STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

August 1, 2019

Jeffrey Barbadora
Real Estate Specialist
Crown Castle
12 Gill Street, Suite 5800
Woburn, MA 01801

RE: **EM-SPRINT-040-190626 –** Sprint notice of intent to modify an existing telecommunications facility located at 60 South Main Street, East Granby, Connecticut.

Dear Mr. Barbadora:

The Connecticut Siting Council (Council) is in receipt of your correspondence of July 31, 2019 submitted in response to the Council's June 27, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>
Sent: Wednesday, July 31, 2019 3:39 PM
To: Robidoux, Evan
Cc: CSC-DL Siting Council
Subject: RE: Council Extension Letter for EM-SPRINT-040-190626-SouthMainSt-EastGranby
Attachments: 876399_397084_MountModification_Pass_SprintPCS_94.0ft_07-23-2019.pdf; 876399_397084_MountModificationDrawings_SprintPCS_94.0ft_07-23-2019.pdf; BU876399 (F) E. Granby 4Q2000 Galasso_Sprint PCS CT43XC804_SA127643_006_01_07.29.19 WO1773228 (003).pdf

Hi Evan,

Attached are the updated MA and SA. I am overnighting three copies of each to your office for tomorrow delivery.

Thanks,

Jeffrey Barbadora
781-970-0053
12 Gill Street, Suite 5800, Woburn, MA 01801
CrownCastle.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Monday, July 15, 2019 12:00 PM
To: Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Extension Letter for EM-SPRINT-040-190626-SouthMainSt-EastGranby

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Date: **July 23, 2019**

Kevin Morrow
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704-405-6619

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Modification Report**	
Carrier Designation:	**Sprint PCS Equipment Change-Out**	
	Carrier Site Number:	CT43XC804
	Carrier Site Name:	CT43XC804
Crown Castle Designation:	**Crown Castle BU Number:**	876399
	Crown Castle Site Name:	(F) E. GRANBY 4Q2000 / GALASSO
	Crown Castle JDE Job Number:	447217
	Crown Castle Order Number:	397084 Rev. 4
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-B0002-B	
Site Data:	**60 South Main St., East Granby, Hartford County, CT, 06026** **Latitude 41°56'29.59" Longitude -72°44'19.25"**	
Structure Information:	**Tower Height & Type:**	**98.0 ft Monopole**
	Mount Elevation:	**94.0 ft**
	Mount Type:	**14.0 ft Platform**

Dear Kevin Morrow,

Infinigy Engineering, PLLC is pleased to submit this **"Mount Modification Report"** to determine the structural integrity of Sprint PCS'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.

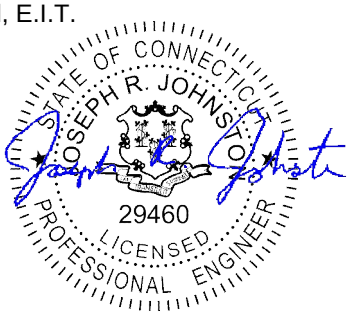
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

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: Mukunda Pokharel, E.I.T.

Respectfully Submitted by:
Joe Johnston, P.E.
VP Structural Engineering/Principal
518-690-0790
jjohnston@infinigy.com
CT PE License No. PEN.0029460



07-23-2019

TABLE OF CONTENTS

1) INTRODUCTION

This is a 14.0 ft Platform.

For the purpose of this analysis, the modifications detailed in Appendix E are considered to be installed.

2) ANALYSIS CRITERIA

Building Code:	2015 International Building Code / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.000
Topographic Factor at Mount:	1.000
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
94.0	97.0	3	COMMSCOPE	NNVV-65B-R4	14.0 ft Platform
		3	RFS/CELWAVE	APXVTM14-ALU-I20	
		3	ALCATEL LUCENT	PCS 1900MHZ 4X45W-65MHZ	
		6	ALCATEL LUCENT	RRH2X50-800	
		3	ALCATEL LUCENT	TD- RRH8X20-25	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Sprint PCS Application	397084 Rev. 4	CCI Sites
Mount Analysis Documents	Infinigy Engineering, PLLC	7523327	CCI Sites
Mount Modifcation Drawings	Infinigy Engineering, PLLC	Appendix E	Infinigy

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.

Infinigy Mount Analysis Tool 4.0.5, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

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) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (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. Infinigy Engineering, PLLC 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 Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP8	94.0	57.8	Pass
	Horizontal(s)	M4		87.1	Pass
	Standoff(s)	M48A		93.4	Pass
	Plate(s)	P9		16.0	Pass
	Mount Connection(s)	--		71.0	Pass

Structure Rating (max from all components) =	93.4%

Notes:
1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical.

4.1) Recommendations

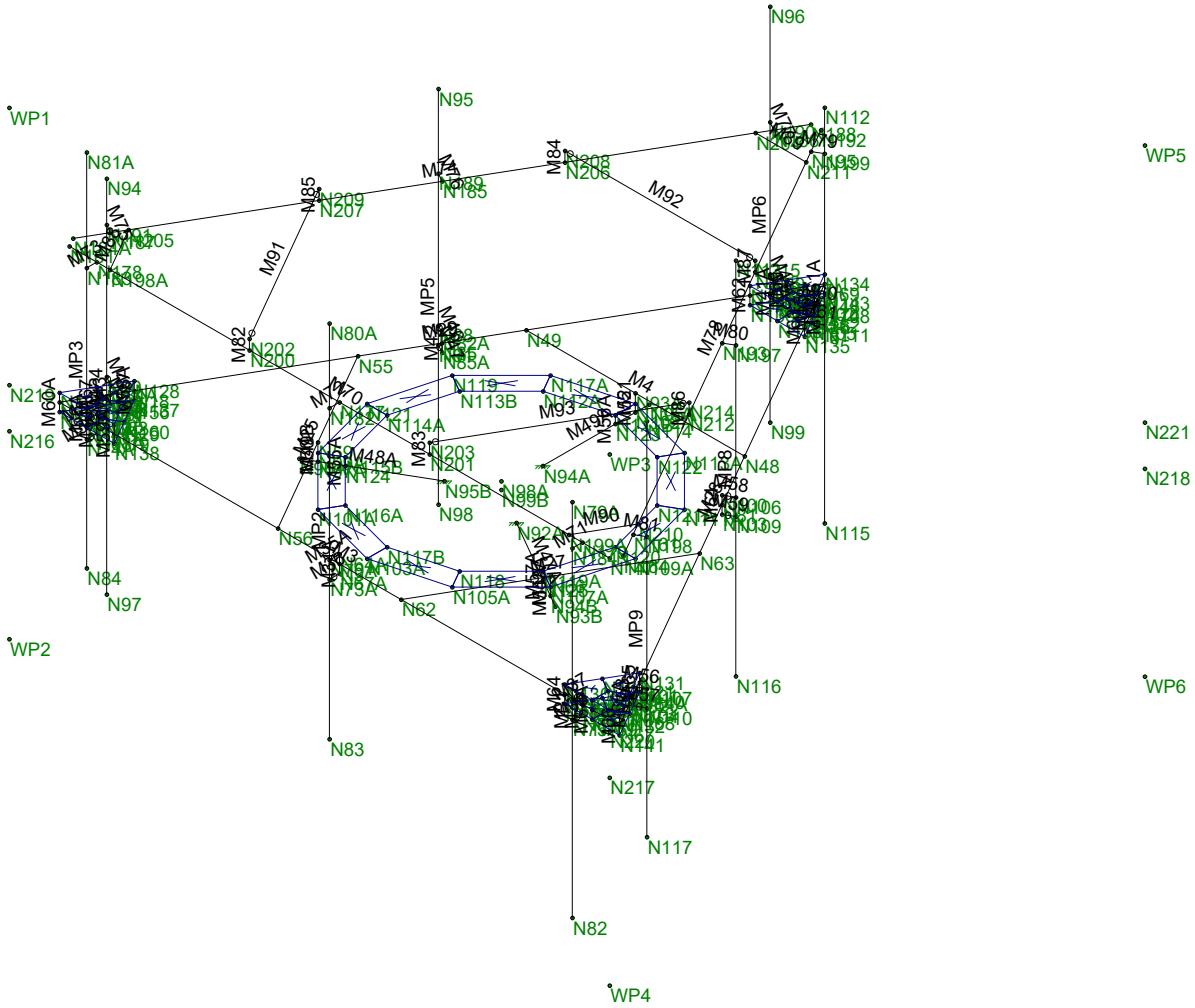
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modification listed below must be completed.

1. Install a Site Pro 1 HRK14-3HD Handrail Kit.

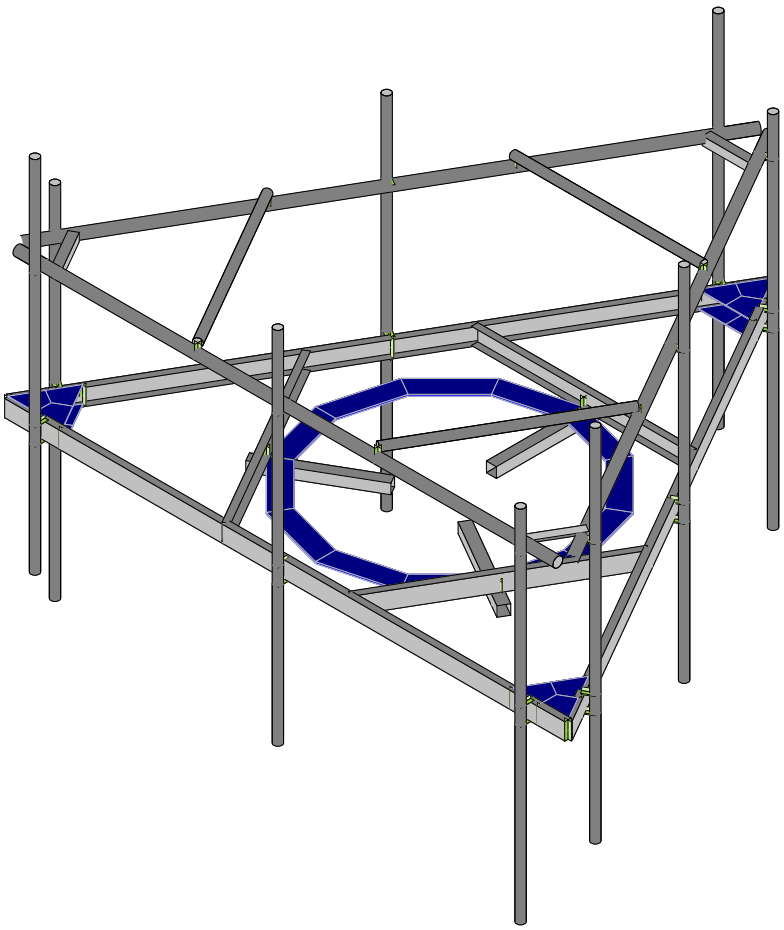
Engineering detail drawings have been provided in Appendix E – Mount Modification Design Drawings. Connection from the mount to the tower and local stresses on the tower are sufficient.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Infinigy Engineering, PLLC	876399	Wire Frame
MP		July 22, 2019 at 10:34 AM
1039-B0002-B		876399_loaded - MOD.r3d



Infinigy Engineering, PLLC	876399	Rendered
MP		July 22, 2019 at 10:35 AM
1039-B0002-B		876399_loaded - MOD.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Site Name:	(F) E. GRANBY 4Q2000 / GALASSO
Client:	CCI
Carrier:	Sprint PCS
Engineer:	MP
Date:	7/22/2019

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

INFINIGY WIND LOAD CALCULATOR 4.0.5

Site Information Inputs:

Adopted Building Code:	2015 IBC
Structure Load Standard:	TIA-222-H
Antenna Load Standard:	TIA-222-H
Structure Risk Category:	II
Structure Type:	Mount - Platform
Number of Sectors:	3
Main Structure Shape:	Flat
Structure Shape 2:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	125	mph (ultimate 3-second gust)
Wind Centerline 1 (z_1):	94.0	ft
Wind Centerline 2 (z_2):	94.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
47.03	1.00	**94.07**
47.03	1.00	**56.44**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
7.53	1.00	**20.09**
7.53	1.00	**20.09**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (ultimate 3-second gust)
Base Ice Thickness:	2.00	in

Appurtenances	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
COMMSCOPE NNVV-65B-R4	97.0	3	1.00	Flat	Flat	47.35	12.27	580.98	272.24	349.42	503.80
RFS/CELWAVE APXV9TM14-ALU-I20	97.0	3	1.00	Flat	Flat	47.35	6.34	300.29	170.79	203.17	267.91
ALCATEL LUCENT TME-PCS 1900MHZ 4X45W-65MHZ	97.0	3	1.00	Flat	Flat	47.35	2.32	109.92	105.96	106.95	108.93
ALCATEL LUCENT TME-800MHZ 2X50W RRH	97.0	6	1.00	Flat	Flat	47.35	2.13	101.04	83.94	88.22	96.77
ALCATEL LUCENT TME-TD-RRH8X20-25	97.0	3	1.00	Flat	Flat	47.35	4.05	191.54	72.65	102.37	161.82

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Ro...	Section/Shape	Type	Design List	Material	Design Rules
1	M3	N68	N67		180	Horizontal	Beam	RECT	A36 Gr.36	Typical
2	M4	N49	N48			Horizontal	Beam	RECT	A36 Gr.36	Typical
3	M25	N56	N55			Horizontal	Beam	RECT	A36 Gr.36	Typical
4	M27	N63	N62			Horizontal	Beam	RECT	A36 Gr.36	Typical
5	M28	N67	N69		180	Horizontal	Beam	RECT	A36 Gr.36	Typical
6	M29	N69	N68		180	Horizontal	Beam	RECT	A36 Gr.36	Typical
7	M30A	N65A	N68A			RIGID	None	None	RIGID	Typical
8	M31A	N64A	N67A			RIGID	None	None	RIGID	Typical
9	M32A	N66A	N69A			RIGID	None	None	RIGID	Typical
10	M33A	N71A	N65A			RIGID	None	None	RIGID	Typical
11	M34A	N74A	N68A			RIGID	None	None	RIGID	Typical
12	M35A	N70A	N64A			RIGID	None	None	RIGID	Typical
13	M36	N73A	N67A			RIGID	None	None	RIGID	Typical
14	M37	N72A	N66A			RIGID	None	None	RIGID	Typical
15	M38	N75A	N69A			RIGID	None	None	RIGID	Typical
16	MP3	N81A	N84			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
17	MP2	N80A	N83			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
18	MP1	N79A	N82			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
19	M41A	N83A	N86			RIGID	None	None	RIGID	Typical
20	M42	N82A	N85A			RIGID	None	None	RIGID	Typical
21	M43	N84A	N87			RIGID	None	None	RIGID	Typical
22	M44	N89	N83A			RIGID	None	None	RIGID	Typical
23	M45	N92	N86			RIGID	None	None	RIGID	Typical
24	M46	N88	N82A			RIGID	None	None	RIGID	Typical
25	M47	N91	N85A			RIGID	None	None	RIGID	Typical
26	M48	N90	N84A			RIGID	None	None	RIGID	Typical
27	M49	N93	N87			RIGID	None	None	RIGID	Typical
28	MP6	N96	N99			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
29	MP5	N95	N98			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
30	MP4	N94	N97			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
31	M53	N101	N104			RIGID	None	None	RIGID	Typical
32	M54	N100	N103			RIGID	None	None	RIGID	Typical
33	M55	N102	N105			RIGID	None	None	RIGID	Typical
34	M56	N107	N101			RIGID	None	None	RIGID	Typical
35	M57	N110	N104			RIGID	None	None	RIGID	Typical
36	M58	N106	N100			RIGID	None	None	RIGID	Typical
37	M59	N109	N103			RIGID	None	None	RIGID	Typical
38	M60	N108	N102			RIGID	None	None	RIGID	Typical
39	M61	N111	N105			RIGID	None	None	RIGID	Typical
40	MP9	N114	N117			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
41	MP8	N113	N116			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
42	MP7	N112	N115			Mount Pipe	Beam	Single Angle	A53 Gr.B	Typical
43	M49A	N94A	N95A			Standoff	Beam	Tube	A53 Gr.B	Typical
44	M47A	N92A	N93B			Standoff	Beam	Tube	A53 Gr.B	Typical
45	M48A	N95B	N96A			Standoff	Beam	Tube	A53 Gr.B	Typical
46	M49B	N59	N99A			RIGID	None	None	RIGID	Typical
47	M50	N99A	N97A			RIGID	None	None	RIGID	Typical
48	M51	N93A	N115A			RIGID	None	None	RIGID	Typical
49	M52	N115A	N102A			RIGID	None	None	RIGID	Typical
50	M53A	N66	N107A			RIGID	None	None	RIGID	Typical
51	M54A	N107A	N94B			RIGID	None	None	RIGID	Typical
52	M55A	N115B	N124			RIGID	None	None	RIGID	Typical
53	M56A	N111B	N123			RIGID	None	None	RIGID	Typical
54	M57A	N119A	N125			RIGID	None	None	RIGID	Typical
55	M58A	N128	N137			RIGID	None	None	RIGID	Typical
56	M59A	N129	N138			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Ro...	Section/Shape	Type	Design List	Material	Design Rules
57	M60A	N133	N142			RIGID	None	None	RIGID	Typical
58	M61A	N134	N143			RIGID	None	None	RIGID	Typical
59	M62	N127	N136			RIGID	None	None	RIGID	Typical
60	M63	N126	N135			RIGID	None	None	RIGID	Typical
61	M64	N130	N139			RIGID	None	None	RIGID	Typical
62	M65	N131	N140			RIGID	None	None	RIGID	Typical
63	M66	N132	N141			RIGID	None	None	RIGID	Typical
64	M64A	N165	N169			RIGID	None	None	RIGID	Typical
65	M65A	N164A	N168			RIGID	None	None	RIGID	Typical
66	M66A	N157	N161A			RIGID	None	None	RIGID	Typical
67	M67	N155	N159			RIGID	None	None	RIGID	Typical
68	M68	N148	N152			RIGID	None	None	RIGID	Typical
69	M69	N147A	N151			RIGID	None	None	RIGID	Typical
70	M70	N181	N147		180	Handrail	Beam	Pipe	Q235-GB	Typical
71	M71	N184	N179			RIGID	None	None	RIGID	Typical
72	M72	N182	N177			RIGID	None	None	RIGID	Typical
73	M73	N183	N178			RIGID	None	None	RIGID	Typical
74	M74	N188	N184A		180	Handrail	Beam	Pipe	Q235-GB	Typical
75	M75	N191	N187			RIGID	None	None	RIGID	Typical
76	M76	N189	N185			RIGID	None	None	RIGID	Typical
77	M77	N190	N186			RIGID	None	None	RIGID	Typical
78	M78	N164	N192		180	Handrail	Beam	Pipe	Q235-GB	Typical
79	M79	N199	N195			RIGID	None	None	RIGID	Typical
80	M80	N197	N193			RIGID	None	None	RIGID	Typical
81	M81	N198	N161			RIGID	None	None	RIGID	Typical
82	M82	N202	N200			RIGID	None	None	RIGID	Typical
83	M83	N203	N201			RIGID	None	None	RIGID	Typical
84	M84	N208	N206			RIGID	None	None	RIGID	Typical
85	M85	N209	N207			RIGID	None	None	RIGID	Typical
86	M86	N214	N212			RIGID	None	None	RIGID	Typical
87	M87	N215	N213			RIGID	None	None	RIGID	Typical
88	M88	N198A	N205		180	Handrail Corner	Beam	Single Angle	Q345	Typical
89	M89	N204	N211		180	Handrail Corner	Beam	Single Angle	Q345	Typical
90	M90	N199A	N210		90	Handrail Corner	Beam	Single Angle	Q345	Typical
91	M91	N202	N209			Handrail Ties	Beam	Pipe	Q235-GB	Typical
92	M92	N208	N215			Handrail Ties	Beam	Pipe	Q235-GB	Typical
93	M93	N203	N214			Handrail Ties	Beam	Pipe	Q235-GB	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		66	240.9	0
3	Total General		66	240.9	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	C5X9	6	700.6	.524
7	A53 Gr.B	HSS3X3X5	3	95.6	.08
8	A53 Gr.B	PIPE_2.0	9	972	.281
9	Q235-GB	PIPE_2.0	3	171	.049
10	Q235-GB	PIPE_2.5	3	486	.222
11	Q345	L2.5x2.5x3	3	45.5	.012
12	Total HR Steel		27	2470.7	1.168
13					
14	Plate Elements	Thickness (in)		Volume (yds^3)	
15	gen_Steel	.5	12	0	.191

Material Takeoff (Continued)

	Material	Size	Pieces	Length[in]	Weight[K]
16	gen_Steel	.3	18	0	.05
17	Total Plates		30	0	.24

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1			21		3	
2	Wind Load AZI 000	WLZ					21		3	
3	Wind Load AZI 090	WLX					21		3	
4	Ice Weight	OL1					21	48	3	
5	Wind + Ice Load AZI 000	OL2					21		1	
6	Wind + Ice Load AZI 090	OL3					21		1	
7	Service Live 1	LL					3			
8	BLC 1 Transient Area Loads	None						26		
9	BLC 2 Transient Area Loads	None						101		
10	Maintenance Load 1	None				1				
11	Maintenance Load 2	None				1				
12	Maintenance Load 3	None				1				
13	Maintenance Load 4	None				1				
14	Maintenance Load 5	None				1				
15	Maintenance Load 6	None				1				
16	Maintenance Load 7	None				1				
17	Maintenance Load 8	None				1				
18	Maintenance Load 9	None				1				
19	BLC 3 Transient Area Loads	None						106		
20	BLC 4 Transient Area Loads	None						26		
21	BLC 5 Transient Area Loads	None						83		
22	BLC 6 Transient Area Loads	None						88		

Load Combinations

	Description	...	...	...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	...	F.....	F.....	F.....	F.....	F.....	F...
1	1.4DL	...	Y		DL	1.4													
2	1.2DL + 1WL AZI 0	...	Y		DL	1.2	WLZ	1	WLX										
3	1.2DL + 1WL AZI 30	...	Y		DL	1.2	WLZ	.866	WLX	.5									
4	1.2DL + 1WL AZI 60	...	Y		DL	1.2	WLZ	.5	WLX	.866									
5	1.2DL + 1WL AZI 90	...	Y		DL	1.2	WLZ		WLX	1									
6	1.2DL + 1WL AZI 120	...	Y		DL	1.2	WLZ	-.5	WLX	.866									
7	1.2DL + 1WL AZI 150	...	Y		DL	1.2	WLZ	-.866	WLX	.5									
8	1.2DL + 1WL AZI 180	...	Y		DL	1.2	WLZ	-1	WLX										
9	1.2DL + 1WL AZI 210	...	Y		DL	1.2	WLZ	-.866	WLX	-.5									
10	1.2DL + 1WL AZI 240	...	Y		DL	1.2	WLZ	-.5	WLX	-.866									
11	1.2DL + 1WL AZI 270	...	Y		DL	1.2	WLZ		WLX	-1									
12	1.2DL + 1WL AZI 300	...	Y		DL	1.2	WLZ	.5	WLX	-.866									
13	1.2DL + 1WL AZI 330	...	Y		DL	1.2	WLZ	.866	WLX	-.5									
14	0.9DL + 1WL AZI 0	...	Y		1	.9	WLZ	1	WLX										
15	0.9DL + 1WL AZI 30	...	Y		1	.9	WLZ	.866	WLX	.5									
16	0.9DL + 1WL AZI 60	...	Y		1	.9	WLZ	.5	WLX	.866									
17	0.9DL + 1WL AZI 90	...	Y		1	.9	WLZ		WLX	1									
18	0.9DL + 1WL AZI 120	...	Y		1	.9	WLZ	-.5	WLX	.866									
19	0.9DL + 1WL AZI 150	...	Y		1	.9	WLZ	-.866	WLX	.5									
20	0.9DL + 1WL AZI 180	...	Y		1	.9	WLZ	-1	WLX										
21	0.9DL + 1WL AZI 210	...	Y		1	.9	WLZ	-.866	WLX	-.5									
22	0.9DL + 1WL AZI 240	...	Y		1	.9	WLZ	-.5	WLX	-.866									
23	0.9DL + 1WL AZI 270	...	Y		1	.9	WLZ		WLX	-1									
24	0.9DL + 1WL AZI 300	...	Y		1	.9	WLZ	.5	WLX	-.866									

Load Combinations (Continued)

	Description	...	...	...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	...	F.....	F.....	F.....	F.....	F.....	F...
25	0.9DL + 1WL AZI 330	...	Y		1	.9	WLZ	.866	WLX	-.5									
26	1.2D + 1.0Di	...	Y		DL	1.2	OL1	1											
27	1.2D + 1.0Di +1.0Wi AZI 0	...	Y		DL	1.2	OL1	1	OL2	1	OL3								
28	1.2D + 1.0Di +1.0Wi AZI 30	...	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5							
29	1.2D + 1.0Di +1.0Wi AZI 60	...	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866							
30	1.2D + 1.0Di +1.0Wi AZI 90	...	Y		DL	1.2	OL1	1	OL2		OL3	1							
31	1.2D + 1.0Di +1.0Wi AZI 120	...	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866							
32	1.2D + 1.0Di +1.0Wi AZI 150	...	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5							
33	1.2D + 1.0Di +1.0Wi AZI 180	...	Y		DL	1.2	OL1	1	OL2	-1	OL3								
34	1.2D + 1.0Di +1.0Wi AZI 210	...	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5							
35	1.2D + 1.0Di +1.0Wi AZI 240	...	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866							
36	1.2D + 1.0Di +1.0Wi AZI 270	...	Y		DL	1.2	OL1	1	OL2		OL3	-1							
37	1.2D + 1.0Di +1.0Wi AZI 300	...	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866							
38	1.2D + 1.0Di +1.0Wi AZI 330	...	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5							
39	1.2DL + 1.5LV	...	Y		DL	1.2	LL	1.5											
40	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	.058	WLX								
41	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	.05	WLX	.029							
42	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	.029	WLX	.05							
43	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ		WLX	.058							
44	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	-.029	WLX	.05							
45	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	-.05	WLX	.029							
46	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	-.058	WLX								
47	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	-.05	WLX	-.029							
48	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	-.029	WLX	-.05							
49	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ		WLX	-.058							
50	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	.029	WLX	-.05							
51	1.2DL + 1.5LM (LM-1) + 1SWL (30 mph) ...	...	Y		DL	1.2	10	1.5	WLZ	.05	WLX	-.029							
52	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	.058	WLX								
53	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	.05	WLX	.029							
54	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	.029	WLX	.05							
55	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ		WLX	.058							
56	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	-.029	WLX	.05							
57	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	-.05	WLX	.029							
58	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	-.058	WLX								
59	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	-.05	WLX	-.029							
60	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	-.029	WLX	-.05							
61	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ		WLX	-.058							
62	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	.029	WLX	-.05							
63	1.2DL + 1.5LM (LM-2) + 1SWL (30 mph) ...	...	Y		DL	1.2	11	1.5	WLZ	.05	WLX	-.029							
64	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	.058	WLX								
65	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	.05	WLX	.029							
66	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	.029	WLX	.05							
67	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ		WLX	.058							
68	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	-.029	WLX	.05							
69	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	-.05	WLX	.029							
70	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	-.058	WLX								
71	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	-.05	WLX	-.029							
72	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	-.029	WLX	-.05							
73	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ		WLX	-.058							
74	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	.029	WLX	-.05							
75	1.2DL + 1.5LM (LM-3) + 1SWL (30 mph) ...	...	Y		DL	1.2	12	1.5	WLZ	.05	WLX	-.029							
76	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ	.058	WLX								
77	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ	.05	WLX	.029							
78	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ	.029	WLX	.05							
79	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ		WLX	.058							
80	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ	-.029	WLX	.05							
81	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...	...	Y		DL	1.2	13	1.5	WLZ	-.05	WLX	.029							

Load Combinations (Continued)

	Description	...	...	...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	...	F.....	F.....	F.....	F.....	F.....	F...
82	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ	-.058	WLX								
83	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ	-.05	WLX	-.029							
84	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ	-.029	WLX	-.05							
85	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ		WLX	-.058							
86	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ	.029	WLX	-.05							
87	1.2DL + 1.5LM (LM-4) + 1SWL (30 mph) ...		Y		DL	1.2	13	1.5	WLZ	.05	WLX	-.029							
88	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	.058	WLX								
89	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	.05	WLX	.029							
90	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	.029	WLX	.05							
91	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ		WLX	.058							
92	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	-.029	WLX	.05							
93	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	-.05	WLX	.029							
94	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	-.058	WLX								
95	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	-.05	WLX	-.029							
96	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	-.029	WLX	-.05							
97	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ		WLX	-.058							
98	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	.029	WLX	-.05							
99	1.2DL + 1.5LM (LM-5) + 1SWL (30 mph) ...		Y		DL	1.2	14	1.5	WLZ	.05	WLX	-.029							
100	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	.058	WLX								
101	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	.05	WLX	.029							
102	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	.029	WLX	.05							
103	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ		WLX	.058							
104	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	-.029	WLX	.05							
105	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	-.05	WLX	.029							
106	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	-.058	WLX								
107	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	-.05	WLX	-.029							
108	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	-.029	WLX	-.05							
109	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ		WLX	-.058							
110	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	.029	WLX	-.05							
111	1.2DL + 1.5LM (LM-6) + 1SWL (30 mph) ...		Y		DL	1.2	15	1.5	WLZ	.05	WLX	-.029							
112	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	.058	WLX								
113	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	.05	WLX	.029							
114	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	.029	WLX	.05							
115	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ		WLX	.058							
116	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	-.029	WLX	.05							
117	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	-.05	WLX	.029							
118	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	-.058	WLX								
119	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	-.05	WLX	-.029							
120	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	-.029	WLX	-.05							
121	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ		WLX	-.058							
122	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	.029	WLX	-.05							
123	1.2DL + 1.5LM (LM-7) + 1SWL (30 mph) ...		Y		DL	1.2	16	1.5	WLZ	.05	WLX	-.029							
124	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	.058	WLX								
125	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	.05	WLX	.029							
126	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	.029	WLX	.05							
127	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ		WLX	.058							
128	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	-.029	WLX	.05							
129	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	-.05	WLX	.029							
130	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	-.058	WLX								
131	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	-.05	WLX	-.029							
132	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	-.029	WLX	-.05							
133	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ		WLX	-.058							
134	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	.029	WLX	-.05							
135	1.2DL + 1.5LM (LM-8) + 1SWL (30 mph) ...		Y		DL	1.2	17	1.5	WLZ	.05	WLX	-.029							
136	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	.058	WLX								
137	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	.05	WLX	.029							
138	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	.029	WLX	.05							

Load Combinations (Continued)

	Description	...	...	...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	...	F.....	F.....	F.....	F.....	F.....	F...
139	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ		WLX	.058							
140	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	-.029	WLX	.05							
141	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	-.05	WLX	.029							
142	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	-.058	WLX								
143	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	-.05	WLX	-.029							
144	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	-.029	WLX	-.05							
145	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ		WLX	-.058							
146	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	.029	WLX	-.05							
147	1.2DL + 1.5LM (LM-9) + 1SWL (30 mph) ...		Y		DL	1.2	18	1.5	WLZ	.05	WLX	-.029							

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N94A	max	1633.616	5	3666.514	27	-132.926	14	6461.465	2	1750.426	11	1263.726	11
2		min	-1632.497	11	-1032.756	20	-13719.512	33	-3813.797	20	-1751.74	5	-1266.97	5
3	N92A	max	11828.192	29	3657.055	35	6962.596	28	2088.767	15	717.909	8	5468.517	10
4		min	348.502	22	-1000.805	16	-311.158	21	-3399.688	9	-720.635	2	-3181.712	16
5	N95B	max	-453.475	18	3653.523	31	7015.175	38	2148.578	25	1238.278	2	3160.035	24
6		min	-11809.599	37	-1001.248	24	-620.195	19	-3467.401	7	-1234.522	8	-5442.481	6
7	Totals:	max	5835.825	17	9550.397	32	6090.464	2						
8		min	-5835.826	11	2282.17	25	-6090.462	20						

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

	Member	Shape	Code Check	Lo...	LC	Shear ...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	Cb	Eqn
1	M48A	HSS3X3X5	.934	0	6	.247	0	y	8	8859...	92610	7612.5	7612.5	1.9...	H1-...
2	M49A	HSS3X3X5	.914	0	13	.258	0	z	5	8859...	92610	7612.5	7612.5	1.96	H1-...
3	M47A	HSS3X3X5	.900	0	10	.236	0	y	8	8859...	92610	7612.5	7612.5	1.9...	H1-...
4	M4	C5X9	.871	32....	13	.080	32....	y	...	3283...	85536	1909...	11853	1.3...	H1-...
5	M25	C5X9	.846	32....	7	.080	32....	y	...	3283...	85536	1909...	11853	1.3...	H1-...
6	M88	L2.5x2.5x3	.792	0	2	.115	15....	y	3	2738...	2919...	872.5...	1971...	2.0...	H2-1
7	M27	C5X9	.789	32....	9	.080	32....	y	...	3283...	85536	1909...	11853	1.3...	H1-...
8	M29	C5X9	.770	66.5	13	.296	15....	z	9	4994...	85536	1909...	8891...	1.3...	H1-...
9	M89	L2.5x2.5x3	.758	0	11	.109	15....	y	...	2738...	2919...	872.5...	1971...	2.16	H2-1
10	M28	C5X9	.728	10....	3	.299	15....	z	5	4994...	85536	1909...	9402...	1.4...	H1-...
11	M90	L2.5x2.5x3	.686	15....	6	.104	0	z	7	2738...	2919...	872.5...	1971...	2.0...	H2-1
12	MP5	PIPE_2.0	.613	60....	7	.273	61....		7	1214...	32130	1871...	1871...	2.0...	H1-...
13	M3	C5X9	.603	10....	11	.272	15....	z	...	4994...	85536	1909...	9570...	1.4...	H1-...
14	MP8	PIPE_2.0	.578	60....	3	.256	61....		3	1214...	32130	1871...	1871...	1.9...	H1-...
15	MP2	PIPE_2.0	.539	60....	11	.236	61....		...	1214...	32130	1871...	1871...	1.8...	H1-...
16	MP3	PIPE_2.0	.400	29....	2	.144	69....		...	1214...	32130	1871...	1871...	4.3...	H1-...
17	MP4	PIPE_2.0	.390	50....	2	.155	51....		2	1214...	32130	1871...	1871...	2.1...	H1-...
18	MP7	PIPE_2.0	.382	50....	10	.152	51....		...	1214...	32130	1871...	1871...	2.37	H1-...
19	MP6	PIPE_2.0	.360	68....	6	.150	69....		6	1214...	32130	1871...	1871...	2.1	H1-...
20	MP1	PIPE_2.0	.351	50....	6	.137	51....		6	1214...	32130	1871...	1871...	2.2...	H1-...
21	MP9	PIPE_2.0	.349	29....	11	.141	69....		2	1214...	32130	1871...	1871...	2.2...	H1-...
22	M74	PIPE_2.5	.302	11....	6	.225	11....		...	5066...	50715	3596...	3596...	1.0...	H1-...
23	M78	PIPE_2.5	.269	11....	2	.212	11....		6	5066...	50715	3596...	3596...	1.0...	H1-...
24	M70	PIPE_2.5	.262	11....	10	.257	11....		2	5066...	50715	3596...	3596...	1.0...	H1-...
25	M92	PIPE_2.0	.027	28.5	8	.097	57		5	2451...	32130	1871...	1871...	1.1...	H1-...
26	M93	PIPE_2.0	.024	28.5	4	.092	57		...	2451...	32130	1871...	1871...	1.1...	H1-...
27	M91	PIPE_2.0	.024	28.5	12	.095	0		9	2451...	32130	1871...	1871...	1.1...	H1-...

