GPD GROUP, INC. - 30920

STRUCTURAL ANALYSIS REPORT

380’ Guyed Tower

1593 NW County Road 25A
Lake City, FL 32056
30.2264 N, 82.6522 W

SBA Site Name: Lake City 4 FL
SBA Site ID: FL09335-A

AT&T Site Name: Five Points
AT&T Site ID: 15826570
Application ID: 256774, v3

GPD Project Number: 2024778.09335.01

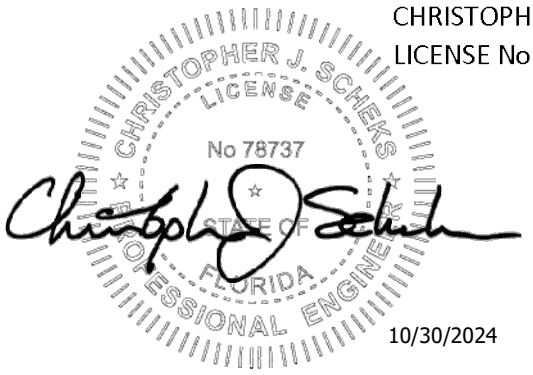
Analysis Results

Tower Components	79.2%	Sufficient
Foundation	55.9%	Sufficient

Net Change in Tower Stress Ratio as Compared to the Previous Structural Analysis	- 24.2%
Net Change in Tower Stress Ratio due to Mount Replacement/Reinforcement	N/A

October 30, 2024

Respectfully submitted by:



Christopher J. Scheks, P.E.
Florida #: 78737

Analysis Criteria

The purpose of this analysis is to verify whether the existing guyed tower is structurally capable of carrying the proposed equipment as specified by AT&T to SBA. This report was commissioned by Aubree Meek of SBA.

The existing structure and its foundations have been analyzed per the following requirements:

Governing Code(s)	TIA-222-H & 2023 Florida Building Code
Wind Speed	119 MPH 3-Second Gust
Wind Speed w/ Ice	N/A
Radial Ice Thickness	N/A
Risk Category	II
Exposure Category	C
Topographic Factor	1.0
Seismic Design Parameters	S_s = 0.130, S_1 = 0.059

Analysis Method

tnxTower (Version 8.2.4.3), a commercially available software program, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind and ice load cases. Selected output from the analysis is included in the appendices of this report. The following table details the information provided to complete the structural analysis. This analysis is solely based on this information.

Document Type	Remarks	Source
Geotechnical Report	Ellis & Associates, Inc Project #: 98-1459.1, Dated: 11/11/1998	SBA
Geotechnical Report	Ellis & Associates, Inc Project #: 98-1459.2, Dated: 12/02/1998	SBA
Original Tower & Foundation Drawings	World Tower Drawing #: Q98383, Dated: 4/9/1999	SBA
TIA Inspection Report	Trylon Project #: 2017 FL09335-A, Dated: 10/30/2017	SBA
AT&T Mount Analysis	TEP Project #: 72661.934960, Dated: 5/16/2024	SBA
Previous Structural Analysis	FDH Project #: 11-02176E S2, Dated: 5/6/2011	SBA
Existing Loading Microsoft Word Document	FL09335 Existing Loading, Uploaded: 7/17/2024	SBA
Collocation Application	SBA Application #: 256774 v3, Dated: 10/7/2024	SBA

Tower Loading

The following data shows the major loading that the tower supports. All existing, leased, and proposed loading information was provided by SBA.

Existing/Leased Loading

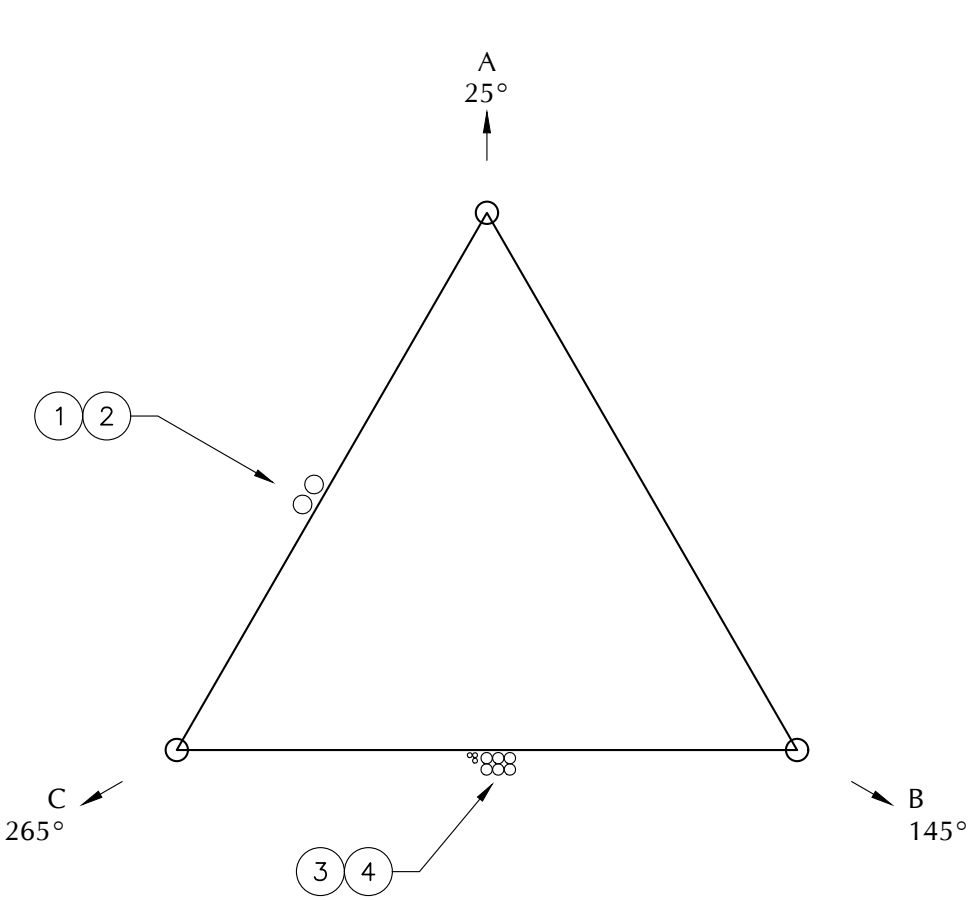
Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size (in)	Note
Unknown	378	387	1	Unknown	Omni	1	1-1/2	
			1	Unknown	Dipole			
		378	6		Standoff Mount			
	377	377	2		Standoff Mount			
Unknown	339	348	1	Unknown	Omni	1	1-1/2	
		339	6		Standoff Mount			
Unknown	302	302	4		Standoff Mount			

