100	0.50 - 1.25	1.0000	1.0000
L39	45	CCI-65FP-065125	0.00 - 1.25	1.0000	1.0000
L39	46	CCI-65FP-065125	0.00 - 1.25	1.0000	1.0000
L39	47	CCI-65FP-065125	0.00 - 1.25	1.0000	1.0000
L39	48	CCI-65FP-065125	0.00 - 1.25	1.0000	1.0000

**Effective Width of Flat Linear Attachments / Feed Lines**

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L8	21	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	Auto	1.0000
L8	22	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	Auto	1.0000
L8	23	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	Auto	1.0000
L8	24	3" x 1-1/4" Reinf. Bar	80.00 - 81.00	Auto	1.0000
L8	41	CCI-65FP-060100	80.00 - 80.50	Auto	1.0000
L8	42	CCI-65FP-060100	80.00 - 80.50	Auto	1.0000
L8	43	CCI-65FP-060100	80.00 - 80.50	Auto	1.0000
L8	44	CCI-65FP-060100	80.00 -	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L9	21	3" x 1-1/4" Reinf. Bar	80.50 79.75 - 80.00	Auto	1.0000
L9	22	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	Auto	1.0000
L9	23	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	Auto	1.0000
L9	24	3" x 1-1/4" Reinf. Bar	79.75 - 80.00	Auto	1.0000
L9	41	CCI-65FP-060100	79.75 - 80.00	Auto	1.0000
L9	42	CCI-65FP-060100	79.75 - 80.00	Auto	1.0000
L9	43	CCI-65FP-060100	79.75 - 80.00	Auto	1.0000
L9	44	CCI-65FP-060100	79.75 - 80.00	Auto	1.0000
L10	21	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	Auto	1.0000
L10	22	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	Auto	1.0000
L10	23	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	Auto	1.0000
L10	24	3" x 1-1/4" Reinf. Bar	78.50 - 79.75	Auto	1.0000
L10	41	CCI-65FP-060100	78.50 - 79.75	Auto	1.0000
L10	42	CCI-65FP-060100	78.50 - 79.75	Auto	1.0000
L10	43	CCI-65FP-060100	78.50 - 79.75	Auto	1.0000
L10	44	CCI-65FP-060100	78.50 - 79.75	Auto	1.0000
L11	21	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	Auto	1.0000
L11	22	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	Auto	1.0000
L11	23	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	Auto	1.0000
L11	24	3" x 1-1/4" Reinf. Bar	78.25 - 78.50	Auto	1.0000
L11	41	CCI-65FP-060100	78.25 - 78.50	Auto	1.0000
L11	42	CCI-65FP-060100	78.25 - 78.50	Auto	1.0000
L11	43	CCI-65FP-060100	78.25 - 78.50	Auto	1.0000
L11	44	CCI-65FP-060100	78.25 - 78.50	Auto	1.0000
L12	21	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	Auto	1.0000
L12	22	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	Auto	1.0000
L12	23	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	Auto	1.0000
L12	24	3" x 1-1/4" Reinf. Bar	73.25 - 78.25	Auto	1.0000
L12	41	CCI-65FP-060100	73.25 - 78.25	Auto	1.0000
L12	42	CCI-65FP-060100	73.25 - 78.25	Auto	1.0000
L12	43	CCI-65FP-060100	73.25 - 78.25	Auto	1.0000
L12	44	CCI-65FP-060100	73.25 - 78.25	Auto	1.0000
L13	21	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	Auto	1.0000
L13	22	3" x 1-1/4" Reinf. Bar	68.25 -	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L13	23	3" x 1-1/4" Reinf. Bar	73.25 68.25 - 73.25	Auto	1.0000
L13	24	3" x 1-1/4" Reinf. Bar	68.25 - 73.25	Auto	1.0000
L13	41	CCI-65FP-060100	68.25 - 73.25	Auto	1.0000
L13	42	CCI-65FP-060100	68.25 - 73.25	Auto	1.0000
L13	43	CCI-65FP-060100	68.25 - 73.25	Auto	1.0000
L13	44	CCI-65FP-060100	68.25 - 73.25	Auto	1.0000
L14	21	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	Auto	1.0000
L14	22	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	Auto	1.0000
L14	23	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	Auto	1.0000
L14	24	3" x 1-1/4" Reinf. Bar	68.00 - 68.25	Auto	1.0000
L14	41	CCI-65FP-060100	68.00 - 68.25	Auto	1.0000
L14	42	CCI-65FP-060100	68.00 - 68.25	Auto	1.0000
L14	43	CCI-65FP-060100	68.00 - 68.25	Auto	1.0000
L14	44	CCI-65FP-060100	68.00 - 68.25	Auto	1.0000
L15	21	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	Auto	1.0000
L15	22	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	Auto	1.0000
L15	23	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	Auto	1.0000
L15	24	3" x 1-1/4" Reinf. Bar	67.75 - 68.00	Auto	1.0000
L15	41	CCI-65FP-060100	67.75 - 68.00	Auto	1.0000
L15	42	CCI-65FP-060100	67.75 - 68.00	Auto	1.0000
L15	43	CCI-65FP-060100	67.75 - 68.00	Auto	1.0000
L15	44	CCI-65FP-060100	67.75 - 68.00	Auto	1.0000
L16	21	3" x 1-1/4" Reinf. Bar	67.00 - 67.75	Auto	1.0000
L16	22	3" x 1-1/4" Reinf. Bar	67.00 - 67.75	Auto	1.0000
L16	23	3" x 1-1/4" Reinf. Bar	67.00 - 67.75	Auto	1.0000
L16	24	3" x 1-1/4" Reinf. Bar	67.00 - 67.75	Auto	1.0000
L16	41	CCI-65FP-060100	62.75 - 67.75	Auto	1.0000
L16	42	CCI-65FP-060100	62.75 - 67.75	Auto	1.0000
L16	43	CCI-65FP-060100	62.75 - 67.75	Auto	1.0000
L16	44	CCI-65FP-060100	62.75 - 67.75	Auto	1.0000
L17	41	CCI-65FP-060100	60.50 - 62.75	Auto	1.0000
L17	42	CCI-65FP-060100	60.50 - 62.75	Auto	1.0000
L17	43	CCI-65FP-060100	60.50 - 62.75	Auto	1.0000
L17	44	CCI-65FP-060100	60.50 -	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	37	CCI-65FP-060100	62.75 57.50 - 59.50	Auto	1.0000
L18	38	CCI-65FP-060100	57.50 - 59.50	Auto	1.0000
L18	39	CCI-65FP-060100	57.50 - 59.50	Auto	1.0000
L18	40	CCI-65FP-060100	57.50 - 59.50	Auto	1.0000
L19	37	CCI-65FP-060100	57.25 - 57.50	Auto	1.0000
L19	38	CCI-65FP-060100	57.25 - 57.50	Auto	1.0000
L19	39	CCI-65FP-060100	57.25 - 57.50	Auto	1.0000
L19	40	CCI-65FP-060100	57.25 - 57.50	Auto	1.0000
L20	37	CCI-65FP-060100	52.25 - 57.25	Auto	1.0000
L20	38	CCI-65FP-060100	52.25 - 57.25	Auto	1.0000
L20	39	CCI-65FP-060100	52.25 - 57.25	Auto	1.0000
L20	40	CCI-65FP-060100	52.25 - 57.25	Auto	1.0000
L21	37	CCI-65FP-060100	47.25 - 52.25	Auto	1.0000
L21	38	CCI-65FP-060100	47.25 - 52.25	Auto	1.0000
L21	39	CCI-65FP-060100	47.25 - 52.25	Auto	1.0000
L21	40	CCI-65FP-060100	47.25 - 52.25	Auto	1.0000
L22	29	MP3-03	45.33 - 46.50	Auto	1.0000
L22	30	MP3-03	45.33 - 46.50	Auto	1.0000
L22	31	MP3-03	45.33 - 46.50	Auto	1.0000
L22	32	MP3-03	45.33 - 46.50	Auto	1.0000
L22	37	CCI-65FP-060100	45.33 - 47.25	Auto	1.0000
L22	38	CCI-65FP-060100	45.33 - 47.25	Auto	1.0000
L22	39	CCI-65FP-060100	45.33 - 47.25	Auto	1.0000
L22	40	CCI-65FP-060100	45.33 - 47.25	Auto	1.0000
L23	29	MP3-03	45.08 - 45.33	Auto	1.0000
L23	30	MP3-03	45.08 - 45.33	Auto	1.0000
L23	31	MP3-03	45.08 - 45.33	Auto	1.0000
L23	32	MP3-03	45.08 - 45.33	Auto	1.0000
L23	37	CCI-65FP-060100	45.08 - 45.33	Auto	1.0000
L23	38	CCI-65FP-060100	45.08 - 45.33	Auto	1.0000
L23	39	CCI-65FP-060100	45.08 - 45.33	Auto	1.0000
L23	40	CCI-65FP-060100	45.08 - 45.33	Auto	1.0000
L24	29	MP3-03	40.08 - 45.08	Auto	1.0000
L24	30	MP3-03	40.08 -	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	31	MP3-03	45.08 40.08 - 45.08	Auto	1.0000
L24	32	MP3-03	40.08 - 45.08	Auto	1.0000
L24	37	CCI-65FP-060100	40.08 - 45.08	Auto	1.0000
L24	38	CCI-65FP-060100	40.08 - 45.08	Auto	1.0000
L24	39	CCI-65FP-060100	40.08 - 45.08	Auto	1.0000
L24	40	CCI-65FP-060100	40.08 - 45.08	Auto	1.0000
L25	25	MP3-05	35.08 - 36.00	Auto	1.0000
L25	26	MP3-05	35.08 - 36.00	Auto	1.0000
L25	27	MP3-05	35.08 - 36.00	Auto	1.0000
L25	28	MP3-05	35.08 - 36.00	Auto	1.0000
L25	29	MP3-03	36.50 - 40.08	Auto	1.0000
L25	30	MP3-03	36.50 - 40.08	Auto	1.0000
L25	31	MP3-03	36.50 - 40.08	Auto	1.0000
L25	32	MP3-03	36.50 - 40.08	Auto	1.0000
L25	37	CCI-65FP-060100	35.08 - 40.08	Auto	1.0000
L25	38	CCI-65FP-060100	35.08 - 40.08	Auto	1.0000
L25	39	CCI-65FP-060100	35.08 - 40.08	Auto	1.0000
L25	40	CCI-65FP-060100	35.08 - 40.08	Auto	1.0000
L26	25	MP3-05	33.58 - 35.08	Auto	1.0000
L26	26	MP3-05	33.58 - 35.08	Auto	1.0000
L26	27	MP3-05	33.58 - 35.08	Auto	1.0000
L26	28	MP3-05	33.58 - 35.08	Auto	1.0000
L26	37	CCI-65FP-060100	33.58 - 35.08	Auto	1.0000
L26	38	CCI-65FP-060100	33.58 - 35.08	Auto	1.0000
L26	39	CCI-65FP-060100	33.58 - 35.08	Auto	1.0000
L26	40	CCI-65FP-060100	33.58 - 35.08	Auto	1.0000
L27	25	MP3-05	33.33 - 33.58	Auto	1.0000
L27	26	MP3-05	33.33 - 33.58	Auto	1.0000
L27	27	MP3-05	33.33 - 33.58	Auto	1.0000
L27	28	MP3-05	33.33 - 33.58	Auto	1.0000
L27	37	CCI-65FP-060100	33.33 - 33.58	Auto	1.0000
L27	38	CCI-65FP-060100	33.33 - 33.58	Auto	1.0000
L27	39	CCI-65FP-060100	33.33 - 33.58	Auto	1.0000
L27	40	CCI-65FP-060100	33.33 -	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L28	25	MP3-05	33.58 32.42 - 33.33	Auto	1.0000
L28	26	MP3-05	32.42 - 33.33	Auto	1.0000
L28	27	MP3-05	32.42 - 33.33	Auto	1.0000
L28	28	MP3-05	32.42 - 33.33	Auto	1.0000
L28	37	CCI-65FP-060100	32.42 - 33.33	Auto	1.0000
L28	38	CCI-65FP-060100	32.42 - 33.33	Auto	1.0000
L28	39	CCI-65FP-060100	32.42 - 33.33	Auto	1.0000
L28	40	CCI-65FP-060100	32.42 - 33.33	Auto	1.0000
L29	25	MP3-05	32.17 - 32.42	Auto	1.0000
L29	26	MP3-05	32.17 - 32.42	Auto	1.0000
L29	27	MP3-05	32.17 - 32.42	Auto	1.0000
L29	28	MP3-05	32.17 - 32.42	Auto	1.0000
L29	37	CCI-65FP-060100	32.17 - 32.42	Auto	1.0000
L29	38	CCI-65FP-060100	32.17 - 32.42	Auto	1.0000
L29	39	CCI-65FP-060100	32.17 - 32.42	Auto	1.0000
L29	40	CCI-65FP-060100	32.17 - 32.42	Auto	1.0000
L30	25	MP3-05	30.00 - 32.17	Auto	1.0000
L30	26	MP3-05	30.00 - 32.17	Auto	1.0000
L30	27	MP3-05	30.00 - 32.17	Auto	1.0000
L30	28	MP3-05	30.00 - 32.17	Auto	1.0000
L30	37	CCI-65FP-060100	30.50 - 32.17	Auto	1.0000
L30	38	CCI-65FP-060100	30.50 - 32.17	Auto	1.0000
L30	39	CCI-65FP-060100	30.50 - 32.17	Auto	1.0000
L30	40	CCI-65FP-060100	30.50 - 32.17	Auto	1.0000
L31	45	CCI-65FP-065125	26.75 - 29.50	Auto	1.0000
L31	46	CCI-65FP-065125	26.75 - 29.50	Auto	1.0000
L31	47	CCI-65FP-065125	26.75 - 29.50	Auto	1.0000
L31	48	CCI-65FP-065125	26.75 - 29.50	Auto	1.0000
L32	45	CCI-65FP-065125	26.50 - 26.75	Auto	1.0000
L32	46	CCI-65FP-065125	26.50 - 26.75	Auto	1.0000
L32	47	CCI-65FP-065125	26.50 - 26.75	Auto	1.0000
L32	48	CCI-65FP-065125	26.50 - 26.75	Auto	1.0000
L33	33	CCI-65FP-060100	21.50 - 23.50	Auto	1.0000
L33	34	CCI-65FP-060100	21.50 -	Auto	1.0000



Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L33	35	CCI-65FP-060100	23.50 21.50 - 23.50	Auto	1.0000
L33	36	CCI-65FP-060100	21.50 - 23.50	Auto	1.0000
L33	45	CCI-65FP-065125	21.50 - 26.50	Auto	1.0000
L33	46	CCI-65FP-065125	21.50 - 26.50	Auto	1.0000
L33	47	CCI-65FP-065125	21.50 - 26.50	Auto	1.0000
L33	48	CCI-65FP-065125	21.50 - 26.50	Auto	1.0000
L34	33	CCI-65FP-060100	21.25 - 21.50	Auto	1.0000
L34	34	CCI-65FP-060100	21.25 - 21.50	Auto	1.0000
L34	35	CCI-65FP-060100	21.25 - 21.50	Auto	1.0000
L34	36	CCI-65FP-060100	21.25 - 21.50	Auto	1.0000
L34	45	CCI-65FP-065125	21.25 - 21.50	Auto	1.0000
L34	46	CCI-65FP-065125	21.25 - 21.50	Auto	1.0000
L34	47	CCI-65FP-065125	21.25 - 21.50	Auto	1.0000
L34	48	CCI-65FP-065125	21.25 - 21.50	Auto	1.0000
L35	33	CCI-65FP-060100	16.25 - 21.25	Auto	1.0000
L35	34	CCI-65FP-060100	16.25 - 21.25	Auto	1.0000
L35	35	CCI-65FP-060100	16.25 - 21.25	Auto	1.0000
L35	36	CCI-65FP-060100	16.25 - 21.25	Auto	1.0000
L35	45	CCI-65FP-065125	16.25 - 21.25	Auto	1.0000
L35	46	CCI-65FP-065125	16.25 - 21.25	Auto	1.0000
L35	47	CCI-65FP-065125	16.25 - 21.25	Auto	1.0000
L35	48	CCI-65FP-065125	16.25 - 21.25	Auto	1.0000
L36	33	CCI-65FP-060100	11.25 - 16.25	Auto	1.0000
L36	34	CCI-65FP-060100	11.25 - 16.25	Auto	1.0000
L36	35	CCI-65FP-060100	11.25 - 16.25	Auto	1.0000
L36	36	CCI-65FP-060100	11.25 - 16.25	Auto	1.0000
L36	45	CCI-65FP-065125	11.25 - 16.25	Auto	1.0000
L36	46	CCI-65FP-065125	11.25 - 16.25	Auto	1.0000
L36	47	CCI-65FP-065125	11.25 - 16.25	Auto	1.0000
L36	48	CCI-65FP-065125	11.25 - 16.25	Auto	1.0000
L37	33	CCI-65FP-060100	6.25 - 11.25	Auto	1.0000
L37	34	CCI-65FP-060100	6.25 - 11.25	Auto	1.0000
L37	35	CCI-65FP-060100	6.25 - 11.25	Auto	1.0000
L37	36	CCI-65FP-060100	6.25 - 11.25	Auto	1.0000
L37	45	CCI-65FP-065125	6.25 - 11.25	Auto	1.0000
L37	46	CCI-65FP-065125	6.25 - 11.25	Auto	1.0000
L37	47	CCI-65FP-065125	6.25 - 11.25	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L37	48	CCI-65FP-065125	6.25 - 11.25	Auto	1.0000
L38	33	CCI-65FP-060100	1.25 - 6.25	Auto	1.0000
L38	34	CCI-65FP-060100	1.25 - 6.25	Auto	1.0000
L38	35	CCI-65FP-060100	1.25 - 6.25	Auto	1.0000
L38	36	CCI-65FP-060100	1.25 - 6.25	Auto	1.0000
L38	45	CCI-65FP-065125	1.25 - 6.25	Auto	1.0000
L38	46	CCI-65FP-065125	1.25 - 6.25	Auto	1.0000
L38	47	CCI-65FP-065125	1.25 - 6.25	Auto	1.0000
L38	48	CCI-65FP-065125	1.25 - 6.25	Auto	1.0000
L39	33	CCI-65FP-060100	0.50 - 1.25	Auto	1.0000
L39	34	CCI-65FP-060100	0.50 - 1.25	Auto	1.0000
L39	35	CCI-65FP-060100	0.50 - 1.25	Auto	1.0000
L39	36	CCI-65FP-060100	0.50 - 1.25	Auto	1.0000
L39	45	CCI-65FP-065125	0.00 - 1.25	Auto	1.0000
L39	46	CCI-65FP-065125	0.00 - 1.25	Auto	1.0000
L39	47	CCI-65FP-065125	0.00 - 1.25	Auto	1.0000
L39	48	CCI-65FP-065125	0.00 - 1.25	Auto	1.0000

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Lightning Rod 5/8"x4'	B	From Leg	2.00 0.00 7.00	0.0000	118.00
10'x4" Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	118.00
*** 118 ***					
APXV9ERR18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	118.00
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	118.00
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	118.00
TD-RRH8X20-25	A	From Leg	4.00 0.00 0.00	0.0000	118.00
TD-RRH8X20-25	B	From Leg	4.00 0.00 0.00	0.0000	118.00
TD-RRH8X20-25	C	From Leg	4.00 0.00 0.00	0.0000	118.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment  °	Placement  ft
(2) HORIZON COMPACT	B	From Leg	4.00 0.00 -2.00	0.0000	118.00
10'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	118.00
(2) 7'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00
(2) 7'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	118.00
10'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	118.00
Platform Mount [LP 502-1] *** 114 ***	C	None		0.0000	118.00
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.00 2.00	0.0000	114.00
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.00 2.00	0.0000	114.00
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.00 2.00	0.0000	114.00
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 0.00	0.0000	114.00
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 0.00	0.0000	114.00
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 0.00	0.0000	114.00
Pipe Mount [PM 602-3] *** 107 ***	C	None		0.0000	114.00
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	107.00
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	107.00
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	107.00
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00	0.0000	107.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			1.00		
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00	0.0000	107.00
			0.00		
			1.00		
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00	0.0000	107.00
			0.00		
			1.00		
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00	0.0000	107.00
			0.00		
			1.00		
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00	0.0000	107.00
			0.00		
			1.00		
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00	0.0000	107.00
			0.00		
			1.00		
Platform Mount [LP 712-1_KCKR] *****	C	None		0.0000	107.00
(2) QS66512-2 w/ Mount Pipe	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) QS66512-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) QS66512-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 8843 B2/B66A	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 8843 B2/B66A	B	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 8843 B2/B66A	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) TPX-070821	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) TPX-070821	B	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) TPX-070821	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
(2) DTMABP7819VG12A	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
DTMABP7819VG12A	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 32	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 32	B	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 32	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 11	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
RRUS 11	B	From Leg	4.00	0.0000	99.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
			0.00		
			1.00		
RRUS 11	C	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
DC6-48-60-18-8C	A	From Leg	4.00	0.0000	99.00
			0.00		
			1.00		
Platform Mount [LP 502-1] *** 59 ***	C	None		0.0000	99.00
Side Arm Mount [SO 701-1] *** 48 ***	A	None		0.0000	59.00
GPS_A	C	From Leg	3.00	0.0000	48.00
			0.00		
			2.00		
KS24019-L112A	C	From Leg	3.00	0.0000	48.00
			0.00		
			2.00		
Side Arm Mount [SO 701-1] **	C	None		0.0000	48.00
(2) Bridge Stiffener (137" x 15.5" x 1.25")	C	None		0.0000	30.00
(2) Bridge Stiffener (109" x 15.75" x 1.25") ***	C	None		0.0000	60.00
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B604	A	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B604	B	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B604	C	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B605	A	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B605	B	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
TA08025-B605	C	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	89.00
			0.00		
			0.00		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment  °	Placement  ft
Commscope MC-PK8-DSH ***** ***	C	None		0.0000	89.00

### 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
VHLP1-18	B	Paraboloid w/o Radome	From Leg	1.00 0.00 -2.00	-6.0000		118.00	1.27
VHLP1-23-DW1	B	Paraboloid w/o Radome	From Leg	1.00 0.00 -2.00	-6.0000		118.00	1.27

### 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

Comb. No.	Description
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	120 - 115	Pole	Max Tension	42	0.00	-0.00	0.00
			Max. Compression	26	-5.44	-3.63	-1.10
			Max. Mx	8	-2.72	-14.39	-0.90
			Max. My	14	-2.72	-2.14	-13.00
			Max. Vy	20	-3.63	10.35	-0.32
			Max. Vx	2	-3.57	-1.46	11.61
			Max. Torque	16			2.82
L2	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.20	-3.66	-1.09
			Max. Mx	8	-3.80	-37.06	-1.22
			Max. My	14	-3.81	-2.61	-35.39
			Max. Vy	20	-4.82	33.31	0.39
			Max. Vx	2	-4.75	-0.42	34.25
			Max. Torque	16			2.82
L3	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.34	-3.64	-1.06
			Max. Mx	8	-8.22	-73.51	-1.54
			Max. My	14	-8.23	-3.07	-71.55
			Max. Vy	20	-9.76	70.09	1.13
			Max. Vx	2	-9.70	0.64	70.70
			Max. Torque	16			2.82
L4	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.03	-3.55	-0.98
			Max. Mx	8	-8.67	-122.72	-1.84
			Max. My	14	-8.68	-3.52	-120.52
			Max. Vy	20	-10.06	119.68	1.90
			Max. Vx	2	-10.01	1.74	120.01
			Max. Torque	16			2.82
L5	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.14	-3.30	0.11
			Max. Mx	8	-11.89	-186.42	-1.66
			Max. My	2	-11.88	2.90	184.65
			Max. Vy	20	-13.18	183.96	3.06
			Max. Vx	2	-13.19	2.90	184.65
			Max. Torque	16			2.82
L6	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.87	-3.21	0.19
			Max. Mx	8	-12.42	-252.63	-1.91
			Max. My	2	-12.40	3.97	251.29
			Max. Vy	20	-13.44	250.54	3.78
			Max. Vx	2	-13.46	3.97	251.29
			Max. Torque	14			2.68
L7	90 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.64	-3.12	0.57
			Max. Mx	8	-16.17	-333.06	-2.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L8	85 - 80	Pole	Max. My	2	-16.15	5.04	332.48
			Max. Vy	20	-16.93	331.34	4.60
			Max. Vx	2	-17.01	5.04	332.48
			Max. Torque	14			2.68
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.68	-3.01	0.59
			Max. Mx	8	-16.99	-417.95	-2.37
			Max. My	2	-16.97	6.13	418.18
			Max. Vy	20	-17.17	416.61	5.29
			Max. Vx	2	-17.29	6.13	418.18
L9	80 - 79.75	Pole	Max. Torque	14			2.68
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.77	-3.01	0.58
			Max. Mx	8	-17.06	-422.23	-2.39
			Max. My	2	-17.04	6.18	422.50
			Max. Vy	20	-17.20	420.91	5.32
			Max. Vx	2	-17.32	6.18	422.50
			Max. Torque	14			2.68
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.21	-2.97	0.54
L10	79.75 - 78.5	Pole	Max. Mx	8	-17.39	-443.76	-2.49
			Max. My	2	-17.37	6.45	444.25
			Max. Vy	20	-17.38	442.53	5.47
			Max. Vx	2	-17.55	6.45	444.25
			Max. Torque	14			2.67
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.31	-2.97	0.53
			Max. Mx	8	-17.47	-448.09	-2.51
			Max. My	2	-17.45	6.51	448.64
			Max. Vy	20	-17.41	446.88	5.50
L11	78.5 - 78.25	Pole	Max. Vx	2	-17.59	6.51	448.64
			Max. Torque	14			2.65
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.29	-2.82	0.36
			Max. Mx	8	-19.00	-536.87	-2.91
			Max. My	2	-18.97	7.61	538.62
			Max. Vy	8	18.16	-536.87	-2.91
			Max. Vx	2	-18.46	7.61	538.62
			Max. Torque	14			2.64
			Max Tension	1	0.00	0.00	0.00
L12	78.25 - 73.25	Pole	Max. Compression	26	-34.26	-2.67	0.19
			Max. Mx	8	-20.54	-629.47	-3.31
			Max. My	2	-20.51	8.71	632.86
			Max. Vy	8	18.91	-629.47	-3.31
			Max. Vx	2	-19.30	8.71	632.86
			Max. Torque	14			2.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.35	-2.66	0.19
			Max. Mx	8	-20.62	-634.19	-3.33
			Max. My	2	-20.59	8.76	637.68
L13	73.25 - 68.25	Pole	Max. Vy	8	18.95	-634.19	-3.33
			Max. Vx	2	-19.33	8.76	637.68
			Max. Torque	14			2.47
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.45	-2.65	0.18
			Max. Mx	8	-20.70	-638.93	-3.35
			Max. My	2	-20.67	8.82	642.51
			Max. Vy	8	18.98	-638.93	-3.35
			Max. Vx	2	-19.37	8.82	642.51
			Max. Torque	14			2.46
L14	68 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.06	-2.53	0.16
			Max. Mx	8	-21.98	-735.07	-3.64
			Max. My	2	-21.95	9.90	740.71
			Max. Vy	8	19.50	-735.07	-3.64
			Max. Vx	2	-19.92	9.90	740.71
			Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.06	-2.53	0.16
			Max. Mx	8	-21.98	-735.07	-3.64
L15	67.75 - 62.75	Pole	Max. My	2	-21.95	9.90	740.71
			Max. Vy	8	19.50	-735.07	-3.64
			Max. Vx	2	-19.92	9.90	740.71
			Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.06	-2.53	0.16
			Max. Mx	8	-21.98	-735.07	-3.64
			Max. My	2	-21.95	9.90	740.71
			Max. Vy	8	19.50	-735.07	-3.64
			Max. Vx	2	-19.92	9.90	740.71



