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

December 10, 2018

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

RE: **Notice of Exempt Modification for Verizon Wireless: 876363**
Verizon Site ID: 79283
219 New Park Ave. Hartford, CT 06141-0270
Latitude: 41° -45' -2.79"/ Longitude: 72° -42' 43.23"

Dear Ms. Bachman:

Verizon currently maintains twelve (12) antennas at the 105-foot level of the existing 108-foot monopole tower at 219 New park Ave. Hartford, CT 06141-0270. The tower is owned by Crown Castle. The Connecticut Light and Power Company own the property. Verizon now intends to remove three (3) RRH's, replace six (6) RRH's. Verizon also intends to replace one (1) OVP and one (1) hybrid cable and remove six (6) coaxial cables.

This facility was approved by the City of Hartford in the mid-2000 and an email was sent to the town on 12/06/2018 in an effort to ascertain the original zoning documents.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Mayor Luke Bronin, City of Hartford, John Collins, Building Official, City of Hartford, the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: City Mayor Luke Bronin
550 Main St #1,
Hartford, CT 06103

Building Official John Collins
550 Main St #1,
Hartford, CT 06103

Connecticut Light and Power
107 Selden St.
C/O corporate Property
Management Department
Berlin, CT 06037

Unofficial Property Record Card - City of Hartford, CT

General Property Data

Parcel ID 138-472-001
Prior Parcel ID
Property Owner CONN LIGHT & POWER CO

Mailing Address PO BOX 270

City HARTFORD
Mailing State CT Zip 06141-0270
ParcelZoning MS-3

Account Number

Property Location 219 NEW PARK AVE HARTFORD
Property Use OTHER UTILTY
Most Recent Sale Date 7/2/1982
Legal Reference 01977 0129
Grantor
Sale Price 0
Land Area 311,018.000 square feet

Current Property Assessment

Card 1 Value	Building Value 12,460	Xtra Features Value 10,570	Land Value 1,094,870	Total Value 1,117,900

Building Description

Building Style WAREHSE
# of Living Units 0
Year Built 1978
Building Grade Economy
Building Condition N/A
Finished Area (SF) 1632
Number Rooms 0
# of 3/4 Baths 0

Foundation Type Concrete
Frame Type Steel Light
Roof Structure GABLE/HIP
Roof Cover Metal
Siding Metal
Interior Walls DRYWALL
# of Bedrooms 0
# of 1/2 Baths 0

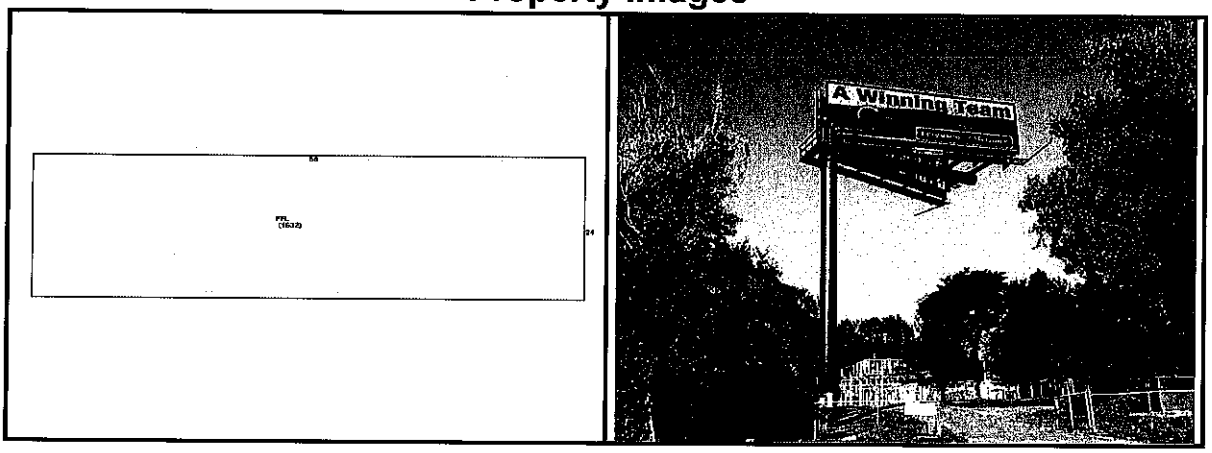
Flooring Type COMBINATION
Basement Floor N/A
Heating Type Electric
Heating Fuel Electric
Air Conditioning 0%
# of Bsmt Garages 0
# of Full Baths 0
# of Other Fixtures 0

Legal Description

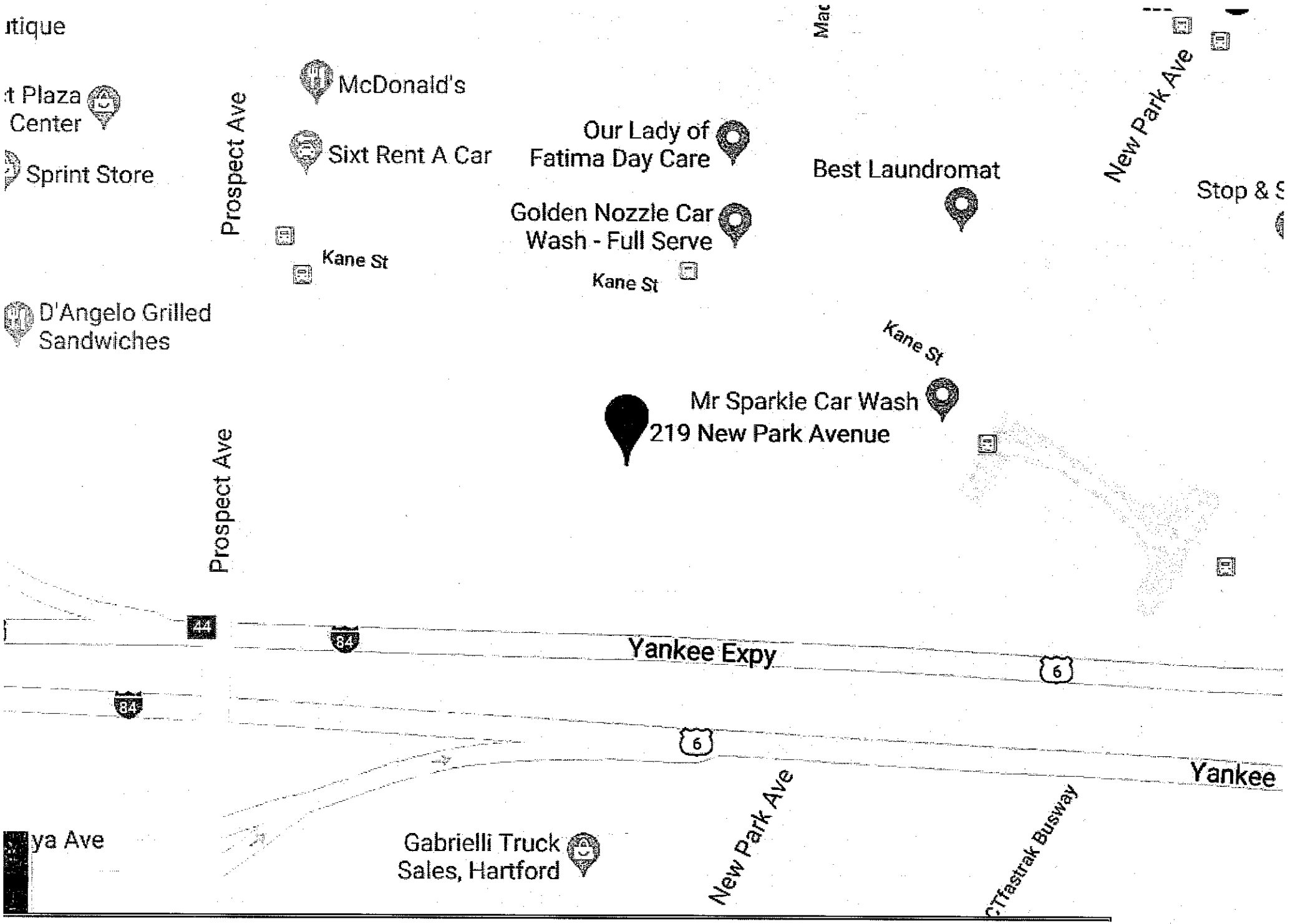
Narrative Description of Property

This property contains 311,018.000 square feet of land mainly classified as OTHER UTILTY with a(n) WAREHSE style building, built about 1978 , having Metal exterior and Metal roof cover, with 0 commercial unit(s) and 0 residential unit(s), 0 room(s), 0 bedroom(s), 0 bath(s), 0 half bath(s).

Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranteed. The Property Use designation depicted on this website is for assessment purposes only, it does not guarantee or imply rights to such use or approval of the premises for such use. Any questions regarding the approved or allowed use of a property should be confirmed with the Planning & Economic Development Division of the City of Hartford.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t Plaza
Center
Sprint Store
McDonald's
Sixt Rent A Car
Prospect Ave
Our Lady of
Fatima Day Care
Golden Nozzle Car
Wash - Full Serve
Kane St
Kane St
Best Laundromat
New Park Ave
Stop &
D'Angelo Grilled
Sandwiches
Kane St
Mr Sparkle Car Wash
219 New Park Avenue
Prospect Ave
44
84
84
Yankee Expy
6
6
Yankee
ya Ave
Gabrielli Truck
Sales, Hartford
New Park Ave
CTfastrak Busway

McKay, Kristian

From: McKay, Kristian
Sent: Thursday, December 6, 2018 4:52 PM
To: 'vanessa.walton@hartford.gov'
Subject: Original zoning docs

Hello Zoning Department,

I work for Crown Castle and have an inquiry regarding the original zoning documents for a tower and I am hoping your office can provide more information.

We are applying for CSC Zoning Approval for Sprint to modify their antennas and new requirements ask that we attempt to procure original zoning documents from the jurisdiction, if possible. However, if these documents are not available, please let me know.

The tower is located at 219 New Park Ave. and according to lease documents I believe would have been constructed sometime in the late 2000. Connecticut light and power company owned the property at the time and continues to do so.

If you have any questions, please don't hesitate to call or e-mail me.

Thank you,

Kristian McKay
Real Estate Specialist – East Area
T: (704) 405-6612 | M: (704) 713-5728 | F: (724) 416-6496

CROWN CASTLE
3530 Toringdon Way, Suite 300, Charlotte, NC 28277
Crowncastle.com

Date: **September 21, 2018**

Amanda D Brown
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:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	79283
	Carrier Site Name:	West Hartford 4 CT
Crown Castle Designation:	**Crown Castle BU Number:**	876363
	Crown Castle Site Name:	Hartford - NU (SSUSA)
	Crown Castle JDE Job Number:	528518
	Crown Castle Work Order Number:	1626542
	Crown Castle Order Number:	457785 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	85565.009.01
Site Data:	**219 New Park Rd., HARTFORD, Hartford County, CT** **Latitude *41° 45' 2.79"*, Longitude *-72° 42' 49.23"*** **108 Foot - Monopole Tower**	

Dear Amanda D Brown,

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

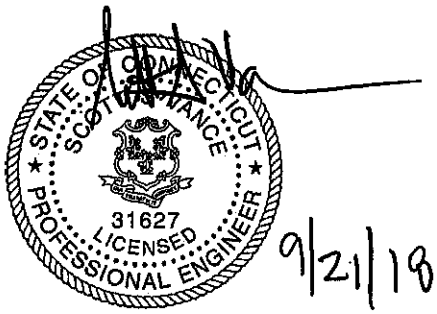
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2012 International Building Code. Exposure Category C and Risk Category II were used in this analysis.

Structural analysis prepared by: Xavier Jones

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2019



9/21/18

Scott S. Vance, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 108 ft. Monopole designed by Summit in October of 2000. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. This tower has been modified multiple times and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

Building Code:	2012 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.7 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)
105.0	105.0	3	Alcatel Lucent	B13 RRH 4X30	1 7	1-5/8 1-1/4
		3	Alcatel Lucent	B25 RRH4X30		
		3	Alcatel Lucent	RRH4X45-AWS4 B66		
		6	Antel	BXA-70063/6CF		
		6	Commscope	SBNHH-1D65B		
		1	Raycap	RVZDC-6627-PF-48		
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Tele.	RFV01U-D1A		
		3	Samsung Tele.	RFV01U-D2A		
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z		
		1	--	Sector Mount [SM 402-3]		

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)
98.0	99.0	3	Nokia	AAHC	4 2 3	1-1/4
		1	Rfs Celwave	APXV9ERR18-C-A20		
		2	Rfs Celwave	APXVSPP18-C-A20		
	98.0	3	Rfs Celwave	IBC1900BB-1		
		3	Rfs Celwave	IBC1900HG-2A		
		1	--	Platform Mount [LP 1201-1]		
96.0	96.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	--	--
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		1	--	Side Arm Mount [SO 102-3]		
	95.0	3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
81.0	81.0	1	--	T-Arm Mount [TA 602-3]	6	7/8
	80.0	3	Andrew	HBX-6516DS-VTM	1	5/16
74.0	76.0	1	Lucent	KS24019-L112A	1	1/2
	74.0	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	Verizon Wireless Co-Locate, Rev. 0	457785	CCI Sites
Tower Manufacturer Drawing	Summit, Job No. 11049	1947570	CCI Sites
Tower Modification Drawings	Vertical Solutions, Date: 01/28/2009	2445633	CCI Sites
Post Modification Inspection	PJF, Date: 10/25/2010	2445631	CCI Sites
Tower Modification Drawings	B+T Group, Date: 10/15/2012	3348853	CCI Sites
Post Modification Inspection	TEP, Date: 12/20/2013	4424435	CCI Sites
Tower Modification Drawings	B+T Group, Date: 05/16/2017	6859034	CCI Sites
Post Modification Inspection	ETS, Date: 12/07/2017	7243678	CCI Sites
Foundation Drawings	Summit, Job No. 11049	1613616	CCI Sites
Geotech Report	FDH, Project No. 08-10012E G1	2337384	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 08/30/2018	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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	108 - 103	Pole	TP8.625x8.625x0.313	1	-2.346	269.918	24.4%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L2	103 - 98.5	Pole	TP8.625x8.625x0.313	2	-2.563	269.918	74.3%	Pass
L3	98.5 - 98	Pole	TP16.5x16.5x0.313	3	-2.609	525.629	21.3%	Pass
L4	98 - 93	Pole	TP17.3x16.5x0.188	4	-6.988	794.471	36.9%	Pass
L5	93 - 88	Pole	TP18.101x17.3x0.188	5	-7.367	830.635	52.2%	Pass
L6	88 - 83	Pole	TP18.901x18.101x0.188	6	-7.789	858.446	65.7%	Pass
L7	83 - 82.33	Pole	TP19.008x18.901x0.188	7	-7.851	862.113	67.4%	Pass
L8	82.33 - 82.08	Pole	TP19.048x19.008x0.325	8	-7.886	1506.666	57.4%	Pass
L9	82.08 - 77.08	Pole	TP19.848x19.048x0.319	9	-9.465	1541.347	69.0%	Pass
L10	77.08 - 76.25	Pole	TP19.981x19.848x0.319	10	-9.566	1551.837	70.8%	Pass
L11	76.25 - 76	Pole	TP20.021x19.981x0.456	11	-9.614	2210.239	55.8%	Pass
L12	76 - 74.5	Pole	TP20.261x20.021x0.45	12	-9.847	2207.415	58.5%	Pass
L13	74.5 - 74.25	Pole	TP20.301x20.261x0.588	13	-9.902	2867.718	51.3%	Pass
L14	74.25 - 69.25	Pole	TP21.102x20.301x0.575	14	-10.84	2922.423	59.1%	Pass
L15	69.25 - 64.25	Pole	TP21.902x21.102x0.55	15	-11.729	2907.744	66.6%	Pass
L16	64.25 - 59.25	Pole	TP22.702x21.902x0.544	16	-12.64	2983.291	73.7%	Pass
L17	59.25 - 58.08	Pole	TP22.89x22.702x0.538	17	-12.856	2974.755	75.3%	Pass
L18	58.08 - 57.73	Pole	TP22.946x22.89x0.713	18	-12.942	3922.296	56.3%	Pass
L19	57.73 - 57.5	Pole	TP22.982x22.946x0.713	19	-12.994	3928.785	56.6%	Pass
L20	57.5 - 52.5	Pole	TP23.783x22.982x0.688	20	-14.096	3931.42	61.8%	Pass
L21	52.5 - 47	Pole	TP24.663x23.783x0.688	21	-14.603	3992.73	64.0%	Pass
L22	47 - 45.25	Pole	TP24.568x23.768x0.75	22	-16.43	4423.062	64.3%	Pass
L23	45.25 - 40.5	Pole	TP25.328x24.568x0.725	23	-17.617	4416.583	68.4%	Pass
L24	40.5 - 40.25	Pole	TP25.368x25.328x0.725	24	-17.69	4423.765	68.6%	Pass
L25	40.25 - 35.25	Pole	TP26.168x25.368x0.7	25	-18.951	4414.242	72.7%	Pass
L26	35.25 - 30.25	Pole	TP26.969x26.168x0.688	26	-20.241	4473.766	76.6%	Pass
L27	30.25 - 27.75	Pole	TP27.369x26.969x0.675	27	-20.893	4461.387	78.4%	Pass
L28	27.75 - 27.5	Pole	TP27.409x27.369x0.725	28	-20.974	4790.068	69.5%	Pass
L29	27.5 - 22.5	Pole	TP28.209x27.409x0.7	29	-22.35	4767.924	72.7%	Pass
L30	22.5 - 19.5	Pole	TP28.689x28.209x0.688	30	-23.192	4766.643	74.6%	Pass
L31	19.5 - 19.25	Pole	TP28.729x28.689x0.8	31	-23.276	5532.271	69.6%	Pass
L32	19.25 - 14.25	Pole	TP29.529x28.729x0.775	32	-24.763	5517.739	72.5%	Pass
L33	14.25 - 14	Pole	TP29.569x29.529x0.775	33	-24.847	5525.425	72.7%	Pass
L34	14 - 13.75	Pole	TP29.609x29.569x0.775	34	-24.927	5533.101	73.2%	Pass
L35	13.75 - 12.98	Pole	TP29.733x29.609x0.8	35	-25.176	5731.047	69.2%	Pass
L36	12.98 - 12.73	Pole	TP29.773x29.733x0.8	36	-25.263	5738.974	69.3%	Pass
L37	12.73 - 7.73	Pole	TP30.573x29.773x0.788	37	-26.904	5807.77	72.0%	Pass
L38	7.73 - 2.73	Pole	TP31.373x30.573x0.775	38	-28.571	5871.537	74.6%	Pass
L39	2.73 - 0	Pole	TP31.81x31.373x0.763	39	-29.489	5861.688	75.9%	Pass
							Summary	
						Pole (L2)	74.3%	Pass
						Reinforcement	78.4%	Pass
						Rating =	78.4%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	Base	86.6	Pass
1	Anchor Rods	Base	68.8	Pass
1	Base Plate	Base	56.9	Pass
1	Base Foundation (Structure)	Base	82.3	Pass
1	Base Foundation (Soil Interaction)	Base	46.8	Pass

Structure Rating (max from all components) =	86.6%

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

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Length (ft)	2.730	5.000	5.000	0.000	0.000	0.000	0.000	5.000	0.000	0.000	5.000	0.000	4.500	5.000	5.000	0.250	4.750	5.000	5.500	5.000	0.000	0.000	0.000	5.000	5.000	5.000	0.000	0.000	0.000	0.000	5.000	0.000	0.000	5.000	5.000	5.000	0.500	4.500	5.000
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	0	0
Thickness (in)	0.762	0.775	0.787	0.800	0.812	0.825	0.838	0.775	0.850	0.688	0.700	0.700	0.575	0.688	0.700	0.725	0.725	0.750	0.688	0.688	0.700	0.700	0.700	0.544	0.550	0.575	0.588	0.600	0.613	0.625	0.319	0.338	0.350	0.188	0.188	0.188	0.313	0.313	0.313
Socket Length (ft)																			3.250																				
Top Dia (in)	31.373	30.573	29.773	28.972	28.172	27.372	26.572	25.772	24.972	24.172	27.409	26.168	25.368	25.168	25.368	24.568	25.328	26.768	23.783	22.982	22.182	21.382	20.582	21.902	21.102	20.301	19.501	18.701	17.901	17.101	19.048	18.248	17.448	17.301	16.500	15.700	8.625	8.625	8.625
Bot Dia (in)	31.810	31.373	30.573	29.773	28.972	28.172	27.372	26.572	25.772	24.972	28.209	26.969	26.168	26.969	26.168	25.368	25.328	24.568	24.663	23.783	22.982	22.182	21.382	22.702	21.902	21.102	20.301	19.501	18.701	17.901	19.048	18.248	17.448	18.101	17.300	16.500	8.625	8.625	8.625
Grade																			A607-65																				A53-B-35
Weight (K)	15.5	0.7	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	1.0	0.9	0.5	0.9	0.9	0.8	0.8	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.0	0.1	0.1

108.0 ft
103.0 ft
98.5 ft
93.0 ft
88.0 ft
83.0 ft
77.1 ft
76.0 ft
74.5 ft
69.3 ft
64.3 ft
59.3 ft
58.1 ft
52.5 ft
47.0 ft
45.3 ft
40.5 ft
35.3 ft
30.3 ft
27.8 ft
22.5 ft
19.5 ft
14.3 ft
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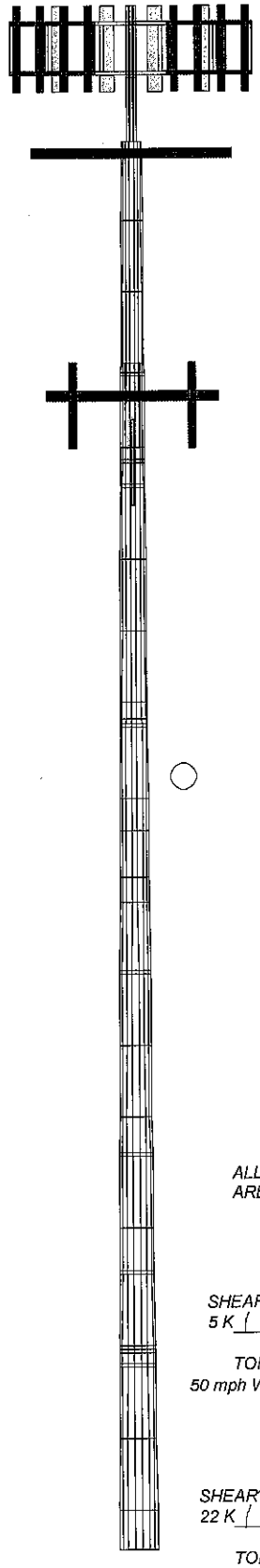


DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe (E)	105	APXVSPP18-C-A20 w/ Mount Pipe (E)	98
BXA-70063/6CF w/ Mount Pipe (E)	105	IBC1900BB-1 (E)	98
BXA-70063/6CF w/ Mount Pipe (E)	105	IBC1900BB-1 (E)	98
DB-T1-6Z-8AB-0Z (E)	105	IBC1900BB-1 (E)	98
(2) SBNHH-1D65B (P)	105	IBC1900HG-2A (E)	98
(2) SBNHH-1D65B (P)	105	IBC1900HG-2A (E)	98
(2) SBNHH-1D65B (P)	105	IBC1900HG-2A (E)	98
BXA-70063/6CF w/ Mount Pipe (P)	105	AAHC w/ Mount Pipe (R)	98
BXA-70063/6CF w/ Mount Pipe (P)	105	AAHC w/ Mount Pipe (R)	98
BXA-70063/6CF w/ Mount Pipe (P)	105	AAHC w/ Mount Pipe (R)	98
(2) RFV01U-D1A (P)	105	Platform Mount [LP 1201-1] (E)	98
RFV01U-D1A (P)	105	PCS 1900MHz 4x45W-65MHz (E)	96
RFV01U-D2A (P)	105	PCS 1900MHz 4x45W-65MHz (E)	96
(2) RFV01U-D2A (P)	105	PCS 1900MHz 4x45W-65MHz (E)	96
RVZDC-6627-PF-48 (P)	105	PCS 1900MHz 4x45W-65MHz (E)	96
B13 RRH 4X30 (P-previous App)	105	PCS 1900MHz 4x45W-65MHz (E)	96
B13 RRH 4X30 (P-previous App)	105	PCS 1900MHz 4x45W-65MHz (E)	96
B13 RRH 4X30 (P-previous App)	105	800MHz 2X50W RRH W/FILTER (E)	96
RRH4X45-AWS4 B66 (P-previous App)	105	800MHz 2X50W RRH W/FILTER (E)	96
		800MHz 2X50W RRH W/FILTER (E)	96
RRH4X45-AWS4 B66 (P-previous App)	105	4' x 2" Pipe Mount (E)	96
		4' x 2" Pipe Mount (E)	96
RRH4X45-AWS4 B66 (P-previous App)	105	4' x 2" Pipe Mount (E)	96
		Side Arm Mount [SO 102-3] (E)	96
B25 RRH4X30 (P-previous App)	105	HBX-6516DS-VTM w/ Mount Pipe (E)	81
B25 RRH4X30 (P-previous App)	105	HBX-6516DS-VTM w/ Mount Pipe (E)	81
B25 RRH4X30 (P-previous App)	105	HBX-6516DS-VTM w/ Mount Pipe (E)	81
DB-T1-6Z-8AB-0Z (P-previous App)	105	6' x 2" Mount Pipe (E)	81
Sector Mount [SM 402-3] (E-2M.P/sector)	105	6' x 2" Mount Pipe (E)	81
		6' x 2" Mount Pipe (E)	81
APXV9ERR18-C-A20 w/ Mount Pipe (E)	98	T-Arm Mount [TA 602-3] (E)	81
APXVSPP18-C-A20 w/ Mount Pipe (E)	98	KS24019-L112A (E)	74
		Side Arm Mount [SO 701-1] (E)	74

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A607-65	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 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.70 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: 83.6%

ALL REACTIONS ARE FACTORED

AXIAL 58 K

SHEAR 5 K *MOMENT 416 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.700 in ICE

