



MORRISON HERSHFIELD

Morrison Hershfield
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Date: **March 16, 2023**

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Site Number: 9JK2819A
Site Name: SE Lake City

Crown Castle Designation: **BU Number:** 846221
Site Name: SE Lake City
JDE Job Number: 737849
Work Order Number: 2212446
Order Number: 640916 Rev. 0

Engineering Firm Designation: **Morrison Hershfield Project Number:** CN12-319 / 2300001

Site Data: **603 Southwest Wendy Terrace, Lake City, Columbia Co., FL 32025**
Latitude 30° 6' 46.56", Longitude -82° 37' 5.17"
300 Foot - Cellxion Guyed Tower

Morrison Hershfield 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:

LC5: Proposed Equipment Configuration

Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 119 mph as required by the 2020 Florida Building Code 7th Edition. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. (FL License No. 68787)
Senior Engineer

Certificate of Authorization # 8508

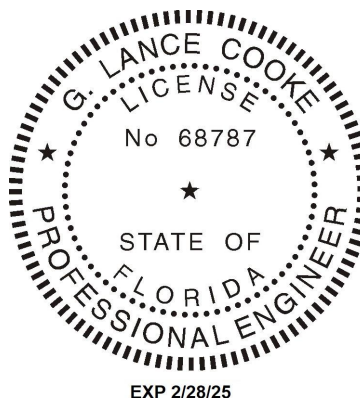


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1) INTRODUCTION

This tower is a 300 ft guyed tower designed by Cellxion.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor:	1
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)
260.0	260.0	3	commscope	FFVV-65C-R3-V1_TMO w/ Mount Pipe	2	1-5/8
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	Sabre	12' V-Boom Mount [#C10857111]		

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)
270.0	272.0	3	andrew	DBXLH-9090C-R2M w/ Mount Pipe	18 6 3 3	1-5/8 3/4 3/8 5/16
		6	commscope	NNHH-65B-R4 w/ Mount Pipe		
		3	commscope	SBNHH-1D65B w/ Mount Pipe		
		6	andrew	E15Z01P06		
		6	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 4478 B5		
		1	raycap	DC6-48-60-18-8C		
		2	raycap	DC6-48-60-18-8F		
	270.0	6	andrew	CBC819-DF		
		1	-	Sector Mount [SM 502-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4552457	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	5167325	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4720742	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. Morrison Hershfield 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
T1	300 - 280	Leg	2	1	-36.40	96.63	37.7	Pass
T2	280 - 260	Leg	2	49	-58.44	96.63	60.5	Pass
T3	260 - 240	Leg	2	97	-52.66	96.63	54.5	Pass
T4	240 - 220	Leg	2 1/2	145	-45.93	176.22	26.1	Pass
T5	220 - 200	Leg	2 1/4	194	-40.09	133.83	30.0	Pass
T6	200 - 180	Leg	2 1/4	242	-47.33	133.83	35.4	Pass
T7	180 - 160	Leg	2 1/4	290	-55.72	133.83	41.6	Pass
T8	160 - 140	Leg	2 1/4	338	-42.97	133.83	32.1	Pass
T9	140 - 120	Leg	2 1/4	386	-49.49	133.83	37.0	Pass
T10	120 - 100	Leg	2 1/4	433	-57.75	133.83	43.2	Pass
T11	100 - 80	Leg	2 1/4	481	-61.37	133.83	45.9	Pass
T12	80 - 60	Leg	2 1/4	529	-64.64	133.83	48.3	Pass
T13	60 - 40	Leg	2 1/4	577	-66.02	133.83	49.3	Pass
T14	40 - 20	Leg	2 1/2	625	-67.88	176.22	38.5	Pass
T15	20 - 6.8125	Leg	2 1/2	673	-63.29	176.26	35.9	Pass
T16	6.8125 - 0	Leg	2 1/2	704	-59.66	220.92	27.0	Pass
T1	300 - 280	Diagonal	1 1/4	11	-7.75	21.77	35.6	Pass
T2	280 - 260	Diagonal	1 1/8	94	-7.47	15.13	49.4	Pass
T3	260 - 240	Diagonal	1 3/8	106	-8.74	29.49	29.6	Pass
T4	240 - 220	Diagonal	1 3/8	189	-10.02	29.96	33.4	Pass
T5	220 - 200	Diagonal	1 1/4	238	-6.71	21.98	30.5	Pass
T6	200 - 180	Diagonal	1 3/8	250	-7.42	29.73	25.0	Pass
T7	180 - 160	Diagonal	1 3/8	333	-7.75	29.73	26.1	Pass
T8	160 - 140	Diagonal	1 1/8	382	-5.32	15.31	34.7	Pass
T9	140 - 120	Diagonal	1 1/4	394	-6.35	21.98	28.9	Pass
T10	120 - 100	Diagonal	1 3/8	442	-7.23	29.73	24.3	Pass
T11	100 - 80	Diagonal	1 1/4	525	-6.91	21.98	31.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T12	80 - 60	Diagonal	1 1/8	539	-4.73	15.31	30.9	Pass
T13	60 - 40	Diagonal	1 1/8	607	-5.19	15.31	33.9	Pass
T14	40 - 20	Diagonal	1 1/8	636	-5.33	15.49	34.4	Pass
T15	20 - 6.8125	Diagonal	1 1/8	680	-5.84	15.50	37.7	Pass
T1	300 - 280	Horizontal	1	23	-3.64	16.58	21.9	Pass
T2	280 - 260	Horizontal	7/8	91	-2.61	10.97	23.8	Pass
T3	260 - 240	Horizontal	1	110	-3.52	16.58	21.2	Pass
T4	240 - 220	Horizontal	1 1/4	173	9.96	41.75	23.9	Pass
T5	220 - 200	Horizontal	7/8	235	4.15	20.46	20.3	Pass
T6	200 - 180	Horizontal	7/8	254	4.46	20.46	21.8	Pass
T7	180 - 160	Horizontal	7/8	330	4.86	20.46	23.8	Pass
T8	160 - 140	Horizontal	7/8	379	3.21	20.46	15.7	Pass
T9	140 - 120	Horizontal	7/8	398	3.82	20.46	18.7	Pass
T10	120 - 100	Horizontal	1	460	4.69	26.72	17.5	Pass
T11	100 - 80	Horizontal	7/8	522	4.14	20.46	20.3	Pass
T12	80 - 60	Horizontal	7/8	544	2.92	20.46	14.3	Pass
T13	60 - 40	Horizontal	7/8	604	3.47	20.46	16.9	Pass
T14	40 - 20	Horizontal	7/8	640	3.30	20.46	16.1	Pass
T15	20 - 6.8125	Horizontal	7/8	685	4.15	20.46	20.3	Pass
T16	6.8125 - 0	Horizontal	L4x4x3/8	712	-1.06	94.71	29.5	Pass
T1	300 - 280	Secondary Horizontal	3/4	13	-0.00	10.42	0.0	Pass
T2	280 - 260	Secondary Horizontal	3/4	61	-0.00	10.42	0.0	Pass
T3	260 - 240	Secondary Horizontal	3/4	144	-0.00	10.42	0.0	Pass
T4	240 - 220	Secondary Horizontal	3/4	157	-0.00	10.45	0.0	Pass
T5	220 - 200	Secondary Horizontal	3/4	205	-0.00	10.43	0.0	Pass
T6	200 - 180	Secondary Horizontal	3/4	288	-0.00	10.43	0.0	Pass
T7	180 - 160	Secondary Horizontal	3/4	301	0.00	15.03	0.0	Pass
T8	160 - 140	Secondary Horizontal	3/4	384	-0.00	10.43	0.0	Pass
T9	140 - 120	Secondary Horizontal	3/4	432	-0.00	10.43	0.0	Pass
T10	120 - 100	Secondary Horizontal	3/4	445	0.00	15.03	0.0	Pass
T11	100 - 80	Secondary Horizontal	3/4	528	0.00	15.03	0.0	Pass
T12	80 - 60	Secondary Horizontal	3/4	576	0.00	15.03	0.0	Pass
T13	60 - 40	Secondary Horizontal	3/4	624	-0.00	10.43	0.0	Pass
T14	40 - 20	Secondary Horizontal	3/4	672	-0.00	10.45	0.0	Pass
T15	20 - 6.8125	Secondary Horizontal	3/4	703	-0.00	10.45	0.0	Pass
T1	300 - 280	Top Girt	1	6	-0.64	16.58	3.9	Pass
T2	280 - 260	Top Girt	7/8	54	-1.86	10.97	16.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T3	260 - 240	Top Girt	1	100	2.70	26.72	10.1	Pass
T4	240 - 220	Top Girt	1 1/4	150	-2.69	28.46	9.5	Pass
T5	220 - 200	Top Girt	7/8	198	2.43	20.46	11.9	Pass
T6	200 - 180	Top Girt	7/8	244	1.84	20.46	9.0	Pass
T7	180 - 160	Top Girt	7/8	292	2.64	20.46	12.9	Pass
T8	160 - 140	Top Girt	7/8	342	1.98	20.46	9.7	Pass
T9	140 - 120	Top Girt	7/8	388	-1.00	11.07	9.0	Pass
T10	120 - 100	Top Girt	1	438	2.43	26.72	9.1	Pass
T11	100 - 80	Top Girt	7/8	484	2.38	20.46	11.6	Pass
T12	80 - 60	Top Girt	7/8	534	-1.22	11.07	11.0	Pass
T13	60 - 40	Top Girt	7/8	582	-1.30	11.07	11.7	Pass
T14	40 - 20	Top Girt	7/8	630	-1.21	11.17	10.8	Pass
T15	20 - 6.8125	Top Girt	7/8	678	2.15	20.46	10.5	Pass
T16	6.8125 - 0	Top Girt	L4x4x3/8	709	10.49	97.30	10.8	Pass
T1	300 - 280	Bottom Girt	1	8	3.33	26.72	12.5	Pass
T2	280 - 260	Bottom Girt	7/8	57	-1.23	10.97	11.2	Pass
T3	260 - 240	Bottom Girt	1	103	-2.10	16.58	12.7	Pass
T4	240 - 220	Bottom Girt	1 1/4	152	2.92	41.75	7.0	Pass
T5	220 - 200	Bottom Girt	7/8	199	1.73	20.46	8.5	Pass
T6	200 - 180	Bottom Girt	7/8	247	2.57	20.46	12.5	Pass
T7	180 - 160	Bottom Girt	7/8	296	2.14	20.46	10.4	Pass
T8	160 - 140	Bottom Girt	7/8	343	-0.86	11.07	7.8	Pass
T9	140 - 120	Bottom Girt	7/8	391	2.14	20.46	10.4	Pass
T10	120 - 100	Bottom Girt	1	439	2.54	26.72	9.5	Pass
T11	100 - 80	Bottom Girt	7/8	489	-1.22	11.07	11.0	Pass
T12	80 - 60	Bottom Girt	7/8	537	-1.22	11.07	11.0	Pass
T13	60 - 40	Bottom Girt	7/8	585	-1.30	11.07	11.7	Pass
T14	40 - 20	Bottom Girt	7/8	633	-1.21	11.17	10.8	Pass
T1	300 - 280	Guy A@290	3/4 [ECP-24000]	735	14.60	36.73	39.8	Pass
T4	240 - 220	Guy A@230	3/4 [ECP-24000]	752	14.30	36.73	38.9	Pass
T7	180 - 160	Guy A@173.193	3/4 [ECP-24000]	763	12.51	36.73	34.1	Pass
T10	120 - 100	Guy A@113.193	3/4 [ECP-24000]	769	12.30	36.73	33.5	Pass
T13	60 - 40	Guy A@53.1927	1/2 [ECP-23000]	775	5.63	16.95	33.2	Pass
T1	300 - 280	Guy B@290	3/4 [ECP-24000]	729	14.92	36.73	40.6	Pass
T4	240 - 220	Guy B@230	3/4 [ECP-24000]	747	15.37	36.73	41.8	Pass
T7	180 - 160	Guy B@173.193	3/4 [ECP-24000]	762	13.28	36.73	36.1	Pass
T10	120 - 100	Guy B@113.193	3/4 [ECP-24000]	768	13.32	36.73	36.3	Pass
T13	60 - 40	Guy B@53.1927	1/2 [ECP-23000]	774	6.06	16.95	35.8	Pass
T1	300 - 280	Guy C@290	3/4 [ECP-24000]	723	14.92	36.73	40.6	Pass
T4	240 - 220	Guy C@230	3/4 [ECP-24000]	741	15.48	36.73	42.2	Pass
T7	180 - 160	Guy C@173.193	3/4 [ECP-24000]	758	13.98	36.73	38.1	Pass
T10	120 - 100	Guy C@113.193	3/4 [ECP-24000]	764	13.98	36.73	38.1	Pass
T13	60 - 40	Guy C@53.1927	1/2 [ECP-23000]	770	6.38	16.95	37.6	Pass
T7	180 - 160	Top Guy Pull-	2x3/8	760	4.17	25.51	16.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
		Off@173.193						
T10	120 - 100	Top Guy Pull-Off@113.193	2x3/8	766	3.69	25.51	14.4	Pass
T13	60 - 40	Top Guy Pull-Off@53.1927	2x3/8	773	2.88	25.51	11.3	Pass
T1	300 - 280	Torque Arm Top@290	L3 1/2x3 1/2x3/8	737	13.93	72.11	19.3	Pass
T4	240 - 220	Torque Arm Top@230	L3 1/2x3 1/2x3/8	755	15.65	72.11	21.7	Pass
T1	300 - 280	Torque Arm Bottom@290	L3 1/2x3 1/2x3/8	727	-19.07	74.43	25.6	Pass
T4	240 - 220	Torque Arm Bottom@230	L3 1/2x3 1/2x3/8	745	-16.62	74.67	22.3	Pass
							Summary	
						Leg (T2)	60.5	Pass
						Diagonal (T2)	49.4	Pass
						Horizontal (T16)	29.5	Pass
						Secondary Horizontal (T10)	0.0	Pass
						Top Girt (T2)	16.9	Pass
						Bottom Girt (T3)	12.7	Pass
						Guy A (T1)	39.8	Pass
						Guy B (T4)	41.8	Pass
						Guy C (T4)	42.2	Pass
						Top Guy Pull-Off (T7)	16.4	Pass
						Torque Arm Top (T4)	21.7	Pass
						Torque Arm Bottom (T1)	25.6	Pass
						Bolt Checks	37.1	Pass
						Rating =	60.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation (Structure)	0	25.2	Pass
1	Base Foundation (Soil Interaction)		61.2	Pass
1	Guy Anchor Shaft	0	75.7	Pass
1	Guy Anchor Foundation Structural		9.2	Pass
1	Guy Anchor Foundation Soil Interaction		22.9	Pass

Structure Rating (max from all components) =	75.7%*
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Notes:

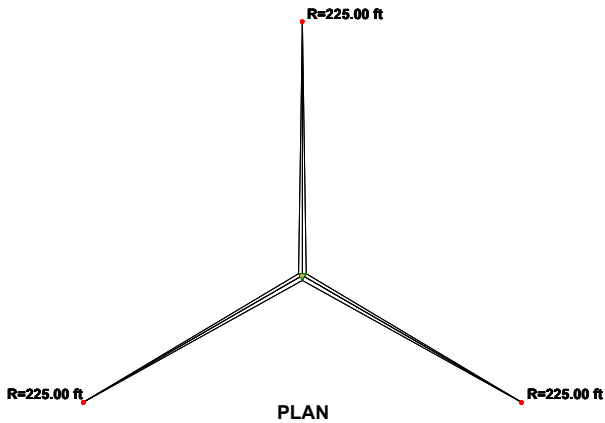
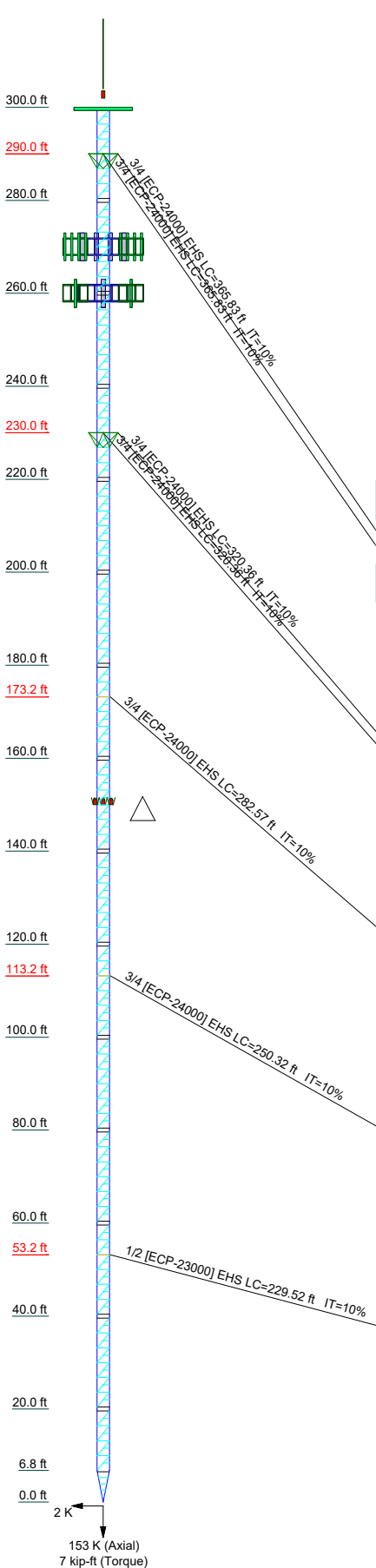
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) *Rating per TIA-222-H, Section 15.5.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 2 1/2		SR 2 1/2		SR 2 1/4		SR 2 1/4		SR 2 1/4		SR 2 1/2		SR 2 1/2		SR 2	
Leg Grade	SR 1 1/8		SR 1 1/8		SR 1 1/4		SR 1 1/4		SR 1 1/8		SR 1 3/8		SR 1 1/4		SR 1 1/8	
Diagonals	N.A.		N.A.		SR 1 1/8		SR 1 1/8		SR 1 1/8		SR 1 3/8		SR 1 1/4		SR 1 1/8	
Top Girts	A		SR 7/8		SR 1		SR 1		SR 7/8		SR 1		SR 1 1/4		SR 7/8	
Bottom Girts	N.A.		SR 7/8		SR 1		SR 1		SR 7/8		SR 1		SR 1 1/4		SR 7/8	
Horizontalis	A		SR 7/8		SR 1		SR 1		SR 7/8		SR 1		SR 1 1/4		SR 7/8	
Sec. Horizontalis	N.A.		2x3/8		N.A.		N.A.		2x3/8		N.A.		SR 3/4		N.A.	
Top Guy Pull-Offs	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		N.A.	
Face Width (ft)	B 4 @ 3.1914		B 4 @ 3.1914		B 4 @ 3.19271		B 4 @ 3.19271		B 4 @ 3.19271		B 4 @ 3.19271		B 4 @ 3.19271		B 4 @ 3.19271	
# Panels @ (ft)	21.6		21.6		21.6		21.6		21.6		21.6		21.6		21.6	
Weight (K)	21.6		21.6		21.6		21.6		21.6		21.6		21.6		21.6	



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L4x4x3/8	B	5 @ 1.30208

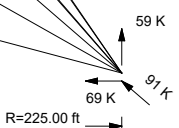
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Columbia County, Florida.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 60.5%

ALL REACTIONS ARE FACTORED





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Job: **CN12-319 / 2300001**

Project: **846221 / SE Lake City**

Client: Crown Castle USA	Drawn by: NN	App'd:
Code: TIA-222-H	Date: 03/16/23	Scale: NTS
Path: C:\Users\NNaidu\Desktop\Daily_Jobs\GTCN12-319\CN12-319 BU_846221 WO_2212446.dwg	Dwg No. E-1	

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 300.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 3.00 ft at the top and tapered at the base.

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

The following design criteria apply:

Tower is located in Columbia County, Florida.

Tower base elevation above sea level: 87.00 ft.