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L17	62.75 - 60	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.90	-2.46	0.16
			Max. Mx	8	-22.66	-789.01	-3.78
			Max. My	2	-22.64	10.49	795.84
			Max. Vy	8	19.77	-789.01	-3.78
			Max. Vx	2	-20.19	10.49	795.84
L18	60 - 57.5	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.56	-2.39	0.17
			Max. Mx	8	-24.83	-842.50	-3.91
			Max. My	2	-24.80	11.04	850.43
			Max. Vy	8	21.60	-842.50	-3.91
			Max. Vx	2	-22.03	11.04	850.43
L19	57.5 - 57.25	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.64	-2.38	0.17
			Max. Mx	8	-24.90	-847.90	-3.93
			Max. My	2	-24.87	11.09	855.95
			Max. Vy	8	21.63	-847.90	-3.93
			Max. Vx	2	-22.06	11.09	855.95
L20	57.25 - 52.25	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.36	-2.23	0.18
			Max. Mx	8	-26.27	-957.49	-4.18
			Max. My	2	-26.24	12.18	967.82
			Max. Vy	8	22.24	-957.49	-4.18
			Max. Vx	2	-22.69	12.18	967.82
L21	52.25 - 47.25	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.19	-2.02	0.15
			Max. Mx	8	-27.74	-1070.11	-4.46
			Max. My	2	-27.71	13.29	1082.83
			Max. Vy	8	22.90	-1070.11	-4.46
			Max. Vx	2	-23.37	13.29	1082.83
L22	47.25 - 45.33	Pole	Max. Torque	14			2.46
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.87	-1.96	0.14
			Max. Mx	8	-28.26	-1114.25	-4.55
			Max. My	2	-28.23	13.70	1127.92
			Max. Vy	8	23.14	-1114.25	-4.55
			Max. Vx	2	-23.62	13.70	1127.92
L23	45.33 - 45.08	Pole	Max. Torque	14			2.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.97	-1.96	0.14
			Max. Mx	8	-28.36	-1120.03	-4.57
			Max. My	2	-28.33	13.76	1133.82
			Max. Vy	8	23.15	-1120.03	-4.57
			Max. Vx	2	-23.63	13.76	1133.82
L24	45.08 - 40.08	Pole	Max. Torque	14			2.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.03	-1.81	0.11
			Max. Mx	8	-29.98	-1237.21	-4.82
			Max. My	2	-29.95	14.84	1253.56
			Max. Vy	8	23.76	-1237.21	-4.82
			Max. Vx	2	-24.27	14.84	1253.56
L25	40.08 - 35.08	Pole	Max. Torque	14			2.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.07	-1.67	0.08
			Max. Mx	8	-31.62	-1357.28	-5.07
			Max. My	2	-31.60	15.91	1376.36
			Max. Vy	8	24.32	-1357.28	-5.07
			Max. Vx	2	-24.86	15.91	1376.36

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L26	35.08 - 33.583	Pole	Max. Torque	14			2.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.69	-1.63	0.06
			Max. Mx	8	-32.11	-1393.77	-5.15
			Max. My	2	-32.08	16.24	1413.73
			Max. Vy	8	24.49	-1393.77	-5.15
			Max. Vx	2	-25.09	16.24	1413.73
L27	33.583 - 33.333	Pole	Max. Torque	14			2.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.80	-1.62	0.06
			Max. Mx	8	-32.21	-1399.88	-5.16
			Max. My	2	-32.19	16.29	1420.00
			Max. Vy	8	24.50	-1399.88	-5.16
			Max. Vx	2	-25.11	16.29	1420.00
L28	33.333 - 32.42	Pole	Max. Torque	14			2.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.22	-1.59	0.05
			Max. Mx	8	-32.55	-1422.28	-5.21
			Max. My	2	-32.52	16.48	1442.98
			Max. Vy	8	24.61	-1422.28	-5.21
			Max. Vx	2	-25.25	16.48	1442.98
L29	32.42 - 32.17	Pole	Max. Torque	14			2.38
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.31	-1.59	0.05
			Max. Mx	8	-32.62	-1428.43	-5.22
			Max. My	2	-32.60	16.54	1449.30
			Max. Vy	8	24.63	-1428.43	-5.22
			Max. Vx	2	-25.28	16.54	1449.30
L30	32.17 - 30	Pole	Max. Torque	14			2.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.09	-1.53	0.04
			Max. Mx	8	-33.24	-1482.06	-5.33
			Max. My	2	-33.22	17.00	1504.44
			Max. Vy	8	24.84	-1482.06	-5.33
			Max. Vx	2	-25.56	17.00	1504.44
L31	30 - 26.75	Pole	Max. Torque	14			2.37
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.38	-1.42	0.05
			Max. Mx	8	-36.02	-1568.48	-5.49
			Max. My	2	-36.00	17.70	1593.28
			Max. Vy	8	26.80	-1568.48	-5.49
			Max. Vx	2	-27.53	17.70	1593.28
L32	26.75 - 26.5	Pole	Max. Torque	14			2.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.49	-1.42	0.05
			Max. Mx	8	-36.11	-1575.18	-5.50
			Max. My	2	-36.09	17.76	1600.17
			Max. Vy	8	26.82	-1575.18	-5.50
			Max. Vx	2	-27.55	17.76	1600.17
L33	26.5 - 21.5	Pole	Max. Torque	14			2.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.58	-1.26	0.04
			Max. Mx	8	-37.83	-1710.61	-5.75
			Max. My	2	-37.81	18.83	1739.41
			Max. Vy	8	27.39	-1710.61	-5.75
			Max. Vx	2	-28.15	18.83	1739.41
L34	21.5 - 21.25	Pole	Max. Torque	14			2.34
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.71	-1.25	0.03
			Max. Mx	8	-37.95	-1717.46	-5.76
			Max. My	2	-37.93	18.88	1746.45
			Max. Vy	8	27.41	-1717.46	-5.76
			Max. Vx	2	-28.17	18.88	1746.45
L35	21.25 -	Pole	Max. Torque	14			2.34
			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
	16.25		Max. Compression	26	-58.35	-1.08	-0.02
			Max. Mx	8	-40.14	-1855.92	-6.00
			Max. My	2	-40.13	19.95	1888.86
			Max. Vy	8	28.01	-1855.92	-6.00
			Max. Vx	2	-28.79	19.95	1888.86
			Max. Torque	14			2.34
L36	16.25 - 11.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.96	-0.92	-0.06
			Max. Mx	8	-42.35	-1997.17	-6.24
			Max. My	2	-42.34	21.01	2034.22
			Max. Vy	8	28.54	-1997.17	-6.24
			Max. Vx	2	-29.36	21.01	2034.22
			Max. Torque	14			2.34
L37	11.25 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.56	-0.76	-0.11
			Max. Mx	8	-44.56	-2141.03	-6.48
			Max. My	2	-44.56	22.07	2182.32
			Max. Vy	8	29.05	-2141.03	-6.48
			Max. Vx	2	-29.90	22.07	2182.32
			Max. Torque	14			2.34
L38	6.25 - 1.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.11	-0.61	-0.14
			Max. Mx	8	-46.79	-2287.38	-6.72
			Max. My	2	-46.79	23.13	2333.07
			Max. Vy	8	29.54	-2287.38	-6.72
			Max. Vx	2	-30.42	23.13	2333.07
			Max. Torque	14			2.34
L39	1.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.72	-0.57	-0.14
			Max. Mx	8	-47.35	-2324.34	-6.78
			Max. My	2	-47.35	23.39	2371.15
			Max. Vy	8	29.66	-2324.34	-6.78
			Max. Vx	2	-30.54	23.39	2371.15
			Max. Torque	14			2.34

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	66.72	0.04	6.95
	Max. H <sub>x</sub>	20	47.36	28.70	0.13
	Max. H <sub>z</sub>	2	47.36	0.20	30.52
	Max. M <sub>x</sub>	2	2371.15	0.20	30.52
	Max. M <sub>z</sub>	8	2324.34	-29.64	-0.05
	Max. Torsion	14	2.34	-0.08	-27.55
	Min. Vert	17	35.52	12.85	-22.26
	Min. H <sub>x</sub>	8	47.36	-29.64	-0.05
	Min. H <sub>z</sub>	14	47.36	-0.08	-27.55
	Min. M <sub>x</sub>	14	-2240.56	-0.08	-27.55
	Min. M <sub>z</sub>	20	-2288.75	28.70	0.13
	Min. Torsion	2	-2.27	0.20	30.52

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	39.47	0.00	0.00	0.04	-0.64	0.00

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 0 deg - No Ice	47.36	-0.20	-30.52	-2371.15	23.39	2.27
0.9 Dead+1.0 Wind 0 deg - No Ice	35.52	-0.20	-30.52	-2348.75	23.33	2.23
1.2 Dead+1.0 Wind 30 deg - No Ice	47.36	14.88	-25.81	-2012.85	-1160.21	2.25
0.9 Dead+1.0 Wind 30 deg - No Ice	35.52	14.88	-25.81	-1993.79	-1149.00	2.22
1.2 Dead+1.0 Wind 60 deg - No Ice	47.36	25.78	-14.87	-1152.93	-2002.37	1.46
0.9 Dead+1.0 Wind 60 deg - No Ice	35.52	25.78	-14.87	-1142.03	-1983.17	1.44
1.2 Dead+1.0 Wind 90 deg - No Ice	47.36	29.64	0.05	6.78	-2324.34	0.35
0.9 Dead+1.0 Wind 90 deg - No Ice	35.52	29.64	0.05	6.68	-2302.03	0.34
1.2 Dead+1.0 Wind 120 deg - No Ice	47.36	25.18	14.59	1158.68	-1997.17	-1.00
0.9 Dead+1.0 Wind 120 deg - No Ice	35.52	25.18	14.59	1147.59	-1977.87	-0.98
1.2 Dead+1.0 Wind 150 deg - No Ice	47.36	14.06	24.34	1959.78	-1133.83	-2.04
0.9 Dead+1.0 Wind 150 deg - No Ice	35.52	14.06	24.34	1940.85	-1122.66	-2.01
1.2 Dead+1.0 Wind 180 deg - No Ice	47.36	0.08	27.55	2240.56	-10.70	-2.34
0.9 Dead+1.0 Wind 180 deg - No Ice	35.52	0.08	27.55	2218.87	-10.35	-2.30
1.2 Dead+1.0 Wind 210 deg - No Ice	47.36	-12.85	22.26	1890.72	1091.55	-2.26
0.9 Dead+1.0 Wind 210 deg - No Ice	35.52	-12.85	22.26	1872.26	1081.11	-2.23
1.2 Dead+1.0 Wind 240 deg - No Ice	47.36	-23.86	13.60	1088.16	1922.83	-1.39
0.9 Dead+1.0 Wind 240 deg - No Ice	35.52	-23.86	13.60	1077.66	1904.43	-1.37
1.2 Dead+1.0 Wind 270 deg - No Ice	47.36	-28.70	-0.13	-16.20	2288.75	-0.25
0.9 Dead+1.0 Wind 270 deg - No Ice	35.52	-28.70	-0.13	-16.02	2267.04	-0.25
1.2 Dead+1.0 Wind 300 deg - No Ice	47.36	-25.69	-14.86	-1169.53	2019.65	0.96
0.9 Dead+1.0 Wind 300 deg - No Ice	35.52	-25.69	-14.86	-1158.41	2000.64	0.94
1.2 Dead+1.0 Wind 330 deg - No Ice	47.36	-15.31	-26.30	-2048.47	1198.89	1.89
0.9 Dead+1.0 Wind 330 deg - No Ice	35.52	-15.31	-26.30	-2029.09	1187.71	1.86
1.2 Dead+1.0 Ice+1.0 Temp	66.72	0.00	-0.00	0.14	-0.57	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	66.72	-0.04	-6.95	-588.34	4.47	0.60
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	66.72	3.40	-5.89	-501.88	-290.11	0.60
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	66.72	5.85	-3.37	-286.32	-497.73	0.39
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	66.72	6.77	0.01	1.39	-579.84	0.10
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	66.72	5.80	3.36	289.39	-499.73	-0.26
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	66.72	3.34	5.78	499.60	-289.32	-0.52
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	66.72	0.01	6.72	578.64	-2.61	-0.62
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	66.72	-3.31	5.73	495.82	285.93	-0.60
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	66.72	-5.69	3.25	279.56	491.88	-0.37
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	66.72	-6.67	-0.03	-3.23	575.47	-0.08

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	66.72	-5.86	-3.39	-290.65	502.22	0.25
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	66.72	-3.47	-5.96	-506.76	295.72	0.49
Dead+Wind 0 deg - Service	39.47	-0.05	-7.07	-546.31	4.88	0.52
Dead+Wind 30 deg - Service	39.47	3.45	-5.98	-463.74	-267.81	0.51
Dead+Wind 60 deg - Service	39.47	5.97	-3.44	-265.61	-461.84	0.33
Dead+Wind 90 deg - Service	39.47	6.87	0.01	1.59	-536.03	0.07
Dead+Wind 120 deg - Service	39.47	5.83	3.38	266.98	-460.63	-0.24
Dead+Wind 150 deg - Service	39.47	3.26	5.64	451.53	-261.71	-0.48
Dead+Wind 180 deg - Service	39.47	0.02	6.38	516.21	-2.96	-0.54
Dead+Wind 210 deg - Service	39.47	-2.98	5.16	435.59	250.96	-0.51
Dead+Wind 240 deg - Service	39.47	-5.53	3.15	250.72	442.48	-0.31
Dead+Wind 270 deg - Service	39.47	-6.65	-0.03	-3.69	526.81	-0.04
Dead+Wind 300 deg - Service	39.47	-5.95	-3.44	-269.43	464.84	0.23
Dead+Wind 330 deg - Service	39.47	-3.55	-6.09	-471.96	275.74	0.44

## 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	-39.47	0.00	0.00	39.47	0.00	0.000%
2	-0.20	-47.36	-30.52	0.20	47.36	30.52	0.000%
3	-0.20	-35.52	-30.52	0.20	35.52	30.52	0.000%
4	14.88	-47.36	-25.81	-14.88	47.36	25.81	0.000%
5	14.88	-35.52	-25.81	-14.88	35.52	25.81	0.000%
6	25.78	-47.36	-14.87	-25.78	47.36	14.87	0.000%
7	25.78	-35.52	-14.87	-25.78	35.52	14.87	0.000%
8	29.64	-47.36	0.05	-29.64	47.36	-0.05	0.000%
9	29.64	-35.52	0.05	-29.64	35.52	-0.05	0.000%
10	25.18	-47.36	14.59	-25.18	47.36	-14.59	0.000%
11	25.18	-35.52	14.59	-25.18	35.52	-14.59	0.000%
12	14.06	-47.36	24.34	-14.06	47.36	-24.34	0.000%
13	14.06	-35.52	24.34	-14.06	35.52	-24.34	0.000%
14	0.08	-47.36	27.55	-0.08	47.36	-27.55	0.000%
15	0.08	-35.52	27.55	-0.08	35.52	-27.55	0.000%
16	-12.85	-47.36	22.26	12.85	47.36	-22.26	0.000%
17	-12.85	-35.52	22.26	12.85	35.52	-22.26	0.000%
18	-23.86	-47.36	13.60	23.86	47.36	-13.60	0.000%
19	-23.86	-35.52	13.60	23.86	35.52	-13.60	0.000%
20	-28.70	-47.36	-0.13	28.70	47.36	0.13	0.000%
21	-28.70	-35.52	-0.13	28.70	35.52	0.13	0.000%
22	-25.69	-47.36	-14.86	25.69	47.36	14.86	0.000%
23	-25.69	-35.52	-14.86	25.69	35.52	14.86	0.000%
24	-15.31	-47.36	-26.30	15.31	47.36	26.30	0.000%
25	-15.31	-35.52	-26.30	15.31	35.52	26.30	0.000%
26	0.00	-66.72	0.00	-0.00	66.72	0.00	0.000%
27	-0.04	-66.72	-6.95	0.04	66.72	6.95	0.000%
28	3.40	-66.72	-5.89	-3.40	66.72	5.89	0.000%
29	5.85	-66.72	-3.37	-5.85	66.72	3.37	0.000%
30	6.77	-66.72	0.01	-6.77	66.72	-0.01	0.000%
31	5.80	-66.72	3.36	-5.80	66.72	-3.36	0.000%
32	3.34	-66.72	5.78	-3.34	66.72	-5.78	0.000%
33	0.01	-66.72	6.72	-0.01	66.72	-6.72	0.000%
34	-3.31	-66.72	5.73	3.31	66.72	-5.73	0.000%
35	-5.69	-66.72	3.25	5.69	66.72	-3.25	0.000%
36	-6.67	-66.72	-0.03	6.67	66.72	0.03	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
37	-5.86	-66.72	-3.39	5.86	66.72	3.39	0.000%
38	-3.47	-66.72	-5.96	3.47	66.72	5.96	0.000%
39	-0.05	-39.47	-7.07	0.05	39.47	7.07	0.000%
40	3.45	-39.47	-5.98	-3.45	39.47	5.98	0.000%
41	5.97	-39.47	-3.44	-5.97	39.47	3.44	0.000%
42	6.87	-39.47	0.01	-6.87	39.47	-0.01	0.000%
43	5.83	-39.47	3.38	-5.83	39.47	-3.38	0.000%
44	3.26	-39.47	5.64	-3.26	39.47	-5.64	0.000%
45	0.02	-39.47	6.38	-0.02	39.47	-6.38	0.000%
46	-2.98	-39.47	5.16	2.98	39.47	-5.16	0.000%
47	-5.53	-39.47	3.15	5.53	39.47	-3.15	0.000%
48	-6.65	-39.47	-0.03	6.65	39.47	0.03	0.000%
49	-5.95	-39.47	-3.44	5.95	39.47	3.44	0.000%
50	-3.55	-39.47	-6.09	3.55	39.47	6.09	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	0.00063387
3	Yes	5	0.00000001	0.00030093
4	Yes	6	0.00000001	0.00030990
5	Yes	6	0.00000001	0.00010614
6	Yes	6	0.00000001	0.00027285
7	Yes	6	0.00000001	0.00009279
8	Yes	5	0.00000001	0.00018558
9	Yes	5	0.00000001	0.00008398
10	Yes	6	0.00000001	0.00028374
11	Yes	6	0.00000001	0.00009641
12	Yes	6	0.00000001	0.00030856
13	Yes	6	0.00000001	0.00010599
14	Yes	5	0.00000001	0.00089773
15	Yes	5	0.00000001	0.00043079
16	Yes	6	0.00000001	0.00025648
17	Yes	6	0.00000001	0.00008823
18	Yes	6	0.00000001	0.00028453
19	Yes	6	0.00000001	0.00009844
20	Yes	5	0.00000001	0.00010355
21	Yes	5	0.00000001	0.00004010
22	Yes	6	0.00000001	0.00030337
23	Yes	6	0.00000001	0.00010342
24	Yes	6	0.00000001	0.00028827
25	Yes	6	0.00000001	0.00009727
26	Yes	4	0.00000001	0.00023607
27	Yes	6	0.00000001	0.00020362
28	Yes	6	0.00000001	0.00022991
29	Yes	6	0.00000001	0.00022580
30	Yes	6	0.00000001	0.00020317
31	Yes	6	0.00000001	0.00022854
32	Yes	6	0.00000001	0.00023015
33	Yes	6	0.00000001	0.00020163
34	Yes	6	0.00000001	0.00022216
35	Yes	6	0.00000001	0.00022098
36	Yes	6	0.00000001	0.00019868
37	Yes	6	0.00000001	0.00022686
38	Yes	6	0.00000001	0.00022796
39	Yes	4	0.00000001	0.00097649
40	Yes	5	0.00000001	0.00010589
41	Yes	5	0.00000001	0.00007615
42	Yes	4	0.00000001	0.00041651
43	Yes	5	0.00000001	0.00007980
44	Yes	5	0.00000001	0.00010402
45	Yes	5	0.00000001	0.00004501
46	Yes	5	0.00000001	0.00007027

47	Yes	5	0.00000001	0.00008867
48	Yes	4	0.00000001	0.00039491
49	Yes	5	0.00000001	0.00009410
50	Yes	5	0.00000001	0.00008063

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	14.07	50	1.0177	0.0081
L2	115 - 110	13.01	50	1.0156	0.0076
L3	110 - 105	11.96	50	1.0078	0.0068
L4	105 - 100	10.92	50	0.9933	0.0059
L5	100 - 95	9.89	50	0.9686	0.0051
L6	95 - 90	8.89	50	0.9314	0.0043
L7	90 - 85	7.94	50	0.8776	0.0034
L8	85 - 80	7.05	50	0.8288	0.0029
L9	80 - 79.75	6.21	50	0.7656	0.0023
L10	79.75 - 78.5	6.17	50	0.7634	0.0023
L11	78.5 - 78.25	5.97	50	0.7521	0.0022
L12	78.25 - 73.25	5.94	50	0.7501	0.0022
L13	73.25 - 68.25	5.17	50	0.7078	0.0019
L14	68.25 - 68	4.46	50	0.6576	0.0017
L15	68 - 67.75	4.42	50	0.6548	0.0016
L16	67.75 - 62.75	4.39	50	0.6521	0.0016
L17	62.75 - 60	3.73	50	0.5928	0.0014
L18	60 - 57.5	3.40	50	0.5565	0.0012
L19	57.5 - 57.25	3.12	50	0.5364	0.0011
L20	57.25 - 52.25	3.09	50	0.5343	0.0011
L21	52.25 - 47.25	2.55	50	0.4896	0.0010
L22	47.25 - 45.33	2.07	50	0.4394	0.0008
L23	45.33 - 45.08	1.89	50	0.4186	0.0008
L24	45.08 - 40.08	1.87	50	0.4164	0.0008
L25	40.08 - 35.08	1.46	50	0.3685	0.0006
L26	35.08 - 33.583	1.10	50	0.3157	0.0005
L27	33.583 - 33.333	1.00	50	0.2989	0.0005
L28	33.333 - 32.42	0.99	50	0.2965	0.0005
L29	32.42 - 32.17	0.93	50	0.2875	0.0005
L30	32.17 - 30	0.92	50	0.2840	0.0005
L31	30 - 26.75	0.80	50	0.2526	0.0004
L32	26.75 - 26.5	0.63	50	0.2222	0.0003
L33	26.5 - 21.5	0.62	50	0.2201	0.0003
L34	21.5 - 21.25	0.42	50	0.1756	0.0003
L35	21.25 - 16.25	0.41	50	0.1739	0.0002
L36	16.25 - 11.25	0.24	50	0.1377	0.0002
L37	11.25 - 6.25	0.12	50	0.0986	0.0001
L38	6.25 - 1.25	0.04	50	0.0567	0.0001
L39	1.25 - 0	0.00	50	0.0117	0.0000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	Lightning Rod 5/8"x4'	50	13.65	1.0173	0.0081	57260
116.00	VHLP1-18	50	13.22	1.0164	0.0079	57260
114.00	PCS 1900MHz 4x45W-65MHz	50	12.80	1.0146	0.0076	47470
107.00	AIR 6419 B41_TMO w/ Mount Pipe	50	11.33	1.0002	0.0064	17934
99.00	(2) QS66512-2 w/ Mount Pipe	50	9.69	0.9626	0.0050	8027
89.00	MX08FRO665-21 w/ Mount Pipe	50	7.76	0.8681	0.0034	5352
60.00	(2) Bridge Stiffener (109" x 15.75" x 1.25")	50	3.40	0.5565	0.0012	5408