Envelope Plate/Shell Principal Stresses

	Plate	S...	Sigma.....		Sigma.....		Tau M.....		Angle		Von Mises [psi]	LC
1	P9	m... T	5054....	36	546.4...	21	3148....	37	.408	18	5764.446	37
2		m...	613.3...	17	-1391...	27	491.3...	20	-.437	23	1024.924	19
3		m... B	1554....	16	-884.8..	25	2005....	29	2.356	45	3505.557	29
4		m...	-636.9..	12	-2479...	29	208.7...	24	-.783	55	819.609	24
5	P8	m... T	5030....	34	496.6...	23	3135....	33	.422	21	5737.317	33
6		m...	536.3...	15	-1381...	31	496.7...	25	-.427	14	1002.324	25
7		m... B	1619....	16	-862.5..	19	2000....	29	1.825	21	3489.809	29
8		m...	-730.3..	8	-2416...	29	204.4...	20	.533	18	834.909	19
9	P12	m... T	5003....	30	558.11	19	3126....	29	1.744	17	5720.191	29
10		m...	609.6...	23	-1393...	27	436.8...	20	.896	22	947.794	21
11		m... B	1566....	37	-981.3..	16	2023....	37	2.302	...	3534.472	37
12		m...	-679.6..	4	-2480...	37	200.0...	16	-.784	9	854.654	16
13	P21	m... T	4686....	23	345.7...	25	2357....	5	2.355	1	4756.81	5
14		m...	-420.4..	7	-4796...	5	11	39	-.768	33	29.312	92
15		m... B	5029....	5	1994....	5	1517....	5	2.332	85	4386.722	5
16		m...	-1994...	11	-4966...	11	4.24	90	-.78	34	31.949	92
17	P19	m... T	4718....	5	84.879	15	2378....	5	2.287	14	4737.52	5
18		m...	-447.2..	35	-4671...	11	14.077	89	-.381	25	64.39	133
19		m... B	4978....	23	1902....	23	1544....	11	1.754	14	4447.119	5
20		m...	-2055...	5	-5103...	5	10.668	...	-.225	15	43.015	133
21	P25	m... T	4520....	9	36.447	68	2322....	9	2.246	...	4584.17	9
22		m...	-439.6..	27	-4491...	3	22.529	57	-.629	...	68.502	89
23		m... B	4791....	15	1885....	15	1459....	3	2.338	...	4265.027	9
24		m...	-2034...	9	-4901...	9	11.982	90	-.755	31	44.52	89
25	P24	m... T	4493....	15	330.6...	17	2283....	9	2.217	12	4577.577	9
26		m...	-400.4..	11	-4588...	9	8.075	60	-.722	89	16.992	60
27		m... B	4837....	9	1952....	9	1442....	9	2.307	1	4215.243	9
28		m...	-1955...	3	-4793...	3	5.79	59	-.766	...	16.992	60
29	P21A	m... T	5016....	5	2031....	5	1511....	11	2.333	26	4370.428	5
30		m...	-1889...	23	-4901...	23	21.452	91	-.785	27	63.507	133
31		m... B	4698....	11	385.5...	36	2341....	5	2.291	...	4710.868	5
32		m...	-85.315	16	-4737...	5	6.464	...	-.581	85	45.25	133
33	P27A	m... T	4266....	19	398.8...	21	2140....	13	2.262	...	4323.51	13
34		m...	-468.3..	3	-4364...	13	8.277	...	-.329	...	16.678	124
35		m... B	4561.5	13	1803....	13	1379....	13	1.644	22	3979.129	13
36		m...	-1805...	7	-4513...	7	6.636	...	-.475	23	16.678	124
37	P28	m... T	4277....	13	32.75	...	2172....	13	2.262	65	4312.11	13
38		m...	-435.8..	31	-4245...	7	12.804	...	-.671	74	92.931	57
39		m... B	4536....	19	1739....	19	1405....	7	2.331	57	4050.366	13
40		m...	-1888...	13	-4649...	13	6.386	57	-.737	89	45.805	57
41	P23	m... T	4851....	11	1960....	11	1477....	5	1.432	14	4294.104	5
42		m...	-1969...	5	-4925...	5	19.963	92	-.269	15	42.325	92
43		m... B	4852....	5	400.5...	7	2348....	5	1.745	14	4776.423	5
44		m...	-347.8..	25	-4736...	23	3.675	...	-.332	...	49.418	39
45	P27	m... T	4834....	9	2031....	9	1427....	3	1.322	17	4204.869	9
46		m...	-1893...	15	-4736...	15	25.47	39	-.447	18	67.492	89
47		m... B	4491....	3	376.3...	27	2280....	9	1.415	18	4537.417	9
48		m...	-62.883	69	-4513...	9	8.047	...	-.295	17	41.811	108
49	P26	m... T	4649....	3	1933....	3	1384....	9	2.148	18	4098.183	9
50		m...	-1939...	9	-4707...	9	19.509	39	.22	89	39.613	60
51		m... B	4666....	9	364.5...	11	2290....	9	1.956	41	4624.36	9
52		m...	-315.8..	17	-4568...	15	8.443	57	.233	17	39.613	60
53	P30	m... T	4551....	13	1880....	13	1360....	7	2.074	22	3961.048	13
54		m...	-1741...	19	-4449...	19	22.42	39	.207	23	68.009	57
55		m... B	4283....	7	379.8...	32	2150....	13	1.834	23	4305.433	13
56		m...	-65.212	...	-4309...	13	6.973	75	.054	22	41.218	74

Envelope Plate/Shell Principal Stresses (Continued)

	Plate	S...	Sigma.....		Sigma.....		Tau M.....		Angle		Von Mises [psi]	LC
57	P29A	m... T	4422....	7	1785....	7	1345....	13	2.329	...	3909.341	13
58		m...	-1792.7	13	-4484...	13	19.465	...	-.727	...	35.315	124
59		m... B	4399....	13	449.1...	3	2131....	13	2.352	96	4332.321	13
60		m...	-400.0...	21	-4297...	19	7.139	57	-.583	29	35.315	124
61	P4	m... T	1649....	20	-807.8...	18	2013....	33	2.354	97	3512.347	33
62		m...	-878.3	12	-2457...	34	185.0...	24	-.784	...	976.326	17
63		m... B	5038....	38	538.6...	15	3140....	37	.462	18	5747.994	37
64		m...	485.3...	19	-1391...	35	414.9...	17	-.414	25	875.12	17
65	P5	m... T	1597....	20	-849.5...	23	2008....	33	1.829	14	3508.74	33
66		m...	-838.8...	4	-2487...	32	187.4...	16	.53	18	986.616	23
67		m... B	5074....	28	552.2...	25	3158....	29	.425	15	5783.273	29
68		m...	533.2...	21	-1391...	31	428.2...	23	-.455	22	897.862	23
69	P1	m... T	1649....	24	-922.5...	14	1984....	37	2.339	3	3464.628	37
70		m...	-815.6...	8	-2420...	36	191.3...	20	-.761	15	927.416	21
71		m... B	5082....	32	496.9...	17	3162....	33	1.724	19	5789.704	33
72		m...	496.1...	25	-1383...	35	479.4...	15	.846	14	971.558	15
73	P7	m... T	3258....	34	592.25	29	1519....	34	2.311	2	3154.585	34
74		m...	385.7...	...	-687.4...	22	49.84	6	-.617	25	336.837	101
75		m... B	2489....	5	676.6...	34	1457....	4	2.329	9	2706.853	4
76		m...	179.1...	24	-664.6	15	137.3...	72	-.502	20	415.951	12
77	P10	m... T	3248....	36	569.6...	29	1497....	36	2.326	3	3129.707	36
78		m...	390.5...	79	-542.5...	23	77.66	78	-.774	15	340.198	79
79		m... B	2524....	3	655.7...	36	1446....	4	2.302	22	2700.22	4
80		m...	139.14	20	-653.0...	21	138.6...	...	-.691	21	381.424	8
81	P11	m... T	3234....	30	561.9...	37	1493....	30	2.1	14	3117.986	30
82		m...	382.6...	20	-552.88	17	77.461	...	.27	25	338.045	145
83		m... B	2520....	13	666.9...	30	1448....	12	2.157	21	2702.775	12
84		m...	108.9...	20	-645.48	19	139.6...	...	-.376	8	309.319	8
85	P3	m... T	2523....	9	675.5...	38	1479....	8	1.68	4	2749.162	8
86		m...	106.2...	16	-661.5...	19	136.5...	...	-.769	17	273.936	4
87		m... B	3267....	38	592.5...	32	1529....	38	1.047	21	3167.899	38
88		m...	383.7...	69	-739.6...	25	72.405	70	-.777	22	335.573	69
89	P6	m... T	2519....	7	663.8...	28	1472....	8	2.309	3	2739.904	8
90		m...	88.068	24	-657.9...	21	137.4...	76	-.551	16	247.3	12
91		m... B	3271....	28	588.1...	34	1523....	28	2.278	10	3165.187	28
92		m...	386.8...	47	-674.3...	15	75.056	47	-.754	23	337.843	47
93	P2	m... T	2489....	11	664.5...	32	1457....	12	2.29	7	2706.478	12
94		m...	159.0...	16	-664.5...	25	137.1...	44	-.532	20	390.005	4
95		m... B	3277....	32	601.1...	37	1529....	32	2.285	2	3173.838	32
96		m...	385.8...	...	-726.7...	19	71.969	...	-.685	15	337.194	123
97	P20	m... T	1471....	5	-2.382	14	1487....	5	2.273	20	2576.449	5
98		m...	-3.706	...	-1503....	5	5.71	...	.089	...	13.268	89
99		m... B	615.5...	11	-15.127	...	626.21	11	2.192	33	1084.68	11
100		m...	-20.51	33	-636.8...	11	5.71	...	-.708	58	13.656	133
101	P23A	m... T	1431....	9	-14.877	89	1452....	9	1.7	...	2515.53	9
102		m...	-5.498	...	-1472....	9	5.789	89	-.694	57	13.532	89
103		m... B	569.5...	3	-14.877	89	576.1...	3	1.656	89	997.957	3
104		m...	-6.63	...	-582.7...	3	5.789	89	-.778	18	13.532	89
105	P29	m... T	1341....	13	-13.948	...	1357.6	13	1.808	16	2351.486	13
106		m...	-8.028	...	-1373...	13	2.96	...	-.447	75	12.125	125
107		m... B	562.4...	8	-17.349	97	566.6...	7	1.795	29	981.507	7
108		m...	-23.045	29	-576.6...	7	2.859	97	-.637	97	15.313	97
109	P22	m... T	743.26	5	.303	58	728.17	11	1.849	15	1261.354	11
110		m...	8.72	...	-746.04	11	9.647	...	.252	93	16.735	133
111		m... B	1416....	5	19.625	20	1387....	5	1.821	...	2403.998	5
112		m...	-36.274	14	-1364...	23	7.124	14	.253	17	12.855	89
113	P25A	m... T	690.03	9	37.198	12	677.61	3	2.249	24	1173.825	3

Envelope Plate/Shell Principal Stresses (Continued)

	Plate	S...	Sigma.....		Sigma.....		Tau M.....		Angle		Von Mises [psi]	LC
114		m...	-22.596	18	-697.6...	3	9.301	89	-.554	...	16.149	89
115		m... B	1384....	9	4.652	...	1353....	9	2.174	89	2344.026	9
116		m...	8.18	89	-1335...	15	2.912	...	-.74	61	9.092	127
117	P31	m... T	665.8...	13	8.389	90	657.7...	7	1.322	24	1139.355	7
118		m...	7.66	58	-672.4...	7	8.416	97	-.249	50	16.051	58
119		m... B	1294....	13	10.949	16	1268....	13	1.298	44	2197.565	13
120		m...	-30.344	22	-1243...	19	6.732	...	-.269	14	11.977	125

APPENDIX D

ADDITIONAL CALCUATIONS

Site Name: (F) E. GRANBY 4Q2000 / GALASSO
BU: 876399
Date: 07/22/2019

INFINIGY

3" SQ. Tube to Tower Weld Check

Known/Assumptions:

$F_{exx} := 70\ ksi$ (assumed weld electrode str.)
$b := 3\ in$ (width of weld)
$d := 3\ in$ (depth of weld)
$a := 0.25\ in$ (assumed design weld size - *based off the tube thk.*)
$L_w := 2 \cdot b + 2\ d = 12\ in$ (length of weld)
$\phi := 0.75$ (applicable reduction factor)

Joint Reactions per RISA 3D (Critical Joint Env. Solution):

$F_x := 10669.140\ lbf$
$F_y := 3657.055\ lbf$
$F_z := 6066.388\ lbf$

$M_x := -3083.498\ lbf \cdot ft$
$M_y := 104.211\ lbf \cdot ft$
$M_z := 5341.864\ lbf \cdot ft$

Weld Property Calculations per AISC 14th ED., Fig. 8-6:

$c_x := 0.5 \cdot b = 1.5\ in$ (radial distance from CG to point on weld remote from CG, x-x Direction)
$c_y := 0.5 \cdot d = 1.5\ in$ (radial distance from CG to point on weld remote from CG, y-y Direction)

$S := b \cdot d + \frac{d^2}{3} = 12\ \frac{1}{in}\ in^3$ (section modulus of weld)

$I_p := \frac{(b+d)^3}{6} = 36\ \frac{1}{in} \cdot in^4$ (polar moment of inertia about CG of weld)

Weld Strength Calculations and Results (Eccentric Elastic Method per AISC 14th Ed., Part 8):

$R_f := \frac{\sqrt{F_x^{\ 2} + F_y^{\ 2}}}{L_w} = 939.875\ \frac{lbf}{in}$

$R_{fz} := \frac{F_z}{L_w} = 505.532\ \frac{lbf}{in}$

$R_{mx} := \frac{(M_z \cdot c_x)}{I_p} = (2.671 \cdot 10^3)\ \frac{lbf}{in}$

$R_{my} := \frac{(M_z \cdot c_y)}{I_p} = (2.671 \cdot 10^3)\ \frac{lbf}{in}$

INFINIGY

$$R_m := \sqrt{R_{mx}{}^2 + R_{my}{}^2}$$

$$R_{mz1} := \frac{M_x}{S} = -3.083 \cdot 10^3 \ \frac{lbf}{in}$$

$$R_{mz2} := \frac{M_y}{S} = 104.211 \ \frac{lbf}{in}$$

$$R_{mz} := \sqrt{R_{mz1}{}^2 + R_{mz2}{}^2} = \left(3.085 \cdot 10^3\right) \ \frac{lbf}{in}$$

(Demand)

$$R_u := \sqrt{\left(R_f + R_m\right)^2 + \left(R_{fz} + R_{mz}\right)^2} = 5928.34 \ \frac{lbf}{in}$$

(Capacity of weld)

$$\phi R_{nw} := \phi \cdot 0.60 \cdot F_{exx} \cdot \frac{\sqrt{2}}{2} \cdot a = 5568.466 \ \frac{lbf}{in}$$

$$L_{stiffeners} := 6 \ in$$

$$\therefore DCR := \frac{L_w \cdot R_u}{\left(L_{stiffeners} + L_w\right) \cdot \phi R_{nw}} = 71\%$$

APPENDIX E

MOUNT MODIFICATION DESIGN DRAWINGS (MDD)

GENERAL NOTES:

1. THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF APPLICABLE LOCAL/STATE/COUNTY/CITY BUILDING CODES, AS WELL AS ANSI/TIA–222 STANDARD, AWWA–D100 STANDARD, NDS, NEC, MSJC, AND/OR THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE, UNLESS NOTED OTHERWISE IN THE CORRESPONDING STRUCTURAL REPORT.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN SIMILAR CONSTRUCTION.
4. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. IF OBSTRUCTIONS ARE FOUND, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD PRIOR TO CONTINUING WORK.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE DURING CONSTRUCTION. TIA–1019–A–2011 IS AN APPROPRIATE REFERENCE FOR THOSE DESIGNS MEETING TIA STANDARDS. THE ENGINEER OF RECORD MAY PROVIDE FORMAL RIGGING PLANS AT THE REQUEST AND EXPENSE OF THE CONTRACTOR.
7. INSTALLATION SHALL NOT INTERFERE NOR DENY ADEQUATE ACCESS TO OR FROM ANY EXISTING OR PROPOSED OPERATIONAL AND SAFETY EQUIPMENT.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINIGY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES, AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS' RECOMMENDATIONS.
3. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
4. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5. ALL STEEL MEMBERS AND CONNECTIONS SHALL MEET THE FOLLOWING GRADES:
   - ANGLES, CHANNELS, PLATES AND BARS TO BE A36. Fy=36 KSI, U.N.O.
   - W SHAPES TO BE A992. Fy=50 KSI, U.N.O.
   - RECTANGULAR HSS TO BE A500, GRADE B. FY=46 KSI, U.N.O.
   - ROUND HSS TO BE A500, GRADE B. FY=42 KSI, U.N.O.
   - STEEL PIPE TO BE A53, GRADE B. Fy=35 KSI, U.N.O.
   - BOLTS TO BE A325–X. Fu=120 KSI, U.N.O.
   - U–BOLTS AND LAG SCREWS TO BE A307 GR A. Fu=60 KSI, U.N.O.
6. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, U.N.O.
7. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION.
8. ALL HILTI ANCHORS TO BE CARBON STEEL, U.N.O.
   - MECHANICAL ANCHORS: KWIK BOLT–TZ, U.N.O.
   - CMU BLOCK ANCHORS: ADHESIVE – HY120, U.N.O.
   - CONCRETE ANCHORS: ADHESIVE – HY150, U.N.O.
   - CONCRETE REBAR: ADHESIVE – RE500, U.N.O.
9. ALL STUDS TO BE NELSON CAPACITOR DISCHARGE 1/4"–20 LOW CARBON STEEL COPPER–FLASH AT 55 KSI ULT/50 KSI YIELD, U.N.O.
10. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
11. MINIMUM EDGE DISTANCES SHALL CONFORM TO AISC TABLE J3.4.
12. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

CONCRETE CONSTRUCTION NOTES:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI–318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.
2. EXISTING CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH NEW PROPOSED CONCRETE SHOULD BE WIRE BRUSHED CLEAN AND TREATED WITH APPROPRIATE MECHANICAL SCRATCH COAT AND REPAIR MATERIALS OR APPROPRIATE CHEMICAL METHODS SUCH AS THE APPLICATION OF A BONDING AGENT, EX. SAKRETE OR EQUIVALENT, TO ENSURE A QUALITY BOND BETWEEN EXISTING AND PROPOSED CONCRETE SURFACES.

FIBER REINFORCED POLYMER (FRP) NOTES:

1. FRP PLATES, SHAPES, BOLTS AND NUTS (STUD/NUT ASSEMBLIES) SHALL CONFORM TO ASTM D638, 695, 790. PLATES AND SHAPES TO BE FY = 5.35 KSI LW (SAFETY FACTOR OF 8), .945 KSI CW (SAFETY FACTOR OF 8) MIN.
2. IF FIELD FABRICATION IS REQUIRED, ALL CUT EDGES AND DRILLED HOLES TO BE SEALED USING VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
3. ALL FASTENERS TO BE 1/2" DIA FRP THREADED ROD WITH FIBER REINFORCED THERMOPLASTIC NUT, SPACED AT 12 INCHES ON CENTER MAXIMUM, U.N.O., FOR PANELS AND AS DESIGNED FOR STRUCTURAL MEMBERS.
4. THE COLOR AND SURFACE PATTERN OF EXPOSED FRP PANELS SHALL MATCH THE EXTERIOR OF THE EXISTING BUILDING, U.N.O.
5. STUD/NUT ASSEMBLIES SHOULD BE LUBRICATED FOR INSTALLATION
6. ENSURE BEARING SURFACES OF THE NUTS ARE PARALLEL TO THE SURFACES BEING FASTENED.
7. TORQUE BOLTS ACCORDING TO THE FOLLOWING TABLE:

INSTALLATION TORQUE TABLE		
SIZE	**ULTIMATE TORQUE STRENGTH**	**RECOMMENDED MAXIMUM INSTALLATION TORQUE**
3/8–16 UNC	8 FT–LBS	4 FT–LBS
1/2–13 UNC	18 FT–LBS	8 FT–LBS
5/8–11 UNC	35 FT–LBS	16 FT–LBS
3/4–10 UNC	50 FT–LBS	24 FT–LBS
1–8 UNC	110 FT–LBS	50 FT–LBS

8. WHEN TIGHTENING FRP STUD/NUT ASSEMBLIES, WRENCHES MUST MAKE FULL CONTACT WITH ALL NUT EDGES. A STANDARD SIX POINT SOCKET IS RECOMMENDED.
9. STUD/NUT ASSEMBLIES SHOULD BE BONDED BY APPLYING BONDING AGENT TO ENTIRE NUT AND EXPOSED STUD.
10. ALL FRP MATERIALS TO BE PROVIDED BY FIBERGRATE COMPOSITE STRUCTURES, DALLAS TX, OR APPROVED EQUAL.
11. ALL FRP SHAPES TO BE DYNAFORM PULTRUDED STRUCTURAL SHAPES.
12. ALL FRP PLATES TO BE FIBERPLATE MOLDED FRP PLATE.
13. ALL FRP PANELS TO BE FIBERPLATE CLADDING PANEL.
14. EACH FRP PANEL TO BE IDENTIFIED WITH LARR#25536 AND FIBERGRATE COMPOSITE STRUCTURAL LABEL.
15. FRP MATERIAL TO BE CLASSIFIED AS CC1 OR BETTER, AND HAVE MAXIMUM FLAME SPREAD OF 50.
16. ALL DESIGN AND CONSTRUCTION TO BE COMPLETED IN ACCORDANCE WITH LOS ANGELES RESEARCH REPORT RR25536, DATED FEBRUARY 1, 2016.
17. SPECIAL INSPECTIONS MUST BE PROVIDED FOR ALL FRP INSTALLMENTS. SEE SPECIAL INSPECTION SECTION, THIS SHEET.

RATIO OF EDGE DISTANCE TO FRP FASTENER DIAMETER		
	RANGE	**RECOMMENDED**
EDGE DISTANCE – CL* BOLT TO END	2.0–4.0	3.0
EDGE DISTANCE – CL* BOLT TO SIDE	1.5–3.5	2.5
BOLT PITCH – CL* TO CL*	4.0–5.0	5.0

WOOD CONSTRUCTION NOTES:

1. ALL EXISTING WOOD SHAPES ARE ASSUMED TO BE DOUGLAS FIR–LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN.
2. ALL PROPOSED WOOD SHAPES ARE TO BE DOUGLAS FIR–LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN. U.N.O.
3. ALL EXISTING AND PROPOSED GLUED LAMINATED TIMBERS ARE TO BE 24F–1.8C DOUGLAS FIR BALANCED WITH A REFERENCE DESIGN BENDING VALUE OF 2400 PSI MIN. U.N.O.

MASONRY CONSTRUCTION NOTES:

1. ALL BRICK TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 100 PSI SHALL BE USED. FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 133 PSI.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
2. ALL CMU TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS, TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 64 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 158 PSI FOR FULLY GROUTED BLOCKS.
   - FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 163 PSI FOR FULLY GROUTED BLOCKS.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

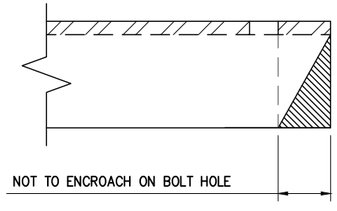
TOWER PLUMB & TENSION NOTES:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS FOR LATTICED STRUCTURES.
4. THE TWIST BETWEEN ANY TWO ELEVATIONS THROUGHOUT THE HEIGHT OF A LATTICE STRUCTURE SHALL NOT EXCEED 0.5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE LATTICE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.

SPECIAL INSPECTIONS NOTES:

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER AND APPROVED BY THE JURISDICTION, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH THE THE GOVERNING BUILDING CODE, APPLICABLE SECTION(S) AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
   a. STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELDS ONLY).
   b. HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 AND/OR A490 BOLTS) TO BE TIGHTENED PER "TURN–OF–THE–NUT" METHOD.
   c. MECHANICAL AND EPOXIED ANCHORAGES.
   d. FIBER REINFORCED POLYMER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE FRP MATERIAL SPECIFIED ON THE APPROVED DESIGN DOCUMENTS IS BEING INSTALLED.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT ALL CUT EDGES AND DRILLED HOLES ARE PROPERLY SEALED USING A VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE STRUCTURE IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN DOCUMENTS.
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT THE SPECIAL INSPECTIONS.

MAXIMUM ALLOWABLE ANGLE CLIP



INFINIGY ENGINEERING PLLC
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CROWN CASTLE

STATE OF CONNECTICUT
JOSEPH R. JOHNSON
29460
LICENSED PROFESSIONAL ENGINEER

07-23-2019

No.	Submittal / Revision	App'd	Date
0	FOR REVIEW	KD	07/23/19

Drawn: BE Date: 07/23/19
Designed: MP Date: 07/23/19
Checked: KD Date: 07/23/19

Project Number: 1039-B0002-B

Project Title:
876399
CT43XC804
(F) E. GRANBY
4Q2000 / GALASSO
60 SOUTH MAIN ST.
EAST GRANBY, CT 06026

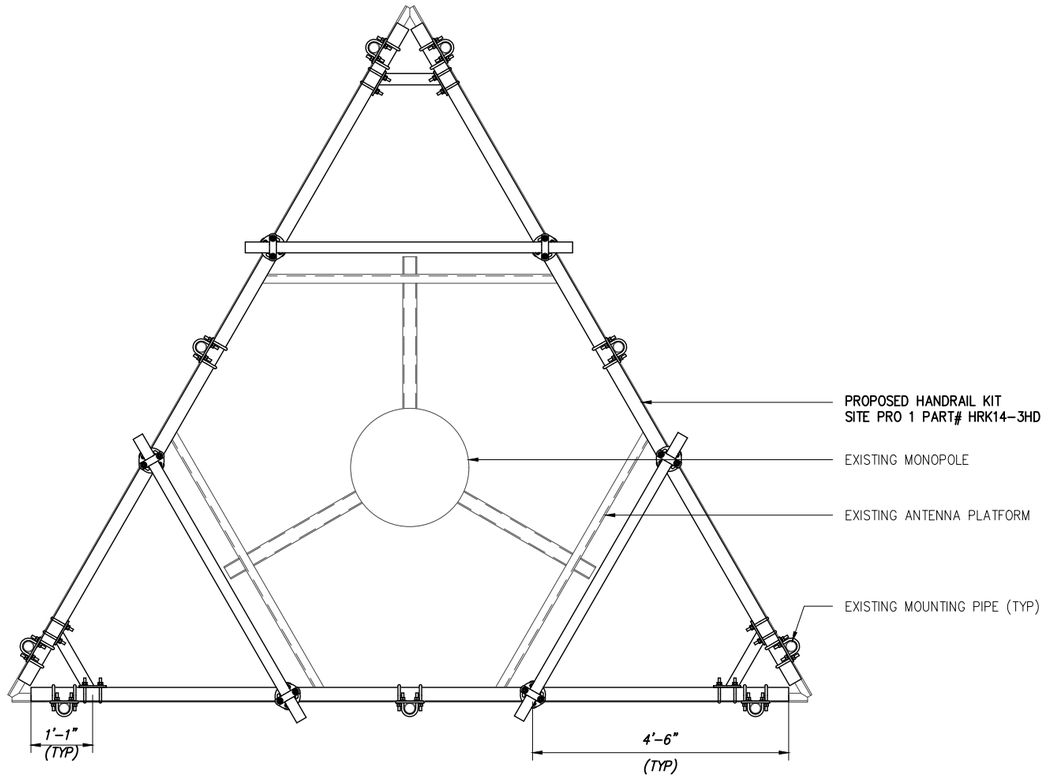
Prepared For: Sprint

Drawing Scale: AS NOTED
Date: 07/23/19

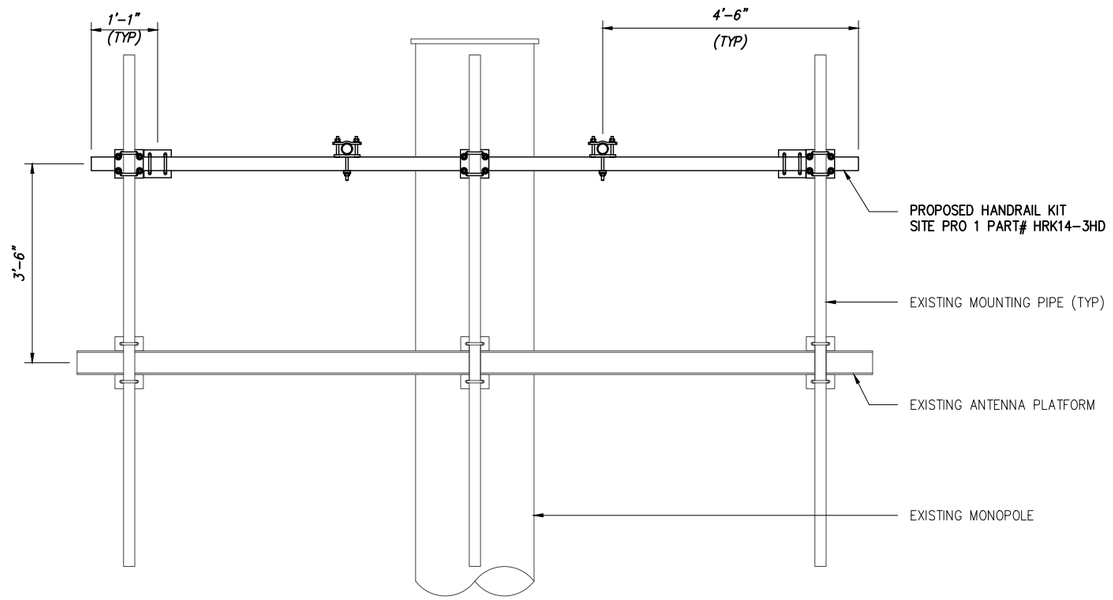
Drawing Title
GENERAL NOTES

Drawing Number
S-1

NOTE: CONTRACTOR TO FIELD VERIFY AND CUT PROPOSED HRK14-3HD AS NECESSARY.



1 PLAN VIEW
SCALE: NOT TO SCALE



2 ELEVATION VIEW
SCALE: NOT TO SCALE

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Prepared For:
Sprint

Drawing Scale:
AS NOTED

Date:
07/23/19

Drawing Title
PLATFORM MODIFICATION

Drawing Number
S-2

GENERAL NOTES:

1. THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF APPLICABLE LOCAL/STATE/COUNTY/CITY BUILDING CODES, AS WELL AS ANSI/TIA-222 STANDARD, AWWA-D100 STANDARD, NDS, NEC, MSJC, AND/OR THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE, UNLESS NOTED OTHERWISE IN THE CORRESPONDING STRUCTURAL REPORT.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN SIMILAR CONSTRUCTION.
4. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. IF OBSTRUCTIONS ARE FOUND, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD PRIOR TO CONTINUING WORK.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE DURING CONSTRUCTION. TIA-1019-A-2011 IS AN APPROPRIATE REFERENCE FOR THOSE DESIGNS MEETING TIA STANDARDS. THE ENGINEER OF RECORD MAY PROVIDE FORMAL RIGGING PLANS AT THE REQUEST AND EXPENSE OF THE CONTRACTOR.
7. INSTALLATION SHALL NOT INTERFERE NOR DENY ADEQUATE ACCESS TO OR FROM ANY EXISTING OR PROPOSED OPERATIONAL AND SAFETY EQUIPMENT.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINIGY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES, AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS' RECOMMENDATIONS.
3. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
4. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5. ALL STEEL MEMBERS AND CONNECTIONS SHALL MEET THE FOLLOWING GRADES:
   - ANGLES, CHANNELS, PLATES AND BARS TO BE A36. Fy=36 KSI, U.N.O.
   - W SHAPES TO BE A992. Fy=50 KSI, U.N.O.
   - RECTANGULAR HSS TO BE A500, GRADE B. FY=46 KSI, U.N.O.
   - ROUND HSS TO BE A500, GRADE B. FY=42 KSI, U.N.O.
   - STEEL PIPE TO BE A53, GRADE B. Fy=35 KSI, U.N.O.
   - BOLTS TO BE A325-X. Fu=120 KSI, U.N.O.
   - U-BOLTS AND LAG SCREWS TO BE A307 GR A. Fu=60 KSI, U.N.O.
6. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, U.N.O.
7. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION.
8. ALL HILTI ANCHORS TO BE CARBON STEEL, U.N.O.
   - MECHANICAL ANCHORS: KWIK BOLT-TZ, U.N.O.
   - CMU BLOCK ANCHORS: ADHESIVE - HY120, U.N.O.
   - CONCRETE ANCHORS: ADHESIVE - HY150, U.N.O.
   - CONCRETE REBAR: ADHESIVE - RE500, U.N.O.
9. ALL STUDS TO BE NELSON CAPACITOR DISCHARGE 1/4"-20 LOW CARBON STEEL COPPER-FLASH AT 55 KSI ULT/50 KSI YIELD, U.N.O.
10. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
11. MINIMUM EDGE DISTANCES SHALL CONFORM TO AISC TABLE J3.4.
12. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

CONCRETE CONSTRUCTION NOTES:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.
2. EXISTING CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH NEW PROPOSED CONCRETE SHOULD BE WIRE BRUSHED CLEAN AND TREATED WITH APPROPRIATE MECHANICAL SCRATCH COAT AND REPAIR MATERIALS OR APPROPRIATE CHEMICAL METHODS SUCH AS THE APPLICATION OF A BONDING AGENT, EX. SAKRETE OR EQUIVALENT, TO ENSURE A QUALITY BOND BETWEEN EXISTING AND PROPOSED CONCRETE SURFACES.

FIBER REINFORCED POLYMER (FRP) NOTES:

1. FRP PLATES, SHAPES, BOLTS AND NUTS (STUD/NUT ASSEMBLIES) SHALL CONFORM TO ASTM D638, 695, 790. PLATES AND SHAPES TO BE FY = 5.35 KSI LW (SAFETY FACTOR OF 8), .945 KSI CW (SAFETY FACTOR OF 8) MIN.
2. IF FIELD FABRICATION IS REQUIRED, ALL CUT EDGES AND DRILLED HOLES TO BE SEALED USING VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
3. ALL FASTENERS TO BE 1/2" DIA FRP THREADED ROD WITH FIBER REINFORCED THERMOPLASTIC NUT, SPACED AT 12 INCHES ON CENTER MAXIMUM, U.N.O., FOR PANELS AND AS DESIGNED FOR STRUCTURAL MEMBERS.
4. THE COLOR AND SURFACE PATTERN OF EXPOSED FRP PANELS SHALL MATCH THE EXTERIOR OF THE EXISTING BUILDING, U.N.O.
5. STUD/NUT ASSEMBLIES SHOULD BE LUBRICATED FOR INSTALLATION
6. ENSURE BEARING SURFACES OF THE NUTS ARE PARALLEL TO THE SURFACES BEING FASTENED.
7. TORQUE BOLTS ACCORDING TO THE FOLLOWING TABLE:

INSTALLATION TORQUE TABLE

SIZE	ULTIMATE TORQUE STRENGTH	RECOMMENDED MAXIMUM INSTALLATION TORQUE
3/8-16 UNC	8 FT-LBS	4 FT-LBS
1/2-13 UNC	18 FT-LBS	8 FT-LBS
5/8-11 UNC	35 FT-LBS	16 FT-LBS
3/4-10 UNC	50 FT-LBS	24 FT-LBS
1-8 UNC	110 FT-LBS	50 FT-LBS

8. WHEN TIGHTENING FRP STUD/NUT ASSEMBLIES, WRENCHES MUST MAKE FULL CONTACT WITH ALL NUT EDGES. A STANDARD SIX POINT SOCKET IS RECOMMENDED.
9. STUD/NUT ASSEMBLIES SHOULD BE BONDED BY APPLYING BONDING AGENT TO ENTIRE NUT AND EXPOSED STUD.
10. ALL FRP MATERIALS TO BE PROVIDED BY FIBERGRATE COMPOSITE STRUCTURES, DALLAS TX, OR APPROVED EQUAL.
11. ALL FRP SHAPES TO BE DYNAFORM PULTRUDED STRUCTURAL SHAPES.
12. ALL FRP PLATES TO BE FIBERPLATE MOLDED FRP PLATE.
13. ALL FRP PANELS TO BE FIBERPLATE CLADDING PANEL.
14. EACH FRP PANEL TO BE IDENTIFIED WITH LARR#25536 AND FIBERGRATE COMPOSITE STRUCTURAL LABEL.
15. FRP MATERIAL TO BE CLASSIFIED AS CC1 OR BETTER, AND HAVE MAXIMUM FLAME SPREAD OF 50.
16. ALL DESIGN AND CONSTRUCTION TO BE COMPLETED IN ACCORDANCE WITH LOS ANGELES RESEARCH REPORT RR25536, DATED FEBRUARY 1, 2016.
17. SPECIAL INSPECTIONS MUST BE PROVIDED FOR ALL FRP INSTALLMENTS. SEE SPECIAL INSPECTION SECTION, THIS SHEET.