Basic wind speed of 119 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Deflections calculated using a wind speed of 60 mph.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Safety factor used in guy design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

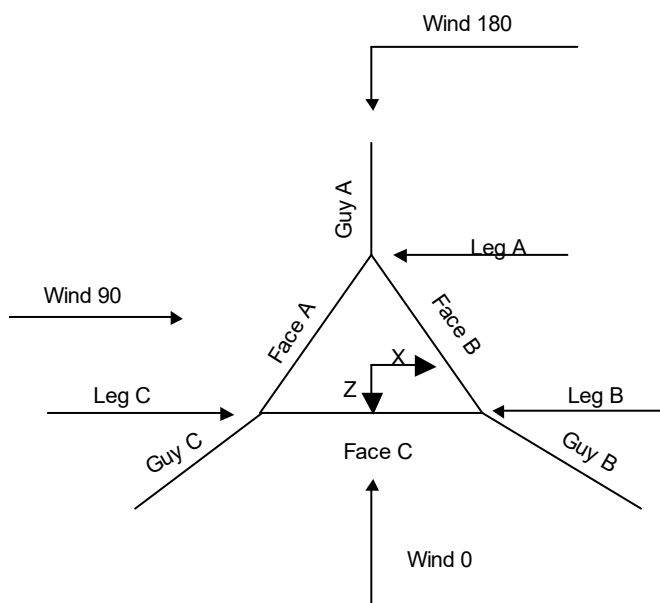
Load Modification Factors used: $K_{es}(F_w) = 0.95$.

Maximum demand-capacity ratio is: 1.05.

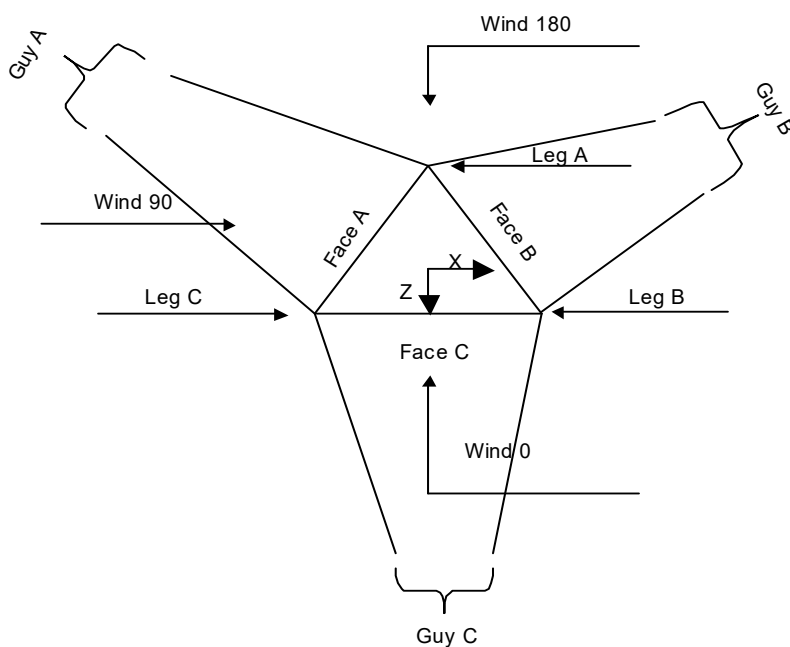
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	300.00-280.00			3.00	1	20.00
T2	280.00-260.00			3.00	1	20.00
T3	260.00-240.00			3.00	1	20.00
T4	240.00-220.00			3.00	1	20.00
T5	220.00-200.00			3.00	1	20.00
T6	200.00-180.00			3.00	1	20.00
T7	180.00-160.00			3.00	1	20.00
T8	160.00-140.00			3.00	1	20.00
T9	140.00-120.00			3.00	1	20.00
T10	120.00-100.00			3.00	1	20.00
T11	100.00-80.00			3.00	1	20.00
T12	80.00-60.00			3.00	1	20.00
T13	60.00-40.00			3.00	1	20.00
T14	40.00-20.00			3.00	1	20.00
T15	20.00-6.81			3.00	1	13.19
T16	6.81-0.00			3.00	1	6.81

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	300.00-280.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T2	280.00-260.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T3	260.00-240.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T4	240.00-220.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T5	220.00-200.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T6	200.00-180.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T7	180.00-160.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T8	160.00-140.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T9	140.00-120.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T10	120.00-100.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T11	100.00-80.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T12	80.00-60.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T13	60.00-40.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T14	40.00-20.00	3.19	Diag Up	No	Yes+Steps	5.0625	5.0625
T15	20.00-6.81	3.19	Diag Up	No	Yes+Steps	5.0625	0.0000
T16	6.81-0.00	1.30	X Brace	No	Yes	3.6250	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 300.00-280.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T2 280.00-260.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3 260.00-240.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T4 240.00-220.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T5 220.00-200.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T6 200.00-180.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T7 180.00-160.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T8 160.00-140.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T9 140.00-120.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T10 120.00-100.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 3/8	A36 (36 ksi)
T11 100.00-80.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T12 80.00-60.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T13 60.00-40.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T14 40.00-20.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T15 20.00-6.81	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T16 6.81-0.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 300.00-280.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 280.00-260.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 260.00-240.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T4 240.00-220.00	Solid Round	1 1/4	A36 (36 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T5 220.00-200.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 200.00-180.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 180.00-160.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 160.00-140.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 140.00-120.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 120.00-100.00	Solid Round	1	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 100.00-80.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 80.00-60.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 60.00-40.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 40.00-20.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T15 20.00-6.81	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T16 6.81-0.00	Equal Angle	L4x4x3/8	A36 (36 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 300.00-280.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T2 280.00-260.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 260.00-240.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T4 240.00-220.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T5 220.00-200.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 200.00-180.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T15 20.00-6.81	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T16 6.81-0.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 300.00-280.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 280.00-260.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 260.00-240.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 240.00-220.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 220.00-200.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 200.00-180.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 180.00-160.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 160.00-140.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 140.00-120.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 120.00-100.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 100.00-80.00	Solid Round	3/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 80.00-0.00	Solid Round	3/4	A36	Solid Round		A36

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
60.00			(36 ksi)			(36 ksi)
T13 60.00-40.00	Solid Round	3/4	A36	Solid Round		A36
T14 40.00-20.00	Solid Round	3/4	(36 ksi) A36	Solid Round		(36 ksi) A36
T15 20.00-6.81	Solid Round	3/4	(36 ksi) A36	Solid Round		(36 ksi) A572-50
			(36 ksi)			(50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 300.00-280.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T2 280.00-260.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T3 260.00-240.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T4 240.00-220.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T5 220.00-200.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T6 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T7 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T8 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T9 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T10 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T11 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T12 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T13 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T14 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T15 20.00-6.81	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000
T16 6.81-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	0.0000	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 300.00-280.00	No	Yes	1	1	1	1	1	1	1	1
T2 280.00-260.00	No	Yes	1	1	1	1	1	1	1	1
T3 260.00-240.00	No	Yes	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T4 240.00-220.00	No	Yes	1	1	1	1	1	1	1	1
T5 220.00-200.00	No	Yes	1	1	1	1	1	1	1	1
T6 200.00-180.00	No	Yes	1	1	1	1	1	1	1	1
T7 180.00-160.00	No	Yes	1	1	1	1	1	1	1	1
T8 160.00-140.00	No	Yes	1	1	1	1	1	1	1	1
T9 140.00-120.00	No	Yes	1	1	1	1	1	1	1	1
T10 120.00-100.00	No	Yes	1	1	1	1	1	1	1	1
T11 100.00-80.00	No	Yes	1	1	1	1	1	1	1	1
T12 80.00-60.00	No	Yes	1	1	1	1	1	1	1	1
T13 60.00-40.00	No	Yes	1	1	1	1	1	1	1	1
T14 40.00-20.00	No	Yes	1	1	1	1	1	1	1	1
T15 20.00-6.81	No	Yes	1	1	1	1	1	1	1	1
T16 6.81-0.00	Yes	Yes	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 300.00-280.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T2 280.00-260.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T3 260.00-240.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T4 240.00-220.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T5 220.00-200.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T6 200.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T7 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T8 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T9 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T10 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T11 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T12 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T13 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T14 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T15 20.00-6.81	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1
T16 6.81-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 300.00-280.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 280.00-260.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 260.00-240.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 240.00-220.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 220.00-200.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 200.00-180.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-6.81	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 6.81-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 300.00-280.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 280.00-260.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 260.00-240.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4 240.00-220.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T5 220.00- 200.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 200.00- 180.00	Flange	A325N	4	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0
T7 180.00- 160.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 160.00- 140.00	Flange	A325N	4	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0
T9 140.00- 120.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T10 120.00- 100.00	Flange	A325N	4	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0
T11 100.00- 80.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T12 80.00- 60.00	Flange	A325N	4	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0
T13 60.00- 40.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T14 40.00- 20.00	Flange	A325N	4	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0
T15 20.00- 6.81	Flange	0.0000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T16 6.81-0.00	Flange	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0	A325N	0

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L _u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
290	EHS	A 3/4 [ECP- B 24000] C 3/4 [ECP- 24000] 3/4 [ECP- 24000]	5.83 5.83 5.83	10% 10% 10%	24000 24000 24000	1.155 1.155 1.155	365.59 365.59 365.59	225.00 225.00 225.00	0.0000 0.0000 0.0000	0.00 0.00 0.00	100% 100% 100%
230	EHS	A 3/4 [ECP- B 24000] C 3/4 [ECP- 24000] 3/4 [ECP- 24000]	5.83 5.83 5.83	10% 10% 10%	24000 24000 24000	1.155 1.155 1.155	320.15 320.15 320.15	225.00 225.00 225.00	0.0000 0.0000 0.0000	0.00 0.00 0.00	100% 100% 100%
173.193	EHS	A 3/4 [ECP- B 24000] C 3/4 [ECP- 24000] 3/4 [ECP- 24000]	5.83 5.83 5.83	10% 10% 10%	24000 24000 24000	1.155 1.155 1.155	282.38 282.38 282.38	225.00 225.00 225.00	0.0000 0.0000 0.0000	0.00 0.00 0.00	100% 100% 100%
113.193	EHS	A 3/4 [ECP- B 24000] C 3/4 [ECP- 24000] 3/4 [ECP- 24000]	5.83 5.83 5.83	10% 10% 10%	24000 24000 24000	1.155 1.155 1.155	250.16 250.16 250.16	225.00 225.00 225.00	0.0000 0.0000 0.0000	0.00 0.00 0.00	100% 100% 100%
53.1927	EHS	A 1/2 [ECP- B 23000] C 1/2 [ECP- 23000] 1/2 [ECP- 23000]	2.69 2.69 2.69	10% 10% 10%	23000 23000 23000	0.517 0.517 0.517	229.35 229.35 229.35	225.00 225.00 225.00	0.0000 0.0000 0.0000	0.00 0.00 0.00	100% 100% 100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
290	Torque Arm	7.00	20.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x3/8
230	Torque Arm	7.00	20.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x3/8
173.193	Corner						
113.193	Corner						
53.1927	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
290.00	A36 (36 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
230.00	A36 (36 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
173.19	A36 (36 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
113.19	A36 (36 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
53.19	A36 (36 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
290	0.42	0.42	0.42		12.88 6.2 sec/pulse	12.88 6.2 sec/pulse	12.88 6.2 sec/pulse	
230	0.37	0.37	0.37		9.94 5.4 sec/pulse	9.94 5.4 sec/pulse	9.94 5.4 sec/pulse	
173.193	0.33	0.33	0.33		7.77 4.8 sec/pulse	7.77 4.8 sec/pulse	7.77 4.8 sec/pulse	
113.193	0.29	0.29	0.29		6.14 4.3 sec/pulse	6.14 4.3 sec/pulse	6.14 4.3 sec/pulse	
53.1927	0.12	0.12	0.12		5.03 3.9 sec/pulse	5.03 3.9 sec/pulse	5.03 3.9 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
290	No	No	1	1	0.7	0.7	1	1
230	No	No	1	1	0.7	0.7	1	1
173.193	No	No			0.7	0.7	1	1

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
113.193	No	No			0.7	0.7	1	1
53.1927	No	No			0.7	0.7	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
290	0.8750 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
230	0.8750 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
173.193	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
113.193	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75
53.1927	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
290	A	145.00	40		
	B	145.00	40		
	C	145.00	40		
230	A	115.00	38		
	B	115.00	38		
	C	115.00	38		
173.193	A	86.60	36		
	B	86.60	36		
	C	86.60	36		
113.193	A	56.60	33		
	B	56.60	33		
	C	56.60	33		
53.1927	A	26.60	28		
	B	26.60	28		
	C	26.60	28		

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F _x K	F _y K	F _z K	M _x kip-ft	M _y kip-ft	M _z kip-ft
290	A	52.4401	6.16 5.83	-0.06	4.96	-3.65	-10.03	12.90	-17.38
	A	52.4401	6.16 5.83	0.06	4.96	-3.65	-10.03	-12.90	17.38
	B	52.4401	6.16 5.83	3.19	4.96	1.78	20.07	12.90	0.00
	B	52.4401	6.16 5.83	3.14	4.96	1.88	-10.03	-12.90	-17.38
	C	52.4401	6.16 5.83	-3.14	4.96	1.88	-10.03	12.90	17.38

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
230	C	52.4401	6.16 5.83	-3.19	4.96	1.78	20.07	-12.90	0.00
			Sum:	0.00	29.79	0.00	-0.00	0.00	0.00
	A	45.8844	6.10 5.83	-0.07	4.47	-4.15	-9.02	14.65	-15.63
	A	45.8844	6.10 5.83	0.07	4.47	-4.15	-9.02	-14.65	15.63
	B	45.8844	6.10 5.83	3.63	4.47	2.02	18.05	14.65	0.00
	B	45.8844	6.10 5.83	3.56	4.47	2.13	-9.02	-14.65	-15.63
	C	45.8844	6.10 5.83	-3.56	4.47	2.13	-9.02	14.65	15.63
173.193	C	45.8844	6.10 5.83	-3.63	4.47	2.02	18.05	-14.65	0.00
			Sum:	0.00	26.79	0.00	-0.00	0.00	0.00
	A	37.8013	6.03 5.83	0.00	3.80	-4.68	-6.58	0.00	0.00
	B	37.8013	6.03 5.83	4.06	3.80	2.34	3.29	0.00	-5.70
	C	37.8013	6.03 5.83	-4.06	3.80	2.34	3.29	-0.00	5.70
			Sum:	0.00	11.39	0.00	0.00	0.00	0.00
	A	26.8842	5.96 5.83	0.00	2.81	-5.26	-4.87	0.00	0.00
113.193	B	26.8842	5.96 5.83	4.55	2.81	2.63	2.43	0.00	-4.22
	C	26.8842	5.96 5.83	-4.55	2.81	2.63	2.43	-0.00	4.22
			Sum:	0.00	8.43	0.00	0.00	0.00	0.00
	A	13.4007	2.72 2.69	0.00	0.69	-2.63	-1.19	0.00	0.00
	B	13.4007	2.72 2.69	2.28	0.69	1.31	0.59	0.00	-1.03
	C	13.4007	2.72 2.69	-2.28	0.69	1.31	0.59	0.00	1.03
			Sum:	0.00	2.06	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
290	A	52.4401	6.16 5.83	-0.06	4.96	-3.65	-10.03	12.90	-17.38
	A	52.4401	6.16 5.83	0.06	4.96	-3.65	-10.03	-12.90	17.38
	B	52.4401	6.16 5.83	3.19	4.96	1.78	20.07	12.90	0.00
	B	52.4401	6.16 5.83	3.14	4.96	1.88	-10.03	-12.90	-17.38
	C	52.4401	6.16 5.83	-3.14	4.96	1.88	-10.03	12.90	17.38
	C	52.4401	6.16 5.83	-3.19	4.96	1.78	20.07	-12.90	0.00
			Sum:	0.00	29.79	0.00	-0.00	0.00	0.00
230	A	45.8844	6.10 5.83	-0.07	4.47	-4.15	-9.02	14.65	-15.63
	A	45.8844	6.10 5.83	0.07	4.47	-4.15	-9.02	-14.65	15.63
	B	45.8844	6.10 5.83	3.63	4.47	2.02	18.05	14.65	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F _x	F _y	F _z	M _x	M _y	M _z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
173.193	B	45.8844	6.10 5.83	3.56	4.47	2.13	-9.02	-14.65	-15.63
	C	45.8844	6.10 5.83	-3.56	4.47	2.13	-9.02	14.65	15.63
	C	45.8844	6.10 5.83	-3.63	4.47	2.02	18.05	-14.65	0.00
	Sum:			0.00	26.79	0.00	-0.00	0.00	0.00
	A	37.8013	6.03 5.83	0.00	3.80	-4.68	-6.58	0.00	0.00
	B	37.8013	6.03 5.83	4.06	3.80	2.34	3.29	0.00	-5.70
113.193	C	37.8013	6.03 5.83	-4.06	3.80	2.34	3.29	-0.00	5.70
	Sum:			0.00	11.39	0.00	0.00	0.00	0.00
	A	26.8842	5.96 5.83	0.00	2.81	-5.26	-4.87	0.00	0.00
	B	26.8842	5.96 5.83	4.55	2.81	2.63	2.43	0.00	-4.22
	C	26.8842	5.96 5.83	-4.55	2.81	2.63	2.43	-0.00	4.22
	Sum:			0.00	8.43	0.00	0.00	0.00	0.00
53.1927	A	13.4007	2.72 2.69	0.00	0.69	-2.63	-1.19	0.00	0.00
	B	13.4007	2.72 2.69	2.28	0.69	1.31	0.59	0.00	-1.03
	C	13.4007	2.72 2.69	-2.28	0.69	1.31	0.59	0.00	1.03
	Sum:			0.00	2.06	0.00	0.00	0.00	0.00

Guy-Tensioning Information

Temperature At Time Of Tensioning																	
Guy Elevation	H	V	0 F		20 F		40 F		60 F		80 F		100 F		120 F		
			Initial	Intercept	Initial	Intercept	Initial	Intercept	Initial	Intercept	Initial	Intercept	Initial	Intercept	Initial	Intercept	
			Tension		Tension		Tension		Tension		Tension		Tension		Tension		
ft	ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	
290	A	223.01	290.00	6.835	11.03	6.493	11.60	6.157	12.21	5.830	12.88	5.512	13.61	5.204	14.39	4.907	15.23
	B	223.01	290.00	6.835	11.03	6.493	11.60	6.157	12.21	5.830	12.88	5.512	13.61	5.204	14.39	4.907	15.23
	C	223.01	290.00	6.835	11.03	6.493	11.60	6.157	12.21	5.830	12.88	5.512	13.61	5.204	14.39	4.907	15.23
230	A	223.01	230.00	7.151	8.13	6.699	8.67	6.258	9.27	5.830	9.94	5.418	10.68	5.024	11.49	4.652	12.39
	B	223.01	230.00	7.151	8.13	6.699	8.67	6.258	9.27	5.830	9.94	5.418	10.68	5.024	11.49	4.652	12.39
	C	223.01	230.00	7.151	8.13	6.699	8.67	6.258	9.27	5.830	9.94	5.418	10.68	5.024	11.49	4.652	12.39
173.193	A	223.27	173.19	7.542	6.03	6.953	6.53	6.381	7.11	5.830	7.77	5.305	8.53	4.812	9.39	4.357	10.35
	B	223.27	173.19	7.542	6.03	6.953	6.53	6.381	7.11	5.830	7.77	5.305	8.53	4.812	9.39	4.357	10.35
	C	223.27	173.19	7.542	6.03	6.953	6.53	6.381	7.11	5.830	7.77	5.305	8.53	4.812	9.39	4.357	10.35
113.193	A	223.27	113.19	8.031	4.47	7.271	4.93	6.534	5.48	5.830	6.14	5.169	6.91	4.562	7.82	4.023	8.85
	B	223.27	113.19	8.031	4.47	7.271	4.93	6.534	5.48	5.830	6.14	5.169	6.91	4.562	7.82	4.023	8.85
	C	223.27	113.19	8.031	4.47	7.271	4.93	6.534	5.48	5.830	6.14	5.169	6.91	4.562	7.82	4.023	8.85
53.1927	A	223.27	53.19	3.830	3.54	3.437	3.94	3.056	4.43	2.690	5.03	2.347	5.77	2.036	6.64	1.763	7.67
	B	223.27	53.19	3.830	3.54	3.437	3.94	3.056	4.43	2.690	5.03	2.347	5.77	2.036	6.64	1.763	7.67
	C	223.27	53.19	3.830	3.54	3.437	3.94	3.056	4.43	2.690	5.03	2.347	5.77	2.036	6.64	1.763	7.67