Final Proposed Loading Configuration

Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size (in)	Note
AT&T	250	250	8	Ericsson	KRE 101 2526/1K	6 3	0.957 DC 0.39 Fiber	1
			4	Ericsson	AIR6472 B77G B77M			
			4	Ericsson	4890 B25/B66			
			4	Ericsson	4478 B14			
			4	Ericsson	4490 B5/B12A			
			3	Raycap	DC9-48-60-24-8C-EV			
			4	Sabre	C10841002C Sector Mount			
			1	Sabre	C10100324 Quad Mount			

Notes:
1. This loading represents AT&T's final configuration on the tower. See the next page for the proposed feedline layout.

Proposed Feedline Configuration



#	CARRIER	SIZE	QTY.	ELEVATION	NOTES
1	Unknown	1-1/2"	1	379'	
2	Unknown	1-1/2"	1	339'	
3	AT&T	0.957"	6	250'	Proposed DC
4	AT&T	0.39"	3	250'	Proposed Fiber

Tower Section Results

Capacity Summary of Structural Components

Notes	Component	% Capacity	Pass / Fail
	Legs	73.9	Pass
	Diagonals	79.2	Pass
	Horizontals	40.3	Pass
	Member Bolts	26.5	Pass
	Guy Wires	64.0	Pass
	Pull-Off	14.0	Pass
	Tower Base Foundation	47.6	Pass
	Guy Anchor Foundation	55.9	Pass

Conclusions & Recommendations

The designs of the tower and its foundations are sufficient to support the proposed loading configuration and will not require modification.

Assumptions

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in the Existing/Reserved Loading and Proposed Loading Tables, and the specified documents.
4) All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5) Mount sizes, weights, and manufacturers are best estimates based on photos provided and determined without the benefit of a site visit by GPD.
6) All member connections and foundation steel reinforcing are assumed designed to meet or exceed the load carrying capacity of the connected member and surrounding soils respectively unless otherwise specified in this report.
7) Tower leg azimuths have been estimated based upon the use of satellite imagery software.
8) The existing feedline layout has been modeled based upon the previous structural analysis and site photos.
9) The proposed feedlines shall be installed as illustrated in order for the results of this analysis to be valid.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

Disclaimer of Warranties

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

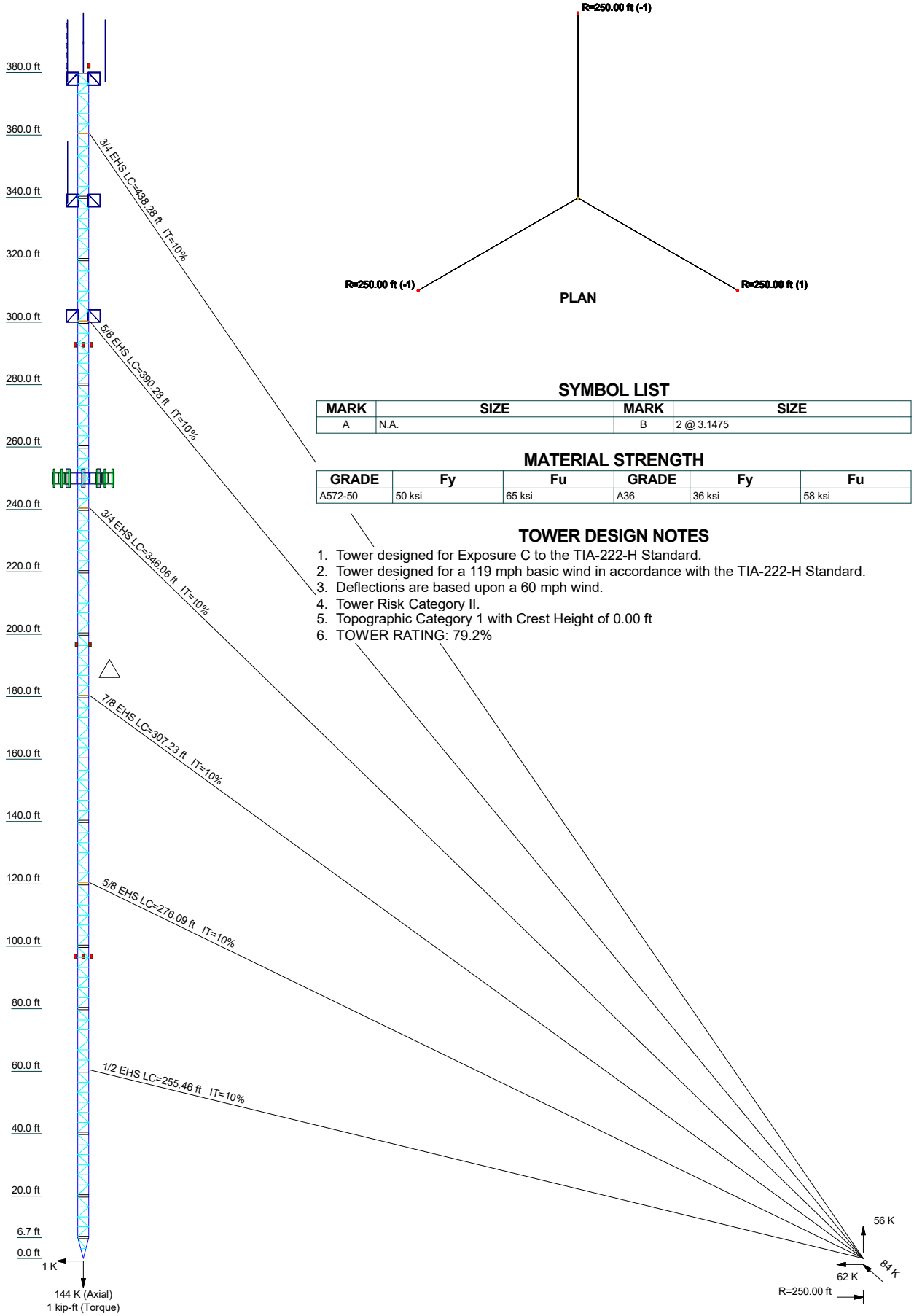
GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation for this report.