RATIO OF EDGE DISTANCE TO FRP FASTENER DIAMETER

	RANGE	RECOMMENDED
EDGE DISTANCE - CL* BOLT TO END	2.0-4.0	3.0
EDGE DISTANCE - CL* BOLT TO SIDE	1.5-3.5	2.5
BOLT PITCH - CL* TO CL*	4.0-5.0	5.0

WOOD CONSTRUCTION NOTES:

1. ALL EXISTING WOOD SHAPES ARE ASSUMED TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN.
2. ALL PROPOSED WOOD SHAPES ARE TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN. U.N.O.
3. ALL EXISTING AND PROPOSED GLUED LAMINATED TIMBERS ARE TO BE 24F-1.8C DOUGLAS FIR BALANCED WITH A REFERENCE DESIGN BENDING VALUE OF 2400 PSI MIN. U.N.O.

MASONRY CONSTRUCTION NOTES:

1. ALL BRICK TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 100 PSI SHALL BE USED. FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 133 PSI.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
2. ALL CMU TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS, TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 64 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 158 PSI FOR FULLY GROUTED BLOCKS.
   - FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 163 PSI FOR FULLY GROUTED BLOCKS.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

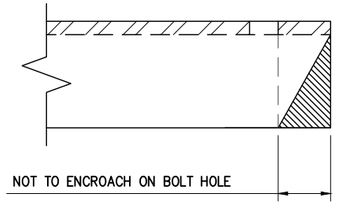
TOWER PLUMB & TENSION NOTES:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS FOR LATTICED STRUCTURES.
4. THE TWIST BETWEEN ANY TWO ELEVATIONS THROUGHOUT THE HEIGHT OF A LATTICE STRUCTURE SHALL NOT EXCEED 0.5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE LATTICE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.

SPECIAL INSPECTIONS NOTES:

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER AND APPROVED BY THE JURISDICTION, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH THE THE GOVERNING BUILDING CODE, APPLICABLE SECTION(S) AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
   a. STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELDS ONLY).
   b. HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 AND/OR A490 BOLTS) TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD.
   c. MECHANICAL AND EPOXIED ANCHORAGES.
   d. FIBER REINFORCED POLYMER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE FRP MATERIAL SPECIFIED ON THE APPROVED DESIGN DOCUMENTS IS BEING INSTALLED.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT ALL CUT EDGES AND DRILLED HOLES ARE PROPERLY SEALED USING A VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE STRUCTURE IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN DOCUMENTS.
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT THE SPECIAL INSPECTIONS.

MAXIMUM ALLOWABLE ANGLE CLIP



INFINIGY ENGINEERING PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

CROWN CASTLE

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED PROFESSIONAL ENGINEER

07-23-2019

No.	Submittal / Revision	App'd	Date
0	FOR REVIEW	KD	07/23/19

Drawn: BE Date: 07/23/19
Designed: MP Date: 07/23/19
Checked: KD Date: 07/23/19

Project Number: 1039-B0002-B

Project Title:
876399
CT43XC804
(F) E. GRANBY
4Q2000 / GALASSO
60 SOUTH MAIN ST.
EAST GRANBY, CT 06026

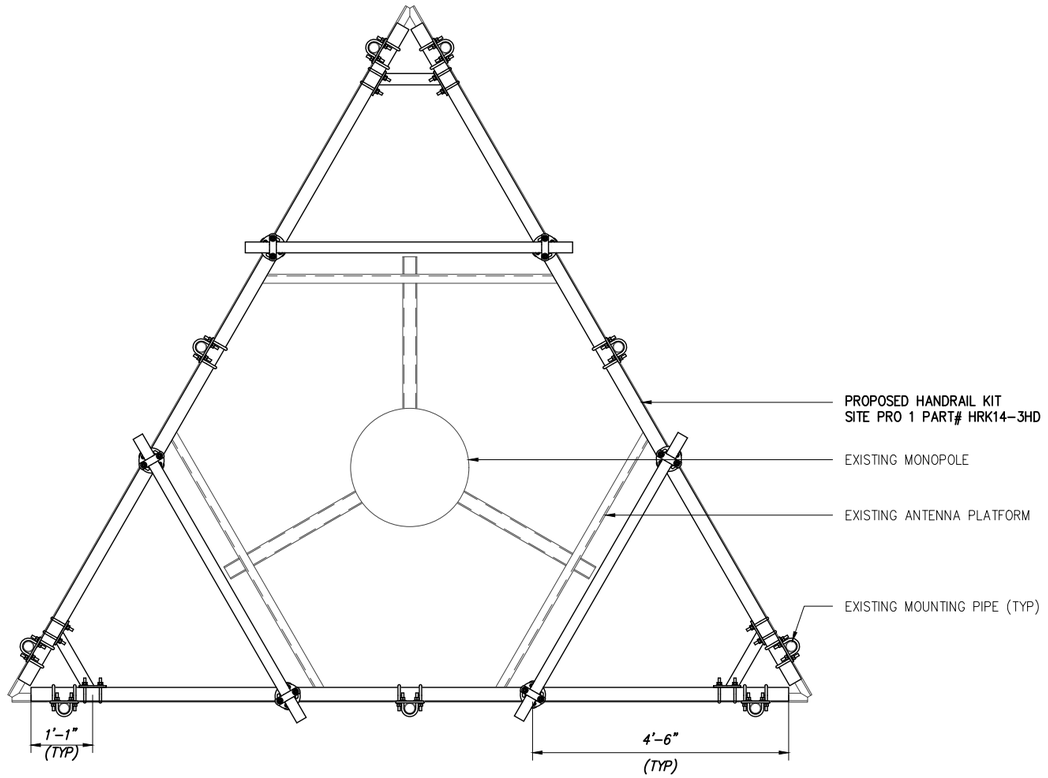
Prepared For: Sprint

Drawing Scale: AS NOTED
Date: 07/23/19

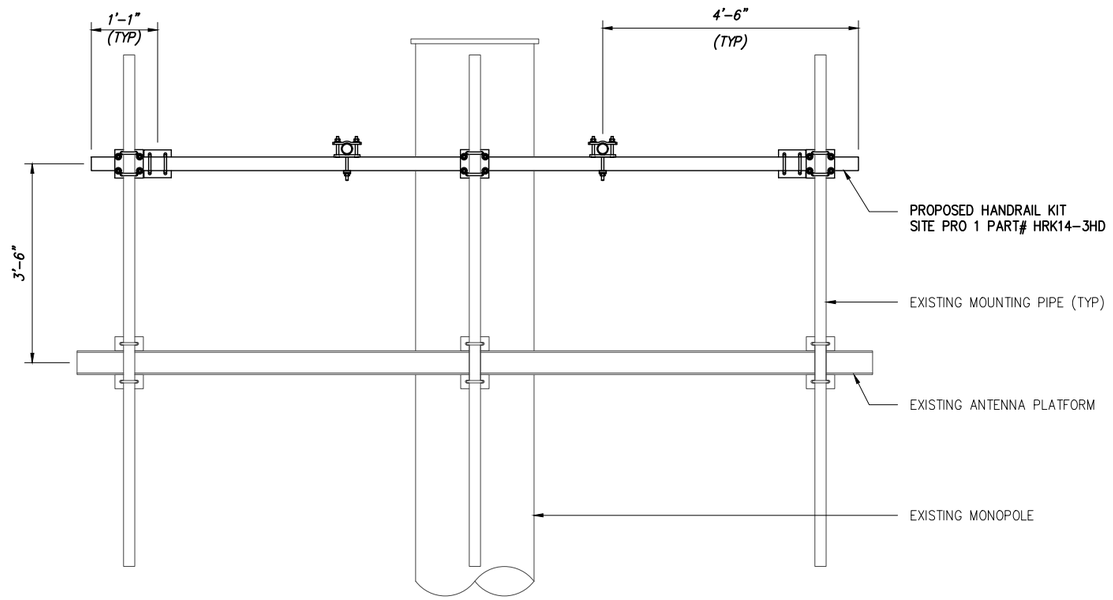
Drawing Title
GENERAL NOTES

Drawing Number
S-1

NOTE: CONTRACTOR TO FIELD VERIFY AND CUT PROPOSED HRK14-3HD AS NECESSARY.



1 PLAN VIEW
SCALE: NOT TO SCALE



2 ELEVATION VIEW
SCALE: NOT TO SCALE

INFINIGY ENGINEERING PLLC
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Office # (518) 690-0790
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CROWN CASTLE

STATE OF CONNECTICUT
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07-23-2019

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60 SOUTH MAIN ST.
EAST GRANBY, CT 06026

Prepared For:
Sprint

Drawing Scale:
AS NOTED

Date:
07/23/19

Drawing Title
PLATFORM MODIFICATION

Drawing Number
S-2

Date: **July 29, 2019**

Charles Trask
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT43XC804
	Carrier Site Name:	CT43XC804
Crown Castle Designation:	**Crown Castle BU Number:**	876399
	Crown Castle Site Name:	(F) E. Granby 4Q2000 / Galasso
	Crown Castle JDE Job Number:	447217
	Crown Castle Work Order Number:	1773228
	Crown Castle Order Number:	397084 Rev. 4
Engineering Firm Designation:	**B+T Group Project Number:**	127643.006.01
Site Data:	**60 South Main St., East Granby, Hartford County, CT** **Latitude *41° 56' 29.59"*, Longitude *-72° 44' 19.248"*** **98 Foot - Monopole Tower**	

Dear Charles Trask,

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

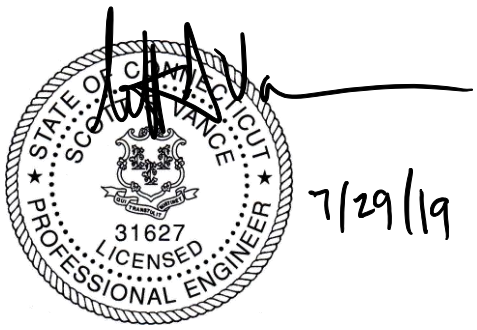
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC4.7: Proposed Equipment Configuration with Proposed Modifications **Sufficient Capacity - 99.3%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 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: Jacob Johnson

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/10/2020



Scott S. Vance, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is 98 ft. monopole designed by Engineered Endeavors, Inc. in September 2000. The monopole was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. This tower has been modified multiple time and are incorporated in this analysis. Modifications designed by B+T Group, dated May 2019 were incorporated in this analysis and must be properly installed for the provided capacity to be effective.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
94.0	97.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz	3 1	1-1/4 7/8
		6	Alcatel Lucent	RRH2X50-800		
		3	Alcatel Lucent	TD-RRH8x20-25		
		3	Commscope	NNVV-65B-R4		
		3	RFS Celwave	APXVTM14-ALU-I20		
	94.0	1	Site Pro 1	HRK14-3HD Handrail Kit		
		1	--	Platform Mount [LP 714-1]		

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)
89.0	90.0	3	Ericsson	RADIO 4449 B12/B71	1 11	1-3/8 7/8
		3	RFS Celwave	APXV18-209014-C		
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		3	RFS Celwave	ATMPP1412D-1CWA		
	89.0	1	--	Platform Mount [LP 305-1]		
74.0	77.0	1	Andrew	SBNH-1D6565C	12 4 2	7/8 3/4 3/8
		3	CCI Antennas	TPA-65R-LCUUUU-H8		
		3	Ericsson	RRUS 11 B12		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Kaelus	DBC0061F1V51-2		
		3	Powerwave Tech	7770.00		
		2	Powerwave Tech	P65-17-XLH-RR		
		3	Powerwave Tech	TT19-08BP111-001		
		2	Raycap	DC6-48-60-18-8F		
	74.0	1	--	Miscellaneous [NA 507-1]		
		1	--	Platform Mount [LP 303-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
67.0	67.0	3	Alcatel Lucent	B13 RRH 4X30	12 2	1-5/8 1-3/8
		3	Alcatel Lucent	B66A RRH4X45		
		6	Antel	LPA-80063/6CFX2		
		2	Commscope	RC2DC-3315-PF-48		
		6	Commscope	SBNHH-1D65B		
		1	--	Miscellaneous [NA 509-3]		
		1	--	Platform Mount [LP 303-1]		
52.0	54.0	1	Lucent	KS24019-L112A	1	7/8
	52.0	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	Sprint PCS Co-Locate, Rev. 4	397084	CCI Sites
Tower Manufacturer Drawing	EEI, Job No. 7832-E01	1613691	CCI Sites
Tower Modification Drawing	IETS, Project No. 2009-70644	2529017	CCI Sites
Post Modification Inspection	IETS, Project No. 2010-70158	2682749	CCI Sites
Tower Modification Drawing	PJF, Project No. 32912-0138 MO	3713021	CCI Sites
Post Modification Inspection		3713020	CCI Sites
Tower Modification Drawing	GPD, Project No. 2015777.876399.01	5803194	CCI Sites
Post Modification Inspection	ETS, Project No. 160019	6139057	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 127643.001.01	8420875	CCI Sites
Foundation Drawings	EEI, Job No. 7832-E01	2066334	CCI Sites
Geotech Report	Delta Oaks, Project No. GEO18-03201-01	1531971	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 12/19/2018	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

3.2) Assumptions

1) The tower and structures were built and have been maintained in accordance with the manufacturer's specification.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) Mount areas and weights are assumed based on photographs provided.
4) The existing base plate grout was not considered in this analysis.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	98 - 93	Pole	TP13.078x12x0.1875	1	-3.371	471.228	9.5	Pass
L2	93 - 88	Pole	TP14.156x13.078x0.1875	2	-5.746	510.643	25.2	Pass
L3	88 - 85.21	Pole	TP15.28x14.156x0.1875	3	-5.885	532.661	34.8	Pass
L4	85.21 - 80.21	Pole	TP15.445x14.384x0.25	4	-6.282	740.636	38.8	Pass
L5	80.21 - 75.21	Pole	TP16.507x15.445x0.25	5	-6.908	792.382	47.1	Pass
L6	75.21 - 70.21	Pole	TP17.569x16.507x0.25	6	-10.171	844.128	60.9	Pass
L7	70.21 - 65.21	Pole	TP18.63x17.569x0.25	7	-13.456	895.874	72.4	Pass
L8	65.21 - 60.21	Pole	TP19.692x18.63x0.25	8	-14.139	947.619	84.4	Pass
L9	60.21 - 59.17	Pole	TP19.912x19.692x0.25	9	-14.285	958.351	86.5	Pass
L10	59.17 - 58.9	Pole + Reinf.	TP19.97x19.912x0.5125	10	-14.354	1944.117	78.4	Pass
L11	58.9 - 58.75	Pole + Reinf.	TP20.001x19.97x0.5125	11	-14.382	1947.298	78.8	Pass
L12	58.75 - 54	Pole + Reinf.	TP21.01x20.001x0.5	12	-15.202	1999.347	88.7	Pass
L13	54 - 53.75	Pole + Reinf.	TP21.063x21.01x0.5125	13	-15.267	2053.380	79.6	Pass
L14	53.75 - 52.91	Pole + Reinf.	TP21.241x21.063x0.5	14	-15.432	2021.901	81.1	Pass
L15	52.91 - 52.66	Pole + Reinf.	TP21.294x21.241x0.675	15	-15.496	2713.525	78.3	Pass
L16	52.66 - 52.17	Pole + Reinf.	TP21.399x21.294x0.675	16	-15.601	2727.217	79.2	Pass
L17	52.17 - 51.92	Pole + Reinf.	TP21.452x21.399x0.525	17	-15.734	2141.958	84.7	Pass
L18	51.92 - 48.7	Pole + Reinf.	TP22.86x21.452x0.5125	18	-16.395	2160.438	90.1	Pass
L19	48.7 - 44.29	Pole + Reinf.	TP22.575x21.634x0.5625	19	-17.852	2413.981	87.4	Pass
L20	44.29 - 39.29	Pole + Reinf.	TP23.639x22.575x0.55	20	-19.017	2475.784	93.2	Pass
L21	39.29 - 34.29	Pole + Reinf.	TP24.703x23.639x0.5375	21	-20.215	2532.348	98.3	Pass
L22	34.29 - 33.5	Pole + Reinf.	TP24.87x24.703x0.525	22	-20.410	2491.881	99.1	Pass
L23	33.5 - 33.25	Pole + Reinf.	TP24.923x24.87x0.8375	23	-20.498	3932.796	67.1	Pass
L24	33.25 - 33	Pole + Reinf.	TP24.977x24.923x0.8375	24	-20.575	3941.490	67.3	Pass
L25	33 - 32.75	Pole + Reinf.	TP25.03x24.977x0.8125	25	-20.645	3836.217	73.0	Pass
L26	32.75 - 32	Pole + Reinf.	TP25.19x25.03x0.8	26	-20.852	3804.045	73.6	Pass
L27	32 - 31.75	Pole + Reinf.	TP25.243x25.19x0.5875	27	-20.916	2824.027	88.8	Pass
L28	31.75 - 28.5	Pole + Reinf.	TP25.934x25.243x0.575	28	-21.678	2842.885	91.4	Pass
L29	28.5 - 28.25	Pole + Reinf.	TP25.988x25.934x0.8625	29	-21.769	4224.927	63.7	Pass
L30	28.25 - 27.5	Pole + Reinf.	TP26.147x25.988x0.85	30	-21.992	4192.219	64.1	Pass
L31	27.5 - 27.25	Pole + Reinf.	TP26.2x26.147x0.575	31	-22.057	2872.705	92.4	Pass
L32	27.25 - 22.25	Pole + Reinf.	TP27.265x26.2x0.5625	32	-23.271	2928.334	95.8	Pass
L33	22.25 - 18	Pole + Reinf.	TP28.169x27.265x0.55	33	-24.333	2961.588	98.5	Pass
L34	18 - 17.75	Pole + Reinf.	TP28.222x28.169x0.5625	34	-24.416	3033.355	90.4	Pass
L35	17.75 - 15.45	Pole + Reinf.	TP28.712x28.222x0.425	35	-25.003	2343.820	91.2	Pass
L36	15.45 - 15.2	Pole + Reinf.	TP28.765x28.712x0.6875	36	-25.099	3763.431	89.7	Pass
L37	15.2 - 13.41	Pole + Reinf.	TP29.146x28.765x0.675	37	-25.616	3746.778	90.7	Pass
L38	13.41 - 13.16	Pole + Reinf.	TP29.199x29.146x0.5625	38	-25.706	3140.487	94.5	Pass
L39	13.16 - 8.16	Pole + Reinf.	TP30.263x29.199x0.55	39	-27.115	3186.151	97.0	Pass
L40	8.16 - 6.5	Pole + Reinf.	TP30.617x30.263x0.55	40	-27.583	3224.035	97.7	Pass
L41	6.5 - 6.25	Pole + Reinf.	TP30.67x30.617x0.6625	41	-27.683	3875.833	94.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L42	6.25 - 4.45	Pole + Reinf.	TP31.053x30.67x0.65	42	-28.220	3852.838	94.9	Pass
L43	4.45 - 4.2	Pole + Reinf.	TP31.106x31.053x0.5125	43	-28.308	3056.865	96.2	Pass
L44	4.2 - 0	Pole + Reinf.	TP32x31.106x0.5	44	-29.435	3070.662	97.8	Pass
							Summary	
						Pole (L9)	91.2	Pass
						Reinforcement	99.1	Pass
						Rating =	99.1	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	64.8	Pass
1	Base Plate	Base	99.3	Pass
1	Base Foundation (Structure)	Base	27.6	Pass
1	Base Foundation (Soil Interaction)	Base	40.2	Pass
1	Base Foundation (Micropile Structure)	Base	49.0	Pass
1	Base Foundation (Micropile)	Base	86.9	Pass

Structure Rating (max from all components) =	**99.3%**

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

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration provided the modification drawings designed by B+T Group (Doc. ID # 8420875) are installed and the following changes are considered.

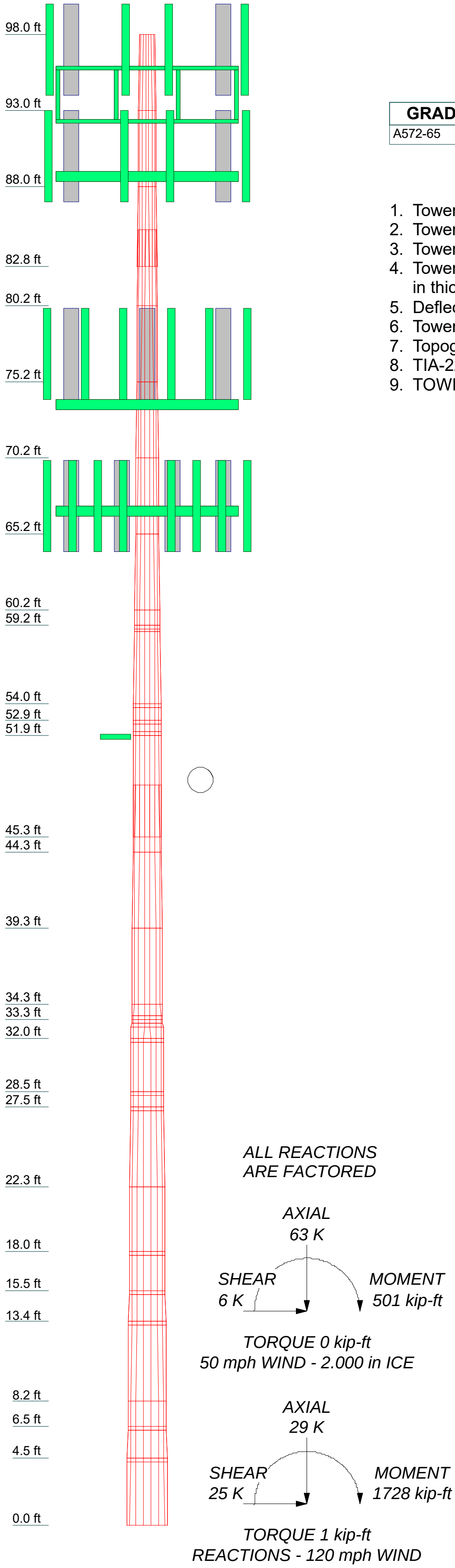
Loading Changes:

The proposed RRH2X50-800 and PCS 1900MHz 4x45W-65MHz TMEs must be installed behind the antenna such that front areas of these TME's are shielded.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.000	18	0.188		12.000	13.078	A572-65	0.1
2	5.000	18	0.188		13.078	14.156		0.1
3	5.210	18	0.188	2.417	14.156	15.280		0.2
4	5.000	18	0.250		14.384	15.445		0.2
5	5.000	18	0.250		15.445	16.507		0.2
6	5.000	18	0.250		16.507	17.569		0.2
7	5.000	18	0.250		17.569	18.630		0.2
8	5.000	18	0.250		18.630	19.692		0.3
9–11	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
12	4.750	18	0.500		20.001	21.010		0.5
13–17	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
18	6.633	18	0.512	3.417	21.452	22.860		0.8
19	4.417	18	0.563		21.634	22.575		0.6
20	5.000	18	0.550		22.575	23.639		0.7
21	5.000	18	0.537		23.639	24.703		0.7
22–31	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
32	5.000	18	0.563		26.200	27.265		0.7
33	4.250	18	0.550		27.265	28.169		0.6
34–38	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
39	5.000	18	0.550		29.199	30.263		0.9
40–43	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
44	4.200	18	0.500		31.100	32.000		0.7
								11.1



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 99.1%

B+T Group
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Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 127643.006.01 - (F) E. GRANBY 4Q2000 / GALASSO, CT (BU# 87639		
Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 07/27/19	Scale: NTS
Path:		Dwg No. E-1

TIA-222-H - 120 mph/50 mph 2.000 in Ice Exposure C

Maximum Values

Vx Vz Mx Mz

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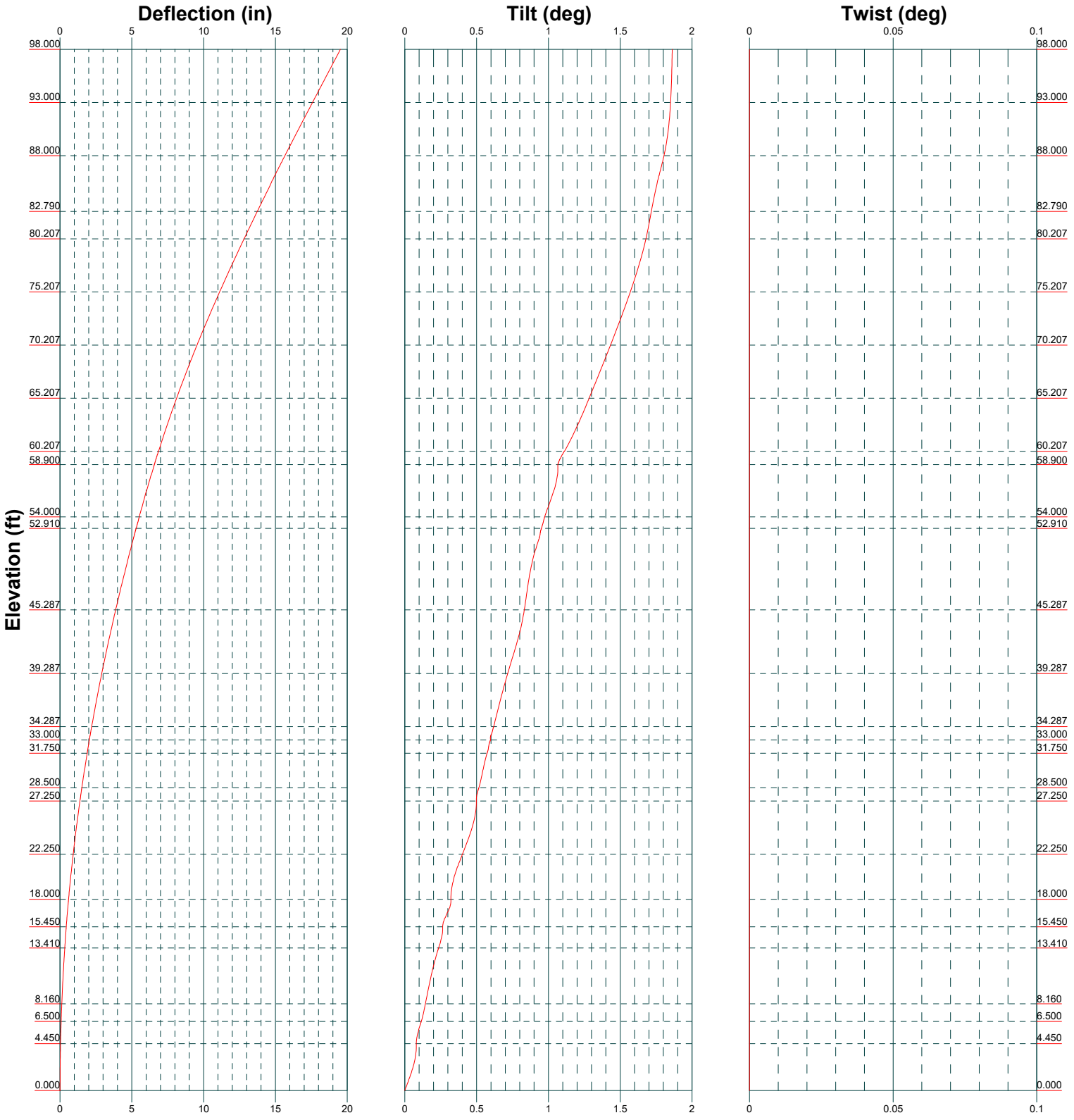
Code: TIA-222-H	Date: 07/27/19	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



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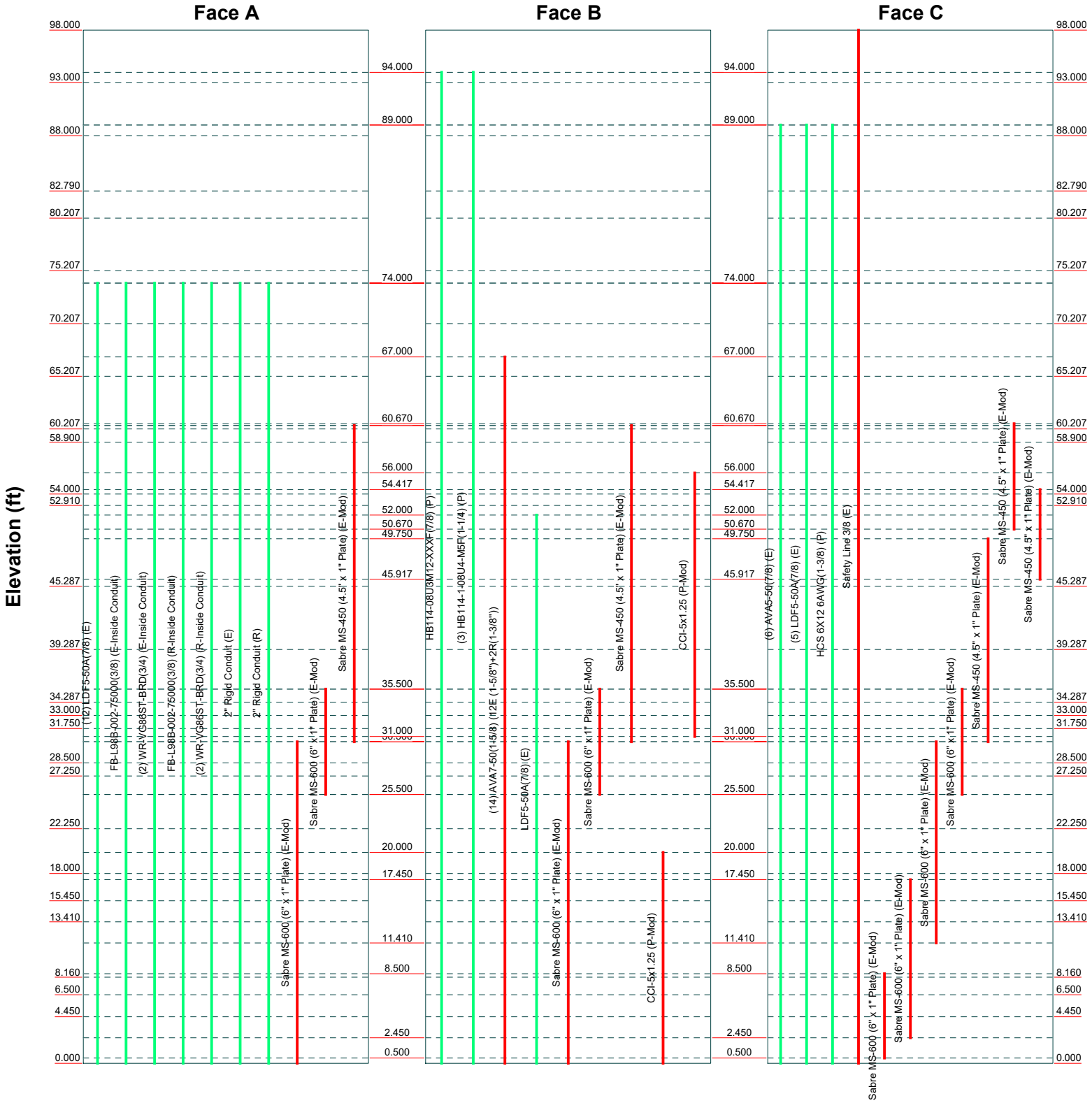
Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 07/27/19	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 98'

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



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Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 07/27/19	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 256.000 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 2.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
TOWER RATING: 99.1%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	98.000-93.000	5.000	0.000	18	12.000	13.078	0.188	0.750	A572-65 (65 ksi)
L2	93.000-88.000	5.000	0.000	18	13.078	14.156	0.188	0.750	A572-65 (65 ksi)
L3	88.000-82.790	5.210	2.417	18	14.156	15.280	0.188	0.750	A572-65 (65 ksi)
L4	82.790-80.207	5.000	0.000	18	14.384	15.445	0.250	1.000	A572-65 (65 ksi)
L5	80.207-75.207	5.000	0.000	18	15.445	16.507	0.250	1.000	A572-65 (65 ksi)
L6	75.207-70.207	5.000	0.000	18	16.507	17.569	0.250	1.000	A572-65 (65 ksi)
L7	70.207-65.207	5.000	0.000	18	17.569	18.630	0.250	1.000	A572-65 (65 ksi)
L8	65.207-60.207	5.000	0.000	18	18.630	19.692	0.250	1.000	A572-65 (65 ksi)
L9	60.207-59.170	1.037	0.000	18	19.692	19.912	0.250	1.000	A572-65 (65 ksi)
L10	59.170-58.900	0.270	0.000	18	19.912	19.970	0.512	2.050	A572-65 (65 ksi)
L11	58.900-58.750	0.150	0.000	18	19.970	20.001	0.512	2.050	A572-65 (65 ksi)
L12	58.750-54.000	4.750	0.000	18	20.001	21.010	0.500	2.000	A572-65 (65 ksi)
L13	54.000-53.750	0.250	0.000	18	21.010	21.063	0.512	2.050	A572-65 (65 ksi)
L14	53.750-52.910	0.840	0.000	18	21.063	21.241	0.500	2.000	A572-65 (65 ksi)
L15	52.910-52.660	0.250	0.000	18	21.241	21.294	0.675	2.700	A572-65 (65 ksi)
L16	52.660-52.170	0.490	0.000	18	21.294	21.399	0.675	2.700	A572-65 (65 ksi)
L17	52.170-51.920	0.250	0.000	18	21.399	21.452	0.525	2.100	A572-65 (65 ksi)
L18	51.920-45.287	6.633	3.417	18	21.452	22.860	0.512	2.050	A572-65 (65 ksi)
L19	45.287-44.287	4.417	0.000	18	21.634	22.575	0.563	2.250	A572-65 (65 ksi)
L20	44.287-39.287	5.000	0.000	18	22.575	23.639	0.550	2.200	A572-65 (65 ksi)
L21	39.287-34.287	5.000	0.000	18	23.639	24.703	0.537	2.150	A572-65 (65 ksi)
L22	34.287-33.500	0.787	0.000	18	24.703	24.870	0.525	2.100	A572-65 (65 ksi)
L23	33.500-33.250	0.250	0.000	18	24.870	24.923	0.838	3.350	A572-65 (65 ksi)
L24	33.250-33.000	0.250	0.000	18	24.923	24.977	0.838	3.350	A572-65 (65 ksi)
L25	33.000-32.750	0.250	0.000	18	24.977	25.030	0.813	3.250	A572-65 (65 ksi)
L26	32.750-32.000	0.750	0.000	18	25.030	25.190	0.800	3.200	A572-65 (65 ksi)
L27	32.000-31.750	0.250	0.000	18	25.190	25.243	0.588	2.350	A572-65 (65 ksi)
L28	31.750-28.500	3.250	0.000	18	25.243	25.934	0.575	2.300	A572-65 (65 ksi)
L29	28.500-28.250	0.250	0.000	18	25.934	25.988	0.863	3.450	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	28.250-27.500	0.750	0.000	18	25.988	26.147	0.850	3.400	A572-65 (65 ksi)
L31	27.500-27.250	0.250	0.000	18	26.147	26.200	0.575	2.300	A572-65 (65 ksi)
L32	27.250-22.250	5.000	0.000	18	26.200	27.265	0.563	2.250	A572-65 (65 ksi)
L33	22.250-18.000	4.250	0.000	18	27.265	28.169	0.550	2.200	A572-65 (65 ksi)
L34	18.000-17.750	0.250	0.000	18	28.169	28.222	0.563	2.250	A572-65 (65 ksi)
L35	17.750-15.450	2.300	0.000	18	28.222	28.712	0.425	1.700	A572-65 (65 ksi)
L36	15.450-15.200	0.250	0.000	18	28.712	28.765	0.688	2.750	A572-65 (65 ksi)
L37	15.200-13.410	1.790	0.000	18	28.765	29.146	0.675	2.700	A572-65 (65 ksi)
L38	13.410-13.160	0.250	0.000	18	29.146	29.199	0.563	2.250	A572-65 (65 ksi)
L39	13.160-8.160	5.000	0.000	18	29.199	30.263	0.550	2.200	A572-65 (65 ksi)
L40	8.160-6.500	1.660	0.000	18	30.263	30.617	0.550	2.200	A572-65 (65 ksi)
L41	6.500-6.250	0.250	0.000	18	30.617	30.670	0.662	2.650	A572-65 (65 ksi)
L42	6.250-4.450	1.800	0.000	18	30.670	31.053	0.650	2.600	A572-65 (65 ksi)
L43	4.450-4.200	0.250	0.000	18	31.053	31.106	0.512	2.050	A572-65 (65 ksi)
L44	4.200-0.000	4.200		18	31.106	32.000	0.500	2.000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	12.156	7.030	123.928	4.193	6.096	20.329	248.020	3.516	1.782	9.504
	13.251	7.672	161.057	4.576	6.644	24.242	322.325	3.837	1.972	10.516
L2	13.251	7.672	161.057	4.576	6.644	24.242	322.325	3.837	1.972	10.516
	14.346	8.313	204.946	4.959	7.191	28.498	410.162	4.157	2.162	11.528
L3	14.346	8.313	204.946	4.959	7.191	28.498	410.162	4.157	2.162	11.528
	15.487	8.982	258.481	5.358	7.762	33.300	517.303	4.492	2.359	12.583
L4	15.088	11.215	283.048	5.017	7.307	38.737	566.467	5.609	2.092	8.366
	15.645	12.058	351.741	5.394	7.846	44.829	703.946	6.030	2.278	9.114
L5	15.645	12.058	351.741	5.394	7.846	44.829	703.946	6.030	2.278	9.114
	16.723	12.900	430.737	5.771	8.386	51.366	862.041	6.451	2.465	9.861
L6	16.723	12.900	430.737	5.771	8.386	51.366	862.041	6.451	2.465	9.861
	17.801	13.742	520.754	6.148	8.925	58.348	1042.193	6.873	2.652	10.608
L7	17.801	13.742	520.754	6.148	8.925	58.348	1042.193	6.873	2.652	10.608
	18.879	14.585	622.512	6.525	9.464	65.775	1245.844	7.294	2.839	11.356
L8	18.879	14.585	622.512	6.525	9.464	65.775	1245.844	7.294	2.839	11.356
	19.957	15.427	736.732	6.902	10.004	73.647	1474.433	7.715	3.026	12.103
L9	19.957	15.427	736.732	6.902	10.004	73.647	1474.433	7.715	3.026	12.103
	20.181	15.602	762.048	6.980	10.115	75.335	1525.098	7.802	3.065	12.258
L10	20.140	31.557	1500.461	6.887	10.115	148.334	3002.896	15.782	2.603	5.078
	20.199	31.650	1513.802	6.907	10.145	149.223	3029.597	15.828	2.613	5.098
L11	20.199	31.650	1513.802	6.907	10.145	149.223	3029.597	15.828	2.613	5.098