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
59.00	Side Arm Mount [SO 701-1]	50	3.29	0.5477	0.0012	5805
48.00	GPS_A	50	2.14	0.4477	0.0009	5605
30.00	(2) Bridge Stiffener (137" x 15.5" x 1.25")	50	0.80	0.2526	0.0004	5080

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 115	61.32	24	4.4170	0.0359
L2	115 - 110	56.71	24	4.4131	0.0337
L3	110 - 105	52.10	24	4.3892	0.0301
L4	105 - 100	47.54	24	4.3358	0.0264
L5	100 - 95	43.06	24	4.2322	0.0227
L6	95 - 90	38.71	24	4.0669	0.0190
L7	90 - 85	34.58	24	3.8294	0.0153
L8	85 - 80	30.68	24	3.6149	0.0128
L9	80 - 79.75	27.04	24	3.3378	0.0102
L10	79.75 - 78.5	26.86	24	3.3282	0.0102
L11	78.5 - 78.25	26.00	24	3.2787	0.0098
L12	78.25 - 73.25	25.83	24	3.2703	0.0097
L13	73.25 - 68.25	22.50	24	3.0850	0.0085
L14	68.25 - 68	19.38	24	2.8652	0.0073
L15	68 - 67.75	19.23	24	2.8533	0.0072
L16	67.75 - 62.75	19.08	24	2.8413	0.0072
L17	62.75 - 60	16.24	24	2.5819	0.0060
L18	60 - 57.5	14.80	24	2.4235	0.0053
L19	57.5 - 57.25	13.56	24	2.3355	0.0050
L20	57.25 - 52.25	13.44	24	2.3264	0.0050
L21	52.25 - 47.25	11.10	24	2.1315	0.0043
L22	47.25 - 45.33	8.98	24	1.9124	0.0036
L23	45.33 - 45.08	8.23	24	1.8217	0.0034
L24	45.08 - 40.08	8.14	24	1.8119	0.0033
L25	40.08 - 35.08	6.35	24	1.6030	0.0028
L26	35.08 - 33.583	4.79	24	1.3730	0.0023
L27	33.583 - 33.333	4.37	24	1.3000	0.0021
L28	33.333 - 32.42	4.30	24	1.2894	0.0021
L29	32.42 - 32.17	4.06	24	1.2505	0.0020
L30	32.17 - 30	3.99	24	1.2351	0.0020
L31	30 - 26.75	3.46	24	1.0983	0.0017
L32	26.75 - 26.5	2.76	24	0.9661	0.0015
L33	26.5 - 21.5	2.71	24	0.9568	0.0014
L34	21.5 - 21.25	1.81	24	0.7632	0.0011
L35	21.25 - 16.25	1.77	24	0.7557	0.0011
L36	16.25 - 11.25	1.06	24	0.5983	0.0008
L37	11.25 - 6.25	0.52	24	0.4285	0.0006
L38	6.25 - 1.25	0.16	24	0.2461	0.0003
L39	1.25 - 0	0.01	24	0.0509	0.0001

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
118.00	Lightning Rod 5/8"x4'	24	59.48	4.4168	0.0352	17678
116.00	VHLP1-18	24	57.63	4.4151	0.0343	17678
114.00	PCS 1900MHz 4x45W-65MHz	24	55.78	4.4103	0.0331	14195
107.00	AIR 6419 B41_TMO w/ Mount Pipe	24	49.36	4.3621	0.0279	4570
99.00	(2) QS66512-2 w/ Mount Pipe	24	42.17	4.2054	0.0220	1933



Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
89.00	MX08FRO665-21 w/ Mount Pipe	24	33.78	3.7875	0.0147	1261
60.00	(2) Bridge Stiffener (109" x 15.75" x 1.25")	24	14.80	2.4235	0.0054	1243
59.00	Side Arm Mount [SO 701-1]	24	14.30	2.3849	0.0052	1334
48.00	GPS_A	24	9.28	1.9485	0.0038	1288
30.00	(2) Bridge Stiffener (137" x 15.5" x 1.25")	24	3.46	1.0983	0.0017	1168

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> φP <sub>n</sub>
L1	120 - 115 (1)	P24x0.25	5.00	0.00	0.0	18.653	-2.71	662.26	0.004
L2	115 - 110 (2)	P24x0.25	5.00	0.00	0.0	18.653	-3.80	662.26	0.006
L3	110 - 105 (3)	P24x0.25	5.00	0.00	0.0	18.653	-8.21	662.26	0.012
L4	105 - 100 (4)	P24x0.25	5.00	0.00	0.0	18.653	-8.66	662.26	0.013
L5	100 - 95 (5)	P24x0.25	5.00	0.00	0.0	18.653	-11.89	662.26	0.018
L6	95 - 90 (6)	P24x0.25	5.00	0.00	0.0	18.653	-12.41	662.26	0.019
L7	90 - 85 (7)	P24x0.375	5.00	0.00	0.0	27.832	-16.14	1052.07	0.015
L8	85 - 80 (8)	P24x0.375	5.00	0.00	0.0	27.832	-16.95	1052.07	0.016
L9	80 - 79.75 (9)	P24x0.625	0.25	0.00	0.0	45.896	-17.03	1734.90	0.010
L10	79.75 - 78.5 (10)	P24x0.625	1.25	0.00	0.0	45.896	-17.36	1734.90	0.010
L11	78.5 - 78.25 (11)	P24x0.775	0.25	0.00	0.0	56.546	-17.44	2137.47	0.008
L12	78.25 - 73.25 (12)	P24x0.775	5.00	0.00	0.0	56.546	-18.96	2137.47	0.009
L13	73.25 - 68.25 (13)	P24x0.775	5.00	0.00	0.0	56.546	-20.50	2137.47	0.010
L14	68.25 - 68 (14)	P24x0.775	0.25	0.00	0.0	56.546	-20.59	2137.47	0.010
L15	68 - 67.75 (15)	P24x0.775	0.25	0.00	0.0	56.546	-20.67	2137.47	0.010
L16	67.75 - 62.75 (16)	P24x0.775	5.00	0.00	0.0	56.546	-21.95	2137.47	0.010
L17	62.75 - 60 (17)	P24x0.775	2.75	0.00	0.0	56.546	-22.63	2137.47	0.011
L18	60 - 57.5 (18)	P30x0.675	2.50	0.00	0.0	62.185	-24.80	2350.63	0.011
L19	57.5 - 57.25 (19)	P30x0.675	0.25	0.00	0.0	62.185	-24.87	2350.63	0.011
L20	57.25 - 52.25 (20)	P30x0.675	5.00	0.00	0.0	62.185	-26.24	2350.63	0.011
L21	52.25 - 47.25 (21)	P30x0.675	5.00	0.00	0.0	62.185	-27.70	2350.63	0.012
L22	47.25 - 45.33 (22)	P30x0.675	1.92	0.00	0.0	62.185	-28.23	2350.63	0.012
L23	45.33 - 45.08 (23)	P30x0.8375	0.25	0.00	0.0	76.729	-28.33	2900.36	0.010
L24	45.08 - 40.08	P30x0.8375	5.00	0.00	0.0	76.729	-29.95	2900.36	0.010

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L25	40.08 - 35.08 (24)	P30x0.8375	5.00	0.00	0.0	76.729	-31.59	2900.36	0.011
L26	35.08 - 33.583 (25)	P30x0.8375	1.50	0.00	0.0	76.729	-32.08	2900.36	0.011
L27	33.583 - 33.333 (26)	P30x1	0.25	0.00	0.0	91.106	-32.19	3443.81	0.009
L28	33.333 - 32.42 (27)	P30x1	0.91	0.00	0.0	91.106	-32.52	3443.81	0.009
L29	32.42 - 32.17 (28)	P30x0.675	0.25	0.00	0.0	62.185	-32.60	2350.63	0.014
L30	32.17 - 30 (29)	P30x0.675	2.17	0.00	0.0	62.185	-33.22	2350.63	0.014
L31	30 - 26.75 (30)	P36x0.625	3.25	0.00	0.0	69.458	-36.00	2625.54	0.014
L32	26.75 - 26.5 (31)	P36x0.7125	0.25	0.00	0.0	78.987	-36.10	2985.71	0.012
L33	26.5 - 21.5 (32)	P36x0.7125	5.00	0.00	0.0	78.987	-37.81	2985.71	0.013
L34	21.5 - 21.25 (33)	P36x0.975	0.25	0.00	0.0	107.28	-37.93	4055.31	0.009
L35	21.25 - 16.25 (34)	P36x0.975	5.00	0.00	0.0	107.28	-40.13	4055.31	0.010
L36	16.25 - 11.25 (35)	P36x0.975	5.00	0.00	0.0	107.28	-42.34	4055.31	0.010
L37	11.25 - 6.25 (36)	P36x0.975	5.00	0.00	0.0	107.28	-44.56	4055.31	0.011
L38	6.25 - 1.25 (37)	P36x0.975	5.00	0.00	0.0	107.28	-46.79	4055.31	0.012
L39	1.25 - 0 (38)	P36x0.975	1.25	0.00	0.0	107.28	-47.35	4055.31	0.012

**Pole Bending Design Data**

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	120 - 115 (1)	P24x0.25	14.70	396.68	0.037	0.00	396.68	0.000
L2	115 - 110 (2)	P24x0.25	37.67	396.68	0.095	0.00	396.68	0.000
L3	110 - 105 (3)	P24x0.25	74.41	396.68	0.188	0.00	396.68	0.000
L4	105 - 100 (4)	P24x0.25	123.92	396.68	0.312	0.00	396.68	0.000
L5	100 - 95 (5)	P24x0.25	187.69	396.68	0.473	0.00	396.68	0.000
L6	95 - 90 (6)	P24x0.25	254.19	396.68	0.641	0.00	396.68	0.000
L7	90 - 85 (7)	P24x0.375	335.20	623.72	0.537	0.00	623.72	0.000
L8	85 - 80 (8)	P24x0.375	421.63	623.72	0.676	0.00	623.72	0.000
L9	80 - 79.75 (9)	P24x0.625	425.98	1075.97	0.396	0.00	1075.97	0.000
L10	79.75 - 78.5 (10)	P24x0.625	447.92	1075.97	0.416	0.00	1075.97	0.000
L11	78.5 - 78.25 (11)	P24x0.775	452.33	1317.30	0.343	0.00	1317.30	0.000
L12	78.25 - 73.25 (12)	P24x0.775	542.84	1317.30	0.412	0.00	1317.30	0.000
L13	73.25 - 68.25 (13)	P24x0.775	637.33	1317.30	0.484	0.00	1317.30	0.000
L14	68.25 - 68 (14)	P24x0.775	642.16	1317.30	0.487	0.00	1317.30	0.000
L15	68 - 67.75 (15)	P24x0.775	647.00	1317.30	0.491	0.00	1317.30	0.000
L16	67.75 - 62.75 (16)	P24x0.775	745.27	1317.30	0.566	0.00	1317.30	0.000
L17	62.75 - 60 (17)	P24x0.775	800.44	1317.30	0.608	0.00	1317.30	0.000
L18	60 - 57.5 (18)	P30x0.675	855.09	1828.80	0.468	0.00	1828.80	0.000
L19	57.5 - 57.25 (19)	P30x0.675	860.60	1828.80	0.471	0.00	1828.80	0.000

Section No.	Elevation ft	Size	$M_{ux}$	$\phi M_{nx}$	Ratio	$M_{uy}$	$\phi M_{ny}$	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L20	57.25 - 52.25 (20)	P30x0.675	972.58	1828.80	0.532	0.00	1828.80	0.000
L21	52.25 - 47.25 (21)	P30x0.675	1087.71	1828.80	0.595	0.00	1828.80	0.000
L22	47.25 - 45.33 (22)	P30x0.675	1132.83	1828.80	0.619	0.00	1828.80	0.000
L23	45.33 - 45.08 (23)	P30x0.8375	1138.75	2244.22	0.507	0.00	2244.22	0.000
L24	45.08 - 40.08 (24)	P30x0.8375	1258.63	2244.22	0.561	0.00	2244.22	0.000
L25	40.08 - 35.08 (25)	P30x0.8375	1381.59	2244.22	0.616	0.00	2244.22	0.000
L26	35.08 - 33.583 (26)	P30x0.8375	1418.98	2244.22	0.632	0.00	2244.22	0.000
L27	33.583 - 33.333 (27)	P30x1	1425.25	2650.20	0.538	0.00	2650.20	0.000
L28	33.333 - 32.42 (28)	P30x1	1448.22	2650.20	0.546	0.00	2650.20	0.000
L29	32.42 - 32.17 (29)	P30x0.675	1454.52	1828.80	0.795	0.00	1828.80	0.000
L30	32.17 - 30 (30)	P30x0.675	1509.51	1828.80	0.825	0.00	1828.80	0.000
L31	30 - 26.75 (31)	P36x0.625	1598.03	2373.92	0.673	0.00	2373.92	0.000
L32	26.75 - 26.5 (32)	P36x0.7125	1604.89	2761.27	0.581	0.00	2761.27	0.000
L33	26.5 - 21.5 (33)	P36x0.7125	1743.65	2761.27	0.631	0.00	2761.27	0.000
L34	21.5 - 21.25 (34)	P36x0.975	1750.67	3768.63	0.465	0.00	3768.63	0.000
L35	21.25 - 16.25 (35)	P36x0.975	1892.61	3768.63	0.502	0.00	3768.63	0.000
L36	16.25 - 11.25 (36)	P36x0.975	2037.52	3768.63	0.541	0.00	3768.63	0.000
L37	11.25 - 6.25 (37)	P36x0.975	2185.20	3768.63	0.580	0.00	3768.63	0.000
L38	6.25 - 1.25 (38)	P36x0.975	2335.53	3768.63	0.620	0.00	3768.63	0.000
L39	1.25 - 0 (39)	P36x0.975	2373.52	3768.63	0.630	0.00	3768.63	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	$\phi V_n$	Ratio	Actual	$\phi T_n$	Ratio
			$V_u$ K	K	$\frac{V_u}{\phi V_n}$	$T_u$ kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	120 - 115 (1)	P24x0.25	3.63	201.86	0.018	0.57	324.23	0.002
L2	115 - 110 (2)	P24x0.25	4.82	201.86	0.024	0.57	324.23	0.002
L3	110 - 105 (3)	P24x0.25	9.76	201.86	0.048	0.57	324.23	0.002
L4	105 - 100 (4)	P24x0.25	10.06	201.86	0.050	0.57	324.23	0.002
L5	100 - 95 (5)	P24x0.25	13.18	201.86	0.065	1.03	324.23	0.003
L6	95 - 90 (6)	P24x0.25	13.44	201.86	0.067	1.03	324.23	0.003
L7	90 - 85 (7)	P24x0.375	17.15	315.62	0.054	2.15	655.57	0.003
L8	85 - 80 (8)	P24x0.375	17.43	315.62	0.055	2.15	655.57	0.003
L9	80 - 79.75 (9)	P24x0.625	17.46	520.47	0.034	2.15	1069.61	0.002
L10	79.75 - 78.5 (10)	P24x0.625	17.67	520.47	0.034	2.15	1069.61	0.002
L11	78.5 - 78.25 (11)	P24x0.775	17.71	641.24	0.028	2.13	1309.35	0.002
L12	78.25 - 73.25 (12)	P24x0.775	18.53	641.24	0.029	2.06	1309.35	0.002
L13	73.25 - 68.25 (13)	P24x0.775	19.31	641.24	0.030	1.98	1309.35	0.002
L14	68.25 - 68 (14)	P24x0.775	19.34	641.24	0.030	1.96	1309.35	0.001
L15	68 - 67.75	P24x0.775	19.38	641.24	0.030	1.96	1309.35	0.001

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L16	(15) 67.75 - 62.75	P24x0.775	19.93	641.24	0.031	1.95	1309.35	0.001
L17	(16) 62.75 - 60	P24x0.775	20.20	641.24	0.032	1.95	1309.35	0.001
L18	(17) 60 - 57.5 (18)	P30x0.675	22.05	705.19	0.031	1.95	1818.12	0.001
L19	57.5 - 57.25	P30x0.675	22.07	705.19	0.031	1.95	1818.12	0.001
L20	(19) 57.25 - 52.25	P30x0.675	22.71	705.19	0.032	1.95	1818.12	0.001
L21	(20) 52.25 - 47.25	P30x0.675	23.39	705.19	0.033	1.95	1818.12	0.001
L22	(21) 47.25 - 45.33	P30x0.675	23.64	705.19	0.034	1.89	1818.12	0.001
L23	(22) 45.33 - 45.08	P30x0.8375	23.65	870.11	0.027	1.89	2230.88	0.001
L24	(23) 45.08 - 40.08	P30x0.8375	24.30	870.11	0.028	1.89	2230.88	0.001
L25	(24) 40.08 - 35.08	P30x0.8375	24.89	870.11	0.029	1.89	2230.88	0.001
L26	(25) 35.08 - 33.583 (26)	P30x0.8375	25.08	870.11	0.029	1.89	2230.88	0.001
L27	33.583 - 33.333 (27)	P30x1	25.09	1033.14	0.024	1.89	2634.14	0.001
L28	33.333 - 32.42 (28)	P30x1	25.21	1033.14	0.024	1.89	2634.14	0.001
L29	32.42 - 32.17 (29)	P30x0.675	25.23	705.19	0.036	1.89	1818.12	0.001
L30	32.17 - 30 (30)	P30x0.675	25.46	705.19	0.036	1.89	1818.12	0.001
L31	30 - 26.75 (31)	P36x0.625	27.43	787.66	0.035	1.89	2449.72	0.001
L32	26.75 - 26.5 (32)	P36x0.7125	27.45	895.71	0.031	1.89	2778.88	0.001
L33	26.5 - 21.5 (33)	P36x0.7125	28.05	895.71	0.031	1.89	2778.88	0.001
L34	21.5 - 21.25 (34)	P36x0.975	28.07	1216.59	0.023	1.89	3746.31	0.001
L35	21.25 - 16.25 (35)	P36x0.975	28.70	1216.59	0.024	1.89	3746.31	0.001
L36	16.25 - 11.25 (36)	P36x0.975	29.26	1216.59	0.024	1.89	3746.31	0.001
L37	11.25 - 6.25 (37)	P36x0.975	29.81	1216.59	0.025	1.89	3746.31	0.001
L38	6.25 - 1.25 (38)	P36x0.975	30.33	1216.59	0.025	1.89	3746.31	0.001
L39	1.25 - 0 (39)	P36x0.975	30.45	1216.59	0.025	1.89	3746.31	0.001

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 115 (1)	0.004	0.037	0.000	0.018	0.002	0.042	1.050	4.8.2
L2	115 - 110 (2)	0.006	0.095	0.000	0.024	0.002	0.101	1.050	4.8.2
L3	110 - 105 (3)	0.012	0.188	0.000	0.048	0.002	0.202	1.050	4.8.2
L4	105 - 100 (4)	0.013	0.312	0.000	0.050	0.002	0.328	1.050	4.8.2
L5	100 - 95 (5)	0.018	0.473	0.000	0.065	0.003	0.496	1.050	4.8.2
L6	95 - 90 (6)	0.019	0.641	0.000	0.067	0.003	0.664	1.050	4.8.2
L7	90 - 85 (7)	0.015	0.537	0.000	0.054	0.003	0.556	1.050	4.8.2
L8	85 - 80 (8)	0.016	0.676	0.000	0.055	0.003	0.696	1.050	4.8.2
L9	80 - 79.75 (9)	0.010	0.396	0.000	0.034	0.002	0.407	1.050	4.8.2
L10	79.75 - 78.5	0.010	0.416	0.000	0.034	0.002	0.428	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$	$M_{ux}$	$M_{uy}$	$V_u$	$T_u$			
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L11	78.5 - 78.25 (10)	0.008	0.343	0.000	0.028	0.002	0.352	1.050	4.8.2
L12	78.25 - 73.25 (11)	0.009	0.412	0.000	0.029	0.002	0.422	1.050	4.8.2
L13	73.25 - 68.25 (12)	0.010	0.484	0.000	0.030	0.002	0.494	1.050	4.8.2
L14	68.25 - 68 (13)	0.010	0.487	0.000	0.030	0.001	0.498	1.050	4.8.2
L15	68 - 67.75 (14)	0.010	0.491	0.000	0.030	0.001	0.502	1.050	4.8.2
L16	67.75 - 62.75 (15)	0.010	0.566	0.000	0.031	0.001	0.577	1.050	4.8.2
L17	62.75 - 60 (16)	0.011	0.608	0.000	0.032	0.001	0.619	1.050	4.8.2
L18	60 - 57.5 (17)	0.011	0.468	0.000	0.031	0.001	0.479	1.050	4.8.2
L19	57.5 - 57.25 (18)	0.011	0.471	0.000	0.031	0.001	0.482	1.050	4.8.2
L20	57.25 - 52.25 (19)	0.011	0.532	0.000	0.032	0.001	0.544	1.050	4.8.2
L21	52.25 - 47.25 (20)	0.012	0.595	0.000	0.033	0.001	0.608	1.050	4.8.2
L22	47.25 - 45.33 (21)	0.012	0.619	0.000	0.034	0.001	0.633	1.050	4.8.2
L23	45.33 - 45.08 (22)	0.010	0.507	0.000	0.027	0.001	0.518	1.050	4.8.2
L24	45.08 - 40.08 (23)	0.010	0.561	0.000	0.028	0.001	0.572	1.050	4.8.2
L25	40.08 - 35.08 (24)	0.011	0.616	0.000	0.029	0.001	0.627	1.050	4.8.2
L26	35.08 - 33.583 (25)	0.011	0.632	0.000	0.029	0.001	0.644	1.050	4.8.2
L27	33.583 - 33.333 (26)	0.009	0.538	0.000	0.024	0.001	0.548	1.050	4.8.2
L28	33.333 - 32.42 (27)	0.009	0.546	0.000	0.024	0.001	0.557	1.050	4.8.2
L29	32.42 - 32.17 (28)	0.014	0.795	0.000	0.036	0.001	0.811	1.050	4.8.2
L30	32.17 - 30 (29)	0.014	0.825	0.000	0.036	0.001	0.841	1.050	4.8.2
L31	30 - 26.75 (30)	0.014	0.673	0.000	0.035	0.001	0.688	1.050	4.8.2
L32	26.75 - 26.5 (31)	0.012	0.581	0.000	0.031	0.001	0.594	1.050	4.8.2
L33	26.5 - 21.5 (32)	0.013	0.631	0.000	0.031	0.001	0.645	1.050	4.8.2
L34	21.5 - 21.25 (33)	0.009	0.465	0.000	0.023	0.001	0.474	1.050	4.8.2
L35	21.25 - 16.25 (34)	0.010	0.502	0.000	0.024	0.001	0.513	1.050	4.8.2
L36	16.25 - 11.25 (35)	0.010	0.541	0.000	0.024	0.001	0.552	1.050	4.8.2
L37	11.25 - 6.25 (36)	0.011	0.580	0.000	0.025	0.001	0.591	1.050	4.8.2
L38	6.25 - 1.25 (37)	0.012	0.620	0.000	0.025	0.001	0.632	1.050	4.8.2
L39	1.25 - 0 (38)	0.012	0.630	0.000	0.025	0.001	0.642	1.050	4.8.2