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*** misc ***													
Safety Line 3/8	C	No	No	Ar (CaAa)	300.00 - 7.00	0.0000	-0.3	1	1	0.3750	0.3750		0.22
1/2" Light Cable	A	No	No	Ar (CaAa)	300.00 - 7.00	0.0000	0.49	1	1	0.8500 0.7500	0.5800		0.25
1/2" Light Cable	B	No	No	Ar (CaAa)	300.00 - 7.00	0.0000	-0.49	1	1	0.8500 0.7500	0.5800		0.25

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
waveguide bracket	A	No	No	Af (CaAa)	300.00 - 7.00	0.0000	0	1	1	1.7500	1.7500		1.27
waveguide bracket	B	No	No	Af (CaAa)	300.00 - 7.00	0.0000	0	1	1	1.7500	1.7500		1.27

ATCB-B01(5/16)	A	No	No	Ar (CaAa)	270.00 - 7.00	1.0000	-0.03	2	2	0.3150	0.3150		0.07
LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	270.00 - 7.00	0.0000	0.2	6	6	0.5000	1.9800		0.82
FB-L98-002-XXX(3/8)	A	No	No	Ar (CaAa)	270.00 - 7.00	2.0000	-0.03	1	1	0.3937	0.3937		0.06
WR-VG86ST-BRD(3/4)	A	No	No	Ar (CaAa)	270.00 - 7.00	0.0000	-0.03	2	2	0.5000	0.7950		0.58
LDF7-50A(1-5/8)	B	No	No	Ar (CaAa)	270.00 - 7.00	0.0000	0.07	12	8	0.5000	1.9800		0.82
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	270.00 - 7.00	0.0000	0.35	4	1	0.5000	0.7950		0.58
FB-L98B-002-XXX(3/8)	B	No	No	Ar (CaAa)	270.00 - 7.00	0.0000	0.37	2	1	0.3937	0.3937		0.06
ATCB-B01(5/16)	B	No	No	Ar (CaAa)	270.00 - 7.00	2.0000	0.37	1	1	0.3150	0.3150		0.07

HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Ar (CaAa)	260.00 - 7.00	0.0000	0	2	2	0.5000	1.9960		2.50

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	300.00-280.00	A	0.000	0.000	6.993	0.000	0.03
		B	0.000	0.000	6.993	0.000	0.03
		C	0.000	0.000	0.750	0.000	0.00
T2	280.00-260.00	A	0.000	0.000	21.487	0.000	0.09
		B	0.000	0.000	35.036	0.000	0.15
		C	0.000	0.000	0.750	0.000	0.00
T3	260.00-240.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T4	240.00-220.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T5	220.00-200.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T6	200.00-180.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T7	180.00-160.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T8	160.00-140.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T9	140.00-120.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
		C	0.000	0.000	8.734	0.000	0.10
T10	120.00-100.00	A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T11	100.00-80.00	C	0.000	0.000	8.734	0.000	0.10
		A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
T12	80.00-60.00	C	0.000	0.000	8.734	0.000	0.10
		A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
T13	60.00-40.00	C	0.000	0.000	8.734	0.000	0.10
		A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
T14	40.00-20.00	C	0.000	0.000	8.734	0.000	0.10
		A	0.000	0.000	35.981	0.000	0.16
		B	0.000	0.000	63.078	0.000	0.28
T15	20.00-6.81	C	0.000	0.000	8.734	0.000	0.10
		A	0.000	0.000	23.387	0.000	0.10
		B	0.000	0.000	41.001	0.000	0.18
T16	6.81-0.00	C	0.000	0.000	5.677	0.000	0.07
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	300.00-280.00	0.2302	-1.9532	0.2302	-1.9532
T2	280.00-260.00	2.4679	-3.9127	2.4679	-3.9127
T3	260.00-240.00	3.0554	-3.8314	3.0554	-3.8314
T4	240.00-220.00	2.9231	-3.7044	2.9231	-3.7044
T5	220.00-200.00	3.0312	-3.8084	3.0312	-3.8084
T6	200.00-180.00	3.0140	-3.7920	3.0140	-3.7920
T7	180.00-160.00	2.9557	-3.7453	2.9557	-3.7453
T8	160.00-140.00	3.0488	-3.8251	3.0488	-3.8251
T9	140.00-120.00	3.0312	-3.8084	3.0312	-3.8084
T10	120.00-100.00	2.9429	-3.7329	2.9429	-3.7329
T11	100.00-80.00	3.0312	-3.8084	3.0312	-3.8084
T12	80.00-60.00	3.0488	-3.8251	3.0488	-3.8251
T13	60.00-40.00	2.9884	-3.7770	2.9884	-3.7770
T14	40.00-20.00	2.9937	-3.7725	2.9937	-3.7725
T15	20.00-6.81	2.9896	-3.7686	2.9896	-3.7686
T16	6.81-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	280.00 - 300.00	0.6000	0.6000
T1	3	1/2" Light Cable	280.00 - 300.00	0.6000	0.6000
T1	4	1/2" Light Cable	280.00 - 300.00	0.6000	0.6000
T1	5	waveguide bracket	280.00 - 300.00	0.6000	0.6000
T1	6	waveguide bracket	280.00 - 300.00	0.6000	0.6000
T2	2	Safety Line 3/8	260.00 - 280.00	0.6000	0.6000
T2	3	1/2" Light Cable	260.00 - 280.00	0.6000	0.6000
T2	4	1/2" Light Cable	260.00 - 280.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T2	5	waveguide bracket	260.00 - 280.00	0.6000	0.6000
T2	6	waveguide bracket	260.00 - 280.00	0.6000	0.6000
T2	8	ATCB-B01(5/16)	260.00 - 270.00	0.6000	0.6000
T2	9	LDF7-50A(1-5/8)	260.00 - 270.00	0.6000	0.6000
T2	10	FB-L98-002-XXX(3/8)	260.00 - 270.00	0.6000	0.6000
T2	11	WR-VG86ST-BRD(3/4)	260.00 - 270.00	0.6000	0.6000
T2	12	LDF7-50A(1-5/8)	260.00 - 270.00	0.6000	0.6000
T2	13	WR-VG86ST-BRD(3/4)	260.00 - 270.00	0.6000	0.6000
T2	14	FB-L98B-002-XXX(3/8)	260.00 - 270.00	0.6000	0.6000
T2	15	ATCB-B01(5/16)	260.00 - 270.00	0.6000	0.6000
T3	2	Safety Line 3/8	240.00 - 260.00	0.6000	0.6000
T3	3	1/2" Light Cable	240.00 - 260.00	0.6000	0.6000
T3	4	1/2" Light Cable	240.00 - 260.00	0.6000	0.6000
T3	5	waveguide bracket	240.00 - 260.00	0.6000	0.6000
T3	6	waveguide bracket	240.00 - 260.00	0.6000	0.6000
T3	8	ATCB-B01(5/16)	240.00 - 260.00	0.6000	0.6000
T3	9	LDF7-50A(1-5/8)	240.00 - 260.00	0.6000	0.6000
T3	10	FB-L98-002-XXX(3/8)	240.00 - 260.00	0.6000	0.6000
T3	11	WR-VG86ST-BRD(3/4)	240.00 - 260.00	0.6000	0.6000
T3	12	LDF7-50A(1-5/8)	240.00 - 260.00	0.6000	0.6000
T3	13	WR-VG86ST-BRD(3/4)	240.00 - 260.00	0.6000	0.6000
T3	14	FB-L98B-002-XXX(3/8)	240.00 - 260.00	0.6000	0.6000
T3	15	ATCB-B01(5/16)	240.00 - 260.00	0.6000	0.6000
T3	17	HB158-21U6S24- xxM_TMO(1-5/8)	240.00 - 260.00	0.6000	0.6000
T4	2	Safety Line 3/8	220.00 - 240.00	0.6000	0.6000
T4	3	1/2" Light Cable	220.00 - 240.00	0.6000	0.6000
T4	4	1/2" Light Cable	220.00 - 240.00	0.6000	0.6000
T4	5	waveguide bracket	220.00 - 240.00	0.6000	0.6000
T4	6	waveguide bracket	220.00 - 240.00	0.6000	0.6000
T4	8	ATCB-B01(5/16)	220.00 - 240.00	0.6000	0.6000
T4	9	LDF7-50A(1-5/8)	220.00 - 240.00	0.6000	0.6000
T4	10	FB-L98-002-XXX(3/8)	220.00 - 240.00	0.6000	0.6000
T4	11	WR-VG86ST-BRD(3/4)	220.00 - 240.00	0.6000	0.6000
T4	12	LDF7-50A(1-5/8)	220.00 - 240.00	0.6000	0.6000
T4	13	WR-VG86ST-BRD(3/4)	220.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T4	14	FB-L98B-002-XXX(3/8)	240.00 220.00 -	0.6000	0.6000
T4	15	ATCB-B01(5/16)	240.00 220.00 -	0.6000	0.6000
T4	17	HB158-21U6S24-xxM_TMO(1-5/8)	240.00 220.00 -	0.6000	0.6000
T5	2	Safety Line 3/8	240.00 200.00 -	0.6000	0.6000
T5	3	1/2" Light Cable	220.00 200.00 -	0.6000	0.6000
T5	4	1/2" Light Cable	220.00 200.00 -	0.6000	0.6000
T5	5	waveguide bracket	220.00 200.00 -	0.6000	0.6000
T5	6	waveguide bracket	220.00 200.00 -	0.6000	0.6000
T5	8	ATCB-B01(5/16)	220.00 200.00 -	0.6000	0.6000
T5	9	LDF7-50A(1-5/8)	220.00 200.00 -	0.6000	0.6000
T5	10	FB-L98-002-XXX(3/8)	220.00 200.00 -	0.6000	0.6000
T5	11	WR-VG86ST-BRD(3/4)	220.00 200.00 -	0.6000	0.6000
T5	12	LDF7-50A(1-5/8)	220.00 200.00 -	0.6000	0.6000
T5	13	WR-VG86ST-BRD(3/4)	220.00 200.00 -	0.6000	0.6000
T5	14	FB-L98B-002-XXX(3/8)	220.00 200.00 -	0.6000	0.6000
T5	15	ATCB-B01(5/16)	220.00 200.00 -	0.6000	0.6000
T5	17	HB158-21U6S24-xxM_TMO(1-5/8)	220.00 200.00 -	0.6000	0.6000
T6	2	Safety Line 3/8	200.00 180.00 -	0.6000	0.6000
T6	3	1/2" Light Cable	200.00 180.00 -	0.6000	0.6000
T6	4	1/2" Light Cable	200.00 180.00 -	0.6000	0.6000
T6	5	waveguide bracket	200.00 180.00 -	0.6000	0.6000
T6	6	waveguide bracket	200.00 180.00 -	0.6000	0.6000
T6	8	ATCB-B01(5/16)	200.00 180.00 -	0.6000	0.6000
T6	9	LDF7-50A(1-5/8)	200.00 180.00 -	0.6000	0.6000
T6	10	FB-L98-002-XXX(3/8)	200.00 180.00 -	0.6000	0.6000
T6	11	WR-VG86ST-BRD(3/4)	200.00 180.00 -	0.6000	0.6000
T6	12	LDF7-50A(1-5/8)	200.00 180.00 -	0.6000	0.6000
T6	13	WR-VG86ST-BRD(3/4)	200.00 180.00 -	0.6000	0.6000
T6	14	FB-L98B-002-XXX(3/8)	200.00 180.00 -	0.6000	0.6000
T6	15	ATCB-B01(5/16)	200.00 180.00 -	0.6000	0.6000
T6	17	HB158-21U6S24-xxM_TMO(1-5/8)	200.00 180.00 -	0.6000	0.6000
T7	2	Safety Line 3/8	180.00 160.00 -	0.6000	0.6000
T7	3	1/2" Light Cable	180.00 160.00 -	0.6000	0.6000
T7	4	1/2" Light Cable	180.00 160.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T7	5	waveguide bracket	160.00 - 180.00	0.6000	0.6000
T7	6	waveguide bracket	160.00 - 180.00	0.6000	0.6000
T7	8	ATCB-B01(5/16)	160.00 - 180.00	0.6000	0.6000
T7	9	LDF7-50A(1-5/8)	160.00 - 180.00	0.6000	0.6000
T7	10	FB-L98-002-XXX(3/8)	160.00 - 180.00	0.6000	0.6000
T7	11	WR-VG86ST-BRD(3/4)	160.00 - 180.00	0.6000	0.6000
T7	12	LDF7-50A(1-5/8)	160.00 - 180.00	0.6000	0.6000
T7	13	WR-VG86ST-BRD(3/4)	160.00 - 180.00	0.6000	0.6000
T7	14	FB-L98B-002-XXX(3/8)	160.00 - 180.00	0.6000	0.6000
T7	15	ATCB-B01(5/16)	160.00 - 180.00	0.6000	0.6000
T7	17	HB158-21U6S24- xxM_TMO(1-5/8)	160.00 - 180.00	0.6000	0.6000
T8	2	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T8	3	1/2" Light Cable	140.00 - 160.00	0.6000	0.6000
T8	4	1/2" Light Cable	140.00 - 160.00	0.6000	0.6000
T8	5	waveguide bracket	140.00 - 160.00	0.6000	0.6000
T8	6	waveguide bracket	140.00 - 160.00	0.6000	0.6000
T8	8	ATCB-B01(5/16)	140.00 - 160.00	0.6000	0.6000
T8	9	LDF7-50A(1-5/8)	140.00 - 160.00	0.6000	0.6000
T8	10	FB-L98-002-XXX(3/8)	140.00 - 160.00	0.6000	0.6000
T8	11	WR-VG86ST-BRD(3/4)	140.00 - 160.00	0.6000	0.6000
T8	12	LDF7-50A(1-5/8)	140.00 - 160.00	0.6000	0.6000
T8	13	WR-VG86ST-BRD(3/4)	140.00 - 160.00	0.6000	0.6000
T8	14	FB-L98B-002-XXX(3/8)	140.00 - 160.00	0.6000	0.6000
T8	15	ATCB-B01(5/16)	140.00 - 160.00	0.6000	0.6000
T8	17	HB158-21U6S24- xxM_TMO(1-5/8)	140.00 - 160.00	0.6000	0.6000
T9	2	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T9	3	1/2" Light Cable	120.00 - 140.00	0.6000	0.6000
T9	4	1/2" Light Cable	120.00 - 140.00	0.6000	0.6000
T9	5	waveguide bracket	120.00 - 140.00	0.6000	0.6000
T9	6	waveguide bracket	120.00 - 140.00	0.6000	0.6000
T9	8	ATCB-B01(5/16)	120.00 - 140.00	0.6000	0.6000
T9	9	LDF7-50A(1-5/8)	120.00 - 140.00	0.6000	0.6000
T9	10	FB-L98-002-XXX(3/8)	120.00 - 140.00	0.6000	0.6000
T9	11	WR-VG86ST-BRD(3/4)	120.00 - 140.00	0.6000	0.6000
T9	12	LDF7-50A(1-5/8)	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T9	13	WR-VG86ST-BRD(3/4)	140.00 120.00 -	0.6000	0.6000
T9	14	FB-L98B-002-XXX(3/8)	140.00 120.00 -	0.6000	0.6000
T9	15	ATCB-B01(5/16)	140.00 120.00 -	0.6000	0.6000
T9	17	HB158-21U6S24-xxM_TMO(1-5/8)	140.00 120.00 -	0.6000	0.6000
T10	2	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T10	3	1/2" Light Cable	100.00 - 120.00	0.6000	0.6000
T10	4	1/2" Light Cable	100.00 - 120.00	0.6000	0.6000
T10	5	waveguide bracket	100.00 - 120.00	0.6000	0.6000
T10	6	waveguide bracket	100.00 - 120.00	0.6000	0.6000
T10	8	ATCB-B01(5/16)	100.00 - 120.00	0.6000	0.6000
T10	9	LDF7-50A(1-5/8)	100.00 - 120.00	0.6000	0.6000
T10	10	FB-L98-002-XXX(3/8)	100.00 - 120.00	0.6000	0.6000
T10	11	WR-VG86ST-BRD(3/4)	100.00 - 120.00	0.6000	0.6000
T10	12	LDF7-50A(1-5/8)	100.00 - 120.00	0.6000	0.6000
T10	13	WR-VG86ST-BRD(3/4)	100.00 - 120.00	0.6000	0.6000
T10	14	FB-L98B-002-XXX(3/8)	100.00 - 120.00	0.6000	0.6000
T10	15	ATCB-B01(5/16)	100.00 - 120.00	0.6000	0.6000
T10	17	HB158-21U6S24-xxM_TMO(1-5/8)	100.00 - 120.00	0.6000	0.6000
T11	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T11	3	1/2" Light Cable	80.00 - 100.00	0.6000	0.6000
T11	4	1/2" Light Cable	80.00 - 100.00	0.6000	0.6000
T11	5	waveguide bracket	80.00 - 100.00	0.6000	0.6000
T11	6	waveguide bracket	80.00 - 100.00	0.6000	0.6000
T11	8	ATCB-B01(5/16)	80.00 - 100.00	0.6000	0.6000
T11	9	LDF7-50A(1-5/8)	80.00 - 100.00	0.6000	0.6000
T11	10	FB-L98-002-XXX(3/8)	80.00 - 100.00	0.6000	0.6000
T11	11	WR-VG86ST-BRD(3/4)	80.00 - 100.00	0.6000	0.6000
T11	12	LDF7-50A(1-5/8)	80.00 - 100.00	0.6000	0.6000
T11	13	WR-VG86ST-BRD(3/4)	80.00 - 100.00	0.6000	0.6000
T11	14	FB-L98B-002-XXX(3/8)	80.00 - 100.00	0.6000	0.6000
T11	15	ATCB-B01(5/16)	80.00 - 100.00	0.6000	0.6000
T11	17	HB158-21U6S24-xxM_TMO(1-5/8)	80.00 - 100.00	0.6000	0.6000
T12	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T12	3	1/2" Light Cable	60.00 - 80.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T12	4	1/2" Light Cable	60.00 - 80.00	0.6000	0.6000
T12	5	waveguide bracket	60.00 - 80.00	0.6000	0.6000
T12	6	waveguide bracket	60.00 - 80.00	0.6000	0.6000
T12	8	ATCB-B01(5/16)	60.00 - 80.00	0.6000	0.6000
T12	9	LDF7-50A(1-5/8)	60.00 - 80.00	0.6000	0.6000
T12	10	FB-L98-002-XXX(3/8)	60.00 - 80.00	0.6000	0.6000
T12	11	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.6000
T12	12	LDF7-50A(1-5/8)	60.00 - 80.00	0.6000	0.6000
T12	13	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.6000
T12	14	FB-L98B-002-XXX(3/8)	60.00 - 80.00	0.6000	0.6000
T12	15	ATCB-B01(5/16)	60.00 - 80.00	0.6000	0.6000
T12	17	HB158-21U6S24-xxM_TMO(1-5/8)	60.00 - 80.00	0.6000	0.6000
T13	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T13	3	1/2" Light Cable	40.00 - 60.00	0.6000	0.6000
T13	4	1/2" Light Cable	40.00 - 60.00	0.6000	0.6000
T13	5	waveguide bracket	40.00 - 60.00	0.6000	0.6000
T13	6	waveguide bracket	40.00 - 60.00	0.6000	0.6000
T13	8	ATCB-B01(5/16)	40.00 - 60.00	0.6000	0.6000
T13	9	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T13	10	FB-L98-002-XXX(3/8)	40.00 - 60.00	0.6000	0.6000
T13	11	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T13	12	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T13	13	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T13	14	FB-L98B-002-XXX(3/8)	40.00 - 60.00	0.6000	0.6000
T13	15	ATCB-B01(5/16)	40.00 - 60.00	0.6000	0.6000
T13	17	HB158-21U6S24-xxM_TMO(1-5/8)	40.00 - 60.00	0.6000	0.6000
T14	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T14	3	1/2" Light Cable	20.00 - 40.00	0.6000	0.6000
T14	4	1/2" Light Cable	20.00 - 40.00	0.6000	0.6000
T14	5	waveguide bracket	20.00 - 40.00	0.6000	0.6000
T14	6	waveguide bracket	20.00 - 40.00	0.6000	0.6000
T14	8	ATCB-B01(5/16)	20.00 - 40.00	0.6000	0.6000
T14	9	LDF7-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T14	10	FB-L98-002-XXX(3/8)	20.00 - 40.00	0.6000	0.6000
T14	11	WR-VG86ST-BRD(3/4)	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T14	12	LDF7-50A(1-5/8)	40.00 20.00 - 40.00	0.6000	0.6000
T14	13	WR-VG86ST-BRD(3/4)	40.00 20.00 - 40.00	0.6000	0.6000
T14	14	FB-L98B-002-XXX(3/8)	40.00 20.00 - 40.00	0.6000	0.6000
T14	15	ATCB-B01(5/16)	40.00 20.00 - 40.00	0.6000	0.6000
T14	17	HB158-21U6S24-xxM_TMO(1-5/8)	20.00 - 40.00	0.6000	0.6000
T15	2	Safety Line 3/8	7.00 - 20.00	0.6000	0.6000
T15	3	1/2" Light Cable	7.00 - 20.00	0.6000	0.6000
T15	4	1/2" Light Cable	7.00 - 20.00	0.6000	0.6000
T15	5	waveguide bracket	7.00 - 20.00	0.6000	0.6000
T15	6	waveguide bracket	7.00 - 20.00	0.6000	0.6000
T15	8	ATCB-B01(5/16)	7.00 - 20.00	0.6000	0.6000
T15	9	LDF7-50A(1-5/8)	7.00 - 20.00	0.6000	0.6000
T15	10	FB-L98-002-XXX(3/8)	7.00 - 20.00	0.6000	0.6000
T15	11	WR-VG86ST-BRD(3/4)	7.00 - 20.00	0.6000	0.6000
T15	12	LDF7-50A(1-5/8)	7.00 - 20.00	0.6000	0.6000
T15	13	WR-VG86ST-BRD(3/4)	7.00 - 20.00	0.6000	0.6000
T15	14	FB-L98B-002-XXX(3/8)	7.00 - 20.00	0.6000	0.6000
T15	15	ATCB-B01(5/16)	7.00 - 20.00	0.6000	0.6000
T15	17	HB158-21U6S24-xxM_TMO(1-5/8)	7.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Flash Beacon Lighting	A	From Leg	0.00 0.00 2.00	0.0000	300.00	No Ice	2.70	2.70	0.05
Lightning Rod 5/8" x 3' on 10' Pole	C	From Face	0.00 0.00 11.50	0.0000	300.00	No Ice	2.56	2.56	0.05
Side Light	A	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice	0.26	0.26	0.01
Side Light	B	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice	0.26	0.26	0.01
Side Light	C	From Leg	0.50 0.00 0.00	0.0000	150.00	No Ice	0.26	0.26	0.01
***** Platform Mount [LP 601-1] *****	C	None		0.0000	300.00	No Ice	28.50	28.50	1.12
DBXLH-9090C-R2M w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	14.06	6.70	0.10
DBXLH-9090C-R2M w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	14.06	6.70	0.10
DBXLH-9090C-R2M w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	14.06	6.70	0.10
NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	7.55	4.23	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	7.55	4.23	0.11
NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	7.55	4.23	0.11
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	60.0000	270.00	No Ice	4.09	3.30	0.07
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	70.0000	270.00	No Ice	4.09	3.30	0.07
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	60.0000	270.00	No Ice	4.09	3.30	0.07
NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	60.0000	270.00	No Ice	7.55	4.23	0.11
NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	70.0000	270.00	No Ice	7.55	4.23	0.11
NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	70.0000	270.00	No Ice	7.55	4.23	0.11
(2) E15Z01P06	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	1.31	0.34	0.02
(2) E15Z01P06	B	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	1.31	0.34	0.02
(2) E15Z01P06	C	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	1.31	0.34	0.02
(2) CBC819-DF	A	From Leg	4.00 0.00 0.00	0.0000	270.00	No Ice	0.45	0.07	0.00
(2) CBC819-DF	B	From Leg	4.00 0.00 0.00	0.0000	270.00	No Ice	0.45	0.07	0.00
(2) CBC819-DF	C	From Leg	4.00 0.00 0.00	0.0000	270.00	No Ice	0.45	0.07	0.00
(2) RRUS 11	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.78	1.19	0.05
(2) RRUS 11	B	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.78	1.19	0.05
(2) RRUS 11	C	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.78	1.19	0.05
RRUS 32 B30	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.69	1.57	0.06
RRUS 32 B30	B	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.69	1.57	0.06
RRUS 32 B30	C	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	2.69	1.57	0.06
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	270.00	No Ice	0.92	0.92	0.02
DC6-48-60-18-8F	B	From Leg	4.00 0.00	0.0000	270.00	No Ice	0.92	0.92	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
RRUS 4478 B14	A	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
RRUS 4478 B14	B	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
RRUS 4478 B14	C	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
RRUS 4426 B66	A	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.64	0.73	0.05
RRUS 4426 B66	B	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.64	0.73	0.05
RRUS 4426 B66	C	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.64	0.73	0.05
RRUS 4478 B5	A	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
RRUS 4478 B5	B	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
RRUS 4478 B5	C	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	1.84	1.06	0.06
DC6-48-60-18-8C	C	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	2.74	2.74	0.03
10' x 2" Mount Pipe	A	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	2.38	2.38	0.04
10' x 2" Mount Pipe	B	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	2.38	2.38	0.04
10' x 2" Mount Pipe	C	From Leg	2.00 4.00 0.00	0.0000	270.00	No Ice	2.38	2.38	0.04
Sector Mount [SM 502-3] *****	C	None	2.00	0.0000	270.00	No Ice	29.82	29.82	1.67
FFVV-65C-R3-V1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	20.0000	260.00	No Ice	12.97	6.20	0.16
FFVV-65C-R3-V1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	12.97	6.20	0.16
FFVV-65C-R3-V1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	5.0000	260.00	No Ice	12.97	6.20	0.16
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	2.14	1.69	0.11
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	2.14	1.69	0.11
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	2.14	1.69	0.11
Radio 4480_TMOV2	A	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	2.88	1.40	0.08
Radio 4480_TMOV2	B	From Leg	4.00 0.00 0.00	0.0000	260.00	No Ice	2.88	1.40	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Radio 4480_TMOV2	C	From Leg	0.00 4.00 0.00 0.00	0.0000	260.00	No Ice	2.88	1.40	0.08
12' V-Boom Mount [#C10857111]	A	From Leg	2.00 0.00 0.00	0.0000	260.00	No Ice	15.40	11.11	0.51
12' V-Boom Mount [#C10857111]	B	From Leg	2.00 0.00 0.00	0.0000	260.00	No Ice	15.40	11.11	0.51
12' V-Boom Mount [#C10857111]	C	From Leg	2.00 0.00 0.00	0.0000	260.00	No Ice	15.40	11.11	0.51