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	20.231	31.702	1521.248	6.919	10.161	149.719	3044.499	15.854	2.618	5.109
L12	20.233	30.949	1487.002	6.923	10.161	146.348	2975.962	15.477	2.640	5.28
	21.257	32.549	1729.853	7.281	10.673	162.077	3461.983	16.278	2.818	5.636
L13	21.255	33.343	1769.860	7.277	10.673	165.825	3542.048	16.675	2.796	5.455
	21.309	33.429	1783.646	7.295	10.700	166.695	3569.638	16.718	2.805	5.473
L14	21.311	32.634	1743.319	7.300	10.700	162.927	3488.933	16.320	2.827	5.654
	21.492	32.917	1789.077	7.363	10.791	165.799	3580.508	16.461	2.858	5.717
L15	21.465	44.062	2354.634	7.301	10.791	218.211	4712.367	22.035	2.550	3.779
	21.519	44.176	2372.913	7.320	10.818	219.357	4748.949	22.092	2.560	3.792
L16	21.519	44.176	2372.913	7.320	10.818	219.357	4748.949	22.092	2.560	3.792
	21.625	44.399	2409.015	7.357	10.870	221.611	4821.199	22.204	2.578	3.819
L17	21.648	34.783	1914.659	7.410	10.870	176.134	3831.838	17.395	2.842	5.414
	21.702	34.871	1929.304	7.429	10.897	177.042	3861.146	17.439	2.851	5.431
L18	21.703	34.061	1886.745	7.433	10.897	173.137	3775.972	17.034	2.873	5.607
	23.134	36.352	2293.639	7.933	11.613	197.508	4590.296	18.180	3.121	6.09
L19	22.620	37.621	2110.485	7.481	10.990	192.031	4223.746	18.814	2.818	5.009
	22.836	39.300	2405.730	7.814	11.468	209.780	4814.626	19.654	2.983	5.303
L20	22.838	38.448	2356.279	7.819	11.468	205.468	4715.659	19.228	3.005	5.464
	23.918	40.306	2714.584	8.196	12.008	226.056	5432.740	20.157	3.192	5.804
L21	23.920	39.411	2657.200	8.201	12.008	221.278	5317.897	19.709	3.214	5.98
	25.001	41.227	3041.580	8.579	12.549	242.376	6087.162	20.617	3.402	6.329
L22	25.003	40.289	2975.458	8.583	12.549	237.107	5954.831	20.148	3.424	6.521
	25.173	40.568	3037.726	8.643	12.634	240.439	6079.449	20.288	3.453	6.577
L23	25.125	63.885	4661.673	8.532	12.634	368.975	9329.481	31.948	2.903	3.466
	25.179	64.026	4692.704	8.551	12.661	370.638	9391.582	32.019	2.913	3.478
L24	25.179	64.026	4692.704	8.551	12.661	370.638	9391.582	32.019	2.913	3.478
	25.233	64.167	4723.871	8.569	12.688	372.305	9453.959	32.090	2.922	3.489
L25	25.237	62.316	4597.114	8.578	12.688	362.315	9200.277	31.164	2.966	3.65
	25.291	62.454	4627.548	8.597	12.715	363.938	9261.185	31.233	2.975	3.662
L26	25.293	61.525	4563.414	8.602	12.715	358.895	9132.832	30.768	2.997	3.747
	25.455	61.930	4654.197	8.658	12.796	363.715	9314.518	30.971	3.025	3.782
L27	25.487	45.876	3508.045	8.734	12.796	274.146	7020.706	22.942	3.399	5.786
	25.542	45.975	3530.855	8.753	12.823	275.347	7066.356	22.992	3.409	5.802
L28	25.543	45.020	3460.989	8.757	12.823	269.898	6926.532	22.514	3.431	5.966
	26.246	46.282	3760.370	9.003	13.175	285.424	7525.687	23.146	3.552	6.178
L29	26.201	68.636	5450.880	8.901	13.175	413.739	10908.932	34.325	3.046	3.532
	26.255	68.782	5485.657	8.919	13.202	415.526	10978.532	34.398	3.056	3.543
L30	26.257	67.819	5414.227	8.924	13.202	410.115	10835.579	33.916	3.078	3.621
	26.419	68.249	5518.022	8.981	13.283	415.426	11043.305	34.131	3.106	3.654
L31	26.462	46.671	3855.842	9.078	13.283	290.288	7716.758	23.340	3.590	6.243
	26.516	46.768	3879.960	9.097	13.310	291.511	7765.026	23.388	3.599	6.26
L32	26.518	45.773	3801.170	9.101	13.310	285.591	7607.343	22.891	3.621	6.438
	27.598	47.673	4294.405	9.479	13.850	310.056	8594.460	23.841	3.809	6.771
L33	27.600	46.636	4204.873	9.484	13.850	303.592	8415.280	23.322	3.831	6.965
	28.519	48.215	4646.610	9.805	14.310	324.713	9299.333	24.112	3.990	7.254
L34	28.517	49.288	4745.765	9.800	14.310	331.642	9497.774	24.649	3.968	7.054
	28.571	49.383	4773.258	9.819	14.337	332.934	9552.796	24.696	3.977	7.07
L35	28.592	37.497	3660.514	9.868	14.337	255.320	7325.844	18.752	4.219	9.927
	29.089	38.158	3857.321	10.042	14.586	264.461	7719.717	19.082	4.305	10.13
L36	29.049	61.153	6067.676	9.949	14.586	416.004	12143.336	30.582	3.843	5.59
	29.103	61.269	6102.302	9.968	14.613	417.604	12212.633	30.640	3.853	5.604
L37	29.105	60.181	5999.356	9.972	14.613	410.560	12006.607	30.096	3.875	5.74
	29.491	60.998	6246.774	10.107	14.806	421.904	12501.767	30.505	3.942	5.84
L38	29.509	51.032	5267.598	10.147	14.806	355.771	10542.126	25.521	4.140	7.359
	29.563	51.127	5297.068	10.166	14.833	357.109	10601.107	25.568	4.149	7.376
L39	29.565	50.013	5186.141	10.170	14.833	349.631	10379.106	25.011	4.171	7.584
	30.645	51.871	5785.769	10.548	15.374	376.340	11579.151	25.940	4.358	7.924
L40	30.645	51.871	5785.769	10.548	15.374	376.340	11579.151	25.940	4.358	7.924
	31.004	52.487	5994.612	10.674	15.553	385.425	11997.111	26.249	4.421	8.037
L41	30.987	62.987	7140.031	10.634	15.553	459.070	14289.458	31.499	4.223	6.374
	31.041	63.099	7178.147	10.653	15.580	460.720	14365.739	31.555	4.232	6.388
L42	31.043	61.934	7051.515	10.657	15.580	452.592	14112.309	30.973	4.254	6.544

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	31.432	62.724	7324.932	10.793	15.775	464.341	14659.502	31.368	4.321	6.648
L43	31.453	49.679	5854.142	10.842	15.775	371.105	11715.986	24.844	4.563	8.904
	31.507	49.766	5884.792	10.861	15.802	372.410	11777.327	24.888	4.573	8.922
L44	31.509	48.572	5748.301	10.865	15.802	363.772	11504.165	24.291	4.595	9.189
	32.417	49.990	6266.803	11.182	16.256	385.507	12541.852	25.000	4.752	9.504

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 98.000-93.000				1	1	1			
L2 93.000-88.000				1	1	1			
L3 88.000-82.790				1	1	1			
L4 82.790-80.207				1	1	1			
L5 80.207-75.207				1	1	1			
L6 75.207-70.207				1	1	1			
L7 70.207-65.207				1	1	1			
L8 65.207-60.207				1	1	1			
L9 60.207-59.170				1	1	1			
L10 59.170-58.900				1	1	0.920938			
L11 58.900-58.750				1	1	0.92023			
L12 58.750-54.000				1	1	0.920865			
L13 54.000-53.750				1	1	1.08486			
L14 53.750-52.910				1	1	1.10605			
L15 52.910-52.660				1	1	0.926962			
L16 52.660-52.170				1	1	0.924168			
L17 52.170-51.920				1	1	1.04884			
L18 51.920-45.287				1	1	1.05527			
L19 45.287-44.287				1	1	1.06443			
L20 44.287-39.287				1	1	1.06405			
L21 39.287-34.287				1	1	1.06589			
L22 34.287-33.500				1	1	1.08729			
L23 33.500-33.250				1	1	0.970893			
L24 33.250-33.000				1	1	0.969575			
L25 33.000-32.750				1	1	0.896948			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L26 32.750-32.000				1	1	0.907091			
L27 32.000-31.750				1	1	0.929377			
L28 31.750-28.500				1	1	0.938036			
L29 28.500-28.250				1	1	0.893662			
L30 28.250-27.500				1	1	0.902954			
L31 27.500-27.250				1	1	0.93394			
L32 27.250-22.250				1	1	0.938341			
L33 22.250-18.000				1	1	0.946411			
L34 18.000-17.750				1	1	1.05165			
L35 17.750-15.450				1	1	1.21652			
L36 15.450-15.200				1	1	0.954361			
L37 15.200-13.410				1	1	0.964796			
L38 13.410-13.160				1	1	1.03473			
L39 13.160-8.160				1	1	1.04025			
L40 8.160-6.500				1	1	1.0347			
L41 6.500-6.250				1	1	0.956625			
L42 6.250-4.450				1	1	0.968393			
L43 4.450-4.200				1	1	0.980473			
L44 4.200-0.000				1	1	0.993803			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
-										
AVA7-50(1-5/8) (12E (1-5/8")+2R(1-3/8"))	B	No	Surface Ar (CaAa)	67.000 - 0.000	14	7	-0.100 0.200	2.010		0.001
-										
Safety Line 3/8 (E)	C	No	Surface Ar (CaAa)	98.000 - 0.000	1	1	0.100 0.100	0.375		0.000
-										
**********										
Sabre MS-600 (6" x 1"	A	No	Surface Af	30.500 -	1	1	-0.500	6.000	14.000	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
Plate) (E-Mod)			(CaAa)	0.000			-0.500			
Sabre MS-600 (6" x 1" Plate) (E-Mod)	B	No	Surface Af (CaAa)	30.500 - 0.000	1	1	-0.500 -0.500	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod)	C	No	Surface Af (CaAa)	8.500 - 0.500	1	1	-0.500 -0.500	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod)	C	No	Surface Af (CaAa)	17.450 - 2.450	1	1	-0.300 -0.300	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod) **-**	C	No	Surface Af (CaAa)	30.500 - 11.410	1	1	-0.500 -0.500	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod)	A	No	Surface Af (CaAa)	35.500 - 25.500	1	1	-0.300 -0.300	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod)	B	No	Surface Af (CaAa)	35.500 - 25.500	1	1	-0.300 -0.300	6.000	14.000	0.000
Sabre MS-600 (6" x 1" Plate) (E-Mod) **-**	C	No	Surface Af (CaAa)	35.500 - 25.500	1	1	-0.300 -0.300	6.000	14.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E-Mod)	C	No	Surface Af (CaAa)	49.750 - 30.500	1	1	-0.500 -0.500	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E-Mod)	A	No	Surface Af (CaAa)	60.500 - 30.500	1	1	-0.500 -0.500	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E-Mod)	B	No	Surface Af (CaAa)	60.500 - 30.500	1	1	-0.500 -0.500	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E-Mod)	C	No	Surface Af (CaAa)	60.670 - 50.670	1	1	-0.500 -0.500	4.500	11.000	0.000
Sabre MS-450 (4.5" x 1" Plate) (E-Mod) **-**	C	No	Surface Af (CaAa)	54.417 - 45.917	1	1	-0.300 -0.300	4.500	11.000	0.000
CCI-5x1.25 (P-Mod) **-**	B	No	Surface Af (CaAa)	20.000 - 0.000	1	1	0.000 0.000	5.000	12.500	0.000
CCI-5x1.25 (P-Mod) **-**	B	No	Surface Af (CaAa)	56.000 - 31.000	1	1	0.000 0.000	5.000	12.500	0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-08U3M12-XXXF(7/8) (P)	B	No	No	Inside Pole	94.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
							2" Ice	0.000	0.001
HB114-1-08U4-M5 F(1-1/4) (P)	B	No	No	Inside Pole	94.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
_									
AVA5-50(7/8) (E)	C	No	No	Inside Pole	89.000 - 0.000	6	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
LDF5-50A(7/8) (E)	C	No	No	Inside Pole	89.000 - 0.000	5	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
HCS 6X12 6AWG(1-3/8) (P)	C	No	No	Inside Pole	89.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
_									
LDF5-50A(7/8) (E)	A	No	No	Inside Pole	74.000 - 0.000	12	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
FB-L98B-002-75000 (3/8) (E-Inside Conduit)	A	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (E-Inside Conduit)	A	No	No	Inside Pole	74.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98B-002-75000 (3/8) (R-Inside Conduit)	A	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4) (R-Inside Conduit)	A	No	No	Inside Pole	74.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
2" Rigid Conduit (E)	A	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
2" Rigid Conduit (R)	A	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
_									
LDF5-50A(7/8) (E)	B	No	No	Inside Pole	52.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	98.000-93.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.004
		C	0.000	0.000	0.188	0.000	0.001
L2	93.000-88.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.020
		C	0.000	0.000	0.188	0.000	0.006
L3	88.000-82.790	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.020
		C	0.000	0.000	0.195	0.000	0.028
L4	82.790-80.207	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.010
		C	0.000	0.000	0.097	0.000	0.014
L5	80.207-75.207	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.020
		C	0.000	0.000	0.188	0.000	0.027
L6	75.207-70.207	A	0.000	0.000	0.000	0.000	0.046
		B	0.000	0.000	0.000	0.000	0.020
		C	0.000	0.000	0.188	0.000	0.027
L7	70.207-65.207	A	0.000	0.000	0.000	0.000	0.060
		B	0.000	0.000	2.523	0.000	0.037
		C	0.000	0.000	0.188	0.000	0.027
L8	65.207-60.207	A	0.000	0.000	0.220	0.000	0.060
		B	0.000	0.000	7.255	0.000	0.069
		C	0.000	0.000	0.535	0.000	0.027
L9	60.207-59.170	A	0.000	0.000	0.778	0.000	0.012
		B	0.000	0.000	2.237	0.000	0.014
		C	0.000	0.000	0.817	0.000	0.006
L10	59.170-58.900	A	0.000	0.000	0.203	0.000	0.003
		B	0.000	0.000	0.582	0.000	0.004
		C	0.000	0.000	0.213	0.000	0.001
L11	58.900-58.750	A	0.000	0.000	0.113	0.000	0.002
		B	0.000	0.000	0.324	0.000	0.002
		C	0.000	0.000	0.118	0.000	0.001
L12	58.750-54.000	A	0.000	0.000	3.563	0.000	0.057
		B	0.000	0.000	11.912	0.000	0.065
		C	0.000	0.000	4.038	0.000	0.026
L13	54.000-53.750	A	0.000	0.000	0.188	0.000	0.003
		B	0.000	0.000	0.748	0.000	0.003
		C	0.000	0.000	0.375	0.000	0.001
L14	53.750-52.910	A	0.000	0.000	0.630	0.000	0.010
		B	0.000	0.000	2.512	0.000	0.012
		C	0.000	0.000	1.261	0.000	0.005
L15	52.910-52.660	A	0.000	0.000	0.188	0.000	0.003
		B	0.000	0.000	0.748	0.000	0.003
		C	0.000	0.000	0.375	0.000	0.001
L16	52.660-52.170	A	0.000	0.000	0.367	0.000	0.006
		B	0.000	0.000	1.465	0.000	0.007
		C	0.000	0.000	0.736	0.000	0.003
L17	52.170-51.920	A	0.000	0.000	0.188	0.000	0.003
		B	0.000	0.000	0.748	0.000	0.003
		C	0.000	0.000	0.375	0.000	0.001
L18	51.920-45.287	A	0.000	0.000	4.975	0.000	0.080
		B	0.000	0.000	19.835	0.000	0.093
		C	0.000	0.000	8.820	0.000	0.036
L19	45.287-44.287	A	0.000	0.000	0.750	0.000	0.012
		B	0.000	0.000	2.990	0.000	0.014
		C	0.000	0.000	0.787	0.000	0.005
L20	44.287-39.287	A	0.000	0.000	3.750	0.000	0.060

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	14.952	0.000	0.070
		C	0.000	0.000	3.938	0.000	0.027
L21	39.287-34.287	A	0.000	0.000	4.856	0.000	0.060
		B	0.000	0.000	16.058	0.000	0.070
		C	0.000	0.000	5.044	0.000	0.027
L22	34.287-33.500	A	0.000	0.000	1.308	0.000	0.009
		B	0.000	0.000	3.071	0.000	0.011
		C	0.000	0.000	1.338	0.000	0.004
L23	33.500-33.250	A	0.000	0.000	0.416	0.000	0.003
		B	0.000	0.000	0.976	0.000	0.004
		C	0.000	0.000	0.425	0.000	0.001
L24	33.250-33.000	A	0.000	0.000	0.416	0.000	0.003
		B	0.000	0.000	0.976	0.000	0.004
		C	0.000	0.000	0.425	0.000	0.001
L25	33.000-32.750	A	0.000	0.000	0.416	0.000	0.003
		B	0.000	0.000	0.976	0.000	0.004
		C	0.000	0.000	0.425	0.000	0.001
L26	32.750-32.000	A	0.000	0.000	1.247	0.000	0.009
		B	0.000	0.000	2.927	0.000	0.011
		C	0.000	0.000	1.275	0.000	0.004
L27	32.000-31.750	A	0.000	0.000	0.416	0.000	0.003
		B	0.000	0.000	0.976	0.000	0.004
		C	0.000	0.000	0.425	0.000	0.001
L28	31.750-28.500	A	0.000	0.000	5.902	0.000	0.039
		B	0.000	0.000	11.100	0.000	0.046
		C	0.000	0.000	6.024	0.000	0.017
L29	28.500-28.250	A	0.000	0.000	0.478	0.000	0.003
		B	0.000	0.000	0.830	0.000	0.004
		C	0.000	0.000	0.487	0.000	0.001
L30	28.250-27.500	A	0.000	0.000	1.434	0.000	0.009
		B	0.000	0.000	2.489	0.000	0.011
		C	0.000	0.000	1.462	0.000	0.004
L31	27.500-27.250	A	0.000	0.000	0.478	0.000	0.003
		B	0.000	0.000	0.830	0.000	0.004
		C	0.000	0.000	0.487	0.000	0.001
L32	27.250-22.250	A	0.000	0.000	6.596	0.000	0.060
		B	0.000	0.000	13.631	0.000	0.070
		C	0.000	0.000	6.784	0.000	0.027
L33	22.250-18.000	A	0.000	0.000	4.250	0.000	0.051
		B	0.000	0.000	11.896	0.000	0.060
		C	0.000	0.000	4.409	0.000	0.023
L34	18.000-17.750	A	0.000	0.000	0.250	0.000	0.003
		B	0.000	0.000	0.810	0.000	0.004
		C	0.000	0.000	0.259	0.000	0.001
L35	17.750-15.450	A	0.000	0.000	2.300	0.000	0.028
		B	0.000	0.000	7.453	0.000	0.032
		C	0.000	0.000	4.386	0.000	0.012
L36	15.450-15.200	A	0.000	0.000	0.250	0.000	0.003
		B	0.000	0.000	0.810	0.000	0.004
		C	0.000	0.000	0.509	0.000	0.001
L37	15.200-13.410	A	0.000	0.000	1.790	0.000	0.022
		B	0.000	0.000	5.800	0.000	0.025
		C	0.000	0.000	3.647	0.000	0.010
L38	13.410-13.160	A	0.000	0.000	0.250	0.000	0.003
		B	0.000	0.000	0.810	0.000	0.004
		C	0.000	0.000	0.509	0.000	0.001
L39	13.160-8.160	A	0.000	0.000	5.000	0.000	0.060
		B	0.000	0.000	16.202	0.000	0.070
		C	0.000	0.000	7.225	0.000	0.027
L40	8.160-6.500	A	0.000	0.000	1.660	0.000	0.020
		B	0.000	0.000	5.379	0.000	0.023

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	3.127	0.000	0.009
L41	6.500-6.250	A	0.000	0.000	0.250	0.000	0.003
		B	0.000	0.000	0.810	0.000	0.004
		C	0.000	0.000	0.471	0.000	0.001
L42	6.250-4.450	A	0.000	0.000	1.800	0.000	0.022
		B	0.000	0.000	5.833	0.000	0.025
		C	0.000	0.000	3.391	0.000	0.010
L43	4.450-4.200	A	0.000	0.000	0.250	0.000	0.003
		B	0.000	0.000	0.810	0.000	0.004
		C	0.000	0.000	0.471	0.000	0.001
L44	4.200-0.000	A	0.000	0.000	4.200	0.000	0.050
		B	0.000	0.000	13.609	0.000	0.059
		C	0.000	0.000	5.039	0.000	0.023

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	98.000-93.000	A	1.891	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.004
		C		0.000	0.000	2.078	0.000	0.027
L2	93.000-88.000	A	1.880	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.020
		C		0.000	0.000	2.068	0.000	0.032
L3	88.000-82.790	A	1.869	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.020
		C		0.000	0.000	2.143	0.000	0.055
L4	82.790-80.207	A	1.861	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.010
		C		0.000	0.000	1.063	0.000	0.027
L5	80.207-75.207	A	1.852	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.020
		C		0.000	0.000	2.039	0.000	0.052
L6	75.207-70.207	A	1.840	0.000	0.000	0.000	0.000	0.046
		B		0.000	0.000	0.000	0.000	0.020
		C		0.000	0.000	2.027	0.000	0.052
L7	70.207-65.207	A	1.827	0.000	0.000	0.000	0.000	0.060
		B		0.000	0.000	3.972	0.000	0.099
		C		0.000	0.000	2.014	0.000	0.051
L8	65.207-60.207	A	1.813	0.000	0.000	0.326	0.000	0.064
		B		0.000	0.000	11.386	0.000	0.244
		C		0.000	0.000	2.440	0.000	0.057
L9	60.207-59.170	A	1.804	0.000	0.000	1.152	0.000	0.025
		B		0.000	0.000	3.443	0.000	0.063
		C		0.000	0.000	1.398	0.000	0.024
L10	59.170-58.900	A	1.802	0.000	0.000	0.300	0.000	0.007
		B		0.000	0.000	0.896	0.000	0.016
		C		0.000	0.000	0.364	0.000	0.006
L11	58.900-58.750	A	1.801	0.000	0.000	0.167	0.000	0.004
		B		0.000	0.000	0.498	0.000	0.009
		C		0.000	0.000	0.202	0.000	0.003
L12	58.750-54.000	A	1.793	0.000	0.000	5.266	0.000	0.116
		B		0.000	0.000	18.134	0.000	0.313
		C		0.000	0.000	6.765	0.000	0.112
L13	54.000-53.750	A	1.785	0.000	0.000	0.277	0.000	0.006
		B		0.000	0.000	1.126	0.000	0.018
		C		0.000	0.000	0.561	0.000	0.009

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L14	53.750-52.910	A	1.784	0.000	0.000	0.930	0.000	0.020
		B		0.000	0.000	3.781	0.000	0.062
		C		0.000	0.000	1.884	0.000	0.029
L15	52.910-52.660	A	1.782	0.000	0.000	0.277	0.000	0.006
		B		0.000	0.000	1.125	0.000	0.018
		C		0.000	0.000	0.561	0.000	0.009
L16	52.660-52.170	A	1.781	0.000	0.000	0.542	0.000	0.012
		B		0.000	0.000	2.205	0.000	0.036
		C		0.000	0.000	1.099	0.000	0.017
L17	52.170-51.920	A	1.779	0.000	0.000	0.276	0.000	0.006
		B		0.000	0.000	1.125	0.000	0.018
		C		0.000	0.000	0.560	0.000	0.009
L18	51.920-45.287	A	1.767	0.000	0.000	7.319	0.000	0.160
		B		0.000	0.000	29.786	0.000	0.484
		C		0.000	0.000	14.099	0.000	0.209
L19	45.287-44.287	A	1.753	0.000	0.000	1.103	0.000	0.024
		B		0.000	0.000	4.491	0.000	0.073
		C		0.000	0.000	1.494	0.000	0.022
L20	44.287-39.287	A	1.741	0.000	0.000	5.491	0.000	0.120
		B		0.000	0.000	22.367	0.000	0.360
		C		0.000	0.000	7.419	0.000	0.109
L21	39.287-34.287	A	1.718	0.000	0.000	6.795	0.000	0.135
		B		0.000	0.000	23.622	0.000	0.372
		C		0.000	0.000	8.701	0.000	0.124
L22	34.287-33.500	A	1.705	0.000	0.000	1.718	0.000	0.029
		B		0.000	0.000	4.362	0.000	0.066
		C		0.000	0.000	2.016	0.000	0.027
L23	33.500-33.250	A	1.702	0.000	0.000	0.546	0.000	0.009
		B		0.000	0.000	1.385	0.000	0.021
		C		0.000	0.000	0.640	0.000	0.009
L24	33.250-33.000	A	1.701	0.000	0.000	0.546	0.000	0.009
		B		0.000	0.000	1.385	0.000	0.021
		C		0.000	0.000	0.640	0.000	0.009
L25	33.000-32.750	A	1.699	0.000	0.000	0.545	0.000	0.009
		B		0.000	0.000	1.385	0.000	0.021
		C		0.000	0.000	0.640	0.000	0.009
L26	32.750-32.000	A	1.697	0.000	0.000	1.636	0.000	0.028
		B		0.000	0.000	4.152	0.000	0.063
		C		0.000	0.000	1.918	0.000	0.026
L27	32.000-31.750	A	1.694	0.000	0.000	0.545	0.000	0.009
		B		0.000	0.000	1.384	0.000	0.021
		C		0.000	0.000	0.639	0.000	0.009
L28	31.750-28.500	A	1.685	0.000	0.000	7.576	0.000	0.123
		B		0.000	0.000	15.538	0.000	0.244
		C		0.000	0.000	8.788	0.000	0.116
L29	28.500-28.250	A	1.675	0.000	0.000	0.606	0.000	0.010
		B		0.000	0.000	1.150	0.000	0.018
		C		0.000	0.000	0.699	0.000	0.009
L30	28.250-27.500	A	1.672	0.000	0.000	1.817	0.000	0.029
		B		0.000	0.000	3.450	0.000	0.054
		C		0.000	0.000	2.095	0.000	0.027
L31	27.500-27.250	A	1.669	0.000	0.000	0.606	0.000	0.010
		B		0.000	0.000	1.150	0.000	0.018
		C		0.000	0.000	0.698	0.000	0.009
L32	27.250-22.250	A	1.652	0.000	0.000	8.554	0.000	0.148
		B		0.000	0.000	19.412	0.000	0.316
		C		0.000	0.000	10.386	0.000	0.135
L33	22.250-18.000	A	1.618	0.000	0.000	5.625	0.000	0.105
		B		0.000	0.000	17.133	0.000	0.268
		C		0.000	0.000	7.158	0.000	0.093
L34	18.000-17.750	A	1.599	0.000	0.000	0.330	0.000	0.006

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	1.158	0.000	0.017
		C		0.000	0.000	0.419	0.000	0.005
L35	17.750-15.450	A	1.587	0.000	0.000	3.030	0.000	0.056
		B		0.000	0.000	10.634	0.000	0.157
		C		0.000	0.000	6.327	0.000	0.074
L36	15.450-15.200	A	1.574	0.000	0.000	0.329	0.000	0.006
		B		0.000	0.000	1.154	0.000	0.017
		C		0.000	0.000	0.727	0.000	0.008
L37	15.200-13.410	A	1.564	0.000	0.000	2.350	0.000	0.043
		B		0.000	0.000	8.249	0.000	0.121
		C		0.000	0.000	5.193	0.000	0.060
L38	13.410-13.160	A	1.552	0.000	0.000	0.328	0.000	0.006
		B		0.000	0.000	1.150	0.000	0.017
		C		0.000	0.000	0.724	0.000	0.008
L39	13.160-8.160	A	1.518	0.000	0.000	6.518	0.000	0.118
		B		0.000	0.000	22.894	0.000	0.328
		C		0.000	0.000	10.497	0.000	0.127
L40	8.160-6.500	A	1.463	0.000	0.000	2.146	0.000	0.038
		B		0.000	0.000	7.541	0.000	0.106
		C		0.000	0.000	4.251	0.000	0.051
L41	6.500-6.250	A	1.442	0.000	0.000	0.322	0.000	0.006
		B		0.000	0.000	1.132	0.000	0.016
		C		0.000	0.000	0.638	0.000	0.008
L42	6.250-4.450	A	1.417	0.000	0.000	2.310	0.000	0.041
		B		0.000	0.000	8.124	0.000	0.112
		C		0.000	0.000	4.577	0.000	0.054
L43	4.450-4.200	A	1.387	0.000	0.000	0.319	0.000	0.006
		B		0.000	0.000	1.123	0.000	0.015
		C		0.000	0.000	0.633	0.000	0.007
L44	4.200-0.000	A	1.290	0.000	0.000	5.284	0.000	0.090
		B		0.000	0.000	18.609	0.000	0.242
		C		0.000	0.000	7.004	0.000	0.085

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	98.000-93.000	-0.062	0.292	-0.270	1.272
L2	93.000-88.000	-0.062	0.293	-0.277	1.305
L3	88.000-82.790	-0.062	0.293	-0.283	1.334
L4	82.790-80.207	-0.062	0.293	-0.286	1.347
L5	80.207-75.207	-0.062	0.293	-0.289	1.361
L6	75.207-70.207	-0.062	0.294	-0.294	1.381
L7	70.207-65.207	3.114	-1.201	2.046	-0.008
L8	65.207-60.207	4.327	-1.815	3.969	-1.164
L9	60.207-59.170	2.628	-1.113	2.349	-0.702
L10	59.170-58.900	2.639	-1.117	2.360	-0.706
L11	58.900-58.750	2.642	-1.119	2.363	-0.707
L12	58.750-54.000	3.138	-1.310	2.844	-0.917
L13	54.000-53.750	4.242	-1.015	3.885	-0.755
L14	53.750-52.910	4.257	-1.018	3.900	-0.758
L15	52.910-52.660	4.273	-1.022	3.917	-0.761
L16	52.660-52.170	4.283	-1.024	3.927	-0.763
L17	52.170-51.920	4.292	-1.026	3.937	-0.764
L18	51.920-45.287	4.179	-1.073	3.963	-0.828
L19	45.287-44.287	3.697	-1.754	3.608	-1.385

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L20	44.287-39.287	3.756	-1.782	3.681	-1.416
L21	39.287-34.287	3.482	-1.652	3.501	-1.348
L22	34.287-33.500	2.723	-1.292	2.868	-1.105
L23	33.500-33.250	2.732	-1.297	2.878	-1.110
L24	33.250-33.000	2.736	-1.299	2.883	-1.111
L25	33.000-32.750	2.740	-1.300	2.887	-1.113
L26	32.750-32.000	2.747	-1.304	2.896	-1.117
L27	32.000-31.750	2.754	-1.307	2.905	-1.120
L28	31.750-28.500	2.083	-0.914	2.265	-0.732
L29	28.500-28.250	1.860	-0.786	2.056	-0.608
L30	28.250-27.500	1.865	-0.788	2.062	-0.610
L31	27.500-27.250	1.869	-0.790	2.068	-0.612
L32	27.250-22.250	2.347	-0.992	2.527	-0.750
L33	22.250-18.000	3.240	-1.467	3.388	-1.184
L34	18.000-17.750	3.768	-1.789	3.911	-1.521
L35	17.750-15.450	4.814	-0.961	4.853	-0.807
L36	15.450-15.200	4.980	-0.857	5.010	-0.717
L37	15.200-13.410	5.004	-0.861	5.039	-0.722
L38	13.410-13.160	5.027	-0.864	5.067	-0.727
L39	13.160-8.160	4.108	-0.597	4.190	-0.461
L40	8.160-6.500	4.907	-0.815	4.874	-0.655
L41	6.500-6.250	4.928	-0.818	4.901	-0.661
L42	6.250-4.450	4.950	-0.821	4.931	-0.667
L43	4.450-4.200	4.970	-0.824	4.961	-0.675
L44	4.200-0.000	4.086	-1.347	4.176	-1.163