AXIAL 28 K

SHEAR 22 K *MOMENT 1648 kip-ft*

TORQUE 0 kip-ft
REACTIONS - 125 mph WIND

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

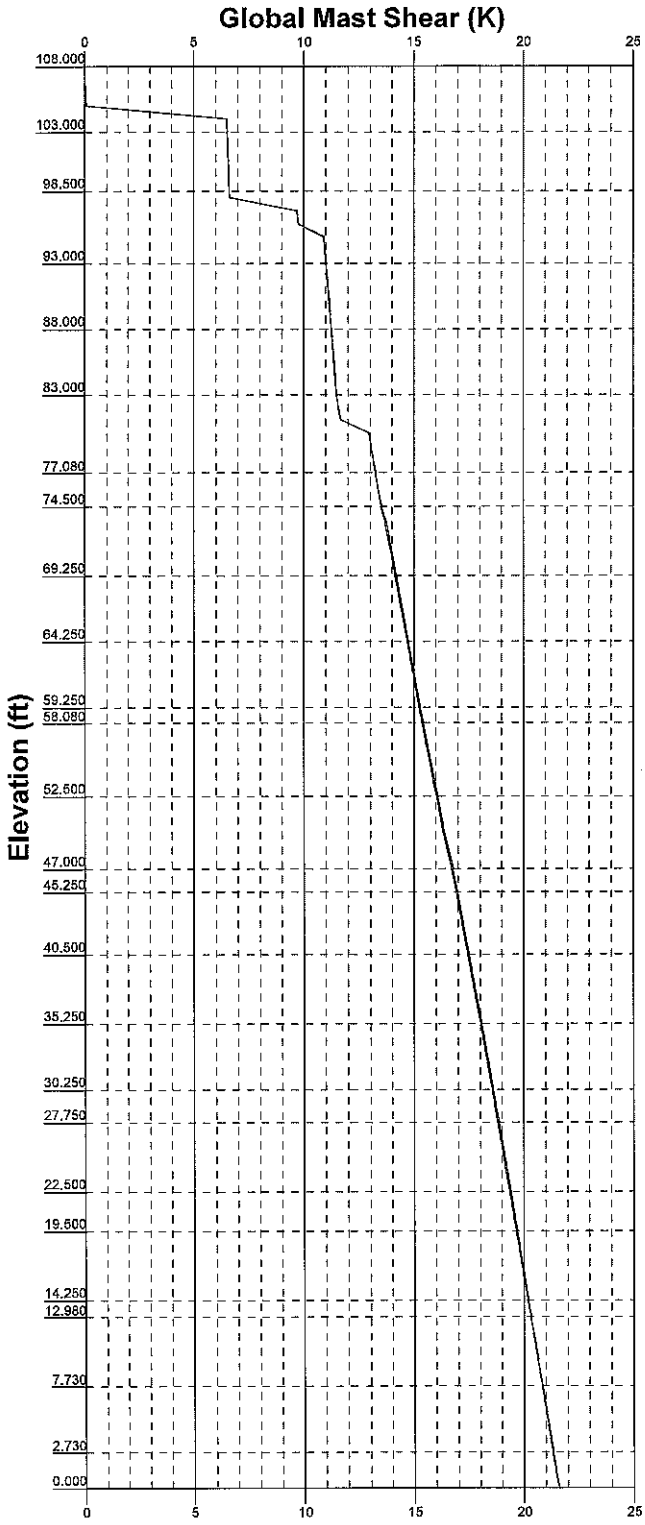
Job: *85565.009.01 - HARTFORD - NU (SSUSA),CT (BU# 87636*			
Project:			
Client: Crown Castle	Drawn by: xjones	App'd:	
Code: TIA-222-H	Date: 09/21/18	Scale: NTS	
Path:		Dwg No. E-1	

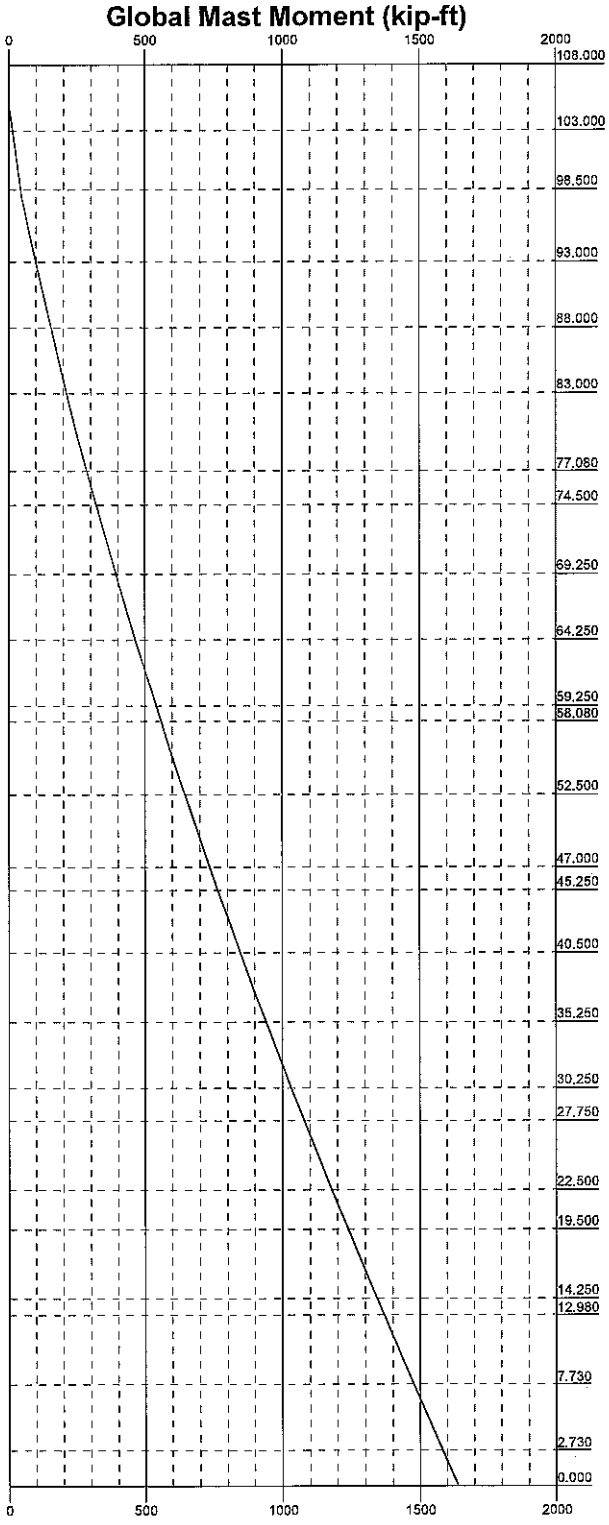
TIA-222-H - 125 mph/50 mph 1.700 in Ice Exposure C

Vx Vz

Maximum Values

Mx Mz





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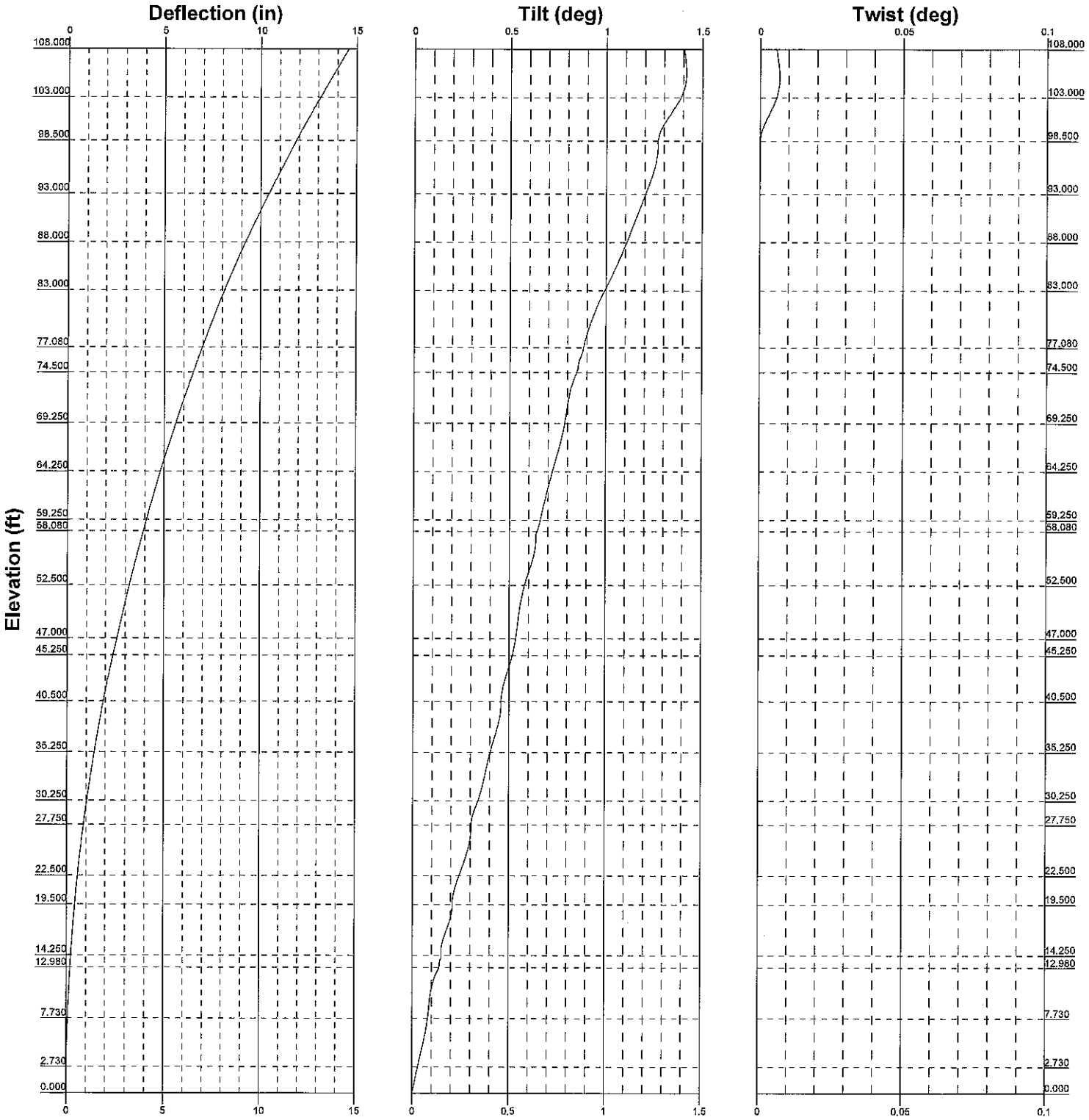
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 85565.009.01 - HARTFORD - NU (SSUSA),CT (BU# 87636		
Project:		
Client: Crown Castle	Drawn by: xjones	App'd:
Code: TIA-222-H	Date: 09/21/18	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values

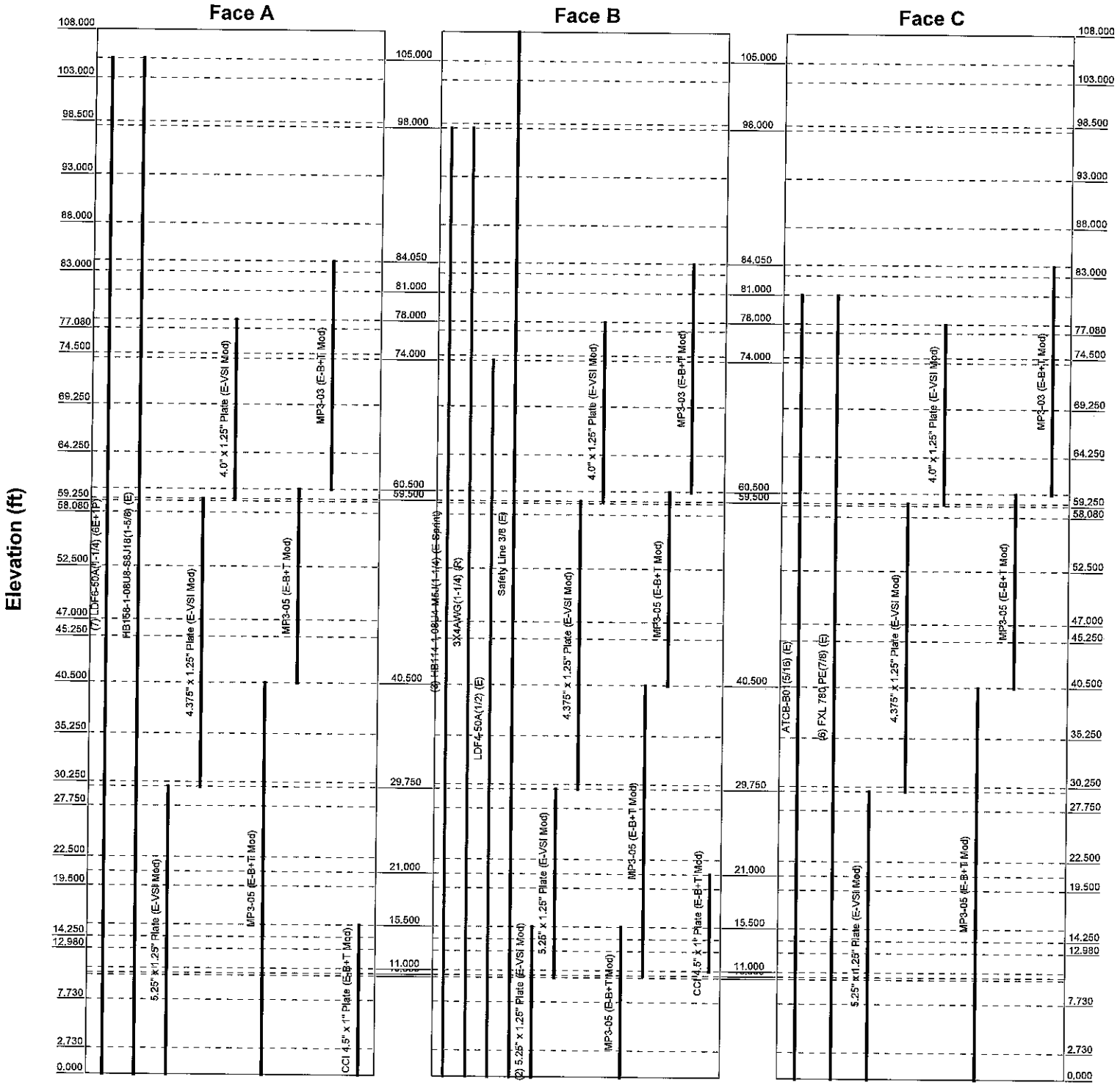


B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: *85565.009.01 - HARTFORD - NU (SSUSA),CT (BU# 87636*		
Project:		
Client: Crown Castle	Drawn by: xjones	App'd:
Code: TIA-222-H	Date: 09/21/18	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 108'

Round Flat App In Face App Out Face Truss Leg



B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job: 85565.009.01 - HARTFORD - NU (SSUSA),CT (BU# 87636		
	Project:		
	Client: Crown Castle	Drawn by: xjones	App'd:
	Code: TIA-222-H	Date: 09/21/18	Scale: NTS
	Path:		Dwg No. E-7

tnxTower	Job	Page
	85565.009.01 - HARTFORD - NU (SSUSA),CT (BU# 876363)	1 of 42
B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Project	Date 15:01:04 09/21/18
	Client Crown Castle	Designed by xjones

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: 71.000 ft.
Basic wind speed of 125 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 1.700 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: 83.6%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform
	Consider Moments - Horizontals		Assume Legs Pinned
	Consider Moments - Diagonals	√	Assume Rigid Index Plate
	Use Moment Magnification	√	Use Clear Spans For Wind Area
	Use Code Stress Ratios		Use Clear Spans For KL/r
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension
	Escalate Ice	√	Bypass Mast Stability Checks
	Always Use Max Kz	√	Use Azimuth Dish Coefficients
	Use Special Wind Profile	√	Project Wind Area of Appurt.
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs

	Use ASCE 10 X-Brace Ly Rules
	Calculate Redundant Bracing Forces
	Ignore Redundant Members in FEA
	SR Leg Bolts Resist Compression
	All Leg Panels Have Same Allowable
	Offset Girt At Foundation
√	Consider Feed Line Torque
	Include Angle Block Shear Check
	Use TIA-222-H Bracing Resist. Exemption
	Use TIA-222-H Tension Splice Exemption
	Poles
√	Include Shear-Torsion Interaction
	Always Use Sub-Critical Flow
	Use Top Mounted Sockets
	Pole Without Linear Attachments
	Pole With Shroud Or No Appurtenances
	Outside and Inside Corner Radii Are Known

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	108.000-103.000	5.000	0.000	Round	8.625	8.625	0.313		A53-B-35 (35 ksi)
L2	103.000-98.500	4.500	0.000	Round	8.625	8.625	0.313		A53-B-35 (35 ksi)
L3	98.500-98.000	0.500	0.000	Round	16.500	16.500	0.313		A53-B-35 (35 ksi)
L4	98.000-93.000	5.000	0.000	18	16.500	17.300	0.188	0.750	A607-65 (65 ksi)
L5	93.000-88.000	5.000	0.000	18	17.300	18.101	0.188	0.750	A607-65 (65 ksi)
L6	88.000-83.000	5.000	0.000	18	18.101	18.901	0.188	0.750	A607-65 (65 ksi)
L7	83.000-82.330	0.670	0.000	18	18.901	19.008	0.188	0.750	A607-65 (65 ksi)
L8	82.330-82.080	0.250	0.000	18	19.008	19.048	0.325	1.300	A607-65 (65 ksi)
L9	82.080-77.080	5.000	0.000	18	19.048	19.848	0.319	1.275	A607-65 (65 ksi)
L10	77.080-76.250	0.830	0.000	18	19.848	19.981	0.319	1.275	A607-65 (65 ksi)
L11	76.250-76.000	0.250	0.000	18	19.981	20.021	0.456	1.825	A607-65 (65 ksi)
L12	76.000-74.500	1.500	0.000	18	20.021	20.261	0.450	1.800	A607-65 (65 ksi)
L13	74.500-74.250	0.250	0.000	18	20.261	20.301	0.588	2.350	A607-65 (65 ksi)
L14	74.250-69.250	5.000	0.000	18	20.301	21.102	0.575	2.300	A607-65 (65 ksi)
L15	69.250-64.250	5.000	0.000	18	21.102	21.902	0.550	2.200	A607-65 (65 ksi)
L16	64.250-59.250	5.000	0.000	18	21.902	22.702	0.544	2.175	A607-65 (65 ksi)
L17	59.250-58.080	1.170	0.000	18	22.702	22.890	0.537	2.150	A607-65 (65 ksi)
L18	58.080-57.730	0.350	0.000	18	22.890	22.946	0.713	2.850	A607-65 (65 ksi)
L19	57.730-57.500	0.230	0.000	18	22.946	22.982	0.713	2.850	A607-65 (65 ksi)
L20	57.500-52.500	5.000	0.000	18	22.982	23.783	0.688	2.750	A607-65 (65 ksi)
L21	52.500-47.000	5.500	3.250	18	23.783	24.663	0.688	2.750	A607-65 (65 ksi)
L22	47.000-45.250	5.000	0.000	18	23.768	24.568	0.750	3.000	A607-65 (65 ksi)
L23	45.250-40.500	4.750	0.000	18	24.568	25.328	0.725	2.900	A607-65 (65 ksi)
L24	40.500-40.250	0.250	0.000	18	25.328	25.368	0.725	2.900	A607-65 (65 ksi)
L25	40.250-35.250	5.000	0.000	18	25.368	26.168	0.700	2.800	A607-65 (65 ksi)
L26	35.250-30.250	5.000	0.000	18	26.168	26.969	0.688	2.750	A607-65 (65 ksi)
L27	30.250-27.750	2.500	0.000	18	26.969	27.369	0.675	2.700	A607-65 (65 ksi)
L28	27.750-27.500	0.250	0.000	18	27.369	27.409	0.725	2.900	A607-65 (65 ksi)
L29	27.500-22.500	5.000	0.000	18	27.409	28.209	0.700	2.800	A607-65 (65 ksi)
L30	22.500-19.500	3.000	0.000	18	28.209	28.689	0.688	2.750	A607-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L31	19.500-19.250	0.250	0.000	18	28.689	28.729	0.800	3.200	A607-65 (65 ksi)
L32	19.250-14.250	5.000	0.000	18	28.729	29.529	0.775	3.100	A607-65 (65 ksi)
L33	14.250-14.000	0.250	0.000	18	29.529	29.569	0.775	3.100	A607-65 (65 ksi)
L34	14.000-13.750	0.250	0.000	18	29.569	29.609	0.775	3.100	A607-65 (65 ksi)
L35	13.750-12.980	0.770	0.000	18	29.609	29.733	0.800	3.200	A607-65 (65 ksi)
L36	12.980-12.730	0.250	0.000	18	29.733	29.773	0.800	3.200	A607-65 (65 ksi)
L37	12.730-7.730	5.000	0.000	18	29.773	30.573	0.787	3.150	A607-65 (65 ksi)
L38	7.730-2.730	5.000	0.000	18	30.573	31.373	0.775	3.100	A607-65 (65 ksi)
L39	2.730-0.000	2.730		18	31.373	31.810	0.762	3.050	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	8.625	8.161	70.586	2.941	4.313	16.368	141.172	4.078	0.000	0
	8.625	8.161	70.586	2.941	4.313	16.368	141.172	4.078	0.000	0
L2	8.625	8.161	70.586	2.941	4.313	16.368	141.172	4.078	0.000	0
	8.625	8.161	70.586	2.941	4.313	16.368	141.172	4.078	0.000	0
L3	16.500	15.892	520.728	5.724	8.250	63.119	1041.456	7.941	0.000	0
	16.500	15.892	520.728	5.724	8.250	63.119	1041.456	7.941	0.000	0
L4	16.726	9.708	326.368	5.791	8.382	38.937	653.165	4.855	2.574	13.728
	17.538	10.184	376.798	6.075	8.789	42.874	754.091	5.093	2.715	14.479
L5	17.538	10.184	376.798	6.075	8.789	42.874	754.091	5.093	2.715	14.479
	18.351	10.661	432.172	6.359	9.195	47.000	864.913	5.331	2.856	15.23
L6	18.351	10.661	432.172	6.359	9.195	47.000	864.913	5.331	2.856	15.23
	19.164	11.137	492.723	6.643	9.602	51.316	986.094	5.569	2.997	15.982
L7	19.164	11.137	492.723	6.643	9.602	51.316	986.094	5.569	2.997	15.982
	19.272	11.201	501.242	6.681	9.656	51.909	1003.144	5.601	3.015	16.082
L8	19.251	19.273	849.916	6.633	9.656	88.018	1700.951	9.638	2.773	8.534
	19.292	19.314	855.389	6.647	9.676	88.399	1711.903	9.659	2.780	8.555
L9	19.293	18.949	839.779	6.649	9.676	86.786	1680.664	9.476	2.791	8.758
	20.105	19.758	952.094	6.933	10.083	94.426	1905.442	9.881	2.932	9.199
L10	20.105	19.758	952.094	6.933	10.083	94.426	1905.442	9.881	2.932	9.199
	20.240	19.893	971.656	6.980	10.150	95.725	1944.591	9.948	2.956	9.273
L11	20.219	28.275	1361.828	6.931	10.150	134.164	2725.448	14.140	2.714	5.948
	20.260	28.333	1370.218	6.946	10.171	134.721	2742.239	14.169	2.721	5.963
L12	20.261	27.954	1352.744	6.948	10.171	133.002	2707.267	13.979	2.732	6.071
	20.505	28.297	1403.141	7.033	10.293	136.323	2808.128	14.151	2.774	6.164
L13	20.483	36.686	1794.000	6.984	10.293	174.297	3590.361	18.347	2.532	4.31
	20.524	36.761	1804.969	6.998	10.313	175.017	3612.313	18.384	2.539	4.322
L14	20.526	36.002	1769.928	7.003	10.313	171.619	3542.184	18.004	2.561	4.454
	21.339	37.462	1994.202	7.287	10.720	186.032	3991.027	18.735	2.702	4.699
L15	21.342	35.877	1914.475	7.296	10.720	178.595	3831.470	17.942	2.746	4.993
	22.155	37.274	2146.949	7.580	11.126	192.963	4296.724	18.641	2.887	5.249
L16	22.156	36.861	2124.417	7.582	11.126	190.938	4251.629	18.434	2.898	5.329
	22.969	38.243	2372.283	7.866	11.533	205.700	4747.687	19.125	3.039	5.588
L17	22.970	37.814	2347.000	7.868	11.533	203.507	4697.088	18.910	3.050	5.674

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
	23.160	38.133	2406.993	7.935	11.628	207.002	4817.153	19.070	3.083	5.735
L18	23.133	50.153	3116.309	7.873	11.628	268.003	6236.718	25.081	2.775	3.894
	23.190	50.280	3139.984	7.893	11.656	269.380	6284.100	25.145	2.784	3.908
L19	23.190	50.280	3139.984	7.893	11.656	269.380	6284.100	25.145	2.784	3.908
	23.227	50.363	3155.608	7.906	11.675	270.286	6315.367	25.186	2.791	3.917
L20	23.231	48.650	3055.151	7.915	11.675	261.682	6114.321	24.330	2.835	4.123
	24.044	50.397	3396.104	8.199	12.082	281.097	6796.676	25.203	2.976	4.328
L21	24.044	50.397	3396.104	8.199	12.082	281.097	6796.676	25.203	2.976	4.328
	24.937	52.318	3799.444	8.511	12.529	303.257	7603.888	26.164	3.131	4.554
L22	24.547	54.794	3667.732	8.171	12.074	303.770	7340.290	27.402	2.863	3.818
	24.831	56.699	4063.713	8.455	12.481	325.603	8132.772	28.355	3.004	4.005
L23	24.835	54.866	3940.638	8.464	12.481	315.742	7886.461	27.438	3.048	4.204
	25.607	56.616	4329.712	8.734	12.867	336.504	8665.120	28.313	3.182	4.389
L24	25.607	56.616	4329.712	8.734	12.867	336.504	8665.120	28.313	3.182	4.389
	25.648	56.708	4350.870	8.748	12.887	337.615	8707.464	28.359	3.189	4.398
L25	25.652	54.808	4213.638	8.757	12.887	326.966	8432.819	27.409	3.233	4.618
	26.464	56.586	4637.144	9.041	13.294	348.826	9280.391	28.298	3.374	4.819
L26	26.466	55.603	4561.047	9.046	13.294	343.102	9128.096	27.807	3.396	4.939
	27.279	57.349	5004.396	9.330	13.700	365.282	10015.378	28.680	3.536	5.144
L27	27.281	56.333	4920.422	9.334	13.700	359.153	9847.318	28.172	3.558	5.272
	27.687	57.190	5148.478	9.476	13.903	370.305	10303.731	28.600	3.629	5.376
L28	27.679	61.311	5498.831	9.459	13.903	395.504	11004.898	30.662	3.541	4.884
	27.720	61.403	5523.641	9.473	13.924	396.709	11054.551	30.708	3.548	4.894
L29	27.724	59.342	5348.175	9.482	13.924	384.107	10703.387	29.676	3.592	5.131
	28.536	61.120	5843.428	9.766	14.330	407.771	11694.546	30.566	3.733	5.333
L30	28.538	60.055	5746.908	9.770	14.330	401.035	11501.379	30.033	3.755	5.462
	29.026	61.103	6052.962	9.941	14.574	415.324	12113.889	30.557	3.839	5.584
L31	29.008	70.816	6958.894	9.901	14.574	477.484	13926.944	35.415	3.641	4.552
	29.049	70.918	6988.887	9.915	14.594	478.874	13986.970	35.466	3.648	4.56
L32	29.053	68.763	6788.682	9.924	14.594	465.156	13586.297	34.388	3.692	4.764
	29.865	70.731	7388.530	10.208	15.001	492.538	14786.782	35.372	3.833	4.946
L33	29.865	70.731	7388.530	10.208	15.001	492.538	14786.782	35.372	3.833	4.946
	29.906	70.830	7419.416	10.222	15.021	493.928	14848.595	35.422	3.840	4.955
L34	29.906	70.830	7419.416	10.222	15.021	493.928	14848.595	35.422	3.840	4.955
	29.947	70.928	7450.387	10.236	15.042	495.320	14910.577	35.471	3.847	4.964
L35	29.943	73.153	7670.735	10.227	15.042	509.969	15351.564	36.583	3.803	4.754
	30.068	73.466	7769.593	10.271	15.104	514.400	15549.410	36.740	3.825	4.781
L36	30.068	73.466	7769.593	10.271	15.104	514.400	15549.410	36.740	3.825	4.781
	30.109	73.567	7801.872	10.285	15.125	515.843	15614.009	36.791	3.832	4.79
L37	30.110	72.449	7689.912	10.290	15.125	508.441	15389.942	36.231	3.854	4.894
	30.923	74.449	8344.564	10.574	15.531	537.284	16700.107	37.232	3.995	5.073
L38	30.925	73.298	8222.454	10.578	15.531	529.422	16455.727	36.656	4.017	5.183
	31.738	75.267	8902.842	10.862	15.938	558.609	17817.398	37.640	4.158	5.365
L39	31.739	74.083	8769.987	10.867	15.938	550.273	17551.513	37.049	4.180	5.482
	32.183	75.140	9150.907	11.022	16.159	566.287	18313.854	37.577	4.257	5.582