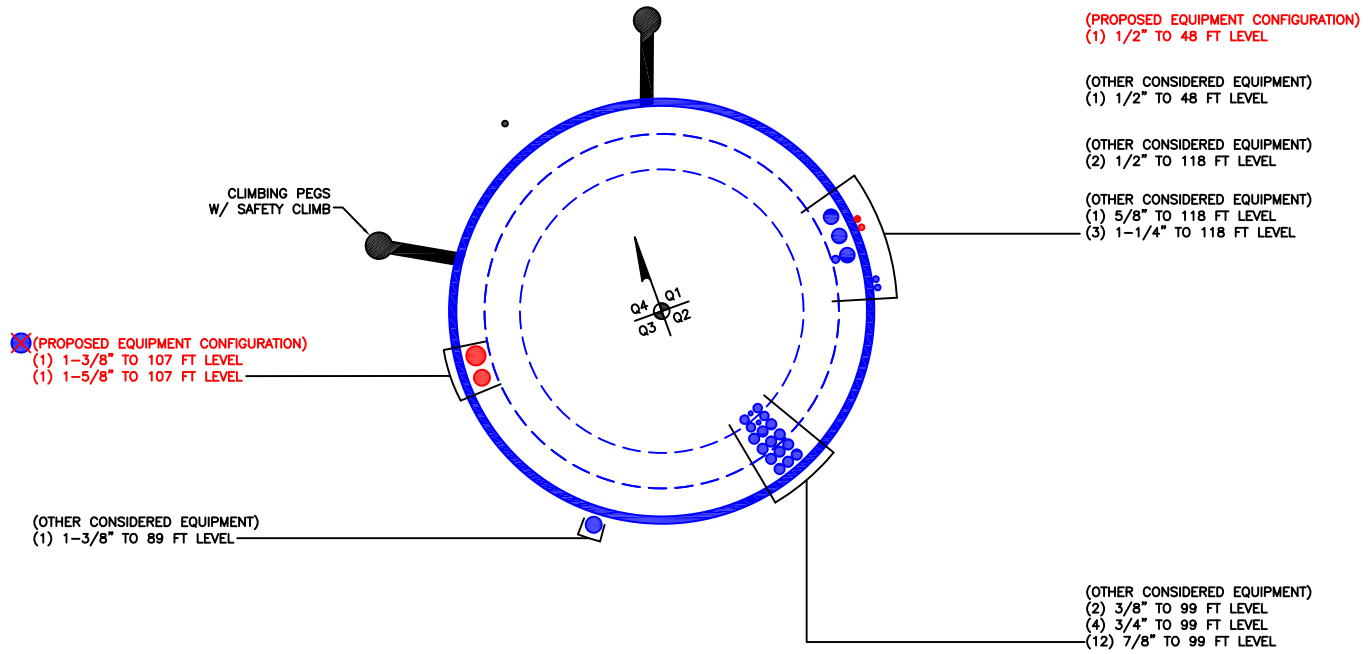
### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L1	120 - 115	Pole	P24x0.25	1	-2.71	695.38	4.0	Pass	
L2	115 - 110	Pole	P24x0.25	2	-3.80	695.38	9.7	Pass	
L3	110 - 105	Pole	P24x0.25	3	-8.21	695.38	19.3	Pass	
L4	105 - 100	Pole	P24x0.25	4	-8.66	695.38	31.2	Pass	
L5	100 - 95	Pole	P24x0.25	5	-11.89	695.38	47.2	Pass	
L6	95 - 90	Pole	P24x0.25	6	-12.41	695.38	63.3	Pass	
L7	90 - 85	Pole	P24x0.375	7	-16.14	1104.67	53.0	Pass	
L8	85 - 80	Pole	P24x0.375	8	-16.95	1104.67	66.2	Pass	
L9	80 - 79.75	Pole	P24x0.625	9	-17.03	1821.64	38.8	Pass	
L10	79.75 - 78.5	Pole	P24x0.625	10	-17.36	1821.64	40.7	Pass	
L11	78.5 - 78.25	Pole	P24x0.775	11	-17.44	2244.34	33.6	Pass	
L12	78.25 - 73.25	Pole	P24x0.775	12	-18.96	2244.34	40.2	Pass	
L13	73.25 - 68.25	Pole	P24x0.775	13	-20.50	2244.34	47.1	Pass	
L14	68.25 - 68	Pole	P24x0.775	14	-20.59	2244.34	47.4	Pass	
L15	68 - 67.75	Pole	P24x0.775	15	-20.67	2244.34	47.8	Pass	
L16	67.75 - 62.75	Pole	P24x0.775	16	-21.95	2244.34	55.0	Pass	
L17	62.75 - 60	Pole	P24x0.775	17	-22.63	2244.34	59.0	Pass	
L18	60 - 57.5	Pole	P30x0.675	18	-24.80	2468.16	45.6	Pass	
L19	57.5 - 57.25	Pole	P30x0.675	19	-24.87	2468.16	45.9	Pass	
L20	57.25 - 52.25	Pole	P30x0.675	20	-26.24	2468.16	51.8	Pass	
L21	52.25 - 47.25	Pole	P30x0.675	21	-27.70	2468.16	57.9	Pass	
L22	47.25 - 45.33	Pole	P30x0.675	22	-28.23	2468.16	60.3	Pass	
L23	45.33 - 45.08	Pole	P30x0.8375	23	-28.33	3045.38	49.3	Pass	
L24	45.08 - 40.08	Pole	P30x0.8375	24	-29.95	3045.38	54.5	Pass	
L25	40.08 - 35.08	Pole	P30x0.8375	25	-31.59	3045.38	59.8	Pass	
L26	35.08 - 33.583	Pole	P30x0.8375	26	-32.08	3045.38	61.4	Pass	
L27	33.583 - 33.333	Pole	P30x1	27	-32.19	3616.00	52.2	Pass	
L28	33.333 - 32.42	Pole	P30x1	28	-32.52	3616.00	53.0	Pass	
L29	32.42 - 32.17	Pole	P30x0.675	29	-32.60	2468.16	77.2	Pass	
L30	32.17 - 30	Pole	P30x0.675	30	-33.22	2468.16	80.1	Pass	
L31	30 - 26.75	Pole	P36x0.625	31	-36.00	2756.82	65.5	Pass	
L32	26.75 - 26.5	Pole	P36x0.7125	32	-36.10	3135.00	56.6	Pass	
L33	26.5 - 21.5	Pole	P36x0.7125	33	-37.81	3135.00	61.4	Pass	
L34	21.5 - 21.25	Pole	P36x0.975	34	-37.93	4258.08	45.2	Pass	
L35	21.25 - 16.25	Pole	P36x0.975	35	-40.13	4258.08	48.8	Pass	
L36	16.25 - 11.25	Pole	P36x0.975	36	-42.34	4258.08	52.5	Pass	
L37	11.25 - 6.25	Pole	P36x0.975	37	-44.56	4258.08	56.3	Pass	
L38	6.25 - 1.25	Pole	P36x0.975	38	-46.79	4258.08	60.2	Pass	
L39	1.25 - 0	Pole	P36x0.975	39	-47.35	4258.08	61.2	Pass	
							Summary		
							Pole (L30)	80.1	Pass
							<b>RATING =</b>	<b>80.1</b>	<b>Pass</b>

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

**APPENDIX B**  
**BASE LEVEL DRAWING**





**APPENDIX C**  
**ADDITIONAL CALCULATIONS**



# 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	120 - 115	5		0	24.000	24.000	0.25	A53-B-42	1.000
2	115 - 110	5		0	24.000	24.000	0.25	A53-B-42	1.000
3	110 - 105	5		0	24.000	24.000	0.25	A53-B-42	1.000
4	105 - 100	5		0	24.000	24.000	0.25	A53-B-42	1.000
5	100 - 95	5		0	24.000	24.000	0.25	A53-B-42	1.000
6	95 - 90	5	0	0	24.000	24.000	0.25	A53-B-42	1.000
7	90 - 85	5		0	24.000	24.000	0.375	A53-B-42	1.000
8	85 - 80	5		0	24.000	24.000	0.375	A53-B-42	1.000
9	80 - 79.75	0.25		0	24.000	24.000	0.625	A53-B-42	0.933
10	79.75 - 78.5	1.25		0	24.000	24.000	0.625	A53-B-42	0.933
11	78.5 - 78.25	0.25		0	24.000	24.000	0.775	A53-B-42	0.917
12	78.25 - 73.25	5		0	24.000	24.000	0.775	A53-B-42	0.917
13	73.25 - 68.25	5		0	24.000	24.000	0.775	A53-B-42	0.917
14	68.25 - 68	0.25		0	24.000	24.000	0.775	A53-B-42	0.917
15	68 - 67.75	0.25		0	24.000	24.000	0.775	A53-B-42	0.917
16	67.75 - 62.75	5		0	24.000	24.000	0.775	A53-B-42	0.917
17	62.75 - 60	2.75	0	0	24.000	24.000	0.775	A53-B-42	0.917
18	60 - 57.5	2.5		0	30.000	30.000	0.675	A53-B-42	0.947
19	57.5 - 57.25	0.25		0	30.000	30.000	0.675	A53-B-42	0.947
20	57.25 - 52.25	5		0	30.000	30.000	0.675	A53-B-42	0.947
21	52.25 - 47.25	5		0	30.000	30.000	0.675	A53-B-42	0.947
22	47.25 - 45.33	1.92		0	30.000	30.000	0.675	A53-B-42	0.947
23	45.33 - 45.08	0.25		0	30.000	30.000	0.8375	A53-B-42	0.920
24	45.08 - 40.08	5		0	30.000	30.000	0.8375	A53-B-42	0.920
25	40.08 - 35.08	5		0	30.000	30.000	0.8375	A53-B-42	0.920
26	35.08 - 33.583	1.497		0	30.000	30.000	0.8375	A53-B-42	0.920
27	33.583 - 33.333	0.25		0	30.000	30.000	1	A53-B-42	0.895
28	33.333 - 32.42	0.913		0	30.000	30.000	1	A53-B-42	0.895
29	32.42 - 32.17	0.25		0	30.000	30.000	0.675	A53-B-42	0.947
30	32.17 - 30	2.17	0	0	30.000	30.000	0.675	A53-B-42	0.947
31	30 - 26.75	3.25		0	36.000	36.000	0.625	A53-B-42	0.950
32	26.75 - 26.5	0.25		0	36.000	36.000	0.7125	A53-B-42	0.943
33	26.5 - 21.5	5		0	36.000	36.000	0.7125	A53-B-42	0.943
34	21.5 - 21.25	0.25		0	36.000	36.000	0.975	A53-B-42	0.918
35	21.25 - 16.25	5		0	36.000	36.000	0.975	A53-B-42	0.918
36	16.25 - 11.25	5		0	36.000	36.000	0.975	A53-B-42	0.918
37	11.25 - 6.25	5		0	36.000	36.000	0.975	A53-B-42	0.918
38	6.25 - 1.25	5		0	36.000	36.000	0.975	A53-B-42	0.918
39	1.25 - 0	1.25		0	36.000	36.000	0.975	A53-B-42	0.918

## TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)
1	120 - 115	2.71	14.70	3.63	
2	115 - 110	3.80	37.67	4.82	
3	110 - 105	8.21	74.41	9.76	
4	105 - 100	8.66	123.92	10.06	
5	100 - 95	11.89	187.68	13.18	
6	95 - 90	12.41	254.19	13.44	
7	90 - 85	16.14	335.20	17.15	
8	85 - 80	16.95	421.63	17.43	
9	80 - 79.75	17.03	425.98	17.46	
10	79.75 - 78.5	17.36	447.92	17.67	
11	78.5 - 78.25	17.44	452.33	17.71	
12	78.25 - 73.25	18.96	542.84	18.53	
13	73.25 - 68.25	20.50	637.33	19.31	
14	68.25 - 68	20.59	642.16	19.34	
15	68 - 67.75	20.67	647.00	19.38	
16	67.75 - 62.75	21.95	745.27	19.93	
17	62.75 - 60	22.63	800.44	20.20	
18	60 - 57.5	24.80	855.09	22.05	
19	57.5 - 57.25	24.87	860.60	22.07	
20	57.25 - 52.25	26.24	972.58	22.71	
21	52.25 - 47.25	27.70	1087.71	23.39	
22	47.25 - 45.33	28.23	1132.84	23.64	
23	45.33 - 45.08	28.33	1138.75	23.65	
24	45.08 - 40.08	29.95	1258.63	24.30	
25	40.08 - 35.08	31.59	1381.59	24.89	
26	35.08 - 33.583	32.08	1418.98	25.08	
27	33.583 - 33.333	32.19	1425.25	25.09	
28	33.333 - 32.42	32.52	1448.21	25.21	
29	32.42 - 32.17	32.60	1454.52	25.23	
30	32.17 - 30	33.22	1509.51	25.46	
31	30 - 26.75	36.00	1598.03	27.43	
32	26.75 - 26.5	36.10	1604.89	27.45	
33	26.5 - 21.5	37.81	1743.65	28.05	
34	21.5 - 21.25	37.93	1750.66	28.07	
35	21.25 - 16.25	40.13	1892.61	28.70	
36	16.25 - 11.25	42.34	2037.52	29.26	
37	11.25 - 6.25	44.56	2185.20	29.81	
38	6.25 - 1.25	46.79	2335.53	30.33	
39	1.25 - 0	47.35	2373.51	30.45	

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
120 - 115	Pole	TP24x24x0.25	Pole	4.0%	Pass
115 - 110	Pole	TP24x24x0.25	Pole	9.6%	Pass
110 - 105	Pole	TP24x24x0.25	Pole	19.3%	Pass
105 - 100	Pole	TP24x24x0.25	Pole	31.2%	Pass
100 - 95	Pole	TP24x24x0.25	Pole	47.2%	Pass
95 - 90	Pole	TP24x24x0.25	Pole	63.2%	Pass
90 - 85	Pole	TP24x24x0.375	Pole	52.9%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	66.2%	Pass
80 - 79.75	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	63.5%	Pass
79.75 - 78.5	Pole + Reinf.	TP24x24x0.625	Reinf. 1 Tension Rupture	66.8%	Pass
78.5 - 78.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	36.1%	Pass
78.25 - 73.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	43.2%	Pass
73.25 - 68.25	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	50.6%	Pass
68.25 - 68	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	51.0%	Pass
68 - 67.75	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	51.4%	Pass
67.75 - 62.75	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	59.1%	Pass
62.75 - 60	Pole + Reinf.	TP24x24x0.775	Reinf. 7 Tension Rupture	63.5%	Pass
60 - 57.5	Pole + Reinf.	TP30x30x0.675	Pole	49.7%	Pass
57.5 - 57.25	Pole + Reinf.	TP30x30x0.675	Pole	50.1%	Pass
57.25 - 52.25	Pole + Reinf.	TP30x30x0.675	Pole	56.5%	Pass
52.25 - 47.25	Pole + Reinf.	TP30x30x0.675	Pole	63.1%	Pass
47.25 - 45.33	Pole + Reinf.	TP30x30x0.675	Pole	65.7%	Pass
45.33 - 45.08	Pole + Reinf.	TP30x30x0.8375	Pole	54.5%	Pass
45.08 - 40.08	Pole + Reinf.	TP30x30x0.8375	Pole	60.2%	Pass
40.08 - 35.08	Pole + Reinf.	TP30x30x0.8375	Pole	66.1%	Pass
35.08 - 33.58	Pole + Reinf.	TP30x30x0.8375	Pole	67.8%	Pass
33.58 - 33.33	Pole + Reinf.	TP30x30x1	Pole	58.1%	Pass
33.33 - 32.42	Pole + Reinf.	TP30x30x1	Pole	59.0%	Pass
32.42 - 32.17	Pole + Reinf.	TP30x30x0.675	Pole	84.2%	Pass
32.17 - 30	Pole + Reinf.	TP30x30x0.675	Pole	87.4%	Pass
30 - 26.75	Pole + Reinf.	TP36x36x0.625	Pole	71.4%	Pass
26.75 - 26.5	Pole + Reinf.	TP36x36x0.7125	Pole	62.7%	Pass
26.5 - 21.5	Pole + Reinf.	TP36x36x0.7125	Pole	68.1%	Pass
21.5 - 21.25	Pole + Reinf.	TP36x36x0.975	Pole	51.1%	Pass
21.25 - 16.25	Pole + Reinf.	TP36x36x0.975	Pole	55.3%	Pass
16.25 - 11.25	Pole + Reinf.	TP36x36x0.975	Pole	59.5%	Pass
11.25 - 6.25	Pole + Reinf.	TP36x36x0.975	Pole	63.8%	Pass
6.25 - 1.25	Pole + Reinf.	TP36x36x0.975	Pole	68.1%	Pass
1.25 - 0	Pole + Reinf.	TP36x36x0.975	Pole	69.2%	Pass
				Summary	
			Pole	87.4%	Pass
			Reinforcement	84.7%	Pass
			Overall	87.4%	Pass

# Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity* (100% Max. Allowable)							
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7
120 - 115	1315	n/a	1315	18.65	n/a	18.65	4.0%							
115 - 110	1315	n/a	1315	18.65	n/a	18.65	9.6%							
110 - 105	1315	n/a	1315	18.65	n/a	18.65	19.3%							
105 - 100	1315	n/a	1315	18.65	n/a	18.65	31.2%							
100 - 95	1315	n/a	1315	18.65	n/a	18.65	47.2%							
95 - 90	1315	n/a	1315	18.65	n/a	18.65	63.2%							
90 - 85	1942	n/a	1942	27.83	n/a	27.83	52.9%							
85 - 80	1942	n/a	1942	27.83	n/a	27.83	66.2%							
80 - 79.75	1942	1202	3144	27.83	15.00	42.83	41.2%	63.5%						
79.75 - 78.5	1942	1202	3144	27.83	15.00	42.83	43.3%	66.8%						
78.5 - 78.25	1942	1912	3854	27.83	24.00	51.83	35.6%							36.1%
78.25 - 73.25	1942	1912	3854	27.83	24.00	51.83	42.6%							43.2%
73.25 - 68.25	1942	1912	3854	27.83	24.00	51.83	50.0%							50.6%
68.25 - 68	1942	1912	3854	27.83	24.00	51.83	50.3%							51.0%
68 - 67.75	1942	1912	3854	27.83	24.00	51.83	50.7%							51.4%
67.75 - 62.75	1942	1912	3854	27.83	24.00	51.83	58.3%							59.1%
62.75 - 60	1942	1912	3854	27.83	24.00	51.83	62.6%							63.5%
60 - 57.5	3829	2920	6749	34.90	24.00	58.90	49.7%							48.2%
57.5 - 57.25	3829	2920	6749	34.90	24.00	58.90	50.1%						48.5%	
57.25 - 52.25	3829	2920	6749	34.90	24.00	58.90	56.5%						54.8%	
52.25 - 47.25	3829	2920	6749	34.90	24.00	58.90	63.1%						61.2%	
47.25 - 45.33	3829	2920	6749	34.90	24.00	58.90	65.7%						63.7%	
45.33 - 45.08	3829	4343	8173	34.90	35.68	70.58	54.5%			50.8%			52.9%	
45.08 - 40.08	3829	4343	8173	34.90	35.68	70.58	60.2%			56.1%			58.4%	
40.08 - 35.08	3829	4343	8173	34.90	35.68	70.58	66.1%			61.6%			64.1%	
35.08 - 33.58	3829	4343	8173	34.90	35.68	70.58	67.8%			63.2%			65.8%	
33.58 - 33.33	3829	5752	9581	34.90	46.60	81.50	58.1%		52.7%				56.3%	
33.33 - 32.42	3829	5752	9581	34.90	46.60	81.50	59.0%		53.5%				57.2%	
32.42 - 32.17	3829	2920	6749	34.90	24.00	58.90	84.2%						81.7%	
32.17 - 30	3829	2920	6749	34.90	24.00	58.90	87.4%						84.7%	
30 - 26.75	6659	4144	10803	41.97	24.00	65.97	71.4%						67.2%	
26.75 - 26.5	6659	5696	12355	41.97	32.50	74.47	62.7%					58.2%		
26.5 - 21.5	6659	5696	12355	41.97	32.50	74.47	68.1%					63.2%		
21.5 - 21.25	6659	9840	16499	41.97	56.50	98.47	51.1%				48.1%	47.5%		
21.25 - 16.25	6659	9840	16499	41.97	56.50	98.47	55.3%				52.0%	51.3%		
16.25 - 11.25	6659	9840	16499	41.97	56.50	98.47	59.5%				55.9%	55.2%		
11.25 - 6.25	6659	9840	16499	41.97	56.50	98.47	63.8%				60.0%	59.2%		
6.25 - 1.25	6659	9840	16499	41.97	56.50	98.47	68.1%				64.1%	63.2%		
1.25 - 0	6659	9840	16499	41.97	56.50	98.47	69.2%				65.1%	64.3%		

Note: Section capacity checked using 5 degree increments.  
 \*Rating per TIA-222-H Section 15.5.

# Monopole Flange Plate Connection

Elevation = 90 ft.



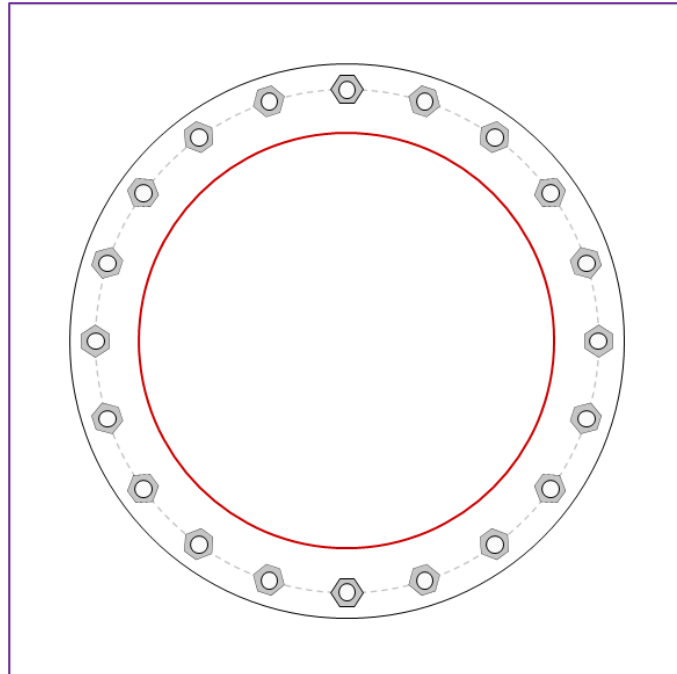
BU #	876329
Site Name	. VIEW CEM. (FILLEY P
Order #	607746 Rev. 0

Applied Loads	
Moment (kip-ft)	254.19
Axial Force (kips)	12.41
Shear Force (kips)	13.44

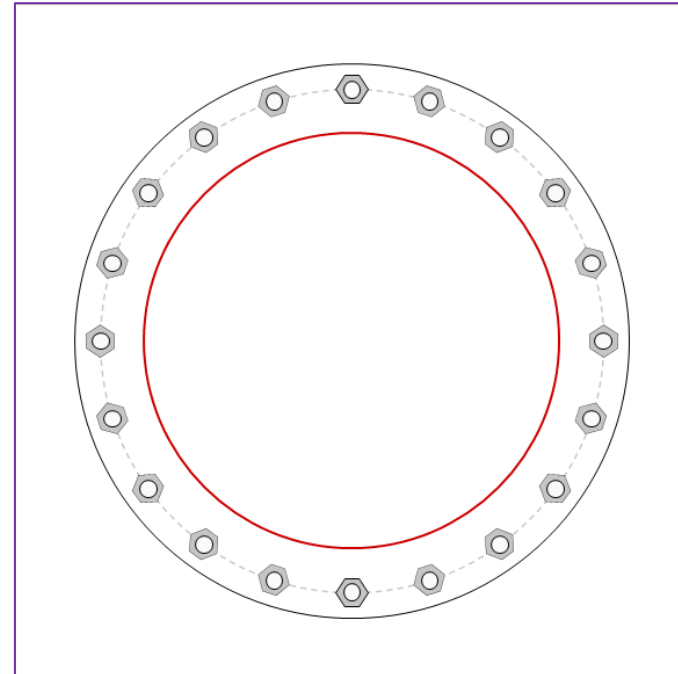
TIA-222 Revision	H
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\*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



### Connection Properties

#### Bolt Data

(20) 1"  $\phi$  bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 29" BC

#### Top Plate Data

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

#### Bottom Plate Data

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

#### Top Stiffener Data

N/A

#### Bottom Stiffener Data

N/A

#### Top Pole Data

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

#### Bottom Pole Data

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

### Analysis Results

#### Bolt Capacity

Max Load (kips)	20.41
Allowable (kips)	54.53
Stress Rating:	<b>35.6%</b> Pass

#### Top Plate Capacity

Max Stress (ksi):	14.73	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>43.3%</b>	Pass
Tension Side Stress Rating:	<b>20.4%</b>	Pass

#### Bottom Plate Capacity

Max Stress (ksi):	14.73	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>43.3%</b>	Pass
Tension Side Stress Rating:	<b>20.4%</b>	Pass

# Monopole Flange Plate Connection

Elevation = 60 ft.