SBA Site ID: FL09335-A
October 30, 2024

TNX TOWER OUTPUT

GPD

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
Legs	SR 1 1/2					SR 1 3/4				SR 2 1/4						SR 2				
Leg Grade	A572-50																			
Diagonals	SR 1 1/8									SR 1 1/4					SR 1 1/8			SR 1		
Diagonal Grade	A36																			
Top Girts	SR 7/8																			
Bottom Girts	SR 7/8																			A
Horizontals	SR 7/8																			
Top Guy Pull-Offs	3x3/8	N.A.		3x3/8	N.A.		3x3/8	N.A.		3x3/8	N.A.		3x3/8	N.A.		3x3/8		N.A.		
Face Width (ft)	3.5								108 @ 3.20833											
# Panels @ (ft)	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.3	1.3	1.4	1.3	1.3	1.4	1.1	1.1	1.1	1.0	1.0	0.7	0.3
Weight (K)																			B 4 @ 3.145	20.4



PLAN

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	N.A.	B	2 @ 3.1475

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
3. Deflections are based upon a 60 mph wind.
4. Tower Risk Category II.
5. Topographic Category 1 with Crest Height of 0.00 ft
6. TOWER RATING: 79.2%

ALL REACTIONS ARE FACTORED

520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2222
FAX: (330) 572-3722

Job: ***FL09335-A / Lake City 4 FL***		
Project: ***2024778.09335.01***		
Client: SBA	Drawn by: TDeak	App'd:
Code: TIA-222-H	Date: 10/30/24	Scale: NTS
Path: T:\SBA\09335\01 SA AT&T LTE\5 Structural\00 Structure\00 Rev 0\03 Modeling\FL09335-A.eri		Dwg No. E-1

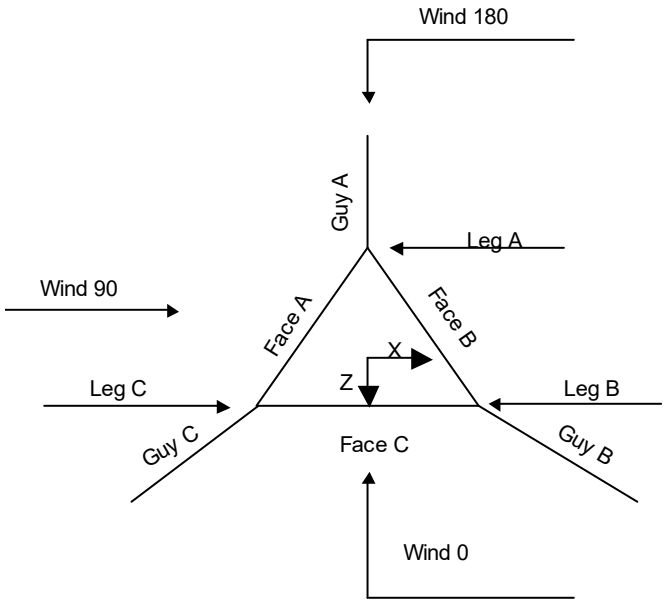
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 380.00 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 3.50 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 base elevation above sea level: 167.00 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.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	380.00-360.00			3.50	1	20.00
T2	360.00-340.00			3.50	1	20.00
T3	340.00-320.00			3.50	1	20.00
T4	320.00-300.00			3.50	1	20.00
T5	300.00-280.00			3.50	1	20.00
T6	280.00-260.00			3.50	1	20.00
T7	260.00-240.00			3.50	1	20.00
T8	240.00-220.00			3.50	1	20.00
T9	220.00-200.00			3.50	1	20.00
T10	200.00-180.00			3.50	1	20.00
T11	180.00-160.00			3.50	1	20.00
T12	160.00-140.00			3.50	1	20.00
T13	140.00-120.00			3.50	1	20.00
T14	120.00-100.00			3.50	1	20.00
T15	100.00-80.00			3.50	1	20.00
T16	80.00-60.00			3.50	1	20.00
T17	60.00-40.00			3.50	1	20.00
T18	40.00-20.00			3.50	1	20.00
T19	20.00-6.67			3.50	1	13.33
T20	6.67-0.00			3.50	1	6.67