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 108.000-103.000				1	1	1			
L2 103.000-98.500				1	1	1			
L3 98.500-98.000				1	1	1			
L4 98.000-93.000				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L5 93.000-88.000				1	1	1			
L6 88.000-83.000				1	1	1			
L7 83.000-82.330				1	1	1			
L8 82.330-82.080				1	1	1.03474			
L9 82.080-77.080				1	1	1.03556			
L10 77.080-76.250				1	1	1.03254			
L11 76.250-76.000				1	1	1.15217			
L12 76.000-74.500				1	1	1.1587			
L13 74.500-74.250				1	1	0.971985			
L14 74.250-69.250				1	1	0.966504			
L15 69.250-64.250				1	1	0.984159			
L16 64.250-59.250				1	1	0.971691			
L17 59.250-58.080				1	1	0.977402			
L18 58.080-57.730				1	1	0.932812			
L19 57.730-57.500				1	1	0.931705			
L20 57.500-52.500				1	1	0.940531			
L21 52.500-47.000				1	1	0.930278			
L22 47.000-45.250				1	1	0.928658			
L23 45.250-40.500				1	1	0.940675			
L24 40.500-40.250				1	1	0.939708			
L25 40.250-35.250				1	1	0.952955			
L26 35.250-30.250				1	1	0.951349			
L27 30.250-27.750				1	1	0.95954			
L28 27.750-27.500				1	1	0.947656			
L29 27.500-22.500				1	1	0.962447			
L30 22.500-19.500				1	1	0.968941			
L31 19.500-19.250				1	1	0.898748			
L32 19.250-14.250				1	1	0.910092			
L33 14.250-14.000				1	1	0.909276			
L34				1	1	0.971909			

Tower Elevation ft	Gusset Area (per face) ft²	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
14.000-13.750									
L35				1	1	0.967746			
13.750-12.980									
L36				1	1	0.966841			
12.980-12.730									
L37				1	1	0.963917			
12.730-7.730									
L38				1	1	0.961885			
7.730-2.730									
L39				1	1	0.968116			
2.730-0.000									

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
LDF6-50A(1-1/4) (6E+1P)	A	No	Surface Ar (CaAa)	105.000 - 0.000	7	6	-0.500 -0.200	1.550		0.001
HB158-1-08U8-S8J18(1-5/8) (E) *$$* *$$*	A	No	Surface Ar (CaAa)	105.000 - 0.000	1	1	-0.300 -0.200	1.980		0.001
ATCB-B01(5/16) (E)	C	No	Surface Ar (CaAa)	81.000 - 0.000	1	1	-0.360 -0.350	0.315		0.000
FXL 780 PE(7/8) (E) *$$*	C	No	Surface Ar (CaAa)	81.000 - 0.000	6	3	-0.500 -0.350	1.090		0.000
Safety Line 3/8 (E) *$$*	B	No	Surface Ar (CaAa)	108.000 - 0.000	1	1	0.000 0.000	0.375		0.000
5.25" x 1.25" Plate (E-VSI Mod)	A	No	Surface Af (CaAa)	29.750 - 0.000	1	1	0.000 0.000	5.250	13.000	0.000
5.25" x 1.25" Plate (E-VSI Mod)	B	No	Surface Af (CaAa)	15.500 - 0.000	2	2	0.200 0.300	5.250	13.000	0.000
5.25" x 1.25" Plate (E-VSI Mod)	B	No	Surface Af (CaAa)	29.750 - 10.250	1	1	0.000 0.000	5.250	13.000	0.000
5.25" x 1.25" Plate (E-VSI Mod) *$$*	C	No	Surface Af (CaAa)	29.750 - 0.000	1	1	0.000 0.000	5.250	13.000	0.000
4.375" x 1.25" Plate (E-VSI Mod)	A	No	Surface Af (CaAa)	59.500 - 29.750	1	1	0.000 0.000	4.375	11.250	0.000
4.375" x 1.25" Plate (E-VSI Mod)	B	No	Surface Af (CaAa)	59.500 - 29.750	1	1	0.000 0.000	4.375	11.250	0.000
4.375" x 1.25" Plate (E-VSI Mod) *$$*	C	No	Surface Af (CaAa)	59.500 - 29.750	1	1	0.000 0.000	4.375	11.250	0.000
4.0" x 1.25" Plate (E-VSI Mod)	A	No	Surface Af (CaAa)	78.000 - 59.500	1	1	0.000 0.000	4.000	10.500	0.000
4.0" x 1.25" Plate (E-VSI Mod)	B	No	Surface Af (CaAa)	78.000 - 59.500	1	1	0.000 0.000	4.000	10.500	0.000
4.0" x 1.25" Plate (E-VSI Mod)	C	No	Surface Af (CaAa)	78.000 - 59.500	1	1	0.000 0.000	4.000	10.500	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
$$										
MP3-05	A	No	Surface Af	40.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	0.000			0.400			
MP3-05	B	No	Surface Af	15.500 -	1	1	0.200	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	0.000			0.200			
MP3-05	B	No	Surface Af	40.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	10.500			0.400			
MP3-05	C	No	Surface Af	40.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	0.000			0.400			
$$										
MP3-05	A	No	Surface Af	60.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	40.500			0.400			
MP3-05	B	No	Surface Af	60.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	40.500			0.400			
MP3-05	C	No	Surface Af	60.500 -	1	1	0.400	5.330	14.840	0.000
(E-B+T Mod)			(CaAa)	40.500			0.400			
$$										
MP3-03	A	No	Surface Af	84.050 -	1	1	0.400	4.060	11.260	0.000
(E-B+T Mod)			(CaAa)	60.500			0.400			
MP3-03	B	No	Surface Af	84.050 -	1	1	0.400	4.060	11.260	0.000
(E-B+T Mod)			(CaAa)	60.500			0.400			
MP3-03	C	No	Surface Af	84.050 -	1	1	0.400	4.060	11.260	0.000
(E-B+T Mod)			(CaAa)	60.500			0.400			
$$										
CCI 4.5" x 1" Plate	A	No	Surface Af	15.500 -	1	1	0.000	4.500	11.000	0.000
(E-B+T Mod)			(CaAa)	0.000			0.020			
CCI 4.5" x 1" Plate	B	No	Surface Af	21.000 -	1	1	0.300	4.500	11.000	0.000
(E-B+T Mod)			(CaAa)	11.000			0.320			
$$										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
$$									
HB114-1-08U4-M5J	B	No	No	Inside Pole	98.000 - 0.000	3	No Ice	0.000	0.001
(1-1/4)							1/2" Ice	0.000	0.001
(E-Sprint)							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
3X4AWG(1-1/4)	B	No	No	Inside Pole	98.000 - 0.000	1	No Ice	0.000	0.001
(R)							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
$$									
LDF4-50A(1/2)	B	No	No	Inside Pole	74.000 - 0.000	1	No Ice	0.000	0.000
(E)							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
$$									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	108.000-103.000	A	0.000	0.000	2.256	0.000	0.011
		B	0.000	0.000	0.188	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.000
L2	103.000-98.500	A	0.000	0.000	5.076	0.000	0.025
		B	0.000	0.000	0.169	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.000
L3	98.500-98.000	A	0.000	0.000	0.564	0.000	0.003
		B	0.000	0.000	0.019	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L4	98.000-93.000	A	0.000	0.000	5.640	0.000	0.028
		B	0.000	0.000	0.188	0.000	0.022
		C	0.000	0.000	0.000	0.000	0.000
L5	93.000-88.000	A	0.000	0.000	5.640	0.000	0.028
		B	0.000	0.000	0.188	0.000	0.022
		C	0.000	0.000	0.000	0.000	0.000
L6	88.000-83.000	A	0.000	0.000	6.351	0.000	0.028
		B	0.000	0.000	0.898	0.000	0.022
		C	0.000	0.000	0.711	0.000	0.000
L7	83.000-82.330	A	0.000	0.000	1.209	0.000	0.004
		B	0.000	0.000	0.478	0.000	0.003
		C	0.000	0.000	0.453	0.000	0.000
L8	82.330-82.080	A	0.000	0.000	0.451	0.000	0.001
		B	0.000	0.000	0.179	0.000	0.001
		C	0.000	0.000	0.169	0.000	0.000
L9	82.080-77.080	A	0.000	0.000	9.637	0.000	0.028
		B	0.000	0.000	4.184	0.000	0.022
		C	0.000	0.000	5.402	0.000	0.006
L10	77.080-76.250	A	0.000	0.000	2.051	0.000	0.005
		B	0.000	0.000	1.146	0.000	0.004
		C	0.000	0.000	1.413	0.000	0.001
L11	76.250-76.000	A	0.000	0.000	0.618	0.000	0.001
		B	0.000	0.000	0.345	0.000	0.001
		C	0.000	0.000	0.425	0.000	0.000
L12	76.000-74.500	A	0.000	0.000	3.707	0.000	0.008
		B	0.000	0.000	2.071	0.000	0.007
		C	0.000	0.000	2.553	0.000	0.002
L13	74.500-74.250	A	0.000	0.000	0.618	0.000	0.001
		B	0.000	0.000	0.345	0.000	0.001
		C	0.000	0.000	0.425	0.000	0.000
L14	74.250-69.250	A	0.000	0.000	12.357	0.000	0.028
		B	0.000	0.000	6.904	0.000	0.022
		C	0.000	0.000	8.509	0.000	0.008
L15	69.250-64.250	A	0.000	0.000	12.357	0.000	0.028
		B	0.000	0.000	6.904	0.000	0.022
		C	0.000	0.000	8.509	0.000	0.008
L16	64.250-59.250	A	0.000	0.000	12.637	0.000	0.028
		B	0.000	0.000	7.184	0.000	0.022
		C	0.000	0.000	8.789	0.000	0.008
L17	59.250-58.080	A	0.000	0.000	3.212	0.000	0.006
		B	0.000	0.000	1.936	0.000	0.005
		C	0.000	0.000	2.312	0.000	0.002
L18	58.080-57.730	A	0.000	0.000	0.961	0.000	0.002
		B	0.000	0.000	0.579	0.000	0.002
		C	0.000	0.000	0.692	0.000	0.001
L19	57.730-57.500	A	0.000	0.000	0.631	0.000	0.001
		B	0.000	0.000	0.381	0.000	0.001
		C	0.000	0.000	0.454	0.000	0.000
L20	57.500-52.500	A	0.000	0.000	13.728	0.000	0.028

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	8.275	0.000	0.022
		C	0.000	0.000	9.880	0.000	0.008
L21	52.500-47.000	A	0.000	0.000	15.100	0.000	0.030
		B	0.000	0.000	9.102	0.000	0.025
		C	0.000	0.000	10.868	0.000	0.009
L22	47.000-45.250	A	0.000	0.000	4.805	0.000	0.010
		B	0.000	0.000	2.896	0.000	0.008
		C	0.000	0.000	3.458	0.000	0.003
L23	45.250-40.500	A	0.000	0.000	13.041	0.000	0.026
		B	0.000	0.000	7.861	0.000	0.021
		C	0.000	0.000	9.386	0.000	0.007
L24	40.500-40.250	A	0.000	0.000	0.686	0.000	0.001
		B	0.000	0.000	0.414	0.000	0.001
		C	0.000	0.000	0.494	0.000	0.000
L25	40.250-35.250	A	0.000	0.000	13.728	0.000	0.028
		B	0.000	0.000	8.275	0.000	0.022
		C	0.000	0.000	9.880	0.000	0.008
L26	35.250-30.250	A	0.000	0.000	13.728	0.000	0.028
		B	0.000	0.000	8.275	0.000	0.022
		C	0.000	0.000	9.880	0.000	0.008
L27	30.250-27.750	A	0.000	0.000	7.155	0.000	0.014
		B	0.000	0.000	4.429	0.000	0.011
		C	0.000	0.000	5.232	0.000	0.004
L28	27.750-27.500	A	0.000	0.000	0.723	0.000	0.001
		B	0.000	0.000	0.450	0.000	0.001
		C	0.000	0.000	0.530	0.000	0.000
L29	27.500-22.500	A	0.000	0.000	14.457	0.000	0.028
		B	0.000	0.000	9.004	0.000	0.022
		C	0.000	0.000	10.609	0.000	0.008
L30	22.500-19.500	A	0.000	0.000	8.674	0.000	0.017
		B	0.000	0.000	6.527	0.000	0.013
		C	0.000	0.000	6.365	0.000	0.005
L31	19.500-19.250	A	0.000	0.000	0.723	0.000	0.001
		B	0.000	0.000	0.638	0.000	0.001
		C	0.000	0.000	0.530	0.000	0.000
L32	19.250-14.250	A	0.000	0.000	15.394	0.000	0.028
		B	0.000	0.000	16.052	0.000	0.022
		C	0.000	0.000	10.609	0.000	0.008
L33	14.250-14.000	A	0.000	0.000	0.910	0.000	0.001
		B	0.000	0.000	1.297	0.000	0.001
		C	0.000	0.000	0.530	0.000	0.000
L34	14.000-13.750	A	0.000	0.000	0.910	0.000	0.001
		B	0.000	0.000	1.297	0.000	0.001
		C	0.000	0.000	0.530	0.000	0.000
L35	13.750-12.980	A	0.000	0.000	2.804	0.000	0.004
		B	0.000	0.000	3.996	0.000	0.003
		C	0.000	0.000	1.634	0.000	0.001
L36	12.980-12.730	A	0.000	0.000	0.910	0.000	0.001
		B	0.000	0.000	1.297	0.000	0.001
		C	0.000	0.000	0.530	0.000	0.000
L37	12.730-7.730	A	0.000	0.000	18.207	0.000	0.028
		B	0.000	0.000	18.828	0.000	0.022
		C	0.000	0.000	10.609	0.000	0.008
L38	7.730-2.730	A	0.000	0.000	18.207	0.000	0.028
		B	0.000	0.000	13.379	0.000	0.022
		C	0.000	0.000	10.609	0.000	0.008
L39	2.730-0.000	A	0.000	0.000	9.941	0.000	0.015
		B	0.000	0.000	7.305	0.000	0.012
		C	0.000	0.000	5.793	0.000	0.004

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	108.000-103.000	A	1.910	0.000	0.000	4.440	0.000	0.077
		B		0.000	0.000	2.097	0.000	0.028
		C		0.000	0.000	0.000	0.000	0.000
L2	103.000-98.500	A	1.901	0.000	0.000	9.971	0.000	0.173
		B		0.000	0.000	1.879	0.000	0.025
		C		0.000	0.000	0.000	0.000	0.000
L3	98.500-98.000	A	1.896	0.000	0.000	1.107	0.000	0.019
		B		0.000	0.000	0.208	0.000	0.003
		C		0.000	0.000	0.000	0.000	0.000
L4	98.000-93.000	A	1.891	0.000	0.000	11.056	0.000	0.191
		B		0.000	0.000	2.078	0.000	0.048
		C		0.000	0.000	0.000	0.000	0.000
L5	93.000-88.000	A	1.880	0.000	0.000	11.033	0.000	0.190
		B		0.000	0.000	2.068	0.000	0.048
		C		0.000	0.000	0.000	0.000	0.000
L6	88.000-83.000	A	1.870	0.000	0.000	12.113	0.000	0.203
		B		0.000	0.000	3.160	0.000	0.061
		C		0.000	0.000	1.103	0.000	0.014
L7	83.000-82.330	A	1.864	0.000	0.000	2.176	0.000	0.034
		B		0.000	0.000	0.978	0.000	0.015
		C		0.000	0.000	0.703	0.000	0.009
L8	82.330-82.080	A	1.862	0.000	0.000	0.812	0.000	0.013
		B		0.000	0.000	0.365	0.000	0.006
		C		0.000	0.000	0.262	0.000	0.003
L9	82.080-77.080	A	1.856	0.000	0.000	17.174	0.000	0.265
		B		0.000	0.000	8.239	0.000	0.125
		C		0.000	0.000	11.195	0.000	0.158
L10	77.080-76.250	A	1.850	0.000	0.000	3.549	0.000	0.052
		B		0.000	0.000	2.067	0.000	0.029
		C		0.000	0.000	2.785	0.000	0.038
L11	76.250-76.000	A	1.848	0.000	0.000	1.069	0.000	0.016
		B		0.000	0.000	0.622	0.000	0.009
		C		0.000	0.000	0.839	0.000	0.012
L12	76.000-74.500	A	1.846	0.000	0.000	6.409	0.000	0.094
		B		0.000	0.000	3.733	0.000	0.053
		C		0.000	0.000	5.029	0.000	0.069
L13	74.500-74.250	A	1.844	0.000	0.000	1.068	0.000	0.016
		B		0.000	0.000	0.622	0.000	0.009
		C		0.000	0.000	0.838	0.000	0.011
L14	74.250-69.250	A	1.837	0.000	0.000	21.328	0.000	0.313
		B		0.000	0.000	12.416	0.000	0.175
		C		0.000	0.000	16.726	0.000	0.228
L15	69.250-64.250	A	1.824	0.000	0.000	21.271	0.000	0.310
		B		0.000	0.000	12.376	0.000	0.173
		C		0.000	0.000	16.670	0.000	0.226
L16	64.250-59.250	A	1.810	0.000	0.000	21.491	0.000	0.311
		B		0.000	0.000	12.614	0.000	0.175
		C		0.000	0.000	16.890	0.000	0.227
L17	59.250-58.080	A	1.801	0.000	0.000	5.275	0.000	0.075
		B		0.000	0.000	3.200	0.000	0.043
		C		0.000	0.000	4.198	0.000	0.056
L18	58.080-57.730	A	1.798	0.000	0.000	1.577	0.000	0.022
		B		0.000	0.000	0.957	0.000	0.013
		C		0.000	0.000	1.255	0.000	0.017
L19	57.730-57.500	A	1.797	0.000	0.000	1.036	0.000	0.015
		B		0.000	0.000	0.629	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
		C		0.000	0.000	0.825	0.000	0.011
L20	57.500-52.500	A	1.789	0.000	0.000	22.493	0.000	0.319
		B		0.000	0.000	13.642	0.000	0.184
		C		0.000	0.000	17.892	0.000	0.235
L21	52.500-47.000	A	1.771	0.000	0.000	24.659	0.000	0.346
		B		0.000	0.000	14.947	0.000	0.200
		C		0.000	0.000	19.598	0.000	0.256
L22	47.000-45.250	A	1.758	0.000	0.000	7.846	0.000	0.110
		B		0.000	0.000	4.756	0.000	0.064
		C		0.000	0.000	6.236	0.000	0.081
L23	45.250-40.500	A	1.745	0.000	0.000	21.191	0.000	0.294
		B		0.000	0.000	12.835	0.000	0.169
		C		0.000	0.000	16.820	0.000	0.217
L24	40.500-40.250	A	1.735	0.000	0.000	1.113	0.000	0.015
		B		0.000	0.000	0.674	0.000	0.009
		C		0.000	0.000	0.883	0.000	0.011
L25	40.250-35.250	A	1.723	0.000	0.000	22.213	0.000	0.305
		B		0.000	0.000	13.444	0.000	0.176
		C		0.000	0.000	17.611	0.000	0.224
L26	35.250-30.250	A	1.699	0.000	0.000	22.109	0.000	0.300
		B		0.000	0.000	13.371	0.000	0.173
		C		0.000	0.000	17.508	0.000	0.220
L27	30.250-27.750	A	1.678	0.000	0.000	11.303	0.000	0.150
		B		0.000	0.000	6.946	0.000	0.087
		C		0.000	0.000	9.002	0.000	0.111
L28	27.750-27.500	A	1.670	0.000	0.000	1.136	0.000	0.015
		B		0.000	0.000	0.701	0.000	0.009
		C		0.000	0.000	0.906	0.000	0.011
L29	27.500-22.500	A	1.653	0.000	0.000	22.646	0.000	0.297
		B		0.000	0.000	13.964	0.000	0.173
		C		0.000	0.000	18.045	0.000	0.218
L30	22.500-19.500	A	1.625	0.000	0.000	13.515	0.000	0.175
		B		0.000	0.000	9.725	0.000	0.118
		C		0.000	0.000	10.754	0.000	0.128
L31	19.500-19.250	A	1.612	0.000	0.000	1.123	0.000	0.014
		B		0.000	0.000	0.925	0.000	0.011
		C		0.000	0.000	0.893	0.000	0.011
L32	19.250-14.250	A	1.588	0.000	0.000	23.699	0.000	0.297
		B		0.000	0.000	19.871	0.000	0.256
		C		0.000	0.000	17.769	0.000	0.208
L33	14.250-14.000	A	1.562	0.000	0.000	1.378	0.000	0.016
		B		0.000	0.000	1.207	0.000	0.018
		C		0.000	0.000	0.883	0.000	0.010
L34	14.000-13.750	A	1.559	0.000	0.000	1.377	0.000	0.016
		B		0.000	0.000	1.207	0.000	0.018
		C		0.000	0.000	0.882	0.000	0.010
L35	13.750-12.980	A	1.553	0.000	0.000	4.236	0.000	0.050
		B		0.000	0.000	3.713	0.000	0.056
		C		0.000	0.000	2.713	0.000	0.031
L36	12.980-12.730	A	1.547	0.000	0.000	1.374	0.000	0.016
		B		0.000	0.000	1.204	0.000	0.018
		C		0.000	0.000	0.880	0.000	0.010
L37	12.730-7.730	A	1.512	0.000	0.000	27.300	0.000	0.318
		B		0.000	0.000	14.673	0.000	0.258
		C		0.000	0.000	17.444	0.000	0.195
L38	7.730-2.730	A	1.414	0.000	0.000	26.791	0.000	0.295
		B		0.000	0.000	7.357	0.000	0.173
		C		0.000	0.000	17.026	0.000	0.180
L39	2.730-0.000	A	1.236	0.000	0.000	14.118	0.000	0.139
		B		0.000	0.000	3.852	0.000	0.081
		C		0.000	0.000	8.884	0.000	0.084

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	108.000-103.000	-2.765	0.433	-1.276	-0.033
L2	103.000-98.500	-4.120	0.702	-2.515	0.261
L3	98.500-98.000	-5.432	0.909	-3.487	0.320
L4	98.000-93.000	-4.995	0.835	-3.514	0.322
L5	93.000-88.000	-5.076	0.848	-3.597	0.328
L6	88.000-83.000	-4.350	0.726	-3.283	0.298
L7	83.000-82.330	-2.310	0.385	-2.376	0.216
L8	82.330-82.080	-2.316	0.386	-2.383	0.216
L9	82.080-77.080	-1.674	0.680	-1.207	0.839
L10	77.080-76.250	-1.218	0.600	-0.802	0.814
L11	76.250-76.000	-1.221	0.602	-0.805	0.816
L12	76.000-74.500	-1.226	0.604	-0.809	0.820
L13	74.500-74.250	-1.232	0.607	-0.813	0.824
L14	74.250-69.250	-1.247	0.614	-0.825	0.836
L15	69.250-64.250	-1.275	0.629	-0.847	0.859
L16	64.250-59.250	-1.273	0.628	-0.859	0.871
L17	59.250-58.080	-1.186	0.585	-0.834	0.845
L18	58.080-57.730	-1.190	0.588	-0.838	0.848
L19	57.730-57.500	-1.191	0.588	-0.839	0.850
L20	57.500-52.500	-1.204	0.595	-0.851	0.860
L21	52.500-47.000	-1.231	0.608	-0.874	0.882
L22	47.000-45.250	-1.237	0.612	-0.878	0.887
L23	45.250-40.500	-1.253	0.620	-0.896	0.899
L24	40.500-40.250	-1.265	0.626	-0.907	0.909
L25	40.250-35.250	-1.278	0.632	-0.919	0.919
L26	35.250-30.250	-1.302	0.644	-0.943	0.938
L27	30.250-27.750	-1.269	0.629	-0.939	0.930
L28	27.750-27.500	-1.263	0.626	-0.940	0.929
L29	27.500-22.500	-1.275	0.632	-0.953	0.938
L30	22.500-19.500	-0.752	0.995	-0.542	1.240
L31	19.500-19.250	-0.259	1.326	-0.140	1.519
L32	19.250-14.250	0.427	1.461	-0.056	1.392
L33	14.250-14.000	1.986	1.748	0.152	1.060
L34	14.000-13.750	1.988	1.750	0.152	1.061
L35	13.750-12.980	1.993	1.754	0.152	1.063
L36	12.980-12.730	1.997	1.758	0.152	1.065
L37	12.730-7.730	0.822	1.213	-1.189	0.464
L38	7.730-2.730	-0.294	0.846	-2.470	0.034
L39	2.730-0.000	-0.296	0.858	-2.539	0.018