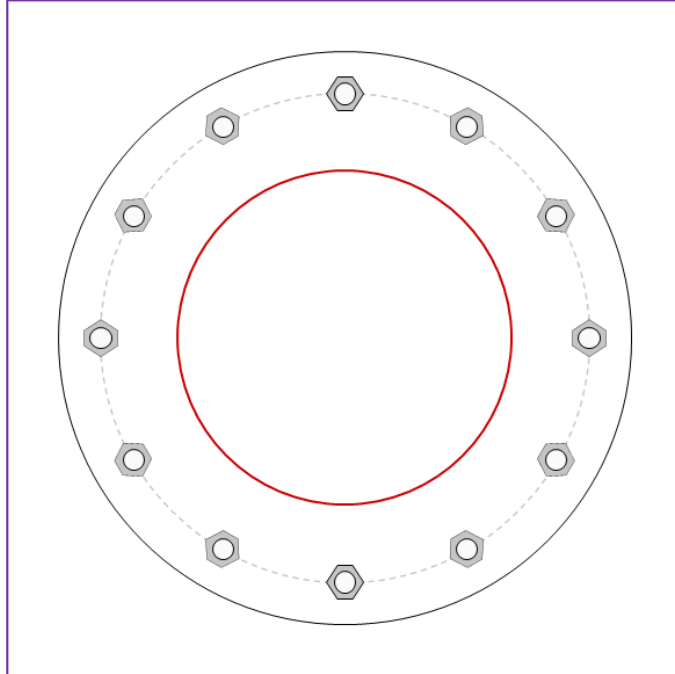
BU #	876329
Site Name	. VIEW CEM. (FILLEY P
Order #	607746 Rev. 0

TIA-222 Revision	H
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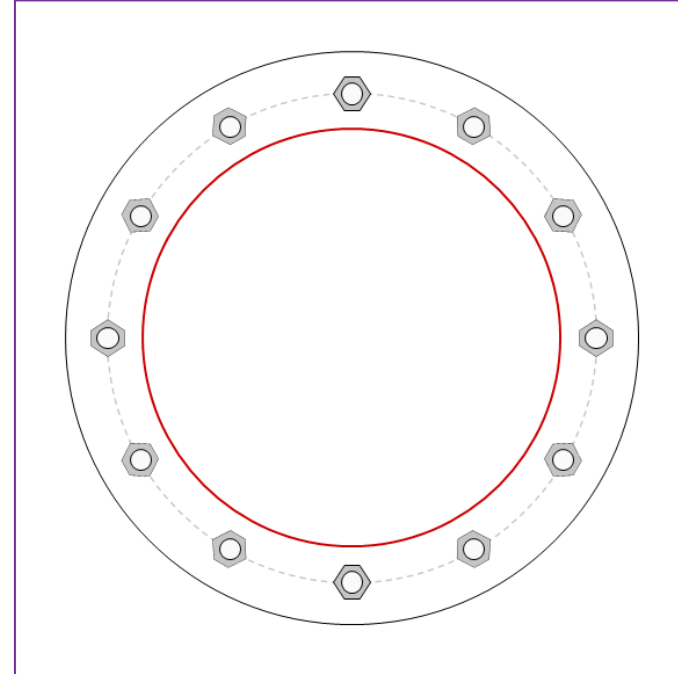
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	217.74	Moment (kip-ft)	582.71
Axial Force (kips)	22.63	Axial Force (kips)	0.00
Shear Force (kips)	20.20	Shear Force (kips)	0.00

\*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



### Connection Properties

#### Bolt Data

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

#### Top Plate Data

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

#### Top Stiffener Data

N/A

#### Top Pole Data

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

#### Bridge Stiffener Group 1 Data

(4) Welded, 6"x1.25", A572-65, Lu=5.63", Upper Plate Width=15.5", Lower Plate Width=9.5", Neglect Flange in MOI: No

#### Bottom Plate Data

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

#### Bottom Stiffener Data

N/A

#### Bottom Pole Data

30" x 0.675" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

### Analysis Results

#### Bolt Capacity

Max Load (kips)	22.98
Allowable (kips)	126.87
Stress Rating:	17.3% <b>Pass</b>

#### Top Plate Capacity

Max Stress (ksi):	11.58	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	34.0%	<b>Pass</b>
Tension Side Stress Rating:	18.1%	<b>Pass</b>

#### Bottom Plate Capacity

Max Stress (ksi):	5.47	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	16.1%	<b>Pass</b>
Tension Side Stress Rating:	5.2%	<b>Pass</b>

#### Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	162.62	
Max Tension (kip):	162.62	
Comp. Capacity (kip):	428.71	
Tens. Capacity (kip):	438.75	(Yield)
Comp. Stress Rating:	36.1%	<b>Pass</b>
Tens. Stress Rating:	35.3%	<b>Pass</b>



# Welded Bridge Stiffener Design

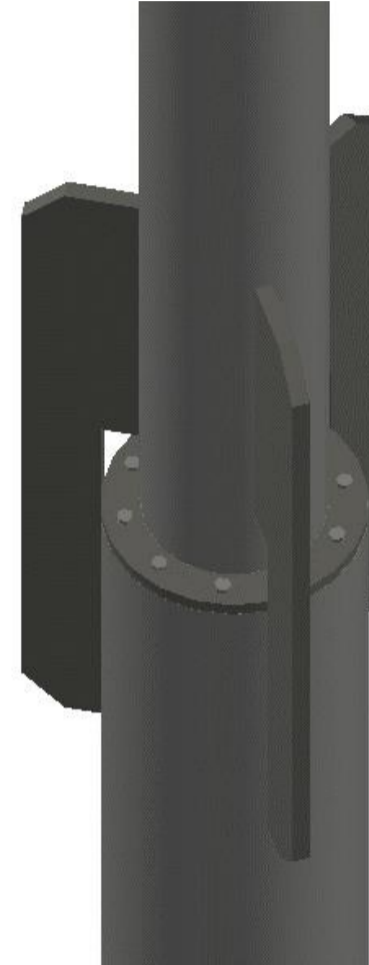
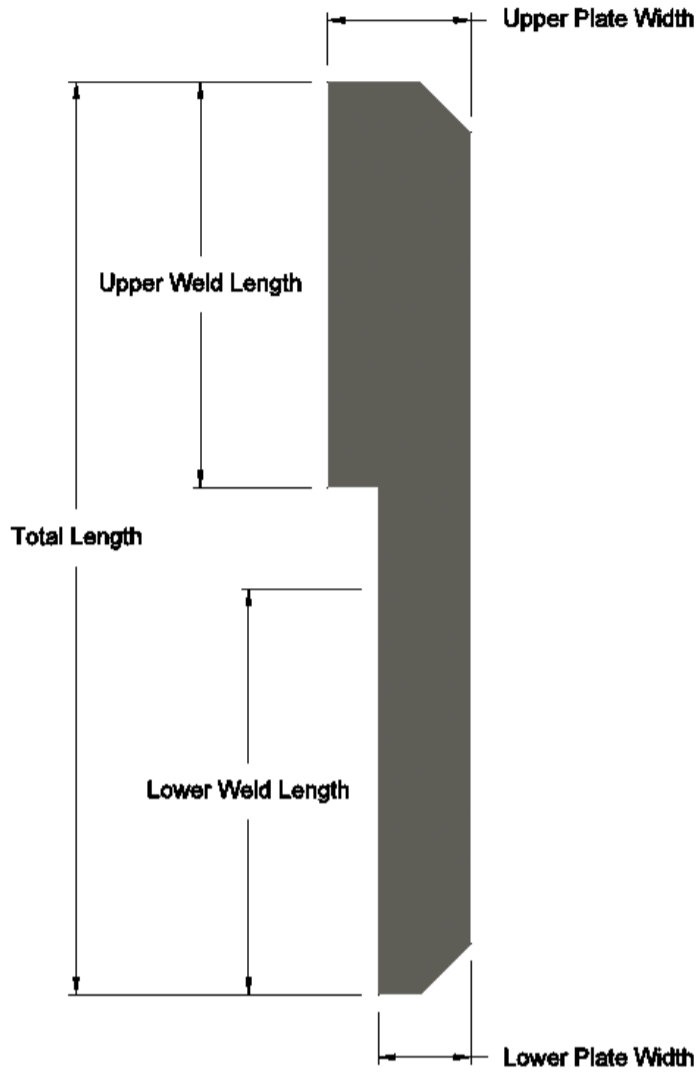
Elevation = 60 ft.



BU #	876329
Site Name	J. VIEW CEM. (FILLEY P)
Order #	607746 Rev. 0
TIA-222 Revision	H

Applied Loads to Design Groups	
Moment (kip-ft)	582.71
Axial Force (kips)	0.00
Shear Force (kips)	0.00

\*TIA-222-H Section 15.5 Applied



## Design Properties

### Bridge Stiffener Group 1 Data

(4) Welded, 6"x1.25", A572-65, Lu=5.63", Upper Plate Width=15.5", Lower Plate Width=9.5", Neglect Flange in MOI: No

Total Length:	108 in	Upper Weld Size:	<b>Good</b>
Weld Type:	Fillet (both sides)	Upper Weld Rating:	<b>18.36%</b>
Weld Size:	0.375 in	Lower Weld Size:	<b>Good</b>
Exx:	80 ksi	Lower Weld Rating:	<b>17.67%</b>
Upper Weld Length:	51.19 in	Top Plate Lateral-Torsional Buckling Rating:	<b>3.81%</b>
Upper Plate Width:	15.5 in	Top Plate Tension Yield Rating:	<b>6.21%</b>
Lower Weld Length:	51.19 in	Top Plate Tension Rupture Rating:	<b>6.72%</b>
Lower Plate Width:	9.5 in	Top Plate Interaction Rating:	<b>4.29%</b>
Stiffener Front EPA (No Ice):	12.95 ft <sup>2</sup>	Bottom Plate Lateral-Torsional Buckling Rating:	<b>2.37%</b>
Stiffener Side EPA (No Ice):	1.88 ft <sup>2</sup>	Bottom Plate Tension Yield Rating:	<b>6.21%</b>
Stiffener Front EPA (1/2" Ice):	13.59 ft <sup>2</sup>	Bottom Plate Tension Rupture Rating:	<b>6.72%</b>
Stiffener Side EPA (1/2" Ice):	3.41 ft <sup>2</sup>	Bottom Plate Interaction Rating:	<b>2.85%</b>
Stiffener Weight (No Ice):	0.473 kip	Top Pole Punching Shear Rating:	<b>11.88%</b>
Stiffener Weight (1/2" Ice):	0.521 kip	Bottom Pole Punching Shear Rating:	<b>4.52%</b>

# Monopole Flange Plate Connection

Elevation = 30 ft.



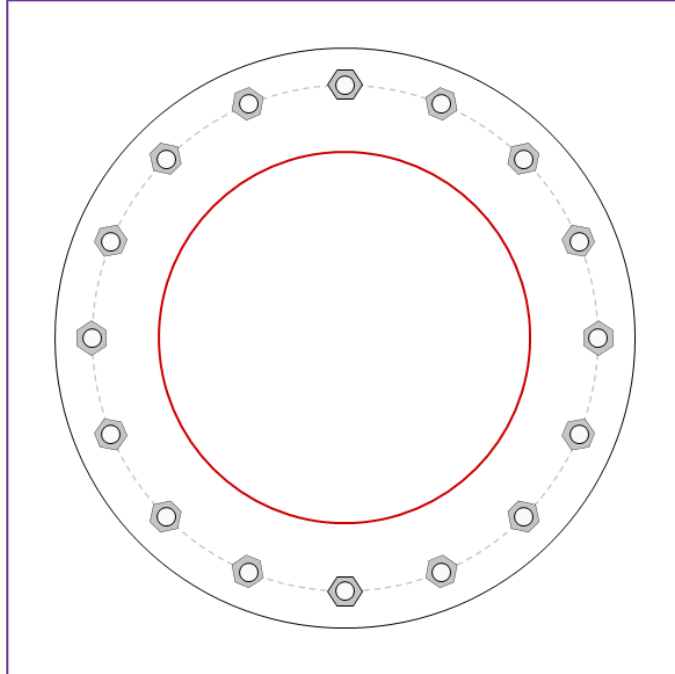
BU #	876329
Site Name	. VIEW CEM. (FILLEY P
Order #	607746 Rev. 0

TIA-222 Revision	H
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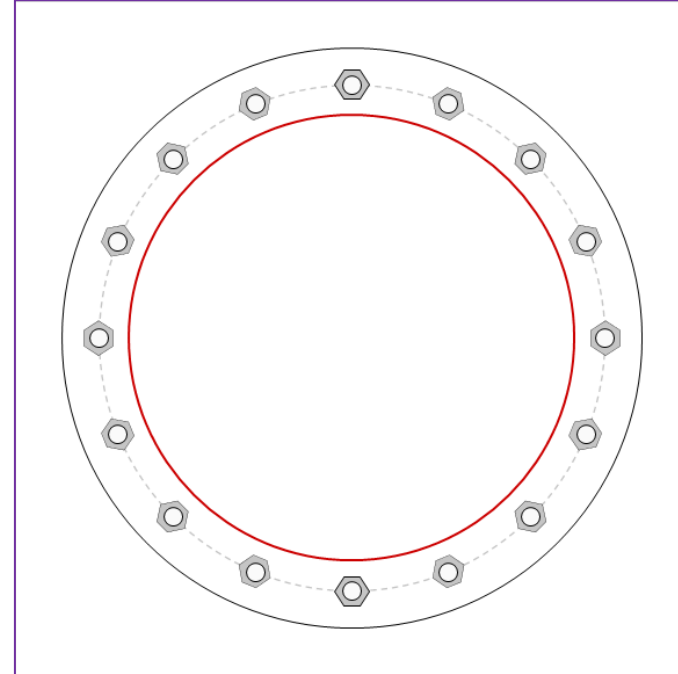
Applied Loads to Flange Connections		Applied Loads to Bridge Stiffeners	
Moment (kip-ft)	355.62	Moment (kip-ft)	1153.89
Axial Force (kips)	33.22	Axial Force (kips)	0.00
Shear Force (kips)	25.46	Shear Force (kips)	0.00

\*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



### Connection Properties

#### Bolt Data

(16) 1-1/2"  $\phi$  bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 41" BC

#### Top Plate Data

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

#### Top Stiffener Data

N/A

#### Top Pole Data

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

#### Bridge Stiffener Group 1 Data

(4) Welded, 4.25"x1.25", A572-65, Lu=12", Upper Plate Width=12.75", Lower Plate Width=8.625", Neglect Flange in MOI: No

#### Bottom Plate Data

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

#### Bottom Stiffener Data

N/A

#### Bottom Pole Data

36" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

#### Bridge Stiffener Group 2 Data

(4) Welded, 6"x1.25", A572-65, Lu=5.63", Upper Plate Width=15.5", Lower Plate Width=9.5", Neglect Flange in MOI: No

### Analysis Results

#### Bolt Capacity

Max Load (kips)	23.93
Allowable (kips)	126.87
Stress Rating:	<b>18.0%</b> <span style="color: green;">Pass</span>

#### Top Plate Capacity

Max Stress (ksi):	13.55	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>39.8%</b>	<span style="color: green;">Pass</span>
Tension Side Stress Rating:	<b>20.3%</b>	<span style="color: green;">Pass</span>

#### Bridge Stiffener Group 1 Analysis Capacity

Max Compression (kip):	117.17	
Max Tension (kip):	117.17	
Comp. Capacity (kip):	279.77	
Tens. Capacity (kip):	310.78	(Yield)
Comp. Stress Rating:	<b>39.9%</b>	<span style="color: green;">Pass</span>
Tens. Stress Rating:	<b>35.9%</b>	<span style="color: green;">Pass</span>

#### Bottom Plate Capacity

Max Stress (ksi):	6.08	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	<b>17.9%</b>	<span style="color: green;">Pass</span>
Tension Side Stress Rating:	<b>6.1%</b>	<span style="color: green;">Pass</span>

#### Bridge Stiffener Group 2 Analysis Capacity

Max Compression (kip):	165.42	
Max Tension (kip):	165.42	
Comp. Capacity (kip):	428.71	
Tens. Capacity (kip):	438.75	(Yield)
Comp. Stress Rating:	<b>36.7%</b>	<span style="color: green;">Pass</span>
Tens. Stress Rating:	<b>35.9%</b>	<span style="color: green;">Pass</span>

# Welded Bridge Stiffener Design

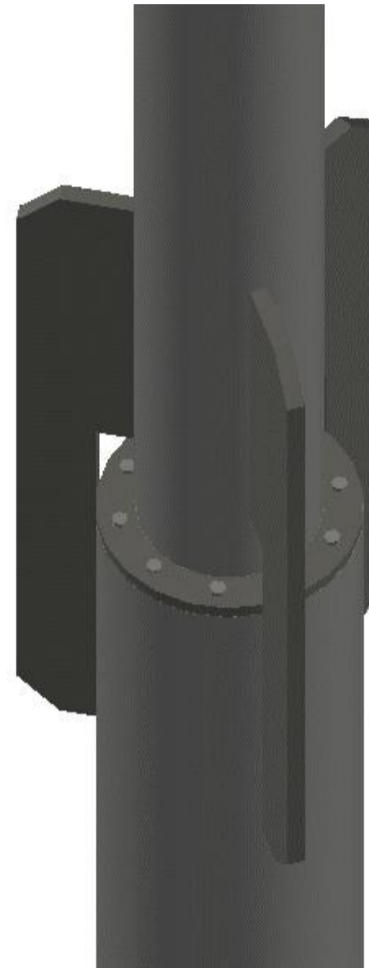
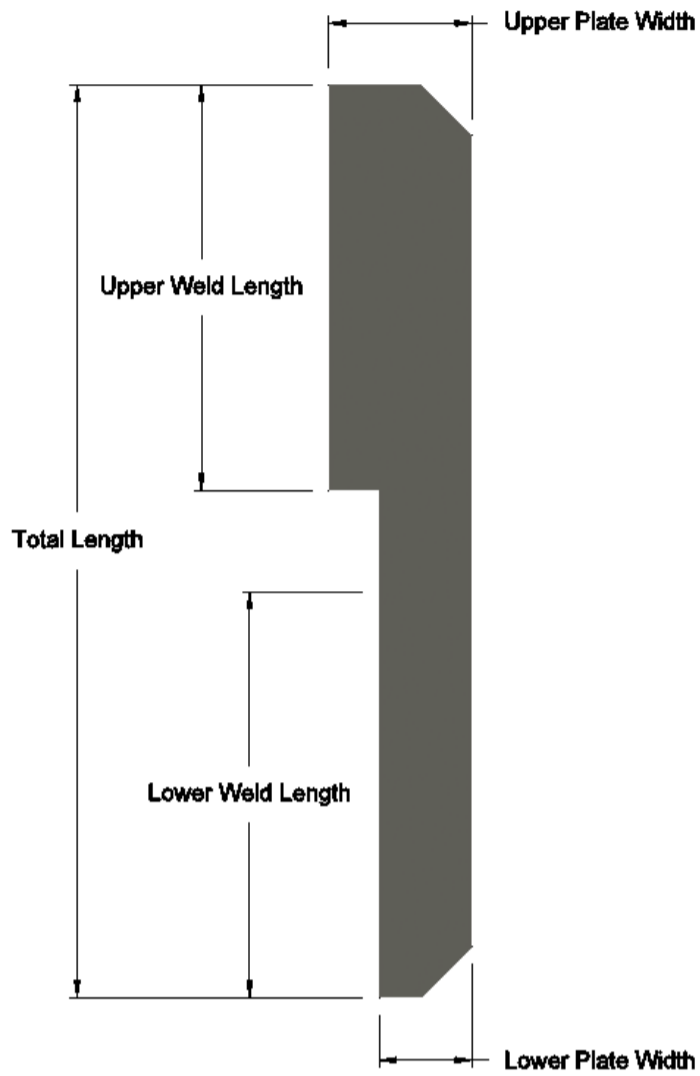
Elevation = 30 ft.



BU #	876329
Site Name	. VIEW CEM. (FILLEY P
Order #	607746 Rev. 0
TIA-222 Revision	H

Applied Loads to Design Groups	
Moment (kip-ft)	1153.89
Axial Force (kips)	0.00
Shear Force (kips)	0.00

\*TIA-222-H Section 15.5 Applied



## Design Properties

### Bridge Stiffener Group 1 Data

(4) Welded, 4.25"x1.25", A572-65, Lu=12", Upper Plate Width=12.75", Lower Plate Width=8.625", Neglect Flange in MOI: No

Total Length:	61.125 in	Upper Weld Size:	<b>Good</b>
Weld Type:	Fillet (both sides)	Upper Weld Rating:	<b>31.10%</b>
Weld Size:	0.375 in	Lower Weld Size:	<b>Good</b>
Exx:	80 ksi	Lower Weld Rating:	<b>36.97%</b>
Upper Weld Length:	27 in	Top Plate Lateral-Torsional Buckling Rating:	<b>8.62%</b>
Upper Plate Width:	12.75 in	Top Plate Tension Yield Rating:	<b>8.48%</b>
Lower Weld Length:	21.25 in	Top Plate Tension Rupture Rating:	<b>9.18%</b>
Lower Plate Width:	8.625 in	Top Plate Interaction Rating:	<b>9.50%</b>
Stiffener Front EPA (No Ice):	5.77 ft <sup>2</sup>	Bottom Plate Lateral-Torsional Buckling Rating:	<b>9.10%</b>
Stiffener Side EPA (No Ice):	1.06 ft <sup>2</sup>	Bottom Plate Tension Yield Rating:	<b>10.77%</b>
Stiffener Front EPA (1/2" Ice):	6.20 ft <sup>2</sup>	Bottom Plate Tension Rupture Rating:	<b>11.67%</b>
Stiffener Side EPA (1/2" Ice):	1.94 ft <sup>2</sup>	Bottom Plate Interaction Rating:	<b>10.53%</b>
Stiffener Weight (No Ice):	0.226 kip	Top Pole Punching Shear Rating:	<b>30.78%</b>
Stiffener Weight (1/2" Ice):	0.251 kip	Bottom Pole Punching Shear Rating:	<b>20.40%</b>

### Bridge Stiffener Group 2 Data

(4) Welded, 6"x1.25", A572-65, Lu=5.63", Upper Plate Width=15.5", Lower Plate Width=9.5", Neglect Flange in MOI: No

Total Length:	132 in	Upper Weld Size:	<b>Good</b>
Weld Type:	Fillet (both sides)	Upper Weld Rating:	<b>15.55%</b>
Weld Size:	0.375 in	Lower Weld Size:	<b>Good</b>
Exx:	80 ksi	Lower Weld Rating:	<b>13.64%</b>
Upper Weld Length:	60 in	Top Plate Lateral-Torsional Buckling Rating:	<b>2.95%</b>
Upper Plate Width:	15.5 in	Top Plate Tension Yield Rating:	<b>5.39%</b>
Lower Weld Length:	67 in	Top Plate Tension Rupture Rating:	<b>5.83%</b>
Lower Plate Width:	9.5 in	Top Plate Interaction Rating:	<b>3.31%</b>
Stiffener Front EPA (No Ice):	16.26 ft <sup>2</sup>	Bottom Plate Lateral-Torsional Buckling Rating:	<b>1.47%</b>
Stiffener Side EPA (No Ice):	2.29 ft <sup>2</sup>	Bottom Plate Tension Yield Rating:	<b>4.82%</b>
Stiffener Front EPA (1/2" Ice):	17.03 ft <sup>2</sup>	Bottom Plate Tension Rupture Rating:	<b>5.23%</b>
Stiffener Side EPA (1/2" Ice):	4.16 ft <sup>2</sup>	Bottom Plate Interaction Rating:	<b>1.76%</b>
Stiffener Weight (No Ice):	0.572 kip	Top Pole Punching Shear Rating:	<b>8.80%</b>
Stiffener Weight (1/2" Ice):	0.631 kip	Bottom Pole Punching Shear Rating:	<b>2.90%</b>

# Monopole Base Plate Connection

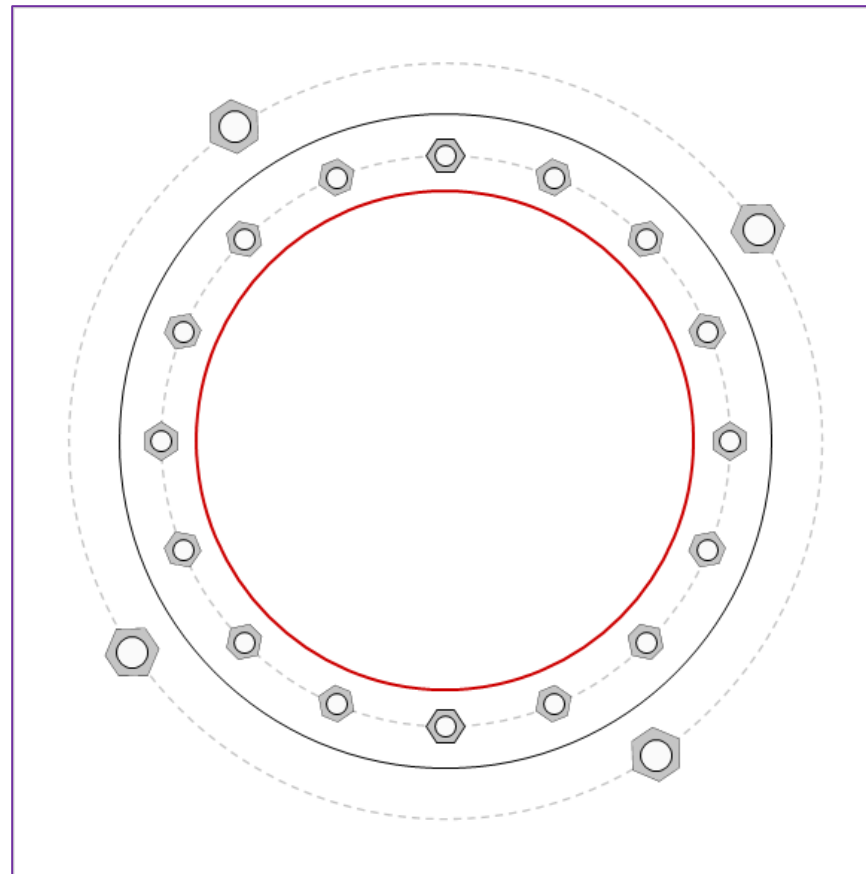


Site Info	
BU #	876329
Site Name	L. VIEW CEM. (FILLEY P.
Order #	607746 Rev. 0

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

Applied Loads	
Moment (kip-ft)	2373.51
Axial Force (kips)	47.35
Shear Force (kips)	30.45

\*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
GROUP 1: (16) 1-1/2" $\phi$ bolts (A354-BC N; $F_y=109$ ksi, $F_u=125$ ksi) on 41" BC
GROUP 2: (4) 2-1/4" $\phi$ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 54.5" BC

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

Stiffener Data
N/A

Pole Data
36" x 0.375" round pole (A53-B-42; $F_y=42$ ksi, $F_u=63$ ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>	
GROUP 1:		
$P_{u,t} = 83.04$	$\phi P_{n,t} = 132.19$	<b>Stress Rating</b>
$V_u = 1.9$	$\phi V_n = 82.83$	<b>59.8%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>
GROUP 2:		
$P_{u,t} = 263.46$	$\phi P_{n,t} = 304.69$	<b>Stress Rating</b>
$V_u = 0$	$\phi V_n = 186.38$	<b>82.4%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>
<b>Base Plate Summary</b>		
Max Stress (ksi):	19.23	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	<b>56.5%</b>	<b>Pass</b>

# CCIplate

Elevation (ft) 0 (Base)