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	27	Safety Line 3/8	93.00 - 98.00	1.0000	1.0000
L2	27	Safety Line 3/8	88.00 - 93.00	1.0000	1.0000
L3	27	Safety Line 3/8	82.79 - 88.00	1.0000	1.0000
L5	27	Safety Line 3/8	75.21 - 80.21	1.0000	1.0000
L6	27	Safety Line 3/8	70.21 - 75.21	1.0000	1.0000
L7	21	AVA7-50(1-5/8)	65.21 - 67.00	1.0000	1.0000
L7	27	Safety Line 3/8	65.21 - 70.21	1.0000	1.0000
L8	21	AVA7-50(1-5/8)	60.21 - 65.21	1.0000	1.0000
L8	27	Safety Line 3/8	60.21 - 65.21	1.0000	1.0000
L8	41	Sabre MS-450 (4.5" x 1" Plate)	60.21 - 60.50	1.0000	1.0000
L8	42	Sabre MS-450 (4.5" x 1" Plate)	60.21 - 60.50	1.0000	1.0000
L8	43	Sabre MS-450 (4.5" x 1" Plate)	60.21 - 60.67	1.0000	1.0000
L9	21	AVA7-50(1-5/8)	59.17 - 60.21	1.0000	1.0000
L9	27	Safety Line 3/8	59.17 - 60.21	1.0000	1.0000
L9	41	Sabre MS-450 (4.5" x 1" Plate)	59.17 - 60.21	1.0000	1.0000
L9	42	Sabre MS-450 (4.5" x 1" Plate)	59.17 - 60.21	1.0000	1.0000
L9	43	Sabre MS-450 (4.5" x 1"	59.17 - 60.21	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Plate)			
L10	21	AVA7-50(1-5/8)	58.90 - 59.17	1.0000	1.0000
L10	27	Safety Line 3/8	58.90 - 59.17	1.0000	1.0000
L10	41	Sabre MS-450 (4.5" x 1" Plate)	58.90 - 59.17	1.0000	1.0000
L10	42	Sabre MS-450 (4.5" x 1" Plate)	58.90 - 59.17	1.0000	1.0000
L10	43	Sabre MS-450 (4.5" x 1" Plate)	58.90 - 59.17	1.0000	1.0000
L11	21	AVA7-50(1-5/8)	58.75 - 58.90	1.0000	1.0000
L11	27	Safety Line 3/8	58.75 - 58.90	1.0000	1.0000
L11	41	Sabre MS-450 (4.5" x 1" Plate)	58.75 - 58.90	1.0000	1.0000
L11	42	Sabre MS-450 (4.5" x 1" Plate)	58.75 - 58.90	1.0000	1.0000
L11	43	Sabre MS-450 (4.5" x 1" Plate)	58.75 - 58.90	1.0000	1.0000
L12	21	AVA7-50(1-5/8)	54.00 - 58.75	1.0000	1.0000
L12	27	Safety Line 3/8	54.00 - 58.75	1.0000	1.0000
L12	41	Sabre MS-450 (4.5" x 1" Plate)	54.00 - 58.75	1.0000	1.0000
L12	42	Sabre MS-450 (4.5" x 1" Plate)	54.00 - 58.75	1.0000	1.0000
L12	43	Sabre MS-450 (4.5" x 1" Plate)	54.00 - 58.75	1.0000	1.0000
L12	44	Sabre MS-450 (4.5" x 1" Plate)	54.00 - 54.42	1.0000	1.0000
L12	48	CCI-5x1.25	54.00 - 56.00	1.0000	1.0000
L13	21	AVA7-50(1-5/8)	53.75 - 54.00	1.0000	1.0000
L13	27	Safety Line 3/8	53.75 - 54.00	1.0000	1.0000
L13	41	Sabre MS-450 (4.5" x 1" Plate)	53.75 - 54.00	1.0000	1.0000
L13	42	Sabre MS-450 (4.5" x 1" Plate)	53.75 - 54.00	1.0000	1.0000
L13	43	Sabre MS-450 (4.5" x 1" Plate)	53.75 - 54.00	1.0000	1.0000
L13	44	Sabre MS-450 (4.5" x 1" Plate)	53.75 - 54.00	1.0000	1.0000
L13	48	CCI-5x1.25	53.75 - 54.00	1.0000	1.0000
L14	21	AVA7-50(1-5/8)	52.91 - 53.75	1.0000	1.0000
L14	27	Safety Line 3/8	52.91 - 53.75	1.0000	1.0000
L14	41	Sabre MS-450 (4.5" x 1" Plate)	52.91 - 53.75	1.0000	1.0000
L14	42	Sabre MS-450 (4.5" x 1" Plate)	52.91 - 53.75	1.0000	1.0000
L14	43	Sabre MS-450 (4.5" x 1" Plate)	52.91 - 53.75	1.0000	1.0000
L14	44	Sabre MS-450 (4.5" x 1" Plate)	52.91 - 53.75	1.0000	1.0000
L14	48	CCI-5x1.25	52.91 - 53.75	1.0000	1.0000
L15	21	AVA7-50(1-5/8)	52.66 - 52.91	1.0000	1.0000
L15	27	Safety Line 3/8	52.66 - 52.91	1.0000	1.0000
L15	41	Sabre MS-450 (4.5" x 1" Plate)	52.66 - 52.91	1.0000	1.0000
L15	42	Sabre MS-450 (4.5" x 1" Plate)	52.66 - 52.91	1.0000	1.0000
L15	43	Sabre MS-450 (4.5" x 1" Plate)	52.66 - 52.91	1.0000	1.0000
L15	44	Sabre MS-450 (4.5" x 1" Plate)	52.66 - 52.91	1.0000	1.0000
L15	48	CCI-5x1.25	52.66 - 52.91	1.0000	1.0000
L16	21	AVA7-50(1-5/8)	52.17 - 52.66	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	27	Safety Line 3/8	52.17 - 52.66	1.0000	1.0000
L16	41	Sabre MS-450 (4.5" x 1" Plate)	52.17 - 52.66	1.0000	1.0000
L16	42	Sabre MS-450 (4.5" x 1" Plate)	52.17 - 52.66	1.0000	1.0000
L16	43	Sabre MS-450 (4.5" x 1" Plate)	52.17 - 52.66	1.0000	1.0000
L16	44	Sabre MS-450 (4.5" x 1" Plate)	52.17 - 52.66	1.0000	1.0000
L16	48	CCI-5x1.25	52.17 - 52.66	1.0000	1.0000
L17	21	AVA7-50(1-5/8)	51.92 - 52.17	1.0000	1.0000
L17	27	Safety Line 3/8	51.92 - 52.17	1.0000	1.0000
L17	41	Sabre MS-450 (4.5" x 1" Plate)	51.92 - 52.17	1.0000	1.0000
L17	42	Sabre MS-450 (4.5" x 1" Plate)	51.92 - 52.17	1.0000	1.0000
L17	43	Sabre MS-450 (4.5" x 1" Plate)	51.92 - 52.17	1.0000	1.0000
L17	44	Sabre MS-450 (4.5" x 1" Plate)	51.92 - 52.17	1.0000	1.0000
L17	48	CCI-5x1.25	51.92 - 52.17	1.0000	1.0000
L18	21	AVA7-50(1-5/8)	45.29 - 51.92	1.0000	1.0000
L18	27	Safety Line 3/8	45.29 - 51.92	1.0000	1.0000
L18	40	Sabre MS-450 (4.5" x 1" Plate)	45.29 - 49.75	1.0000	1.0000
L18	41	Sabre MS-450 (4.5" x 1" Plate)	45.29 - 51.92	1.0000	1.0000
L18	42	Sabre MS-450 (4.5" x 1" Plate)	45.29 - 51.92	1.0000	1.0000
L18	43	Sabre MS-450 (4.5" x 1" Plate)	50.67 - 51.92	1.0000	1.0000
L18	44	Sabre MS-450 (4.5" x 1" Plate)	45.92 - 51.92	1.0000	1.0000
L18	48	CCI-5x1.25	45.29 - 51.92	1.0000	1.0000
L20	21	AVA7-50(1-5/8)	39.29 - 44.29	1.0000	1.0000
L20	27	Safety Line 3/8	39.29 - 44.29	1.0000	1.0000
L20	40	Sabre MS-450 (4.5" x 1" Plate)	39.29 - 44.29	1.0000	1.0000
L20	41	Sabre MS-450 (4.5" x 1" Plate)	39.29 - 44.29	1.0000	1.0000
L20	42	Sabre MS-450 (4.5" x 1" Plate)	39.29 - 44.29	1.0000	1.0000
L20	48	CCI-5x1.25	39.29 - 44.29	1.0000	1.0000
L21	21	AVA7-50(1-5/8)	34.29 - 39.29	1.0000	1.0000
L21	27	Safety Line 3/8	34.29 - 39.29	1.0000	1.0000
L21	36	Sabre MS-600 (6" x 1" Plate)	34.29 - 35.50	1.0000	1.0000
L21	37	Sabre MS-600 (6" x 1" Plate)	34.29 - 35.50	1.0000	1.0000
L21	38	Sabre MS-600 (6" x 1" Plate)	34.29 - 35.50	1.0000	1.0000
L21	40	Sabre MS-450 (4.5" x 1" Plate)	34.29 - 39.29	1.0000	1.0000
L21	41	Sabre MS-450 (4.5" x 1" Plate)	34.29 - 39.29	1.0000	1.0000
L21	42	Sabre MS-450 (4.5" x 1" Plate)	34.29 - 39.29	1.0000	1.0000
L21	48	CCI-5x1.25	34.29 - 39.29	1.0000	1.0000
L22	21	AVA7-50(1-5/8)	33.50 - 34.29	1.0000	1.0000
L22	27	Safety Line 3/8	33.50 - 34.29	1.0000	1.0000
L22	36	Sabre MS-600 (6" x 1" Plate)	33.50 - 34.29	1.0000	1.0000
L22	37	Sabre MS-600 (6" x 1" Plate)	33.50 - 34.29	1.0000	1.0000
L22	38	Sabre MS-600 (6" x 1" Plate)	33.50 - 34.29	1.0000	1.0000
L22	40	Sabre MS-450 (4.5" x 1" Plate)	33.50 - 34.29	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	41	Sabre MS-450 (4.5" x 1" Plate)	33.50 - 34.29	1.0000	1.0000
L22	42	Sabre MS-450 (4.5" x 1" Plate)	33.50 - 34.29	1.0000	1.0000
L22	48	CCI-5x1.25	33.50 - 34.29	1.0000	1.0000
L23	21	AVA7-50(1-5/8)	33.25 - 33.50	1.0000	1.0000
L23	27	Safety Line 3/8	33.25 - 33.50	1.0000	1.0000
L23	36	Sabre MS-600 (6" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	37	Sabre MS-600 (6" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	38	Sabre MS-600 (6" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	40	Sabre MS-450 (4.5" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	41	Sabre MS-450 (4.5" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	42	Sabre MS-450 (4.5" x 1" Plate)	33.25 - 33.50	1.0000	1.0000
L23	48	CCI-5x1.25	33.25 - 33.50	1.0000	1.0000
L24	21	AVA7-50(1-5/8)	33.00 - 33.25	1.0000	1.0000
L24	27	Safety Line 3/8	33.00 - 33.25	1.0000	1.0000
L24	36	Sabre MS-600 (6" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	37	Sabre MS-600 (6" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	38	Sabre MS-600 (6" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	40	Sabre MS-450 (4.5" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	41	Sabre MS-450 (4.5" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	42	Sabre MS-450 (4.5" x 1" Plate)	33.00 - 33.25	1.0000	1.0000
L24	48	CCI-5x1.25	33.00 - 33.25	1.0000	1.0000
L25	21	AVA7-50(1-5/8)	32.75 - 33.00	1.0000	1.0000
L25	27	Safety Line 3/8	32.75 - 33.00	1.0000	1.0000
L25	36	Sabre MS-600 (6" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	37	Sabre MS-600 (6" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	38	Sabre MS-600 (6" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	40	Sabre MS-450 (4.5" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	41	Sabre MS-450 (4.5" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	42	Sabre MS-450 (4.5" x 1" Plate)	32.75 - 33.00	1.0000	1.0000
L25	48	CCI-5x1.25	32.75 - 33.00	1.0000	1.0000
L26	21	AVA7-50(1-5/8)	32.00 - 32.75	1.0000	1.0000
L26	27	Safety Line 3/8	32.00 - 32.75	1.0000	1.0000
L26	36	Sabre MS-600 (6" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	37	Sabre MS-600 (6" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	38	Sabre MS-600 (6" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	40	Sabre MS-450 (4.5" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	41	Sabre MS-450 (4.5" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	42	Sabre MS-450 (4.5" x 1" Plate)	32.00 - 32.75	1.0000	1.0000
L26	48	CCI-5x1.25	32.00 - 32.75	1.0000	1.0000
L27	21	AVA7-50(1-5/8)	31.75 - 32.00	1.0000	1.0000
L27	27	Safety Line 3/8	31.75 - 32.00	1.0000	1.0000
L27	36	Sabre MS-600 (6" x 1" Plate)	31.75 - 32.00	1.0000	1.0000
L27	37	Sabre MS-600 (6" x 1" Plate)	31.75 - 32.00	1.0000	1.0000
L27	38	Sabre MS-600 (6" x 1" Plate)	31.75 - 32.00	1.0000	1.0000
L27	40	Sabre MS-450 (4.5" x 1" Plate)	31.75 - 32.00	1.0000	1.0000
L27	41	Sabre MS-450 (4.5" x 1" Plate)	31.75 - 32.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	42	Sabre MS-450 (4.5" x 1" Plate)	31.75 - 32.00	1.0000	1.0000
L27	48	CCI-5x1.25	31.75 - 32.00	1.0000	1.0000
L28	21	AVA7-50(1-5/8)	28.50 - 31.75	1.0000	1.0000
L28	27	Safety Line 3/8	28.50 - 31.75	1.0000	1.0000
L28	30	Sabre MS-600 (6" x 1" Plate)	28.50 - 30.50	1.0000	1.0000
L28	31	Sabre MS-600 (6" x 1" Plate)	28.50 - 30.50	1.0000	1.0000
L28	34	Sabre MS-600 (6" x 1" Plate)	28.50 - 30.50	1.0000	1.0000
L28	36	Sabre MS-600 (6" x 1" Plate)	28.50 - 31.75	1.0000	1.0000
L28	37	Sabre MS-600 (6" x 1" Plate)	28.50 - 31.75	1.0000	1.0000
L28	38	Sabre MS-600 (6" x 1" Plate)	28.50 - 31.75	1.0000	1.0000
L28	40	Sabre MS-450 (4.5" x 1" Plate)	30.50 - 31.75	1.0000	1.0000
L28	41	Sabre MS-450 (4.5" x 1" Plate)	30.50 - 31.75	1.0000	1.0000
L28	42	Sabre MS-450 (4.5" x 1" Plate)	30.50 - 31.75	1.0000	1.0000
L28	48	CCI-5x1.25	31.00 - 31.75	1.0000	1.0000
L29	21	AVA7-50(1-5/8)	28.25 - 28.50	1.0000	1.0000
L29	27	Safety Line 3/8	28.25 - 28.50	1.0000	1.0000
L29	30	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L29	31	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L29	34	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L29	36	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L29	37	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L29	38	Sabre MS-600 (6" x 1" Plate)	28.25 - 28.50	1.0000	1.0000
L30	21	AVA7-50(1-5/8)	27.50 - 28.25	1.0000	1.0000
L30	27	Safety Line 3/8	27.50 - 28.25	1.0000	1.0000
L30	30	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L30	31	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L30	34	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L30	36	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L30	37	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L30	38	Sabre MS-600 (6" x 1" Plate)	27.50 - 28.25	1.0000	1.0000
L31	21	AVA7-50(1-5/8)	27.25 - 27.50	1.0000	1.0000
L31	27	Safety Line 3/8	27.25 - 27.50	1.0000	1.0000
L31	30	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L31	31	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L31	34	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L31	36	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L31	37	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L31	38	Sabre MS-600 (6" x 1" Plate)	27.25 - 27.50	1.0000	1.0000
L32	21	AVA7-50(1-5/8)	22.25 - 27.25	1.0000	1.0000
L32	27	Safety Line 3/8	22.25 - 27.25	1.0000	1.0000
L32	30	Sabre MS-600 (6" x 1" Plate)	22.25 - 27.25	1.0000	1.0000
L32	31	Sabre MS-600 (6" x 1" Plate)	22.25 - 27.25	1.0000	1.0000
L32	34	Sabre MS-600 (6" x 1" Plate)	22.25 - 27.25	1.0000	1.0000
L32	36	Sabre MS-600 (6" x 1" Plate)	25.50 - 27.25	1.0000	1.0000
L32	37	Sabre MS-600 (6" x 1" Plate)	25.50 - 27.25	1.0000	1.0000
L32	38	Sabre MS-600 (6" x 1" Plate)	25.50 - 27.25	1.0000	1.0000
L33	21	AVA7-50(1-5/8)	18.00 - 22.25	1.0000	1.0000
L33	27	Safety Line 3/8	18.00 - 22.25	1.0000	1.0000
L33	30	Sabre MS-600 (6" x 1" Plate)	18.00 - 22.25	1.0000	1.0000
L33	31	Sabre MS-600 (6" x 1" Plate)	18.00 - 22.25	1.0000	1.0000
L33	34	Sabre MS-600 (6" x 1" Plate)	18.00 - 22.25	1.0000	1.0000
L33	46	CCI-5x1.25	18.00 - 20.00	1.0000	1.0000
L34	21	AVA7-50(1-5/8)	17.75 - 18.00	1.0000	1.0000
L34	27	Safety Line 3/8	17.75 - 18.00	1.0000	1.0000
L34	30	Sabre MS-600 (6" x 1" Plate)	17.75 - 18.00	1.0000	1.0000
L34	31	Sabre MS-600 (6" x 1" Plate)	17.75 - 18.00	1.0000	1.0000
L34	34	Sabre MS-600 (6" x 1" Plate)	17.75 - 18.00	1.0000	1.0000
L34	46	CCI-5x1.25	17.75 - 18.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	21	AVA7-50(1-5/8)	15.45 - 17.75	1.0000	1.0000
L35	27	Safety Line 3/8	15.45 - 17.75	1.0000	1.0000
L35	30	Sabre MS-600 (6" x 1" Plate)	15.45 - 17.75	1.0000	1.0000
L35	31	Sabre MS-600 (6" x 1" Plate)	15.45 - 17.75	1.0000	1.0000
L35	33	Sabre MS-600 (6" x 1" Plate)	15.45 - 17.45	1.0000	1.0000
L35	34	Sabre MS-600 (6" x 1" Plate)	15.45 - 17.75	1.0000	1.0000
L35	46	CCI-5x1.25	15.45 - 17.75	1.0000	1.0000
L36	21	AVA7-50(1-5/8)	15.20 - 15.45	1.0000	1.0000
L36	27	Safety Line 3/8	15.20 - 15.45	1.0000	1.0000
L36	30	Sabre MS-600 (6" x 1" Plate)	15.20 - 15.45	1.0000	1.0000
L36	31	Sabre MS-600 (6" x 1" Plate)	15.20 - 15.45	1.0000	1.0000
L36	33	Sabre MS-600 (6" x 1" Plate)	15.20 - 15.45	1.0000	1.0000
L36	34	Sabre MS-600 (6" x 1" Plate)	15.20 - 15.45	1.0000	1.0000
L36	46	CCI-5x1.25	15.20 - 15.45	1.0000	1.0000
L37	21	AVA7-50(1-5/8)	13.41 - 15.20	1.0000	1.0000
L37	27	Safety Line 3/8	13.41 - 15.20	1.0000	1.0000
L37	30	Sabre MS-600 (6" x 1" Plate)	13.41 - 15.20	1.0000	1.0000
L37	31	Sabre MS-600 (6" x 1" Plate)	13.41 - 15.20	1.0000	1.0000
L37	33	Sabre MS-600 (6" x 1" Plate)	13.41 - 15.20	1.0000	1.0000
L37	34	Sabre MS-600 (6" x 1" Plate)	13.41 - 15.20	1.0000	1.0000
L37	46	CCI-5x1.25	13.41 - 15.20	1.0000	1.0000
L38	21	AVA7-50(1-5/8)	13.16 - 13.41	1.0000	1.0000
L38	27	Safety Line 3/8	13.16 - 13.41	1.0000	1.0000
L38	30	Sabre MS-600 (6" x 1" Plate)	13.16 - 13.41	1.0000	1.0000
L38	31	Sabre MS-600 (6" x 1" Plate)	13.16 - 13.41	1.0000	1.0000
L38	33	Sabre MS-600 (6" x 1" Plate)	13.16 - 13.41	1.0000	1.0000
L38	34	Sabre MS-600 (6" x 1" Plate)	13.16 - 13.41	1.0000	1.0000
L38	46	CCI-5x1.25	13.16 - 13.41	1.0000	1.0000
L39	21	AVA7-50(1-5/8)	8.16 - 13.16	1.0000	1.0000
L39	27	Safety Line 3/8	8.16 - 13.16	1.0000	1.0000
L39	30	Sabre MS-600 (6" x 1" Plate)	8.16 - 13.16	1.0000	1.0000
L39	31	Sabre MS-600 (6" x 1" Plate)	8.16 - 13.16	1.0000	1.0000
L39	32	Sabre MS-600 (6" x 1" Plate)	8.16 - 8.50	1.0000	1.0000
L39	33	Sabre MS-600 (6" x 1" Plate)	8.16 - 13.16	1.0000	1.0000
L39	34	Sabre MS-600 (6" x 1" Plate)	11.41 - 13.16	1.0000	1.0000
L39	46	CCI-5x1.25	8.16 - 13.16	1.0000	1.0000
L40	21	AVA7-50(1-5/8)	6.50 - 8.16	1.0000	1.0000
L40	27	Safety Line 3/8	6.50 - 8.16	1.0000	1.0000
L40	30	Sabre MS-600 (6" x 1" Plate)	6.50 - 8.16	1.0000	1.0000
L40	31	Sabre MS-600 (6" x 1" Plate)	6.50 - 8.16	1.0000	1.0000
L40	32	Sabre MS-600 (6" x 1" Plate)	6.50 - 8.16	1.0000	1.0000
L40	33	Sabre MS-600 (6" x 1" Plate)	6.50 - 8.16	1.0000	1.0000
L40	46	CCI-5x1.25	6.50 - 8.16	1.0000	1.0000
L41	21	AVA7-50(1-5/8)	6.25 - 6.50	1.0000	1.0000
L41	27	Safety Line 3/8	6.25 - 6.50	1.0000	1.0000
L41	30	Sabre MS-600 (6" x 1" Plate)	6.25 - 6.50	1.0000	1.0000
L41	31	Sabre MS-600 (6" x 1" Plate)	6.25 - 6.50	1.0000	1.0000
L41	32	Sabre MS-600 (6" x 1" Plate)	6.25 - 6.50	1.0000	1.0000
L41	33	Sabre MS-600 (6" x 1" Plate)	6.25 - 6.50	1.0000	1.0000
L41	46	CCI-5x1.25	6.25 - 6.50	1.0000	1.0000
L42	21	AVA7-50(1-5/8)	4.45 - 6.25	1.0000	1.0000
L42	27	Safety Line 3/8	4.45 - 6.25	1.0000	1.0000
L42	30	Sabre MS-600 (6" x 1" Plate)	4.45 - 6.25	1.0000	1.0000
L42	31	Sabre MS-600 (6" x 1" Plate)	4.45 - 6.25	1.0000	1.0000
L42	32	Sabre MS-600 (6" x 1" Plate)	4.45 - 6.25	1.0000	1.0000
L42	33	Sabre MS-600 (6" x 1" Plate)	4.45 - 6.25	1.0000	1.0000
L42	46	CCI-5x1.25	4.45 - 6.25	1.0000	1.0000
L43	21	AVA7-50(1-5/8)	4.20 - 4.45	1.0000	1.0000
L43	27	Safety Line 3/8	4.20 - 4.45	1.0000	1.0000
L43	30	Sabre MS-600 (6" x 1" Plate)	4.20 - 4.45	1.0000	1.0000
L43	31	Sabre MS-600 (6" x 1" Plate)	4.20 - 4.45	1.0000	1.0000
L43	32	Sabre MS-600 (6" x 1" Plate)	4.20 - 4.45	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L43	33	Sabre MS-600 (6" x 1" Plate)	4.20 - 4.45	1.0000	1.0000
L43	46	CCI-5x1.25	4.20 - 4.45	1.0000	1.0000
L44	21	AVA7-50(1-5/8)	0.00 - 4.20	1.0000	1.0000
L44	27	Safety Line 3/8	0.00 - 4.20	1.0000	1.0000
L44	30	Sabre MS-600 (6" x 1" Plate)	0.00 - 4.20	1.0000	1.0000
L44	31	Sabre MS-600 (6" x 1" Plate)	0.00 - 4.20	1.0000	1.0000
L44	32	Sabre MS-600 (6" x 1" Plate)	0.50 - 4.20	1.0000	1.0000
L44	33	Sabre MS-600 (6" x 1" Plate)	2.45 - 4.20	1.0000	1.0000
L44	46	CCI-5x1.25	0.00 - 4.20	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVTM14-ALU-I20 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331
APXVTM14-ALU-I20 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331
APXVTM14-ALU-I20 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331
NNVV-65B-R4 w/ Mount Pipe (P)	A	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.509 13.108 13.672 14.822	7.413 8.598 9.496 11.328	0.103 0.194 0.293 0.520
NNVV-65B-R4 w/ Mount Pipe (P)	B	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.509 13.108 13.672 14.822	7.413 8.598 9.496 11.328	0.103 0.194 0.293 0.520
NNVV-65B-R4 w/ Mount Pipe (P)	C	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.509 13.108 13.672 14.822	7.413 8.598 9.496 11.328	0.103 0.194 0.293 0.520
(2) RRH2X50-800 (P)	A	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.282 1.428 1.580 1.908	0.053 0.070 0.090 0.138
(2) RRH2X50-800 (P)	B	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.282 1.428 1.580 1.908	0.053 0.070 0.090 0.138
(2) RRH2X50-800 (P)	C	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.282 1.428 1.580 1.908	0.053 0.070 0.090 0.138

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PCS 1900MHz 4x45W-65MHz (P)	A	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	2.238 2.441 2.651 3.093	0.060 0.083 0.110 0.173
PCS 1900MHz 4x45W-65MHz (P)	B	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	2.238 2.441 2.651 3.093	0.060 0.083 0.110 0.173
PCS 1900MHz 4x45W-65MHz (P)	C	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	2.238 2.441 2.651 3.093	0.060 0.083 0.110 0.173
TD-RRH8x20-25 (P)	A	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
TD-RRH8x20-25 (P)	B	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
TD-RRH8x20-25 (P)	C	From Leg	4.000 0.000 3.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
6' x 2" Mount Pipe (E-per Photo)	A	From Leg	4.000 0.000 0.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe (E-per Photo)	B	From Leg	4.000 0.000 0.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe (E-per Photo)	C	From Leg	4.000 0.000 0.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
4'x2" Horizontal Mount Pipe (P-Handrail Support)	A	From Leg	2.000 0.000 4.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.866 1.111 1.365 1.901	0.866 1.111 1.365 1.901	0.060 0.068 0.078 0.107
4'x2" Horizontal Mount Pipe (P-Handrail Support)	B	From Leg	2.000 0.000 4.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.866 1.111 1.365 1.901	0.866 1.111 1.365 1.901	0.060 0.068 0.078 0.107
4'x2" Horizontal Mount Pipe (P-Handrail Support)	C	From Leg	2.000 0.000 4.000	0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.866 1.111 1.365 1.901	0.866 1.111 1.365 1.901	0.060 0.068 0.078 0.107
Miscellaneous [NA 510-1] (P-Handrail Kit)	C	None		0.000	98.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.360 8.520 10.620 14.640	6.360 8.520 10.620 14.640	0.256 0.344 0.459 0.769
Platform Mount [LP 714-1] (E-Area changed to 14' Mount) **-**	C	None		0.000	94.000	No Ice 1/2" Ice 1" Ice 2" Ice	34.972 41.281 47.590 60.208	34.972 41.281 47.590 60.208	1.493 1.904 2.315 3.137

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe (R)	A	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788
APXVAARR24_43-U-NA20 w/ Mount Pipe (R)	B	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788
APXVAARR24_43-U-NA20 w/ Mount Pipe (R)	C	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.186 0.315 0.458 0.788
RADIO 4449 B12/B71 (R)	A	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.650 1.810 1.978 2.336	1.300 1.445 1.597 1.924	0.075 0.092 0.112 0.161
RADIO 4449 B12/B71 (R)	B	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.650 1.810 1.978 2.336	1.300 1.445 1.597 1.924	0.075 0.092 0.112 0.161
RADIO 4449 B12/B71 (R)	C	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.650 1.810 1.978 2.336	1.300 1.445 1.597 1.924	0.075 0.092 0.112 0.161
APXV18-209014-C w/ Mount Pipe (E)	A	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.722 4.134 4.541 5.356	3.311 4.017 4.684 6.066	0.038 0.072 0.112 0.212
APXV18-209014-C w/ Mount Pipe (E)	B	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.722 4.134 4.541 5.356	3.311 4.017 4.684 6.066	0.038 0.072 0.112 0.212
APXV18-209014-C w/ Mount Pipe (E)	C	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.722 4.134 4.541 5.356	3.311 4.017 4.684 6.066	0.038 0.072 0.112 0.212
ATMPP1412D-1CWA (E)	A	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.129 1.265 1.560	0.382 0.477 0.578 0.802	0.013 0.020 0.028 0.052
ATMPP1412D-1CWA (E)	B	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.129 1.265 1.560	0.382 0.477 0.578 0.802	0.013 0.020 0.028 0.052
ATMPP1412D-1CWA (E)	C	From Leg	4.000 0.000 1.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.129 1.265 1.560	0.382 0.477 0.578 0.802	0.013 0.020 0.028 0.052
4' x 2" Pipe Mount (E)	A	From Leg	4.000 0.000 0.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
4' x 2" Pipe Mount (E)	B	From Leg	4.000 0.000 0.000	0.000	89.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.785 1.028 1.281 1.814	0.785 1.028 1.281 1.814	0.029 0.035 0.044 0.072
4' x 2" Pipe Mount	C	From Leg	4.000	0.000	89.000	No Ice	0.785	0.785	0.029

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(E)			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
Platform Mount [LP 305-1]	C	None		0.000	89.000	No Ice	18.040	18.040	1.121
(E)						1/2" Ice	22.040	22.040	1.470
						1" Ice	26.060	26.060	1.882
						2" Ice	34.160	34.160	2.896
_									
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.000	74.000	No Ice	11.850	8.990	0.115
			0.000			1/2" Ice	12.770	9.880	0.210
(R)			3.000			1" Ice	13.710	10.790	0.319
						2" Ice	15.640	12.660	0.580
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000	0.000	74.000	No Ice	11.850	8.990	0.115
			0.000			1/2" Ice	12.770	9.880	0.210
(R)			3.000			1" Ice	13.710	10.790	0.319
						2" Ice	15.640	12.660	0.580
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.000	74.000	No Ice	11.850	8.990	0.115
			0.000			1/2" Ice	12.770	9.880	0.210
(R)			3.000			1" Ice	13.710	10.790	0.319
						2" Ice	15.640	12.660	0.580
SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.000	0.000	74.000	No Ice	5.560	4.470	0.085
			0.000			1/2" Ice	6.070	4.970	0.167
(R)			3.000			1" Ice	6.590	5.470	0.262
						2" Ice	7.650	6.520	0.495
RRUS 11 B12	A	From Leg	4.000	0.000	74.000	No Ice	2.833	1.182	0.051
(R)			0.000			1/2" Ice	3.043	1.330	0.072
			3.000			1" Ice	3.259	1.485	0.095
						2" Ice	3.715	1.826	0.153
RRUS 11 B12	B	From Leg	4.000	0.000	74.000	No Ice	2.833	1.182	0.051
(R)			0.000			1/2" Ice	3.043	1.330	0.072
			3.000			1" Ice	3.259	1.485	0.095
						2" Ice	3.715	1.826	0.153
RRUS 11 B12	C	From Leg	4.000	0.000	74.000	No Ice	2.833	1.182	0.051
(R)			0.000			1/2" Ice	3.043	1.330	0.072
			3.000			1" Ice	3.259	1.485	0.095
						2" Ice	3.715	1.826	0.153
RRUS 32 B30	A	From Leg	4.000	0.000	74.000	No Ice	2.692	1.573	0.060
(R)			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
						2" Ice	3.614	2.346	0.161
RRUS 32 B30	B	From Leg	4.000	0.000	74.000	No Ice	2.692	1.573	0.060
(R)			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
						2" Ice	3.614	2.346	0.161
RRUS 32 B30	C	From Leg	4.000	0.000	74.000	No Ice	2.692	1.573	0.060
(R)			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
						2" Ice	3.614	2.346	0.161
RRUS 32 B2	A	From Leg	4.000	0.000	74.000	No Ice	2.731	1.668	0.053
(R)			0.000			1/2" Ice	2.953	1.855	0.074
			3.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	B	From Leg	4.000	0.000	74.000	No Ice	2.731	1.668	0.053
(R)			0.000			1/2" Ice	2.953	1.855	0.074
			3.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	C	From Leg	4.000	0.000	74.000	No Ice	2.731	1.668	0.053

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(R)			0.000			1/2" Ice	2.953	1.855	0.074
			3.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
DBC0061F1V51-2	A	From Leg	4.000	0.000	74.000	No Ice	0.433	0.413	0.025
(R)			0.000			1/2" Ice	0.518	0.496	0.031
			3.000			1" Ice	0.609	0.586	0.038
						2" Ice	0.815	0.788	0.057
DBC0061F1V51-2	B	From Leg	4.000	0.000	74.000	No Ice	0.433	0.413	0.025
(R)			0.000			1/2" Ice	0.518	0.496	0.031
			3.000			1" Ice	0.609	0.586	0.038
						2" Ice	0.815	0.788	0.057
DBC0061F1V51-2	C	From Leg	4.000	0.000	74.000	No Ice	0.433	0.413	0.025
(R)			0.000			1/2" Ice	0.518	0.496	0.031
			3.000			1" Ice	0.609	0.586	0.038
						2" Ice	0.815	0.788	0.057
DC6-48-60-18-8F	A	From Leg	4.000	0.000	74.000	No Ice	1.212	1.212	0.033
(R)			0.000			1/2" Ice	1.892	1.892	0.055
			3.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	74.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	74.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	74.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.000	0.000	74.000	No Ice	11.704	8.938	0.092
			0.000			1/2" Ice	12.424	10.450	0.178
(E)			3.000			1" Ice	13.153	11.986	0.273
						2" Ice	14.517	14.313	0.498
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.000	0.000	74.000	No Ice	11.704	8.938	0.092
			0.000			1/2" Ice	12.424	10.450	0.178
(E)			3.000			1" Ice	13.153	11.986	0.273
						2" Ice	14.517	14.313	0.498
TT19-08BP111-001	A	From Leg	4.000	0.000	74.000	No Ice	0.545	0.442	0.016
(E)			0.000			1/2" Ice	0.641	0.530	0.022
			3.000			1" Ice	0.743	0.626	0.029
						2" Ice	0.971	0.840	0.049
TT19-08BP111-001	B	From Leg	4.000	0.000	74.000	No Ice	0.545	0.442	0.016
(E)			0.000			1/2" Ice	0.641	0.530	0.022
			3.000			1" Ice	0.743	0.626	0.029
						2" Ice	0.971	0.840	0.049
TT19-08BP111-001	C	From Leg	4.000	0.000	74.000	No Ice	0.545	0.442	0.016
(E)			0.000			1/2" Ice	0.641	0.530	0.022
			3.000			1" Ice	0.743	0.626	0.029
						2" Ice	0.971	0.840	0.049
DC6-48-60-18-8F	B	From Leg	2.000	0.000	74.000	No Ice	1.212	1.212	0.033
(E)			0.000			1/2" Ice	1.892	1.892	0.055
			3.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
3' x 2" Pipe Mount	B	From Leg	1.000	0.000	74.000	No Ice	0.583	0.583	0.011
(E-For DC6 Per Photo)			0.000			1/2" Ice	0.770	0.770	0.017