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	380.00-360.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T2	360.00-340.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T3	340.00-320.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T4	320.00-300.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T5	300.00-280.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T6	280.00-260.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T7	260.00-240.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T8	240.00-220.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T9	220.00-200.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T10	200.00-180.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T11	180.00-160.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T12	160.00-140.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T13	140.00-120.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T14	120.00-100.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T15	100.00-80.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T16	80.00-60.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T17	60.00-40.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T18	40.00-20.00	3.21	K Brace Left	No	Yes	4.5000	4.5000
T19	20.00-6.67	3.15	K Brace Left	No	Yes	4.5000	4.5000
T20	6.67-0.00	3.15	K Brace Left	No	Yes	4.5000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 380.00-360.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2 360.00-340.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3 340.00-320.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 320.00-300.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5 300.00-280.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T6 280.00-260.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T7 260.00-240.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T8 240.00-220.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T9 220.00-200.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T10 200.00-180.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T11 180.00-160.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T12 160.00-140.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T13	Solid Round	2 1/4	A572-50	Solid Round	1 1/4	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
140.00-120.00			(50 ksi)			(36 ksi)
T14	Solid Round	2	A572-50	Solid Round	1 1/8	A36
120.00-100.00			(50 ksi)			(36 ksi)
T15 100.00-80.00	Solid Round	2	A572-50	Solid Round	1 1/8	A36
			(50 ksi)			(36 ksi)
T16 80.00-60.00	Solid Round	2	A572-50	Solid Round	1 1/8	A36
			(50 ksi)			(36 ksi)
T17 60.00-40.00	Solid Round	2	A572-50	Solid Round	1	A36
			(50 ksi)			(36 ksi)
T18 40.00-20.00	Solid Round	2	A572-50	Solid Round	1	A36
			(50 ksi)			(36 ksi)
T19 20.00-6.67	Solid Round	2	A572-50	Solid Round	1	A36
			(50 ksi)			(36 ksi)
T20 6.67-0.00	Solid Round	2	A572-50	Solid Round	1	A36
			(50 ksi)			(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 380.00-360.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T2 360.00-340.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T3 340.00-320.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T4 320.00-300.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T5 300.00-280.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T6 280.00-260.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T7 260.00-240.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T8 240.00-220.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T9 220.00-200.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T10	Solid Round	7/8	A36	Solid Round	7/8	A36
200.00-180.00			(36 ksi)			(36 ksi)
T11	Solid Round	7/8	A36	Solid Round	7/8	A36
180.00-160.00			(36 ksi)			(36 ksi)
T12	Solid Round	7/8	A36	Solid Round	7/8	A36
160.00-140.00			(36 ksi)			(36 ksi)
T13	Solid Round	7/8	A36	Solid Round	7/8	A36
140.00-120.00			(36 ksi)			(36 ksi)
T14	Solid Round	7/8	A36	Solid Round	7/8	A36
120.00-100.00			(36 ksi)			(36 ksi)
T15 100.00-80.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T16 80.00-60.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T17 60.00-40.00	Solid Round	7/8	A36	Solid Round	7/8	A36
			(36 ksi)			(36 ksi)
T18 40.00-20.00	Solid Round	7/8	A36	Solid Round	7/8	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T19 20.00-6.67	Solid Round	7/8	(36 ksi) A36 (36 ksi)	Solid Round	7/8	(36 ksi) A36 (36 ksi)
T20 6.67-0.00	Solid Round	7/8	A36 (36 ksi)	Solid Round		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 380.00-360.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 360.00-340.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 340.00-320.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 320.00-300.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 300.00-280.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 280.00-260.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 260.00-240.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 240.00-220.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 220.00-200.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 200.00-180.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T15 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T16 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T17 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T18 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T19 20.00-6.67	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T20 6.67-0.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	*in*					*in*	*in*	*in*
T1 380.00-360.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 360.00-340.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 340.00-320.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 320.00-300.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 300.00-280.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 280.00-260.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 260.00-240.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 240.00-220.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 220.00-200.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T13 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T14 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T15 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T16 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T17 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T18 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T19 20.00-6.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T20 6.67-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 380.00-360.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2	No	Yes	1	1	1	1	1	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
360.00-340.00				1	1	1	1	1	1	1
T3	No	Yes	1	1	1	1	1	1	1	1
340.00-320.00				1	1	1	1	1	1	1
T4	No	Yes	1	1	1	1	1	1	1	1
320.00-300.00				1	1	1	1	1	1	1
T5	No	Yes	1	1	1	1	1	1	1	1
300.00-280.00				1	1	1	1	1	1	1
T6	No	Yes	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1
T7	No	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T8	No	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T9	No	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T10	No	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T11	No	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T12	No	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T13	No	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T14	No	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T15	No	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T16	No	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T17	No	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T18	No	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T19	No	Yes	1	1	1	1	1	1	1	1
20.00-6.67				1	1	1	1	1	1	1
T20 6.67-0.00	No	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: 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	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
380.00-360.00														
T2	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
360.00-340.00														