Load Combinations

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

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
T1	300 - 280	Leg	Max Tension	10	10.95	0.61	-0.61
			Max. Compression	4	-41.57	0.02	0.00
			Max. Mx	11	-11.61	1.10	0.02
			Max. My	2	-26.48	-0.11	0.91
			Max. Vy	11	2.63	1.10	0.02
			Max. Vx	2	2.18	-0.11	0.91
		Diagonal	Max Tension	11	5.33	0.00	0.00
			Max. Compression	13	-7.75	0.00	0.00
			Max. Mx	11	5.33	0.01	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	280 - 260	Horizontal	Max. My	11	-2.07	0.00	-0.00
			Max. Vy	11	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	5.19	0.00	0.00
			Max. Compression	4	-3.64	0.00	0.00
			Max. Mx	4	1.09	0.00	0.00
			Max. My	11	-3.25	0.00	0.00
			Max. Vy	4	-0.01	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
			Max Tension	11	0.00	-0.00	-0.00
		Secondary Horizontal	Max. Compression	5	-0.00	-0.00	-0.00
			Max. Mx	9	0.00	-0.00	0.00
			Max. My	11	0.00	-0.00	-0.00
			Max. Vy	9	0.00	-0.00	0.00
			Max. Vx	5	0.00	-0.00	-0.00
			Max Tension	4	0.64	0.00	0.00
			Max. Compression	10	-0.64	0.00	0.00
			Max. Mx	4	-0.29	0.00	0.00
			Max. My	11	0.52	0.00	0.00
			Max. Vy	4	-0.01	0.00	0.00
		Top Girt	Max. Vx	11	-0.00	0.00	0.00
			Max Tension	12	3.33	0.00	0.00
			Max. Compression	6	-2.00	0.00	0.00
			Max. Mx	10	1.70	0.00	0.00
			Max. My	11	-1.25	0.00	0.00
			Max. Vy	10	-0.01	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
			Bottom Tension	8	14.27		
			Top Tension	8	14.60		
			Top Cable Vert	8	11.81		
		Bottom Girt	Top Cable Norm	8	8.58		
			Top Cable Tan	8	0.01		
			Bot Cable Vert	8	-11.04		
			Bot Cable Norm	8	9.04		
			Bot Cable Tan	8	0.01		
			Bottom Tension	12	14.59		
			Top Tension	12	14.92		
			Top Cable Vert	12	12.07		
			Top Cable Norm	12	8.78		
			Top Cable Tan	12	0.01		
		Guy A	Bot Cable Vert	12	-11.29		
			Bot Cable Norm	12	9.24		
			Bot Cable Tan	12	0.01		
			Bottom Tension	4	14.59		
			Top Tension	4	14.92		
			Top Cable Vert	4	12.07		
			Top Cable Norm	4	8.78		
			Top Cable Tan	4	0.01		
			Bot Cable Vert	4	-11.29		
			Bot Cable Norm	4	9.24		
		Guy B	Bot Cable Tan	4	0.01		
			Max Tension	11	13.93	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	6	9.17	-0.02	0.00
			Max. My	11	13.93	0.00	-0.00
			Max. Vy	6	0.02	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-19.07	0.00	0.00
			Max. Mx	11	-9.95	-0.02	0.00
		Guy C	Max. My	11	-3.38	0.00	0.00
			Max. Vy	11	0.02	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
			Max Tension	10	30.60	-0.04	0.03
			Max. Compression	4	-59.72	0.04	-0.02
			Max. Mx	11	-11.74	-1.12	-0.02
			Max. My	2	-26.49	0.11	-0.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T3	260 - 240	Diagonal	Max. Vy	11	2.63	-0.01	0.00
			Max. Vx	2	2.18	-0.00	-0.01
			Max Tension	7	4.33	0.00	0.00
			Max. Compression	13	-7.47	0.00	0.00
			Max. Mx	11	3.80	0.01	0.00
		Horizontal	Max. My	11	-5.44	0.00	-0.00
			Max. Vy	11	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	12	4.54	0.00	0.00
			Max. Compression	6	-2.61	0.00	0.00
		Secondary Horizontal	Max. Mx	7	2.35	0.00	0.00
			Max. My	11	-2.26	0.00	0.00
			Max. Vy	7	-0.00	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
			Max Tension	11	0.00	-0.00	-0.00
		Top Girt	Max. Compression	5	-0.00	-0.00	-0.00
			Max. Mx	9	0.00	-0.00	0.00
			Max. My	11	0.00	-0.00	-0.00
			Max. Vy	9	0.00	-0.00	0.00
			Max. Vx	5	0.00	-0.00	-0.00
		Bottom Girt	Max Tension	11	2.82	0.00	0.00
			Max. Compression	4	-1.86	0.00	0.00
			Max. Mx	6	-0.67	0.00	0.00
			Max. My	11	-1.45	0.00	0.00
			Max. Vy	6	-0.00	0.00	0.00
		Leg	Max. Vx	11	-0.00	0.00	0.00
			Max Tension	2	1.31	0.00	0.00
			Max. Compression	5	-0.42	0.00	0.00
			Max. Mx	6	0.04	0.00	0.00
			Max. My	3	1.23	0.00	-0.00
		Diagonal	Max. Vy	6	-0.00	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
			Max Tension	10	21.00	-0.15	0.11
			Max. Compression	4	-56.78	-0.24	0.42
			Max. Mx	5	-17.25	0.74	-0.04
		Horizontal	Max. My	2	-17.02	-0.07	-0.70
			Max. Vy	11	-2.73	0.41	0.04
			Max. Vx	2	-2.51	0.02	0.36
			Max Tension	5	5.73	0.00	0.00
			Max. Compression	11	-8.74	0.00	0.00
		Secondary Horizontal	Max. Mx	13	4.73	0.01	0.00
			Max. My	11	1.45	0.00	-0.00
			Max. Vy	13	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	5.45	0.00	0.00
		Top Girt	Max. Compression	5	-3.52	0.00	0.00
			Max. Mx	10	1.13	0.00	0.00
			Max. My	11	5.45	0.00	-0.00
			Max. Vy	10	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	13	-0.00	-0.00	0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	13	0.00	-0.00	0.00
		Leg	Max. Vx	2	-0.00	-0.00	0.00
			Max Tension	12	2.70	0.00	0.00
			Max. Compression	6	-1.40	0.00	0.00
			Max. Mx	6	1.14	0.00	0.00
			Max. My	3	2.44	0.00	-0.00
		Top Girt	Max. Vy	6	-0.01	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
			Max Tension	10	3.10	0.00	0.00
			Max. Compression	4	-2.10	0.00	0.00
			Max. Mx	12	1.75	0.00	0.00
		Bottom Girt	Max. My	11	2.92	0.00	-0.00
			Max. Vy	12	-0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T4	240 - 220	Leg	Max. Vx	11	0.00	0.00	0.00
			Max Tension	4	10.59	-0.19	0.08
			Max. Compression	10	-45.93	0.09	-0.03
			Max. Mx	11	-20.60	1.56	0.16
			Max. My	2	-17.03	0.11	1.41
		Diagonal	Max. Vy	11	-2.72	1.56	0.16
			Max. Vx	2	-2.50	0.11	1.41
			Max Tension	5	6.73	0.00	0.00
			Max. Compression	11	-10.02	0.00	0.00
			Max. Mx	13	5.67	0.01	0.00
		Horizontal	Max. My	11	2.57	0.00	-0.00
			Max. Vy	13	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	4	9.96	0.00	0.00
			Max. Compression	10	-5.56	0.00	0.00
		Secondary Horizontal	Max. Mx	12	1.26	0.01	0.00
			Max. My	11	6.19	0.00	-0.00
			Max. Vy	12	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
		Top Girt	Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	13	-0.00	-0.00	0.00
			Max. My	2	-0.00	-0.00	0.00
			Max. Vy	13	0.00	-0.00	0.00
			Max. Vx	2	-0.00	0.00	0.00
		Bottom Girt	Max Tension	4	3.87	0.00	0.00
			Max. Compression	10	-2.69	0.00	0.00
			Max. Mx	12	-0.75	0.01	0.00
			Max. My	11	3.51	0.00	-0.00
			Max. Vy	12	-0.01	0.00	0.00
		Guy A	Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	2.92	0.00	0.00
			Max. Compression	5	-0.70	0.00	0.00
			Max. Mx	12	1.36	0.01	0.00
			Max. My	11	0.95	0.00	-0.00
		Guy B	Max. Vy	12	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Bottom Tension	8	14.04		
			Top Tension	8	14.30		
			Top Cable Vert	8	10.48		
		Guy C	Top Cable Norm	8	9.73		
			Top Cable Tan	8	0.00		
			Bot Cable Vert	8	-9.84		
			Bot Cable Norm	8	10.02		
			Bot Cable Tan	8	0.00		
		Torque Arm Top	Bottom Tension	12	15.10		
			Top Tension	12	15.37		
			Top Cable Vert	12	11.25		
			Top Cable Norm	12	10.47		
			Top Cable Tan	12	0.00		
		Torque Arm	Bot Cable Vert	12	-10.60		
			Bot Cable Norm	12	10.76		
			Bot Cable Tan	12	0.00		
			Bottom Tension	4	15.22		
			Top Tension	4	15.48		
		Torque Arm	Top Cable Vert	4	11.33		
			Top Cable Norm	4	10.55		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-10.68		
			Bot Cable Norm	4	10.84		
		Torque Arm	Bot Cable Tan	4	0.00		
			Max Tension	11	15.65	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	10.16	-0.02	0.00
			Max. My	11	5.90	0.00	-0.00
		Torque Arm	Max. Vy	6	0.02	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T5	220 - 200	Bottom	Max. Compression	4	-16.62	0.00	0.00
			Max. Mx	13	-7.90	-0.02	0.00
			Max. My	11	-15.70	0.00	0.00
			Max. Vy	13	0.02	0.00	0.00
			Max. Vx	11	-0.00	0.00	0.00
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-42.77	-0.46	-0.19
			Max. Mx	11	-29.38	-0.80	-0.02
			Max. My	3	-28.81	0.37	-0.61
			Max. Vy	11	2.40	0.21	0.02
		Diagonal	Max. Vx	3	1.84	-0.11	0.16
			Max Tension	5	0.60	0.00	0.00
			Max. Compression	12	-6.71	0.00	0.00
			Max. Mx	9	-2.86	0.01	0.00
			Max. My	11	-4.90	0.00	-0.00
		Horizontal	Max. Vy	9	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	12	4.15	0.00	0.00
			Max. Compression	6	-0.30	0.00	0.00
			Max. Mx	10	1.79	0.00	0.00
		Secondary Horizontal	Max. My	11	2.98	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	6	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
		Top Girt	Max. Mx	13	-0.00	-0.00	0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	13	0.00	-0.00	0.00
			Max. Vx	2	-0.00	-0.00	0.00
			Max Tension	11	2.43	0.00	0.00
T6	200 - 180	Bottom Girt	Max. Compression	5	-0.52	0.00	0.00
			Max. Mx	12	1.95	0.00	0.00
			Max. My	3	0.96	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	3	0.00	0.00	0.00
		Leg	Max Tension	11	1.73	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	4	1.02	0.00	0.00
			Max. My	11	1.73	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
		Diagonal	Max. Vx	11	0.00	0.00	0.00
			Max Tension	5	1.33	0.00	0.00
			Max. Compression	11	-7.42	0.00	0.00
			Max. Mx	9	-0.96	0.01	0.00
			Max. My	11	-2.60	0.00	-0.00
		Horizontal	Max. Vy	9	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	4.46	0.00	0.00
			Max. Compression	5	-0.68	0.00	0.00
			Max. Mx	4	1.64	0.00	0.00
		Secondary Horizontal	Max. My	11	3.46	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
		Top Girt	Max. Mx	13	-0.00	-0.00	0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	13	0.00	-0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	11	1.84	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T7	180 - 160	Bottom Girt	Max. Compression	1	0.00	0.00	0.00
			Max. Mx	4	0.96	0.00	0.00
			Max. My	11	1.84	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	2.57	0.00	0.00
			Max. Compression	5	-0.42	0.00	0.00
			Max. Mx	10	0.50	0.00	0.00
			Max. My	11	2.57	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
		Leg	Max. Vx	11	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-55.72	0.01	-0.01
			Max. Mx	11	-35.80	0.82	-0.02
			Max. My	3	-17.89	0.08	0.77
			Max. Vy	11	1.88	0.82	-0.02
			Max. Vx	3	-1.82	0.08	0.77
		Diagonal	Max Tension	5	1.64	0.00	0.00
			Max. Compression	11	-7.75	0.00	0.00
			Max. Mx	9	0.95	0.01	0.00
			Max. My	11	-2.53	0.00	-0.00
			Max. Vy	9	-0.01	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Horizontal	Max Tension	11	4.86	0.00	0.00
			Max. Compression	5	-1.10	0.00	0.00
			Max. Mx	6	1.17	0.00	0.00
			Max. My	11	4.86	0.00	-0.00
			Max. Vy	6	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	11	2.64	0.00	0.00
			Max. Compression	5	-0.60	0.00	0.00
			Max. Mx	10	1.59	0.00	0.00
			Max. My	11	2.64	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Bottom Girt	Max Tension	11	2.14	0.00	0.00
			Max. Compression	6	-0.26	0.00	0.00
			Max. Mx	12	1.03	0.00	0.00
			Max. My	11	0.64	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
		Guy A	Bottom Tension	8	12.31		
			Top Tension	8	12.51		
			Top Cable Vert	8	7.86		
			Top Cable Norm	8	9.74		
			Top Cable Tan	8	0.00		
			Bot Cable Vert	8	-7.34		
			Bot Cable Norm	8	9.89		
			Bot Cable Tan	8	0.00		
		Guy B	Bottom Tension	12	13.08		
			Top Tension	12	13.27		
			Top Cable Vert	12	8.32		
			Top Cable Norm	12	10.34		
			Top Cable Tan	12	0.00		
			Bot Cable Vert	12	-7.81		
			Bot Cable Norm	12	10.49		
			Bot Cable Tan	12	0.00		
		Guy C	Bottom Tension	4	13.78		
			Top Tension	4	13.98		
			Top Cable Vert	4	8.76		
			Top Cable Norm	4	10.90		
			Top Cable Tan	4	0.00		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	160 - 140	Top Guy Pull-Off	Bot Cable Vert	4	-8.24		
			Bot Cable Norm	4	11.05		
			Bot Cable Tan	4	0.00		
			Max Tension	11	4.17	0.00	0.00
		Leg	Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	3.66	0.00	0.00
			Max. My	11	3.24	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-45.75	0.38	-0.08
			Max. Mx	11	-36.17	-0.76	0.03
			Max. My	2	-33.26	0.18	-0.63
			Max. Vy	11	1.87	0.03	0.01
		Diagonal	Max. Vx	2	1.56	-0.01	0.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	12	-5.32	0.00	0.00
			Max. Mx	4	-2.58	0.01	0.00
			Max. My	5	-2.82	0.00	0.00
			Max. Vy	4	-0.01	0.00	0.00
		Horizontal	Max. Vx	5	-0.00	0.00	0.00
			Max Tension	12	3.21	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	2.27	0.00	0.00
			Max. My	5	1.38	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
		Secondary Horizontal	Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
		Top Girt	Max. Vx	5	0.00	0.00	0.00
			Max Tension	11	1.98	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	1.60	0.00	0.00
			Max. My	11	0.76	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
		Bottom Girt	Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	1.40	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	4	1.17	0.00	0.00
			Max. My	5	0.66	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
T9	140 - 120	Leg	Max. Vx	5	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	5	-52.89	-0.02	-0.02
			Max. Mx	5	-41.97	0.80	-0.01
			Max. My	8	-43.27	-0.16	0.63
			Max. Vy	5	2.00	-0.04	0.01
		Diagonal	Max. Vx	8	1.60	0.00	-0.04
			Max Tension	5	0.21	0.00	0.00
			Max. Compression	11	-6.35	0.00	0.00
			Max. Mx	4	-1.46	0.01	0.00
			Max. My	5	-4.60	0.00	0.00
			Max. Vy	4	-0.01	0.00	0.00
		Horizontal	Max. Vx	5	-0.00	0.00	0.00
			Max Tension	11	3.82	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	4	1.89	0.00	0.00
			Max. My	11	2.90	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
		Secondary Horizontal	Max. Vx	11	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T10	120 - 100	Top Girt	Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	11	1.59	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	4	0.91	0.00	0.00
		Bottom Girt	Max. My	11	1.59	0.00	-0.00
			Max. Vy	4	-0.00	0.00	0.00
			Max. Vx	11	0.00	0.00	0.00
			Max Tension	11	2.14	0.00	0.00
			Max. Compression	4	-0.12	0.00	0.00
		Leg	Max. Mx	13	1.76	0.00	0.00
			Max. My	5	-0.07	0.00	-0.00
			Max. Vy	13	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
		Diagonal	Max. Compression	11	-57.75	0.00	0.01
			Max. Mx	11	-42.97	0.89	0.02
			Max. My	8	-45.55	-0.19	-0.76
			Max. Vy	11	2.07	0.89	0.02
			Max. Vx	8	-1.74	-0.19	-0.76
		Horizontal	Max Tension	11	1.73	0.00	0.00
			Max. Compression	5	-7.23	0.00	0.00
			Max. Mx	2	0.19	0.01	0.00
			Max. My	5	-0.90	0.00	0.00
			Max. Vy	2	-0.01	0.00	0.00
		Secondary Horizontal	Max. Vx	5	-0.00	0.00	0.00
			Max Tension	5	4.69	0.00	0.00
			Max. Compression	11	-1.14	0.00	0.00
			Max. Mx	8	3.29	0.00	0.00
			Max. My	6	-0.20	0.00	-0.00
		Top Girt	Max. Vy	8	-0.01	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
			Max Tension	10	0.00	-0.00	-0.00
			Max. Compression	6	-0.00	-0.00	0.00
			Max. Mx	6	-0.00	-0.00	0.00
		Bottom Girt	Max. My	2	0.00	-0.00	0.00
			Max. Vy	6	0.00	-0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
			Max Tension	4	2.43	0.00	0.00
			Max. Compression	5	-0.17	0.00	0.00
		Guy A	Max. Mx	13	1.08	0.00	0.00
			Max. My	5	-0.17	0.00	-0.00
			Max. Vy	13	-0.01	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	4	2.54	0.00	0.00
		Guy B	Max. Compression	10	-0.51	0.00	0.00
			Max. Mx	6	1.56	0.00	0.00
			Max. My	6	1.75	0.00	0.00
			Max. Vy	6	-0.01	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Guy C	Bottom Tension	8	12.17		
			Top Tension	8	12.30		
			Top Cable Vert	8	5.72		
			Top Cable Norm	8	10.89		
			Top Cable Tan	8	0.00		
		Guy B	Bot Cable Vert	8	-5.33		
			Bot Cable Norm	8	10.94		
			Bot Cable Tan	8	0.00		
			Bottom Tension	11	13.19		
			Top Tension	11	13.32		
		Guy A	Top Cable Vert	11	6.19		
			Top Cable Norm	11	11.80		
			Top Cable Tan	11	0.08		
			Bot Cable Vert	11	-5.78		
			Bot Cable Norm	11	11.85		
		Guy C	Bot Cable Tan	11	0.09		
			Bottom Tension	4	13.85		
		Guy B	Top Tension	4	13.98		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T11	100 - 80	Top Guy Pull-Off	Top Cable Vert	4	6.47		
			Top Cable Norm	4	12.39		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-6.09		
			Bot Cable Norm	4	12.44		
			Bot Cable Tan	4	0.00		
			Max Tension	11	3.69	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	8	3.14	0.00	0.00
			Max. My	6	1.95	0.00	-0.00
			Max. Vy	8	-0.00	0.00	0.00
			Max. Vx	6	0.00	0.00	0.00
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-64.52	0.02	-0.02
			Max. Mx	11	-43.12	-0.85	-0.01
			Max. My	8	-45.56	0.18	0.72
			Max. Vy	11	2.06	0.02	0.00
			Max. Vx	8	-1.74	-0.00	-0.02
		Diagonal	Max Tension	11	0.86	0.00	0.00
			Max. Compression	5	-6.91	0.00	0.00
			Max. Mx	2	-0.27	0.01	0.00
			Max. My	5	-2.95	0.00	0.00
			Max. Vy	2	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Horizontal	Max Tension	5	4.14	0.00	0.00
			Max. Compression	11	-0.39	0.00	0.00
			Max. Mx	8	2.66	0.00	0.00
			Max. My	6	3.37	0.00	0.00
			Max. Vy	8	-0.00	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	0.00	-0.00	-0.00
			Max. Compression	6	-0.00	-0.00	-0.00
			Max. Mx	9	0.00	-0.00	0.00
			Max. My	2	0.00	-0.00	0.00
			Max. Vy	9	0.00	-0.00	0.00
			Max. Vx	2	-0.00	-0.00	0.00
		Top Girt	Max Tension	5	2.38	0.00	0.00
			Max. Compression	11	-0.32	0.00	0.00
			Max. Mx	6	0.45	0.00	0.00
			Max. My	6	2.24	0.00	0.00
			Max. Vy	6	-0.00	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
		Bottom Girt	Max Tension	5	1.70	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	1.20	0.00	0.00
			Max. My	5	1.70	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T12	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-64.64	0.01	-0.01
			Max. Mx	5	-46.71	0.76	-0.00
			Max. My	9	-45.08	-0.34	0.59
			Max. Vy	5	1.75	0.02	0.01
			Max. Vx	9	1.38	-0.01	0.01
		Diagonal	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-4.73	0.00	0.00
			Max. Mx	5	-2.65	0.01	0.00
			Max. My	5	-4.71	0.00	0.00
			Max. Vy	5	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Horizontal	Max Tension	5	2.92	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	6	2.17	0.00	0.00
			Max. My	5	1.77	0.00	-0.00
			Max. Vy	6	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T13	60 - 40	Top Girt	Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	1.58	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	10	0.83	0.00	0.00
			Max. My	5	1.58	0.00	-0.00
			Max. Vy	10	-0.00	0.00	0.00
		Bottom Girt	Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	1.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	0.95	0.00	0.00
			Max. My	5	0.88	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-68.73	0.07	0.02
			Max. Mx	5	-46.72	-0.72	0.02
		Diagonal	Max. My	9	-45.10	0.31	-0.57
			Max. Vy	5	1.76	-0.72	0.02
			Max. Vx	9	1.38	0.31	-0.57
			Max Tension	11	0.26	0.00	0.00
			Max. Compression	5	-5.19	0.00	0.00
			Max. Mx	5	-4.94	0.01	0.00
			Max. My	5	-3.64	0.00	0.00
			Max. Vy	5	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
			Max Tension	5	3.47	0.00	0.00
		Horizontal	Max. Compression	11	-0.10	0.00	0.00
			Max. Mx	12	1.31	0.00	0.00
			Max. My	5	3.21	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
		Secondary Horizontal	Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	2.00	0.00	0.00
		Top Girt	Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	0.49	0.00	0.00
			Max. My	5	0.82	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	1.68	0.00	0.00
		Bottom Girt	Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	0.51	0.00	0.00
			Max. My	5	1.68	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Guy A	Bottom Tension	8	5.60		
			Top Tension	8	5.63		
			Top Cable Vert	8	1.37		
			Top Cable Norm	8	5.46		
			Top Cable Tan	8	0.00		
			Bot Cable Vert	8	-1.23		
			Bot Cable Norm	8	5.46		
			Bot Cable Tan	8	0.00		
		Guy B	Bottom Tension	11	6.04		
			Top Tension	11	6.06		
			Top Cable Vert	11	1.47		
			Top Cable Norm	11	5.88		
			Top Cable Tan	11	0.03		
			Bot Cable Vert	11	-1.33		
			Bot Cable Norm	11	5.89		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T14	40 - 20	Guy C	Bot Cable Tan	11	0.04		
			Bottom Tension	4	6.35		
			Top Tension	4	6.38		
			Top Cable Vert	4	1.54		
			Top Cable Norm	4	6.19		
			Top Cable Tan	4	0.00		
			Bot Cable Vert	4	-1.41		
			Bot Cable Norm	4	6.19		
		Top Guy Pull-Off	Bot Cable Tan	4	0.00		
			Max Tension	5	2.88	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	1.24	0.00	0.00
			Max. My	5	2.34	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-68.73	0.37	0.31
			Max. Mx	5	-49.09	0.82	-0.00
			Max. My	9	-47.89	-0.36	0.64
			Max. Vy	5	1.87	0.03	0.01
			Max. Vx	9	1.48	-0.02	0.01
		Diagonal	Max Tension	1	0.00	0.00	0.00
			Max. Compression	5	-5.33	0.00	0.00
			Max. Mx	5	-3.07	0.01	0.00
			Max. My	5	-5.22	0.00	0.00
			Max. Vy	5	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Horizontal	Max Tension	5	3.30	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	1.05	0.00	0.00
			Max. My	5	2.02	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
			Max. Mx	4	0.00	-0.00	-0.00
			Max. My	5	0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	5	0.00	0.00	0.00
		Top Girt	Max Tension	5	1.68	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	12	0.71	0.00	0.00
			Max. My	5	1.68	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	1.98	0.00	0.00
			Max. Compression	11	-0.02	0.00	0.00
			Max. Mx	12	0.73	0.00	0.00
			Max. My	5	1.02	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T15	20 - 6.8125	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-66.48	0.03	0.44
			Max. Mx	5	-54.68	-1.37	0.37
			Max. My	8	-53.77	0.31	-1.32
			Max. Vy	5	1.88	-0.76	0.02
			Max. Vx	9	1.48	0.33	-0.61
		Diagonal	Max Tension	12	0.38	0.00	0.00
			Max. Compression	6	-5.84	0.00	0.00
			Max. Mx	5	-2.23	0.01	0.00
			Max. My	5	-5.44	0.00	0.00
			Max. Vy	5	-0.01	0.00	0.00
			Max. Vx	5	-0.00	0.00	0.00
		Horizontal	Max Tension	5	4.15	0.00	0.00
			Max. Compression	12	-0.23	0.00	0.00
			Max. Mx	12	0.93	0.00	0.00
			Max. My	5	1.76	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T16	6.8125 - 0	Secondary Horizontal	Max. Vx	5	0.00	0.00	0.00
			Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	11	-0.00	-0.00	-0.00
		Top Girt	Max. Mx	4	0.00	-0.00	-0.00
			Max. My	11	-0.00	-0.00	-0.00
			Max. Vy	4	0.00	-0.00	-0.00
			Max. Vx	11	0.00	-0.00	-0.00
			Max Tension	5	2.15	0.00	0.00
			Max. Compression	11	-0.17	0.00	0.00
			Max. Mx	12	0.26	0.00	0.00
			Max. My	5	0.98	0.00	-0.00
			Max. Vy	12	-0.00	0.00	0.00
		Leg	Max. Vx	5	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-59.66	0.42	-0.62
			Max. Mx	5	-47.62	-3.45	-0.17
			Max. My	5	-45.83	-0.10	-2.23
			Max. Vy	5	15.20	-3.45	-0.17
			Max. Vx	5	2.30	0.04	0.89
		Horizontal	Max Tension	5	0.19	-1.97	-0.18
			Max. Compression	5	-1.26	1.63	0.13
			Max. Mx	5	0.06	2.73	0.35
			Max. My	5	-0.18	-2.26	-0.47
			Max. Vy	5	-9.01	2.73	0.35
		Top Girt	Max. Vx	5	-1.39	2.73	0.35
			Max Tension	5	10.49	0.03	-0.73
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	5	10.49	2.09	-0.32
			Max. My	5	9.43	0.07	-0.75
			Max. Vy	5	-0.74	2.09	-0.32
			Max. Vx	5	-0.17	1.93	-0.26