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	0.967	0.967	0.024
						2" Ice	1.388	1.388	0.047
Platform Mount [LP 303-1]	C	None		0.000	74.000	No Ice	14.690	14.690	1.250
(E)						1/2" Ice	18.010	18.010	1.569
						1" Ice	21.340	21.340	1.942
						2" Ice	28.080	28.080	2.852
Miscellaneous [NA 507-1]	C	None		0.000	76.000	No Ice	4.560	4.560	0.245
(R-Per e-mail)						1/2" Ice	6.390	6.390	0.311
						1" Ice	8.180	8.180	0.402
						2" Ice	11.660	11.660	0.657
-									
(2) SBNHH-1D65B w/	A	From Leg	4.000	0.000	67.000	No Ice	4.090	3.300	0.066
Mount Pipe			0.000			1/2" Ice	4.490	3.680	0.130
(R)			0.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/	B	From Leg	4.000	0.000	67.000	No Ice	4.090	3.300	0.066
Mount Pipe			0.000			1/2" Ice	4.490	3.680	0.130
(R)			0.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/	C	From Leg	4.000	0.000	67.000	No Ice	4.090	3.300	0.066
Mount Pipe			0.000			1/2" Ice	4.490	3.680	0.130
(R)			0.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
B13 RRH 4X30	A	From Leg	4.000	0.000	67.000	No Ice	2.055	1.320	0.056
(R)			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
						2" Ice	2.841	1.997	0.142
B13 RRH 4X30	B	From Leg	4.000	0.000	67.000	No Ice	2.055	1.320	0.056
(R)			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
						2" Ice	2.841	1.997	0.142
B13 RRH 4X30	C	From Leg	4.000	0.000	67.000	No Ice	2.055	1.320	0.056
(R)			0.000			1/2" Ice	2.241	1.475	0.073
			0.000			1" Ice	2.433	1.638	0.093
						2" Ice	2.841	1.997	0.142
B66A RRH4X45	A	From Leg	4.000	0.000	67.000	No Ice	2.580	1.630	0.057
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			0.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
B66A RRH4X45	B	From Leg	4.000	0.000	67.000	No Ice	2.580	1.630	0.057
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			0.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
B66A RRH4X45	C	From Leg	4.000	0.000	67.000	No Ice	2.580	1.630	0.057
(R)			0.000			1/2" Ice	2.794	1.811	0.077
			0.000			1" Ice	3.015	1.999	0.101
						2" Ice	3.479	2.396	0.158
RC2DC-3315-PF-48	A	From Leg	4.000	0.000	67.000	No Ice	3.792	2.512	0.032
(R)			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
						2" Ice	4.844	3.414	0.181
RC2DC-3315-PF-48	B	From Leg	4.000	0.000	67.000	No Ice	3.792	2.512	0.032
(R)			0.000			1/2" Ice	4.044	2.725	0.063
			0.000			1" Ice	4.303	2.945	0.099
						2" Ice	4.844	3.414	0.181
(2) LPA-80063/6CFX2 w/	A	From Leg	4.000	0.000	67.000	No Ice	9.831	10.215	0.052
Mount Pipe			0.000			1/2" Ice	10.400	11.384	0.145

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(E)			0.000			1" Ice	10.933	12.269	0.246
						2" Ice	12.026	14.086	0.476
(2) LPA-80063/6CFX2 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	67.000	No Ice 1/2" Ice	9.831 10.400	10.215 11.384	0.052 0.145
(E)			0.000			1" Ice	10.933	12.269	0.246
						2" Ice	12.026	14.086	0.476
(2) LPA-80063/6CFX2 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	67.000	No Ice 1/2" Ice	9.831 10.400	10.215 11.384	0.052 0.145
(E)			0.000			1" Ice	10.933	12.269	0.246
						2" Ice	12.026	14.086	0.476
Platform Mount [LP 303-1]	C	None		0.000	67.000	No Ice	14.690	14.690	1.250
(E)						1/2" Ice	18.010	18.010	1.569
						1" Ice	21.340	21.340	1.942
						2" Ice	28.080	28.080	2.852
Miscellaneous [NA 509-3]	C	None		0.000	67.000	No Ice	11.840	11.840	0.275
(E-Photo)						1/2" Ice	16.960	16.960	0.296
						1" Ice	22.080	22.080	0.317
						2" Ice	32.320	32.320	0.360
-									
KS24019-L112A	C	From Leg	3.000	0.000	52.000	No Ice	0.141	0.141	0.005
(E)			0.000			1/2" Ice	0.198	0.198	0.007
			2.000			1" Ice	0.262	0.262	0.009
						2" Ice	0.415	0.415	0.018
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	52.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
-									

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	98 - 93	Pole	Max Tension	26	0.000	0.000	-0.000
			Max. Compression	26	-9.655	-0.005	-0.012
			Max. Mx	20	-3.381	14.034	0.001
			Max. My	14	-3.375	0.001	-14.040
			Max. Vy	20	-5.127	14.034	0.001
			Max. Vx	2	-5.132	0.000	14.040
			Max. Torque	24			0.002
L2	93 - 88	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-16.920	-0.027	-0.016
			Max. Mx	20	-5.762	44.922	0.005
			Max. My	2	-5.750	-0.000	44.955
			Max. Vy	20	-8.312	44.922	0.005
			Max. Vx	2	-8.320	-0.000	44.955
			Max. Torque	24			0.002
L3	88 - 82.79	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.170	-0.046	-0.015
			Max. Mx	20	-5.900	68.277	0.008
			Max. My	2	-5.888	-0.001	68.333
			Max. Vy	20	-8.420	68.277	0.008
			Max. Vx	2	-8.429	-0.001	68.333
			Max. Torque	24			0.002

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	82.79 - 80.207	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-17.864	-0.079	-0.013
			Max. Mx	20	-6.299	110.924	0.014
			Max. My	2	-6.287	-0.002	111.023
			Max. Vy	20	-8.639	110.924	0.014
			Max. Vx	2	-8.648	-0.002	111.023
			Max. Torque	24			0.002
L5	80.207 - 75.207	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-19.070	-0.114	-0.012
			Max. Mx	20	-6.925	154.755	0.020
			Max. My	2	-6.912	-0.004	154.899
			Max. Vy	20	-9.064	154.755	0.020
			Max. Vx	2	-9.073	-0.004	154.899
			Max. Torque	24			0.002
L6	75.207 - 70.207	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-28.700	-0.524	0.428
			Max. Mx	8	-10.198	-226.811	0.301
			Max. My	2	-10.171	-0.312	227.332
			Max. Vy	20	-13.561	226.712	-0.057
			Max. Vx	2	-13.605	-0.312	227.332
			Max. Torque	17			-0.677
L7	70.207 - 65.207	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.940	-1.361	0.890
			Max. Mx	8	-13.493	-303.660	0.487
			Max. My	2	-13.456	-0.551	304.389
			Max. Vy	20	-18.485	303.232	-0.061
			Max. Vx	2	-18.553	-0.551	304.389
			Max. Torque	21			-0.685
L8	65.207 - 60.207	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.877	-1.616	1.011
			Max. Mx	8	-14.197	-396.309	0.557
			Max. My	2	-14.139	-0.630	398.046
			Max. Vy	20	-18.598	395.809	-0.060
			Max. Vx	2	-18.933	-0.630	398.046
			Max. Torque	21			-0.685
L9	60.207 - 59.17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.111	-1.668	1.036
			Max. Mx	8	-14.344	-415.609	0.571
			Max. My	2	-14.285	-0.648	417.709
			Max. Vy	20	-18.654	415.093	-0.060
			Max. Vx	2	-19.017	-0.648	417.709
			Max. Torque	21			-0.684
L10	59.17 - 58.9	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.187	-1.682	1.043
			Max. Mx	8	-14.414	-420.644	0.575
			Max. My	2	-14.354	-0.652	422.844
			Max. Vy	20	-18.657	420.125	-0.060
			Max. Vx	2	-19.029	-0.652	422.844
			Max. Torque	21			-0.684
L11	58.9 - 58.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.229	-1.690	1.047
			Max. Mx	8	-14.441	-423.444	0.577
			Max. My	2	-14.382	-0.655	425.699
			Max. Vy	20	-18.668	422.922	-0.060
			Max. Vx	2	-19.045	-0.655	425.699
			Max. Torque	21			-0.684
L12	58.75 - 54	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-41.601	-1.954	1.170
			Max. Mx	8	-15.269	-512.970	0.643
			Max. My	2	-15.202	-0.736	517.318
			Max. Vy	20	-19.050	512.412	-0.059
			Max. Vx	2	-19.540	-0.736	517.318
			Max. Torque	21			-0.684
L13	54 - 53.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.685	-1.971	1.175
			Max. Mx	8	-15.333	-517.729	0.647
			Max. My	2	-15.267	-0.740	522.204
			Max. Vy	20	-19.061	517.172	-0.059
			Max. Vx	2	-19.552	-0.740	522.204
			Max. Torque	21			-0.683
L14	53.75 - 52.91	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.968	-2.028	1.191
			Max. Mx	8	-15.499	-533.754	0.658
			Max. My	2	-15.432	-0.755	538.661
			Max. Vy	20	-19.142	533.203	-0.058
			Max. Vx	2	-19.632	-0.755	538.661
			Max. Torque	21			-0.683
L15	52.91 - 52.66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.058	-2.046	1.196
			Max. Mx	8	-15.563	-538.534	0.662
			Max. My	2	-15.496	-0.759	543.571
			Max. Vy	20	-19.159	537.986	-0.058
			Max. Vx	2	-19.649	-0.759	543.571
			Max. Torque	21			-0.683
L16	52.66 - 52.17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.232	-2.079	1.205
			Max. Mx	8	-15.668	-547.917	0.669
			Max. My	2	-15.601	-0.768	553.212
			Max. Vy	20	-19.207	547.379	-0.058
			Max. Vx	2	-19.697	-0.768	553.212
			Max. Torque	21			-0.683
L17	52.17 - 51.92	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.462	-1.774	1.024
			Max. Mx	8	-15.802	-552.547	0.572
			Max. My	2	-15.734	-0.601	558.051
			Max. Vy	20	-19.282	552.377	-0.156
			Max. Vx	2	-19.788	-0.601	558.051
			Max. Torque	21			-0.683
L18	51.92 - 45.287	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.543	-1.992	1.096
			Max. Mx	8	-16.462	-614.823	0.571
			Max. My	2	-16.396	-0.614	622.136
			Max. Vy	20	-19.567	614.783	-0.108
			Max. Vx	2	-20.071	-0.614	622.136
			Max. Torque	19			-0.668
L19	45.287 - 44.287	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.804	-2.287	1.203
			Max. Mx	20	-17.931	702.161	-0.043
			Max. My	2	-17.879	-0.632	711.812
			Max. Vy	20	-20.023	702.161	-0.043
			Max. Vx	2	-20.525	-0.632	711.812
			Max. Torque	19			-0.667
L20	44.287 - 39.287	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.546	-2.606	1.361
			Max. Mx	20	-19.095	803.141	0.031
			Max. My	2	-19.049	-0.655	815.381

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-20.420	803.141	0.031
			Max. Vx	2	-20.919	-0.655	815.381
			Max. Torque	19			-0.667
L21	39.287 - 34.287	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.361	-2.929	1.521
			Max. Mx	20	-20.289	906.113	0.106
			Max. My	2	-20.249	-0.679	920.929
			Max. Vy	20	-20.824	906.113	0.106
			Max. Vx	2	-21.318	-0.679	920.929
			Max. Torque	19			-0.667
L22	34.287 - 33.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.674	-2.980	1.546
			Max. Mx	20	-20.484	922.507	0.118
			Max. My	2	-20.444	-0.683	937.734
			Max. Vy	20	-20.891	922.507	0.118
			Max. Vx	2	-21.403	-0.683	937.734
			Max. Torque	19			-0.666
L23	33.5 - 33.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.792	-2.996	1.555
			Max. Mx	20	-20.570	927.727	0.122
			Max. My	2	-20.531	-0.684	943.087
			Max. Vy	20	-20.907	927.727	0.122
			Max. Vx	2	-21.426	-0.684	943.087
			Max. Torque	19			-0.666
L24	33.25 - 33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.910	-3.013	1.563
			Max. Mx	20	-20.647	932.953	0.126
			Max. My	2	-20.607	-0.686	948.448
			Max. Vy	20	-20.933	932.953	0.126
			Max. Vx	2	-21.457	-0.686	948.448
			Max. Torque	19			-0.666
L25	33 - 32.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.022	-3.029	1.571
			Max. Mx	20	-20.718	938.186	0.129
			Max. My	2	-20.678	-0.687	953.817
			Max. Vy	20	-20.958	938.186	0.129
			Max. Vx	2	-21.488	-0.687	953.817
			Max. Torque	19			-0.666
L26	32.75 - 32	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.357	-3.077	1.595
			Max. Mx	20	-20.924	953.921	0.141
			Max. My	2	-20.884	-0.690	969.970
			Max. Vy	20	-21.039	953.921	0.141
			Max. Vx	2	-21.585	-0.690	969.970
			Max. Torque	19			-0.666
L27	32 - 31.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.455	-3.094	1.603
			Max. Mx	20	-20.987	959.179	0.145
			Max. My	2	-20.947	-0.692	975.370
			Max. Vy	20	-21.057	959.179	0.145
			Max. Vx	2	-21.610	-0.692	975.370
			Max. Torque	19			-0.666
L28	31.75 - 28.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.710	-3.276	1.691
			Max. Mx	20	-21.746	1028.017	0.194
			Max. My	2	-21.709	-0.709	1046.086
			Max. Vy	20	-21.350	1028.017	0.194
			Max. Vx	2	-21.916	-0.709	1046.086
			Max. Torque	19			-0.666
L29	28.5 - 28.25	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-51.826	-3.290	1.697
			Max. Mx	20	-21.835	1033.350	0.198
			Max. My	2	-21.799	-0.711	1051.566
			Max. Vy	20	-21.361	1033.350	0.198
			Max. Vx	2	-21.929	-0.711	1051.566
			Max. Torque	19			-0.666
L30	28.25 - 27.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.171	-3.330	1.716
			Max. Mx	20	-22.059	1049.386	0.209
			Max. My	2	-22.022	-0.715	1068.044
			Max. Vy	20	-21.438	1049.386	0.209
			Max. Vx	2	-22.011	-0.715	1068.044
			Max. Torque	19			-0.666
L31	27.5 - 27.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.269	-3.344	1.723
			Max. Mx	20	-22.123	1054.743	0.213
			Max. My	2	-22.087	-0.716	1073.550
			Max. Vy	20	-21.455	1054.743	0.213
			Max. Vx	2	-22.030	-0.716	1073.550
			Max. Torque	19			-0.666
L32	27.25 - 22.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.083	-3.612	1.851
			Max. Mx	20	-23.326	1162.853	0.290
			Max. My	2	-23.295	-0.746	1184.704
			Max. Vy	20	-21.836	1162.853	0.290
			Max. Vx	2	-22.440	-0.746	1184.704
			Max. Torque	19			-0.666
L33	22.25 - 18	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.605	-3.846	1.965
			Max. Mx	20	-24.380	1256.142	0.356
			Max. My	2	-24.354	-0.772	1280.679
			Max. Vy	20	-22.126	1256.142	0.356
			Max. Vx	2	-22.745	-0.772	1280.679
			Max. Torque	19			-0.666
L34	18 - 17.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.702	-3.862	1.973
			Max. Mx	20	-24.462	1261.668	0.360
			Max. My	2	-24.437	-0.774	1286.365
			Max. Vy	20	-22.131	1261.668	0.360
			Max. Vx	2	-22.749	-0.774	1286.365
			Max. Torque	19			-0.665
L35	17.75 - 15.45	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.572	-4.022	2.014
			Max. Mx	20	-25.044	1312.696	0.395
			Max. My	2	-25.022	-0.789	1338.864
			Max. Vy	20	-22.297	1312.696	0.395
			Max. Vx	2	-22.916	-0.789	1338.864
			Max. Torque	19			-0.665
L36	15.45 - 15.2	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.679	-4.040	2.018
			Max. Mx	20	-25.138	1318.263	0.399
			Max. My	2	-25.117	-0.791	1344.591
			Max. Vy	20	-22.296	1318.263	0.399
			Max. Vx	2	-22.915	-0.791	1344.591
			Max. Torque	19			-0.665
L37	15.2 - 13.41	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.446	-4.167	2.046
			Max. Mx	20	-25.653	1358.268	0.427
			Max. My	2	-25.634	-0.803	1385.744
			Max. Vy	20	-22.458	1358.268	0.427
			Max. Vx	2	-23.078	-0.803	1385.744

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	12			0.692
L38	13.41 - 13.16	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.548	-4.185	2.050
			Max. Mx	20	-25.741	1363.875	0.431
			Max. My	2	-25.723	-0.804	1391.511
			Max. Vy	20	-22.456	1363.875	0.431
			Max. Vx	2	-23.077	-0.804	1391.511
			Max. Torque	12			0.696
L39	13.16 - 8.16	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.528	-4.497	2.176
			Max. Mx	20	-27.140	1476.928	0.510
			Max. My	2	-27.128	-0.839	1507.779
			Max. Vy	20	-22.816	1476.928	0.510
			Max. Vx	2	-23.438	-0.839	1507.779
			Max. Torque	12			0.759
L40	8.16 - 6.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.195	-4.614	2.203
			Max. Mx	20	-27.604	1514.851	0.536
			Max. My	2	-27.594	-0.851	1546.773
			Max. Vy	20	-22.950	1514.851	0.536
			Max. Vx	2	-23.572	-0.851	1546.773
			Max. Torque	12			0.784
L41	6.5 - 6.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.301	-4.631	2.207
			Max. Mx	20	-27.702	1520.580	0.540
			Max. My	2	-27.693	-0.853	1552.663
			Max. Vy	20	-22.945	1520.580	0.540
			Max. Vx	2	-23.567	-0.853	1552.663
			Max. Torque	12			0.788
L42	6.25 - 4.45	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-61.064	-4.756	2.237
			Max. Mx	20	-28.237	1561.976	0.569
			Max. My	2	-28.229	-0.866	1595.221
			Max. Vy	20	-23.111	1561.976	0.569
			Max. Vx	2	-23.734	-0.866	1595.221
			Max. Torque	12			0.816
L43	4.45 - 4.2	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-61.158	-4.773	2.242
			Max. Mx	20	-28.321	1567.746	0.573
			Max. My	2	-28.315	-0.868	1601.152
			Max. Vy	20	-23.107	1567.746	0.573
			Max. Vx	2	-23.730	-0.868	1601.152
			Max. Torque	12			0.820
L44	4.2 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.661	-5.025	2.351
			Max. Mx	20	-29.436	1665.297	0.640
			Max. My	2	-29.436	-0.900	1701.420
			Max. Vy	20	-23.403	1665.297	0.640
			Max. Vx	2	-24.026	-0.900	1701.420
			Max. Torque	12			0.880

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	32	62.661	-3.208	-5.552

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	21	22.089	23.382	0.008
	Max. H_z	2	29.453	0.008	24.006
	Max. M_x	2	1701.420	0.008	24.006
	Max. M_z	8	1642.236	-22.260	-0.008
	Max. Torsion	12	0.880	-12.423	-21.568
	Min. Vert	7	22.089	-19.274	11.157
	Min. H_x	9	22.089	-22.260	-0.008
	Min. H_z	14	29.453	-0.008	-23.731
	Min. M_x	14	-1692.486	-0.008	-23.731
	Min. M_z	20	-1665.297	23.382	0.008
	Min. Torsion	24	-0.878	12.443	21.603

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	24.544	0.000	0.000	-0.488	-0.739	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	29.453	-0.008	-24.006	-1701.420	-0.900	-0.148
0.9 Dead+1.0 Wind 0 deg - No Ice	22.089	-0.008	-24.006	-1679.586	-0.653	-0.149
1.2 Dead+1.0 Wind 30 deg - No Ice	29.453	11.469	-19.931	-1433.534	-825.845	-0.557
0.9 Dead+1.0 Wind 30 deg - No Ice	22.089	11.469	-19.931	-1414.932	-814.979	-0.558
1.2 Dead+1.0 Wind 60 deg - No Ice	29.453	19.274	-11.157	-823.601	-1422.326	-0.662
0.9 Dead+1.0 Wind 60 deg - No Ice	22.089	19.274	-11.157	-812.810	-1403.719	-0.663
1.2 Dead+1.0 Wind 90 deg - No Ice	29.453	22.260	0.008	-0.576	-1642.236	-0.591
0.9 Dead+1.0 Wind 90 deg - No Ice	22.089	22.260	0.008	-0.413	-1620.792	-0.591
1.2 Dead+1.0 Wind 120 deg - No Ice	29.453	20.293	11.754	836.706	-1447.067	-0.361
0.9 Dead+1.0 Wind 120 deg - No Ice	22.089	20.293	11.754	826.151	-1428.309	-0.361
1.2 Dead+1.0 Wind 150 deg - No Ice	29.453	12.423	21.568	1496.373	-862.858	-0.880
0.9 Dead+1.0 Wind 150 deg - No Ice	22.089	12.423	21.568	1477.609	-851.722	-0.879
1.2 Dead+1.0 Wind 180 deg - No Ice	29.453	0.008	23.731	1692.486	-0.964	0.147
0.9 Dead+1.0 Wind 180 deg - No Ice	22.089	0.008	23.731	1671.018	-0.727	0.148
1.2 Dead+1.0 Wind 210 deg - No Ice	29.453	-11.596	20.151	1442.177	829.670	0.559
0.9 Dead+1.0 Wind 210 deg - No Ice	22.089	-11.596	20.151	1423.822	819.248	0.560
1.2 Dead+1.0 Wind 240 deg - No Ice	29.453	-20.543	11.890	840.065	1451.081	0.664
0.9 Dead+1.0 Wind 240 deg - No Ice	22.089	-20.543	11.890	829.482	1432.770	0.665
1.2 Dead+1.0 Wind 270 deg - No Ice	29.453	-23.382	-0.008	-0.640	1665.297	0.591
0.9 Dead+1.0 Wind 270 deg -	22.089	-23.382	-0.008	-0.486	1644.184	0.591

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice 1.2 Dead+1.0 Wind 300 deg - No Ice	29.453	-20.245	-11.726	-836.942	1443.502	0.359
0.9 Dead+1.0 Wind 300 deg - No Ice	22.089	-20.245	-11.726	-826.070	1425.230	0.359
1.2 Dead+1.0 Wind 330 deg - No Ice	29.453	-12.443	-21.603	-1498.269	861.396	0.878
0.9 Dead+1.0 Wind 330 deg - No Ice	22.089	-12.443	-21.603	-1479.178	850.735	0.877
1.2 Dead+1.0 Ice+1.0 Temp	62.661	0.000	-0.000	-2.351	-5.025	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	62.661	-0.012	-6.087	-492.370	-4.266	-0.088
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	62.661	2.949	-5.129	-419.720	-245.300	-0.188
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	62.661	5.087	-2.935	-242.304	-421.007	-0.201
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	62.661	5.881	0.012	-1.559	-485.821	-0.160
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	62.661	5.169	2.996	240.263	-424.068	-0.077
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	62.661	3.208	5.552	431.194	-255.609	-0.186
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	62.661	0.012	6.034	486.029	-5.899	0.088
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	62.661	-2.954	5.137	415.398	235.382	0.188
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	62.661	-5.217	3.010	239.948	414.991	0.201
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	62.661	-5.964	-0.012	-3.192	478.282	0.160
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	62.661	-5.159	-2.990	-244.820	413.566	0.076
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	62.661	-3.211	-5.558	-436.099	245.534	0.187
Dead+Wind 0 deg - Service	24.544	-0.002	-5.656	-398.745	-0.761	-0.036
Dead+Wind 30 deg - Service	24.544	2.702	-4.696	-335.992	-193.900	-0.134
Dead+Wind 60 deg - Service	24.544	4.541	-2.629	-193.187	-333.542	-0.159
Dead+Wind 90 deg - Service	24.544	5.245	0.002	-0.503	-385.027	-0.141
Dead+Wind 120 deg - Service	24.544	4.781	2.769	195.532	-339.356	-0.086
Dead+Wind 150 deg - Service	24.544	2.927	5.081	350.019	-202.597	-0.208
Dead+Wind 180 deg - Service	24.544	0.002	5.591	395.913	-0.777	0.036
Dead+Wind 210 deg - Service	24.544	-2.732	4.748	337.287	193.699	0.134
Dead+Wind 240 deg - Service	24.544	-4.840	2.801	196.320	339.198	0.159
Dead+Wind 270 deg - Service	24.544	-5.509	-0.002	-0.518	389.343	0.141
Dead+Wind 300 deg - Service	24.544	-4.770	-2.763	-196.321	337.415	0.086
Dead+Wind 330 deg - Service	24.544	-2.932	-5.090	-351.197	201.150	0.208

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-24.544	0.000	0.000	24.544	0.000	0.000%
2	-0.008	-29.453	-24.006	0.008	29.453	24.006	0.000%
3	-0.008	-22.089	-24.006	0.008	22.089	24.006	0.000%
4	11.469	-29.453	-19.931	-11.469	29.453	19.931	0.000%
5	11.469	-22.089	-19.931	-11.469	22.089	19.931	0.000%
6	19.274	-29.453	-11.157	-19.274	29.453	11.157	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
7	19.274	-22.089	-11.157	-19.274	22.089	11.157	0.000%
8	22.260	-29.453	0.008	-22.260	29.453	-0.008	0.000%
9	22.260	-22.089	0.008	-22.260	22.089	-0.008	0.000%
10	20.293	-29.453	11.754	-20.293	29.453	-11.754	0.000%
11	20.293	-22.089	11.754	-20.293	22.089	-11.754	0.000%
12	12.423	-29.453	21.568	-12.423	29.453	-21.568	0.000%
13	12.423	-22.089	21.568	-12.423	22.089	-21.568	0.000%
14	0.008	-29.453	23.731	-0.008	29.453	-23.731	0.000%
15	0.008	-22.089	23.731	-0.008	22.089	-23.731	0.000%
16	-11.596	-29.453	20.151	11.596	29.453	-20.151	0.000%
17	-11.596	-22.089	20.151	11.596	22.089	-20.151	0.000%
18	-20.543	-29.453	11.890	20.543	29.453	-11.890	0.000%
19	-20.543	-22.089	11.890	20.543	22.089	-11.890	0.000%
20	-23.382	-29.453	-0.008	23.382	29.453	0.008	0.000%
21	-23.382	-22.089	-0.008	23.382	22.089	0.008	0.000%
22	-20.245	-29.453	-11.726	20.245	29.453	11.726	0.000%
23	-20.245	-22.089	-11.726	20.245	22.089	11.726	0.000%
24	-12.443	-29.453	-21.603	12.443	29.453	21.603	0.000%
25	-12.443	-22.089	-21.603	12.443	22.089	21.603	0.000%
26	0.000	-62.661	0.000	-0.000	62.661	0.000	0.000%
27	-0.012	-62.661	-6.087	0.012	62.661	6.087	0.000%
28	2.949	-62.661	-5.129	-2.949	62.661	5.129	0.000%
29	5.087	-62.661	-2.935	-5.087	62.661	2.935	0.000%
30	5.881	-62.661	0.012	-5.881	62.661	-0.012	0.000%
31	5.169	-62.661	2.996	-5.169	62.661	-2.996	0.000%
32	3.208	-62.661	5.552	-3.208	62.661	-5.552	0.000%
33	0.012	-62.661	6.034	-0.012	62.661	-6.034	0.000%
34	-2.954	-62.661	5.137	2.954	62.661	-5.137	0.000%
35	-5.217	-62.661	3.010	5.217	62.661	-3.010	0.000%
36	-5.964	-62.661	-0.012	5.964	62.661	0.012	0.000%
37	-5.159	-62.661	-2.990	5.159	62.661	2.990	0.000%
38	-3.211	-62.661	-5.558	3.211	62.661	5.558	0.000%
39	-0.002	-24.544	-5.656	0.002	24.544	5.656	0.000%
40	2.702	-24.544	-4.696	-2.702	24.544	4.696	0.000%
41	4.541	-24.544	-2.629	-4.541	24.544	2.629	0.000%
42	5.245	-24.544	0.002	-5.245	24.544	-0.002	0.000%
43	4.781	-24.544	2.769	-4.781	24.544	-2.769	0.000%
44	2.927	-24.544	5.081	-2.927	24.544	-5.081	0.000%
45	0.002	-24.544	5.591	-0.002	24.544	-5.591	0.000%
46	-2.732	-24.544	4.748	2.732	24.544	-4.748	0.000%
47	-4.840	-24.544	2.801	4.840	24.544	-2.801	0.000%
48	-5.509	-24.544	-0.002	5.509	24.544	0.002	0.000%
49	-4.770	-24.544	-2.763	4.770	24.544	2.763	0.000%
50	-2.932	-24.544	-5.090	2.932	24.544	5.090	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	0.00032558
3	Yes	5	0.00000001	0.00012455
4	Yes	7	0.00000001	0.00011738
5	Yes	6	0.00000001	0.00059399
6	Yes	7	0.00000001	0.00012217
7	Yes	6	0.00000001	0.00061996

8	Yes	6	0.00000001	0.00006738
9	Yes	5	0.00000001	0.00047776
10	Yes	7	0.00000001	0.00011869
11	Yes	6	0.00000001	0.00059984
12	Yes	7	0.00000001	0.00012482
13	Yes	6	0.00000001	0.00062790
14	Yes	5	0.00000001	0.00033609
15	Yes	5	0.00000001	0.00013038
16	Yes	7	0.00000001	0.00012193
17	Yes	6	0.00000001	0.00061755
18	Yes	7	0.00000001	0.00011761
19	Yes	6	0.00000001	0.00059397
20	Yes	6	0.00000001	0.00006586
21	Yes	5	0.00000001	0.00046603
22	Yes	7	0.00000001	0.00012174
23	Yes	6	0.00000001	0.00061600
24	Yes	7	0.00000001	0.00012090
25	Yes	6	0.00000001	0.00060746
26	Yes	5	0.00000001	0.00026479
27	Yes	7	0.00000001	0.00057224
28	Yes	7	0.00000001	0.00078737
29	Yes	7	0.00000001	0.00079359
30	Yes	7	0.00000001	0.00056976
31	Yes	7	0.00000001	0.00078218
32	Yes	7	0.00000001	0.00080965
33	Yes	7	0.00000001	0.00056548
34	Yes	7	0.00000001	0.00076615
35	Yes	7	0.00000001	0.00076233
36	Yes	7	0.00000001	0.00055970
37	Yes	7	0.00000001	0.00077894
38	Yes	7	0.00000001	0.00079457
39	Yes	5	0.00000001	0.00006890
40	Yes	5	0.00000001	0.00056554
41	Yes	5	0.00000001	0.00062146
42	Yes	5	0.00000001	0.00009369
43	Yes	5	0.00000001	0.00057624
44	Yes	5	0.00000001	0.00065119
45	Yes	5	0.00000001	0.00006864
46	Yes	5	0.00000001	0.00061479
47	Yes	5	0.00000001	0.00056404
48	Yes	5	0.00000001	0.00009355
49	Yes	5	0.00000001	0.00061271
50	Yes	5	0.00000001	0.00060067

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 93	19.525	50	1.859	0.003
L2	93 - 88	17.580	50	1.853	0.003
L3	88 - 82.79	15.663	50	1.803	0.003
L4	85.207 - 80.207	14.621	50	1.755	0.003
L5	80.207 - 75.207	12.816	50	1.681	0.003
L6	75.207 - 70.207	11.114	50	1.568	0.003
L7	70.207 - 65.207	9.540	50	1.434	0.002
L8	65.207 - 60.207	8.117	50	1.281	0.002
L9	60.207 - 59.17	6.863	50	1.110	0.001
L10	59.17 - 58.9	6.626	50	1.073	0.001
L11	58.9 - 58.75	6.566	50	1.068	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L12	58.75 - 54	6.532	50	1.065	0.001
L13	54 - 53.75	5.518	50	0.973	0.001
L14	53.75 - 52.91	5.468	50	0.968	0.001
L15	52.91 - 52.66	5.299	50	0.951	0.001
L16	52.66 - 52.17	5.249	50	0.948	0.001
L17	52.17 - 51.92	5.152	50	0.940	0.001
L18	51.92 - 45.287	5.103	50	0.935	0.001
L19	48.704 - 44.287	4.494	50	0.872	0.001
L20	44.287 - 39.287	3.709	50	0.818	0.001
L21	39.287 - 34.287	2.905	50	0.718	0.001
L22	34.287 - 33.5	2.207	50	0.616	0.000
L23	33.5 - 33.25	2.106	50	0.600	0.000
L24	33.25 - 33	2.075	50	0.597	0.000
L25	33 - 32.75	2.044	50	0.593	0.000
L26	32.75 - 32	2.013	50	0.590	0.000
L27	32 - 31.75	1.921	50	0.579	0.000
L28	31.75 - 28.5	1.891	50	0.575	0.000
L29	28.5 - 28.25	1.521	50	0.514	0.000
L30	28.25 - 27.5	1.494	50	0.511	0.000
L31	27.5 - 27.25	1.414	50	0.501	0.000
L32	27.25 - 22.25	1.388	50	0.496	0.000
L33	22.25 - 18	0.918	50	0.403	0.000
L34	18 - 17.75	0.595	50	0.323	0.000
L35	17.75 - 15.45	0.578	50	0.319	0.000
L36	15.45 - 15.2	0.437	50	0.265	0.000
L37	15.2 - 13.41	0.424	50	0.261	0.000
L38	13.41 - 13.16	0.331	50	0.235	0.000
L39	13.16 - 8.16	0.319	50	0.230	0.000
L40	8.16 - 6.5	0.124	50	0.141	0.000
L41	6.5 - 6.25	0.080	50	0.112	0.000
L42	6.25 - 4.45	0.075	50	0.109	0.000
L43	4.45 - 4.2	0.038	50	0.083	0.000
L44	4.2 - 0	0.034	50	0.078	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
98.000	Miscellaneous [NA 510-1]	50	19.525	1.859	0.003	10789
94.000	APXVTM14-ALU-I20 w/ Mount Pipe	50	17.968	1.857	0.003	10789
89.000	APXVAARR24_43-U-NA20 w/ Mount Pipe	50	16.041	1.818	0.003	4732
76.000	Miscellaneous [NA 507-1]	50	11.376	1.588	0.003	2412
74.000	TPA-65R-LCUUUU-H8 w/ Mount Pipe	50	10.721	1.537	0.002	2251
67.000	(2) SBNHH-1D65B w/ Mount Pipe	50	8.608	1.337	0.002	1835
52.000	KS24019-L112A	50	5.119	0.937	0.001	3149