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
T3 340.00-320.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 320.00-300.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 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	0.75
T6 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	0.75
T7 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	0.75
T8 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	0.75
T9 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	0.75
T10 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	0.75
T11 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	0.75
T12 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	0.75
T13 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	0.75
T14 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	0.75
T15 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	0.75
T16 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	0.75
T17 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	0.75
T18 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	0.75
T19 20.00-6.67	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T20 6.67-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

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 380.00-360.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T2 360.00-340.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)

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
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T3 340.00-320.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T4 320.00-300.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T5 300.00-280.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T6 280.00-260.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T7 260.00-240.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T8 240.00-220.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T9 220.00-200.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)

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
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T10 200.00-180.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T11 180.00-160.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T12 160.00-140.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T13 140.00-120.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T14 120.00-100.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T15 100.00-80.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T16 80.00-60.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)

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
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T17 60.00-40.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T18 40.00-20.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T19 20.00-6.67	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T20 6.67-0.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
380.00-360.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
360.00-340.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
340.00-320.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
320.00-300.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
300.00-280.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
280.00-260.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
260.00-240.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
240.00-220.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
220.00-200.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
200.00-180.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
180.00-160.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
160.00-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
140.00-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
120.00-100.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
100.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T19 20.00-6.67	Flange	0.7500	0	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	
T20 6.67-0.00	Flange	0.7500	0	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	

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 %
360.375	EHS	A	3/4	5.83	10%	24000	1.155	437.99	250.00	0.0000	-1.00	100%
		B	3/4	5.83	10%	24000	1.155	436.34	250.00	0.0000	1.00	100%
		C	3/4	5.83	10%	24000	1.155	437.99	250.00	0.0000	-1.00	100%
300.375	EHS	A	5/8	4.24	10%	23000	0.813	390.00	250.00	0.0000	-1.00	100%
		B	5/8	4.24	10%	23000	0.813	388.46	250.00	0.0000	1.00	100%
		C	5/8	4.24	10%	23000	0.813	390.00	250.00	0.0000	-1.00	100%

240.375	EHS	A	3/4	5.83	10%	24000	1.155	345.83	250.00	0.0000	-1.00	100%
		B	3/4	5.83	10%	24000	1.155	344.44	250.00	0.0000	1.00	100%
		C	3/4	5.83	10%	24000	1.155	345.83	250.00	0.0000	-1.00	100%
180.375	EHS	A	7/8	7.97	10%	24000	1.581	307.03	250.00	0.0000	-1.00	100%
		B	7/8	7.97	10%	24000	1.581	305.86	250.00	0.0000	1.00	100%
		C	7/8	7.97	10%	24000	1.581	307.03	250.00	0.0000	-1.00	100%
120.375	EHS	A	5/8	4.24	10%	23000	0.813	275.90	250.00	0.0000	-1.00	100%
		B	5/8	4.24	10%	23000	0.813	275.02	250.00	0.0000	1.00	100%
		C	5/8	4.24	10%	23000	0.813	275.90	250.00	0.0000	-1.00	100%
60.375	EHS	A	1/2	2.69	10%	23000	0.517	255.28	250.00	0.0000	-1.00	100%
		B	1/2	2.69	10%	23000	0.517	254.81	250.00	0.0000	1.00	100%
		C	1/2	2.69	10%	23000	0.517	255.28	250.00	0.0000	-1.00	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*
360.375	Corner						
300.375	Corner						
240.375	Corner						
180.375	Corner						
120.375	Corner						
60.375	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*
360.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8
300.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8
240.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8
180.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8
120.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8
60.38	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	3x3/8

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*

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
360.375	0.51	0.50	0.51		18.36 7.4 sec/pulse	18.23 7.4 sec/pulse	18.36 7.4 sec/pulse	
300.375	0.32	0.32	0.32		14.19 6.5 sec/pulse	14.08 6.5 sec/pulse	14.19 6.5 sec/pulse	
240.375	0.40	0.40	0.40		11.58 5.9 sec/pulse	11.49 5.9 sec/pulse	11.58 5.9 sec/pulse	
180.375	0.49	0.48	0.49		9.19 5.2 sec/pulse	9.13 5.2 sec/pulse	9.19 5.2 sec/pulse	
120.375	0.22	0.22	0.22		7.22 4.6 sec/pulse	7.18 4.6 sec/pulse	7.22 4.6 sec/pulse	
60.375	0.13	0.13	0.13		6.23 4.3 sec/pulse	6.21 4.3 sec/pulse	6.23 4.3 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
360.375	No	No			1	1	1	1
300.375	No	No			1	1	1	1
240.375	No	No			1	1	1	1
180.375	No	No			1	1	1	1
120.375	No	No			1	1	1	1
60.375	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
360.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
300.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
240.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
180.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
120.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
60.375	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
360.375	A	179.69	0		
	B	180.69	0		
	C	179.69	0		
300.375	A	149.69	0		
	B	150.69	0		
	C	149.69	0		
240.375	A	119.69	0		
	B	120.69	0		
	C	119.69	0		
180.375	A	89.69	0		
	B	90.69	0		
	C	89.69	0		
120.375	A	59.69	0		
	B	60.69	0		
	C	59.69	0		
60.375	A	29.69	0		
	B	30.69	0		
	C	29.69	0		