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	2	LDF6-50A(1-1/4)	103.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.00		
L1	3	HB158-1-08U8-S8J18(1-5/8)	103.00 - 105.00	1.0000	1.0000
L1	18	Safety Line 3/8	103.00 - 108.00	1.0000	1.0000
L2	2	LDF6-50A(1-1/4)	98.50 - 103.00	1.0000	1.0000
L2	3	HB158-1-08U8-S8J18(1-5/8)	98.50 - 103.00	1.0000	1.0000
L2	18	Safety Line 3/8	98.50 - 103.00	1.0000	1.0000
L3	2	LDF6-50A(1-1/4)	98.00 - 98.50	1.0000	1.0000
L3	3	HB158-1-08U8-S8J18(1-5/8)	98.00 - 98.50	1.0000	1.0000
L3	18	Safety Line 3/8	98.00 - 98.50	1.0000	1.0000
L4	2	LDF6-50A(1-1/4)	93.00 - 98.00	1.0000	1.0000
L4	3	HB158-1-08U8-S8J18(1-5/8)	93.00 - 98.00	1.0000	1.0000
L4	18	Safety Line 3/8	93.00 - 98.00	1.0000	1.0000
L5	2	LDF6-50A(1-1/4)	88.00 - 93.00	1.0000	1.0000
L5	3	HB158-1-08U8-S8J18(1-5/8)	88.00 - 93.00	1.0000	1.0000
L5	18	Safety Line 3/8	88.00 - 93.00	1.0000	1.0000
L6	2	LDF6-50A(1-1/4)	83.00 - 88.00	1.0000	1.0000
L6	3	HB158-1-08U8-S8J18(1-5/8)	83.00 - 88.00	1.0000	1.0000
L6	18	Safety Line 3/8	83.00 - 88.00	1.0000	1.0000
L6	42	MP3-03	83.00 - 84.05	1.0000	1.0000
L6	43	MP3-03	83.00 - 84.05	1.0000	1.0000
L6	44	MP3-03	83.00 - 84.05	1.0000	1.0000
L7	2	LDF6-50A(1-1/4)	82.33 - 83.00	1.0000	1.0000
L7	3	HB158-1-08U8-S8J18(1-5/8)	82.33 - 83.00	1.0000	1.0000
L7	18	Safety Line 3/8	82.33 - 83.00	1.0000	1.0000
L7	42	MP3-03	82.33 - 83.00	1.0000	1.0000
L7	43	MP3-03	82.33 - 83.00	1.0000	1.0000
L7	44	MP3-03	82.33 - 83.00	1.0000	1.0000
L8	2	LDF6-50A(1-1/4)	82.08 - 82.33	1.0000	1.0000
L8	3	HB158-1-08U8-S8J18(1-5/8)	82.08 - 82.33	1.0000	1.0000
L8	18	Safety Line 3/8	82.08 - 82.33	1.0000	1.0000
L8	42	MP3-03	82.08 - 82.33	1.0000	1.0000
L8	43	MP3-03	82.08 - 82.33	1.0000	1.0000
L8	44	MP3-03	82.08 - 82.33	1.0000	1.0000
L9	2	LDF6-50A(1-1/4)	77.08 - 82.08	1.0000	1.0000
L9	3	HB158-1-08U8-S8J18(1-5/8)	77.08 - 82.08	1.0000	1.0000
L9	13	ATCB-B01(5/16)	77.08 - 81.00	1.0000	1.0000
L9	14	FXL 780 PE(7/8)	77.08 - 81.00	1.0000	1.0000
L9	18	Safety Line 3/8	77.08 - 82.08	1.0000	1.0000
L9	29	4.0" x 1.25" Plate	77.08 - 78.00	1.0000	1.0000
L9	30	4.0" x 1.25" Plate	77.08 - 78.00	1.0000	1.0000
L9	31	4.0" x 1.25" Plate	77.08 - 78.00	1.0000	1.0000
L9	42	MP3-03	77.08 - 82.08	1.0000	1.0000
L9	43	MP3-03	77.08 - 82.08	1.0000	1.0000
L9	44	MP3-03	77.08 - 82.08	1.0000	1.0000
L10	2	LDF6-50A(1-1/4)	76.25 - 77.08	1.0000	1.0000
L10	3	HB158-1-08U8-S8J18(1-5/8)	76.25 - 77.08	1.0000	1.0000
L10	13	ATCB-B01(5/16)	76.25 - 77.08	1.0000	1.0000
L10	14	FXL 780 PE(7/8)	76.25 - 77.08	1.0000	1.0000
L10	18	Safety Line 3/8	76.25 - 77.08	1.0000	1.0000
L10	29	4.0" x 1.25" Plate	76.25 - 77.08	1.0000	1.0000
L10	30	4.0" x 1.25" Plate	76.25 - 77.08	1.0000	1.0000
L10	31	4.0" x 1.25" Plate	76.25 - 77.08	1.0000	1.0000
L10	42	MP3-03	76.25 - 77.08	1.0000	1.0000
L10	43	MP3-03	76.25 - 77.08	1.0000	1.0000
L10	44	MP3-03	76.25 - 77.08	1.0000	1.0000
L11	2	LDF6-50A(1-1/4)	76.00 - 76.25	1.0000	1.0000
L11	3	HB158-1-08U8-S8J18(1-5/8)	76.00 - 76.25	1.0000	1.0000
L11	13	ATCB-B01(5/16)	76.00 - 76.25	1.0000	1.0000
L11	14	FXL 780 PE(7/8)	76.00 - 76.25	1.0000	1.0000
L11	18	Safety Line 3/8	76.00 - 76.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	29	4.0" x 1.25" Plate	76.00 - 76.25	1.0000	1.0000
L11	30	4.0" x 1.25" Plate	76.00 - 76.25	1.0000	1.0000
L11	31	4.0" x 1.25" Plate	76.00 - 76.25	1.0000	1.0000
L11	42	MP3-03	76.00 - 76.25	1.0000	1.0000
L11	43	MP3-03	76.00 - 76.25	1.0000	1.0000
L11	44	MP3-03	76.00 - 76.25	1.0000	1.0000
L12	2	LDF6-50A(1-1/4)	74.50 - 76.00	1.0000	1.0000
L12	3	HB158-1-08U8-S8J18(1-5/8)	74.50 - 76.00	1.0000	1.0000
L12	13	ATCB-B01(5/16)	74.50 - 76.00	1.0000	1.0000
L12	14	FXL 780 PE(7/8)	74.50 - 76.00	1.0000	1.0000
L12	18	Safety Line 3/8	74.50 - 76.00	1.0000	1.0000
L12	29	4.0" x 1.25" Plate	74.50 - 76.00	1.0000	1.0000
L12	30	4.0" x 1.25" Plate	74.50 - 76.00	1.0000	1.0000
L12	31	4.0" x 1.25" Plate	74.50 - 76.00	1.0000	1.0000
L12	42	MP3-03	74.50 - 76.00	1.0000	1.0000
L12	43	MP3-03	74.50 - 76.00	1.0000	1.0000
L12	44	MP3-03	74.50 - 76.00	1.0000	1.0000
L13	2	LDF6-50A(1-1/4)	74.25 - 74.50	1.0000	1.0000
L13	3	HB158-1-08U8-S8J18(1-5/8)	74.25 - 74.50	1.0000	1.0000
L13	13	ATCB-B01(5/16)	74.25 - 74.50	1.0000	1.0000
L13	14	FXL 780 PE(7/8)	74.25 - 74.50	1.0000	1.0000
L13	18	Safety Line 3/8	74.25 - 74.50	1.0000	1.0000
L13	29	4.0" x 1.25" Plate	74.25 - 74.50	1.0000	1.0000
L13	30	4.0" x 1.25" Plate	74.25 - 74.50	1.0000	1.0000
L13	31	4.0" x 1.25" Plate	74.25 - 74.50	1.0000	1.0000
L13	42	MP3-03	74.25 - 74.50	1.0000	1.0000
L13	43	MP3-03	74.25 - 74.50	1.0000	1.0000
L13	44	MP3-03	74.25 - 74.50	1.0000	1.0000
L14	2	LDF6-50A(1-1/4)	69.25 - 74.25	1.0000	1.0000
L14	3	HB158-1-08U8-S8J18(1-5/8)	69.25 - 74.25	1.0000	1.0000
L14	13	ATCB-B01(5/16)	69.25 - 74.25	1.0000	1.0000
L14	14	FXL 780 PE(7/8)	69.25 - 74.25	1.0000	1.0000
L14	18	Safety Line 3/8	69.25 - 74.25	1.0000	1.0000
L14	29	4.0" x 1.25" Plate	69.25 - 74.25	1.0000	1.0000
L14	30	4.0" x 1.25" Plate	69.25 - 74.25	1.0000	1.0000
L14	31	4.0" x 1.25" Plate	69.25 - 74.25	1.0000	1.0000
L14	42	MP3-03	69.25 - 74.25	1.0000	1.0000
L14	43	MP3-03	69.25 - 74.25	1.0000	1.0000
L14	44	MP3-03	69.25 - 74.25	1.0000	1.0000
L15	2	LDF6-50A(1-1/4)	64.25 - 69.25	1.0000	1.0000
L15	3	HB158-1-08U8-S8J18(1-5/8)	64.25 - 69.25	1.0000	1.0000
L15	13	ATCB-B01(5/16)	64.25 - 69.25	1.0000	1.0000
L15	14	FXL 780 PE(7/8)	64.25 - 69.25	1.0000	1.0000
L15	18	Safety Line 3/8	64.25 - 69.25	1.0000	1.0000
L15	29	4.0" x 1.25" Plate	64.25 - 69.25	1.0000	1.0000
L15	30	4.0" x 1.25" Plate	64.25 - 69.25	1.0000	1.0000
L15	31	4.0" x 1.25" Plate	64.25 - 69.25	1.0000	1.0000
L15	42	MP3-03	64.25 - 69.25	1.0000	1.0000
L15	43	MP3-03	64.25 - 69.25	1.0000	1.0000
L15	44	MP3-03	64.25 - 69.25	1.0000	1.0000
L16	2	LDF6-50A(1-1/4)	59.25 - 64.25	1.0000	1.0000
L16	3	HB158-1-08U8-S8J18(1-5/8)	59.25 - 64.25	1.0000	1.0000
L16	13	ATCB-B01(5/16)	59.25 - 64.25	1.0000	1.0000
L16	14	FXL 780 PE(7/8)	59.25 - 64.25	1.0000	1.0000
L16	18	Safety Line 3/8	59.25 - 64.25	1.0000	1.0000
L16	25	4.375" x 1.25" Plate	59.25 - 59.50	1.0000	1.0000
L16	26	4.375" x 1.25" Plate	59.25 - 59.50	1.0000	1.0000
L16	27	4.375" x 1.25" Plate	59.25 - 59.50	1.0000	1.0000
L16	29	4.0" x 1.25" Plate	59.50 - 64.25	1.0000	1.0000
L16	30	4.0" x 1.25" Plate	59.50 - 64.25	1.0000	1.0000
L16	31	4.0" x 1.25" Plate	59.50 - 64.25	1.0000	1.0000
L16	38	MP3-05	59.25 - 60.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	39	MP3-05	59.25 - 60.50	1.0000	1.0000
L16	40	MP3-05	59.25 - 60.50	1.0000	1.0000
L16	42	MP3-03	60.50 - 64.25	1.0000	1.0000
L16	43	MP3-03	60.50 - 64.25	1.0000	1.0000
L16	44	MP3-03	60.50 - 64.25	1.0000	1.0000
L17	2	LDF6-50A(1-1/4)	58.08 - 59.25	1.0000	1.0000
L17	3	HB158-1-08U8-S8J18(1-5/8)	58.08 - 59.25	1.0000	1.0000
L17	13	ATCB-B01(5/16)	58.08 - 59.25	1.0000	1.0000
L17	14	FXL 780 PE(7/8)	58.08 - 59.25	1.0000	1.0000
L17	18	Safety Line 3/8	58.08 - 59.25	1.0000	1.0000
L17	25	4.375" x 1.25" Plate	58.08 - 59.25	1.0000	1.0000
L17	26	4.375" x 1.25" Plate	58.08 - 59.25	1.0000	1.0000
L17	27	4.375" x 1.25" Plate	58.08 - 59.25	1.0000	1.0000
L17	38	MP3-05	58.08 - 59.25	1.0000	1.0000
L17	39	MP3-05	58.08 - 59.25	1.0000	1.0000
L17	40	MP3-05	58.08 - 59.25	1.0000	1.0000
L18	2	LDF6-50A(1-1/4)	57.73 - 58.08	1.0000	1.0000
L18	3	HB158-1-08U8-S8J18(1-5/8)	57.73 - 58.08	1.0000	1.0000
L18	13	ATCB-B01(5/16)	57.73 - 58.08	1.0000	1.0000
L18	14	FXL 780 PE(7/8)	57.73 - 58.08	1.0000	1.0000
L18	18	Safety Line 3/8	57.73 - 58.08	1.0000	1.0000
L18	25	4.375" x 1.25" Plate	57.73 - 58.08	1.0000	1.0000
L18	26	4.375" x 1.25" Plate	57.73 - 58.08	1.0000	1.0000
L18	27	4.375" x 1.25" Plate	57.73 - 58.08	1.0000	1.0000
L18	38	MP3-05	57.73 - 58.08	1.0000	1.0000
L18	39	MP3-05	57.73 - 58.08	1.0000	1.0000
L18	40	MP3-05	57.73 - 58.08	1.0000	1.0000
L19	2	LDF6-50A(1-1/4)	57.50 - 57.73	1.0000	1.0000
L19	3	HB158-1-08U8-S8J18(1-5/8)	57.50 - 57.73	1.0000	1.0000
L19	13	ATCB-B01(5/16)	57.50 - 57.73	1.0000	1.0000
L19	14	FXL 780 PE(7/8)	57.50 - 57.73	1.0000	1.0000
L19	18	Safety Line 3/8	57.50 - 57.73	1.0000	1.0000
L19	25	4.375" x 1.25" Plate	57.50 - 57.73	1.0000	1.0000
L19	26	4.375" x 1.25" Plate	57.50 - 57.73	1.0000	1.0000
L19	27	4.375" x 1.25" Plate	57.50 - 57.73	1.0000	1.0000
L19	38	MP3-05	57.50 - 57.73	1.0000	1.0000
L19	39	MP3-05	57.50 - 57.73	1.0000	1.0000
L19	40	MP3-05	57.50 - 57.73	1.0000	1.0000
L20	2	LDF6-50A(1-1/4)	52.50 - 57.50	1.0000	1.0000
L20	3	HB158-1-08U8-S8J18(1-5/8)	52.50 - 57.50	1.0000	1.0000
L20	13	ATCB-B01(5/16)	52.50 - 57.50	1.0000	1.0000
L20	14	FXL 780 PE(7/8)	52.50 - 57.50	1.0000	1.0000
L20	18	Safety Line 3/8	52.50 - 57.50	1.0000	1.0000
L20	25	4.375" x 1.25" Plate	52.50 - 57.50	1.0000	1.0000
L20	26	4.375" x 1.25" Plate	52.50 - 57.50	1.0000	1.0000
L20	27	4.375" x 1.25" Plate	52.50 - 57.50	1.0000	1.0000
L20	38	MP3-05	52.50 - 57.50	1.0000	1.0000
L20	39	MP3-05	52.50 - 57.50	1.0000	1.0000
L20	40	MP3-05	52.50 - 57.50	1.0000	1.0000
L21	2	LDF6-50A(1-1/4)	47.00 - 52.50	1.0000	1.0000
L21	3	HB158-1-08U8-S8J18(1-5/8)	47.00 - 52.50	1.0000	1.0000
L21	13	ATCB-B01(5/16)	47.00 - 52.50	1.0000	1.0000
L21	14	FXL 780 PE(7/8)	47.00 - 52.50	1.0000	1.0000
L21	18	Safety Line 3/8	47.00 - 52.50	1.0000	1.0000
L21	25	4.375" x 1.25" Plate	47.00 - 52.50	1.0000	1.0000
L21	26	4.375" x 1.25" Plate	47.00 - 52.50	1.0000	1.0000
L21	27	4.375" x 1.25" Plate	47.00 - 52.50	1.0000	1.0000
L21	38	MP3-05	47.00 - 52.50	1.0000	1.0000
L21	39	MP3-05	47.00 - 52.50	1.0000	1.0000
L21	40	MP3-05	47.00 - 52.50	1.0000	1.0000
L23	2	LDF6-50A(1-1/4)	40.50 - 45.25	1.0000	1.0000
L23	3	HB158-1-08U8-S8J18(1-5/8)	40.50 - 45.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L23	13	ATCB-B01(5/16)	40.50 - 45.25	1.0000	1.0000
L23	14	FXL 780 PE(7/8)	40.50 - 45.25	1.0000	1.0000
L23	18	Safety Line 3/8	40.50 - 45.25	1.0000	1.0000
L23	25	4.375" x 1.25" Plate	40.50 - 45.25	1.0000	1.0000
L23	26	4.375" x 1.25" Plate	40.50 - 45.25	1.0000	1.0000
L23	27	4.375" x 1.25" Plate	40.50 - 45.25	1.0000	1.0000
L23	38	MP3-05	40.50 - 45.25	1.0000	1.0000
L23	39	MP3-05	40.50 - 45.25	1.0000	1.0000
L23	40	MP3-05	40.50 - 45.25	1.0000	1.0000
L24	2	LDF6-50A(1-1/4)	40.25 - 40.50	1.0000	1.0000
L24	3	HB158-1-08U8-S8J18(1-5/8)	40.25 - 40.50	1.0000	1.0000
L24	13	ATCB-B01(5/16)	40.25 - 40.50	1.0000	1.0000
L24	14	FXL 780 PE(7/8)	40.25 - 40.50	1.0000	1.0000
L24	18	Safety Line 3/8	40.25 - 40.50	1.0000	1.0000
L24	25	4.375" x 1.25" Plate	40.25 - 40.50	1.0000	1.0000
L24	26	4.375" x 1.25" Plate	40.25 - 40.50	1.0000	1.0000
L24	27	4.375" x 1.25" Plate	40.25 - 40.50	1.0000	1.0000
L24	33	MP3-05	40.25 - 40.50	1.0000	1.0000
L24	35	MP3-05	40.25 - 40.50	1.0000	1.0000
L24	36	MP3-05	40.25 - 40.50	1.0000	1.0000
L25	2	LDF6-50A(1-1/4)	35.25 - 40.25	1.0000	1.0000
L25	3	HB158-1-08U8-S8J18(1-5/8)	35.25 - 40.25	1.0000	1.0000
L25	13	ATCB-B01(5/16)	35.25 - 40.25	1.0000	1.0000
L25	14	FXL 780 PE(7/8)	35.25 - 40.25	1.0000	1.0000
L25	18	Safety Line 3/8	35.25 - 40.25	1.0000	1.0000
L25	25	4.375" x 1.25" Plate	35.25 - 40.25	1.0000	1.0000
L25	26	4.375" x 1.25" Plate	35.25 - 40.25	1.0000	1.0000
L25	27	4.375" x 1.25" Plate	35.25 - 40.25	1.0000	1.0000
L25	33	MP3-05	35.25 - 40.25	1.0000	1.0000
L25	35	MP3-05	35.25 - 40.25	1.0000	1.0000
L25	36	MP3-05	35.25 - 40.25	1.0000	1.0000
L26	2	LDF6-50A(1-1/4)	30.25 - 35.25	1.0000	1.0000
L26	3	HB158-1-08U8-S8J18(1-5/8)	30.25 - 35.25	1.0000	1.0000
L26	13	ATCB-B01(5/16)	30.25 - 35.25	1.0000	1.0000
L26	14	FXL 780 PE(7/8)	30.25 - 35.25	1.0000	1.0000
L26	18	Safety Line 3/8	30.25 - 35.25	1.0000	1.0000
L26	25	4.375" x 1.25" Plate	30.25 - 35.25	1.0000	1.0000
L26	26	4.375" x 1.25" Plate	30.25 - 35.25	1.0000	1.0000
L26	27	4.375" x 1.25" Plate	30.25 - 35.25	1.0000	1.0000
L26	33	MP3-05	30.25 - 35.25	1.0000	1.0000
L26	35	MP3-05	30.25 - 35.25	1.0000	1.0000
L26	36	MP3-05	30.25 - 35.25	1.0000	1.0000
L27	2	LDF6-50A(1-1/4)	27.75 - 30.25	1.0000	1.0000
L27	3	HB158-1-08U8-S8J18(1-5/8)	27.75 - 30.25	1.0000	1.0000
L27	13	ATCB-B01(5/16)	27.75 - 30.25	1.0000	1.0000
L27	14	FXL 780 PE(7/8)	27.75 - 30.25	1.0000	1.0000
L27	18	Safety Line 3/8	27.75 - 30.25	1.0000	1.0000
L27	20	5.25" x 1.25" Plate	27.75 - 29.75	1.0000	1.0000
L27	22	5.25" x 1.25" Plate	27.75 - 29.75	1.0000	1.0000
L27	23	5.25" x 1.25" Plate	27.75 - 29.75	1.0000	1.0000
L27	25	4.375" x 1.25" Plate	29.75 - 30.25	1.0000	1.0000
L27	26	4.375" x 1.25" Plate	29.75 - 30.25	1.0000	1.0000
L27	27	4.375" x 1.25" Plate	29.75 - 30.25	1.0000	1.0000
L27	33	MP3-05	27.75 - 30.25	1.0000	1.0000
L27	35	MP3-05	27.75 - 30.25	1.0000	1.0000
L27	36	MP3-05	27.75 - 30.25	1.0000	1.0000
L28	2	LDF6-50A(1-1/4)	27.50 - 27.75	1.0000	1.0000
L28	3	HB158-1-08U8-S8J18(1-5/8)	27.50 - 27.75	1.0000	1.0000
L28	13	ATCB-B01(5/16)	27.50 - 27.75	1.0000	1.0000
L28	14	FXL 780 PE(7/8)	27.50 - 27.75	1.0000	1.0000
L28	18	Safety Line 3/8	27.50 - 27.75	1.0000	1.0000
L28	20	5.25" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	22	5.25" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L28	23	5.25" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L28	33	MP3-05	27.50 - 27.75	1.0000	1.0000
L28	35	MP3-05	27.50 - 27.75	1.0000	1.0000
L28	36	MP3-05	27.50 - 27.75	1.0000	1.0000
L29	2	LDF6-50A(1-1/4)	22.50 - 27.50	1.0000	1.0000
L29	3	HB158-1-08U8-S8J18(1-5/8)	22.50 - 27.50	1.0000	1.0000
L29	13	ATCB-B01(5/16)	22.50 - 27.50	1.0000	1.0000
L29	14	FXL 780 PE(7/8)	22.50 - 27.50	1.0000	1.0000
L29	18	Safety Line 3/8	22.50 - 27.50	1.0000	1.0000
L29	20	5.25" x 1.25" Plate	22.50 - 27.50	1.0000	1.0000
L29	22	5.25" x 1.25" Plate	22.50 - 27.50	1.0000	1.0000
L29	23	5.25" x 1.25" Plate	22.50 - 27.50	1.0000	1.0000
L29	33	MP3-05	22.50 - 27.50	1.0000	1.0000
L29	35	MP3-05	22.50 - 27.50	1.0000	1.0000
L29	36	MP3-05	22.50 - 27.50	1.0000	1.0000
L30	2	LDF6-50A(1-1/4)	19.50 - 22.50	1.0000	1.0000
L30	3	HB158-1-08U8-S8J18(1-5/8)	19.50 - 22.50	1.0000	1.0000
L30	13	ATCB-B01(5/16)	19.50 - 22.50	1.0000	1.0000
L30	14	FXL 780 PE(7/8)	19.50 - 22.50	1.0000	1.0000
L30	18	Safety Line 3/8	19.50 - 22.50	1.0000	1.0000
L30	20	5.25" x 1.25" Plate	19.50 - 22.50	1.0000	1.0000
L30	22	5.25" x 1.25" Plate	19.50 - 22.50	1.0000	1.0000
L30	23	5.25" x 1.25" Plate	19.50 - 22.50	1.0000	1.0000
L30	33	MP3-05	19.50 - 22.50	1.0000	1.0000
L30	35	MP3-05	19.50 - 22.50	1.0000	1.0000
L30	36	MP3-05	19.50 - 22.50	1.0000	1.0000
L30	47	CCI 4.5" x 1" Plate	19.50 - 21.00	1.0000	1.0000
L31	2	LDF6-50A(1-1/4)	19.25 - 19.50	1.0000	1.0000
L31	3	HB158-1-08U8-S8J18(1-5/8)	19.25 - 19.50	1.0000	1.0000
L31	13	ATCB-B01(5/16)	19.25 - 19.50	1.0000	1.0000
L31	14	FXL 780 PE(7/8)	19.25 - 19.50	1.0000	1.0000
L31	18	Safety Line 3/8	19.25 - 19.50	1.0000	1.0000
L31	20	5.25" x 1.25" Plate	19.25 - 19.50	1.0000	1.0000
L31	22	5.25" x 1.25" Plate	19.25 - 19.50	1.0000	1.0000
L31	23	5.25" x 1.25" Plate	19.25 - 19.50	1.0000	1.0000
L31	33	MP3-05	19.25 - 19.50	1.0000	1.0000
L31	35	MP3-05	19.25 - 19.50	1.0000	1.0000
L31	36	MP3-05	19.25 - 19.50	1.0000	1.0000
L31	47	CCI 4.5" x 1" Plate	19.25 - 19.50	1.0000	1.0000
L32	2	LDF6-50A(1-1/4)	14.25 - 19.25	1.0000	1.0000
L32	3	HB158-1-08U8-S8J18(1-5/8)	14.25 - 19.25	1.0000	1.0000
L32	13	ATCB-B01(5/16)	14.25 - 19.25	1.0000	1.0000
L32	14	FXL 780 PE(7/8)	14.25 - 19.25	1.0000	1.0000
L32	18	Safety Line 3/8	14.25 - 19.25	1.0000	1.0000
L32	20	5.25" x 1.25" Plate	14.25 - 19.25	1.0000	1.0000
L32	21	5.25" x 1.25" Plate	14.25 - 15.50	1.0000	1.0000
L32	22	5.25" x 1.25" Plate	14.25 - 19.25	1.0000	1.0000
L32	23	5.25" x 1.25" Plate	14.25 - 19.25	1.0000	1.0000
L32	33	MP3-05	14.25 - 19.25	1.0000	1.0000
L32	34	MP3-05	14.25 - 15.50	1.0000	1.0000
L32	35	MP3-05	14.25 - 19.25	1.0000	1.0000
L32	36	MP3-05	14.25 - 19.25	1.0000	1.0000
L32	46	CCI 4.5" x 1" Plate	14.25 - 15.50	1.0000	1.0000
L32	47	CCI 4.5" x 1" Plate	14.25 - 19.25	1.0000	1.0000
L33	2	LDF6-50A(1-1/4)	14.00 - 14.25	1.0000	1.0000
L33	3	HB158-1-08U8-S8J18(1-5/8)	14.00 - 14.25	1.0000	1.0000
L33	13	ATCB-B01(5/16)	14.00 - 14.25	1.0000	1.0000
L33	14	FXL 780 PE(7/8)	14.00 - 14.25	1.0000	1.0000
L33	18	Safety Line 3/8	14.00 - 14.25	1.0000	1.0000
L33	20	5.25" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L33	21	5.25" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	22	5.25" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L33	23	5.25" x 1.25" Plate	14.00 - 14.25	1.0000	1.0000
L33	33	MP3-05	14.00 - 14.25	1.0000	1.0000
L33	34	MP3-05	14.00 - 14.25	1.0000	1.0000
L33	35	MP3-05	14.00 - 14.25	1.0000	1.0000
L33	36	MP3-05	14.00 - 14.25	1.0000	1.0000
L33	46	CCI 4.5" x 1" Plate	14.00 - 14.25	1.0000	1.0000
L33	47	CCI 4.5" x 1" Plate	14.00 - 14.25	1.0000	1.0000
L34	2	LDF6-50A(1-1/4)	13.75 - 14.00	1.0000	1.0000
L34	3	HB158-1-08U8-S8J18(1-5/8)	13.75 - 14.00	1.0000	1.0000
L34	13	ATCB-B01(5/16)	13.75 - 14.00	1.0000	1.0000
L34	14	FXL 780 PE(7/8)	13.75 - 14.00	1.0000	1.0000
L34	18	Safety Line 3/8	13.75 - 14.00	1.0000	1.0000
L34	20	5.25" x 1.25" Plate	13.75 - 14.00	1.0000	1.0000
L34	21	5.25" x 1.25" Plate	13.75 - 14.00	1.0000	1.0000
L34	22	5.25" x 1.25" Plate	13.75 - 14.00	1.0000	1.0000
L34	23	5.25" x 1.25" Plate	13.75 - 14.00	1.0000	1.0000
L34	33	MP3-05	13.75 - 14.00	1.0000	1.0000
L34	34	MP3-05	13.75 - 14.00	1.0000	1.0000
L34	35	MP3-05	13.75 - 14.00	1.0000	1.0000
L34	36	MP3-05	13.75 - 14.00	1.0000	1.0000
L34	46	CCI 4.5" x 1" Plate	13.75 - 14.00	1.0000	1.0000
L34	47	CCI 4.5" x 1" Plate	13.75 - 14.00	1.0000	1.0000
L35	2	LDF6-50A(1-1/4)	12.98 - 13.75	1.0000	1.0000
L35	3	HB158-1-08U8-S8J18(1-5/8)	12.98 - 13.75	1.0000	1.0000
L35	13	ATCB-B01(5/16)	12.98 - 13.75	1.0000	1.0000
L35	14	FXL 780 PE(7/8)	12.98 - 13.75	1.0000	1.0000
L35	18	Safety Line 3/8	12.98 - 13.75	1.0000	1.0000
L35	20	5.25" x 1.25" Plate	12.98 - 13.75	1.0000	1.0000
L35	21	5.25" x 1.25" Plate	12.98 - 13.75	1.0000	1.0000
L35	22	5.25" x 1.25" Plate	12.98 - 13.75	1.0000	1.0000
L35	23	5.25" x 1.25" Plate	12.98 - 13.75	1.0000	1.0000
L35	33	MP3-05	12.98 - 13.75	1.0000	1.0000
L35	34	MP3-05	12.98 - 13.75	1.0000	1.0000
L35	35	MP3-05	12.98 - 13.75	1.0000	1.0000
L35	36	MP3-05	12.98 - 13.75	1.0000	1.0000
L35	46	CCI 4.5" x 1" Plate	12.98 - 13.75	1.0000	1.0000
L35	47	CCI 4.5" x 1" Plate	12.98 - 13.75	1.0000	1.0000
L36	2	LDF6-50A(1-1/4)	12.73 - 12.98	1.0000	1.0000
L36	3	HB158-1-08U8-S8J18(1-5/8)	12.73 - 12.98	1.0000	1.0000
L36	13	ATCB-B01(5/16)	12.73 - 12.98	1.0000	1.0000
L36	14	FXL 780 PE(7/8)	12.73 - 12.98	1.0000	1.0000
L36	18	Safety Line 3/8	12.73 - 12.98	1.0000	1.0000
L36	20	5.25" x 1.25" Plate	12.73 - 12.98	1.0000	1.0000
L36	21	5.25" x 1.25" Plate	12.73 - 12.98	1.0000	1.0000
L36	22	5.25" x 1.25" Plate	12.73 - 12.98	1.0000	1.0000
L36	23	5.25" x 1.25" Plate	12.73 - 12.98	1.0000	1.0000
L36	33	MP3-05	12.73 - 12.98	1.0000	1.0000
L36	34	MP3-05	12.73 - 12.98	1.0000	1.0000
L36	35	MP3-05	12.73 - 12.98	1.0000	1.0000
L36	36	MP3-05	12.73 - 12.98	1.0000	1.0000
L36	46	CCI 4.5" x 1" Plate	12.73 - 12.98	1.0000	1.0000
L36	47	CCI 4.5" x 1" Plate	12.73 - 12.98	1.0000	1.0000
L37	2	LDF6-50A(1-1/4)	7.73 - 12.73	1.0000	1.0000
L37	3	HB158-1-08U8-S8J18(1-5/8)	7.73 - 12.73	1.0000	1.0000
L37	13	ATCB-B01(5/16)	7.73 - 12.73	1.0000	1.0000
L37	14	FXL 780 PE(7/8)	7.73 - 12.73	1.0000	1.0000
L37	18	Safety Line 3/8	7.73 - 12.73	1.0000	1.0000
L37	20	5.25" x 1.25" Plate	7.73 - 12.73	1.0000	1.0000
L37	21	5.25" x 1.25" Plate	7.73 - 12.73	1.0000	1.0000
L37	22	5.25" x 1.25" Plate	10.25 - 12.73	1.0000	1.0000
L37	23	5.25" x 1.25" Plate	7.73 - 12.73	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L37	33	MP3-05	7.73 - 12.73	1.0000	1.0000
L37	34	MP3-05	7.73 - 12.73	1.0000	1.0000
L37	35	MP3-05	10.50 - 12.73	1.0000	1.0000
L37	36	MP3-05	7.73 - 12.73	1.0000	1.0000
L37	46	CCI 4.5" x 1" Plate	7.73 - 12.73	1.0000	1.0000
L37	47	CCI 4.5" x 1" Plate	11.00 - 12.73	1.0000	1.0000
L38	2	LDF6-50A(1-1/4)	2.73 - 7.73	1.0000	1.0000
L38	3	HB158-1-08U8-S8J18(1-5/8)	2.73 - 7.73	1.0000	1.0000
L38	13	ATCB-B01(5/16)	2.73 - 7.73	1.0000	1.0000
L38	14	FXL 780 PE(7/8)	2.73 - 7.73	1.0000	1.0000
L38	18	Safety Line 3/8	2.73 - 7.73	1.0000	1.0000
L38	20	5.25" x 1.25" Plate	2.73 - 7.73	1.0000	1.0000
L38	21	5.25" x 1.25" Plate	2.73 - 7.73	1.0000	1.0000
L38	23	5.25" x 1.25" Plate	2.73 - 7.73	1.0000	1.0000
L38	33	MP3-05	2.73 - 7.73	1.0000	1.0000
L38	34	MP3-05	2.73 - 7.73	1.0000	1.0000
L38	36	MP3-05	2.73 - 7.73	1.0000	1.0000
L38	46	CCI 4.5" x 1" Plate	2.73 - 7.73	1.0000	1.0000
L39	2	LDF6-50A(1-1/4)	0.00 - 2.73	1.0000	1.0000
L39	3	HB158-1-08U8-S8J18(1-5/8)	0.00 - 2.73	1.0000	1.0000
L39	13	ATCB-B01(5/16)	0.00 - 2.73	1.0000	1.0000
L39	14	FXL 780 PE(7/8)	0.00 - 2.73	1.0000	1.0000
L39	18	Safety Line 3/8	0.00 - 2.73	1.0000	1.0000
L39	20	5.25" x 1.25" Plate	0.00 - 2.73	1.0000	1.0000
L39	21	5.25" x 1.25" Plate	0.00 - 2.73	1.0000	1.0000
L39	23	5.25" x 1.25" Plate	0.00 - 2.73	1.0000	1.0000
L39	33	MP3-05	0.00 - 2.73	1.0000	1.0000
L39	34	MP3-05	0.00 - 2.73	1.0000	1.0000
L39	36	MP3-05	0.00 - 2.73	1.0000	1.0000
L39	46	CCI 4.5" x 1" Plate	0.00 - 2.73	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
BXA-70063/6CF w/ Mount	A	From Leg	4.000	0.000	105.000	No Ice	7.819	5.407	0.042
Pipe			0.000			1/2" Ice	8.370	6.558	0.101
(E)			0.000			1" Ice	8.886	7.422	0.168
						2" Ice	9.942	9.198	0.328
BXA-70063/6CF w/ Mount	B	From Leg	4.000	0.000	105.000	No Ice	7.819	5.407	0.042
Pipe			0.000			1/2" Ice	8.370	6.558	0.101
(E)			0.000			1" Ice	8.886	7.422	0.168
						2" Ice	9.942	9.198	0.328
BXA-70063/6CF w/ Mount	C	From Leg	4.000	0.000	105.000	No Ice	7.819	5.407	0.042
Pipe			0.000			1/2" Ice	8.370	6.558	0.101
(E)			0.000			1" Ice	8.886	7.422	0.168
						2" Ice	9.942	9.198	0.328
DB-T1-6Z-8AB-0Z	A	From Leg	4.000	0.000	105.000	No Ice	4.800	2.000	0.044
(E)			0.000			1/2" Ice	5.070	2.193	0.080
			0.000			1" Ice	5.348	2.393	0.120