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 93	83.265	24	7.955	0.010
L2	93 - 88	74.986	24	7.928	0.010
L3	88 - 82.79	66.824	24	7.715	0.010
L4	85.207 - 80.207	62.391	24	7.510	0.010
L5	80.207 - 75.207	54.700	24	7.190	0.011
L6	75.207 - 70.207	47.449	24	6.707	0.011
L7	70.207 - 65.207	40.739	24	6.135	0.009
L8	65.207 - 60.207	34.668	24	5.481	0.007
L9	60.207 - 59.17	29.319	24	4.747	0.005
L10	59.17 - 58.9	28.307	24	4.589	0.004
L11	58.9 - 58.75	28.048	24	4.568	0.004
L12	58.75 - 54	27.905	24	4.556	0.004
L13	54 - 53.75	23.575	24	4.160	0.004
L14	53.75 - 52.91	23.358	24	4.140	0.004
L15	52.91 - 52.66	22.637	24	4.069	0.003
L16	52.66 - 52.17	22.425	24	4.053	0.003
L17	52.17 - 51.92	22.011	24	4.021	0.003
L18	51.92 - 45.287	21.802	24	4.000	0.003
L19	48.704 - 44.287	19.202	24	3.728	0.003
L20	44.287 - 39.287	15.847	24	3.499	0.003
L21	39.287 - 34.287	12.412	24	3.069	0.002
L22	34.287 - 33.5	9.428	24	2.633	0.002
L23	33.5 - 33.25	9.000	24	2.565	0.002
L24	33.25 - 33	8.866	24	2.550	0.002
L25	33 - 32.75	8.733	24	2.536	0.002
L26	32.75 - 32	8.601	24	2.521	0.002
L27	32 - 31.75	8.208	24	2.477	0.002
L28	31.75 - 28.5	8.079	24	2.457	0.002
L29	28.5 - 28.25	6.496	24	2.196	0.001
L30	28.25 - 27.5	6.382	24	2.183	0.001
L31	27.5 - 27.25	6.042	24	2.141	0.001
L32	27.25 - 22.25	5.931	24	2.122	0.001
L33	22.25 - 18	3.920	24	1.721	0.001
L34	18 - 17.75	2.540	24	1.381	0.001
L35	17.75 - 15.45	2.468	24	1.361	0.001
L36	15.45 - 15.2	1.868	24	1.130	0.001
L37	15.2 - 13.41	1.810	24	1.115	0.001
L38	13.41 - 13.16	1.413	24	1.002	0.001
L39	13.16 - 8.16	1.361	24	0.983	0.001
L40	8.16 - 6.5	0.532	24	0.602	0.000
L41	6.5 - 6.25	0.343	24	0.480	0.000
L42	6.25 - 4.45	0.318	24	0.465	0.000
L43	4.45 - 4.2	0.164	24	0.353	0.000
L44	4.2 - 0	0.146	24	0.334	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
98.000	Miscellaneous [NA 510-1]	24	83.265	7.955	0.011	2619
94.000	APXVTM14-ALU-I20 w/ Mount Pipe	24	76.638	7.943	0.011	2619
89.000	APXVAARR24_43-U-NA20 w/ Mount Pipe	24	68.437	7.777	0.011	1146
76.000	Miscellaneous [NA 507-1]	24	48.565	6.793	0.011	578
74.000	TPA-65R-LCUUUU-H8 w/ Mount	24	45.776	6.575	0.010	539

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Pipe					
67.000	(2) SBNHH-1D65B w/ Mount Pipe	24	36.766	5.720	0.007	437
52.000	KS24019-L112A	24	21.869	4.007	0.003	743

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	98 - 93 (1)	TP13.078x12x0.188	5.000	0.000	0.0	7.672	-3.371	448.789	0.008
L2	93 - 88 (2)	TP14.156x13.078x0.188	5.000	0.000	0.0	8.313	-5.746	486.327	0.012
L3	88 - 82.79 (3)	TP15.28x14.156x0.188	5.210	0.000	0.0	8.672	-5.885	507.296	0.012
L4	82.79 - 80.207 (4)	TP15.445x14.384x0.25	5.000	0.000	0.0	12.058	-6.282	705.368	0.009
L5	80.207 - 75.207 (5)	TP16.507x15.445x0.25	5.000	0.000	0.0	12.900	-6.908	754.650	0.009
L6	75.207 - 70.207 (6)	TP17.569x16.507x0.25	5.000	0.000	0.0	13.742	-10.171	803.931	0.013
L7	70.207 - 65.207 (7)	TP18.63x17.569x0.25	5.000	0.000	0.0	14.585	-13.456	853.213	0.016
L8	65.207 - 60.207 (8)	TP19.692x18.63x0.25	5.000	0.000	0.0	15.427	-14.139	902.494	0.016
L9	60.207 - 59.17 (9)	TP19.912x19.692x0.25	1.037	0.000	0.0	15.602	-14.285	912.715	0.016
L10	59.17 - 58.9 (10)	TP19.97x19.912x0.513	0.270	0.000	0.0	31.650	-14.354	1851.540	0.008
L11	58.9 - 58.75 (11)	TP20.001x19.97x0.513	0.150	0.000	0.0	31.702	-14.382	1854.570	0.008
L12	58.75 - 54 (12)	TP21.01x20.001x0.5	4.750	0.000	0.0	32.549	-15.202	1904.140	0.008
L13	54 - 53.75 (13)	TP21.063x21.01x0.513	0.250	0.000	0.0	33.429	-15.267	1955.600	0.008
L14	53.75 - 52.91 (14)	TP21.241x21.063x0.5	0.840	0.000	0.0	32.917	-15.432	1925.620	0.008
L15	52.91 - 52.66 (15)	TP21.294x21.241x0.675	0.250	0.000	0.0	44.176	-15.496	2584.310	0.006
L16	52.66 - 52.17 (16)	TP21.399x21.294x0.675	0.490	0.000	0.0	44.399	-15.601	2597.350	0.006
L17	52.17 - 51.92 (17)	TP21.452x21.399x0.525	0.250	0.000	0.0	34.871	-15.734	2039.960	0.008
L18	51.92 - 45.287 (18)	TP22.86x21.452x0.513	6.633	0.000	0.0	35.172	-16.395	2057.560	0.008
L19	45.287 - 44.287 (19)	TP22.575x21.634x0.563	4.417	0.000	0.0	39.300	-17.852	2299.030	0.008
L20	44.287 - 39.287 (20)	TP23.639x22.575x0.55	5.000	0.000	0.0	40.306	-19.017	2357.890	0.008
L21	39.287 - 34.287 (21)	TP24.703x23.639x0.538	5.000	0.000	0.0	41.227	-20.215	2411.760	0.008
L22	34.287 - 33.5 (22)	TP24.87x24.703x0.525	0.787	0.000	0.0	40.568	-20.410	2373.220	0.009
L23	33.5 - 33.25 (23)	TP24.923x24.87x0.838	0.250	0.000	0.0	64.026	-20.498	3745.520	0.005
L24	33.25 - 33 (24)	TP24.977x24.923x0.838	0.250	0.000	0.0	64.167	-20.575	3753.800	0.005
L25	33 - 32.75 (25)	TP25.03x24.977x0.813	0.250	0.000	0.0	62.454	-20.645	3653.540	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L26	32.75 - 32 (26)	TP25.19x25.03x0.8	0.750	0.000	0.0	61.930	-20.852	3622.900	0.006
L27	32 - 31.75 (27)	TP25.243x25.19x0.588	0.250	0.000	0.0	45.975	-20.916	2689.550	0.008
L28	31.75 - 28.5 (28)	TP25.934x25.243x0.575	3.250	0.000	0.0	46.282	-21.678	2707.510	0.008
L29	28.5 - 28.25 (29)	TP25.988x25.934x0.863	0.250	0.000	0.0	68.782	-21.769	4023.740	0.005
L30	28.25 - 27.5 (30)	TP26.147x25.988x0.85	0.750	0.000	0.0	68.249	-21.992	3992.590	0.006
L31	27.5 - 27.25 (31)	TP26.2x26.147x0.575	0.250	0.000	0.0	46.768	-22.057	2735.910	0.008
L32	27.25 - 22.25 (32)	TP27.265x26.2x0.563	5.000	0.000	0.0	47.673	-23.271	2788.890	0.008
L33	22.25 - 18 (33)	TP28.169x27.265x0.55	4.250	0.000	0.0	48.215	-24.333	2820.560	0.009
L34	18 - 17.75 (34)	TP28.222x28.169x0.563	0.250	0.000	0.0	49.383	-24.416	2888.910	0.008
L35	17.75 - 15.45 (35)	TP28.712x28.222x0.425	2.300	0.000	0.0	38.158	-25.003	2232.210	0.011
L36	15.45 - 15.2 (36)	TP28.765x28.712x0.688	0.250	0.000	0.0	61.269	-25.099	3584.220	0.007
L37	15.2 - 13.41 (37)	TP29.146x28.765x0.675	1.790	0.000	0.0	60.998	-25.616	3568.360	0.007
L38	13.41 - 13.16 (38)	TP29.199x29.146x0.563	0.250	0.000	0.0	51.127	-25.706	2990.940	0.009
L39	13.16 - 8.16 (39)	TP30.263x29.199x0.55	5.000	0.000	0.0	51.871	-27.115	3034.430	0.009
L40	8.16 - 6.5 (40)	TP30.617x30.263x0.55	1.660	0.000	0.0	52.487	-27.583	3070.510	0.009
L41	6.5 - 6.25 (41)	TP30.67x30.617x0.663	0.250	0.000	0.0	63.099	-27.683	3691.270	0.007
L42	6.25 - 4.45 (42)	TP31.053x30.67x0.65	1.800	0.000	0.0	62.724	-28.220	3669.370	0.008
L43	4.45 - 4.2 (43)	TP31.106x31.053x0.513	0.250	0.000	0.0	49.766	-28.308	2911.300	0.010
L44	4.2 - 0 (44)	TP32x31.106x0.5	4.200	0.000	0.0	49.991	-29.435	2924.440	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	98 - 93 (1)	TP13.078x12x0.188	14.043	150.088	0.094	0.000	150.088	0.000
L2	93 - 88 (2)	TP14.156x13.078x0.188	44.968	176.441	0.255	0.000	176.441	0.000
L3	88 - 82.79 (3)	TP15.28x14.156x0.188	68.354	192.089	0.356	0.000	192.089	0.000
L4	82.79 - 80.207 (4)	TP15.445x14.384x0.25	111.058	277.548	0.400	0.000	277.548	0.000
L5	80.207 - 75.207 (5)	TP16.507x15.445x0.25	154.950	318.022	0.487	0.000	318.022	0.000
L6	75.207 - 70.207 (6)	TP17.569x16.507x0.25	227.333	361.249	0.629	0.000	361.249	0.000
L7	70.207 - 65.207 (7)	TP18.63x17.569x0.25	304.390	407.231	0.747	0.000	407.231	0.000
L8	65.207 - 60.207 (8)	TP19.692x18.63x0.25	398.047	455.967	0.873	0.000	455.967	0.000
L9	60.207 - 59.17 (9)	TP19.912x19.692x0.25	417.709	466.420	0.896	0.000	466.420	0.000
L10	59.17 - 58.9 (10)	TP19.97x19.912x0.513	422.844	923.883	0.458	0.000	923.883	0.000
L11	58.9 - 58.75 (11)	TP20.001x19.97x0.513	425.700	926.950	0.459	0.000	926.950	0.000
L12	58.75 - 54 (12)	TP21.01x20.001x0.5	517.319	1003.458	0.516	0.000	1003.458	0.000
L13	54 - 53.75 (13)	TP21.063x21.01x0.513	522.205	1032.050	0.506	0.000	1032.050	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L14	53.75 - 52.91 (14)	TP21.241x21.063x0.5	538.662	1026.500	0.525	0.000	1026.500	0.000
L15	52.91 - 52.66 (15)	TP21.294x21.241x0.675	543.572	1358.092	0.400	0.000	1358.092	0.000
L16	52.66 - 52.17 (16)	TP21.399x21.294x0.675	553.212	1372.050	0.403	0.000	1372.050	0.000
L17	52.17 - 51.92 (17)	TP21.452x21.399x0.525	558.052	1096.117	0.509	0.000	1096.117	0.000
L18	51.92 - 45.287 (18)	TP22.86x21.452x0.513	622.136	1143.850	0.544	0.000	1143.850	0.000
L19	45.287 - 44.287 (19)	TP22.575x21.634x0.563	712.728	1298.800	0.549	0.000	1298.800	0.000
L20	44.287 - 39.287 (20)	TP23.639x22.575x0.55	817.953	1399.575	0.584	0.000	1399.575	0.000
L21	39.287 - 34.287 (21)	TP24.703x23.639x0.538	925.775	1500.608	0.617	0.000	1500.608	0.000
L22	34.287 - 33.5 (22)	TP24.87x24.703x0.525	942.983	1488.617	0.633	0.000	1488.617	0.000
L23	33.5 - 33.25 (23)	TP24.923x24.87x0.838	948.458	2294.717	0.413	0.000	2294.717	0.000
L24	33.25 - 33 (24)	TP24.977x24.923x0.838	953.950	2305.033	0.414	0.000	2305.033	0.000
L25	33 - 32.75 (25)	TP25.03x24.977x0.813	959.442	2253.233	0.426	0.000	2253.233	0.000
L26	32.75 - 32 (26)	TP25.19x25.03x0.8	975.975	2251.850	0.433	0.000	2251.850	0.000
L27	32 - 31.75 (27)	TP25.243x25.19x0.588	981.500	1704.742	0.576	0.000	1704.742	0.000
L28	31.75 - 28.5 (28)	TP25.934x25.243x0.575	1053.900	1767.133	0.596	0.000	1767.133	0.000
L29	28.5 - 28.25 (29)	TP25.988x25.934x0.863	1059.517	2572.625	0.412	0.000	2572.625	0.000
L30	28.25 - 27.5 (30)	TP26.147x25.988x0.85	1076.400	2572.008	0.419	0.000	2572.008	0.000
L31	27.5 - 27.25 (31)	TP26.2x26.147x0.575	1082.042	1804.817	0.600	0.000	1804.817	0.000
L32	27.25 - 22.25 (32)	TP27.265x26.2x0.563	1195.808	1919.633	0.623	0.000	1919.633	0.000
L33	22.25 - 18 (33)	TP28.169x27.265x0.55	1294.067	2010.375	0.644	0.000	2010.375	0.000
L34	18 - 17.75 (34)	TP28.222x28.169x0.563	1299.900	2061.283	0.631	0.000	2061.283	0.000
L35	17.75 - 15.45 (35)	TP28.712x28.222x0.425	1353.783	1637.342	0.827	0.000	1637.342	0.000
L36	15.45 - 15.2 (36)	TP28.765x28.712x0.688	1359.667	2585.492	0.526	0.000	2585.492	0.000
L37	15.2 - 13.41 (37)	TP29.146x28.765x0.675	1401.975	2612.108	0.537	0.000	2612.108	0.000
L38	13.41 - 13.16 (38)	TP29.199x29.146x0.563	1407.908	2210.950	0.637	0.000	2210.950	0.000
L39	13.16 - 8.16 (39)	TP30.263x29.199x0.55	1527.750	2330.017	0.656	0.000	2330.017	0.000
L40	8.16 - 6.5 (40)	TP30.617x30.263x0.55	1568.033	2386.267	0.657	0.000	2386.267	0.000
L41	6.5 - 6.25 (41)	TP30.67x30.617x0.663	1574.125	2852.433	0.552	0.000	2852.433	0.000
L42	6.25 - 4.45 (42)	TP31.053x30.67x0.65	1618.150	2874.850	0.563	0.000	2874.850	0.000
L43	4.45 - 4.2 (43)	TP31.106x31.053x0.513	1624.292	2305.683	0.704	0.000	2305.683	0.000
L44	4.2 - 0 (44)	TP32x31.106x0.5	1728.242	2386.767	0.724	0.000	2386.767	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	98 - 93 (1)	TP13.078x12x0.188	5.133	134.637	0.038	0.000	151.992	0.000
L2	93 - 88 (2)	TP14.156x13.078x0.188	8.323	145.898	0.057	0.001	178.482	0.000
L3	88 - 82.79 (3)	TP15.28x14.156x0.188	8.431	152.189	0.055	0.001	194.205	0.000
L4	82.79 - 80.207 (4)	TP15.445x14.384x0.25	8.651	211.610	0.041	0.002	281.598	0.000
L5	80.207 - 75.207 (5)	TP16.507x15.445x0.25	9.077	226.395	0.040	0.002	322.322	0.000
L6	75.207 - 70.207 (6)	TP17.569x16.507x0.25	13.605	241.179	0.056	0.501	365.794	0.001
L7	70.207 - 65.207 (7)	TP18.63x17.569x0.25	18.553	255.964	0.072	0.152	412.015	0.000
L8	65.207 - 60.207 (8)	TP19.692x18.63x0.25	18.933	270.748	0.070	0.083	460.986	0.000
L9	60.207 - 59.17 (9)	TP19.912x19.692x0.25	19.017	273.815	0.069	0.066	471.487	0.000
L10	59.17 - 58.9 (10)	TP19.97x19.912x0.513	19.029	555.463	0.034	0.058	946.483	0.000
L11	58.9 - 58.75 (11)	TP20.001x19.97x0.513	19.045	556.372	0.034	0.056	949.583	0.000
L12	58.75 - 54 (12)	TP21.01x20.001x0.5	19.540	571.241	0.034	0.024	1026.042	0.000
L13	54 - 53.75 (13)	TP21.063x21.01x0.513	19.552	586.680	0.033	0.014	1055.858	0.000
L14	53.75 - 52.91 (14)	TP21.241x21.063x0.5	19.632	577.687	0.034	0.014	1049.325	0.000
L15	52.91 - 52.66 (15)	TP21.294x21.241x0.675	19.649	775.293	0.025	0.014	1399.983	0.000
L16	52.66 - 52.17 (16)	TP21.399x21.294x0.675	19.697	779.205	0.025	0.014	1414.150	0.000
L17	52.17 - 51.92 (17)	TP21.452x21.399x0.525	19.788	611.987	0.032	0.167	1121.558	0.000
L18	51.92 - 45.287 (18)	TP22.86x21.452x0.513	20.071	610.769	0.033	0.167	1168.825	0.000
L19	45.287 - 44.287 (19)	TP22.575x21.634x0.563	20.798	689.710	0.030	0.363	1329.558	0.000
L20	44.287 - 39.287 (20)	TP23.639x22.575x0.55	21.322	707.368	0.030	0.445	1430.292	0.000
L21	39.287 - 34.287 (21)	TP24.703x23.639x0.538	21.838	723.527	0.030	0.518	1531.183	0.000
L22	34.287 - 33.5 (22)	TP24.87x24.703x0.525	21.919	711.965	0.031	0.527	1517.933	0.000
L23	33.5 - 33.25 (23)	TP24.923x24.87x0.838	21.939	1123.660	0.020	0.529	2370.167	0.000
L24	33.25 - 33 (24)	TP24.977x24.923x0.838	21.969	1126.140	0.020	0.532	2380.650	0.000
L25	33 - 32.75 (25)	TP25.03x24.977x0.813	21.999	1096.060	0.020	0.534	2324.575	0.000
L26	32.75 - 32 (26)	TP25.19x25.03x0.8	22.092	1086.870	0.020	0.542	2321.458	0.000
L27	32 - 31.75 (27)	TP25.243x25.19x0.588	22.115	806.865	0.027	0.545	1742.167	0.000
L28	31.75 - 28.5 (28)	TP25.934x25.243x0.575	22.461	812.253	0.028	0.567	1803.892	0.000
L29	28.5 - 28.25 (29)	TP25.988x25.934x0.863	22.476	1207.120	0.019	0.568	2656.075	0.000
L30	28.25 - 27.5 (30)	TP26.147x25.988x0.85	22.566	1197.780	0.019	0.572	2653.567	0.000
L31	27.5 - 27.25 (31)	TP26.2x26.147x0.575	22.581	820.774	0.028	0.572	1841.942	0.000
L32	27.25 - 22.25 (32)	TP27.265x26.2x0.563	22.948	836.666	0.027	0.572	1956.492	0.000
L33	22.25 - 18 (33)	TP28.169x27.265x0.55	23.327	846.168	0.028	0.620	2046.658	0.000
L34	18 - 17.75 (34)	TP28.222x28.169x0.563	23.336	866.674	0.027	0.624	2099.350	0.000
L35	17.75 - 15.45 (35)	TP28.712x28.222x0.425	23.549	669.664	0.035	0.658	1658.900	0.000
L36	15.45 - 15.2 (36)	TP28.765x28.712x0.688	23.552	1075.270	0.022	0.662	2643.958	0.000
L37	15.2 - 13.41 (37)	TP29.146x28.765x0.675	23.750	1070.510	0.022	0.689	2669.150	0.000
L38	13.41 - 13.16 (38)	TP29.199x29.146x0.563	23.752	897.283	0.026	0.693	2250.258	0.000
L39	13.16 - 8.16 (39)	TP30.263x29.199x0.55	24.209	910.328	0.027	0.757	2368.808	0.000
L40	8.16 - 6.5 (40)	TP30.617x30.263x0.55	24.375	921.152	0.026	0.782	2425.475	0.000
L41	6.5 - 6.25 (41)	TP30.67x30.617x0.663	24.374	1107.380	0.022	0.786	2910.075	0.000
L42	6.25 - 4.45 (42)	TP31.053x30.67x0.65	24.576	1100.810	0.022	0.814	2930.950	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L43	4.45 - 4.2 (43)	TP31.106x31.053x0.513	24.575	873.391	0.028	0.817	2340.025	0.000
L44	4.2 - 0 (44)	TP32x31.106x0.5	24.951	877.333	0.028	0.878	2420.225	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	98 - 93 (1)	0.008	0.094	0.000	0.038	0.000	0.103 ✔	1.050	4.8.2 ✔
L2	93 - 88 (2)	0.012	0.255	0.000	0.057	0.000	0.270 ✔	1.050	4.8.2 ✔
L3	88 - 82.79 (3)	0.012	0.356	0.000	0.055	0.000	0.371 ✔	1.050	4.8.2 ✔
L4	82.79 - 80.207 (4)	0.009	0.400	0.000	0.041	0.000	0.411 ✔	1.050	4.8.2 ✔
L5	80.207 - 75.207 (5)	0.009	0.487	0.000	0.040	0.000	0.498 ✔	1.050	4.8.2 ✔
L6	75.207 - 70.207 (6)	0.013	0.629	0.000	0.056	0.001	0.645 ✔	1.050	4.8.2 ✔
L7	70.207 - 65.207 (7)	0.016	0.747	0.000	0.072	0.000	0.769 ✔	1.050	4.8.2 ✔
L8	65.207 - 60.207 (8)	0.016	0.873	0.000	0.070	0.000	0.894 ✔	1.050	4.8.2 ✔
L9	60.207 - 59.17 (9)	0.016	0.896	0.000	0.069	0.000	0.916 ✔	1.050	4.8.2 ✔
L10	59.17 - 58.9 (10)	0.008	0.458	0.000	0.034	0.000	0.467 ✔	1.050	4.8.2 ✔
L11	58.9 - 58.75 (11)	0.008	0.459	0.000	0.034	0.000	0.468 ✔	1.050	4.8.2 ✔
L12	58.75 - 54 (12)	0.008	0.516	0.000	0.034	0.000	0.525 ✔	1.050	4.8.2 ✔
L13	54 - 53.75 (13)	0.008	0.506	0.000	0.033	0.000	0.515 ✔	1.050	4.8.2 ✔
L14	53.75 - 52.91 (14)	0.008	0.525	0.000	0.034	0.000	0.534 ✔	1.050	4.8.2 ✔
L15	52.91 - 52.66 (15)	0.006	0.400	0.000	0.025	0.000	0.407 ✔	1.050	4.8.2 ✔
L16	52.66 - 52.17 (16)	0.006	0.403	0.000	0.025	0.000	0.410 ✔	1.050	4.8.2 ✔
L17	52.17 - 51.92 (17)	0.008	0.509	0.000	0.032	0.000	0.518 ✔	1.050	4.8.2 ✔
L18	51.92 - 45.287 (18)	0.008	0.544	0.000	0.033	0.000	0.553 ✔	1.050	4.8.2 ✔
L19	45.287 - 44.287 (19)	0.008	0.549	0.000	0.030	0.000	0.557 ✔	1.050	4.8.2 ✔
L20	44.287 - 39.287 (20)	0.008	0.584	0.000	0.030	0.000	0.593 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L21	39.287 - 34.287 (21)	0.008	0.617	0.000	0.030	0.000	0.626 ✔	1.050	4.8.2 ✔
L22	34.287 - 33.5 (22)	0.009	0.633	0.000	0.031	0.000	0.643 ✔	1.050	4.8.2 ✔
L23	33.5 - 33.25 (23)	0.005	0.413	0.000	0.020	0.000	0.419 ✔	1.050	4.8.2 ✔
L24	33.25 - 33 (24)	0.005	0.414	0.000	0.020	0.000	0.420 ✔	1.050	4.8.2 ✔
L25	33 - 32.75 (25)	0.006	0.426	0.000	0.020	0.000	0.432 ✔	1.050	4.8.2 ✔
L26	32.75 - 32 (26)	0.006	0.433	0.000	0.020	0.000	0.440 ✔	1.050	4.8.2 ✔
L27	32 - 31.75 (27)	0.008	0.576	0.000	0.027	0.000	0.584 ✔	1.050	4.8.2 ✔
L28	31.75 - 28.5 (28)	0.008	0.596	0.000	0.028	0.000	0.605 ✔	1.050	4.8.2 ✔
L29	28.5 - 28.25 (29)	0.005	0.412	0.000	0.019	0.000	0.418 ✔	1.050	4.8.2 ✔
L30	28.25 - 27.5 (30)	0.006	0.419	0.000	0.019	0.000	0.424 ✔	1.050	4.8.2 ✔
L31	27.5 - 27.25 (31)	0.008	0.600	0.000	0.028	0.000	0.608 ✔	1.050	4.8.2 ✔
L32	27.25 - 22.25 (32)	0.008	0.623	0.000	0.027	0.000	0.632 ✔	1.050	4.8.2 ✔
L33	22.25 - 18 (33)	0.009	0.644	0.000	0.028	0.000	0.653 ✔	1.050	4.8.2 ✔
L34	18 - 17.75 (34)	0.008	0.631	0.000	0.027	0.000	0.640 ✔	1.050	4.8.2 ✔
L35	17.75 - 15.45 (35)	0.011	0.827	0.000	0.035	0.000	0.839 ✔	1.050	4.8.2 ✔
L36	15.45 - 15.2 (36)	0.007	0.526	0.000	0.022	0.000	0.533 ✔	1.050	4.8.2 ✔
L37	15.2 - 13.41 (37)	0.007	0.537	0.000	0.022	0.000	0.544 ✔	1.050	4.8.2 ✔
L38	13.41 - 13.16 (38)	0.009	0.637	0.000	0.026	0.000	0.646 ✔	1.050	4.8.2 ✔
L39	13.16 - 8.16 (39)	0.009	0.656	0.000	0.027	0.000	0.665 ✔	1.050	4.8.2 ✔
L40	8.16 - 6.5 (40)	0.009	0.657	0.000	0.026	0.000	0.667 ✔	1.050	4.8.2 ✔
L41	6.5 - 6.25 (41)	0.007	0.552	0.000	0.022	0.000	0.560 ✔	1.050	4.8.2 ✔
L42	6.25 - 4.45 (42)	0.008	0.563	0.000	0.022	0.000	0.571 ✔	1.050	4.8.2 ✔
L43	4.45 - 4.2 (43)	0.010	0.704	0.000	0.028	0.000	0.715 ✔	1.050	4.8.2 ✔
L44	4.2 - 0 (44)	0.010	0.724	0.000	0.028	0.000	0.735 ✔	1.050	4.8.2 ✔

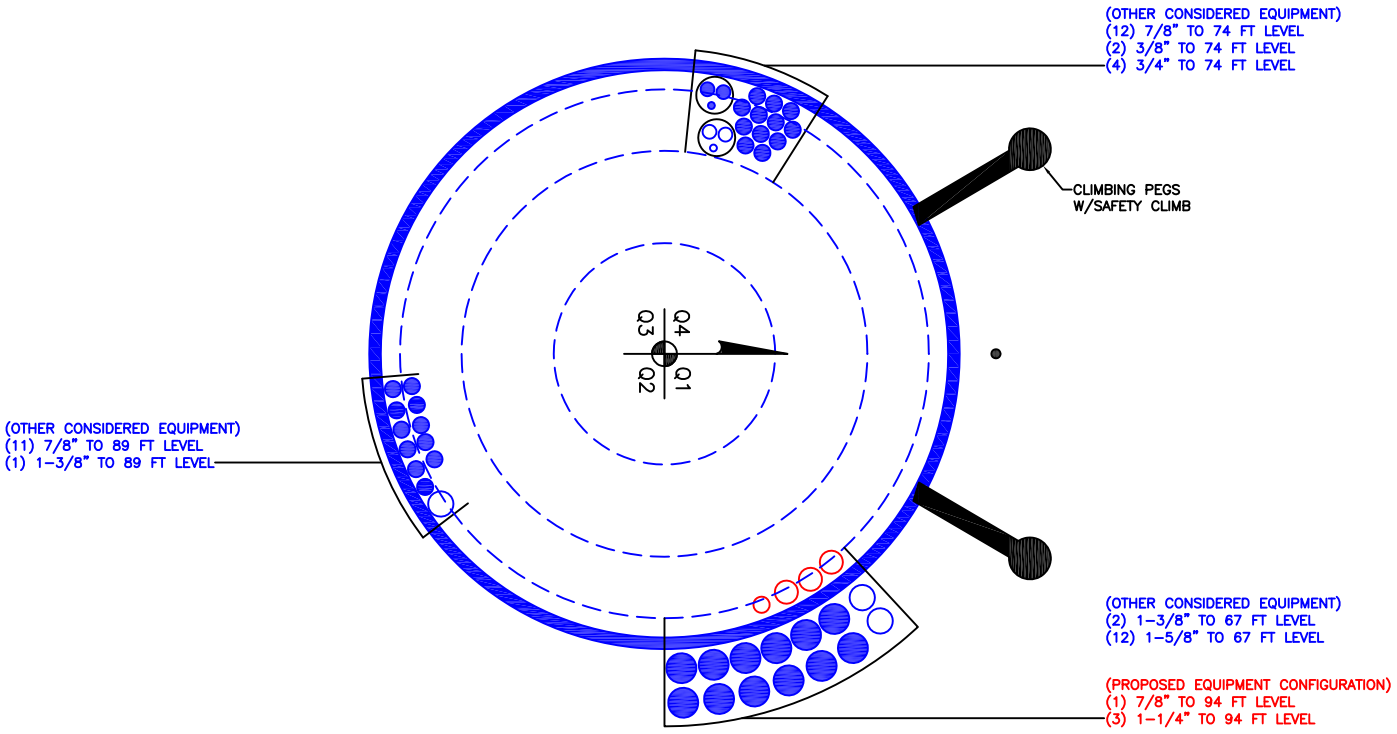
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	98 - 93	Pole	TP13.078x12x0.188	1	-3.371	471.228	**	**
L2	93 - 88	Pole	TP14.156x13.078x0.188	2	-5.746	510.643	**	**
L3	88 - 82.79	Pole	TP15.28x14.156x0.188	3	-5.885	532.661	**	**
L4	82.79 - 80.207	Pole	TP15.445x14.384x0.25	4	-6.282	740.636	**	**
L5	80.207 - 75.207	Pole	TP16.507x15.445x0.25	5	-6.908	792.382	**	**
L6	75.207 - 70.207	Pole	TP17.569x16.507x0.25	6	-10.171	844.128	**	**
L7	70.207 - 65.207	Pole	TP18.63x17.569x0.25	7	-13.456	895.874	**	**
L8	65.207 - 60.207	Pole	TP19.692x18.63x0.25	8	-14.139	947.619	**	**
L9	60.207 - 59.17	Pole	TP19.912x19.692x0.25	9	-14.285	958.351	**	**
L10	59.17 - 58.9	Pole	TP19.97x19.912x0.513	10	-14.354	1944.117	**	**
L11	58.9 - 58.75	Pole	TP20.001x19.97x0.513	11	-14.382	1947.298	**	**
L12	58.75 - 54	Pole	TP21.01x20.001x0.5	12	-15.202	1999.347	**	**
L13	54 - 53.75	Pole	TP21.063x21.01x0.513	13	-15.267	2053.380	**	**
L14	53.75 - 52.91	Pole	TP21.241x21.063x0.5	14	-15.432	2021.901	**	**
L15	52.91 - 52.66	Pole	TP21.294x21.241x0.675	15	-15.496	2713.525	**	**
L16	52.66 - 52.17	Pole	TP21.399x21.294x0.675	16	-15.601	2727.217	**	**
L17	52.17 - 51.92	Pole	TP21.452x21.399x0.525	17	-15.734	2141.958	**	**
L18	51.92 - 45.287	Pole	TP22.86x21.452x0.513	18	-16.395	2160.438	**	**
L19	45.287 - 44.287	Pole	TP22.575x21.634x0.563	19	-17.852	2413.981	**	**
L20	44.287 - 39.287	Pole	TP23.639x22.575x0.55	20	-19.017	2475.784	**	**
L21	39.287 - 34.287	Pole	TP24.703x23.639x0.538	21	-20.215	2532.348	**	**
L22	34.287 - 33.5	Pole	TP24.87x24.703x0.525	22	-20.410	2491.881	**	**
L23	33.5 - 33.25	Pole	TP24.923x24.87x0.838	23	-20.498	3932.796	**	**
L24	33.25 - 33	Pole	TP24.977x24.923x0.838	24	-20.575	3941.490	**	**
L25	33 - 32.75	Pole	TP25.03x24.977x0.813	25	-20.645	3836.217	**	**
L26	32.75 - 32	Pole	TP25.19x25.03x0.8	26	-20.852	3804.045	**	**
L27	32 - 31.75	Pole	TP25.243x25.19x0.588	27	-20.916	2824.027	**	**
L28	31.75 - 28.5	Pole	TP25.934x25.243x0.575	28	-21.678	2842.885	**	**
L29	28.5 - 28.25	Pole	TP25.988x25.934x0.863	29	-21.769	4224.927	**	**
L30	28.25 - 27.5	Pole	TP26.147x25.988x0.85	30	-21.992	4192.219	**	**
L31	27.5 - 27.25	Pole	TP26.2x26.147x0.575	31	-22.057	2872.705	**	**
L32	27.25 - 22.25	Pole	TP27.265x26.2x0.563	32	-23.271	2928.334	**	**
L33	22.25 - 18	Pole	TP28.169x27.265x0.55	33	-24.333	2961.588	**	**
L34	18 - 17.75	Pole	TP28.222x28.169x0.563	34	-24.416	3033.355	**	**
L35	17.75 - 15.45	Pole	TP28.712x28.222x0.425	35	-25.003	2343.820	**	**
L36	15.45 - 15.2	Pole	TP28.765x28.712x0.688	36	-25.099	3763.431	**	**
L37	15.2 - 13.41	Pole	TP29.146x28.765x0.675	37	-25.616	3746.778	**	**
L38	13.41 - 13.16	Pole	TP29.199x29.146x0.563	38	-25.706	3140.487	**	**
L39	13.16 - 8.16	Pole	TP30.263x29.199x0.55	39	-27.115	3186.151	**	**
L40	8.16 - 6.5	Pole	TP30.617x30.263x0.55	40	-27.583	3224.035	**	**
L41	6.5 - 6.25	Pole	TP30.67x30.617x0.663	41	-27.683	3875.833	**	**
L42	6.25 - 4.45	Pole	TP31.053x30.67x0.65	42	-28.220	3852.838	**	**
L43	4.45 - 4.2	Pole	TP31.106x31.053x0.513	43	-28.308	3056.865	**	**
L44	4.2 - 0	Pole	TP32x31.106x0.5	44	-29.435	3070.662	**	**
							Summary	
						Pole (L9)	**	**
						RATING =	**	**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876399