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
Safety Line (3/8")	B	No	No	Ar (CaAa)	380.00 - 8.00	0.0000	0	1	1	0.3750	0.3750		0.22
7/8"x18" SR Steps 6/20'	B	No	No	Ar (CaAa)	380.00 - 8.00	0.0000	-0.25	1	1	0.3937	0.3937		0.92
Coax Bracket (Af) 3' x 6/20'	A	No	No	Af (CaAa)	380.00 - 8.00	0.0000	0	1	1	1.4730	1.4730		1.45
Coax Bracket 6/20' x 12"	B	No	No	Af (CaAa)	380.00 - 8.00	0.0000	0	1	1	0.6000	0.6000		0.51
Coax Bracket (Af) 3' x 6/20' ***	C	No	No	Af (CaAa)	380.00 - 8.00	0.0000	0	1	1	1.4730	1.4730		1.45
Lighting Cable	C	No	No	Ar (CaAa)	380.00 - 292.00	0.0000	0.5	1	1	0.6300	0.6300		0.15
Lighting Cable	C	No	No	Ar (CaAa)	292.00 - 196.00	0.0000	0.5	2	2	0.6300	0.6300		0.15
Lighting Cable	C	No	No	Ar (CaAa)	196.00 - 96.00	0.0000	0.5	3	3	0.6300	0.6300		0.15
Lighting Cable ***	C	No	No	Ar (CaAa)	96.00 - 8.00	0.0000	0.5	4	4	0.6300	0.6300		0.15
1-1/2" Coax	A	No	No	Ar (CaAa)	379.00 - 339.00	0.0000	-0.05	1	1	1.0000	1.5000		0.80
1-1/2" Coax ***	A	No	No	Ar (CaAa)	339.00 - 8.00	0.0000	-0.05	2	2	1.0000	1.5000		0.80
0.957" DC Power	C	No	No	Ar (CaAa)	250.00 - 8.00	0.0000	-0.05	6	3	0.5000	0.9570		0.89
0.39" Fiber Cable	C	No	No	Ar (CaAa)	250.00 - 8.00	0.0000	0.01	3	2	0.3937	0.3900		0.10