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	4	153.04	-1.39	0.83
	Max. H _x	11	151.21	1.70	-0.01
	Max. H _z	2	141.95	0.02	1.50
	Max. M _x	1	0.00	0.01	-0.00
	Max. M _z	1	0.00	0.01	-0.00
	Max. Torsion	5	7.20	-1.69	0.03
	Min. Vert	1	115.07	0.01	-0.00
	Min. H _x	5	151.29	-1.69	0.03
	Min. H _z	8	150.93	-0.00	-1.34
	Min. M _x	1	0.00	0.01	-0.00
	Min. M _z	1	0.00	0.01	-0.00
	Min. Torsion	11	1.58	1.70	-0.01
	Max. Vert	10	-6.68	-5.44	3.14
	Max. H _x	10	-6.68	-5.44	3.14
Guy C @ 225 ft Elev 0 ft Azimuth 240 deg	Max. H _z	4	-59.05	-60.02	34.64
	Min. Vert	4	-59.05	-60.02	34.64
	Min. H _x	4	-59.05	-60.02	34.64
	Min. H _z	10	-6.68	-5.44	3.14
	Max. Vert	6	-7.23	6.07	3.50
	Max. H _x	12	-57.25	57.85	33.43
	Max. H _z	12	-57.25	57.85	33.43
	Min. Vert	12	-57.25	57.85	33.43
	Min. H _x	6	-7.23	6.07	3.50
	Max. H _x	6	-7.23	6.07	3.50
Guy B @ 225 ft Elev 0 ft Azimuth 120 deg	Max. H _x	12	-57.25	57.85	33.43
	Max. H _z	12	-57.25	57.85	33.43
	Min. Vert	12	-57.25	57.85	33.43
	Min. H _x	6	-7.23	6.07	3.50

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Guy A @ 225 ft Elev 0 ft Azimuth 0 deg	Min. H _z	6	-7.23	6.07	3.50
	Max. Vert	2	-8.18	0.00	-8.28
	Max. H _x	11	-33.47	2.52	-38.33
	Max. H _z	2	-8.18	0.00	-8.28
	Min. Vert	8	-55.33	0.00	-64.15
	Min. H _x	5	-33.39	-2.51	-38.31
	Min. H _z	8	-55.33	0.00	-64.15

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	115.07	-0.01	0.00	0.00	0.00	-3.36
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	141.95	-0.02	-1.50	0.00	0.00	-2.51
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	148.58	0.72	-1.29	0.00	0.00	-1.88
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	153.04	1.39	-0.83	0.00	0.00	-4.62
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	151.29	1.69	-0.03	0.00	0.00	-7.20
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	143.27	1.43	0.82	0.00	0.00	-6.42
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	147.70	0.71	1.22	0.00	0.00	-5.26
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	150.93	0.00	1.34	0.00	0.00	-5.98
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	148.35	-0.73	1.28	0.00	0.00	-6.76
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	145.49	-1.53	0.90	0.00	0.00	-4.02
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	151.21	-1.70	0.01	0.00	0.00	-1.58
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	152.05	-1.31	-0.73	0.00	0.00	-2.18
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	147.72	-0.72	-1.21	0.00	0.00	-3.35
Dead+Wind 0 deg - Service+Guy	116.92	-0.01	-0.40	0.00	0.00	-2.98
Dead+Wind 30 deg - Service+Guy	116.79	0.20	-0.36	0.00	0.00	-2.75
Dead+Wind 60 deg - Service+Guy	116.74	0.40	-0.24	0.00	0.00	-3.46
Dead+Wind 90 deg - Service+Guy	116.79	0.49	-0.00	0.00	0.00	-4.17
Dead+Wind 120 deg - Service+Guy	116.90	0.37	0.22	0.00	0.00	-4.02
Dead+Wind 150 deg - Service+Guy	116.77	0.19	0.35	0.00	0.00	-3.67
Dead+Wind 180 deg - Service+Guy	116.66	-0.01	0.39	0.00	0.00	-3.84
Dead+Wind 210 deg - Service+Guy	116.76	-0.22	0.37	0.00	0.00	-4.07
Dead+Wind 240 deg - Service+Guy	116.91	-0.42	0.25	0.00	0.00	-3.36
Dead+Wind 270 deg - Service+Guy	116.82	-0.50	0.01	0.00	0.00	-2.65
Dead+Wind 300 deg - Service+Guy	116.72	-0.39	-0.21	0.00	0.00	-2.80
Dead+Wind 330 deg - Service+Guy	116.77	-0.21	-0.34	0.00	0.00	-3.15

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-43.60	0.00	-0.00	43.60	0.00	0.001%
2	0.07	-51.47	-44.51	-0.07	51.47	44.51	0.002%
3	23.43	-50.93	-40.46	-23.43	50.93	40.46	0.002%
4	43.90	-50.39	-25.36	-43.90	50.39	25.36	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
5	52.06	-50.93	-0.07	-52.06	50.93	0.07	0.005%
6	41.25	-51.47	23.75	-41.25	51.47	-23.75	0.002%
7	22.45	-50.93	38.92	-22.45	50.93	-38.92	0.003%
8	-0.07	-50.39	44.15	0.07	50.39	-44.15	0.001%
9	-23.27	-50.93	40.19	23.27	50.93	-40.18	0.005%
10	-43.67	-51.47	25.23	43.67	51.47	-25.23	0.003%
11	-51.75	-50.93	0.07	51.74	50.93	-0.07	0.002%
12	-41.21	-50.39	-23.72	41.21	50.39	23.73	0.003%
13	-22.45	-50.93	-38.92	22.46	50.93	38.92	0.004%
14	0.02	-43.74	-11.91	-0.02	43.74	11.91	0.005%
15	6.27	-43.60	-10.83	-6.27	43.60	10.83	0.004%
16	11.75	-43.45	-6.79	-11.75	43.45	6.79	0.003%
17	13.93	-43.60	-0.02	-13.93	43.60	0.02	0.005%
18	11.04	-43.74	6.36	-11.04	43.74	-6.35	0.006%
19	6.01	-43.60	10.42	-6.01	43.60	-10.42	0.003%
20	-0.02	-43.45	11.82	0.02	43.45	-11.82	0.002%
21	-6.23	-43.60	10.76	6.23	43.60	-10.75	0.003%
22	-11.69	-43.74	6.75	11.69	43.74	-6.75	0.007%
23	-13.85	-43.60	0.02	13.85	43.60	-0.02	0.006%
24	-11.03	-43.45	-6.35	11.03	43.45	6.35	0.003%
25	-6.01	-43.60	-10.42	6.01	43.60	10.42	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	8	0.00000001	0.00003309
2	Yes	14	0.00000001	0.00005474
3	Yes	15	0.00000001	0.00001964
4	Yes	12	0.00000001	0.00004238
5	Yes	15	0.00009916	0.00005454
6	Yes	15	0.00000001	0.00003137
7	Yes	14	0.00000001	0.00004375
8	Yes	11	0.00000001	0.00006696
9	Yes	14	0.00009845	0.00004907
10	Yes	16	0.00000001	0.00003213
11	Yes	16	0.00000001	0.00002167
12	Yes	11	0.00000001	0.00009541
13	Yes	14	0.00000001	0.00003592
14	Yes	10	0.00000001	0.00006846
15	Yes	10	0.00000001	0.00005420
16	Yes	10	0.00000001	0.00004326
17	Yes	10	0.00000001	0.00008517
18	Yes	10	0.00000001	0.00009376
19	Yes	10	0.00000001	0.00005678
20	Yes	10	0.00000001	0.00003297
21	Yes	10	0.00000001	0.00004840
22	Yes	10	0.00000001	0.00009557
23	Yes	10	0.00000001	0.00007728
24	Yes	10	0.00000001	0.00004359
25	Yes	10	0.00000001	0.00005622