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876399

Work Order: 1773228

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	98	15.21	2.417	18	12	15.28	0.1875	Auto	A572-65
2	85.207	39.92	3.417	18	14.38	22.86	0.25	Auto	A572-65
3	48.704	48.704	0	18	21.63	32	0.3125	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	6.5	plate	MS-600 W(1.1875")	1												E2						
2	0	28.5	plate	MS-600 W(1.1875")	1																		E2
3	0	28.5	plate	MS-600 (1.1875")	1						E2												
4	4.45	15.45	plate	MS-600 (1.1875")	1											E2							
5	13.41	28.5	plate	MS-600 (1.1875")	1												E2						
6	27.5	33.5	plate	MS-600 (1.1875")	3					E2						E2						E2	
7	32	48.25	plate	MS-450 (1.1875")	1												E2						
8	32	59	plate	MS-450 (1.1875")	2						E2												E2
9	47.41	52.91	plate	MS-450 (1.1875")	1											E2							
10	52.17	59.17	plate	MS-450 (1.1875")	1												E2						
11	0	18	plate	CCI-WSFP-050125	1															P			
12	33	54	plate	CCI-SFP-050125	1															P			
13																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	n/a	24.000	16.375	4.750	1.1875	A572-65
2	6	1	6	0.5	n/a	24.000	16.375	4.750	1.1875	A572-65
3	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
7	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
8	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
10	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
11	5	1.25	6.25	0.625	n/a	24.000	23.000	4.688	1.1875	A572-65
12	5	1.25	6.25	0.625	24.000	24.000	23.000	4.688	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	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	98 - 93	5		18	12.000	13.078	0.1875	A572-65	1.000
2	93 - 88	5		18	13.078	14.156	0.1875	A572-65	1.000
3	88 - 85.207	5.21	2.417	18	14.156	15.280	0.1875	A572-65	1.000
4	85.207 - 80.207	5		18	14.384	15.445	0.25	A572-65	1.000
5	80.207 - 75.207	5		18	15.445	16.507	0.25	A572-65	1.000
6	75.207 - 70.207	5		18	16.507	17.569	0.25	A572-65	1.000
7	70.207 - 65.207	5		18	17.569	18.630	0.25	A572-65	1.000
8	65.207 - 60.207	5		18	18.630	19.692	0.25	A572-65	1.000
9	60.207 - 59.17	1.037		18	19.692	19.912	0.25	A572-65	1.000
10	59.17 - 58.9	0.27		18	19.912	19.970	0.5125	A572-65	0.921
11	58.9 - 58.75	0.15		18	19.970	20.001	0.5125	A572-65	0.920
12	58.75 - 54	4.75		18	20.001	21.010	0.5	A572-65	0.921
13	54 - 53.75	0.25		18	21.010	21.063	0.5125	A572-65	1.085
14	53.75 - 52.91	0.84		18	21.063	21.241	0.5	A572-65	1.106
15	52.91 - 52.66	0.25		18	21.241	21.294	0.675	A572-65	0.927
16	52.66 - 52.17	0.49		18	21.294	21.399	0.675	A572-65	0.924
17	52.17 - 51.92	0.25		18	21.399	21.452	0.525	A572-65	1.049
18	51.92 - 48.704	6.633	3.417	18	21.452	22.860	0.5125	A572-65	1.055
19	48.704 - 44.287	4.417		18	21.634	22.575	0.5625	A572-65	1.064
20	44.287 - 39.287	5		18	22.575	23.639	0.55	A572-65	1.064
21	39.287 - 34.287	5		18	23.639	24.703	0.5375	A572-65	1.066
22	34.287 - 33.5	0.787		18	24.703	24.870	0.525	A572-65	1.087
23	33.5 - 33.25	0.25		18	24.870	24.923	0.8375	A572-65	0.971
24	33.25 - 33	0.25		18	24.923	24.977	0.8375	A572-65	0.970
25	33 - 32.75	0.25		18	24.977	25.030	0.8125	A572-65	0.897
26	32.75 - 32	0.75		18	25.030	25.190	0.8	A572-65	0.907
27	32 - 31.75	0.25		18	25.190	25.243	0.5875	A572-65	0.929
28	31.75 - 28.5	3.25		18	25.243	25.934	0.575	A572-65	0.938
29	28.5 - 28.25	0.25		18	25.934	25.988	0.8625	A572-65	0.894
30	28.25 - 27.5	0.75		18	25.988	26.147	0.85	A572-65	0.903
31	27.5 - 27.25	0.25		18	26.147	26.200	0.575	A572-65	0.934
32	27.25 - 22.25	5		18	26.200	27.265	0.5625	A572-65	0.938
33	22.25 - 18	4.25		18	27.265	28.169	0.55	A572-65	0.946
34	18 - 17.75	0.25		18	28.169	28.222	0.5625	A572-65	1.052
35	17.75 - 15.45	2.3		18	28.222	28.712	0.425	A572-65	1.217
36	15.45 - 15.2	0.25		18	28.712	28.765	0.6875	A572-65	0.954
37	15.2 - 13.41	1.79		18	28.765	29.146	0.675	A572-65	0.965
38	13.41 - 13.16	0.25		18	29.146	29.199	0.5625	A572-65	1.035
39	13.16 - 8.16	5		18	29.199	30.263	0.55	A572-65	1.040
40	8.16 - 6.5	1.66		18	30.263	30.617	0.55	A572-65	1.035
41	6.5 - 6.25	0.25		18	30.617	30.670	0.6625	A572-65	0.957
42	6.25 - 4.45	1.8		18	30.670	31.053	0.65	A572-65	0.968
43	4.45 - 4.2	0.25		18	31.053	31.106	0.5125	A572-65	0.980
44	4.2 - 0	4.2		18	31.106	32.000	0.5	A572-65	0.994

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	98 - 93	3.37	14.04	5.13
2	93 - 88	5.75	44.97	8.32
3	88 - 85.207	5.88	68.35	8.43
4	85.207 - 80.207	6.28	111.06	8.65
5	80.207 - 75.207	6.91	154.95	9.08
6	75.207 - 70.207	10.17	227.33	13.60
7	70.207 - 65.207	13.46	304.39	18.55
8	65.207 - 60.207	14.14	398.05	18.93
9	60.207 - 59.17	14.28	417.71	19.02
10	59.17 - 58.9	14.35	422.84	19.03
11	58.9 - 58.75	14.38	425.70	19.05
12	58.75 - 54	15.20	517.32	19.54
13	54 - 53.75	15.27	522.20	19.55
14	53.75 - 52.91	15.43	538.66	19.63
15	52.91 - 52.66	15.50	543.57	19.65
16	52.66 - 52.17	15.60	553.21	19.70
17	52.17 - 51.92	15.73	558.05	19.79
18	51.92 - 48.704	16.40	622.14	20.07
19	48.704 - 44.287	17.85	712.73	20.80
20	44.287 - 39.287	19.02	817.95	21.32
21	39.287 - 34.287	20.21	925.77	21.84
22	34.287 - 33.5	20.41	942.98	21.92
23	33.5 - 33.25	20.50	948.46	21.94
24	33.25 - 33	20.57	953.95	21.97
25	33 - 32.75	20.65	959.44	22.00
26	32.75 - 32	20.85	975.97	22.09
27	32 - 31.75	20.92	981.50	22.11
28	31.75 - 28.5	21.68	1053.90	22.46
29	28.5 - 28.25	21.77	1059.51	22.48
30	28.25 - 27.5	21.99	1076.40	22.57
31	27.5 - 27.25	22.06	1082.04	22.58
32	27.25 - 22.25	23.27	1195.81	22.95
33	22.25 - 18	24.33	1294.07	23.33
34	18 - 17.75	24.42	1299.90	23.34
35	17.75 - 15.45	25.00	1353.78	23.55
36	15.45 - 15.2	25.10	1359.67	23.55
37	15.2 - 13.41	25.62	1401.98	23.75
38	13.41 - 13.16	25.71	1407.91	23.75
39	13.16 - 8.16	27.12	1527.75	24.21
40	8.16 - 6.5	27.58	1568.04	24.38
41	6.5 - 6.25	27.68	1574.13	24.37
42	6.25 - 4.45	28.22	1618.15	24.58
43	4.45 - 4.2	28.31	1624.29	24.58
44	4.2 - 0	29.43	1728.24	24.95

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
98 - 93	Pole	TP13.078x12x0.1875	Pole	9.5%	Pass
93 - 88	Pole	TP14.156x13.078x0.1875	Pole	25.2%	Pass
88 - 85.21	Pole	TP15.28x14.156x0.1875	Pole	34.8%	Pass
85.21 - 80.21	Pole	TP15.445x14.384x0.25	Pole	38.8%	Pass
80.21 - 75.21	Pole	TP16.507x15.445x0.25	Pole	47.1%	Pass
75.21 - 70.21	Pole	TP17.569x16.507x0.25	Pole	60.9%	Pass
70.21 - 65.21	Pole	TP18.63x17.569x0.25	Pole	72.4%	Pass
65.21 - 60.21	Pole	TP19.692x18.63x0.25	Pole	84.4%	Pass
60.21 - 59.17	Pole	TP19.912x19.692x0.25	Pole	86.5%	Pass
59.17 - 58.9	Pole + Reinf.	TP19.97x19.912x0.5125	Reinf. 10 Compression	78.4%	Pass
58.9 - 58.75	Pole + Reinf.	TP20.001x19.97x0.5125	Reinf. 10 Compression	78.8%	Pass
58.75 - 54	Pole + Reinf.	TP21.01x20.001x0.5	Reinf. 10 Compression	88.7%	Pass
54 - 53.75	Pole + Reinf.	TP21.063x21.01x0.5125	Reinf. 10 Compression	79.6%	Pass
53.75 - 52.91	Pole + Reinf.	TP21.241x21.063x0.5	Reinf. 10 Compression	81.1%	Pass
52.91 - 52.66	Pole + Reinf.	TP21.294x21.241x0.675	Reinf. 8 Compression	78.3%	Pass
52.66 - 52.17	Pole + Reinf.	TP21.399x21.294x0.675	Reinf. 8 Compression	79.2%	Pass
52.17 - 51.92	Pole + Reinf.	TP21.452x21.399x0.525	Reinf. 9 Compression	84.7%	Pass
51.92 - 48.7	Pole + Reinf.	TP22.86x21.452x0.5125	Reinf. 9 Compression	90.1%	Pass
48.7 - 44.29	Pole + Reinf.	TP22.575x21.634x0.5625	Reinf. 7 Compression	87.4%	Pass
44.29 - 39.29	Pole + Reinf.	TP23.639x22.575x0.55	Reinf. 7 Compression	93.2%	Pass
39.29 - 34.29	Pole + Reinf.	TP24.703x23.639x0.5375	Reinf. 7 Compression	98.3%	Pass
34.29 - 33.5	Pole + Reinf.	TP24.87x24.703x0.525	Reinf. 7 Compression	99.1%	Pass
33.5 - 33.25	Pole + Reinf.	TP24.923x24.87x0.8375	Reinf. 7 Compression	67.1%	Pass
33.25 - 33	Pole + Reinf.	TP24.977x24.923x0.8375	Reinf. 7 Compression	67.3%	Pass
33 - 32.75	Pole + Reinf.	TP25.03x24.977x0.8125	Reinf. 7 Compression	73.0%	Pass
32.75 - 32	Pole + Reinf.	TP25.19x25.03x0.8	Reinf. 7 Compression	73.6%	Pass
32 - 31.75	Pole + Reinf.	TP25.243x25.19x0.5875	Reinf. 6 Tension Rupture	88.8%	Pass
31.75 - 28.5	Pole + Reinf.	TP25.934x25.243x0.575	Reinf. 6 Tension Rupture	91.4%	Pass
28.5 - 28.25	Pole + Reinf.	TP25.988x25.934x0.8625	Reinf. 6 Tension Rupture	63.7%	Pass
28.25 - 27.5	Pole + Reinf.	TP26.147x25.988x0.85	Reinf. 6 Tension Rupture	64.1%	Pass
27.5 - 27.25	Pole + Reinf.	TP26.2x26.147x0.575	Reinf. 5 Tension Rupture	92.4%	Pass
27.25 - 22.25	Pole + Reinf.	TP27.265x26.2x0.5625	Reinf. 5 Tension Rupture	95.8%	Pass
22.25 - 18	Pole + Reinf.	TP28.169x27.265x0.55	Reinf. 5 Tension Rupture	98.5%	Pass
18 - 17.75	Pole + Reinf.	TP28.222x28.169x0.5625	Reinf. 5 Tension Rupture	90.4%	Pass
17.75 - 15.45	Pole + Reinf.	TP28.712x28.222x0.425	Pole	91.2%	Pass
15.45 - 15.2	Pole + Reinf.	TP28.765x28.712x0.6875	Reinf. 3 Tension Rupture	89.7%	Pass
15.2 - 13.41	Pole + Reinf.	TP29.146x28.765x0.675	Reinf. 3 Tension Rupture	90.7%	Pass
13.41 - 13.16	Pole + Reinf.	TP29.199x29.146x0.5625	Reinf. 4 Tension Rupture	94.5%	Pass
13.16 - 8.16	Pole + Reinf.	TP30.263x29.199x0.55	Reinf. 4 Tension Rupture	97.0%	Pass
8.16 - 6.5	Pole + Reinf.	TP30.617x30.263x0.55	Reinf. 4 Tension Rupture	97.7%	Pass
6.5 - 6.25	Pole + Reinf.	TP30.67x30.617x0.6625	Reinf. 3 Tension Rupture	94.1%	Pass
6.25 - 4.45	Pole + Reinf.	TP31.053x30.67x0.65	Reinf. 3 Tension Rupture	94.9%	Pass
4.45 - 4.2	Pole + Reinf.	TP31.106x31.053x0.5125	Reinf. 1 Tension Rupture	96.2%	Pass
4.2 - 0	Pole + Reinf.	TP32x31.106x0.5	Reinf. 1 Tension Rupture	97.8%	Pass
				Summary	
			Pole	91.2%	Pass
			Reinforcement	99.1%	Pass
			Overall	99.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*												
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
98 - 93	161	n/a	161	7.67	n/a	7.67	9.5%												
93 - 88	205	n/a	205	8.31	n/a	8.31	25.2%												
88 - 85.21	233	n/a	233	8.67	n/a	8.67	34.8%												
85.21 - 80.21	352	n/a	352	12.06	n/a	12.06	38.8%												
80.21 - 75.21	431	n/a	431	12.90	n/a	12.90	47.1%												
75.21 - 70.21	521	n/a	521	13.74	n/a	13.74	60.9%												
70.21 - 65.21	622	n/a	622	14.58	n/a	14.58	72.4%												
65.21 - 60.21	736	n/a	736	15.43	n/a	15.43	84.4%												
60.21 - 59.17	762	n/a	762	15.60	n/a	15.60	86.5%												
59.17 - 58.9	768	754	1522	15.65	13.50	29.15	43.5%								78.4%		78.4%		
58.9 - 58.75	772	756	1528	15.67	13.50	29.17	43.7%								78.8%		78.8%		
58.75 - 54	897	829	1726	16.47	13.50	29.97	49.3%								88.7%		88.7%		
54 - 53.75	905	864	1769	16.51	19.75	36.26	50.1%								79.6%		79.6%		52.1%
53.75 - 52.91	929	877	1806	16.66	19.75	36.41	51.0%								81.1%		81.1%		53.2%
52.91 - 52.66	1003	1447	2449	16.70	24.25	40.95	44.4%								78.4%	62.7%	58.5%		53.7%
52.66 - 52.17	1018	1460	2478	16.78	24.25	41.03	44.8%								79.2%	63.4%	59.1%		54.3%
52.17 - 51.92	958	956	1914	16.82	19.75	36.57	50.7%								80.1%	84.7%			59.1%
51.92 - 48.7	1054	1013	2067	17.36	19.75	37.11	54.0%								85.2%	90.1%			63.1%
48.7 - 44.29	1387	1008	2395	22.08	19.75	41.83	55.1%							87.4%	87.4%				60.1%
44.29 - 39.29	1595	1099	2694	23.14	19.75	42.89	58.7%							93.2%	93.2%				64.7%
39.29 - 34.29	1823	1194	3017	24.19	19.75	43.94	62.0%							98.3%	98.3%				68.8%
34.29 - 33.5	1861	1209	3070	24.36	19.75	44.11	62.4%							99.1%	99.1%				69.4%
33.5 - 33.25	1872	2805	4677	24.41	37.75	62.16	41.4%						64.4%	67.1%	67.1%				52.0%
33.25 - 33	1885	2816	4701	24.46	37.75	62.21	41.5%						64.6%	67.3%	67.3%				52.1%
33 - 32.75	1892	2708	4599	24.52	31.50	56.02	40.8%						65.9%	73.0%	73.0%				
32.75 - 32	1929	2740	4669	24.67	31.50	56.17	41.1%						66.5%	73.6%	73.6%				
32 - 31.75	1941	1577	3518	24.73	18.00	42.73	54.9%						88.8%						
31.75 - 28.5	2107	1660	3767	25.41	18.00	43.41	56.6%						91.4%						
28.5 - 28.25	2120	3333	5453	25.47	36.00	61.47	39.4%		63.7%	63.7%		63.7%	63.7%						
28.25 - 27.5	2160	3372	5532	25.62	36.00	61.62	39.7%		64.1%	64.1%		64.1%	64.1%						
27.5 - 27.25	2173	1692	3866	25.68	18.00	43.68	57.2%		92.4%	92.4%		92.4%							
27.25 - 22.25	2453	1825	4278	26.73	18.00	44.73	59.4%		95.8%	95.8%		95.8%							
22.25 - 18	2708	1942	4650	27.63	18.00	45.63	61.1%		98.5%	98.5%		98.5%							
18 - 17.75	2729	2035	4765	27.68	24.25	51.93	62.6%		90.4%	88.1%		90.4%						73.7%	
17.75 - 15.45	3303	945	4247	28.17	18.25	46.42	91.2%		90.9%			90.9%						90.3%	
15.45 - 15.2	2998	3180	6178	28.22	30.25	58.47	56.7%		84.1%	89.8%	71.5%	68.2%						74.9%	
15.2 - 13.41	3118	3262	6380	28.60	30.25	58.85	57.3%		85.1%	90.7%	72.3%	69.0%						75.8%	
13.41 - 13.16	3024	2280	5304	28.65	24.25	52.90	62.1%		87.6%	91.5%	94.5%							82.3%	
13.16 - 8.16	3371	2441	5812	29.71	24.25	53.96	63.8%		89.9%	93.9%	97.0%							84.7%	
8.16 - 6.5	3492	2496	5987	30.06	24.25	54.31	64.5%		90.7%	94.6%	97.7%							85.5%	
6.5 - 6.25	3632	3601	7233	30.11	30.25	60.36	59.9%	72.1%	88.4%	94.1%	75.5%							79.1%	
6.25 - 4.45	3769	3689	7458	30.49	30.25	60.74	60.6%	72.8%	89.2%	94.9%	76.2%							79.8%	
4.45 - 4.2	3716	2201	5918	30.54	18.25	48.79	74.1%	96.2%	96.2%									95.4%	
4.2 - 0	4047	2326	6373	31.43	18.25	49.68	75.7%	97.8%	97.8%									97.0%	

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

PROJECT	**127643.006.01 - (F) E.GRANBY 4Q2000 GALASSO, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**07/27/19**
V4.2.0	

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

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	208.3	kips
AR Capacity	415.0	kips

Tower Type	Monopole

Manufacturers Tower Prop.		
Pole Thickness	0.3125	in
Pole Grade	A572-65	
Pole Sides #	18	
Pole Base OD	32	in
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	A572-60	
Fy	60	ksi
Fu	75	ksi
Anchor Rods		
Size	2.25	in
Quantity	8	
Bolt Circle	40	in
Grade	A615-75	
Fy	75	ksi
Fu	100	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	2.25	in
AR Layout	Symmetric	
Quantity	3	
Bolt Circle	44.0	in
Grade	'22-150 (William	
Fy	127.7	ksi
Fu	150	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	40.5%	-
Tube Compression	N/A	
Gusset Shear	12.2%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	61.8%	-
Welds: Gusset to Tube	13.0%	-
Welds: Geometry	N/A	
Tower Punching	24.5%	-
Tube Punching	8.8%	-
Utilization	**61.8%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS5x5x1/2		FEXX	70	ksi
Width at Tube	3.5	in	Total Length	18	in	Weld Type	Double Bevel+Fillet	
Height at Pole	36	in	Length above Gusset	0	in	Fillet Size	5/8	in
Height at Tube	36	in	Length below Gusset	0	in	Bevel Depth	1/2	
Grade	A572-65		Grade	A500 Grade B (Square)				
Fy	65	ksi	Fy	46	ksi			
Fu	80	ksi	Fu	58	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	70	ksi	FEXX	70	ksi
Weld Type	Double Fillet		Weld Type	Double Bevel+Fillet	
Fillet Size	3/8	in	Fillet Size	5/8	in
			Bevel Depth	1/2	in
Length	36	in	Gap	0	in
Load Angle	45	deg.	Notch (horiz)	0.75	in
			Notch (vert)	0.75	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	3/8	in

PROJECT	**127643.006.01 - (F) E.GRANBY 4Q2000 GALASSO, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**07/27/19**
V4.2.0	

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

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	101.24	kips
AR Capacity	199.5	kips

Tower Type	Monopole

Manufacturers Tower Prop.		
Pole Thickness	0.3125	in
Pole Grade	A572-65	
Pole Sides #	18	
Pole Base OD	32	in
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	A572-60	
Fy	60	ksi
Fu	75	ksi
Anchor Rods		
Size	2.25	in
Quantity	8	
Bolt Circle	40	in
Grade	A615-75	
Fy	75	ksi
Fu	100	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1.75	in
AR Layout	Asymmetric	
Quantity	2	
Bolt Circle	47.1	in
Grade	A193 Gr B7	
Fy	105	ksi
Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	23.7%	-
Tube Compression	N/A	
Gusset Shear	7.1%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	18.9%	-
Welds: Gusset to Tube	22.4%	-
Welds: Geometry	N/A	
Tower Punching	14.9%	-
Tube Punching	4.6%	-
Utilization	**23.7%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS4x4x1/2		FEXX	80	ksi
Width at Tube	5.5	in	Total Length	27	in	Weld Type	Double Fillet	
Height at Pole	36	in	Length above Gusset	0	in	Fillet Size	5/16	in
Height at Tube	30	in	Length below Gusset	0	in			
Grade	A572-65		Grade	A500 Grade C (Square)				
Fy	65	ksi	Fy	50	ksi			
Fu	80	ksi	Fu	62	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	80	ksi	FEXX	80	ksi
Weld Type	Double Fillet		Weld Type	Double Bevel+Fillet	
Fillet Size	5/16	in	Fillet Size	9/16	in
			Bevel Depth	9/16	in
Length	36	in	Gap	0	in
Load Angle	45	deg.	Notch (horiz)	0.75	in
			Notch (vert)	1.25	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	1/2	in

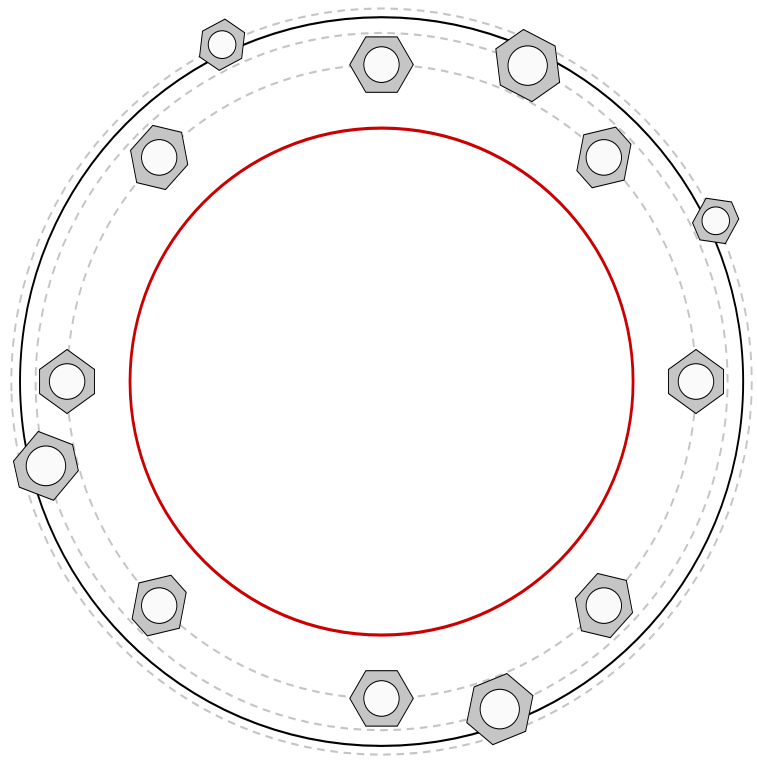
Monopole Base Plate Connection

Site Info	
BU #	876399
Site Name	GRANBY 4Q2000 / GAL
Order #	397084, Rev. 4

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	1728.24
Axial Force (kips)	29.43
Shear Force (kips)	24.95

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 40" BC

GROUP 2: (3) 2-1/2" ø bolts (Williams N; Fy=127.7 ksi, Fu=125 ksi) on 44" BC

pos. (deg): 65, 194, 290

GROUP 3: (2) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 47.1" BC

Base Plate Data

46" OD x 1.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

32" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 165.44	ϕPn_c = 243.75	**Stress Rating**
Vu = 3.12	ϕVn = 73.13	**64.8%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 208.3	ϕPn_c = 510.8	**Stress Rating**
Vu = 0	ϕVn = 153.24	**38.8%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 3:		
Pu_c = 101.24	ϕPn_c = 199.5	**Stress Rating**
Vu = 0	ϕVn = 59.85	**48.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	56.32	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**99.3%**	**Pass**

B+T GRP

PROJECT : GRANBY 4Q2000
CLIENT : CROWN CASTLE
JOB NO. : BU876399 DATE : 7/27/2019
DESIGN BY : KM
REVIEW BY : US

STRUCTURAL CAPACITY OF MICROPILE (UNCASED SECTION)

INPUT		
Design Load Comp.	190	kips
Production Test Load Comp.	203	
Design Load Ten.	190	kips
Test Load Ten.	203	
Nominal Bar Diameter,db	1.75	
Yield (F_y) - 0.8 f Pu A	270.00	kips
Bar Diameter	1.75	in
Bit Diameter	5.00	in
Grout Strength (G_c)	5.00	ksi
Design Code (AASHTO or NYC)	TIA-222-G A2 (LRFD)	
Unit Weight of Rock rd=	0.110	kcf
Micropile quantity, n	4.00	

REV H ANALYSIS

Net Allow. capacity of each Pile=				190	kips
Base Moment	1728	kip-ft	Load per pile	172	
No. of micropile per leg				4	

Grade 150 All-Thread Rebar - Williams R71

Soil Interaction	**86.22%**	**Pass**
Micropile Steel	**70.37%**	**Pass**

Safety Factor Steel Comp. Design (Yield):	0.64
Safety Factor Steel Comp. Test (Yield):	0.64
Safety Factor Steel Ten. Design (Yield):	0.80
Safety Factor Steel Ten. Test (Yield):	0.80
Safety Factor Grout Design:	0.54
Safety Factor Grout Test:	0.54

Checks:

Load Taken on Grout in Compression $F_g=A_g*(G_c*SF)$

A_g= 17.23 in^2

	Design	F_g=	46.68	kips		
	Test	F_g=	46.68	kips		

Load Taken on Steel in Compression $F_s=F_y*SF$

*Steel Must Take 40% of Load

	Design	F_s=	172.13	kips		**78.7%**	**Pass**
	Test	F_s=	172.13	kips			

Total Load Taken on Pile in Compression $F_c=F_g+F_s$

	Design	F_c=	218.81	kips	>	190 kips	**Pass**
	Test	F_c=	218.81	kips	>	202.67 kips	**Pass**

Total Load Taken on Pile in Tension $F_t=F_y*SF$

	Design	F_t=	216	kips	>	190 kips	**Pass**
Pull Test load Limited to 0.8*fy (PTI) for steel	Test	F_t=	216	kips	>	202.67 kips	**Pass**

GEOTECHNICAL BOND LENGTH OF MICROPILE

Geotechnical Design

Geo-strata 1 ultimate bond stress, tu1 =	0	psi
Geo-strata 2 ultimate bond stress, tu2 =	17	psi
Geo-strata 3 ultimate bond stress, tu3 =	11	psi
Geo-strata 4 ultimate bond stress, tu4 =	21	psi
Geo-strata 5 ultimate bond stress, tu5 =	23	psi
Geo-strata 6 ultimate bond stress, tu6 =	450	psi

	Ult kips/ft	FS (Design)-2		Depth	Load		
Soil-Grout Bond, α1 =	0.00	0.00	kips/ft	10	0.00	kips	
Soil-Grout Bond, α2 =	3.11	2.33	kips/ft	5	11.66	kips	
Soil-Grout Bond, α3 =	2.07	1.56	kips/ft	5	7.78	kips	
Soil-Grout Bond, α4 =	3.86	2.90	kips/ft	5	14.49	kips	
Soil-Grout Bond, α5 =	4.34	3.25	kips/ft	5	16.26	kips	
Soil-Grout Bond, α5 =	84.82	63.62	kips/ft	2.5	159.04	kips	
Bond Length				22.5 FT			
Total Length				32.5 FT	209	kips	Pass

DELTA OAKS GROUP

SUBSURFACE STRENGTH PARAMETERS - MICROPILES

Boring	Depth (bgs)	Ultimate Grout to Ground Bond Strength - Type "A"		Ultimate Grout to Ground Bond Strength - Type "B"	
		Compression (psi)	Uplift (psi)	Compression (psi)	Uplift (psi)
B-1	0.0 – 3.3	-	-	-	-
	3.3 – 6.0	10.0	10.0	14.5	14.5
	6.0 – 8.0	6.5	6.5	8.0	8.0
	8.0 – 10.0	13.5	13.5	21.0	21.0
	10.0 – 15.0	22.0	16.5	34.5	25.5
	15.0 – 20.0	15.0	11.0	20.5	15.0
	20.0 – 25.0	27.5	20.5	45.0	33.5
	25.0 – 30.0	31.0	23.0	52.0	39.0
	30.0 – 50.0	450	450	-	-

- The micropiles should have an adequate design embedment length to resist the applied loads.
- Group effects can contribute to a reduction in resistance for the micropiles and should be taken into consideration during foundation analysis.
- Delta Oaks Group recommends an appropriate factor of safety be utilized and the appropriate manufacturer recommendations be followed for the analysis of the micropiles.

Pile Foundation

Checks the capacity of pile foundation configurations for monopoles or self-support towers with individual foundations in Rev. F, G, and H.

BU #:	876399
Site Name:	(F) E. GRANBY 4Q2000 / GAL
Order:	397084, Rev. 4

Tower Type:	Monopole
TIA Revision:	H

Top & Bot. Pad Rein. Different?: ☐

Factored Design Reactions At Base		
Moment, M:	1728	ft-kips
Axial, Pu:	29	kips
Shear, Sc:	25	kips
Load Eccentricity, Ecc:	6	in
Bolt Circle / Bearing Plate Width, BC:	40	in

Pile Properties		
Pile Shape:	Round	
Pile Material:	Steel	
Length of Pile, Lpile:	32	ft
Pile Diameter:	6.0	in
Pile (Soil) Capacity Given?	Yes	
Steel Grade, Fy:	150	ksi
Rebar Quantity, Pquan:		

Pile Group		
Group Configuration:	Rectangular	
Number of Columns, Nx:	2	
Number of Rows, Ny:	2	
Column Spacing, Dx:	120	in
Row Spacing, Dy:	120	in
Orientation of Neutral Axis, θ:	0	deg
Group Efficiency Given in Geotech?	No	

Program Calculated Group Efficiency, Eg: 1.00

Pile Cap		
Cap Type:	Block	
Depth to Bottom of Block, D:	3.00	ft
Thickness of Block, T:	3.00	ft
Block Width, Wx:	14.00	ft
Block Length, Wy:	14.00	ft
Pad Rebar Size (Bot.), Spad:	8	
Pad Rebar Quantity (X-direction) (Bot.), Mpad:	15	
Pad Rebar Quantity (Y-direction) (Bot.), $Mpad_y$:	15	

Material Properties		
Rebar Grade, Fy:	60	ksi
Concrete Strength, Fc:	4	ksi
Clear Cover, cc:	3	in

Soil Properties		
Groundwater Depth, GW:	99.00	ft
Soil Unit Weight:	105	pcf
Cohesion, Co:	0	ksf
Friction Angle, ϕ:	0	deg
Neglected Depth, ND:	2	ft
Negative Friction Force (per pile), Sw:	0	kips
SPT Blow Count, N_{blows}:	10	

Design Checks				
	Capacity	***Demand***	***Rating****	***Check***
PILE CHECKS				
Soil Compression (kips per pile):	190.00	173.41	**86.9%**	**Pass**
Soil Uplift (kips per pile):	190.00	111.04	**55.7%**	**Pass**
Pile Tensile Strength (kips):	216.00	111.04	**49.0%**	**Pass**
PAD CHECKS				
One-Way Shear (kips):	502.04	212.07	**40.2%**	**Pass**
Pad Shear - Comp Two-Way (ksi):	0.164	0.003	**1.8%**	**Pass**
*Flexural Two-Way (Comp) (kip*ft):*	3293.10	0.00	**0.0%**	**Pass**
*Pad Flexure (kip*ft):*	1646.55	477.26	**27.6%**	**Pass**

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

Soil Rating:	**86.9%**
Structural Rating:	**49.0%**

Ultimate Pile Capacities		
Ultimate Compression, Cn:	253.3333333	kips
Ultimate Tension, Tn:	253.3333333	kips

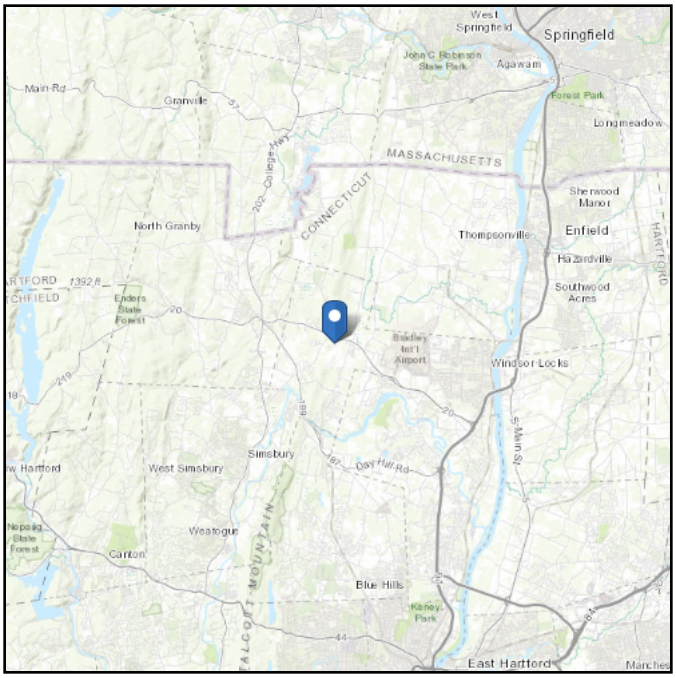
Per CCIsites Doc. # 8420875

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 255.76 ft (NAVD 88)
Latitude: 41.941553
Longitude: -72.73868



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

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

Date Accessed: Thu Jul 25 2019

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.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

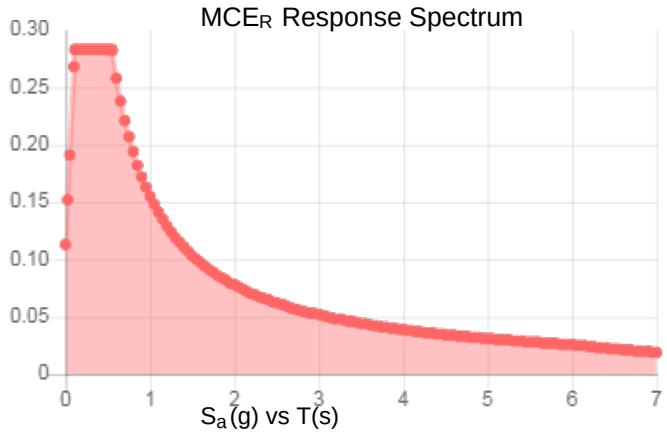
Seismic

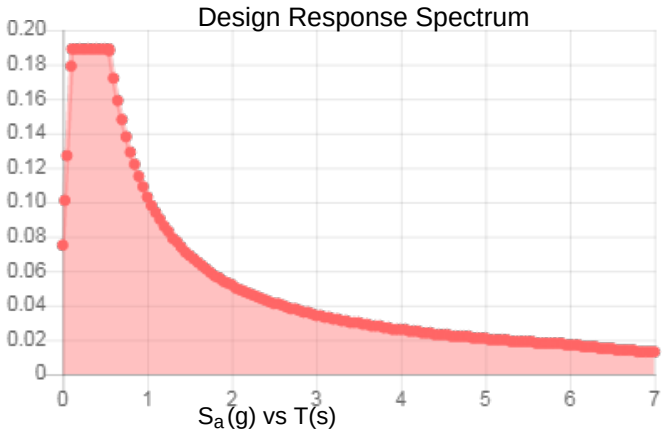
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.177	S_{DS} :	0.189
S_1 :	0.065	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.087
S_{MS} :	0.283	PGA_M :	0.14
S_{M1} :	0.155	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Jul 25 2019

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:	Thu Jul 25 2019

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.