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	380.00-360.00	A	0.000	0.000	7.760	0.000	0.04
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	6.170	0.000	0.03
T2	360.00-340.00	A	0.000	0.000	7.910	0.000	0.04
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	6.170	0.000	0.03
T3	340.00-320.00	A	0.000	0.000	10.760	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	6.170	0.000	0.03
T4	320.00-300.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	6.170	0.000	0.03
T5	300.00-280.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	6.926	0.000	0.03
T6	280.00-260.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	7.430	0.000	0.03
T7	260.00-240.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	14.342	0.000	0.09
T8	240.00-220.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	21.254	0.000	0.15
T9	220.00-200.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	21.254	0.000	0.15
T10	200.00-180.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	22.262	0.000	0.15
T11	180.00-160.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	22.514	0.000	0.15
T12	160.00-140.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	22.514	0.000	0.15
T13	140.00-120.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	22.514	0.000	0.15
T14	120.00-100.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	22.514	0.000	0.15
T15	100.00-80.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	23.522	0.000	0.15
T16	80.00-60.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	23.774	0.000	0.15
T17	60.00-40.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	23.774	0.000	0.15
T18	40.00-20.00	A	0.000	0.000	10.910	0.000	0.06
		B	0.000	0.000	3.537	0.000	0.03
		C	0.000	0.000	23.774	0.000	0.15
T19	20.00-6.67	A	0.000	0.000	6.546	0.000	0.04
		B	0.000	0.000	2.123	0.000	0.02
		C	0.000	0.000	14.264	0.000	0.09
T20	6.67-0.00	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	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	380.00-360.00	-2.3025	0.3249	-2.3025	0.3249
T2	360.00-340.00	-2.5470	0.3306	-2.5470	0.3306
T3	340.00-320.00	-3.0494	0.0122	-3.0494	0.0122
T4	320.00-300.00	-2.8332	-0.0032	-2.8332	-0.0032
T5	300.00-280.00	-3.2505	0.0473	-3.2505	0.0473
T6	280.00-260.00	-3.4475	0.0808	-3.4475	0.0808
T7	260.00-240.00	-2.6739	1.0959	-2.6739	1.0959
T8	240.00-220.00	-2.2279	1.9273	-2.2279	1.9273
T9	220.00-200.00	-2.2279	1.9273	-2.2279	1.9273
T10	200.00-180.00	-2.4024	1.8409	-2.4024	1.8409
T11	180.00-160.00	-2.6042	1.9273	-2.6042	1.9273
T12	160.00-140.00	-2.6042	1.9273	-2.6042	1.9273
T13	140.00-120.00	-2.4732	1.8409	-2.4732	1.8409
T14	120.00-100.00	-2.7060	2.0075	-2.7060	2.0075
T15	100.00-80.00	-3.0058	2.0075	-3.0058	2.0075
T16	80.00-60.00	-2.9172	1.9112	-2.9172	1.9112
T17	60.00-40.00	-3.1103	2.0296	-3.1103	2.0296
T18	40.00-20.00	-3.1103	2.0296	-3.1103	2.0296
T19	20.00-6.67	-2.9485	1.9152	-2.9485	1.9152
T20	6.67-0.00	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	1	Safety Line (3/8")	360.00 - 380.00	0.6000	0.6000
T1	2	7/8"x18" SR Steps 6/20'	360.00 - 380.00	0.6000	0.6000
T1	3	Coax Bracket (Af) 3' x 6/20'	360.00 - 380.00	0.6000	0.6000
T1	4	Coax Bracket 6/20' x 12"	360.00 - 380.00	0.6000	0.6000
T1	5	Coax Bracket (Af) 3' x 6/20'	360.00 - 380.00	0.6000	0.6000
T1	7	Lighting Cable	360.00 - 380.00	0.6000	0.6000
T1	12	1-1/2" Coax	360.00 - 379.00	0.6000	0.6000
T2	1	Safety Line (3/8")	340.00 - 360.00	0.6000	0.6000
T2	2	7/8"x18" SR Steps 6/20'	340.00 - 360.00	0.6000	0.6000
T2	3	Coax Bracket (Af) 3' x 6/20'	340.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	4	Coax Bracket 6/20' x 12"	340.00 - 360.00	0.6000	0.6000
T2	5	Coax Bracket (Af) 3' x 6/20'	340.00 - 360.00	0.6000	0.6000
T2	7	Lighting Cable	340.00 - 360.00	0.6000	0.6000
T2	12	1-1/2" Coax	340.00 - 360.00	0.6000	0.6000
T3	1	Safety Line (3/8")	320.00 - 340.00	0.6000	0.6000
T3	2	7/8"x18" SR Steps 6/20'	320.00 - 340.00	0.6000	0.6000
T3	3	Coax Bracket (Af) 3' x 6/20'	320.00 - 340.00	0.6000	0.6000
T3	4	Coax Bracket 6/20' x 12"	320.00 - 340.00	0.6000	0.6000
T3	5	Coax Bracket (Af) 3' x 6/20'	320.00 - 340.00	0.6000	0.6000
T3	7	Lighting Cable	320.00 - 340.00	0.6000	0.6000
T3	12	1-1/2" Coax	339.00 - 340.00	0.6000	0.6000
T3	13	1-1/2" Coax	320.00 - 339.00	0.6000	0.6000
T4	1	Safety Line (3/8")	300.00 - 320.00	0.6000	0.6000
T4	2	7/8"x18" SR Steps 6/20'	300.00 - 320.00	0.6000	0.6000
T4	3	Coax Bracket (Af) 3' x 6/20'	300.00 - 320.00	0.6000	0.6000
T4	4	Coax Bracket 6/20' x 12"	300.00 - 320.00	0.6000	0.6000
T4	5	Coax Bracket (Af) 3' x 6/20'	300.00 - 320.00	0.6000	0.6000
T4	7	Lighting Cable	300.00 - 320.00	0.6000	0.6000
T4	13	1-1/2" Coax	300.00 - 320.00	0.6000	0.6000
T5	1	Safety Line (3/8")	280.00 - 300.00	0.6000	0.6000
T5	2	7/8"x18" SR Steps 6/20'	280.00 - 300.00	0.6000	0.6000
T5	3	Coax Bracket (Af) 3' x 6/20'	280.00 - 300.00	0.6000	0.6000
T5	4	Coax Bracket 6/20' x 12"	280.00 - 300.00	0.6000	0.6000