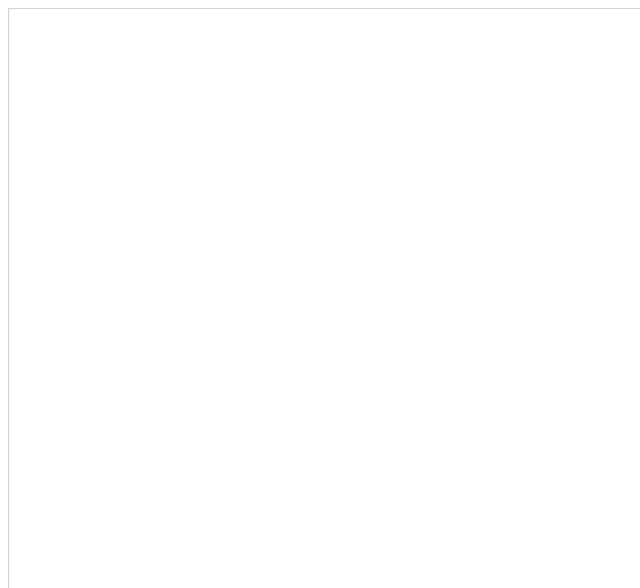
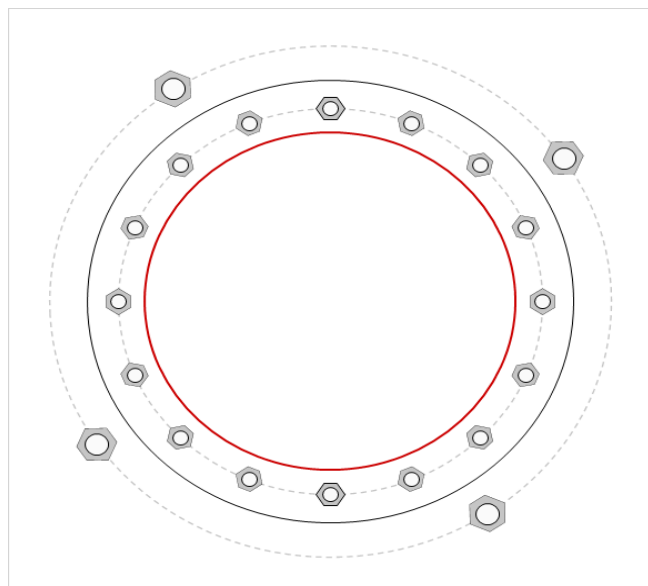
note: Bending interaction not considered when Grout Considered = "Yes"

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

## Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, $\eta$ :	$I_{ar}$ (in):	Thread Type	Area Override, in <sup>2</sup>	Tension Only
1	1	0	1.5	A354-BC	41	0.5	0	N-Included		No
2	1	22.5	1.5	A354-BC	41	0.5	0	N-Included		No
3	1	45	1.5	A354-BC	41	0.5	0	N-Included		No
4	1	67.5	1.5	A354-BC	41	0.5	0	N-Included		No
5	1	90	1.5	A354-BC	41	0.5	0	N-Included		No
6	1	112.5	1.5	A354-BC	41	0.5	0	N-Included		No
7	1	135	1.5	A354-BC	41	0.5	0	N-Included		No
8	1	157.5	1.5	A354-BC	41	0.5	0	N-Included		No
9	1	180	1.5	A354-BC	41	0.5	0	N-Included		No
10	1	202.5	1.5	A354-BC	41	0.5	0	N-Included		No
11	1	225	1.5	A354-BC	41	0.5	0	N-Included		No
12	1	247.5	1.5	A354-BC	41	0.5	0	N-Included		No
13	1	270	1.5	A354-BC	41	0.5	0	N-Included		No
14	1	292.5	1.5	A354-BC	41	0.5	0	N-Included		No
15	1	315	1.5	A354-BC	41	0.5	0	N-Included		No
16	1	337.5	1.5	A354-BC	41	0.5	0	N-Included		No
17	2	34	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No
18	2	124	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No
19	2	214	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No
20	2	304	2.25	A193 Gr. B7	54.5	0.5	0	N-Included		No

## Plot Graphic



## Drilled Pier Foundation

BU # :	876329
Site Name:	MTN. VIEW CEM. (FILLEY)
Order Number:	607746 Rev. 0
TIA-222 Revision:	H
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2373.51	
Axial Force (kips)	47.36	
Shear Force (kips)	30.43	

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

Pier Design Data		
Depth	25	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
<i>From 0.5' above grade to 25' below grade</i>		
Pier Diameter	6	ft
Rebar Quantity	24	
Rebar Size	9	
Clear Cover to Ties	3	in
Tie Size	5	
Tie Spacing		in

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

### Analysis Results

Soil Lateral Check	Compression	Uplift
D <sub>v=0</sub> (ft from TOC)	6.76	-
Soil Safety Factor	4.31	-
Max Moment (kip-ft)	2539.32	-
Rating*	29.4%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	526.86	-
End Bearing (kips)	339.29	-
Weight of Concrete (kips)	108.59	-
Total Capacity (kips)	866.15	-
Axial (kips)	155.95	-
Rating*	17.1%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	6.72	-
Critical Moment (kip-ft)	2539.31	-
Critical Moment Capacity	3304.50	-
Rating*	73.2%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	18.19	-
Critical Shear (kip)	293.40	-
Critical Shear Capacity	396.96	-
Rating*	70.4%	-

Structural Foundation Rating*	73.2%
Soil Interaction Rating*	29.4%

\*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	15	# of Layers	3

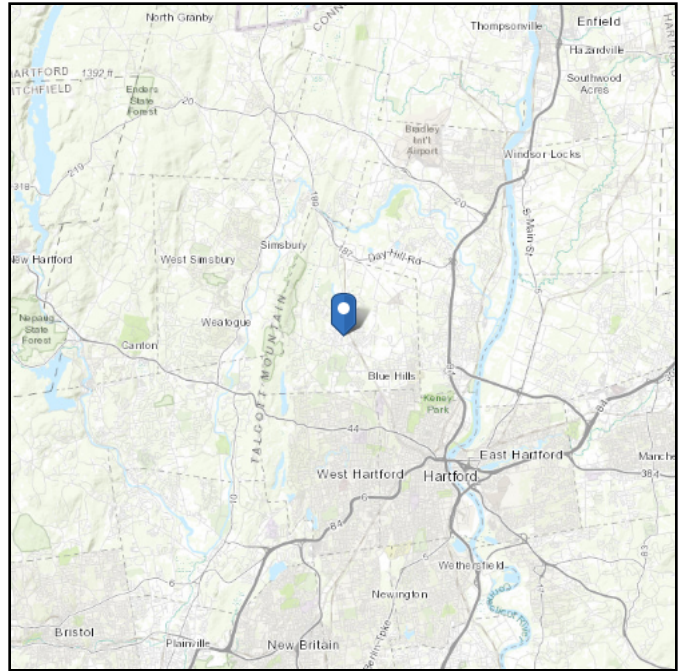
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	15	11.67	135	150		36	1.350	1.350				50	Cohesionless
3	15	25	10	75	87.6		36	2.151	2.151			16	42	Cohesionless

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Elevation:** 192.79 ft (NAVD 88)  
**Latitude:** 41.835158  
**Longitude:** -72.741167



## Wind

### Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

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

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

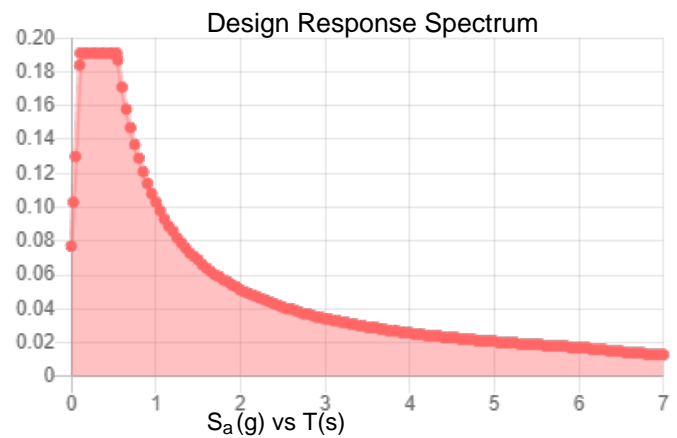
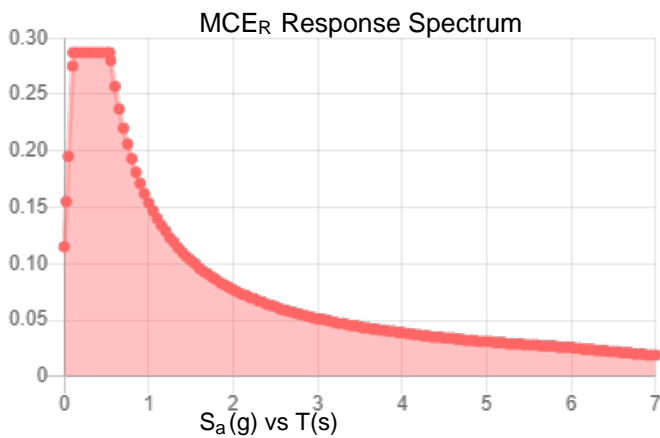
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_S$ :	0.18	$S_{DS}$ :	0.191
$S_1$ :	0.064	$S_{D1}$ :	0.103
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.09
$S_{MS}$ :	0.287	$PGA_M$ :	0.144
$S_{M1}$ :	0.154	$F_{PGA}$ :	1.6
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Mon May 24 2021

**Date Source:**

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



## Ice

---

### Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

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

**Date Accessed:** Mon May 24 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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Date: **March 24, 2022**



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

**Subject:** **Mount Modification Report**

**Carrier Designation:** **T-Mobile Equipment Change-Out**  
**Carrier Site Number:** CT11278A  
**Carrier Site Name:** -

**Crown Castle Designation:** **BU Number:** 876329  
**Site Name:** Mtn. View Cem. (Filley Park)  
**JDE Job Number:** 708426  
**Order Number:** 607746 Rev. 0

**Engineering Firm Designation:** **Trylon Report Designation:** 205693

**Site Data:** **28 Brewer Dr., Bloomfield, Hartford County, CT, 06002**  
**Latitude 41°50'6.57" Longitude -72°44'28.20"**

**Structure Information:** **Tower Height & Type:** **120.0 ft Monopole**  
**Mount Elevation:** **107.0 ft**  
**Mount Width & Type:** **10.0 ft Platform**

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

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

**Platform**

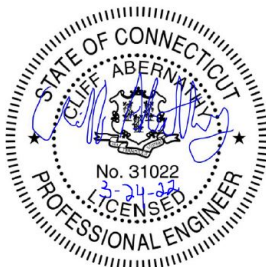
**Sufficient\***

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

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Andrei Florea

Respectfully Submitted by:  
Cliff Abernathy, P.E.



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Mount Modification Design Drawings (MDD)

## 1) INTRODUCTION

This is an existing 3 sector 10.0 ft Platform, mapped by Tower Engineering Professionals, INC.

The mount has been modified per reinforcement drawings prepared by Maser Consulting Connecticut, in March of 2019. Reinforcement consists of replacing existing mount pipes with 96" long P2.0 STD mount pipes, installing platform reinforcement kit Site Pro 1, PRK-1245L and installing support rail kit Site Pro 1, HRK-12.

## 2) ANALYSIS CRITERIA

<b>Building Code:</b>	2015 IBC
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor at Base:</b>	1.00
<b>Topographic Factor at Mount:</b>	1.00
<b>Ice Thickness:</b>	2.00 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Seismic <math>S_s</math>:</b>	0.180
<b>Seismic <math>S_1</math>:</b>	0.064
<b>Live Loading Wind Speed:</b>	50 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 - Proposed Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
107.0	108.0	3	Ericsson	AIR 32 B2A B66AA_T-MOBILE	10.0 ft Platform
		3	Ericsson	AIR 6419 B41_TMO	
		3	RFS/Celwave	APXVAARR24_43-U-NA20	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	

## 3) ANALYSIS PROCEDURE

**Table 2 - Documents Provided**

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	607746, Rev. 0	CCI Sites
Structural Analysis Report	Crown Castle	9812440	CCI Sites
Mount Analysis Report	Maser Consulting Connecticut	8323137	CCI Sites
Mount Mapping	Tower Engineering Professionals, INC	7842041	CCI Sites
Mount Modification Drawings	Trylon	Appendix E	Trylon

### 3.1) Analysis Method

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

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

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

### 3.2) Assumptions

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

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

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

## 4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3,4	Mount Pipe(s)	MP2	107.0	41.0	Pass
	Horizontal(s)	H3		26.5	Pass
	Standoff(s)	M30B		31.3	Pass
	Bracing(s)	M28A		44.5	Pass
	Handrail(s)	M22		45.8	Pass
	Kicker(s)	M33		4.1	Pass
	Mount Connection(s)	-		42.6	Pass

<b>Structure Rating (max from all components) =</b>	<b>45.8%</b>
---	--------------

Notes:

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

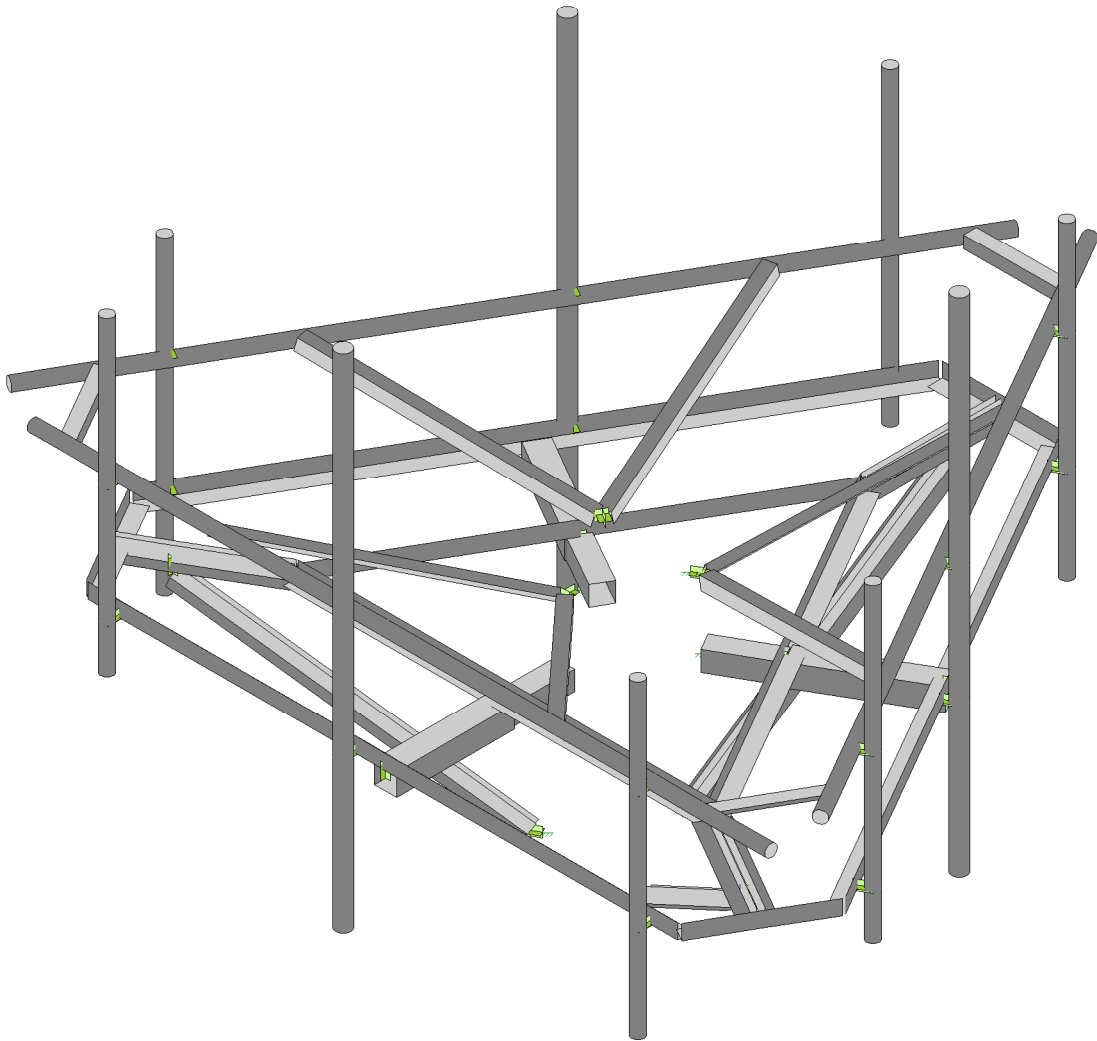
#### 4.1) Recommendations

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

1. Install Site Pro 1, PRK-SFS 12.5" below handrail.

Engineering detail drawings have been provided in Appendix E – Mount Modification Design Drawings. Connection from the mount to the tower and local stresses on the tower are sufficient.

**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**



Envelope Only Solution

Trylon

AF

205693

876329

SK - 1

Mar 23, 2022 at 4:37 PM

846329 - Reinf.r3d





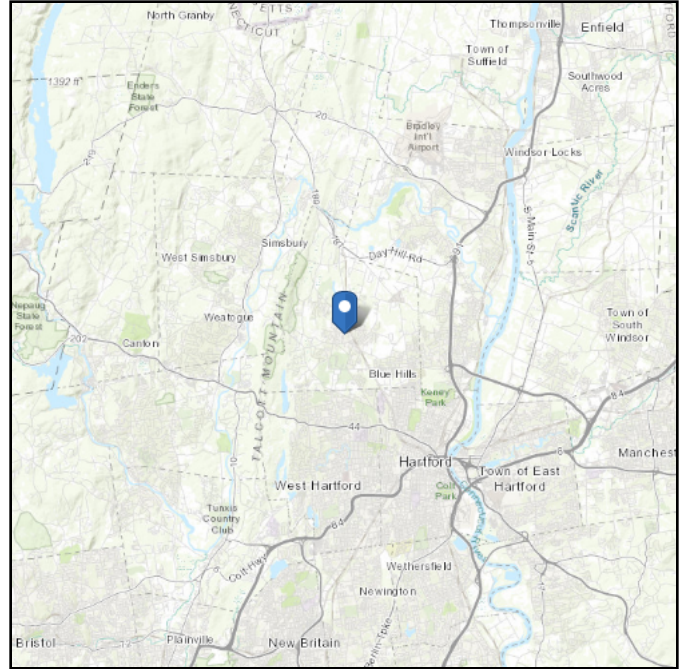
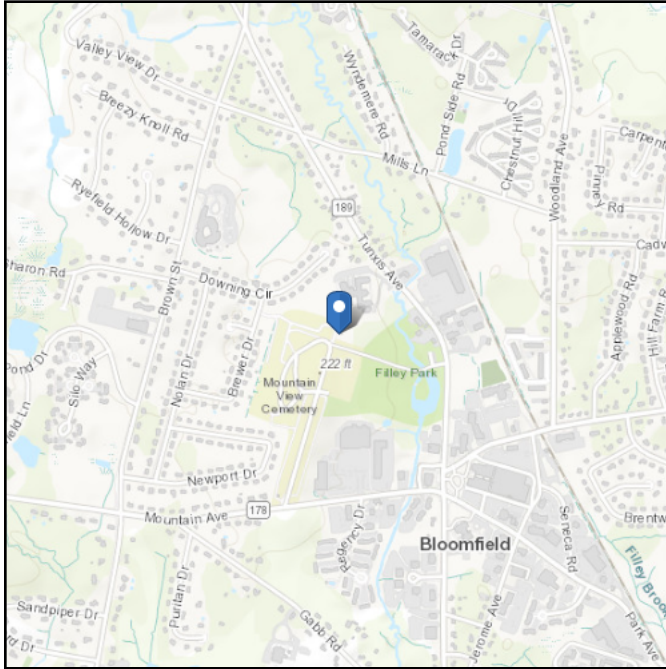
**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

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

**Elevation:** 192.79 ft (NAVD 88)  
**Latitude:** 41.835158  
**Longitude:** -72.741167

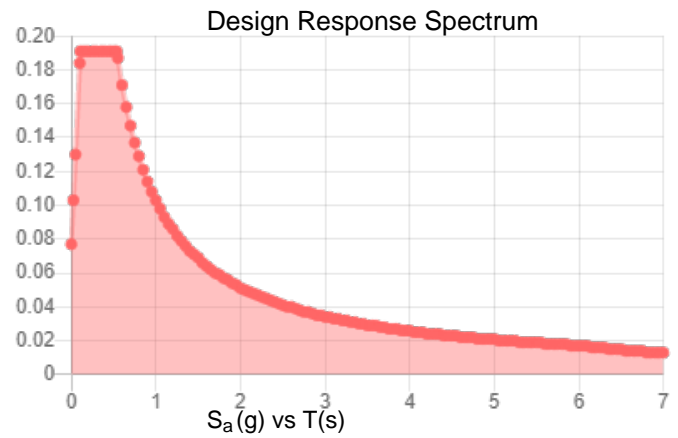
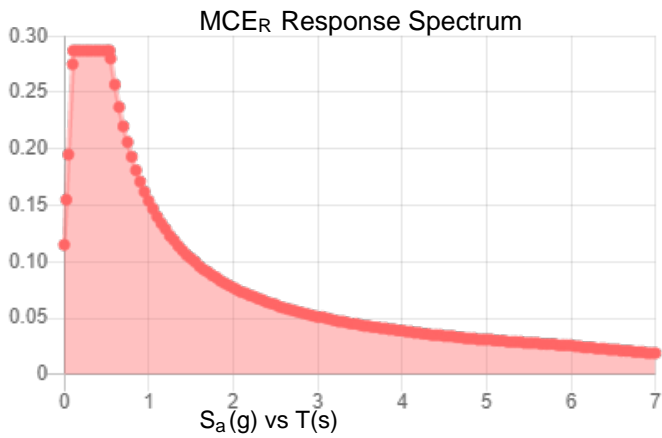


**Site Soil Class:** D - Stiff Soil

**Results:**

$S_S$ :	0.18	$S_{DS}$ :	0.191
$S_1$ :	0.064	$S_{D1}$ :	0.103
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.09
$S_{MS}$ :	0.287	$PGA_M$ :	0.144
$S_{M1}$ :	0.154	$F_{PGA}$ :	1.6
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:** Fri Mar 11 2022

**Date Source:**

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

## Ice

---

**Results:**

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

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

**Date Accessed:** Fri Mar 11 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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# Trylon

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

## TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	205693
Carrier Site ID:	CT11278A
Carrier Site Name:	-

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	107.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	120.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	192.79	ft.

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

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor ( $K_s$ ):	1.00	--
Velocity Coefficient ( $K_z$ ):	1.28	--
Directionality Factor ( $K_d$ ):	0.95	--
Gust Effect Factor ( $G_h$ ):	1.00	--
Shielding Factor ( $K_a$ ):	0.90	--
Velocity Pressure ( $q_z$ ):	48.44	psf
Ground Elevation Factor ( $K_e$ ):	0.99	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness ( $t_i$ ):	2.00	in
Importance Factor ( $I_i$ ):	1.00	--
Ice Velocity Pressure ( $q_{zi}$ ):	6.79	psf
Mount Ice Thickness ( $t_{iz}$ ):	2.25	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	87.20	psf
Round Member Pressure:	52.32	psf
Ice Wind Pressure:	7.33	psf

SEISMIC PARAMETERS		
Importance Factor ( $I_e$ ):	1.00	--
Short Period Accel. ( $S_s$ ):	0.180	g
1 Second Accel. ( $S_1$ ):	0.064	g
Short Period Des. ( $S_{DS}$ ):	0.19	g
1 Second Des. ( $S_{D1}$ ):	0.10	g
Short Period Coeff. ( $F_a$ ):	1.60	--
1 Second Coeff. ( $F_v$ ):	2.40	--
Response Coefficient ( $C_s$ ):	0.10	--
Amplification Factor ( $A_S$ ):	1.20	--

## LOAD COMBINATIONS [LRFD]

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

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

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

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

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







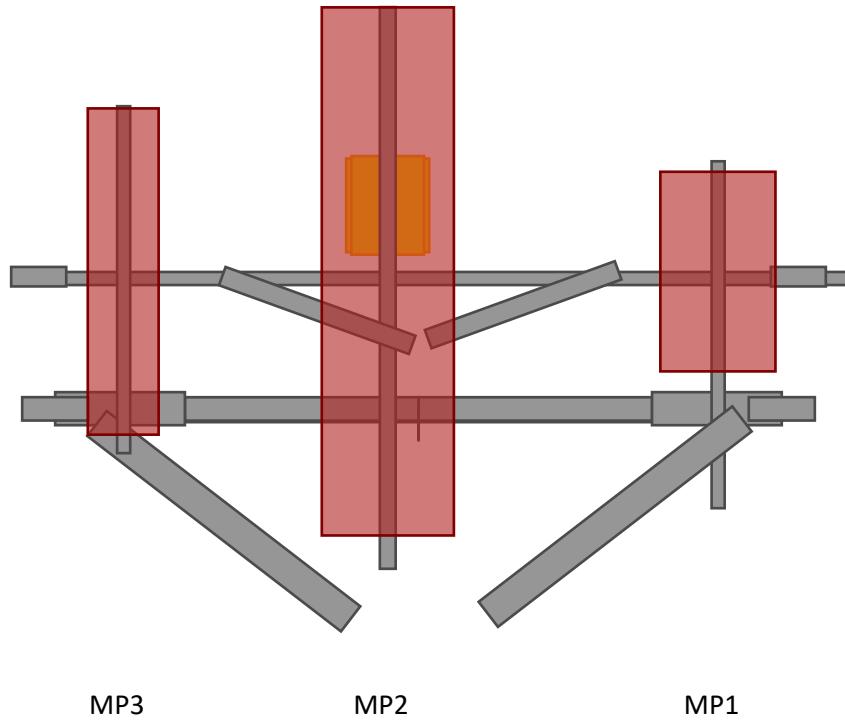






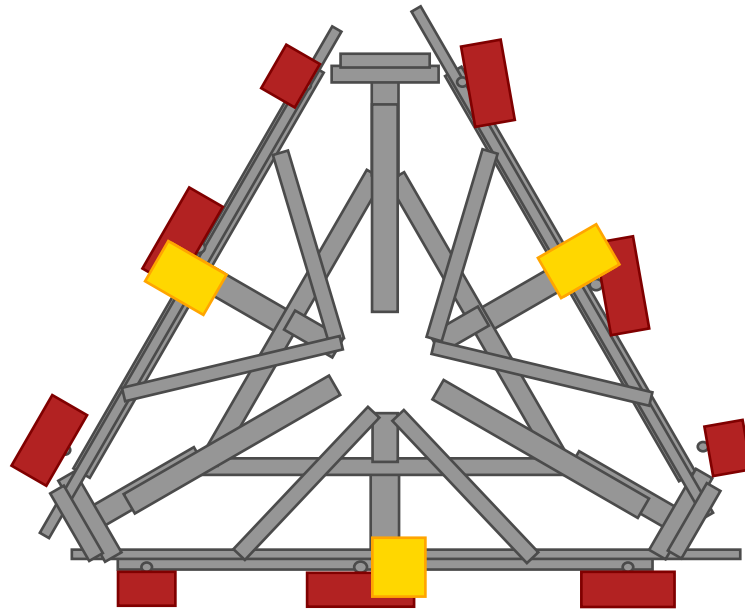


ELEVATION VIEW



\*Elevation View Shows Alpha Sector Only

PLAN VIEW







**APPENDIX C**  
**SOFTWARE ANALYSIS OUTPUT**



Company : Trylon  
 Designer : AF  
 Job Number : 205693  
 Model Name : 876329

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**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