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	1.142	16	0.0833	0.2594
T2	280 - 260	1.439	16	0.0755	0.2669
T3	260 - 240	1.557	16	0.0217	0.3015
T4	240 - 220	1.359	16	0.0541	0.2343
T5	220 - 200	1.178	16	0.0342	0.2416
T6	200 - 180	1.074	16	0.0276	0.3142

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T7	180 - 160	0.959	16	0.0215	0.3339
T8	160 - 140	0.908	16	0.0073	0.3072
T9	140 - 120	0.885	17	0.0105	0.3474
T10	120 - 100	0.838	17	0.0056	0.4355
T11	100 - 80	0.873	17	0.0135	0.5874
T12	80 - 60	0.911	17	0.0058	0.7091
T13	60 - 40	0.827	17	0.0330	0.7826
T14	40 - 20	0.647	17	0.0551	0.8680
T15	20 - 6.8125	0.366	17	0.0776	0.8755
T16	6.8125 - 0	0.128	17	0.0870	0.8448

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.00	Flash Beacon Lighting	16	1.142	0.0833	0.2594	124340
290.00	Guy	16	1.300	0.0891	0.2573	62170
270.00	DBXLH-9090C-R2M w/ Mount Pipe	16	1.537	0.0352	0.2916	15492
260.00	FFVV-65C-R3-V1_TMO w/ Mount Pipe	16	1.557	0.0217	0.3015	11069
230.00	Guy	16	1.254	0.0486	0.2238	43611
173.19	Guy	16	0.934	0.0160	0.3251	60532
150.00	Side Light	17	0.897	0.0084	0.3182	132389
113.19	Guy	17	0.841	0.0077	0.4832	49652
53.19	Guy	17	0.775	0.0417	0.8287	55916

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	7.325	4	0.2123	0.6623
T2	280 - 260	8.111	4	0.1825	0.6921
T3	260 - 240	8.207	4	0.1784	0.8009
T4	240 - 220	7.125	5	0.2949	0.7332
T5	220 - 200	6.187	5	0.2112	0.7856
T6	200 - 180	5.533	5	0.1751	1.0292
T7	180 - 160	4.854	5	0.1407	1.1516
T8	160 - 140	4.479	5	0.0742	1.1892
T9	140 - 120	4.236	5	0.0727	1.2537
T10	120 - 100	3.941	5	0.0416	1.3843
T11	100 - 80	3.998	5	0.0753	1.5811
T12	80 - 60	4.105	10	0.0390	1.7092
T13	60 - 40	3.754	10	0.1518	1.7265
T14	40 - 20	2.928	10	0.2535	1.7346
T15	20 - 6.8125	1.639	10	0.3506	1.6112
T16	6.8125 - 0	0.574	10	0.3897	1.4688

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
300.00	Flash Beacon Lighting	4	7.325	0.2123	0.6623	32024
290.00	Guy	4	7.755	0.2094	0.6640	16012
270.00	DBXLH-9090C-R2M w/ Mount	4	8.306	0.1260	0.7563	4017

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
260.00	Pipe FFVV-65C-R3-V1_TMO w/ Mount Pipe	4	8.207	0.1784	0.8009	2905
230.00	Guy	5	6.605	0.2657	0.7285	11051
173.19	Guy	5	4.689	0.1160	1.1650	9793
150.00	Side Light	5	4.365	0.0705	1.2247	82616
113.19	Guy	5	3.922	0.0571	1.4474	11810
53.19	Guy	10	3.523	0.1938	1.7597	10983

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	300	Leg	A325N	0.7500	4	3.46	30.10	0.115	1.05	Bolt Tension
		Torque Arm Top@290	A325N	0.8750	2	6.97	20.08	0.347	1.05	Member Block Shear
		Torque Arm Bottom@290	A325N	0.8750	2	9.53	27.06	0.352	1.05	Bolt Shear
T2	280	Leg	A325N	0.7500	4	5.25	30.10	0.174	1.05	Bolt Tension
T3	260	Leg	A325N	0.7500	4	1.94	30.10	0.065	1.05	Bolt Tension
T4	240	Leg	A325N	0.7500	4	3.56	30.10	0.118	1.05	Bolt Tension
		Torque Arm Top@230	A325N	0.8750	2	7.82	20.08	0.390	1.05	Member Block Shear
		Torque Arm Bottom@230	A325N	0.8750	2	8.31	27.06	0.307	1.05	Bolt Shear
T5	220	Leg	A325N	0.7500	4	3.23	30.10	0.107	1.05	Bolt Tension
T6	200	Leg	A325N	0.7500	4	4.21	30.10	0.140	1.05	Bolt Tension
T7	180	Leg	A325N	0.7500	4	3.81	30.10	0.127	1.05	Bolt Tension
T8	160	Leg	A325N	0.7500	4	3.46	30.10	0.115	1.05	Bolt Tension
T9	140	Leg	A325N	0.7500	4	4.41	30.10	0.146	1.05	Bolt Tension
T10	120	Leg	A325N	0.7500	4	3.92	30.10	0.130	1.05	Bolt Tension
T11	100	Leg	A325N	0.7500	4	5.38	30.10	0.179	1.05	Bolt Tension
T12	80	Leg	A325N	0.7500	4	5.35	30.10	0.178	1.05	Bolt Tension
T13	60	Leg	A325N	0.7500	4	5.73	30.10	0.190	1.05	Bolt Tension
T14	40	Leg	A325N	0.7500	4	5.54	30.10	0.184	1.05	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T1	290.00 (A)	3/4 [ECP- (734) 24000] EHS	5.83	58.30	14.20	36.73	0.952	2.463
	290.00 (A)	3/4 [ECP- (735) 24000] EHS	5.83	58.30	14.60	36.73	0.952	2.396
	290.00 (B)	3/4 [ECP- (728) 24000] EHS	5.83	58.30	14.18	36.73	0.952	2.467
	290.00 (B)	3/4 [ECP- (729) 24000] EHS	5.83	58.30	14.92	36.73	0.952	2.344
	290.00 (C)	3/4 [ECP- (722) 24000] EHS	5.83	58.30	14.47	36.73	0.952	2.418
	290.00 (C)	3/4 [ECP- (723) 24000] EHS	5.83	58.30	14.92	36.73	0.952	2.344
T4	230.00 (A)	3/4 [ECP- (752) 24000] EHS	5.83	58.30	14.30	36.73	0.952	2.446
	230.00 (A)	3/4 [ECP- (753) 24000] EHS	5.83	58.30	14.30	36.73	0.952	2.447
	230.00 (B)	3/4 [ECP- (746) 24000] EHS	5.83	58.30	14.25	36.73	0.952	2.454
	230.00 (B)	3/4 [ECP-	5.83	58.30	15.37	36.73	0.952	2.276

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T7	(747)	24000] EHS						
	230.00 (C)	3/4 [ECP- 24000] EHS	5.83	58.30	15.12	36.73	0.952	2.314
	(740)	24000] EHS						
	230.00 (C)	3/4 [ECP- 24000] EHS	5.83	58.30	15.48	36.73	0.952	2.259
	(741)	24000] EHS						
T10	173.19 (A)	3/4 [ECP- 24000] EHS	5.83	58.30	12.51	36.73	0.952	2.796
	(763)	24000] EHS						
	173.19 (B)	3/4 [ECP- 24000] EHS	5.83	58.30	13.28	36.73	0.952	2.635
	(762)	24000] EHS						
	173.19 (C)	3/4 [ECP- 24000] EHS	5.83	58.30	13.98	36.73	0.952	2.502
T13	(758)	24000] EHS						
	113.19 (A)	3/4 [ECP- 24000] EHS	5.83	58.30	12.30	36.73	0.952	2.844
	(769)	24000] EHS						
	113.19 (B)	3/4 [ECP- 24000] EHS	5.83	58.30	13.32	36.73	0.952	2.626
	(768)	24000] EHS						
T13	113.19 (C)	3/4 [ECP- 24000] EHS	5.83	58.30	13.98	36.73	0.952	2.502
	(764)	24000] EHS						
	53.19 (A)	1/2 [ECP- 23000] EHS	2.69	26.90	5.63	16.95	0.952	2.868
	(775)	23000] EHS						
	53.19 (B)	1/2 [ECP- 23000] EHS	2.69	26.90	6.06	16.95	0.952	2.662
T13	(774)	23000] EHS						
	53.19 (C)	1/2 [ECP- 23000] EHS	2.69	26.90	6.38	16.95	0.952	2.530
T13	(770)	23000] EHS						

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2	20.00	3.19	76.6 K=1.00	3.1416	-36.40	92.03	0.396 ¹
T2	280 - 260	2	20.00	3.19	76.6 K=1.00	3.1416	-58.44	92.03	0.635 ¹
T3	260 - 240	2	20.00	3.19	76.6 K=1.00	3.1416	-52.66	92.03	0.572 ¹
T4	240 - 220	2 1/2	20.00	3.19	61.3 K=1.00	4.9087	-45.93	167.83	0.274 ¹
T5	220 - 200	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-40.09	127.45	0.315 ¹
T6	200 - 180	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-47.33	127.45	0.371 ¹
T7	180 - 160	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-55.72	127.45	0.437 ¹
T8	160 - 140	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-42.97	127.45	0.337 ¹
T9	140 - 120	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-49.49	127.45	0.388 ¹
T10	120 - 100	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-57.75	127.45	0.453 ¹
T11	100 - 80	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-61.37	127.45	0.481 ¹
T12	80 - 60	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-64.64	127.45	0.507 ¹
T13	60 - 40	2 1/4	20.00	3.19	68.1 K=1.00	3.9761	-66.02	127.45	0.518 ¹
T14	40 - 20	2 1/2	20.00	3.19	61.3 K=1.00	4.9087	-67.88	167.83	0.404 ¹
T15	20 - 6.8125	2 1/2	13.19	3.19	61.3 K=1.00	4.9087	-63.29	167.86	0.377 ¹
T16	6.8125 - 0	2 1/2	7.03	1.34	25.8 K=1.00	4.9087	-59.66	210.40	0.284 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
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¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/4	4.38	4.14	111.2 K=0.70	1.2272	-7.75	20.73	0.374 ¹
T2	280 - 260	1 1/8	4.38	4.14	123.6 K=0.70	0.9940	-7.47	14.41	0.518 ¹
T3	260 - 240	1 3/8	4.38	4.14	101.1 K=0.70	1.4849	-8.74	28.09	0.311 ¹
T4	240 - 220	1 3/8	4.38	4.08	99.6 K=0.70	1.4849	-10.02	28.53	0.351 ¹
T5	220 - 200	1 1/4	4.38	4.11	110.4 K=0.70	1.2272	-6.71	20.93	0.321 ¹
T6	200 - 180	1 3/8	4.38	4.11	100.4 K=0.70	1.4849	-7.42	28.31	0.262 ¹
T7	180 - 160	1 3/8	4.38	4.11	100.4 K=0.70	1.4849	-7.75	28.31	0.274 ¹
T8	160 - 140	1 1/8	4.38	4.11	122.7 K=0.70	0.9940	-5.32	14.58	0.365 ¹
T9	140 - 120	1 1/4	4.38	4.11	110.4 K=0.70	1.2272	-6.35	20.93	0.303 ¹
T10	120 - 100	1 3/8	4.38	4.11	100.4 K=0.70	1.4849	-7.23	28.31	0.255 ¹
T11	100 - 80	1 1/4	4.38	4.11	110.4 K=0.70	1.2272	-6.91	20.93	0.330 ¹
T12	80 - 60	1 1/8	4.38	4.11	122.7 K=0.70	0.9940	-4.73	14.58	0.324 ¹
T13	60 - 40	1 1/8	4.38	4.11	122.7 K=0.70	0.9940	-5.19	14.58	0.356 ¹
T14	40 - 20	1 1/8	4.38	4.08	121.8 K=0.70	0.9940	-5.33	14.76	0.361 ¹
T15	20 - 6.8125	1 1/8	4.38	4.08	121.7 K=0.70	0.9940	-5.84	14.76	0.396 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	95.2 K=0.70	0.7854	-3.64	15.79	0.230 ¹
T2	280 - 260	7/8	3.00	2.83	108.8 K=0.70	0.6013	-2.61	10.45	0.250 ¹
T3	260 - 240	1	3.00	2.83	95.2 K=0.70	0.7854	-3.52	15.79	0.223 ¹
T4	240 - 220	1 1/4	3.00	2.79	85.3 K=0.80	1.2272	-5.56	27.10	0.205 ¹
T5	220 - 200	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.81	10.54	0.077 ¹
T6	200 - 180	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.95	10.54	0.090 ¹
T7	180 - 160	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.10	10.54	0.104 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T8	160 - 140	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.86	10.54	0.082 ¹
T9	140 - 120	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.00	10.54	0.095 ¹
T10	120 - 100	1	3.00	2.81	94.5 K=0.70	0.7854	-1.14	15.90	0.071 ¹
T11	100 - 80	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.22	10.54	0.116 ¹
T12	80 - 60	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.22	10.54	0.116 ¹
T13	60 - 40	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.30	10.54	0.123 ¹
T14	40 - 20	7/8	3.00	2.79	107.2 K=0.70	0.6013	-1.21	10.64	0.114 ¹
T15	20 - 6.8125	7/8	3.00	2.79	107.2 K=0.70	0.6013	-1.17	10.64	0.110 ¹
T16	6.8125 - 0	L4x4x3/8	2.29	2.09	75.9 K=2.39	2.8600	-1.26	84.32	0.015 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	3/4	1.50	1.42	83.4 K=0.92	0.4418	-0.00	9.92	0.000 ¹
T2	280 - 260	3/4	1.50	1.42	83.4 K=0.92	0.4418	-0.00	9.92	0.000 ¹
T3	260 - 240	3/4	1.50	1.42	83.4 K=0.92	0.4418	-0.00	9.92	0.000 ¹
T4	240 - 220	3/4	1.50	1.40	83.1 K=0.93	0.4418	-0.00	9.95	0.000 ¹
T5	220 - 200	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T6	200 - 180	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T7	180 - 160	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T8	160 - 140	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T9	140 - 120	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T10	120 - 100	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T11	100 - 80	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T12	80 - 60	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T13	60 - 40	3/4	1.50	1.41	83.3 K=0.92	0.4418	-0.00	9.94	0.000 ¹
T14	40 - 20	3/4	1.50	1.40	83.1 K=0.93	0.4418	-0.00	9.95	0.000 ¹
T15	20 - 6.8125	3/4	1.50	1.40	83.1 K=0.93	0.4418	-0.00	9.95	0.000 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	95.2 K=0.70	0.7854	-0.64	15.79	0.041 ¹
T2	280 - 260	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.86	10.45	0.178 ¹
T3	260 - 240	1	3.00	2.83	95.2 K=0.70	0.7854	-1.40	15.79	0.088 ¹
T4	240 - 220	1 1/4	3.00	2.79	85.3 K=0.80	1.2272	-2.69	27.10	0.099 ¹
T5	220 - 200	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.81	10.54	0.077 ¹
T6	200 - 180	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.95	10.54	0.090 ¹
T7	180 - 160	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.05	10.54	0.100 ¹
T8	160 - 140	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.86	10.54	0.082 ¹
T9	140 - 120	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.00	10.54	0.095 ¹
T10	120 - 100	1	3.00	2.81	94.5 K=0.70	0.7854	-1.09	15.90	0.069 ¹
T11	100 - 80	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.22	10.54	0.116 ¹
T12	80 - 60	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.22	10.54	0.116 ¹
T13	60 - 40	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.30	10.54	0.123 ¹
T14	40 - 20	7/8	3.00	2.79	107.2 K=0.70	0.6013	-1.21	10.64	0.114 ¹
T15	20 - 6.8125	7/8	3.00	2.79	107.2 K=0.70	0.6013	-1.17	10.64	0.110 ¹
T16	6.8125 - 0	L4x4x3/8	2.87	2.66	80.2 K=1.98	2.8600	-1.06	82.11	0.013 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	95.2 K=0.70	0.7854	-2.00	15.79	0.127 ¹
T2	280 - 260	7/8	3.00	2.83	108.8 K=0.70	0.6013	-1.23	10.45	0.117 ¹
T3	260 - 240	1	3.00	2.83	95.2 K=0.70	0.7854	-2.10	15.79	0.133 ¹
T4	240 - 220	1 1/4	3.00	2.79	85.3 K=0.80	1.2272	-0.81	27.10	0.030 ¹
T5	220 - 200	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.81	10.54	0.077 ¹
T6	200 - 180	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.95	10.54	0.090 ¹
T7	180 - 160	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.05	10.54	0.100 ¹
T8	160 - 140	7/8	3.00	2.81	108.0 K=0.70	0.6013	-0.86	10.54	0.082 ¹
T9	140 - 120	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.00	10.54	0.095 ¹
T10	120 - 100	1	3.00	2.81	94.5 K=0.70	0.7854	-1.09	15.90	0.069 ¹
T11	100 - 80	7/8	3.00	2.81	108.0 K=0.70	0.6013	-1.22	10.54	0.116 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T12	80 - 60	7/8	3.00	2.81	K=0.70 108.0	0.6013	-1.22	10.54	0.116 ¹
T13	60 - 40	7/8	3.00	2.81	K=0.70 108.0	0.6013	-1.30	10.54	0.123 ¹
T14	40 - 20	7/8	3.00	2.79	K=0.70 107.2	0.6013	-1.21	10.64	0.114 ¹

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280 (726)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-18.48	70.89	0.261 ¹
T1	300 - 280 (727)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-19.07	70.89	0.269 ¹
T1	300 - 280 (732)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-18.64	70.89	0.263 ¹
T1	300 - 280 (733)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-18.97	70.89	0.268 ¹
T1	300 - 280 (738)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-18.93	70.89	0.267 ¹
T1	300 - 280 (739)	L3 1/2x3 1/2x3/8	4.75	4.63	80.9 K=1.00	2.4800	-18.64	70.89	0.263 ¹
T4	240 - 220 (744)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-14.95	71.11	0.210 ¹
T4	240 - 220 (745)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-16.62	71.11	0.234 ¹
T4	240 - 220 (750)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-15.47	71.11	0.217 ¹
T4	240 - 220 (751)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-16.43	71.11	0.231 ¹
T4	240 - 220 (756)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-16.41	71.11	0.231 ¹
T4	240 - 220 (757)	L3 1/2x3 1/2x3/8	4.75	4.61	80.4 K=1.00	2.4800	-15.71	71.11	0.221 ¹