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
						2" Ice	5.926	2.815	0.213
(2) SBNHH-1D65B (P)	A	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.160 8.619 9.085 10.039	5.396 5.853 6.317 7.267	0.041 0.091 0.148 0.280
(2) SBNHH-1D65B (P)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.160 8.619 9.085 10.039	5.396 5.853 6.317 7.267	0.041 0.091 0.148 0.280
(2) SBNHH-1D65B (P)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.160 8.619 9.085 10.039	5.396 5.853 6.317 7.267	0.041 0.091 0.148 0.280
BXA-70063/6CF w/ Mount Pipe (P)	A	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.819 8.370 8.886 9.942	5.407 6.558 7.422 9.198	0.042 0.101 0.168 0.328
BXA-70063/6CF w/ Mount Pipe (P)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.819 8.370 8.886 9.942	5.407 6.558 7.422 9.198	0.042 0.101 0.168 0.328
BXA-70063/6CF w/ Mount Pipe (P)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.819 8.370 8.886 9.942	5.407 6.558 7.422 9.198	0.042 0.101 0.168 0.328
(2) RFV01U-D1A (P)	A	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.084 0.103 0.124 0.175
RFV01U-D1A (P)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.250 1.393 1.543 1.865	0.084 0.103 0.124 0.175
RFV01U-D2A (P)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.070 0.087 0.106 0.153
(2) RFV01U-D2A (P)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.875 2.045 2.223 2.601	1.013 1.145 1.284 1.585	0.070 0.087 0.106 0.153
RVZDC-6627-PF-48 (P)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.792 4.044 4.303 4.844	2.514 2.727 2.947 3.417	0.032 0.063 0.099 0.181
B13 RRH 4X30 (P-previous App)	A	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142
B13 RRH 4X30 (P-previous App)	B	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142
B13 RRH 4X30 (P-previous App)	C	From Leg	4.000 0.000 0.000	0.000	105.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.055 2.241 2.433 2.841	1.320 1.475 1.638 1.997	0.056 0.073 0.093 0.142

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
RRH4X45-AWS4 B66	A	From Leg	4.000	0.000	105.000	No Ice	2.660	1.586	0.064
(P-previous App)			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
						2" Ice	3.577	2.359	0.165
RRH4X45-AWS4 B66	B	From Leg	4.000	0.000	105.000	No Ice	2.660	1.586	0.064
(P-previous App)			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
						2" Ice	3.577	2.359	0.165
RRH4X45-AWS4 B66	C	From Leg	4.000	0.000	105.000	No Ice	2.660	1.586	0.064
(P-previous App)			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
						2" Ice	3.577	2.359	0.165
B25 RRH4X30	A	From Leg	4.000	0.000	105.000	No Ice	2.200	1.742	0.055
(P-previous App)			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
						2" Ice	3.015	2.501	0.156
B25 RRH4X30	B	From Leg	4.000	0.000	105.000	No Ice	2.200	1.742	0.055
(P-previous App)			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
						2" Ice	3.015	2.501	0.156
B25 RRH4X30	C	From Leg	4.000	0.000	105.000	No Ice	2.200	1.742	0.055
(P-previous App)			0.000			1/2" Ice	2.393	1.920	0.075
			0.000			1" Ice	2.593	2.106	0.099
						2" Ice	3.015	2.501	0.156
DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	105.000	No Ice	4.800	2.000	0.044
(P-previous App)			0.000			1/2" Ice	5.070	2.193	0.080
			0.000			1" Ice	5.348	2.393	0.120
						2" Ice	5.926	2.815	0.213
Sector Mount [SM 402-3]	C	None		0.000	105.000	No Ice	18.910	18.910	0.851
(E-2M.P/sector)						1/2" Ice	26.780	26.780	1.233
						1" Ice	34.650	34.650	1.616
						2" Ice	50.390	50.390	2.381
$$									
APXV9ERR18-C-A20 w/	A	From Leg	4.000	0.000	98.000	No Ice	8.262	7.471	0.088
Mount Pipe			0.000			1/2" Ice	8.822	8.656	0.158
(E)			1.000			1" Ice	9.346	9.556	0.237
						2" Ice	10.418	11.388	0.421
APXVSPP18-C-A20 w/	B	From Leg	4.000	0.000	98.000	No Ice	8.262	6.946	0.083
Mount Pipe			0.000			1/2" Ice	8.822	8.127	0.151
(E)			1.000			1" Ice	9.346	9.021	0.227
						2" Ice	10.418	10.844	0.406
APXVSPP18-C-A20 w/	C	From Leg	4.000	0.000	98.000	No Ice	8.262	6.946	0.083
Mount Pipe			0.000			1/2" Ice	8.822	8.127	0.151
(E)			1.000			1" Ice	9.346	9.021	0.227
						2" Ice	10.418	10.844	0.406
IBC1900BB-1	A	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065
IBC1900BB-1	B	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065
IBC1900BB-1	C	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065

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
IBC1900HG-2A	A	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065
IBC1900HG-2A	B	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065
IBC1900HG-2A	C	From Leg	4.000	0.000	98.000	No Ice	0.966	0.463	0.022
(E)			0.000			1/2" Ice	1.091	0.558	0.030
			0.000			1" Ice	1.223	0.660	0.039
						2" Ice	1.510	0.893	0.065
AAHC w/ Mount Pipe	A	From Leg	4.000	0.000	98.000	No Ice	4.409	2.691	0.115
(R)			0.000			1/2" Ice	4.727	3.079	0.156
			1.000			1" Ice	5.055	3.486	0.202
						2" Ice	5.743	4.359	0.310
AAHC w/ Mount Pipe	B	From Leg	4.000	0.000	98.000	No Ice	4.409	2.691	0.115
(R)			0.000			1/2" Ice	4.727	3.079	0.156
			1.000			1" Ice	5.055	3.486	0.202
						2" Ice	5.743	4.359	0.310
AAHC w/ Mount Pipe	C	From Leg	4.000	0.000	98.000	No Ice	4.409	2.691	0.115
(R)			0.000			1/2" Ice	4.727	3.079	0.156
			1.000			1" Ice	5.055	3.486	0.202
						2" Ice	5.743	4.359	0.310
Platform Mount [LP 1201-1]	C	None		0.000	98.000	No Ice	23.100	23.100	2.100
(E)						1/2" Ice	26.800	26.800	2.500
						1" Ice	30.500	30.500	2.900
						2" Ice	37.900	37.900	3.700
$$									
PCS 1900MHz	A	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	B	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	C	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	A	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			-1.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	B	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			-1.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	C	From Leg	2.000	0.000	96.000	No Ice	2.322	2.238	0.060
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
(E)			-1.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
800MHz 2X50W RRH	A	From Leg	2.000	0.000	96.000	No Ice	2.058	1.932	0.064
W/FILTER			0.000			1/2" Ice	2.240	2.109	0.086
(E)			0.000			1" Ice	2.429	2.293	0.111
						2" Ice	2.829	2.684	0.172

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
800MHz 2X50W RRH W/FILTER	B	From Leg	2.000 0.000	0.000	96.000	No Ice 1/2" Ice	2.058 2.240	1.932 2.109	0.064 0.086
(E)			0.000			1" Ice 2" Ice	2.429 2.829	2.293 2.684	0.111 0.172
800MHz 2X50W RRH W/FILTER	C	From Leg	2.000 0.000	0.000	96.000	No Ice 1/2" Ice	2.058 2.240	1.932 2.109	0.064 0.086
(E)			0.000			1" Ice 2" Ice	2.429 2.829	2.293 2.684	0.111 0.172
4' x 2" Pipe Mount	A	From Leg	1.000	0.000	96.000	No Ice	0.785	0.785	0.029
(E)			0.000 0.000			1/2" Ice 1" Ice	1.028 1.281	1.028 1.281	0.035 0.044
						2" Ice	1.814	1.814	0.072
4' x 2" Pipe Mount	B	From Leg	1.000	0.000	96.000	No Ice	0.785	0.785	0.029
(E)			0.000 0.000			1/2" Ice 1" Ice	1.028 1.281	1.028 1.281	0.035 0.044
						2" Ice	1.814	1.814	0.072
4' x 2" Pipe Mount	C	From Leg	1.000	0.000	96.000	No Ice	0.785	0.785	0.029
(E)			0.000 0.000			1/2" Ice 1" Ice	1.028 1.281	1.028 1.281	0.035 0.044
						2" Ice	1.814	1.814	0.072
Side Arm Mount [SO 102-3]	C	None		0.000	96.000	No Ice	3.000	3.000	0.081
(E)						1/2" Ice 1" Ice	3.480 3.960	3.480 3.960	0.111 0.141
						2" Ice	4.920	4.920	0.201
$$									
$$									
HBX-6516DS-VTM w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	81.000	No Ice 1/2" Ice	3.598 3.998	3.241 3.914	0.029 0.062
(E)			-1.000			1" Ice 2" Ice	4.389 5.187	4.564 5.914	0.101 0.199
HBX-6516DS-VTM w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	81.000	No Ice 1/2" Ice	3.598 3.998	3.241 3.914	0.029 0.062
(E)			-1.000			1" Ice 2" Ice	4.389 5.187	4.564 5.914	0.101 0.199
HBX-6516DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	81.000	No Ice 1/2" Ice	3.598 3.998	3.241 3.914	0.029 0.062
(E)			-1.000			1" Ice 2" Ice	4.389 5.187	4.564 5.914	0.101 0.199
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	81.000	No Ice	1.425	1.425	0.022
(E)			0.000 -1.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	81.000	No Ice	1.425	1.425	0.022
(E)			0.000 -1.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
						2" Ice	3.060	3.060	0.090
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	81.000	No Ice	1.425	1.425	0.022
(E)			0.000 -1.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
						2" Ice	3.060	3.060	0.090
T-Arm Mount [TA 602-3]	C	None		0.000	81.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice 1" Ice	15.440 19.290	15.440 19.290	0.990 1.206
						2" Ice	26.990	26.990	1.639
$$									
KS24019-L112A	A	From Leg	3.000	0.000	74.000	No Ice	0.141	0.141	0.005
(E)			0.000			1/2" Ice	0.198	0.198	0.007

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
			2.000			1" Ice	0.262	0.262	0.009
						2" Ice	0.415	0.415	0.018
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	74.000	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
$$									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft^2	Weight K
$$										

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
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	108 - 103	Pole	Max Tension	48	0.000	-0.000	-0.000
			Max. Compression	26	-9.569	1.499	0.268
			Max. Mx	20	-2.394	13.847	0.035
			Max. My	2	-2.395	0.620	13.264
			Max. Vy	20	-6.512	13.847	0.035
			Max. Vx	2	-6.527	0.620	13.264
			Max. Torque	2			0.352
L2	103 - 98.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-10.032	1.614	0.331
			Max. Mx	20	-2.614	43.379	-0.198
			Max. My	2	-2.615	0.398	42.860
			Max. Vy	20	-6.609	43.379	-0.198
			Max. Vx	2	-6.624	0.398	42.860
			Max. Torque	2			0.352
L3	98.5 - 98	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-10.108	1.631	0.342
			Max. Mx	20	-2.659	46.690	-0.223
			Max. My	2	-2.659	0.374	46.178
			Max. Vy	20	-6.629	46.690	-0.223
			Max. Vx	2	-6.644	0.374	46.178
			Max. Torque	2			0.352
L4	98 - 93	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-19.444	1.823	0.531
			Max. Mx	20	-6.789	100.043	-0.465
			Max. My	2	-6.792	0.132	99.498
			Max. Vy	20	-11.020	100.043	-0.465
			Max. Vx	2	-11.014	0.132	99.498
			Max. Torque	16			-0.373
L5	93 - 88	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-20.131	2.015	0.649

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-7.118	155.747	-0.725
			Max. My	2	-7.121	-0.112	155.161
			Max. Vy	20	-11.261	155.747	-0.725
			Max. Vx	2	-11.255	-0.112	155.161
			Max. Torque	16			-0.372
L6	88 - 83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-20.877	2.200	0.767
			Max. Mx	20	-7.484	212.618	-0.984
			Max. My	2	-7.487	-0.357	211.991
			Max. Vy	20	-11.491	212.618	-0.984
			Max. Vx	2	-11.485	-0.357	211.991
			Max. Torque	16			-0.372
L7	83 - 82.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-20.999	2.225	0.782
			Max. Mx	20	-7.537	220.334	-1.018
			Max. My	2	-7.540	-0.390	219.703
			Max. Vy	20	-11.547	220.334	-1.018
			Max. Vx	2	-11.541	-0.390	219.703
			Max. Torque	16			-0.372
L8	82.33 - 82.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.054	2.235	0.789
			Max. Mx	20	-7.569	223.224	-1.031
			Max. My	2	-7.571	-0.402	222.590
			Max. Vy	20	-11.567	223.224	-1.031
			Max. Vx	2	-11.561	-0.402	222.590
			Max. Torque	16			-0.372
L9	82.08 - 77.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-24.838	2.419	0.834
			Max. Mx	20	-9.106	286.418	-1.296
			Max. My	2	-9.109	-0.647	285.736
			Max. Vy	20	-13.251	286.418	-1.296
			Max. Vx	2	-13.245	-0.647	285.736
			Max. Torque	16			-0.372
L10	77.08 - 76.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.070	2.450	0.839
			Max. Mx	20	-9.198	297.449	-1.341
			Max. My	2	-9.201	-0.687	296.759
			Max. Vy	20	-13.333	297.449	-1.341
			Max. Vx	2	-13.327	-0.687	296.759
			Max. Torque	16			-0.372
L11	76.25 - 76	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.152	2.461	0.840
			Max. Mx	20	-9.243	300.786	-1.354
			Max. My	2	-9.245	-0.700	300.093
			Max. Vy	20	-13.356	300.786	-1.354
			Max. Vx	2	-13.350	-0.700	300.093
			Max. Torque	16			-0.371
L12	76 - 74.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.647	2.515	0.847
			Max. Mx	20	-9.463	320.947	-1.434
			Max. My	2	-9.466	-0.773	320.240
			Max. Vy	20	-13.525	320.947	-1.434
			Max. Vx	2	-13.518	-0.773	320.240
			Max. Torque	16			-0.371
L13	74.5 - 74.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.732	2.527	0.849
			Max. Mx	20	-9.514	324.332	-1.447
			Max. My	2	-9.517	-0.785	323.621
			Max. Vy	20	-13.546	324.332	-1.447
			Max. Vx	2	-13.540	-0.785	323.621
			Max. Torque	16			-0.371

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L14	74.25 - 69.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-27.587	2.712	1.245
			Max. Mx	20	-10.407	393.904	-1.522
			Max. My	2	-10.412	-1.029	393.166
			Max. Vy	20	-14.193	393.904	-1.522
			Max. Vx	2	-14.149	-1.029	393.166
			Max. Torque	16			-0.475
L15	69.25 - 64.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-29.306	2.901	1.269
			Max. Mx	20	-11.250	466.243	-1.789
			Max. My	2	-11.254	-1.273	465.260
			Max. Vy	20	-14.744	466.243	-1.789
			Max. Vx	2	-14.699	-1.273	465.260
			Max. Torque	16			-0.475
L16	64.25 - 59.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-31.044	3.092	1.292
			Max. Mx	20	-12.112	541.333	-2.055
			Max. My	2	-12.117	-1.515	540.105
			Max. Vy	20	-15.295	541.333	-2.055
			Max. Vx	2	-15.250	-1.515	540.105
			Max. Torque	16			-0.475
L17	59.25 - 58.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-31.462	3.136	1.297
			Max. Mx	20	-12.317	559.304	-2.118
			Max. My	2	-12.321	-1.572	558.019
			Max. Vy	20	-15.429	559.304	-2.118
			Max. Vx	2	-15.384	-1.572	558.019
			Max. Torque	16			-0.474
L18	58.08 - 57.73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-31.601	3.151	1.299
			Max. Mx	20	-12.399	564.711	-2.136
			Max. My	2	-12.403	-1.589	563.409
			Max. Vy	20	-15.464	564.711	-2.136
			Max. Vx	2	-15.419	-1.589	563.409
			Max. Torque	16			-0.474
L19	57.73 - 57.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-31.693	3.161	1.300
			Max. Mx	20	-12.449	568.271	-2.149
			Max. My	2	-12.453	-1.600	566.958
			Max. Vy	20	-15.490	568.271	-2.149
			Max. Vx	2	-15.445	-1.600	566.958
			Max. Torque	16			-0.474
L20	57.5 - 52.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-33.671	3.350	1.321
			Max. Mx	20	-13.505	647.201	-2.414
			Max. My	2	-13.509	-1.842	645.642
			Max. Vy	20	-16.079	647.201	-2.414
			Max. Vx	2	-16.034	-1.842	645.642
			Max. Torque	16			-0.474
L21	52.5 - 47	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-34.566	3.437	1.330
			Max. Mx	20	-13.991	683.670	-2.534
			Max. My	2	-13.995	-1.950	681.999
			Max. Vy	20	-16.339	683.670	-2.534
			Max. Vx	2	-16.294	-1.950	681.999
			Max. Torque	16			-0.474
L22	47 - 45.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.471	3.630	1.351
			Max. Mx	20	-15.775	766.989	-2.799
			Max. My	2	-15.779	-2.190	765.072
			Max. Vy	20	-16.975	766.989	-2.799

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-16.931	-2.190	765.072
			Max. Torque	16			-0.474
L23	45.25 - 40.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.453	3.814	1.370
			Max. Mx	20	-16.917	848.855	-3.052
			Max. My	2	-16.921	-2.418	846.703
			Max. Vy	20	-17.505	848.855	-3.052
			Max. Vx	2	-17.461	-2.418	846.703
			Max. Torque	16			-0.474
L24	40.5 - 40.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.557	3.826	1.372
			Max. Mx	20	-16.986	853.235	-3.065
			Max. My	2	-16.989	-2.430	851.070
			Max. Vy	20	-17.526	853.235	-3.065
			Max. Vx	2	-17.481	-2.430	851.070
			Max. Torque	16			-0.474
L25	40.25 - 35.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.650	4.017	1.391
			Max. Mx	20	-18.200	942.250	-3.330
			Max. My	2	-18.203	-2.669	939.838
			Max. Vy	20	-18.080	942.250	-3.330
			Max. Vx	2	-18.035	-2.669	939.838
			Max. Torque	16			-0.474
L26	35.25 - 30.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.748	4.209	1.410
			Max. Mx	20	-19.441	1033.963	-3.593
			Max. My	2	-19.443	-2.906	1031.303
			Max. Vy	20	-18.612	1033.963	-3.593
			Max. Vx	2	-18.567	-2.906	1031.303
			Max. Torque	16			-0.474
L27	30.25 - 27.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-44.807	4.299	1.417
			Max. Mx	20	-20.069	1080.812	-3.724
			Max. My	2	-20.072	-3.024	1078.028
			Max. Vy	20	-18.876	1080.812	-3.724
			Max. Vx	2	-18.831	-3.024	1078.028
			Max. Torque	16			-0.473
L28	27.75 - 27.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-44.917	4.310	1.418
			Max. Mx	20	-20.146	1085.532	-3.738
			Max. My	2	-20.148	-3.036	1082.736
			Max. Vy	20	-18.892	1085.532	-3.738
			Max. Vx	2	-18.847	-3.036	1082.736
			Max. Torque	16			-0.473
L29	27.5 - 22.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-47.100	4.480	1.429
			Max. Mx	20	-21.474	1181.287	-3.999
			Max. My	2	-21.476	-3.270	1178.244
			Max. Vy	20	-19.410	1181.287	-3.999
			Max. Vx	2	-19.366	-3.270	1178.244
			Max. Torque	16			-0.473
L30	22.5 - 19.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.428	4.560	1.436
			Max. Mx	20	-22.287	1239.947	-4.155
			Max. My	2	-22.289	-3.410	1236.767
			Max. Vy	20	-19.704	1239.947	-4.155
			Max. Vx	2	-19.668	-3.410	1236.767
			Max. Torque	16			-0.473
L31	19.5 - 19.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.544	4.567	1.437
			Max. Mx	20	-22.368	1244.876	-4.168

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-22.369	-3.422	1241.685
			Max. Vy	20	-19.720	1244.876	-4.168
			Max. Vx	2	-19.685	-3.422	1241.685
			Max. Torque	16			-0.473
L32	19.25 - 14.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.914	4.621	1.462
			Max. Mx	20	-23.808	1344.705	-4.427
			Max. My	2	-23.809	-3.653	1341.375
			Max. Vy	20	-20.211	1344.705	-4.427
			Max. Vx	2	-20.201	-3.653	1341.375
			Max. Torque	16			-0.473
L33	14.25 - 14	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.040	4.619	1.466
			Max. Mx	20	-23.888	1349.760	-4.440
			Max. My	2	-23.889	-3.665	1346.426
			Max. Vy	20	-20.227	1349.760	-4.440
			Max. Vx	2	-20.219	-3.665	1346.426
			Max. Torque	16			-0.473
L34	14 - 13.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.170	4.616	1.470
			Max. Mx	20	-23.966	1354.821	-4.453
			Max. My	2	-23.967	-3.676	1351.484
			Max. Vy	20	-20.252	1354.821	-4.453
			Max. Vx	2	-20.245	-3.676	1351.484
			Max. Torque	16			-0.473
L35	13.75 - 12.98	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.579	4.605	1.480
			Max. Mx	20	-24.208	1370.448	-4.493
			Max. My	2	-24.208	-3.711	1367.103
			Max. Vy	20	-20.333	1370.448	-4.493
			Max. Vx	2	-20.330	-3.711	1367.103
			Max. Torque	16			-0.473
L36	12.98 - 12.73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.711	4.603	1.484
			Max. Mx	20	-24.293	1375.534	-4.506
			Max. My	2	-24.293	-3.723	1372.187
			Max. Vy	20	-20.352	1375.534	-4.506
			Max. Vx	2	-20.351	-3.723	1372.187
			Max. Torque	16			-0.473
L37	12.73 - 7.73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.235	4.681	1.541
			Max. Mx	20	-25.886	1478.549	-4.762
			Max. My	2	-25.887	-3.952	1475.160
			Max. Vy	20	-20.853	1478.549	-4.762
			Max. Vx	2	-20.848	-3.952	1475.160
			Max. Torque	16			-0.473
L38	7.73 - 2.73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.635	4.853	1.585
			Max. Mx	20	-27.505	1584.021	-5.017
			Max. My	2	-27.505	-4.178	1580.521
			Max. Vy	20	-21.344	1584.021	-5.017
			Max. Vx	14	21.326	7.098	-1575.225
			Max. Torque	16			-0.473
L39	2.73 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.887	4.939	1.606
			Max. Mx	20	-28.396	1642.642	-5.156
			Max. My	2	-28.396	-4.301	1639.032
			Max. Vy	20	-21.616	1642.642	-5.156
			Max. Vx	14	21.614	7.264	-1633.791
			Max. Torque	16			-0.473