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

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

**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65
3	A36	29500	11346	.3	.65	.49	36	58

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design ...	A [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	HSS4X4X4	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	L3X3X4	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
3	PIPE 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	PIPE 2.5	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
5	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
6	L2.5x2.5x3	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
7	Grate Support 1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	.031
8	Grate Support 2	LL3x3x4x0	Beam	Double Angle (...)	A36 Gr.36	Typical	2.88	4.5	2.46	.063
9	HSS4.5X4.5X4	HSS4.5X4.5X4	Beam	Tube	A500 Gr.B Rect	Typical	3.84	11.4	11.4	18.5
10	LL2.5x2.5x8x6	LL2.5x2.5x8x6	Beam	Double Angle (...)	A36 Gr.36	Typical	4.52	8.73	2.44	.376



Company : Trylon  
 Designer : AF  
 Job Number : 205693  
 Model Name : 876329

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### Cold Formed Steel Section Sets

	Label	Shape	Type	Design ...	Material	Design ...	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	C5.25"x4"edw	C5.25"x4"x0.375"	Beam	None	A36	Typical	4.446	7.105	19.039	.208

### Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N33	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N41A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N43B	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N49	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N50						
6	N102A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N103A						
8	N106A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N107A						
10	N108						
11	N111	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	N112						
13	N113						
14	N114						
15	N115	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
16	N116						
17	N117						
18	N120						
19	N121	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
20	N122						
21	N123						

### Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...)	Surface(P...
1	Self Weight	DL			-1		24		6	
2	Structure Wind X	WLX						78		
3	Structure Wind Y	WLY						78		
4	Wind Load 0 AZI	WLX					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLY					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	78	6	
13	Ice Structure Wind X	OL2						78		
14	Ice Structure Wind Y	OL3						78		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load X	ELX	-.115				24			
24	Seismic Load Y	ELY		-.115			24			
25	Live Load 1 (Lv)	None					1			



Company : Trylon  
 Designer : AF  
 Job Number : 205693  
 Model Name : 876329

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**Basic Load Cases (Continued)**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
26	Live Load 2 (Lv)	None					1		
27	Live Load 3 (Lv)	None					1		
28	Live Load 4 (Lv)	None					1		
29	Live Load 5 (Lv)	None					1		
30	Live Load 6 (Lv)	None					1		
31	Live Load 7 (Lv)	None					1		
32	Live Load 8 (Lv)	None					1		
33	Live Load 9 (Lv)	None					1		
34	Maintenance Load 1 (...)	None					1		
35	Maintenance Load 2 (...)	None					1		
36	Maintenance Load 3 (...)	None					1		
37	Maintenance Load 4 (...)	None					1		
38	Maintenance Load 5 (...)	None					1		
39	Maintenance Load 6 (...)	None					1		
40	Maintenance Load 7 (...)	None					1		
41	Maintenance Load 8 (...)	None					1		
42	Maintenance Load 9 (...)	None					1		
43	BLC 1 Transient Area...	None						43	
44	BLC 12 Transient Are...	None						43	

**Load Combinations**

	Description	So...P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	1.4DL	Yes	Y	DL	1.4								
2	1.2DL + 1WL 0 ...	Yes	Y	DL	1.2	2	1	3	4	1			
3	1.2DL + 1WL 30 ...	Yes	Y	DL	1.2	2	.866	3	.5	5	1		
4	1.2DL + 1WL 45 ...	Yes	Y	DL	1.2	2	.707	3	.707	6	1		
5	1.2DL + 1WL 60 ...	Yes	Y	DL	1.2	2	.5	3	.866	7	1		
6	1.2DL + 1WL 90 ...	Yes	Y	DL	1.2	2		3	1	8	1		
7	1.2DL + 1WL 12...	Yes	Y	DL	1.2	2	-.5	3	.866	9	1		
8	1.2DL + 1WL 13...	Yes	Y	DL	1.2	2	-.707	3	.707	10	1		
9	1.2DL + 1WL 15...	Yes	Y	DL	1.2	2	-.866	3	.5	11	1		
10	1.2DL + 1WL 18...	Yes	Y	DL	1.2	2	-1	3		4	-1		
11	1.2DL + 1WL 21...	Yes	Y	DL	1.2	2	-.866	3	-.5	5	-1		
12	1.2DL + 1WL 22...	Yes	Y	DL	1.2	2	-.707	3	-.707	6	-1		
13	1.2DL + 1WL 24...	Yes	Y	DL	1.2	2	-.5	3	-.866	7	-1		
14	1.2DL + 1WL 27...	Yes	Y	DL	1.2	2		3	-1	8	-1		
15	1.2DL + 1WL 30...	Yes	Y	DL	1.2	2	.5	3	-.866	9	-1		
16	1.2DL + 1WL 31...	Yes	Y	DL	1.2	2	.707	3	-.707	10	-1		
17	1.2DL + 1WL 33...	Yes	Y	DL	1.2	2	.866	3	-.5	11	-1		
18	0.9DL + 1WL 0 ...	Yes	Y	DL	.9	2	1	3	4	1			
19	0.9DL + 1WL 30 ...	Yes	Y	DL	.9	2	.866	3	.5	5	1		
20	0.9DL + 1WL 45 ...	Yes	Y	DL	.9	2	.707	3	.707	6	1		
21	0.9DL + 1WL 60 ...	Yes	Y	DL	.9	2	.5	3	.866	7	1		
22	0.9DL + 1WL 90 ...	Yes	Y	DL	.9	2		3	1	8	1		
23	0.9DL + 1WL 12...	Yes	Y	DL	.9	2	-.5	3	.866	9	1		
24	0.9DL + 1WL 13...	Yes	Y	DL	.9	2	-.707	3	.707	10	1		
25	0.9DL + 1WL 15...	Yes	Y	DL	.9	2	-.866	3	.5	11	1		
26	0.9DL + 1WL 18...	Yes	Y	DL	.9	2	-1	3		4	-1		
27	0.9DL + 1WL 21...	Yes	Y	DL	.9	2	-.866	3	-.5	5	-1		
28	0.9DL + 1WL 22...	Yes	Y	DL	.9	2	-.707	3	-.707	6	-1		
29	0.9DL + 1WL 24...	Yes	Y	DL	.9	2	-.5	3	-.866	7	-1		
30	0.9DL + 1WL 27...	Yes	Y	DL	.9	2		3	-1	8	-1		
31	0.9DL + 1WL 30...	Yes	Y	DL	.9	2	.5	3	-.866	9	-1		
32	0.9DL + 1WL 31...	Yes	Y	DL	.9	2	.707	3	-.707	10	-1		
33	0.9DL + 1WL 33...	Yes	Y	DL	.9	2	.866	3	-.5	11	-1		



**Load Combinations (Continued)**

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
34	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	1	14	15	1	
35	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.866	14	.5	16	1
36	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.707	14	.707	17	1
37	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.5	14	.866	18	1
38	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13		14	1	19	1
39	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.5	14	.866	20	1
40	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.707	14	.707	21	1
41	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.866	14	.5	22	1
42	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-1	14		15	-1
43	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.866	14	-.5	16	-1
44	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.707	14	-.707	17	-1
45	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	-.5	14	-.866	18	-1
46	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13		14	-1	19	-1
47	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.5	14	-.866	20	-1
48	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.707	14	-.707	21	-1
49	1.2DL + 1DLi + 1...	Yes	Y		DL 1.2	OL1	1	13	.866	14	-.5	22	-1
50	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	1	24					
51	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.866	24	.5				
52	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.707	24	.707				
53	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.5	24	.866				
54	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23		24	1				
55	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.5	24	.866				
56	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.707	24	.707				
57	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.866	24	.5				
58	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-1	24					
59	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.866	24	-.5				
60	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.707	24	-.707				
61	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	-.5	24	-.866				
62	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23		24	-1				
63	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.5	24	-.866				
64	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.707	24	-.707				
65	(1.2+0.2Sds)DL ...	Yes	Y		DL 1.238	23	.866	24	-.5				
66	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	1	24					
67	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.866	24	.5				
68	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.707	24	.707				
69	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.5	24	.866				
70	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23		24	1				
71	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.5	24	.866				
72	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.707	24	.707				
73	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.866	24	.5				
74	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-1	24					
75	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.866	24	-.5				
76	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.707	24	-.707				
77	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	-.5	24	-.866				
78	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23		24	-1				
79	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.5	24	-.866				
80	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.707	24	-.707				
81	(0.9-0.2Sds)DL ...	Yes	Y		DL .862	23	.866	24	-.5				
82	1.2DL + 1Lv1	Yes	Y		DL 1.2	25	1.5						
83	1.2DL + 1Lv2	Yes	Y		DL 1.2	26	1.5						
84	1.2DL + 1Lv3	Yes	Y		DL 1.2	27	1.5						
85	1.2DL + 1Lv4	Yes	Y		DL 1.2	28	1.5						
86	1.2DL + 1Lv5	Yes	Y		DL 1.2	29	1.5						
87	1.2DL + 1Lv6	Yes	Y		DL 1.2	30	1.5						
88	1.2DL + 1Lv7	Yes	Y		DL 1.2	31	1.5						
89	1.2DL + 1Lv8	Yes	Y		DL 1.2	32	1.5						
90	1.2DL + 1Lv9	Yes	Y		DL 1.2	33	1.5						



Company : Trylon  
 Designer : AF  
 Job Number : 205693  
 Model Name : 876329

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**Load Combinations (Continued)**

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
91	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.058	3		4	.058	
92	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.05	3	.029	5	.058	
93	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.041	3	.041	6	.058	
94	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.029	3	.05	7	.058	
95	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2		3	.058	8	.058	
96	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.029	3	.05	9	.058	
97	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.041	3	.041	10	.058	
98	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.05	3	.029	11	.058	
99	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.058	3		4	-.058	
100	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.05	3	-.029	5	-.058	
101	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.041	3	-.041	6	-.058	
102	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	-.029	3	-.05	7	-.058	
103	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2		3	-.058	8	-.058	
104	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.029	3	-.05	9	-.058	
105	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.041	3	-.041	10	-.058	
106	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	34	1.5	2	.05	3	-.029	11	-.058	
107	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.058	3		4	.058	
108	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.05	3	.029	5	.058	
109	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.041	3	.041	6	.058	
110	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.029	3	.05	7	.058	
111	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2		3	.058	8	.058	
112	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.029	3	.05	9	.058	
113	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.041	3	.041	10	.058	
114	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.05	3	.029	11	.058	
115	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.058	3		4	-.058	
116	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.05	3	-.029	5	-.058	
117	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.041	3	-.041	6	-.058	
118	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	-.029	3	-.05	7	-.058	
119	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2		3	-.058	8	-.058	
120	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.029	3	-.05	9	-.058	
121	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.041	3	-.041	10	-.058	
122	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	35	1.5	2	.05	3	-.029	11	-.058	
123	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.058	3		4	.058	
124	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.05	3	.029	5	.058	
125	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.041	3	.041	6	.058	
126	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.029	3	.05	7	.058	
127	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2		3	.058	8	.058	
128	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.029	3	.05	9	.058	
129	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.041	3	.041	10	.058	
130	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.05	3	.029	11	.058	
131	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.058	3		4	-.058	
132	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.05	3	-.029	5	-.058	
133	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.041	3	-.041	6	-.058	
134	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	-.029	3	-.05	7	-.058	
135	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2		3	-.058	8	-.058	
136	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.029	3	-.05	9	-.058	
137	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.041	3	-.041	10	-.058	
138	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	36	1.5	2	.05	3	-.029	11	-.058	
139	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	.058	3		4	.058	
140	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	.05	3	.029	5	.058	
141	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	.041	3	.041	6	.058	
142	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	.029	3	.05	7	.058	
143	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2		3	.058	8	.058	
144	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	-.029	3	.05	9	.058	
145	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	-.041	3	.041	10	.058	
146	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	-.05	3	.029	11	.058	
147	1.2DL + 1.5Lm +...	Yes	Y		DL 1.2	37	1.5	2	-.058	3		4	-.058	



Company : Trylon  
 Designer : AF  
 Job Number : 205693  
 Model Name : 876329

Mar 23, 2022  
 4:38 PM  
 Checked By: CA

**Load Combinations (Continued)**

Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
148	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	-.05	3	-.029	5	-.058	
149	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	-.041	3	-.041	6	-.058	
150	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	-.029	3	-.05	7	-.058	
151	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2		3	-.058	8	-.058	
152	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	.029	3	-.05	9	-.058	
153	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	.041	3	-.041	10	-.058	
154	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	37	1.5	2	.05	3	-.029	11	-.058	
155	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.058	3		4	.058	
156	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.05	3	.029	5	.058	
157	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.041	3	.041	6	.058	
158	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.029	3	.05	7	.058	
159	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2		3	.058	8	.058	
160	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.029	3	.05	9	.058	
161	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.041	3	.041	10	.058	
162	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.05	3	.029	11	.058	
163	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.058	3		4	-.058	
164	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.05	3	-.029	5	-.058	
165	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.041	3	-.041	6	-.058	
166	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	-.029	3	-.05	7	-.058	
167	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2		3	-.058	8	-.058	
168	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.029	3	-.05	9	-.058	
169	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.041	3	-.041	10	-.058	
170	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	38	1.5	2	.05	3	-.029	11	-.058	
171	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.058	3		4	.058	
172	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.05	3	.029	5	.058	
173	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.041	3	.041	6	.058	
174	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.029	3	.05	7	.058	
175	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2		3	.058	8	.058	
176	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.029	3	.05	9	.058	
177	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.041	3	.041	10	.058	
178	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.05	3	.029	11	.058	
179	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.058	3		4	-.058	
180	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.05	3	-.029	5	-.058	
181	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.041	3	-.041	6	-.058	
182	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	-.029	3	-.05	7	-.058	
183	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2		3	-.058	8	-.058	
184	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.029	3	-.05	9	-.058	
185	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.041	3	-.041	10	-.058	
186	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	39	1.5	2	.05	3	-.029	11	-.058	
187	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.058	3		4	.058	
188	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.05	3	.029	5	.058	
189	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.041	3	.041	6	.058	
190	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.029	3	.05	7	.058	
191	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2		3	.058	8	.058	
192	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.029	3	.05	9	.058	
193	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.041	3	.041	10	.058	
194	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.05	3	.029	11	.058	
195	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.058	3		4	-.058	
196	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.05	3	-.029	5	-.058	
197	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.041	3	-.041	6	-.058	
198	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	-.029	3	-.05	7	-.058	
199	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2		3	-.058	8	-.058	
200	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.029	3	-.05	9	-.058	
201	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.041	3	-.041	10	-.058	
202	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	40	1.5	2	.05	3	-.029	11	-.058	
203	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.058	3		4	.058	
204	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.05	3	.029	5	.058	



### Load Combinations (Continued)

Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
205	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.041	3	.041	6	.058	
206	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.029	3	.05	7	.058	
207	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2		3	.058	8	.058	
208	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.029	3	.05	9	.058	
209	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.041	3	.041	10	.058	
210	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.05	3	.029	11	.058	
211	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.058	3		4	-.058	
212	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.05	3	-.029	5	-.058	
213	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.041	3	-.041	6	-.058	
214	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	-.029	3	-.05	7	-.058	
215	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2		3	-.058	8	-.058	
216	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.029	3	-.05	9	-.058	
217	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.041	3	-.041	10	-.058	
218	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	41	1.5	2	.05	3	-.029	11	-.058	
219	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.058	3		4	.058	
220	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.05	3	.029	5	.058	
221	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.041	3	.041	6	.058	
222	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.029	3	.05	7	.058	
223	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2		3	.058	8	.058	
224	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.029	3	.05	9	.058	
225	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.041	3	.041	10	.058	
226	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.05	3	.029	11	.058	
227	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.058	3		4	-.058	
228	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.05	3	-.029	5	-.058	
229	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.041	3	-.041	6	-.058	
230	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	-.029	3	-.05	7	-.058	
231	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2		3	-.058	8	-.058	
232	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.029	3	-.05	9	-.058	
233	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.041	3	-.041	10	-.058	
234	1.2DL + 1.5Lm +...	Yes	Y	DL	1.2	42	1.5	2	.05	3	-.029	11	-.058	

### Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
1	N33	max	353.349	2	1539.028	21	1767.588	42	1.498	29	.561	18	15.839	20
2		min	-238.996	26	-1557.291	13	44.844	18	-3.184	38	-59.502	42	-16.108	12
3	N41A	max	1575.389	20	1125.551	5	1764.539	47	52.704	47	27.521	48	20.885	29
4		min	-1617.009	12	-1016.577	29	58.509	23	.392	23	-.802	24	-21.136	5
5	N43B	max	1520.855	31	1001.04	23	1774.249	37	1.043	29	32.022	36	20.575	31
6		min	-1596.884	7	-1090.73	15	39.447	29	-50.375	37	.13	28	-20.856	7
7	N49	max	1748.722	39	-131.435	31	2447.475	39	-.148	31	-.107	31	.153	3
8		min	55.383	30	-3028.977	39	90.961	31	-4.223	39	-2.476	39	-.13	27
9	N102A	max	1744.706	45	3021.151	44	2441.51	45	4.247	45	-.038	20	.155	9
10		min	42.737	21	71.744	20	48.023	21	.086	21	-2.412	44	-.133	33
11	N106A	max	-181.434	26	48.102	22	2435.822	34	.126	153	4.872	34	.108	231
12		min	-3482.5	34	-47.996	30	122.115	26	-.157	221	.244	26	-.088	143
13	N111	max	1803.544	18	490.143	7	609.792	2	.155	7	1.181	26	.527	7
14		min	-1868.331	10	-445.057	31	-597.234	26	-.14	31	-1.21	2	-.482	31
15	N115	max	773.523	32	1522.167	23	575.513	7	1.008	7	.539	7	.585	12
16		min	-781.977	8	-1599.928	15	-563.254	31	-.992	31	-.51	31	-.541	20
17	N121	max	1135.977	4	1505.691	5	604.533	13	.982	21	.641	28	.524	2
18		min	-1064.817	28	-1471.879	29	-591.951	21	-1.015	13	-.642	5	-.48	25
19	Totals:	max	5485.99	18	5635.93	22	12236.522	42						
20		min	-5485.989	26	-5635.931	14	2612.525	81						



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

Member	Shape	Code Check	Loc[in]	LC Shear	Dir	LC phi*Pnc	phi*Pnt	phi*Mn y	phi*Mn z	Cb	Eqn				
1	M22	PIPE 2.0	.481	65.625	10	.173	37.5	10	6295.422	32130	22.459	22.459	1	H1-1b	
2	M27B	PIPE 2.0	.477	65.625	5	.169	37.5	5	6295.422	32130	22.459	22.459	1	H1-1b	
3	M28A	L3X3X4	.468	12	44	.115	12	z	1...42699.8...	46656	20.258	45.069	1	H2-1	
4	M30	L3X3X4	.462	12	34	.115	12	z	2...42699.8...	46656	20.258	45.069	1	H2-1	
5	M28	L3X3X4	.460	12	39	.115	12	z	1...42699.8...	46656	20.258	45.069	1	H2-1	
6	M26A	PIPE 2.0	.455	65.625	15	.165	35.938	14	6295.422	32130	22.459	22.459	1	H1-1b	
7	MP2	PIPE 2.5	.431	47.813	10	.069	48.875	9	28077.3...	50715	43.155	43.155	3...	H1-1b	
8	MP5	PIPE 2.5	.431	47.813	5	.068	48.875	3	28077.3...	50715	43.155	43.155	1	H1-1b	
9	MP8	PIPE 2.5	.426	47.813	14	.074	48.875	14	28077.3...	50715	43.155	43.155	1...	H1-1b	
10	M30B	HSS4X4X4	.329	12.5	38	.071	12.5	y	15	136751....	139518	194.166	194.166	1	H1-1b
11	M61	HSS4X4X4	.322	12.5	43	.064	12.5	z	40	136751....	139518	194.166	194.166	1	H1-1b
12	M29B	HSS4X4X4	.321	12.5	34	.073	12.5	y	12	136751....	139518	194.166	194.166	1	H1-1b
13	M27A	LL3x3x4x0	.320	8.788	44	.086	8.788	y	1...	77429.4...	93312	77.76	53.068	1	H1-1b
14	M12	LL3x3x4x0	.319	8.788	38	.086	8.788	y	1...	77429.4...	93312	77.76	53.068	1	H1-1b
15	M29	LL3x3x4x0	.318	8.788	34	.086	8.788	y	2...	77429.4...	93312	77.76	53.068	1	H1-1b
16	MP9	PIPE 2.0	.292	53.813	43	.087	53.813	13	23088.1...	32130	22.459	22.459	1...	H1-1b	
17	MP6	PIPE 2.0	.291	53.813	47	.079	30.188	3	23088.1...	32130	22.459	22.459	2...	H1-1b	
18	MP3	PIPE 2.0	.287	53.813	37	.080	53.813	8	23088.1...	32130	22.459	22.459	1	H1-1b	
19	MP4	PIPE 2.0	.283	43.969	39	.089	43.969	6	23088.1...	32130	22.459	22.459	1	H1-1b	
20	MP7	PIPE 2.0	.282	43.969	35	.082	43.969	2	23088.1...	32130	22.459	22.459	1	H1-1b	
21	MP1	PIPE 2.0	.281	43.969	45	.095	43.969	12	23088.1...	32130	22.459	22.459	3...	H1-1b	
22	H3	L3X3X4	.265	6.25	45	.180	120	z	2...	26786.0...	46656	20.258	44.549	2...	H2-1
23	H2	L3X3X4	.262	6.25	34	.181	120	z	1...	26786.0...	46656	20.258	44.457	2...	H2-1
24	H1	L3X3X4	.262	6.25	40	.181	120	z	1...	26786.0...	46656	20.258	44.539	2...	H2-1
25	M29A	L2.5x2.5x4	.213	20	2...	.021	0	z	2...	35214.9...	38556	13.363	30.449	1	H2-1
26	M30A	L2.5x2.5x4	.212	20	1...	.021	0	z	1...	35214.9...	38556	13.363	30.449	1	H2-1
27	M28B	L2.5x2.5x4	.212	20	1...	.021	0	z	1...	35214.9...	38556	13.363	30.449	1	H2-1
28	M3	HSS4.5X4.5X4	.155	24	37	.055	24	z	38	150084....	158976	250.884	250.884	1	H1-1b
29	M1	HSS4.5X4.5X4	.154	24	42	.055	24	z	43	150084....	158976	250.884	250.884	1	H1-1b
30	M2	HSS4.5X4.5X4	.152	24	48	.055	24	z	49	150084....	158976	250.884	250.884	1	H1-1b
31	M77	L2.5x2.5x3	.138	25.339	29	.012	0	z	5	15909.3...	29192.4	10.471	20.183	1...	H2-1
32	M74	L2.5x2.5x3	.123	26.417	23	.011	0	z	14	15909.3...	29192.4	10.471	20.183	1...	H2-1
33	M8	L3X3X4	.122	42.431	5	.017	84.862	z	46	29216.9...	46656	20.258	39.393	1...	H2-1
34	M69	L2.5x2.5x3	.118	25.339	18	.011	51.757	z	10	15909.3...	29192.4	10.471	20.183	1...	H2-1
35	M9	L3X3X4	.118	42.431	6	.017	84.862	z	35	29216.9...	46656	20.258	39.478	1...	H2-1
36	M73	L2.5x2.5x3	.114	25.878	24	.011	51.757	z	16	15909.3...	29192.4	10.471	20.183	1...	H2-1
37	M78	L2.5x2.5x3	.110	25.878	28	.011	0	z	4	15909.3...	29192.4	10.471	20.183	1...	H2-1
38	M70	L2.5x2.5x3	.107	26.417	18	.010	0	z	10	15909.3...	29192.4	10.471	20.183	1...	H2-1
39	M7	L3X3X4	.100	42.431	37	.018	84.862	z	41	29216.9...	46656	20.258	38.306	1...	H2-1
40	M33	LL2.5x2.5x8x6	.044	31.984	39	.012	63.968	y	1...	98260.8...	146448	157.413	69.879	1...	H1-1b
41	M63A	LL2.5x2.5x8x6	.044	31.984	45	.012	0	y	1...	98260.8...	146448	157.413	69.879	1...	H1-1b
42	M66	LL2.5x2.5x8x6	.043	0	34	.012	0	y	2...	98260.8...	146448	157.413	69.879	1	H1-1b*

**Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks**

Member	Shape	Code	Loc[in]	LC Shear	Dir	LC phi*Pn	phi*Tn	phi*Mn	phi*Mn	phi*...	phi*...	Cb	Eqn
No Data to Print ...													