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	2	20.00	0.42	10.1	3.1416	10.95	141.37	0.077 ¹
T2	280 - 260	2	20.00	3.19	76.6	3.1416	28.16	141.37	0.199 ¹
T3	260 - 240	2	20.00	0.42	10.1	3.1416	21.00	141.37	0.149 ¹
T4	240 - 220	2 1/2	20.00	3.19	61.3	4.9087	10.59	220.89	0.048 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1 1/4	4.38	4.14	158.9	1.2272	5.33	39.76	0.134 ¹
T2	280 - 260	1 1/8	4.38	4.14	176.5	0.9940	4.33	32.21	0.134 ¹
T3	260 - 240	1 3/8	4.38	4.14	144.4	1.4849	5.73	48.11	0.119 ¹
T4	240 - 220	1 3/8	4.38	4.08	142.3	1.4849	6.73	48.11	0.140 ¹
T5	220 - 200	1 1/4	4.38	4.11	157.7	1.2272	0.60	39.76	0.015 ¹
T6	200 - 180	1 3/8	4.38	4.11	143.4	1.4849	1.33	48.11	0.028 ¹
T7	180 - 160	1 3/8	4.38	4.11	143.4	1.4849	1.64	48.11	0.034 ¹
T9	140 - 120	1 1/4	4.38	4.11	157.7	1.2272	0.21	39.76	0.005 ¹
T10	120 - 100	1 3/8	4.38	4.11	143.4	1.4849	1.73	48.11	0.036 ¹
T11	100 - 80	1 1/4	4.38	4.11	157.7	1.2272	0.86	39.76	0.022 ¹
T13	60 - 40	1 1/8	4.38	4.11	175.2	0.9940	0.26	32.21	0.008 ¹
T15	20 - 6.8125	1 1/8	4.38	4.08	173.9	0.9940	0.38	32.21	0.012 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	136.0	0.7854	5.19	25.45	0.204 ¹
T2	280 - 260	7/8	3.00	2.83	155.4	0.6013	4.54	19.48	0.233 ¹
T3	260 - 240	1	3.00	2.83	136.0	0.7854	5.45	25.45	0.214 ¹
T4	240 - 220	1 1/4	3.00	2.79	107.2	1.2272	9.96	39.76	0.251 ¹
T5	220 - 200	7/8	3.00	2.81	154.3	0.6013	4.15	19.48	0.213 ¹
T6	200 - 180	7/8	3.00	2.81	154.3	0.6013	4.46	19.48	0.229 ¹
T7	180 - 160	7/8	3.00	2.81	154.3	0.6013	4.86	19.48	0.250 ¹
T8	160 - 140	7/8	3.00	2.81	154.3	0.6013	3.21	19.48	0.165 ¹
T9	140 - 120	7/8	3.00	2.81	154.3	0.6013	3.82	19.48	0.196 ¹
T10	120 - 100	1	3.00	2.81	135.0	0.7854	4.69	25.45	0.184 ¹
T11	100 - 80	7/8	3.00	2.81	154.3	0.6013	4.14	19.48	0.213 ¹
T12	80 - 60	7/8	3.00	2.81	154.3	0.6013	2.92	19.48	0.150 ¹
T13	60 - 40	7/8	3.00	2.81	154.3	0.6013	3.47	19.48	0.178 ¹
T14	40 - 20	7/8	3.00	2.79	153.1	0.6013	3.30	19.48	0.169 ¹
T15	20 - 6.8125	7/8	3.00	2.79	153.1	0.6013	4.15	19.48	0.213 ¹
T16	6.8125 - 0	L4x4x3/8	2.29	2.09	20.3	2.8600	1.06	92.66	0.011 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	3/4	1.50	1.42	90.7	0.4418	0.00	14.31	0.000 ¹
T2	280 - 260	3/4	1.50	1.42	90.7	0.4418	0.00	14.31	0.000 ¹
T3	260 - 240	3/4	1.50	1.42	90.7	0.4418	0.00	14.31	0.000 ¹
T4	240 - 220	3/4	1.50	1.40	89.3	0.4418	0.00	14.31	0.000 ¹
T5	220 - 200	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T6	200 - 180	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T7	180 - 160	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T8	160 - 140	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T9	140 - 120	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T10	120 - 100	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T11	100 - 80	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T12	80 - 60	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹
T13	60 - 40	3/4	1.50	1.41	90.0	0.4418	0.00	14.31	0.000 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T14	40 - 20	3/4	1.50	1.40	89.3	0.4418	0.00	14.31	0.000 ¹
T15	20 - 6.8125	3/4	1.50	1.40	89.3	0.4418	0.00	14.31	0.000 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	136.0	0.7854	0.64	25.45	0.025 ¹
T2	280 - 260	7/8	3.00	2.83	155.4	0.6013	2.82	19.48	0.145 ¹
T3	260 - 240	1	3.00	2.83	136.0	0.7854	2.70	25.45	0.106 ¹
T4	240 - 220	1 1/4	3.00	2.79	107.2	1.2272	3.87	39.76	0.097 ¹
T5	220 - 200	7/8	3.00	2.81	154.3	0.6013	2.43	19.48	0.125 ¹
T6	200 - 180	7/8	3.00	2.81	154.3	0.6013	1.84	19.48	0.095 ¹
T7	180 - 160	7/8	3.00	2.81	154.3	0.6013	2.64	19.48	0.135 ¹
T8	160 - 140	7/8	3.00	2.81	154.3	0.6013	1.98	19.48	0.101 ¹
T9	140 - 120	7/8	3.00	2.81	154.3	0.6013	1.59	19.48	0.082 ¹
T10	120 - 100	1	3.00	2.81	135.0	0.7854	2.43	25.45	0.096 ¹
T11	100 - 80	7/8	3.00	2.81	154.3	0.6013	2.38	19.48	0.122 ¹
T12	80 - 60	7/8	3.00	2.81	154.3	0.6013	1.58	19.48	0.081 ¹
T13	60 - 40	7/8	3.00	2.81	154.3	0.6013	2.00	19.48	0.103 ¹
T14	40 - 20	7/8	3.00	2.79	153.1	0.6013	1.68	19.48	0.086 ¹
T15	20 - 6.8125	7/8	3.00	2.79	153.1	0.6013	2.15	19.48	0.110 ¹
T16	6.8125 - 0	L4x4x3/8	2.87	2.66	25.9	2.8600	10.49	92.66	0.113 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280	1	3.00	2.83	136.0	0.7854	3.33	25.45	0.131 ¹
T2	280 - 260	7/8	3.00	2.83	155.4	0.6013	1.31	19.48	0.067 ¹
T3	260 - 240	1	3.00	2.83	136.0	0.7854	3.10	25.45	0.122 ¹
T4	240 - 220	1 1/4	3.00	2.79	107.2	1.2272	2.92	39.76	0.073 ¹
T5	220 - 200	7/8	3.00	2.81	154.3	0.6013	1.73	19.48	0.089 ¹
T6	200 - 180	7/8	3.00	2.81	154.3	0.6013	2.57	19.48	0.132 ¹
T7	180 - 160	7/8	3.00	2.81	154.3	0.6013	2.14	19.48	0.110 ¹
T8	160 - 140	7/8	3.00	2.81	154.3	0.6013	1.40	19.48	0.072 ¹
T9	140 - 120	7/8	3.00	2.81	154.3	0.6013	2.14	19.48	0.110 ¹
T10	120 - 100	1	3.00	2.81	135.0	0.7854	2.54	25.45	0.100 ¹
T11	100 - 80	7/8	3.00	2.81	154.3	0.6013	1.70	19.48	0.087 ¹
T12	80 - 60	7/8	3.00	2.81	154.3	0.6013	1.80	19.48	0.092 ¹
T13	60 - 40	7/8	3.00	2.81	154.3	0.6013	1.68	19.48	0.086 ¹
T14	40 - 20	7/8	3.00	2.79	153.1	0.6013	1.98	19.48	0.102 ¹

¹ P_u / φP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T7	180 - 160	2x3/8	3.00	2.81	311.8	0.7500	4.17	24.30	0.172 ¹
T10	120 - 100	2x3/8	3.00	2.81	311.8	0.7500	3.69	24.30	0.152 ¹
T13	60 - 40	2x3/8	3.00	2.81	311.8	0.7500	2.88	24.30	0.119 ¹

¹ P_u / φP_n controls

Top Guy Pull-Off 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 $\frac{M_{uy}}{\phi M_{ny}}$
T7	180 - 160	2x3/8	0.00	1.01	0.000	0.00	0.19	0.000
T10	120 - 100	2x3/8	0.00	1.01	0.000	0.00	0.19	0.000
T13	60 - 40	2x3/8	0.00	1.01	0.000	0.00	0.19	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T7	180 - 160	2x3/8	0.172	0.000	0.000	0.172 ¹	1.050	4.8.1
T10	120 - 100	2x3/8	0.152	0.000	0.000	0.152 ¹	1.050	4.8.1
T13	60 - 40	2x3/8	0.119	0.000	0.000	0.119 ¹	1.050	4.8.1

¹ P_u / φP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	300 - 280 (724)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	12.61	68.68	0.184 ¹
T1	300 - 280 (725)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	13.70	68.68	0.200 ¹
T1	300 - 280 (730)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	13.75	68.68	0.200 ¹
T1	300 - 280 (731)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	12.51	68.68	0.182 ¹
T1	300 - 280 (736)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	12.53	68.68	0.182 ¹
T1	300 - 280 (737)	L3 1/2x3 1/2x3/8	3.51	3.43	38.5	1.5788	13.93	68.68	0.203 ¹
T4	240 - 220 (742)	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	14.56	68.68	0.212 ¹
T4	240 - 220 (743)	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	14.28	68.68	0.208 ¹
T4	240 - 220 (748)	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	15.07	68.68	0.220 ¹
T4	240 - 220 (749)	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	13.74	68.68	0.200 ¹
T4	240 - 220	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	13.77	68.68	0.201 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	(754) 240 - 220 (755)	L3 1/2x3 1/2x3/8	3.51	3.41	38.2	1.5788	15.65	68.68	0.228 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	300 - 280	Leg	2	1	-36.40	96.63	37.7	Pass
T2	280 - 260	Leg	2	49	-58.44	96.63	60.5	Pass
T3	260 - 240	Leg	2	97	-52.66	96.63	54.5	Pass
T4	240 - 220	Leg	2 1/2	145	-45.93	176.22	26.1	Pass
T5	220 - 200	Leg	2 1/4	194	-40.09	133.83	30.0	Pass
T6	200 - 180	Leg	2 1/4	242	-47.33	133.83	35.4	Pass
T7	180 - 160	Leg	2 1/4	290	-55.72	133.83	41.6	Pass
T8	160 - 140	Leg	2 1/4	338	-42.97	133.83	32.1	Pass
T9	140 - 120	Leg	2 1/4	386	-49.49	133.83	37.0	Pass
T10	120 - 100	Leg	2 1/4	433	-57.75	133.83	43.2	Pass
T11	100 - 80	Leg	2 1/4	481	-61.37	133.83	45.9	Pass
T12	80 - 60	Leg	2 1/4	529	-64.64	133.83	48.3	Pass
T13	60 - 40	Leg	2 1/4	577	-66.02	133.83	49.3	Pass
T14	40 - 20	Leg	2 1/2	625	-67.88	176.22	38.5	Pass
T15	20 - 6.8125	Leg	2 1/2	673	-63.29	176.26	35.9	Pass
T16	6.8125 - 0	Leg	2 1/2	704	-59.66	220.92	27.0	Pass
T1	300 - 280	Diagonal	1 1/4	11	-7.75	21.77	35.6	Pass
T2	280 - 260	Diagonal	1 1/8	94	-7.47	15.13	49.4	Pass
T3	260 - 240	Diagonal	1 3/8	106	-8.74	29.49	29.6	Pass
T4	240 - 220	Diagonal	1 3/8	189	-10.02	29.96	33.4	Pass
T5	220 - 200	Diagonal	1 1/4	238	-6.71	21.98	30.5	Pass
T6	200 - 180	Diagonal	1 3/8	250	-7.42	29.73	25.0	Pass
T7	180 - 160	Diagonal	1 3/8	333	-7.75	29.73	26.1	Pass
T8	160 - 140	Diagonal	1 1/8	382	-5.32	15.31	34.7	Pass
T9	140 - 120	Diagonal	1 1/4	394	-6.35	21.98	28.9	Pass
T10	120 - 100	Diagonal	1 3/8	442	-7.23	29.73	24.3	Pass
T11	100 - 80	Diagonal	1 1/4	525	-6.91	21.98	31.4	Pass
T12	80 - 60	Diagonal	1 1/8	539	-4.73	15.31	30.9	Pass
T13	60 - 40	Diagonal	1 1/8	607	-5.19	15.31	33.9	Pass
T14	40 - 20	Diagonal	1 1/8	636	-5.33	15.49	34.4	Pass
T15	20 - 6.8125	Diagonal	1 1/8	680	-5.84	15.50	37.7	Pass
T1	300 - 280	Horizontal	1	23	-3.64	16.58	21.9	Pass
T2	280 - 260	Horizontal	7/8	91	-2.61	10.97	23.8	Pass
T3	260 - 240	Horizontal	1	110	-3.52	16.58	21.2	Pass
T4	240 - 220	Horizontal	1 1/4	173	9.96	41.75	23.9	Pass
T5	220 - 200	Horizontal	7/8	235	4.15	20.46	20.3	Pass
T6	200 - 180	Horizontal	7/8	254	4.46	20.46	21.8	Pass
T7	180 - 160	Horizontal	7/8	330	4.86	20.46	23.8	Pass
T8	160 - 140	Horizontal	7/8	379	3.21	20.46	15.7	Pass
T9	140 - 120	Horizontal	7/8	398	3.82	20.46	18.7	Pass
T10	120 - 100	Horizontal	1	460	4.69	26.72	17.5	Pass
T11	100 - 80	Horizontal	7/8	522	4.14	20.46	20.3	Pass
T12	80 - 60	Horizontal	7/8	544	2.92	20.46	14.3	Pass
T13	60 - 40	Horizontal	7/8	604	3.47	20.46	16.9	Pass
T14	40 - 20	Horizontal	7/8	640	3.30	20.46	16.1	Pass
T15	20 - 6.8125	Horizontal	7/8	685	4.15	20.46	20.3	Pass
T16	6.8125 - 0	Horizontal	L4x4x3/8	712	-1.06	94.71	29.5	Pass
T1	300 - 280	Secondary Horizontal	3/4	13	-0.00	10.42	0.0	Pass
T2	280 - 260	Secondary Horizontal	3/4	61	-0.00	10.42	0.0	Pass
T3	260 - 240	Secondary Horizontal	3/4	144	-0.00	10.42	0.0	Pass
T4	240 - 220	Secondary Horizontal	3/4	157	-0.00	10.45	0.0	Pass

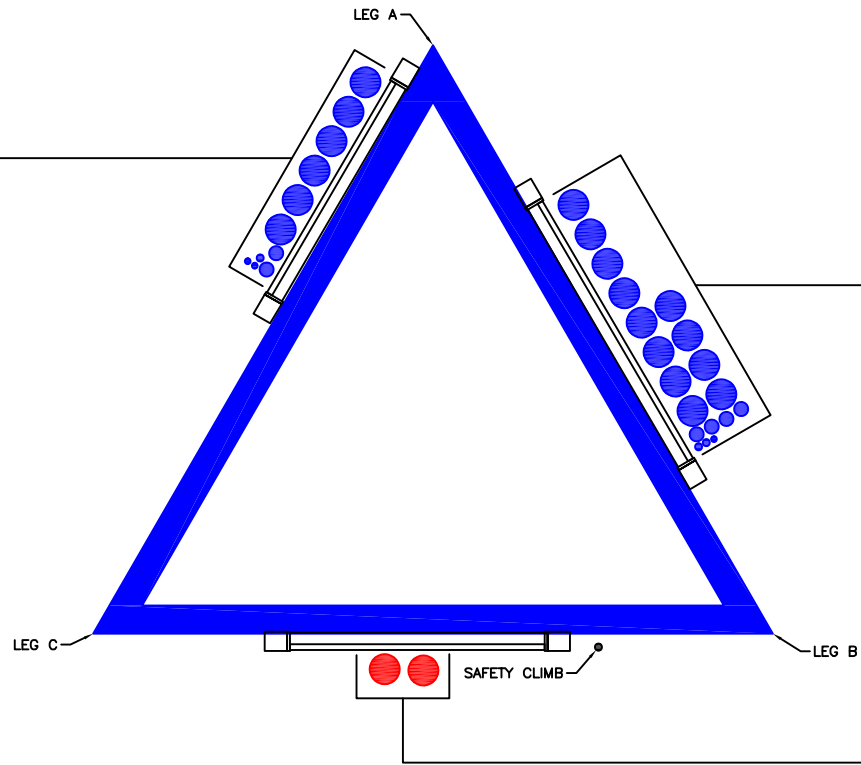
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T5	220 - 200	Horizontal Secondary	3/4	205	-0.00	10.43	0.0	Pass
T6	200 - 180	Horizontal Secondary	3/4	288	-0.00	10.43	0.0	Pass
T7	180 - 160	Horizontal Secondary	3/4	301	0.00	15.03	0.0	Pass
T8	160 - 140	Horizontal Secondary	3/4	384	-0.00	10.43	0.0	Pass
T9	140 - 120	Horizontal Secondary	3/4	432	-0.00	10.43	0.0	Pass
T10	120 - 100	Horizontal Secondary	3/4	445	0.00	15.03	0.0	Pass
T11	100 - 80	Horizontal Secondary	3/4	528	0.00	15.03	0.0	Pass
T12	80 - 60	Horizontal Secondary	3/4	576	0.00	15.03	0.0	Pass
T13	60 - 40	Horizontal Secondary	3/4	624	-0.00	10.43	0.0	Pass
T14	40 - 20	Horizontal Secondary	3/4	672	-0.00	10.45	0.0	Pass
T15	20 - 6.8125	Horizontal Secondary	3/4	703	-0.00	10.45	0.0	Pass
T1	300 - 280	Top Girt	1	6	-0.64	16.58	3.9	Pass
T2	280 - 260	Top Girt	7/8	54	-1.86	10.97	16.9	Pass
T3	260 - 240	Top Girt	1	100	2.70	26.72	10.1	Pass
T4	240 - 220	Top Girt	1 1/4	150	-2.69	28.46	9.5	Pass
T5	220 - 200	Top Girt	7/8	198	2.43	20.46	11.9	Pass
T6	200 - 180	Top Girt	7/8	244	1.84	20.46	9.0	Pass
T7	180 - 160	Top Girt	7/8	292	2.64	20.46	12.9	Pass
T8	160 - 140	Top Girt	7/8	342	1.98	20.46	9.7	Pass
T9	140 - 120	Top Girt	7/8	388	-1.00	11.07	9.0	Pass
T10	120 - 100	Top Girt	1	438	2.43	26.72	9.1	Pass
T11	100 - 80	Top Girt	7/8	484	2.38	20.46	11.6	Pass
T12	80 - 60	Top Girt	7/8	534	-1.22	11.07	11.0	Pass
T13	60 - 40	Top Girt	7/8	582	-1.30	11.07	11.7	Pass
T14	40 - 20	Top Girt	7/8	630	-1.21	11.17	10.8	Pass
T15	20 - 6.8125	Top Girt	7/8	678	2.15	20.46	10.5	Pass
T16	6.8125 - 0	Top Girt	L4x4x3/8	709	10.49	97.30	10.8	Pass
T1	300 - 280	Bottom Girt	1	8	3.33	26.72	12.5	Pass
T2	280 - 260	Bottom Girt	7/8	57	-1.23	10.97	11.2	Pass
T3	260 - 240	Bottom Girt	1	103	-2.10	16.58	12.7	Pass
T4	240 - 220	Bottom Girt	1 1/4	152	2.92	41.75	7.0	Pass
T5	220 - 200	Bottom Girt	7/8	199	1.73	20.46	8.5	Pass
T6	200 - 180	Bottom Girt	7/8	247	2.57	20.46	12.5	Pass
T7	180 - 160	Bottom Girt	7/8	296	2.14	20.46	10.4	Pass
T8	160 - 140	Bottom Girt	7/8	343	-0.86	11.07	7.8	Pass
T9	140 - 120	Bottom Girt	7/8	391	2.14	20.46	10.4	Pass
T10	120 - 100	Bottom Girt	1	439	2.54	26.72	9.5	Pass
T11	100 - 80	Bottom Girt	7/8	489	-1.22	11.07	11.0	Pass
T12	80 - 60	Bottom Girt	7/8	537	-1.22	11.07	11.0	Pass
T13	60 - 40	Bottom Girt	7/8	585	-1.30	11.07	11.7	Pass
T14	40 - 20	Bottom Girt	7/8	633	-1.21	11.17	10.8	Pass
T1	300 - 280	Guy A@290	3/4 [ECP-24000]	735	14.60	36.73	39.8	Pass
T4	240 - 220	Guy A@230	3/4 [ECP-24000]	752	14.30	36.73	38.9	Pass
T7	180 - 160	Guy A@173.193	3/4 [ECP-24000]	763	12.51	36.73	34.1	Pass
T10	120 - 100	Guy A@113.193	3/4 [ECP-24000]	769	12.30	36.73	33.5	Pass
T13	60 - 40	Guy A@53.1927	1/2 [ECP-23000]	775	5.63	16.95	33.2	Pass
T1	300 - 280	Guy B@290	3/4 [ECP-24000]	729	14.92	36.73	40.6	Pass
T4	240 - 220	Guy B@230	3/4 [ECP-24000]	747	15.37	36.73	41.8	Pass
T7	180 - 160	Guy B@173.193	3/4 [ECP-24000]	762	13.28	36.73	36.1	Pass
T10	120 - 100	Guy B@113.193	3/4 [ECP-24000]	768	13.32	36.73	36.3	Pass
T13	60 - 40	Guy B@53.1927	1/2 [ECP-23000]	774	6.06	16.95	35.8	Pass
T1	300 - 280	Guy C@290	3/4 [ECP-24000]	723	14.92	36.73	40.6	Pass
T4	240 - 220	Guy C@230	3/4 [ECP-24000]	741	15.48	36.73	42.2	Pass
T7	180 - 160	Guy C@173.193	3/4 [ECP-24000]	758	13.98	36.73	38.1	Pass
T10	120 - 100	Guy C@113.193	3/4 [ECP-24000]	764	13.98	36.73	38.1	Pass
T13	60 - 40	Guy C@53.1927	1/2 [ECP-23000]	770	6.38	16.95	37.6	Pass
T7	180 - 160	Top Guy Pull-Off@173.193	2x3/8	760	4.17	25.51	16.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T10	120 - 100	Top Guy Pull-Off@113.193	2x3/8	766	3.69	25.51	14.4	Pass
T13	60 - 40	Top Guy Pull-Off@53.1927	2x3/8	773	2.88	25.51	11.3	Pass
T1	300 - 280	Torque Arm Top@290	L3 1/2x3 1/2x3/8	737	13.93	72.11	19.3	Pass
T4	240 - 220	Torque Arm Top@230	L3 1/2x3 1/2x3/8	755	15.65	72.11	21.7	Pass
T1	300 - 280	Torque Arm Bottom@290	L3 1/2x3 1/2x3/8	727	-19.07	74.43	25.6	Pass
T4	240 - 220	Torque Arm Bottom@230	L3 1/2x3 1/2x3/8	745	-16.62	74.67	22.3	Pass
						Summary		
						Leg (T2)	60.5	Pass
						Diagonal (T2)	49.4	Pass
						Horizontal (T16)	29.5	Pass
						Secondary Horizontal (T10)	0.0	Pass
						Top Girt (T2)	16.9	Pass
						Bottom Girt (T3)	12.7	Pass
						Guy A (T1)	39.8	Pass
						Guy B (T4)	41.8	Pass
						Guy C (T4)	42.2	Pass
						Top Guy Pull-Off (T7)	16.4	Pass
						Torque Arm Top (T4)	21.7	Pass
						Torque Arm Bottom (T1)	25.6	Pass
						Bolt Checks	37.1	Pass
						RATING =	60.5	Pass

APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(2) 5/16" TO 270 FT LEVEL
(1) 3/8" TO 270 FT LEVEL
(2) 3/4" TO 270 FT LEVEL
(6) 1-5/8" TO 270 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)
(1) 5/16" TO 270 FT LEVEL
(2) 3/8" TO 270 FT LEVEL
(4) 3/4" TO 270 FT LEVEL
(12) 1-5/8" TO 270 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-5/8" TO 260 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Pier and Pad Foundation



BU # : 846221
 Site Name: SE Lake City
 App. Number: 640916 Rev. 0

TIA-222 Revision: H
 Tower Type: Guyed

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	153.04	kips
Base Shear, V_{u_comp} :	1.772	kips
Moment, M_u :	0	ft-kips
Tower Height, H :	300	ft
BP Dist. Above Fdn, b_{p_dist} :	1.5	in
Bolt Circle / Bearing Plate Width, BC :		in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, d_{pier} :	3.5	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	9	
Pier Rebar Quantity, mc :	10	
Pier Tie/Spiral Size, S_t :	4	
Pier Tie/Spiral Quantity, mt :	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	3	ft
Pad Width, W_1 :	12	ft
Pad Thickness, T :	1.5	ft
Pad Rebar Size (Top dir.2), Sp_{top2} :	0	
Pad Rebar Quantity (Top dir. 2), mp_{top2} :	0	
Pad Rebar Size (Bottom dir. 2), Sp_2 :	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2 :	13	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	100	pcf
Ultimate Gross Bearing, Q_{ult} :	4.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, ϕ :	32	degrees
SPT Blow Count, N_{blows} :	3	
Base Friction, μ :		
Neglected Depth, N :	1.75	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	10	ft

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	45.63	1.77	3.7%	Pass
Bearing Pressure (ksf)	2.40	1.54	61.2%	Pass
Overturning (kip*ft)	437.29	6.42	1.5%	Pass
Pier Flexure (Comp.) (kip*ft)	874.69	3.54	0.4%	Pass
Pier Compression (kip)	5847.66	157.45	2.6%	Pass
Pad Flexure (kip*ft)	716.39	118.68	15.8%	Pass
Pad Shear - 1-way (kips)	157.44	41.26	25.0%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.044	25.2%	Pass
Flexural 2-way (Comp) (kip*ft)	464.97	2.13	0.4%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	25.2%
Soil Rating*:	61.2%

--Toggle between Gross and Net

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.



BU#:	846221
Site Name:	SE Lake City
Order Number:	640916 Rev. 0
Location:	Guy A @ 225 ft (Elev 0 ft)

TIA-222 Revision: H

Design Reactions		
Shear, S:	64.15	kips
Uplift, Ua:	55.33	kips
Resultant Force, Rf:	84.72	kips
Tower Height, H:	300.00	ft
Guy Anchor Radius, R:	225.00	ft
Resultant Angle to Horizontal, θ:	40.8	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, Da:	12	ft
Anchor Width, Wa:	5	ft
Anchor Thickness, Ta:	4	ft
Anchor Length, La:	20	ft
Concrete Volume, Vc:	14.8	yd ³
Toe Width, toe:	0	ft
Guyed Anchor Top Rebar Size, Sat:	9	
No. of Bars in Top of Block:	8	
Guyed Anchor Front Rebar Size, Saf:	9	
No. of Bars in Front of Block:	8	
Stirrup Size:	4	
Anchor Shaft Diameter, ds:	2.25	in
Anchor Shaft Quantity, n:	1	
Anchor Shaft Area Override:		in ²
Shear Lag Factor, u:	1	

Material Properties		
Rebar Grade, Fy:	60	ksi
Concrete Strength, F'c:	3	ksi
Wt. Avg. Concrete Density, δx:	0.119	kcf
Clear Cover, cc:	3	in
Anchor Shaft Grade, Fy':	36	ksi
Anchor Shaft Ultimate Strength, Fu':	58	ksi

Design Checks				
	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	287.61	64.15	21.2%	Pass
Uplift Capacity (kips):	297.56	55.33	17.7%	Pass
Lateral Flexural Capacity (ft*kips):	1943.11	160.38	7.9%	Pass
Uplift Flexural Capacity (ft*kips):	1525.23	138.33	8.6%	Pass
Anchor Shaft (kips):	114.51	84.72	70.5%	Pass

*Rating per TIA-222-H Section 15.5

Anchor Shaft Rating:	70.5%
Structural Rating:	8.6%
Soil Rating:	21.2%

Neglect Depth, Neg:	0.4167	ft
Groundwater Level, gw:	10	ft

Soil Properties:		No. of Soil Layers:		3		
Layer	φ, deg	cu, ksf	δ, pcf		Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	110	0.42		
2	32	0.000	110	10.00		16
3	32	0.000	47.6	12.00		16

*key: φ = Internal Angle of Friction

cu = Cohesion / Undrained Shear Strength

δ = Buoyant Soil Unit Weight

d = Depth to Bottom of Layer

Ultimate fs = Geotechnical Report-provided skin friction / adhesion

N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.



BU#:	846221
Site Name:	SE Lake City
Order Number:	640916 Rev. 0
Location:	Guy B @ 225 ft (Elev 0 ft)

TIA-222 Revision: H

Design Reactions		
Shear, S :	66.81	kips
Uplift, Ua :	57.25	kips
Resultant Force, Rf :	87.99	kips
Tower Height, H :	300.00	ft
Guy Anchor Radius, R :	225.00	ft
Resultant Angle to Horizontal, θ :	40.6	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, Da :	12	ft
Anchor Width, Wa :	5	ft
Anchor Thickness, Ta :	4	ft
Anchor Length, La :	20	ft
Concrete Volume, Vc :	14.8	yd ³
Toe Width, toe :	0	ft
Guyed Anchor Top Rebar Size, Sat :	9	
No. of Bars in Top of Block:	8	
Guyed Anchor Front Rebar Size, Saf :	9	
No. of Bars in Front of Block:	8	
Stirrup Size:	4	
Anchor Shaft Diameter, ds :	2.25	in
Anchor Shaft Quantity, n :	1	
Anchor Shaft Area Override:		in ²
Shear Lag Factor, u :	1	

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Strength, Fc :	3	ksi
Wt. Avg. Concrete Density, δx :	0.119	kcf
Clear Cover, cc :	3	in
Anchor Shaft Grade, Fy' :	36	ksi
Anchor Shaft Ultimate Strength, Fu' :	58	ksi

Design Checks				
	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	287.63	66.81	22.1%	Pass
Uplift Capacity (kips):	297.54	57.25	18.3%	Pass
Lateral Flexural Capacity (ft*kips):	1943.11	167.04	8.2%	Pass
Uplift Flexural Capacity (ft*kips):	1525.23	143.13	8.9%	Pass
Anchor Shaft (kips):	114.51	87.99	73.2%	Pass

*Rating per TIA-222-H Section 15.5

Anchor Shaft Rating:	73.2%
Structural Rating:	8.9%
Soil Rating:	22.1%

Neglect Depth, Neg :	0.4167	ft
Groundwater Level, gw :	10	ft

Soil Properties:		No. of Soil Layers:		3		
Layer	φ, deg	cu, ksf	δ, pcf		Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	110	0.42		
2	32	0.000	110	10.00		23
3	32	0.000	47.6	12.00		23

*key: φ = Internal Angle of Friction

cu = Cohesion / Undrained Shear Strength

δ = Buoyant Soil Unit Weight

d = Depth to Bottom of Layer

Ultimate fs = Geotechnical Report-provided skin friction / adhesion

N = SPT Blow Count

Guyed Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.



BU#:	846221
Site Name:	SE Lake City
Order Number:	640916 Rev. 0
Location:	Guy C @ 225 ft (Elev 0 ft)

TIA-222 Revision: H

Design Reactions		
Shear, S:	69.30	kips
Uplift, Ua:	59.05	kips
Resultant Force, Rf:	91.05	kips
Tower Height, H:	300.00	ft
Guy Anchor Radius, R:	225.00	ft
Resultant Angle to Horizontal, θ:	40.4	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, Da:	12	ft
Anchor Width, Wa:	5	ft
Anchor Thickness, Ta:	4	ft
Anchor Length, La:	20	ft
Concrete Volume, Vc:	14.8	yd ³
Toe Width, toe:	0	ft
Guyed Anchor Top Rebar Size, Sat:	9	
No. of Bars in Top of Block:	8	
Guyed Anchor Front Rebar Size, Saf:	9	
No. of Bars in Front of Block:	8	
Stirrup Size:	4	
Anchor Shaft Diameter, ds:	2.25	in
Anchor Shaft Quantity, n:	1	
Anchor Shaft Area Override:		in ²
Shear Lag Factor, u:	1	

Material Properties		
Rebar Grade, Fy:	60	ksi
Concrete Strength, F'c:	3	ksi
Wt. Avg. Concrete Density, δx:	0.119	kcf
Clear Cover, cc:	3	in
Anchor Shaft Grade, Fy':	36	ksi
Anchor Shaft Ultimate Strength, Fu':	58	ksi

Design Checks				
	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	287.64	69.30	22.9%	Pass
Uplift Capacity (kips):	297.52	59.05	18.9%	Pass
Lateral Flexural Capacity (ft*kips):	1943.11	173.25	8.5%	Pass
Uplift Flexural Capacity (ft*kips):	1525.23	147.63	9.2%	Pass
Anchor Shaft (kips):	114.51	91.05	75.7%	Pass

*Rating per TIA-222-H Section 15.5

Anchor Shaft Rating:	75.7%
Structural Rating:	9.2%
Soil Rating:	22.9%

Neglect Depth, Neg:	0.4167	ft
Groundwater Level, gw:	10	ft

Soil Properties:		No. of Soil Layers:		3		
Layer	φ, deg	cu, ksf	δ, pcf		Ultimate fs (ksf)	N (blows/ft)
1	0	0.000	110	0.42		
2	32	0.000	110	10.00		32
3	32	0.000	47.6	12.00		32

*key: φ = Internal Angle of Friction

cu = Cohesion / Undrained Shear Strength

δ = Buoyant Soil Unit Weight

d = Depth to Bottom of Layer

Ultimate fs = Geotechnical Report-provided skin friction / adhesion

N = SPT Blow Count

ASCE 7 Hazards Report

Address:

No Address at This Location

Standard:

ASCE/SEI 7-16

Risk Category: II**Soil Class:**

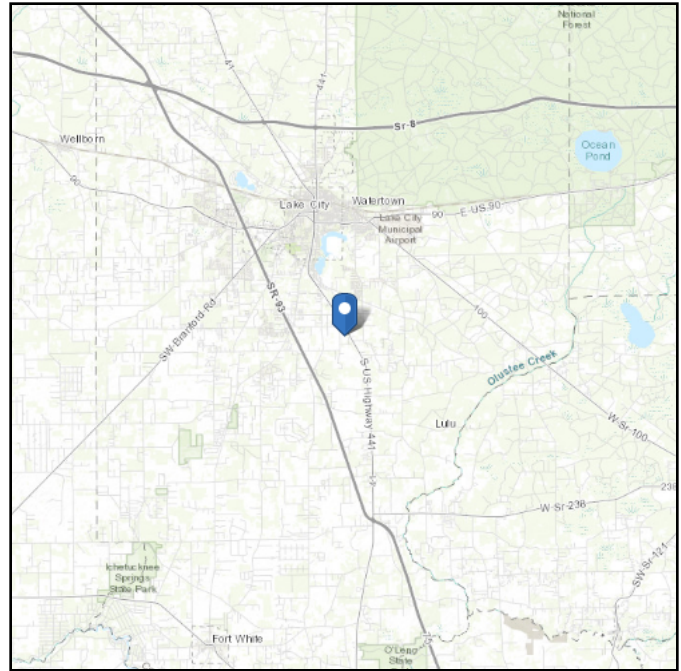
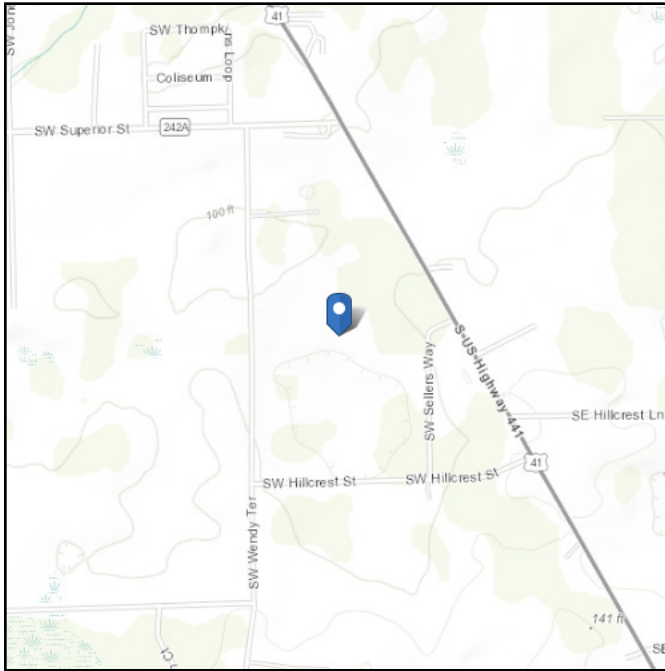
D - Stiff Soil

Latitude:

30.112933

Longitude: -82.618103**Elevation:**

86.7660617824194 ft (NAVD 88)



Wind

Results:

Wind Speed	119 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source:

ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed:

Thu Mar 16 2023

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

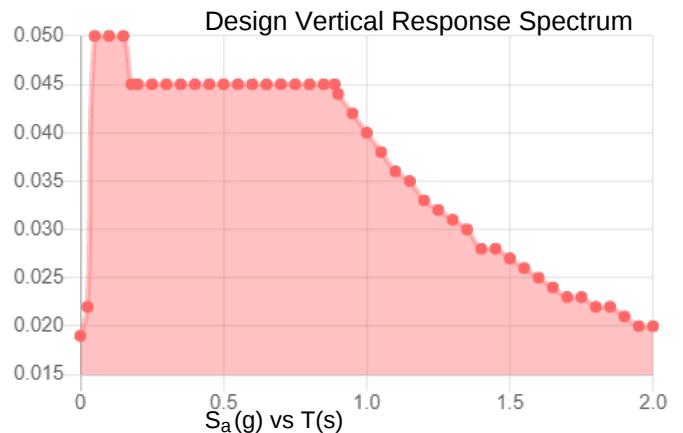
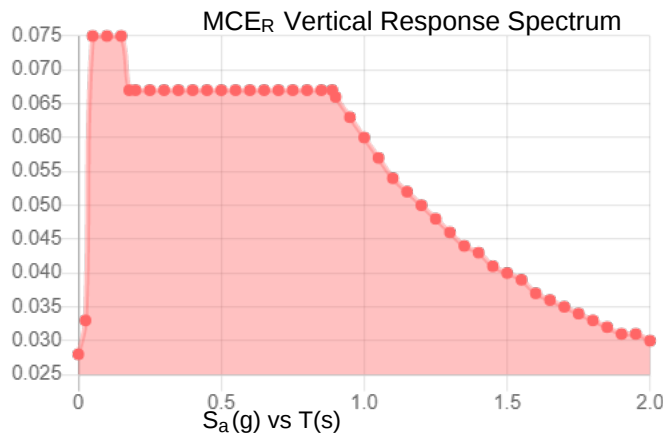
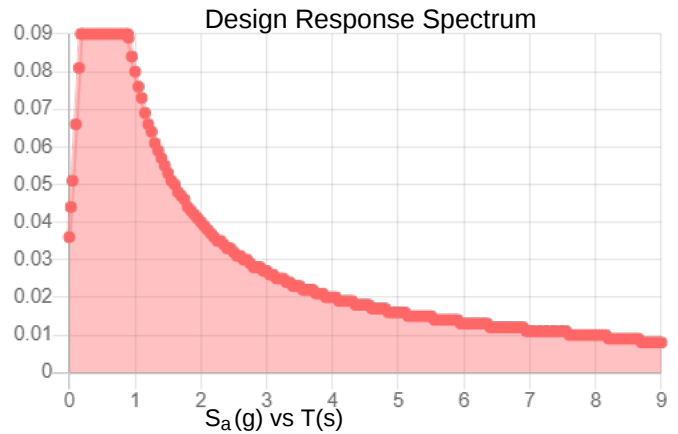
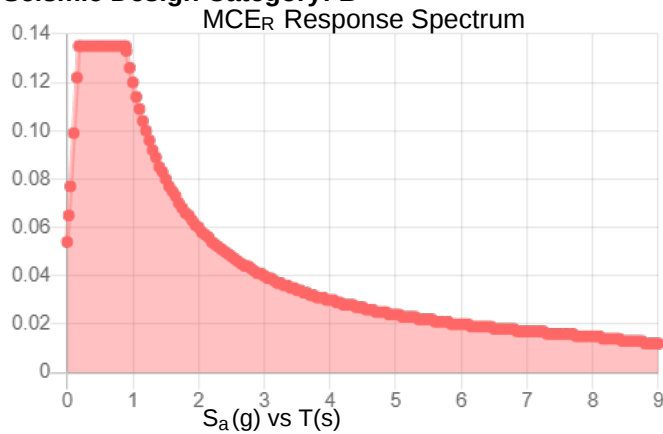
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class:

Results:

S_S :	0.084	S_{D1} :	0.08
S_1 :	0.05	T_L :	8
F_a :	1.6	PGA :	0.04
F_v :	2.4	PGA _M :	0.064
S_{MS} :	0.135	F_{PGA} :	1.6
S_{M1} :	0.12	I_e :	1
S_{DS} :	0.09	C_v :	0.7

Seismic Design Category: B



Data Accessed:

Thu Mar 16 2023

Date Source:

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

Results:

Ice Thickness: 0.25 in.
Concurrent Temperature: 25 F
Gust Speed 30 mph

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

Date Accessed: Thu Mar 16 2023

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

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

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