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	57.887	4.686	-0.010
	Max. H_x	20	28.409	21.599	-0.053
	Max. H_z	2	28.409	-0.053	21.557
	Max. M_x	2	1639.032	-0.053	21.557
	Max. M_z	8	1639.691	-21.599	0.053
	Max. Torsion	4	0.472	-10.899	18.787
	Min. Vert	7	21.307	-18.667	10.786
	Min. H_x	8	28.409	-21.599	0.053
	Min. H_z	14	28.409	0.053	-21.596
	Min. M_x	14	-1633.791	0.053	-21.596
	Min. M_z	20	-1642.642	21.599	-0.053
	Min. Torsion	16	-0.473	10.899	-18.787

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	23.675	0.000	0.000	-0.505	1.191	-0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	28.409	0.053	-21.557	-1639.032	-4.301	-0.349
0.9 Dead+1.0 Wind 0 deg - No Ice	21.307	0.053	-21.557	-1623.326	-4.625	-0.327
1.2 Dead+1.0 Wind 30 deg - No Ice	28.409	10.899	-18.787	-1423.209	-824.841	-0.472
0.9 Dead+1.0 Wind 30 deg - No Ice	21.307	10.899	-18.787	-1409.552	-817.390	-0.450
1.2 Dead+1.0 Wind 60 deg - No Ice	28.409	18.667	-10.786	-822.311	-1418.804	-0.468
0.9 Dead+1.0 Wind 60 deg - No Ice	21.307	18.667	-10.786	-814.337	-1405.706	-0.453
1.2 Dead+1.0 Wind 90 deg - No Ice	28.409	21.599	-0.053	-6.409	-1639.691	-0.340
0.9 Dead+1.0 Wind 90 deg - No Ice	21.307	21.599	-0.053	-6.180	-1624.511	-0.336
1.2 Dead+1.0 Wind 120 deg - No Ice	28.409	18.678	10.732	813.305	-1416.941	-0.121
0.9 Dead+1.0 Wind 120 deg - No Ice	21.307	18.678	10.732	805.754	-1403.879	-0.128
1.2 Dead+1.0 Wind 150 deg - No Ice	28.409	10.836	18.784	1416.473	-814.999	0.131
0.9 Dead+1.0 Wind 150 deg - No Ice	21.307	10.836	18.784	1403.206	-807.657	0.114
1.2 Dead+1.0 Wind 180 deg - No Ice	28.409	-0.053	21.596	1633.791	7.264	0.349
0.9 Dead+1.0 Wind 180 deg - No Ice	21.307	-0.053	21.596	1618.445	6.811	0.326
1.2 Dead+1.0 Wind 210 deg - No Ice	28.409	-10.899	18.787	1421.952	827.802	0.473
0.9 Dead+1.0 Wind 210 deg - No Ice	21.307	-10.899	18.787	1408.624	819.574	0.452

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 240 deg - No Ice	28.409	-18.825	10.877	824.035	1426.924	0.470
0.9 Dead+1.0 Wind 240 deg - No Ice	21.307	-18.825	10.877	816.373	1413.022	0.455
1.2 Dead+1.0 Wind 270 deg - No Ice	28.409	-21.599	0.053	5.156	1642.642	0.341
0.9 Dead+1.0 Wind 270 deg - No Ice	21.307	-21.599	0.053	5.255	1626.689	0.336
1.2 Dead+1.0 Wind 300 deg - No Ice	28.409	-18.708	-10.749	-813.047	1417.287	0.120
0.9 Dead+1.0 Wind 300 deg - No Ice	21.307	-18.708	-10.749	-805.184	1403.475	0.127
1.2 Dead+1.0 Wind 330 deg - No Ice	28.409	-10.836	-18.784	-1417.720	817.959	-0.133
0.9 Dead+1.0 Wind 330 deg - No Ice	21.307	-10.836	-18.784	-1404.127	809.841	-0.116
1.2 Dead+1.0 Ice+1.0 Temp	57.887	-0.000	-0.000	-1.606	4.939	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	57.887	0.010	-4.669	-411.565	3.877	-0.114
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	57.887	2.357	-4.058	-357.277	-201.681	-0.155
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	57.887	4.063	-2.343	-207.570	-351.788	-0.155
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	57.887	4.686	-0.010	-2.751	-406.335	-0.113
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	57.887	4.054	2.326	202.369	-350.664	-0.041
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	57.887	2.341	4.048	352.900	-199.734	0.042
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	57.887	-0.010	4.669	408.312	6.127	0.114
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	57.887	-2.357	4.058	354.024	211.685	0.155
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	57.887	-4.073	2.348	204.357	361.862	0.155
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	57.887	-4.686	0.010	-0.502	416.336	0.113
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	57.887	-4.063	-2.332	-205.662	360.737	0.041
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	57.887	-2.341	-4.048	-356.152	209.737	-0.042
Dead+Wind 0 deg - Service	23.675	0.011	-4.470	-339.338	0.040	-0.070
Dead+Wind 30 deg - Service	23.675	2.260	-3.895	-294.704	-169.646	-0.096
Dead+Wind 60 deg - Service	23.675	3.871	-2.236	-170.438	-292.485	-0.096
Dead+Wind 90 deg - Service	23.675	4.478	-0.011	-1.705	-338.161	-0.070
Dead+Wind 120 deg - Service	23.675	3.873	2.225	167.807	-292.100	-0.026
Dead+Wind 150 deg - Service	23.675	2.247	3.895	292.534	-167.625	0.025
Dead+Wind 180 deg - Service	23.675	-0.011	4.478	337.478	2.410	0.070
Dead+Wind 210 deg - Service	23.675	-2.260	3.895	293.664	172.096	0.096
Dead+Wind 240 deg - Service	23.675	-3.903	2.255	170.012	295.998	0.096
Dead+Wind 270 deg - Service	23.675	-4.478	0.011	0.666	340.610	0.070
Dead+Wind 300 deg - Service	23.675	-3.879	-2.229	-168.537	294.013	0.026
Dead+Wind 330 deg - Service	23.675	-2.247	-3.895	-293.574	170.075	-0.026

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-23.675	0.000	0.000	23.675	0.000	0.000%
2	0.053	-28.409	-21.557	-0.053	28.409	21.557	0.000%
3	0.053	-21.307	-21.557	-0.053	21.307	21.557	0.000%
4	10.899	-28.409	-18.787	-10.899	28.409	18.787	0.000%
5	10.899	-21.307	-18.787	-10.899	21.307	18.787	0.000%
6	18.667	-28.409	-10.786	-18.667	28.409	10.786	0.000%
7	18.667	-21.307	-10.786	-18.667	21.307	10.786	0.000%
8	21.599	-28.409	-0.053	-21.599	28.409	0.053	0.000%
9	21.599	-21.307	-0.053	-21.599	21.307	0.053	0.000%
10	18.678	-28.409	10.732	-18.678	28.409	-10.732	0.000%
11	18.678	-21.307	10.732	-18.678	21.307	-10.732	0.000%
12	10.836	-28.409	18.784	-10.836	28.409	-18.784	0.000%
13	10.836	-21.307	18.784	-10.836	21.307	-18.784	0.000%
14	-0.053	-28.409	21.596	0.053	28.409	-21.596	0.000%
15	-0.053	-21.307	21.596	0.053	21.307	-21.596	0.000%
16	-10.899	-28.409	18.787	10.899	28.409	-18.787	0.000%
17	-10.899	-21.307	18.787	10.899	21.307	-18.787	0.000%
18	-18.825	-28.409	10.877	18.825	28.409	-10.877	0.000%
19	-18.825	-21.307	10.877	18.825	21.307	-10.877	0.000%
20	-21.599	-28.409	0.053	21.599	28.409	-0.053	0.000%
21	-21.599	-21.307	0.053	21.599	21.307	-0.053	0.000%
22	-18.708	-28.409	-10.749	18.708	28.409	10.749	0.000%
23	-18.708	-21.307	-10.749	18.708	21.307	10.749	0.000%
24	-10.836	-28.409	-18.784	10.836	28.409	18.784	0.000%
25	-10.836	-21.307	-18.784	10.836	21.307	18.784	0.000%
26	0.000	-57.887	0.000	0.000	57.887	0.000	0.000%
27	0.010	-57.887	-4.669	-0.010	57.887	4.669	0.000%
28	2.357	-57.887	-4.058	-2.357	57.887	4.058	0.000%
29	4.063	-57.887	-2.343	-4.063	57.887	2.343	0.000%
30	4.686	-57.887	-0.010	-4.686	57.887	0.010	0.000%
31	4.054	-57.887	2.326	-4.054	57.887	-2.326	0.000%
32	2.341	-57.887	4.048	-2.341	57.887	-4.048	0.000%
33	-0.010	-57.887	4.669	0.010	57.887	-4.669	0.000%
34	-2.357	-57.887	4.058	2.357	57.887	-4.058	0.000%
35	-4.073	-57.887	2.348	4.073	57.887	-2.348	0.000%
36	-4.686	-57.887	0.010	4.686	57.887	-0.010	0.000%
37	-4.063	-57.887	-2.332	4.063	57.887	2.332	0.000%
38	-2.341	-57.887	-4.048	2.341	57.887	4.048	0.000%
39	0.011	-23.675	-4.470	-0.011	23.675	4.470	0.000%
40	2.260	-23.675	-3.895	-2.260	23.675	3.895	0.000%
41	3.871	-23.675	-2.236	-3.871	23.675	2.236	0.000%
42	4.478	-23.675	-0.011	-4.478	23.675	0.011	0.000%
43	3.873	-23.675	2.225	-3.873	23.675	-2.225	0.000%
44	2.247	-23.675	3.895	-2.247	23.675	-3.895	0.000%
45	-0.011	-23.675	4.478	0.011	23.675	-4.478	0.000%
46	-2.260	-23.675	3.895	2.260	23.675	-3.895	0.000%
47	-3.903	-23.675	2.255	3.903	23.675	-2.255	0.000%
48	-4.478	-23.675	0.011	4.478	23.675	-0.011	0.000%
49	-3.879	-23.675	-2.229	3.879	23.675	2.229	0.000%
50	-2.247	-23.675	-3.895	2.247	23.675	3.895	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	0.00012702
3	Yes	5	0.00000001	0.00004883
4	Yes	6	0.00000001	0.00031467
5	Yes	6	0.00000001	0.00009576
6	Yes	6	0.00000001	0.00032480
7	Yes	6	0.00000001	0.00009926
8	Yes	5	0.00000001	0.00023716
9	Yes	5	0.00000001	0.00010321
10	Yes	6	0.00000001	0.00031371
11	Yes	6	0.00000001	0.00009602
12	Yes	6	0.00000001	0.00031323
13	Yes	6	0.00000001	0.00009594
14	Yes	5	0.00000001	0.00026238
15	Yes	5	0.00000001	0.00010962
16	Yes	6	0.00000001	0.00032673
17	Yes	6	0.00000001	0.00009964
18	Yes	6	0.00000001	0.00031562
19	Yes	6	0.00000001	0.00009591
20	Yes	5	0.00000001	0.00010467
21	Yes	5	0.00000001	0.00004298
22	Yes	6	0.00000001	0.00031745
23	Yes	6	0.00000001	0.00009714
24	Yes	6	0.00000001	0.00031888
25	Yes	6	0.00000001	0.00009744
26	Yes	4	0.00000001	0.00087120
27	Yes	6	0.00000001	0.00064281
28	Yes	6	0.00000001	0.00076584
29	Yes	6	0.00000001	0.00077081
30	Yes	6	0.00000001	0.00062599
31	Yes	6	0.00000001	0.00075040
32	Yes	6	0.00000001	0.00075007
33	Yes	6	0.00000001	0.00063389
34	Yes	6	0.00000001	0.00079055
35	Yes	6	0.00000001	0.00078648
36	Yes	6	0.00000001	0.00065266
37	Yes	6	0.00000001	0.00079359
38	Yes	6	0.00000001	0.00079283
39	Yes	4	0.00000001	0.00034031
40	Yes	5	0.00000001	0.00008515
41	Yes	5	0.00000001	0.00009411
42	Yes	4	0.00000001	0.00034391
43	Yes	5	0.00000001	0.00008534
44	Yes	5	0.00000001	0.00008500
45	Yes	4	0.00000001	0.00035825
46	Yes	5	0.00000001	0.00009604
47	Yes	5	0.00000001	0.00008662
48	Yes	4	0.00000001	0.00033004
49	Yes	5	0.00000001	0.00009048
50	Yes	5	0.00000001	0.00009122

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	108 - 103	14.579	47	1.401	0.004
L2	103 - 98.5	13.117	47	1.385	0.003
L3	98.5 - 98	11.858	47	1.269	0.002
L4	98 - 93	11.726	47	1.266	0.002
L5	93 - 88	10.430	47	1.203	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L6	88 - 83	9.217	47	1.108	0.001
L7	83 - 82.33	8.118	47	0.989	0.001
L8	82.33 - 82.08	7.980	47	0.972	0.001
L9	82.08 - 77.08	7.929	47	0.968	0.001
L10	77.08 - 76.25	6.959	47	0.884	0.001
L11	76.25 - 76	6.806	47	0.869	0.001
L12	76 - 74.5	6.761	47	0.865	0.001
L13	74.5 - 74.25	6.492	47	0.846	0.001
L14	74.25 - 69.25	6.448	47	0.843	0.001
L15	69.25 - 64.25	5.595	47	0.786	0.001
L16	64.25 - 59.25	4.804	47	0.724	0.000
L17	59.25 - 58.08	4.081	47	0.657	0.000
L18	58.08 - 57.73	3.922	47	0.641	0.000
L19	57.73 - 57.5	3.875	47	0.638	0.000
L20	57.5 - 52.5	3.844	47	0.635	0.000
L21	52.5 - 47	3.208	47	0.579	0.000
L22	50.25 - 45.25	2.941	47	0.554	0.000
L23	45.25 - 40.5	2.378	47	0.516	0.000
L24	40.5 - 40.25	1.891	47	0.461	0.000
L25	40.25 - 35.25	1.867	47	0.458	0.000
L26	35.25 - 30.25	1.419	47	0.398	0.000
L27	30.25 - 27.75	1.034	47	0.337	0.000
L28	27.75 - 27.5	0.865	47	0.306	0.000
L29	27.5 - 22.5	0.849	47	0.303	0.000
L30	22.5 - 19.5	0.563	47	0.243	0.000
L31	19.5 - 19.25	0.422	47	0.207	0.000
L32	19.25 - 14.25	0.411	47	0.204	0.000
L33	14.25 - 14	0.225	47	0.150	0.000
L34	14 - 13.75	0.217	47	0.148	0.000
L35	13.75 - 12.98	0.210	47	0.145	0.000
L36	12.98 - 12.73	0.187	47	0.137	0.000
L37	12.73 - 7.73	0.180	47	0.135	0.000
L38	7.73 - 2.73	0.066	47	0.082	0.000
L39	2.73 - 0	0.008	47	0.029	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.000	BXA-70063/6CF w/ Mount Pipe	47	13.698	1.409	0.004	4118
98.000	APXV9ERR18-C-A20 w/ Mount Pipe	47	11.726	1.266	0.002	3111
96.000	PCS 1900MHz 4x45W-65MHz	47	11.200	1.249	0.002	3801
81.000	HBX-6516DS-VTM w/ Mount Pipe	47	7.712	0.952	0.001	3021
74.000	KS24019-L112A	47	6.404	0.840	0.001	4519

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	108 - 103	70.019	18	6.669	0.018
L2	103 - 98.5	63.072	18	6.610	0.015
L3	98.5 - 98	57.066	18	6.091	0.009
L4	98 - 93	56.431	18	6.079	0.009
L5	93 - 88	50.225	18	5.783	0.007
L6	88 - 83	44.409	18	5.333	0.006
L7	83 - 82.33	39.125	18	4.765	0.004
L8	82.33 - 82.08	38.464	18	4.682	0.004
L9	82.08 - 77.08	38.220	18	4.664	0.004
L10	77.08 - 76.25	33.552	18	4.259	0.004
L11	76.25 - 76	32.819	18	4.188	0.003
L12	76 - 74.5	32.600	18	4.172	0.003
L13	74.5 - 74.25	31.306	18	4.077	0.003
L14	74.25 - 69.25	31.093	18	4.065	0.003
L15	69.25 - 64.25	26.983	18	3.792	0.003
L16	64.25 - 59.25	23.173	18	3.490	0.002
L17	59.25 - 58.08	19.688	18	3.171	0.002
L18	58.08 - 57.73	18.921	18	3.094	0.002
L19	57.73 - 57.5	18.695	18	3.076	0.002
L20	57.5 - 52.5	18.547	18	3.065	0.002
L21	52.5 - 47	15.480	18	2.796	0.002
L22	50.25 - 45.25	14.192	18	2.673	0.001
L23	45.25 - 40.5	11.474	18	2.491	0.001
L24	40.5 - 40.25	9.129	18	2.226	0.001
L25	40.25 - 35.25	9.013	18	2.212	0.001
L26	35.25 - 30.25	6.849	18	1.923	0.001
L27	30.25 - 27.75	4.990	18	1.628	0.001
L28	27.75 - 27.5	4.177	18	1.478	0.001
L29	27.5 - 22.5	4.100	18	1.464	0.001
L30	22.5 - 19.5	2.718	18	1.175	0.001
L31	19.5 - 19.25	2.035	18	1.000	0.000
L32	19.25 - 14.25	1.983	18	0.987	0.000
L33	14.25 - 14	1.086	18	0.726	0.000
L34	14 - 13.75	1.049	18	0.713	0.000
L35	13.75 - 12.98	1.012	18	0.700	0.000
L36	12.98 - 12.73	0.902	18	0.662	0.000
L37	12.73 - 7.73	0.867	18	0.649	0.000
L38	7.73 - 2.73	0.320	18	0.395	0.000
L39	2.73 - 0	0.040	18	0.140	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.000	BXA-70063/6CF w/ Mount Pipe	18	65.836	6.715	0.017	991
98.000	APXV9ERR18-C-A20 w/ Mount Pipe	18	56.431	6.079	0.009	701
96.000	PCS 1900MHz 4x45W-65MHz	18	53.915	5.998	0.008	840
81.000	HBX-6516DS-VTM w/ Mount Pipe	18	37.176	4.587	0.004	641
74.000	KS24019-L112A	18	30.881	4.052	0.003	953

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	108 - 103 (1)	TP8.625x8.625x0.313	5.000	0.000	0.0	8.161	-2.394	257.065	0.009
L2	103 - 98.5 (2)	TP8.625x8.625x0.313	4.500	0.000	0.0	8.161	-2.607	257.065	0.010
L3	98.5 - 98 (3)	TP16.5x16.5x0.313	0.500	0.000	0.0	15.892	-2.652	500.599	0.005
L4	98 - 93 (4)	TP17.3x16.5x0.188	5.000	0.000	0.0	10.184	-6.781	756.639	0.009
L5	93 - 88 (5)	TP18.101x17.3x0.188	5.000	0.000	0.0	10.660	-7.110	791.081	0.009
L6	88 - 83 (6)	TP18.901x18.101x0.188	5.000	0.000	0.0	11.137	-7.477	817.568	0.009
L7	83 - 82.33 (7)	TP19.008x18.901x0.188	0.670	0.000	0.0	11.201	-7.531	821.060	0.009
L8	82.33 - 82.08 (8)	TP19.048x19.008x0.325	0.250	0.000	0.0	19.314	-7.562	1434.920	0.005
L9	82.08 - 77.08 (9)	TP19.848x19.048x0.319	5.000	0.000	0.0	19.758	-9.100	1467.950	0.006
L10	77.08 - 76.25 (10)	TP19.981x19.848x0.319	0.830	0.000	0.0	19.893	-9.192	1477.940	0.006
L11	76.25 - 76 (11)	TP20.021x19.981x0.456	0.250	0.000	0.0	28.333	-9.237	2104.990	0.004
L12	76 - 74.5 (12)	TP20.261x20.021x0.45	1.500	0.000	0.0	28.297	-9.457	2102.300	0.004
L13	74.5 - 74.25 (13)	TP20.301x20.261x0.588	0.250	0.000	0.0	36.761	-9.508	2731.160	0.003
L14	74.25 - 69.25 (14)	TP21.102x20.301x0.575	5.000	0.000	0.0	37.462	-10.402	2783.260	0.004
L15	69.25 - 64.25 (15)	TP21.902x21.102x0.55	5.000	0.000	0.0	37.274	-11.245	2769.280	0.004
L16	64.25 - 59.25 (16)	TP22.702x21.902x0.544	5.000	0.000	0.0	38.243	-12.108	2841.230	0.004
L17	59.25 - 58.08 (17)	TP22.89x22.702x0.538	1.170	0.000	0.0	38.133	-12.313	2833.100	0.004
L18	58.08 - 57.73 (18)	TP22.946x22.89x0.713	0.350	0.000	0.0	50.279	-12.395	3735.520	0.003
L19	57.73 - 57.5 (19)	TP22.982x22.946x0.713	0.230	0.000	0.0	50.363	-12.445	3741.700	0.003
L20	57.5 - 52.5 (20)	TP23.783x22.982x0.688	5.000	0.000	0.0	50.397	-13.502	3744.210	0.004
L21	52.5 - 47 (21)	TP24.663x23.783x0.688	5.500	0.000	0.0	51.182	-13.987	3802.600	0.004
L22	47 - 45.25 (22)	TP24.568x23.768x0.75	5.000	0.000	0.0	56.699	-15.772	4212.440	0.004
L23	45.25 - 40.5 (23)	TP25.328x24.568x0.725	4.750	0.000	0.0	56.616	-16.914	4206.270	0.004
L24	40.5 - 40.25 (24)	TP25.368x25.328x0.725	0.250	0.000	0.0	56.708	-16.983	4213.110	0.004
L25	40.25 - 35.25 (25)	TP26.168x25.368x0.7	5.000	0.000	0.0	56.586	-18.197	4204.040	0.004
L26	35.25 - 30.25 (26)	TP26.969x26.168x0.688	5.000	0.000	0.0	57.349	-19.438	4260.730	0.005
L27	30.25 - 27.75 (27)	TP27.369x26.969x0.675	2.500	0.000	0.0	57.190	-20.067	4248.940	0.005
L28	27.75 - 27.5 (28)	TP27.409x27.369x0.725	0.250	0.000	0.0	61.403	-20.144	4561.970	0.004
L29	27.5 - 22.5 (29)	TP28.209x27.409x0.7	5.000	0.000	0.0	61.119	-21.472	4540.880	0.005
L30	22.5 - 19.5 (30)	TP28.689x28.209x0.688	3.000	0.000	0.0	61.103	-22.286	4539.660	0.005
L31	19.5 - 19.25 (31)	TP28.729x28.689x0.8	0.250	0.000	0.0	70.918	-22.366	5268.830	0.004
L32	19.25 - 14.25 (32)	TP29.529x28.729x0.775	5.000	0.000	0.0	70.731	-23.806	5254.990	0.005
L33	14.25 - 14 (33)	TP29.569x29.529x0.775	0.250	0.000	0.0	70.830	-23.886	5262.310	0.005
L34	14 - 13.75 (34)	TP29.609x29.569x0.775	0.250	0.000	0.0	70.928	-23.964	5269.620	0.005
L35	13.75 - 12.98 (35)	TP29.733x29.609x0.8	0.770	0.000	0.0	73.466	-24.206	5458.140	0.004
L36	12.98 - 12.73	TP29.773x29.733x0.8	0.250	0.000	0.0	73.567	-24.291	5465.690	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(36)								
L37	12.73 - 7.73 (37)	TP30.573x29.773x0.788	5.000	0.000	0.0	74.449	-25.885	5531.210	0.005
L38	7.73 - 2.73 (38)	TP31.373x30.573x0.775	5.000	0.000	0.0	75.267	-27.504	5591.940	0.005
L39	2.73 - 0 (39)	TP31.81x31.373x0.763	2.730	0.000	0.0	75.140	-28.396	5582.560	0.005