**APPENDIX D**  
**ADDITIONAL CALCULATIONS**

## CONNECTION CHECK

---

### Mount to Tower Connections Check (N33- Results from LC42)

#### Weldment Connections Check

---

##### Reactions

---

Tension Force (X)	0.131 [kips]
Shear Force (Y)	0.062 [kips]
Shear Force (Z)	1.767 [kips]
Torsional Moment (about x-x)	2.652 [kips-in]
Bending Moment (about y-y)	59.502 [kips-in]
Bending Moment (about z-z)	0.804 [kips-in]

##### Fillet Weld Check

---

The standoff member is Round?	No
Height, z-z	4 [in]
Width, y-y	4 [in]
Fillet weld Thickness	0.1875 [in] <i>Assumed</i>
Weld Material Yield (Assumed)	70 [ksi]
Length of weldment	16.00 [in]
Section modulus in a line weld, y-y	21.33 [in <sup>2</sup> ]
Section modulus in a line weld, z-z	21.33 [in <sup>2</sup> ]
F <sub>w</sub>	63 ksi
Weld Force, y-y	2.80 kips/inch
Weld Force, z-z	0.05 kips/inch
φ*R <sub>n</sub>	6.26 kips/inch
Weld Check	44.70% PASS → <b>42.6% PASS</b>

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

**BOLT TOOL 1.5.2**

Project Data	
Job Code:	205693
Carrier Site ID:	CT11278A
Carrier Site Name:	-

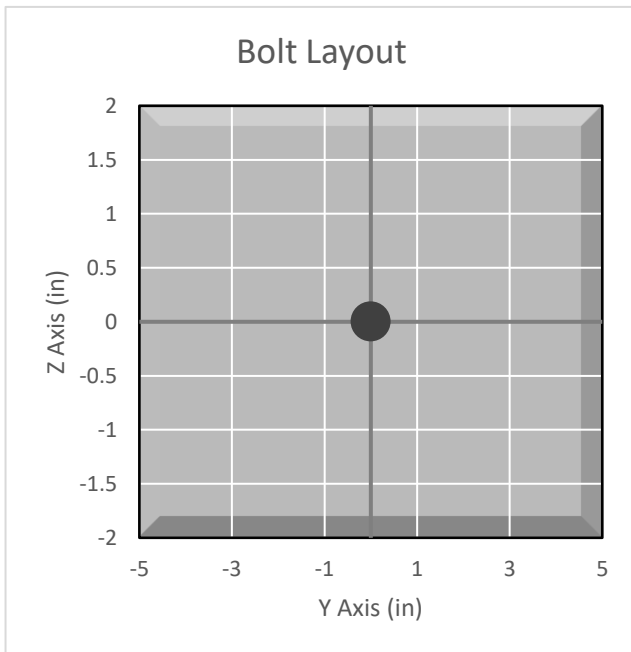
Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	1	--
Threads Included:	Yes	--
Double Shear:	Yes	--
Connection Pipe Size:	-	in

Connection Description
Kicker Connection

Bolt Check*		
Tensile Capacity ( $\phi T_n$ ):	20340.1	lbs
Shear Capacity ( $\phi V_n$ ):	13805.8	lbs
Tension Force ( $T_u$ ):	0.1	lbs
Shear Force ( $V_u$ ):	2134.4	lbs
Tension Usage:	0.0%	--
Shear Usage:	14.7%	--
Interaction:	14.7%	Pass
Controlling Member:	M32	--
Controlling LC:	39	--

\*Rating per TIA-222-H Section 15.5



**APPENDIX E**  
**MOUNT MODIFICATION DESIGN DRAWINGS (MDD)**

# T-Mobile



1220 AUGUSTA DRIVE SUIT 500  
HOUSTON, TX 77057



1825 W. WALNUT HILL LANE, SUITE 120  
IRVING, TEXAS 75038  
1-855-669-5421

## UPGRADE: MOUNT REINFORCEMENT

**SITE NAME:**  
MTN. VIEW CEM. (FILLEY PARK)

**SITE NUMBER:**  
CT11278A

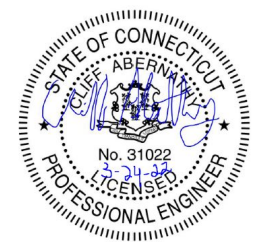
**CROWN CASTLE BU#:**  
876329

**SITE ADDRESS:**  
28 BREWER DR.  
BLOOMFIELD, CT 06002



### PROJECT INFORMATION

SCOPE OF WORK:	REINFORCE AS FOLLOWS: <ul style="list-style-type: none"> <li>INSTALL (1) SITE PRO 1, PRK-SFS REINFORCEMENT KIT, CONNECTING THE HANDRAIL TO THE MONOPOLE. THE KIT COLLAR MUST BE INSTALLED AT APPROX 12.5" BELOW THE HANDRAIL ELEVATION.</li> </ul>
JURISDICTION:	HARTFORD COUNTY
SITE NAME:	MTN. VIEW CEM. (FILLEY PARK)
SITE ADDRESS:	28 BREWER DR. BLOOMFIELD, CT 06002
LATITUDE:	41° 50' 6.57"
LONGITUDE:	-72° 44' 28.20"
TOWER TYPE:	MONOPOLE
OVERALL TOWER HEIGHT:	120'
ELEVATION OF WORK ON TOWER:	107'



DRAWING SCALES ARE INTENDED FOR 24"x36" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

### SUBMITTALS

REV	DATE	DESCRIPTION	BY
0	03/24/22	FOR REVIEW	RC

### SITE INFORMATION

**SITE NAME:**  
MTN. VIEW CEM. (FILLEY PARK)

**SITE NUMBER:**  
CT11278A

**SITE ADDRESS:**  
28 BREWER DR.  
BLOOMFIELD, CT 06002

### SHEET DESCRIPTION

TITLE SHEET

SHEET No.

T-1

### GENERAL NOTES

PRIOR TO ACCESSING/ ENTERING THE SITE, YOU MUST CONTACT THE CROWN NOC AT 800-788-7011 AND CROWN CM CHAD STEINHOFF- 214-287-3756, CHAD.STEINHOFF@CROWNCastle.COM

THE HEIGHT OF THE TOWER WILL NOT BE INCREASED, NOR AN EXPANSION OF THE GROUND/ LEASE AREA WHEN AND WHERE APPLICABLE

### BUILDING CODES

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL AUTHORITIES HAVING JURISDICTION

- 2015 INTERNATIONAL BUILDING CODE
- UNIFORM BUILDING CODE
- CITY/COUNTY ORDINANCES
- TIA-222-H



IF YOU DIG IN ANY STATE DIAL 811 FOR THE LOCAL "ONE CALL CENTER" IT'S THE LAW

THE UTILITIES SHOWN HEREIN ARE FOR THE CONTRACTORS CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER/SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL THE UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO THE EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

### APPROVALS

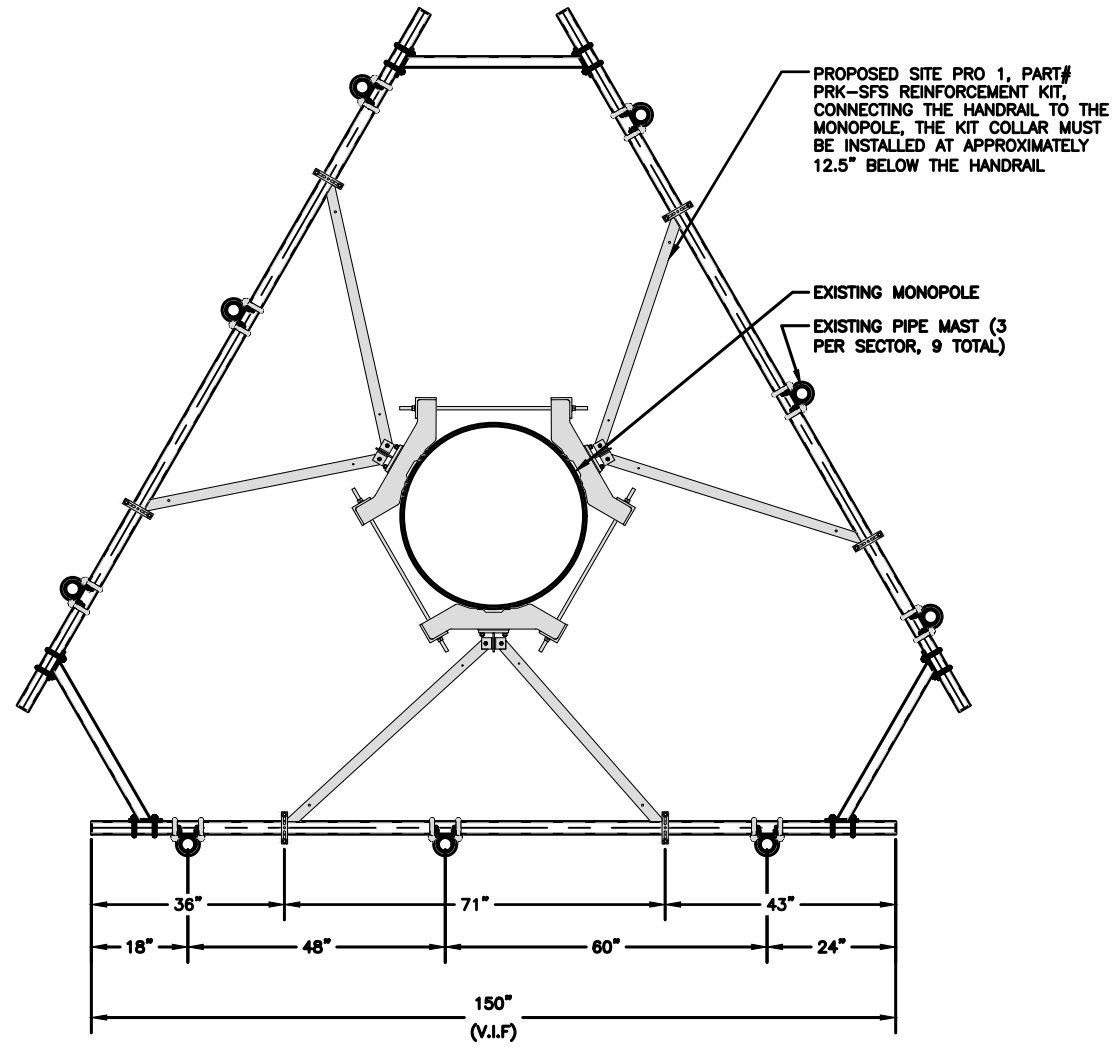
_____ T-MOBILE CONSTRUCTION MANAGER	_____ T-MOBILE RF ENGINEER
_____ LAND USE PLANNER	_____ NETWORK OPERATION
_____ PROPERTY OWNER	_____ CONTRACTOR

### DRIVING DIRECTION

FROM HARTFORD-BRAINARD AIRPORT:  
HEAD NORTH ON LINDBERGH DR TOWARD MAXIM RD (0.2 MI), TURN LEFT ONTO MAXIM RD (0.4 MI), CONTINUE ONTO BRAINARD RD (0.4 MI), TURN RIGHT ONTO THE RAMP TO I-91 N/I-84/SPRINGFIELD/BOSTON (0.4 MI), TAKE I-91 N AND CT-218 W TO YOUR DESTINATION IN BLOOMFIELD (11.2 MI), MERGE WITH US-5 N (0.4 MI), USE THE RIGHT 2 LANES TO TAKE EXIT 89 TO MERGE WITH I-91 N TOWARD I-84 W/HARTFORD/SPRINGFIELD (5.0 MI), TAKE THE CT-218 EXIT TOWARD WINDSOR/BLOOMFIELD (0.6 MI), TURN LEFT ONTO CT-218 W (3.9 MI), TURN RIGHT ONTO CT-189 N (1.0 MI), TURN LEFT ONTO CT-178 W (0.3 MI), TURN RIGHT.

**INSTALLATION NOTES:**

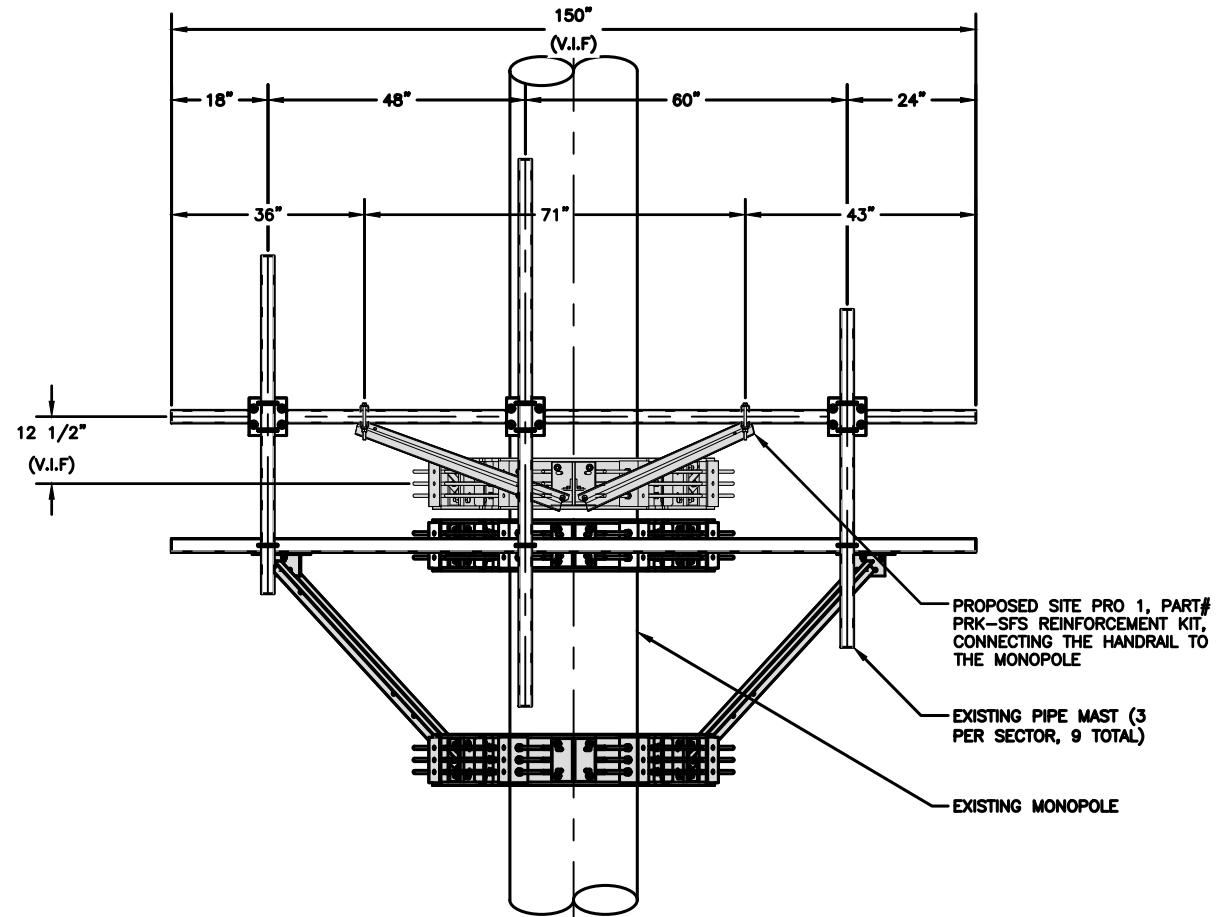
- INSTALL (1) SITE PRO 1, PRK-SFS REINFORCEMENT KIT, CONNECTING THE HANDRAIL TO THE MONOPOLE, THE KIT COLLAR MUST BE INSTALLED AT APPROX 12.5" BELOW THE HANDRAIL ELEVATION.



EQUIPMENT NOT SHOWN FOR CLARITY.

1 PROPOSED PLAN VIEW (ALL SECTORS)  
S-1 SCALE: 3/4" = 1'-0"

BILL OF MATERIALS		
QTY.	KIT NO./PART NO.	DESCRIPTION
1 TOTAL	PRK-SFS	REINFORCEMENT KIT



EQUIPMENT NOT SHOWN FOR CLARITY.

2 PROPOSED ELEVATION VIEW (ALL SECTORS)  
S-1 SCALE: 3/4" = 1'-0"

**GENERAL NOTES:**

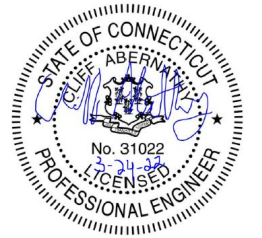
1. ALL STEEL ANGLE TO BE ASTM A36 (GR 36) OR BETTER.
2. ALL STEEL PLATE TO BE ASTM A36 (GR 36) OR BETTER.
3. ALL PIPES TO BE ASTM A53 (GR 35) OR BETTER.
4. HOT DIP GALVANIZE LEVEL 3 PARTS.
5. APPLY TWO COATS OF GALVICON TO ALL FIELD CUT OR DRILL EDGES.
6. ALL BOLTS TO MAINTAIN 1" EDGE DISTANCE.



1220 AUGUSTA DRIVE SUIT 500  
HOUSTON, TX 77057



1825 W. WALNUT HILL LANE, SUITE 120  
IRVING, TEXAS 75038  
1-855-669-5421



DRAWING SCALES ARE INTENDED FOR 24"x36" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

SUBMITTALS			
REV	DATE	DESCRIPTION	BY
0	03/24/22	FOR REVIEW	RC

**SITE INFORMATION**

SITE NAME:  
MTN. VIEW CEM. (FILLEY PARK)

SITE NUMBER:  
CT11278A

SITE ADDRESS:  
28 BREWER DR.  
BLOOMFIELD, CT 06002

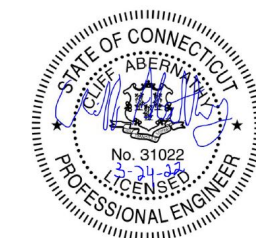
**SHEET DESCRIPTION**

MOUNT REINFORCEMENT

**SHEET No.**

S-1





DRAWING SCALES ARE INTENDED FOR 24"x36" SIZE PRINTED MEDIA ONLY. ALL OTHER PRINTED SIZES ARE DEEMED "NOT TO SCALE".

SUBMITTALS

REV	DATE	DESCRIPTION	BY
0	03/24/22	FOR REVIEW	RC

SITE INFORMATION

SITE NAME:  
MTN. VIEW CEM. (FILLEY PARK)

SITE NUMBER:  
CT11278A

SITE ADDRESS:  
28 BREWER DR.  
BLOOMFIELD, CT 06002

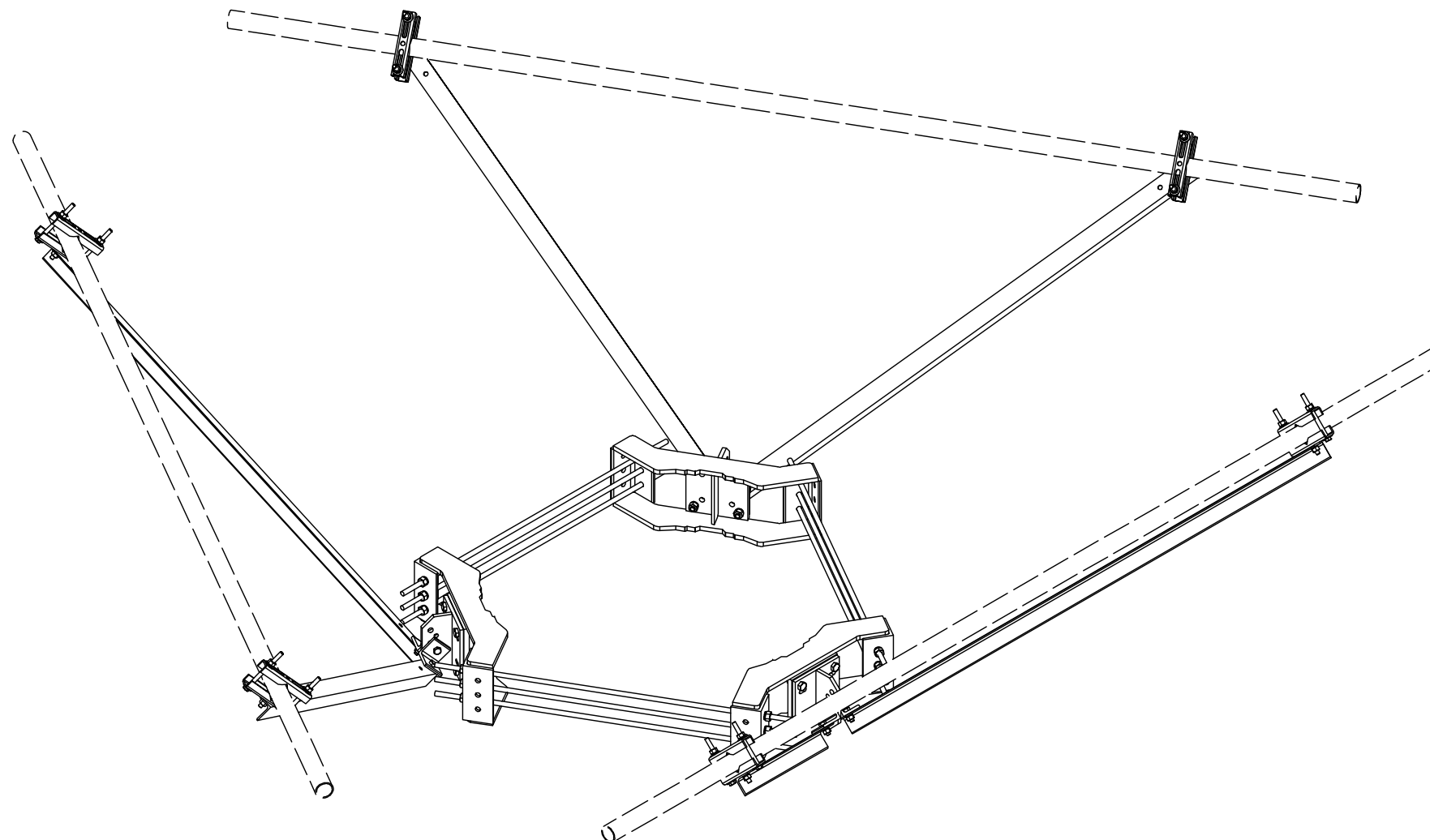
SHEET DESCRIPTION

MOUNT REINFORCEMENT  
DETAIL

SHEET No.

S-2

MOUNT KIT	
PART NUMBER	DESCRIPTION
PRK-SFS	REINFORCEMENT ASSEMBLY KIT



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

T-Mobile Existing Facility

Site ID: CT11278A

876329

28 Brewer Drive

Bloomfield, Connecticut 06002

**April 22, 2022**

**EBI Project Number: 6222002672**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>32.63%</b>

April 22, 2022

T-Mobile

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

Emissions Analysis for Site: CT11278A - 876329

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **28 Brewer Drive in Bloomfield, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 28 Brewer Drive in Bloomfield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.
- 8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.
- 9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 13) The antennas used in this modeling are the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24\_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all

calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 14) The antenna mounting height centerline of the proposed antennas is 108 feet above ground level (AGL).
- 15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 16) All calculations were done with respect to uncontrolled / general population threshold limits.

## T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	108 feet	Height (AGL):	108 feet	Height (AGL):	108 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	31,011.95	ERP (W):	31,011.95	ERP (W):	31,011.95
Antenna A1 MPE %:	<b>10.72%</b>	Antenna B1 MPE %:	<b>10.72%</b>	Antenna C1 MPE %:	<b>10.72%</b>
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	108 feet	Height (AGL):	108 feet	Height (AGL):	108 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts
ERP (W):	8,466.41	ERP (W):	8,466.41	ERP (W):	8,466.41
Antenna A2 MPE %:	<b>4.87%</b>	Antenna B2 MPE %:	<b>4.87%</b>	Antenna C2 MPE %:	<b>4.87%</b>
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	108 feet	Height (AGL):	108 feet	Height (AGL):	108 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts	Total TX Power (W):	360.00 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A3 MPE %:	<b>4.44%</b>	Antenna B3 MPE %:	<b>4.44%</b>	Antenna C3 MPE %:	<b>4.44%</b>

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	20.02%
Dish	2.3%
Verizon	3.31%
AT&T	6.36%
Clearwire	0.15%
Sprint	0.07%
Town of Bloomfield	0.42%
<b>Site Total MPE % :</b>	<b>32.63%</b>

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	20.02%
T-Mobile Sector B Total:	20.02%
T-Mobile Sector C Total:	20.02%
<b>Site Total MPE % :</b>	<b>32.63%</b>

T-Mobile Maximum MPE Power Values (Sector A)							
T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	9619.47	108.0	33.24	2500 MHz LTE IC & 2C Traffic	1000	3.32%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	717.84	108.0	2.48	2500 MHz LTE IC & 2C Broadcast	1000	0.25%
T-Mobile 2500 MHz NR Traffic	1	19238.94	108.0	66.48	2500 MHz NR Traffic	1000	6.65%
T-Mobile 2500 MHz NR Broadcast	1	1435.69	108.0	4.96	2500 MHz NR Broadcast	1000	0.50%
T-Mobile 600 MHz LTE	2	591.73	108.0	4.09	600 MHz LTE	400	1.02%
T-Mobile 600 MHz NR	1	1577.94	108.0	5.45	600 MHz NR	400	1.36%
T-Mobile 700 MHz LTE	2	648.82	108.0	4.48	700 MHz LTE	467	0.96%
T-Mobile 1900 MHz LTE	2	2203.69	108.0	15.23	1900 MHz LTE	1000	1.52%
T-Mobile 1900 MHz GSM	4	1028.30	108.0	14.21	1900 MHz GSM	1000	1.42%
T-Mobile 1900 MHz LTE	2	2056.61	108.0	14.21	1900 MHz LTE	1000	1.42%
T-Mobile 2100 MHz LTE	2	2307.55	108.0	15.95	2100 MHz LTE	1000	1.59%
						<b>Total:</b>	<b>20.02%</b>

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



## Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	20.02%
Sector B:	20.02%
Sector C:	20.02%
T-Mobile Maximum MPE % (Sector A):	20.02%
Site Total:	32.63%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **32.63%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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