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	108 - 103 (1)	TP8.625x8.625x0.313	13.847	56.708	0.244	0.000	56.708	0.000
L2	103 - 98.5 (2)	TP8.625x8.625x0.313	43.528	56.708	0.768	0.000	56.708	0.000
L3	98.5 - 98 (3)	TP16.5x16.5x0.313	46.863	214.977	0.218	0.000	214.977	0.000
L4	98 - 93 (4)	TP17.3x16.5x0.188	100.418	265.442	0.378	0.000	265.442	0.000
L5	93 - 88 (5)	TP18.101x17.3x0.188	156.343	290.644	0.538	0.000	290.644	0.000
L6	88 - 83 (6)	TP18.901x18.101x0.188	213.434	313.934	0.680	0.000	313.934	0.000
L7	83 - 82.33 (7)	TP19.008x18.901x0.188	221.180	317.100	0.698	0.000	317.100	0.000
L8	82.33 - 82.08 (8)	TP19.048x19.008x0.325	224.081	547.300	0.409	0.000	547.300	0.000
L9	82.08 - 77.08 (9)	TP19.848x19.048x0.319	287.498	584.613	0.492	0.000	584.613	0.000
L10	77.08 - 76.25 (10)	TP19.981x19.848x0.319	298.567	592.658	0.504	0.000	592.658	0.000
L11	76.25 - 76 (11)	TP20.021x19.981x0.456	301.915	834.092	0.362	0.000	834.092	0.000
L12	76 - 74.5 (12)	TP20.261x20.021x0.45	322.143	844.008	0.382	0.000	844.008	0.000
L13	74.5 - 74.25 (13)	TP20.301x20.261x0.588	325.539	1083.575	0.300	0.000	1083.575	0.000
L14	74.25 - 69.25 (14)	TP21.102x20.301x0.575	395.187	1151.775	0.343	0.000	1151.775	0.000
L15	69.25 - 64.25 (15)	TP21.902x21.102x0.55	467.702	1194.683	0.391	0.000	1194.683	0.000
L16	64.25 - 59.25 (16)	TP22.702x21.902x0.544	542.967	1273.533	0.426	0.000	1273.533	0.000
L17	59.25 - 58.08 (17)	TP22.89x22.702x0.538	560.979	1281.600	0.438	0.000	1281.600	0.000
L18	58.08 - 57.73 (18)	TP22.946x22.89x0.713	566.398	1667.800	0.340	0.000	1667.800	0.000
L19	57.73 - 57.5 (19)	TP22.982x22.946x0.713	569.967	1673.408	0.341	0.000	1673.408	0.000
L20	57.5 - 52.5 (20)	TP23.783x22.982x0.688	649.071	1740.342	0.373	0.000	1740.342	0.000
L21	52.5 - 47 (21)	TP24.663x23.783x0.688	685.618	1795.842	0.382	0.000	1795.842	0.000
L22	47 - 45.25 (22)	TP24.568x23.768x0.75	769.112	2015.892	0.382	0.000	2015.892	0.000
L23	45.25 - 40.5 (23)	TP25.328x24.568x0.725	851.142	2083.383	0.409	0.000	2083.383	0.000
L24	40.5 - 40.25 (24)	TP25.368x25.328x0.725	855.533	2090.258	0.409	0.000	2090.258	0.000
L25	40.25 - 35.25 (25)	TP26.168x25.368x0.7	944.725	2159.667	0.437	0.000	2159.667	0.000
L26	35.25 - 30.25 (26)	TP26.969x26.168x0.688	1036.608	2261.550	0.458	0.000	2261.550	0.000
L27	30.25 - 27.75 (27)	TP27.369x26.969x0.675	1083.542	2292.650	0.473	0.000	2292.650	0.000
L28	27.75 - 27.5 (28)	TP27.409x27.369x0.725	1088.267	2456.125	0.443	0.000	2456.125	0.000
L29	27.5 - 22.5 (29)	TP28.209x27.409x0.7	1184.200	2524.608	0.469	0.000	2524.608	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 $\frac{M_{uy}}{\phi M_{ny}}$
L30	22.5 - 19.5 (30)	TP28.689x28.209x0.688	1242.967	2571.375	0.483	0.000	2571.375	0.000
L31	19.5 - 19.25 (31)	TP28.729x28.689x0.8	1247.908	2964.833	0.421	0.000	2964.833	0.000
L32	19.25 - 14.25 (32)	TP29.529x28.729x0.775	1348.050	3049.425	0.442	0.000	3049.425	0.000
L33	14.25 - 14 (33)	TP29.569x29.529x0.775	1353.125	3058.033	0.442	0.000	3058.033	0.000
L34	14 - 13.75 (34)	TP29.609x29.569x0.775	1358.208	3066.650	0.443	0.000	3066.650	0.000
L35	13.75 - 12.98 (35)	TP29.733x29.609x0.8	1373.908	3184.783	0.431	0.000	3184.783	0.000
L36	12.98 - 12.73 (36)	TP29.773x29.733x0.8	1379.017	3193.717	0.432	0.000	3193.717	0.000
L37	12.73 - 7.73 (37)	TP30.573x29.773x0.788	1482.608	3326.458	0.446	0.000	3326.458	0.000
L38	7.73 - 2.73 (38)	TP31.373x30.573x0.775	1588.767	3458.483	0.459	0.000	3458.483	0.000
L39	2.73 - 0 (39)	TP31.81x31.373x0.763	1647.767	3506.025	0.470	0.000	3506.025	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	108 - 103 (1)	TP8.625x8.625x0.313	6.512	77.119	0.084	0.034	56.361	0.001
L2	103 - 98.5 (2)	TP8.625x8.625x0.313	6.659	77.119	0.086	0.206	56.361	0.004
L3	98.5 - 98 (3)	TP16.5x16.5x0.313	6.680	150.180	0.044	0.206	213.732	0.001
L4	98 - 93 (4)	TP17.3x16.5x0.188	11.067	178.734	0.062	0.294	262.022	0.001
L5	93 - 88 (5)	TP18.101x17.3x0.188	11.307	187.092	0.060	0.293	287.387	0.001
L6	88 - 83 (6)	TP18.901x18.101x0.188	11.537	195.451	0.059	0.293	313.923	0.001
L7	83 - 82.33 (7)	TP19.008x18.901x0.188	11.593	196.571	0.059	0.293	317.568	0.001
L8	82.33 - 82.08 (8)	TP19.048x19.008x0.325	11.614	338.958	0.034	0.293	536.655	0.001
L9	82.08 - 77.08 (9)	TP19.848x19.048x0.319	13.297	346.760	0.038	0.293	573.867	0.001
L10	77.08 - 76.25 (10)	TP19.981x19.848x0.319	13.380	349.119	0.038	0.293	581.831	0.001
L11	76.25 - 76 (11)	TP20.021x19.981x0.456	13.404	497.242	0.027	0.293	812.706	0.000
L12	76 - 74.5 (12)	TP20.261x20.021x0.45	13.571	496.605	0.027	0.293	822.904	0.000
L13	74.5 - 74.25 (13)	TP20.301x20.261x0.588	13.593	645.156	0.021	0.293	1048.425	0.000
L14	74.25 - 69.25 (14)	TP21.102x20.301x0.575	14.230	657.462	0.022	0.472	1116.583	0.000
L15	69.25 - 64.25 (15)	TP21.902x21.102x0.55	14.781	654.162	0.023	0.472	1161.008	0.000
L16	64.25 - 59.25 (16)	TP22.702x21.902x0.544	15.332	671.157	0.023	0.472	1239.267	0.000
L17	59.25 - 58.08 (17)	TP22.89x22.702x0.538	15.465	669.237	0.023	0.472	1247.775	0.000
L18	58.08 - 57.73 (18)	TP22.946x22.89x0.713	15.501	882.406	0.018	0.472	1609.742	0.000
L19	57.73 - 57.5 (19)	TP22.982x22.946x0.713	15.528	883.867	0.018	0.472	1615.258	0.000
L20	57.5 - 52.5 (20)	TP23.783x22.982x0.688	16.116	884.460	0.018	0.471	1683.958	0.000
L21	52.5 - 47 (21)	TP24.663x23.783x0.688	16.376	898.251	0.018	0.471	1738.517	0.000
L22	47 - 45.25 (22)	TP24.568x23.768x0.75	17.012	995.064	0.017	0.471	1946.908	0.000
L23	45.25 - 40.5 (23)	TP25.328x24.568x0.725	17.542	993.606	0.018	0.471	2016.542	0.000
L24	40.5 - 40.25	TP25.368x25.328x0.725	17.563	995.222	0.018	0.471	2023.300	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 $\frac{T_u}{\phi T_n}$
	(24)							
L25	40.25 - 35.25	TP26.168x25.368x0.7	18.116	993.081	0.018	0.471	2094.883	0.000
	(25)							
L26	35.25 - 30.25	TP26.969x26.168x0.688	18.648	1006.470	0.019	0.471	2196.858	0.000
	(26)							
L27	30.25 - 27.75	TP27.369x26.969x0.675	18.912	1003.690	0.019	0.471	2229.167	0.000
	(27)							
L28	27.75 - 27.5	TP27.409x27.369x0.725	18.928	1077.630	0.018	0.470	2383.258	0.000
	(28)							
L29	27.5 - 22.5 (29)	TP28.209x27.409x0.7	19.446	1072.650	0.018	0.470	2454.275	0.000
L30	22.5 - 19.5 (30)	TP28.689x28.209x0.688	19.748	1072.360	0.018	0.470	2502.142	0.000
L31	19.5 - 19.25	TP28.729x28.689x0.8	19.765	1244.610	0.016	0.470	2872.283	0.000
	(31)							
L32	19.25 - 14.25	TP29.529x28.729x0.775	20.295	1241.340	0.016	0.470	2959.658	0.000
	(32)							
L33	14.25 - 14 (33)	TP29.569x29.529x0.775	20.314	1243.060	0.016	0.470	2968.133	0.000
L34	14 - 13.75 (34)	TP29.609x29.569x0.775	20.341	1244.790	0.016	0.470	2976.617	0.000
L35	13.75 - 12.98	TP29.733x29.609x0.8	20.430	1289.320	0.016	0.470	3088.692	0.000
	(35)							
L36	12.98 - 12.73	TP29.773x29.733x0.8	20.452	1291.110	0.016	0.470	3097.483	0.000
	(36)							
L37	12.73 - 7.73	TP30.573x29.773x0.788	20.990	1306.580	0.016	0.470	3230.325	0.000
	(37)							
L38	7.73 - 2.73 (38)	TP31.373x30.573x0.775	21.485	1320.930	0.016	0.470	3362.567	0.000
L39	2.73 - 0 (39)	TP31.81x31.373x0.763	21.759	1318.710	0.017	0.470	3411.608	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	108 - 103 (1)	0.009	0.244	0.000	0.084	0.001	0.261 ✔	1.050	4.8.2 ✔
L2	103 - 98.5 (2)	0.010	0.768	0.000	0.086	0.004	0.786 ✔	1.050	4.8.2 ✔
L3	98.5 - 98 (3)	0.005	0.218	0.000	0.044	0.001	0.225 ✔	1.050	4.8.2 ✔
L4	98 - 93 (4)	0.009	0.378	0.000	0.062	0.001	0.391 ✔	1.050	4.8.2 ✔
L5	93 - 88 (5)	0.009	0.538	0.000	0.060	0.001	0.551 ✔	1.050	4.8.2 ✔
L6	88 - 83 (6)	0.009	0.680	0.000	0.059	0.001	0.693 ✔	1.050	4.8.2 ✔
L7	83 - 82.33 (7)	0.009	0.698	0.000	0.059	0.001	0.710 ✔	1.050	4.8.2 ✔
L8	82.33 - 82.08	0.005	0.409	0.000	0.034	0.001	0.416 ✔	1.050	4.8.2 ✔
	(8)								
L9	82.08 - 77.08	0.006	0.492	0.000	0.038	0.001	0.499 ✔	1.050	4.8.2 ✔
	(9)								
L10	77.08 - 76.25	0.006	0.504	0.000	0.038	0.001	0.512 ✔	1.050	4.8.2 ✔
	(10)								

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L11	76.25 - 76 (11)	0.004	0.362	0.000	0.027	0.000	0.367 ✔	1.050	4.8.2 ✔
L12	76 - 74.5 (12)	0.004	0.382	0.000	0.027	0.000	0.387 ✔	1.050	4.8.2 ✔
L13	74.5 - 74.25 (13)	0.003	0.300	0.000	0.021	0.000	0.304 ✔	1.050	4.8.2 ✔
L14	74.25 - 69.25 (14)	0.004	0.343	0.000	0.022	0.000	0.347 ✔	1.050	4.8.2 ✔
L15	69.25 - 64.25 (15)	0.004	0.391	0.000	0.023	0.000	0.396 ✔	1.050	4.8.2 ✔
L16	64.25 - 59.25 (16)	0.004	0.426	0.000	0.023	0.000	0.431 ✔	1.050	4.8.2 ✔
L17	59.25 - 58.08 (17)	0.004	0.438	0.000	0.023	0.000	0.443 ✔	1.050	4.8.2 ✔
L18	58.08 - 57.73 (18)	0.003	0.340	0.000	0.018	0.000	0.343 ✔	1.050	4.8.2 ✔
L19	57.73 - 57.5 (19)	0.003	0.341	0.000	0.018	0.000	0.344 ✔	1.050	4.8.2 ✔
L20	57.5 - 52.5 (20)	0.004	0.373	0.000	0.018	0.000	0.377 ✔	1.050	4.8.2 ✔
L21	52.5 - 47 (21)	0.004	0.382	0.000	0.018	0.000	0.386 ✔	1.050	4.8.2 ✔
L22	47 - 45.25 (22)	0.004	0.382	0.000	0.017	0.000	0.386 ✔	1.050	4.8.2 ✔
L23	45.25 - 40.5 (23)	0.004	0.409	0.000	0.018	0.000	0.413 ✔	1.050	4.8.2 ✔
L24	40.5 - 40.25 (24)	0.004	0.409	0.000	0.018	0.000	0.414 ✔	1.050	4.8.2 ✔
L25	40.25 - 35.25 (25)	0.004	0.437	0.000	0.018	0.000	0.442 ✔	1.050	4.8.2 ✔
L26	35.25 - 30.25 (26)	0.005	0.458	0.000	0.019	0.000	0.463 ✔	1.050	4.8.2 ✔
L27	30.25 - 27.75 (27)	0.005	0.473	0.000	0.019	0.000	0.478 ✔	1.050	4.8.2 ✔
L28	27.75 - 27.5 (28)	0.004	0.443	0.000	0.018	0.000	0.448 ✔	1.050	4.8.2 ✔
L29	27.5 - 22.5 (29)	0.005	0.469	0.000	0.018	0.000	0.474 ✔	1.050	4.8.2 ✔
L30	22.5 - 19.5 (30)	0.005	0.483	0.000	0.018	0.000	0.489 ✔	1.050	4.8.2 ✔
L31	19.5 - 19.25 (31)	0.004	0.421	0.000	0.016	0.000	0.425 ✔	1.050	4.8.2 ✔
L32	19.25 - 14.25 (32)	0.005	0.442	0.000	0.016	0.000	0.447 ✔	1.050	4.8.2 ✔
L33	14.25 - 14 (33)	0.005	0.442	0.000	0.016	0.000	0.447 ✔	1.050	4.8.2 ✔
L34	14 - 13.75 (34)	0.005	0.443	0.000	0.016	0.000	0.448 ✔	1.050	4.8.2 ✔
L35	13.75 - 12.98 (35)	0.004	0.431	0.000	0.016	0.000	0.436 ✔	1.050	4.8.2 ✔
L36	12.98 - 12.73 (36)	0.004	0.432	0.000	0.016	0.000	0.436 ✔	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
L37	12.73 - 7.73 (37)	0.005	0.446	0.000	0.016	0.000	0.451 ✔	1.050	4.8.2 ✔
L38	7.73 - 2.73 (38)	0.005	0.459	0.000	0.016	0.000	0.465 ✔	1.050	4.8.2 ✔
L39	2.73 - 0 (39)	0.005	0.470	0.000	0.017	0.000	0.475 ✔	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	108 - 103	Pole	TP8.625x8.625x0.313	1	-2.394	269.918	**	**
L2	103 - 98.5	Pole	TP8.625x8.625x0.313	2	-2.607	269.918	**	**
L3	98.5 - 98	Pole	TP16.5x16.5x0.313	3	-2.652	525.629	**	**
L4	98 - 93	Pole	TP17.3x16.5x0.188	4	-6.781	794.471	**	**
L5	93 - 88	Pole	TP18.101x17.3x0.188	5	-7.110	830.635	**	**
L6	88 - 83	Pole	TP18.901x18.101x0.188	6	-7.477	858.446	**	**
L7	83 - 82.33	Pole	TP19.008x18.901x0.188	7	-7.531	862.113	**	**
L8	82.33 - 82.08	Pole	TP19.048x19.008x0.325	8	-7.562	1506.666	**	**
L9	82.08 - 77.08	Pole	TP19.848x19.048x0.319	9	-9.100	1541.347	**	**
L10	77.08 - 76.25	Pole	TP19.981x19.848x0.319	10	-9.192	1551.837	**	**
L11	76.25 - 76	Pole	TP20.021x19.981x0.456	11	-9.237	2210.239	**	**
L12	76 - 74.5	Pole	TP20.261x20.021x0.45	12	-9.457	2207.415	**	**
L13	74.5 - 74.25	Pole	TP20.301x20.261x0.588	13	-9.508	2867.718	**	**
L14	74.25 - 69.25	Pole	TP21.102x20.301x0.575	14	-10.402	2922.423	**	**
L15	69.25 - 64.25	Pole	TP21.902x21.102x0.55	15	-11.245	2907.744	**	**
L16	64.25 - 59.25	Pole	TP22.702x21.902x0.544	16	-12.108	2983.291	**	**
L17	59.25 - 58.08	Pole	TP22.89x22.702x0.538	17	-12.313	2974.755	**	**
L18	58.08 - 57.73	Pole	TP22.946x22.89x0.713	18	-12.395	3922.296	**	**
L19	57.73 - 57.5	Pole	TP22.982x22.946x0.713	19	-12.445	3928.785	**	**
L20	57.5 - 52.5	Pole	TP23.783x22.982x0.688	20	-13.502	3931.420	**	**
L21	52.5 - 47	Pole	TP24.663x23.783x0.688	21	-13.987	3992.730	**	**
L22	47 - 45.25	Pole	TP24.568x23.768x0.75	22	-15.772	4423.062	**	**
L23	45.25 - 40.5	Pole	TP25.328x24.568x0.725	23	-16.914	4416.583	**	**
L24	40.5 - 40.25	Pole	TP25.368x25.328x0.725	24	-16.983	4423.765	**	**
L25	40.25 - 35.25	Pole	TP26.168x25.368x0.7	25	-18.197	4414.242	**	**
L26	35.25 - 30.25	Pole	TP26.969x26.168x0.688	26	-19.438	4473.766	**	**
L27	30.25 - 27.75	Pole	TP27.369x26.969x0.675	27	-20.067	4461.387	**	**
L28	27.75 - 27.5	Pole	TP27.409x27.369x0.725	28	-20.144	4790.068	**	**
L29	27.5 - 22.5	Pole	TP28.209x27.409x0.7	29	-21.472	4767.924	**	**
L30	22.5 - 19.5	Pole	TP28.689x28.209x0.688	30	-22.286	4766.643	**	**
L31	19.5 - 19.25	Pole	TP28.729x28.689x0.8	31	-22.366	5532.271	**	**
L32	19.25 - 14.25	Pole	TP29.529x28.729x0.775	32	-23.806	5517.739	**	**
L33	14.25 - 14	Pole	TP29.569x29.529x0.775	33	-23.886	5525.425	**	**
L34	14 - 13.75	Pole	TP29.609x29.569x0.775	34	-23.964	5533.101	**	**
L35	13.75 - 12.98	Pole	TP29.733x29.609x0.8	35	-24.206	5731.047	**	**
L36	12.98 - 12.73	Pole	TP29.773x29.733x0.8	36	-24.291	5738.974	**	**
L37	12.73 - 7.73	Pole	TP30.573x29.773x0.788	37	-25.885	5807.770	**	**
L38	7.73 - 2.73	Pole	TP31.373x30.573x0.775	38	-27.504	5871.537	**	**
L39	2.73 - 0	Pole	TP31.81x31.373x0.763	39	-28.396	5861.688	**	**
						Summary		
						Pole (L2)	**	**

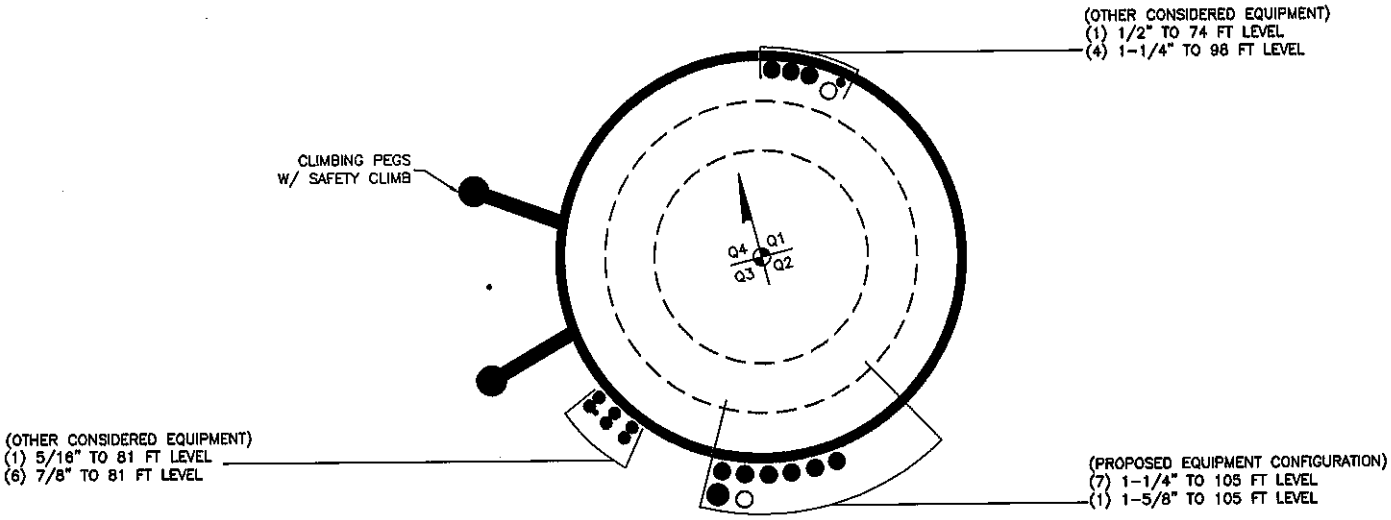
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						RATING =	**	**

** Additional Calculations in Appendix C

Program Version 8.0.4.0

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876363

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 876363

Work Order: 1626542

CROWN CASTLE

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	108	9.5	0	0	8.625	8.625	0.3125		A53-B-35
2	98.5	0.5	0	0	16.50	16.5	0.3125		A53-B-35
3	98	51	3.25	18	16.50	24.663	0.1875	Auto	A607-65
4	50.25	50.25	0	18	23.77	31.81	0.25	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	13	plate	VS-1.25X5.25	4			E					E					E				E	
2	13	27.75	plate	VS-1.25X5.25	3			E					E							E			
3	27.75	57.75	plate	VS-1.25X4.375	3			E					E							E			
4	57.75	76.25	plate	VS-1.25X4	3			E					E							E			
5	0	13.08	channel	MP3-05 (1.1875in)	3				E								E						E
6	13.08	40.5	channel	MP3-05 (1.1875in)	3						E						E						E
7	40.5	58.08	channel	MP3-05 (1.1875in)	3						E						E						E
8	58.08	74.5	channel	MP3-03 (1.1875in)	3						E						E						E
9	74.5	76.25	channel	MP3-03 (1.1875in)	2						E												E
10	76.25	82.33	channel	MP3-03 (1.1875in)	3						E					E							E
11	0	13	plate	CCI-SFP-045100	1									E									
12	13	14	plate	CCI-SFP-045100	2	E								E									
13	14	19.5	plate	CCI-SFP-045100	1	E																	
14																							

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	5.25	1.25	6.5625	0.625	24.000	24.000	18.000	4.961	1.2188	A572-65
2	5.25	1.25	6.5625	0.625	24.000	24.000	18.000	4.961	1.2188	A572-65
3	4.375	1.25	5.46875	0.625	n/a	24.000	21.000	3.867	1.2188	A572-65
4	4	1.25	5	0.625	n/a	21.000	21.000	3.398	1.2188	A572-65
5	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
6	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
7	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
8	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
9	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
10	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65
11	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
12	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
13	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	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	108 - 103	5		0	8.625	8.625	0.3125	A53-B-35	1.000
2	103 - 98.5	4.5	0	0	8.625	8.625	0.3125	A53-B-35	1.000
3	98.5 - 98	0.5	0	0	16.500	16.500	0.3125	A53-B-35	1.000
4	98 - 93	5		18	16.500	17.300	0.1875	A607-65	1.000
5	93 - 88	5		18	17.300	18.101	0.1875	A607-65	1.000
6	88 - 83	5		18	18.101	18.901	0.1875	A607-65	1.000
7	83 - 82.33	0.67		18	18.901	19.008	0.1875	A607-65	1.000
8	82.33 - 82.08	0.25		18	19.008	19.048	0.325	A607-65	1.035
9	82.08 - 77.08	5		18	19.048	19.848	0.31875	A607-65	1.036
10	77.08 - 76.25	0.83		18	19.848	19.981	0.31875	A607-65	1.033
11	76.25 - 76	0.25		18	19.981	20.021	0.45625	A607-65	1.152
12	76 - 74.5	1.5		18	20.021	20.261	0.45	A607-65	1.159
13	74.5 - 74.25	0.25		18	20.261	20.301	0.5875	A607-65	0.972
14	74.25 - 69.25	5		18	20.301	21.102	0.575	A607-65	0.967
15	69.25 - 64.25	5		18	21.102	21.902	0.55	A607-65	0.984
16	64.25 - 59.25	5		18	21.902	22.702	0.54375	A607-65	0.972
17	59.25 - 58.08	1.17		18	22.702	22.890	0.5375	A607-65	0.977
18	58.08 - 57.73	0.35		18	22.890	22.946	0.7125	A607-65	0.933
19	57.73 - 57.5	0.23		18	22.946	22.982	0.7125	A607-65	0.932
20	57.5 - 52.5	5		18	22.982	23.783	0.6875	A607-65	0.941
21	52.5 - 50.25	5.5	3.25	18	23.783	24.663	0.6875	A607-65	0.930
22	50.25 - 45.25	5		18	23.768	24.568	0.75	A607-65	0.929
23	45.25 - 40.5	4.75		18	24.568	25.328	0.725	A607-65	0.941
24	40.5 - 40.25	0.25		18	25.328	25.368	0.725	A607-65	0.940
25	40.25 - 35.25	5		18	25.368	26.168	0.7	A607-65	0.953
26	35.25 - 30.25	5		18	26.168	26.969	0.6875	A607-65	0.951
27	30.25 - 27.75	2.5		18	26.969	27.369	0.675	A607-65	0.960
28	27.75 - 27.5	0.25		18	27.369	27.409	0.725	A607-65	0.948
29	27.5 - 22.5	5		18	27.409	28.209	0.7	A607-65	0.962
30	22.5 - 19.5	3		18	28.209	28.689	0.6875	A607-65	0.969
31	19.5 - 19.25	0.25		18	28.689	28.729	0.8	A607-65	0.899
32	19.25 - 14.25	5		18	28.729	29.529	0.775	A607-65	0.910
33	14.25 - 14	0.25		18	29.529	29.569	0.775	A607-65	0.909
34	14 - 13.75	0.25		18	29.569	29.609	0.775	A607-65	0.972
35	13.75 - 12.98	0.77		18	29.609	29.733	0.8	A607-65	0.968
36	12.98 - 12.73	0.25		18	29.733	29.773	0.8	A607-65	0.967
37	12.73 - 7.73	5		18	29.773	30.573	0.7875	A607-65	0.964
38	7.73 - 2.73	5		18	30.573	31.373	0.775	A607-65	0.962
39	2.73 - 0	2.73		18	31.373	31.810	0.7625	A607-65	0.968

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	108 - 103	2.39	13.85	6.51
2	103 - 98.5	2.61	43.53	6.66
3	98.5 - 98	2.65	46.86	6.68
4	98 - 93	6.78	100.42	11.07
5	93 - 88	7.11	156.34	11.31
6	88 - 83	7.48	213.43	11.54
7	83 - 82.33	7.53	221.18	11.59
8	82.33 - 82.08	7.56	224.08	11.61
9	82.08 - 77.08	9.10	287.50	13.30
10	77.08 - 76.25	9.19	298.57	13.38
11	76.25 - 76	9.24	301.91	13.40
12	76 - 74.5	9.46	322.14	13.57
13	74.5 - 74.25	9.51	325.54	13.59
14	74.25 - 69.25	10.40	395.19	14.23
15	69.25 - 64.25	11.24	467.70	14.78
16	64.25 - 59.25	12.11	542.97	15.33
17	59.25 - 58.08	12.31	560.98	15.47
18	58.08 - 57.73	12.39	566.40	15.50
19	57.73 - 57.5	12.44	569.97	15.53
20	57.5 - 52.5	13.50	649.07	16.12
21	52.5 - 50.25	13.99	685.62	16.38
22	50.25 - 45.25	15.77	769.11	17.01
23	45.25 - 40.5	16.91	851.14	17.54
24	40.5 - 40.25	16.98	855.53	17.56
25	40.25 - 35.25	18.20	944.72	18.12
26	35.25 - 30.25	19.44	1036.61	18.65
27	30.25 - 27.75	20.07	1083.54	18.91
28	27.75 - 27.5	20.14	1088.27	18.93
29	27.5 - 22.5	21.47	1184.20	19.45
30	22.5 - 19.5	22.29	1242.97	19.75
31	19.5 - 19.25	22.37	1247.91	19.77
32	19.25 - 14.25	23.81	1348.05	20.29
33	14.25 - 14	23.89	1353.13	20.31
34	14 - 13.75	23.96	1358.21	20.34
35	13.75 - 12.98	24.21	1373.90	20.43
36	12.98 - 12.73	24.29	1379.01	20.45
37	12.73 - 7.73	25.88	1482.61	20.99
38	7.73 - 2.73	27.50	1588.77	21.48
39	2.73 - 0	28.40	1647.77	21.76

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
108 - 103	Pole	TP8.625x8.625x0.3125	Pole	24.4%	Pass
103 - 98.5	Pole	TP8.625x8.625x0.3125	Pole	74.3%	Pass
98.5 - 98	Pole	TP16.5x16.5x0.3125	Pole	21.3%	Pass
98 - 93	Pole	TP17.3x16.5x0.1875	Pole	36.9%	Pass
93 - 88	Pole	TP18.101x17.3x0.1875	Pole	52.2%	Pass
88 - 83	Pole	TP18.901x18.101x0.1875	Pole	65.7%	Pass
83 - 82.33	Pole	TP19.008x18.901x0.1875	Pole	67.4%	Pass
82.33 - 82.08	Pole + Reinf.	TP19.048x19.008x0.325	Reinf. 10 Tension Rupture	57.4%	Pass
82.08 - 77.08	Pole + Reinf.	TP19.848x19.048x0.3188	Reinf. 10 Tension Rupture	69.0%	Pass
77.08 - 76.25	Pole + Reinf.	TP19.981x19.848x0.3188	Reinf. 10 Tension Rupture	70.8%	Pass
76.25 - 76	Pole + Reinf.	TP20.021x19.981x0.4563	Reinf. 4 Tension Rupture	55.8%	Pass
76 - 74.5	Pole + Reinf.	TP20.261x20.021x0.45	Reinf. 4 Tension Rupture	58.5%	Pass
74.5 - 74.25	Pole + Reinf.	TP20.301x20.261x0.5875	Reinf. 4 Tension Rupture	51.3%	Pass
74.25 - 69.25	Pole + Reinf.	TP21.102x20.301x0.575	Reinf. 4 Tension Rupture	59.1%	Pass
69.25 - 64.25	Pole + Reinf.	TP21.902x21.102x0.55	Reinf. 4 Tension Rupture	66.6%	Pass
64.25 - 59.25	Pole + Reinf.	TP22.702x21.902x0.5438	Reinf. 4 Tension Rupture	73.7%	Pass
59.25 - 58.08	Pole + Reinf.	TP22.89x22.702x0.5375	Reinf. 4 Tension Rupture	75.3%	Pass
58.08 - 57.73	Pole + Reinf.	TP22.946x22.89x0.7125	Reinf. 3 Tension Rupture	56.3%	Pass
57.73 - 57.5	Pole + Reinf.	TP22.982x22.946x0.7125	Reinf. 3 Tension Rupture	56.6%	Pass
57.5 - 52.5	Pole + Reinf.	TP23.783x22.982x0.6875	Reinf. 3 Tension Rupture	61.8%	Pass
52.5 - 50.25	Pole + Reinf.	TP24.663x23.783x0.6875	Reinf. 3 Tension Rupture	64.0%	Pass
50.25 - 45.25	Pole + Reinf.	TP24.568x23.768x0.75	Reinf. 3 Tension Rupture	64.3%	Pass
45.25 - 40.5	Pole + Reinf.	TP25.328x24.568x0.725	Reinf. 3 Tension Rupture	68.4%	Pass
40.5 - 40.25	Pole + Reinf.	TP25.368x25.328x0.725	Reinf. 3 Tension Rupture	68.6%	Pass
40.25 - 35.25	Pole + Reinf.	TP26.168x25.368x0.7	Reinf. 3 Tension Rupture	72.7%	Pass
35.25 - 30.25	Pole + Reinf.	TP26.969x26.168x0.6875	Reinf. 3 Tension Rupture	76.6%	Pass
30.25 - 27.75	Pole + Reinf.	TP27.369x26.969x0.675	Reinf. 3 Tension Rupture	78.4%	Pass
27.75 - 27.5	Pole + Reinf.	TP27.409x27.369x0.725	Reinf. 2 Tension Rupture	69.5%	Pass
27.5 - 22.5	Pole + Reinf.	TP28.209x27.409x0.7	Reinf. 2 Tension Rupture	72.7%	Pass
22.5 - 19.5	Pole + Reinf.	TP28.689x28.209x0.6875	Reinf. 2 Tension Rupture	74.6%	Pass
19.5 - 19.25	Pole + Reinf.	TP28.729x28.689x0.8	Reinf. 2 Tension Rupture	69.6%	Pass
19.25 - 14.25	Pole + Reinf.	TP29.529x28.729x0.775	Reinf. 2 Tension Rupture	72.5%	Pass
14.25 - 14	Pole + Reinf.	TP29.569x29.529x0.775	Reinf. 2 Tension Rupture	72.7%	Pass
14 - 13.75	Pole + Reinf.	TP29.609x29.569x0.775	Reinf. 2 Tension Rupture	73.2%	Pass
13.75 - 12.98	Pole + Reinf.	TP29.733x29.609x0.8	Reinf. 1 Tension Rupture	69.2%	Pass
12.98 - 12.73	Pole + Reinf.	TP29.773x29.733x0.8	Reinf. 1 Tension Rupture	69.3%	Pass
12.73 - 7.73	Pole + Reinf.	TP30.573x29.773x0.7875	Reinf. 1 Tension Rupture	72.0%	Pass
7.73 - 2.73	Pole + Reinf.	TP31.373x30.573x0.775	Reinf. 1 Tension Rupture	74.6%	Pass
2.73 - 0	Pole + Reinf.	TP31.81x31.373x0.7625	Reinf. 1 Tension Rupture	75.9%	Pass
				Summary	
			Pole	74.3%	Pass
			Reinforcement	78.4%	Pass
			Overall	78.4%	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	R13
108 - 103	71	n/a	71	8.16	n/a	8.16	24.4%													
103 - 98.5	71	n/a	71	8.16	n/a	8.16	74.3%													
98.5 - 98	521	n/a	521	15.89	n/a	15.89	21.3%													
98 - 93	377	n/a	377	10.18	n/a	10.18	36.9%													
93 - 88	432	n/a	432	10.66	n/a	10.66	52.2%													
88 - 83	493	n/a	493	11.14	n/a	11.14	65.7%													
83 - 82.33	501	n/a	501	11.20	n/a	11.20	67.4%													
82.33 - 82.08	506	356	863	11.22	8.76	19.98	41.6%										57.4%			
82.08 - 77.08	574	385	959	11.70	8.76	20.46	50.5%										69.0%			
77.08 - 76.25	585	390	975	11.78	8.76	20.54	52.0%										70.9%			
76.25 - 76	611	787	1399	11.80	20.84	32.64	40.0%				55.8%					40.9%				
76 - 74.5	634	805	1439	11.95	20.84	32.79	42.1%				58.5%					42.9%				
74.5 - 74.25	614	1210	1824	11.97	23.76	35.73	30.9%				51.3%				45.8%					
74.25 - 69.25	690	1300	1991	12.45	23.76	36.21	38.1%				59.1%				52.8%					
69.25 - 64.25	772	1394	2167	12.92	23.76	36.68	41.2%				66.6%				59.4%					
64.25 - 59.25	861	1515	2376	13.40	23.76	37.16	45.6%				73.7%				65.7%					
59.25 - 58.08	883	1538	2421	13.51	23.76	37.27	46.7%				75.3%				67.1%					
58.08 - 57.73	889	2280	3169	13.54	33.36	46.90	35.9%			56.3%				50.4%						
57.73 - 57.5	893	2287	3180	13.57	33.36	46.92	38.1%			56.6%				50.6%						
57.5 - 52.5	990	2438	3428	14.04	33.36	47.40	39.9%			61.8%				55.2%						
52.5 - 50.25	1036	2507	3543	14.26	33.36	47.61	41.6%			64.0%				57.2%						
50.25 - 45.25	1445	2591	4036	19.30	33.36	52.65	38.4%			64.3%				57.0%						
45.25 - 40.5	1584	2743	4328	19.90	33.36	53.26	41.1%			68.4%				60.5%						
40.5 - 40.25	1592	2751	4343	19.98	33.36	53.29	41.3%			68.6%			60.7%							
40.25 - 35.25	1749	2917	4665	20.57	33.36	53.92	44.1%			72.7%			64.3%							
35.25 - 30.25	1916	3087	5002	21.20	33.36	54.56	46.9%			76.6%			67.6%							
30.25 - 27.75	2003	3174	5177	21.52	33.36	54.87	48.2%			78.4%			69.3%							
27.75 - 27.5	2013	3466	5480	21.55	36.64	58.19	46.0%		69.5%				66.1%							
27.5 - 22.5	2196	3660	5856	22.18	36.64	58.82	48.6%		72.7%				69.1%							
22.5 - 19.5	2311	3778	6089	22.57	36.64	59.20	50.2%		74.6%				70.9%							
19.5 - 19.25	2320	4614	6934	22.60	41.14	63.73	44.3%		69.6%				66.6%							64.7%
19.25 - 14.25	2521	4861	7381	23.23	41.14	64.37	46.6%		72.5%				71.4%							67.5%
14.25 - 14	2531	4873	7404	23.25	41.14	64.40	46.7%		72.7%				71.5%							67.6%
14 - 13.75	2550	4979	7529	23.30	45.64	68.93	47.1%		73.2%				68.7%						64.1%	
13.75 - 12.98	2570	5275	7846	23.39	47.70	71.09	44.6%	69.2%				58.5%						67.4%		
12.98 - 12.73	2581	5289	7870	23.43	47.70	71.13	44.7%	69.3%				58.6%						67.6%		
12.73 - 7.73	2796	5562	8359	24.06	47.70	71.76	46.8%	72.0%				60.9%						70.2%		
7.73 - 2.73	3024	5843	8867	24.70	47.70	72.40	49.0%	74.6%				63.1%						72.8%		
2.73 - 0	3153	5999	9152	25.04	47.70	72.74	50.1%	75.9%				64.3%						74.1%		

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

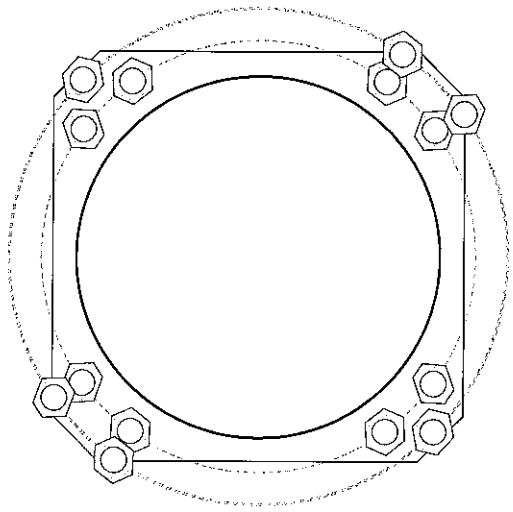
Monopole Base Plate Connection

CROWN CASTLE

Site Info	
BU #	876363
Site Name	artford - NU (SSUSA), C
Order #	85565.009.01

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

Applied Loads	
Moment (kip-ft)	1648.00
Axial Force (kips)	28.00
Shear Force (kips)	22.00



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 38" BC
GROUP 2: (3) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 43.8" BC
pos. (deg): 35, 135, 235

GROUP 3: (3) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 43.5" BC
pos. (deg): 55, 215, 315

Base Plate Data

36" OD x 2.5" Plate (F1554-55; Fy=55 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

31.81" x 0.25" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu = 155.66	ϕPn = 243.75	**Stress Rating**
Vu = 2.75	ϕVn = 73.13	**61.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu = 176.16	ϕPn = 243.75	**Stress Rating**
Vu = 0	ϕVn = 73.13	**68.8%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 3:		
Pu = 175.07	ϕPn = 341.25	**Stress Rating**
Vu = 0	ϕVn = 102.38	**48.9%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	29.58	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	**56.9%**	**Pass**

Monopole Flange Plate Connection

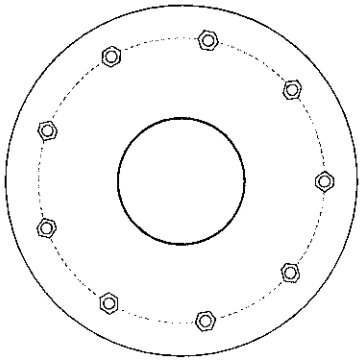
Elevation = 98 ft.

BU #	876363
Site Name	artford - NU (SSUSA), C
Order #	85565.009.01

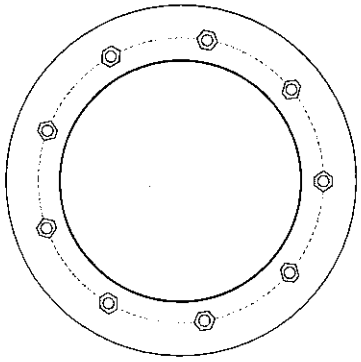
TIA-222 Revision	H

Applied Loads	
Moment (kip-ft)	47.00
Axial Force (kips)	2.70
Shear Force (kips)	6.70

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(9) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19.5" BC

Top Plate Data

24" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

8.625" x 0.3125" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Plate Data

24" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

16.5" x 0.1875" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	19.96	
Allowable (kips)	30.04	
Stress Rating:	**63.3%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	40.92	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**86.6%**	**Pass**
Tension Side Stress Rating:	**79.3%**	**Pass**

Bottom Plate Capacity

Max Stress (ksi):	12.90	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	**27.3%**	**Pass**
Tension Side Stress Rating:	**8.6%**	**Pass**

Pier and Pad Foundation

BU # :	876363
Site Name:	Hartford - NU (SSU
App. Number:	457785 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

Block Foundation?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	28	kips
Base Shear, Vu_comp:	22	kips
Moment, M_u:	1648	ft-kips
Tower Height, H:	108	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier:	5	ft
Ext. Above Grade, E:	0.5	ft
Pier Rebar Size, Sc:	11	
Pier Rebar Quantity, mc:	12	
Pier Tie/Spiral Size, St:	5	
Pier Tie/Spiral Quantity, mt:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	4	in

Pad Properties		
Depth, D:	7	ft
Pad Width, W:	21.5	ft
Pad Thickness, T:	3	ft
Pad Rebar Size, Sp:	8	
Pad Rebar Quantity, mp:	22	
Pad Clear Cover, cc_{pad}:	4	in

Material Properties		
Rebar Grade, Fy:	60000	psi
Concrete Compressive Strength, F'c:	3000	psi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	111	pcf
Ultimate Gross Bearing, Qult:	6.900	ksf
Cohesion, Cu:	0.000	ksf
Friction Angle, ϕ:	32	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.35	
Neglected Depth, N:	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw:	10	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	203.71	22.00	10.3%	Pass
Bearing Pressure (ksf)	5.18	1.91	35.2%	Pass
*Overturning (kip*ft)*	3888.50	1818.50	46.8%	Pass
*Pier Flexure (Comp.) (kip*ft)*	2022.59	1747.00	82.3%	Pass
Pier Compression (kip)	11934.00	48.25	0.4%	Pass
*Pad Flexure (kip*ft)*	2323.42	655.88	26.9%	Pass
Pad Shear - 1-way (kips)	646.50	108.64	16.0%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.028	16.3%	Pass
*Flexural 2-way (Comp) (kip*ft)*	1496.79	1048.20	66.7%	Pass

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

Soil Rating*:	46.8%
Structural Rating*:	82.3%

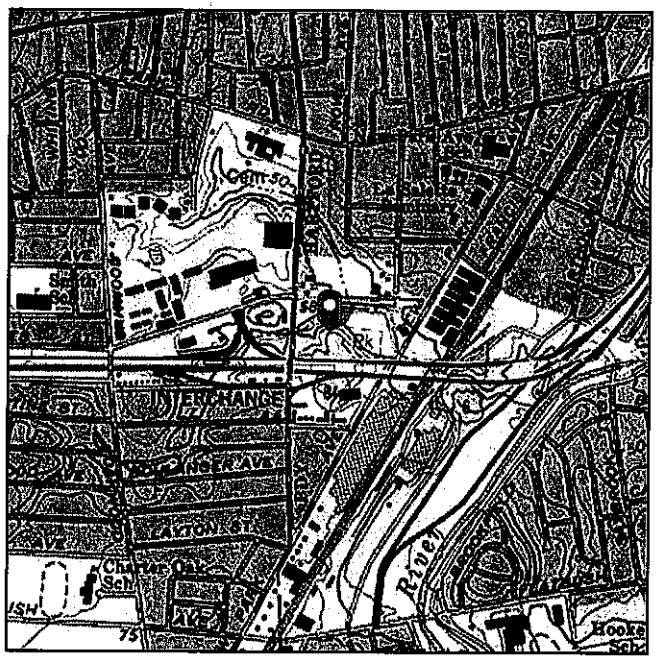
Version 3.0.2

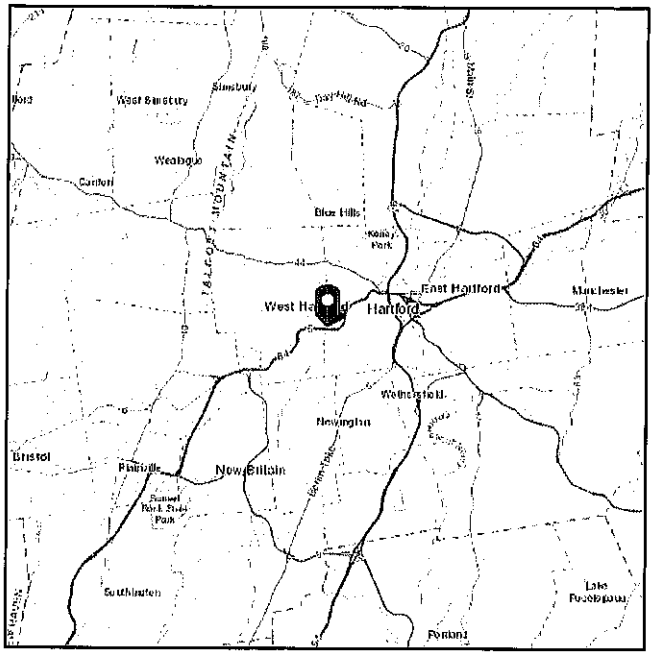
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 71.06 ft (NAVD 88)
Latitude: 41.750775
Longitude: -72.713675





Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	100 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: Wed Sep 19 2018

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).

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

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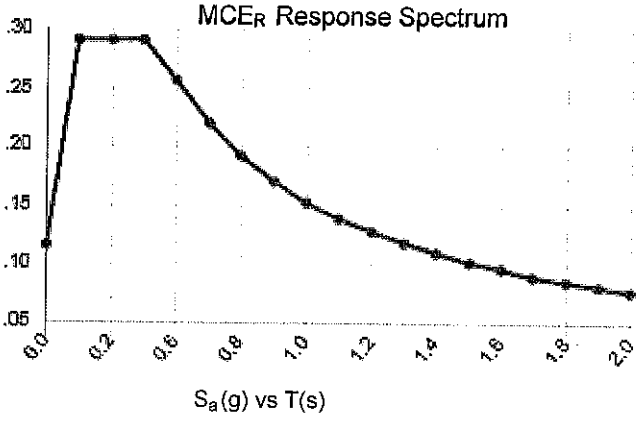
Seismic

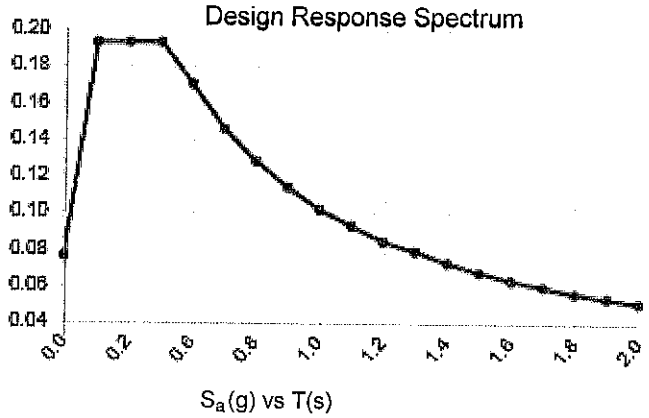
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.091
S_{MS} :	0.290	PGA_M :	0.146
S_{M1} :	0.153	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Sep 19 2018

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.

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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:	Wed Sep 19 2018

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.

Date: **October 08, 2018**

ENGINEERED TOWER SOLUTIONS, PLLC

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8120 Sheridan Blvd, Suite A-311
Westminster, CO 80003
(919) 782-2710
brandon.little@ets-pllc.com

Subject:	**Mount Structural Analysis**	
Contractor Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	79283
	Carrier Site Name:	West Hartford 4 CT
Crown Castle Designation:	**Crown Castle BU Number:**	876363
	Crown Castle Site Name:	HARTFORD - NU (SSUSA)
	Crown Castle JDE Number:	528518
	Crown Castle PO Number:	1263856
	Crown Castle Application Number:	457785 Rev. 0
Engineering Firm Designation:	**ETS Project No.:**	184431.14
Site Data:	**219 New Park Road, Hartford, Hartford County, CT 06106-2949**	
	Latitude: 41° 45' 2.79" Longitude: -72° 42' 49.23"	
Structure Information:	**Tower Height & Type:**	108.0-ft Monopole
	Mount Elevation:	105.0-ft
	Mount Width & Type:	10.0-ft Sector Mount

Dear Charles McGuirt,

Engineered Tower Solutions, PLLC is pleased to submit this **"Mount Structural Analysis Report"** to determine the structural integrity of *Verizon Wireless* 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.

Based upon our analysis, we have determined the adequacy of the antenna mounting system that will support the existing and proposed loading to be for the following Load Case:

Sector Mount (Multiple) **Sufficient Capacity**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the ***2016 Connecticut State Building Code***. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria.

We at Engineered Tower Solutions, PLLC appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by:

Helen Tesfaye, EI
Structural Engineer I

Respectfully Submitted by:

Frederic G. Bost, PE
Owner/President

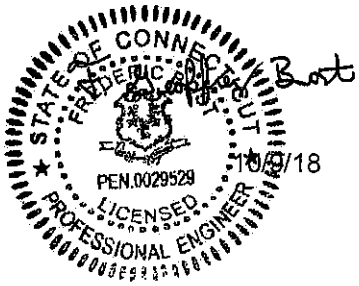


TABLE OF CONTENTS

1) INTRODUCTION

This mount is a 10.0 ft Sector mount installed at the 105.0 ft elevation of the 108.0 ft Monopole. Engineered Tower Solutions, PLLC, did not visit the site. A mapping and/or mount manufacturer drawings were not provided. Therefore, per direction of Crown Castle, photos of the tower were compared with other mounts within our database and a similar and comparable mount was used to perform this mount analysis

2) ANALYSIS CRITERIA

Building Code:	2012 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2.00 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.181
Seismic S1:	0.064
Service Wind Speed:	30 mph

Table 1 – Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
105.0	105.0	6	ANTEL	BXA-70063/6CF	(3) 10.0 ft Sector Mount
		6	COMMSCOPE	SBNHH-1D65B	
		1	RAYCAP	RVZDC-6627-PF-48	
		1	RFS/CELWAVE	DB-T1-6Z-8AB-0Z	
		3	SAMSUNG TELECOMMUNICATIONS	RFV01U-D1A	
		3	SAMSUNG TELECOMMUNICATIONS	RFV01U-D2A	

3) ANALYSIS PROCEDURE

Table 2 – Documents Provided

Document	Remarks	Reference	Source
Structural Level Drawings (Installed)	Crown Castle	08/30/2018	CCI Sites
Structural Level Drawing (Proposed)	Crown Castle	08/30/2018	CCI Sites
Carrier Application	App # 457785 Rev. 0	08/22/2018	CCI Sites
4-Structural Analysis Report	B+T Group	7861410	CCI Sites

3.1) Analysis Method

RISA-3D (version 16.0), 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 C.

3.2) Assumptions

1) Engineered Tower Solutions, PLLC, did not visit the site. A mapping and/or mount manufacturer drawings were not provided. Therefore, per direction of Crown Castle, photos of the tower were compared with other mounts within our database and a similar and comparable mount was used to perform this mount analysis
2) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specification.
3) The configuration of antennas, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) 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.
5) This Structural Analysis is not a condition assessment of the mount and is an evaluation of the theoretical structural capacity.
6) This analysis is based from the information supplied, and therefore, this report's results are as accurate as the supplied data.
7) Engineered Tower Solutions, PLLC makes no warranties, expressed and/or implied, in connection with this report, and disclaims any liability associated with material, fabrication, or erection of the mount. Engineered Tower Solutions, PLLC will not be held responsible from any consequential or incidental damages sustained by any person, firm, or organization as a result of the contents of this report. The maximum liability of Engineered Tower Solutions, PLLC pursuant to this report will be limited to the total fee received for compilation of this report.
8) It is the tower owner's responsibility to verify that the mount modeled and analyzed is the correct structure modeled.
9) The use of this report shall be limited to the purpose for which it was commissioned and may not be used for any other purposes without the written consent of Engineered Tower Solutions, PLLC.
10) Member connections are assumed to have been designed to meet or exceed the theoretical capacity of the connected member.
11) Steel grades have been assumed as follows:

a)	Channel, Solid Round, Angle, Plate	ASTM A36 (Gr 36)
b)	HSS (Rectangular)	ASTM 500 (Gr B-46)
c)	HSS (Round)	ASTM 500 (Gr B-42)
d)	Pipe	ASTM A53 (Gr 35)
e)	Connection Bolts	ASTM A325
f)	U-Bolts	SAE 429 Gr.2

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

4) ANALYSIS RESULTS

Table 3a– Mount Component Stresses vs. Capacity, Alpha

Mount Centerline (ft)	Component	% Capacity	Pass/Fail	Notes
105.0	Face Mount – Horizontal	83.5	PASS	1
	Mount Pipe – Vertical	47.9	PASS	1
	Sidearm – Horizontal	20.4	PASS	1

Table 3b – Mount Component Stresses vs. Capacity, Beta

Mount Centerline (ft)	Component	% Capacity	Pass/Fail	Notes
105.0	Face Mount – Horizontal	90.3	PASS	1
	Mount Pipe – Vertical	44.8	PASS	1
	Sidearm – Horizontal	19.0	PASS	1

Table 3c– Mount Component Stresses vs. Capacity, Gamma

Mount Centerline (ft)	Component	% Capacity	Pass/Fail	Notes
105.0	Face Mount – Horizontal	82.8	PASS	1
	Mount Pipe – Vertical	47.1	PASS	1
	Sidearm – Horizontal	20.2	PASS	1

Notes:

1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.

Tower Mount Rating (max from all components) =	**90.3%**

4.1) Recommendations

The tower mount has sufficient capacity to carry the existing and proposed load configuration. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS

Site Name: West Hartford 4, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	1	5000	5000	105	0.1631	1.0	16.31%
VZW Cellular LTE	869	1	3050	3050	105	0.0995	0.579333333	17.17%
VZW Cellular	869	3	410	1230	105	0.0401	0.579333333	6.93%
VZW AWS	2145	1	7400	7400	105	0.2414	1.0	24.14%
VZW 700	746	1	2200	2200	105	0.0718	0.497333333	14.43%

Total Percentage of Maximum Permissible Exposure 78.97%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.

-1992

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Tuesday, December 11, 2018 11:50 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 773930407784 Delivered

Your package has been delivered

Tracking # 773930407784

Ship date:
Mon, 12/10/2018

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US

Delivery date:
Tue, 12/11/2018 11:47 am

Mr. Luke Bronin-Mayor
City of Hartford
550 Main Street, #1
HARTFORD, CT 06103
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	773930407784
Status:	Delivered: 12/11/2018 11:47 AM Signed for By: D.ACOSTF
Reference:	1766.6680
Signed for by:	D.ACOSTF
Delivery location:	HARTFORD, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	0.50 lb.

Barbadora, Jeff

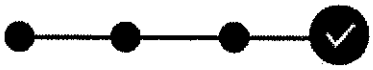
From: TrackingUpdates@fedex.com
Sent: Tuesday, December 11, 2018 10:46 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 773930696634 Delivered

Your package has been delivered

Tracking # 773930696634

Ship date:
Mon, 12/10/2018

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US



Delivery date:
Tue, 12/11/2018 10:40 am

C/O Corporate Property
CL&P
107 Selden Street
BERLIN, CT 06037
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	773930696634
Status:	Delivered: 12/11/2018 10:40 AM Signed for By: K.HADIDAZ
Reference:	1766.6680
Signed for by:	K.HADIDAZ
Delivery location:	BERLIN, CT
Delivered to:	Mailroom
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	0.50 lb.

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Tuesday, December 11, 2018 11:29 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 773930572998 Delivered

Your package has been delivered

Tracking # 773930572998

Ship date:
Mon, 12/10/2018

Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US

Delivery date:
Tue, 12/11/2018 11:26 am

John Collins-License & Inspections
City of Hartford
550 Main Street, #1
HARTFORD, CT 06103
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	773930572998
Status:	Delivered: 12/11/2018 11:26 AM Signed for By: H.HILL
Reference:	1766.6680
Signed for by:	H.HILL
Delivery location:	HARTFORD, CT
Delivered to:	Mailroom
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	0.50 lb.