T5	5	Coax Bracket (Af) 3' x 6/20'	280.00 - 300.00	0.6000	0.6000
T5	7	Lighting Cable	292.00 - 300.00	0.6000	0.6000
T5	8	Lighting Cable	280.00 - 292.00	0.6000	0.6000
T5	13	1-1/2" Coax	280.00 - 300.00	0.6000	0.6000
T6	1	Safety Line (3/8")	260.00 - 280.00	0.6000	0.6000
T6	2	7/8"x18" SR Steps 6/20'	260.00 - 280.00	0.6000	0.6000
T6	3	Coax Bracket (Af) 3' x 6/20'	260.00 - 280.00	0.6000	0.6000
T6	4	Coax Bracket 6/20' x 12"	260.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	5	Coax Bracket (Af) 3' x 6/20'	260.00 - 280.00	0.6000	0.6000
T6	8	Lighting Cable	260.00 - 280.00	0.6000	0.6000
T6	13	1-1/2" Coax	260.00 - 280.00	0.6000	0.6000
T7	1	Safety Line (3/8")	240.00 - 260.00	0.6000	0.6000
T7	2	7/8"x18" SR Steps 6/20'	240.00 - 260.00	0.6000	0.6000
T7	3	Coax Bracket (Af) 3' x 6/20'	240.00 - 260.00	0.6000	0.6000
T7	4	Coax Bracket 6/20' x 12"	240.00 - 260.00	0.6000	0.6000
T7	5	Coax Bracket (Af) 3' x 6/20'	240.00 - 260.00	0.6000	0.6000
T7	8	Lighting Cable	240.00 - 260.00	0.6000	0.6000
T7	13	1-1/2" Coax	240.00 - 260.00	0.6000	0.6000
T7	15	0.957" DC Power	240.00 - 250.00	0.6000	0.6000
T7	16	0.39" Fiber Cable	240.00 - 250.00	0.6000	0.6000
T8	1	Safety Line (3/8")	220.00 - 240.00	0.6000	0.6000
T8	2	7/8"x18" SR Steps 6/20'	220.00 - 240.00	0.6000	0.6000
T8	3	Coax Bracket (Af) 3' x 6/20'	220.00 - 240.00	0.6000	0.6000
T8	4	Coax Bracket 6/20' x 12"	220.00 - 240.00	0.6000	0.6000
T8	5	Coax Bracket (Af) 3' x 6/20'	220.00 - 240.00	0.6000	0.6000
T8	8	Lighting Cable	220.00 - 240.00	0.6000	0.6000
T8	13	1-1/2" Coax	220.00 - 240.00	0.6000	0.6000
T8	15	0.957" DC Power	220.00 - 240.00	0.6000	0.6000
T8	16	0.39" Fiber Cable	220.00 - 240.00	0.6000	0.6000
T9	1	Safety Line (3/8")	200.00 - 220.00	0.6000	0.6000
T9	2	7/8"x18" SR Steps 6/20'	200.00 - 220.00	0.6000	0.6000
T9	3	Coax Bracket (Af) 3' x 6/20'	200.00 - 220.00	0.6000	0.6000
T9	4	Coax Bracket 6/20' x 12"	200.00 - 220.00	0.6000	0.6000
T9	5	Coax Bracket (Af) 3' x 6/20'	200.00 - 220.00	0.6000	0.6000
T9	8	Lighting Cable	200.00 - 220.00	0.6000	0.6000
T9	13	1-1/2" Coax	200.00 - 220.00	0.6000	0.6000
T9	15	0.957" DC Power	200.00 - 220.00	0.6000	0.6000
T9	16	0.39" Fiber Cable	200.00 - 220.00	0.6000	0.6000
T10	1	Safety Line (3/8")	180.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	2	7/8"x18" SR Steps 6/20'	180.00 - 200.00	0.6000	0.6000
T10	3	Coax Bracket (Af) 3' x 6/20'	180.00 - 200.00	0.6000	0.6000
T10	4	Coax Bracket 6/20' x 12"	180.00 - 200.00	0.6000	0.6000
T10	5	Coax Bracket (Af) 3' x 6/20'	180.00 - 200.00	0.6000	0.6000
T10	8	Lighting Cable	196.00 - 200.00	0.6000	0.6000
T10	9	Lighting Cable	180.00 - 196.00	0.6000	0.6000
T10	13	1-1/2" Coax	180.00 - 200.00	0.6000	0.6000
T10	15	0.957" DC Power	180.00 - 200.00	0.6000	0.6000
T10	16	0.39" Fiber Cable	180.00 - 200.00	0.6000	0.6000
T11	1	Safety Line (3/8")	160.00 - 180.00	0.6000	0.6000
T11	2	7/8"x18" SR Steps 6/20'	160.00 - 180.00	0.6000	0.6000
T11	3	Coax Bracket (Af) 3' x 6/20'	160.00 - 180.00	0.6000	0.6000
T11	4	Coax Bracket 6/20' x 12"	160.00 - 180.00	0.6000	0.6000
T11	5	Coax Bracket (Af) 3' x 6/20'	160.00 - 180.00	0.6000	0.6000
T11	9	Lighting Cable	160.00 - 180.00	0.6000	0.6000
T11	13	1-1/2" Coax	160.00 - 180.00	0.6000	0.6000
T11	15	0.957" DC Power	160.00 - 180.00	0.6000	0.6000
T11	16	0.39" Fiber Cable	160.00 - 180.00	0.6000	0.6000
T12	1	Safety Line (3/8")	140.00 - 160.00	0.6000	0.6000
T12	2	7/8"x18" SR Steps 6/20'	140.00 - 160.00	0.6000	0.6000
T12	3	Coax Bracket (Af) 3' x 6/20'	140.00 - 160.00	0.6000	0.6000
T12	4	Coax Bracket 6/20' x 12"	140.00 - 160.00	0.6000	0.6000
T12	5	Coax Bracket (Af) 3' x 6/20'	140.00 - 160.00	0.6000	0.6000
T12	9	Lighting Cable	140.00 - 160.00	0.6000	0.6000
T12	13	1-1/2" Coax	140.00 - 160.00	0.6000	0.6000
T12	15	0.957" DC Power	140.00 - 160.00	0.6000	0.6000
T12	16	0.39" Fiber Cable	140.00 - 160.00	0.6000	0.6000
T13	1	Safety Line (3/8")	120.00 - 140.00	0.6000	0.6000
T13	2	7/8"x18" SR Steps 6/20'	120.00 - 140.00	0.6000	0.6000
T13	3	Coax Bracket (Af) 3' x 6/20'	120.00 - 140.00	0.6000	0.6000
T13	4	Coax Bracket 6/20' x 12"	120.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			140.00		
T13	5	Coax Bracket (Af) 3' x 6/20'	120.00 - 140.00	0.6000	0.6000
T13	9	Lighting Cable	120.00 - 140.00	0.6000	0.6000
T13	13	1-1/2" Coax	120.00 - 140.00	0.6000	0.6000
T13	15	0.957" DC Power	120.00 - 140.00	0.6000	0.6000
T13	16	0.39" Fiber Cable	120.00 - 140.00	0.6000	0.6000
T14	1	Safety Line (3/8")	100.00 - 120.00	0.6000	0.6000
T14	2	7/8"x18" SR Steps 6/20'	100.00 - 120.00	0.6000	0.6000
T14	3	Coax Bracket (Af) 3' x 6/20'	100.00 - 120.00	0.6000	0.6000
T14	4	Coax Bracket 6/20' x 12"	100.00 - 120.00	0.6000	0.6000
T14	5	Coax Bracket (Af) 3' x 6/20'	100.00 - 120.00	0.6000	0.6000
T14	9	Lighting Cable	100.00 - 120.00	0.6000	0.6000
T14	13	1-1/2" Coax	100.00 - 120.00	0.6000	0.6000
T14	15	0.957" DC Power	100.00 - 120.00	0.6000	0.6000
T14	16	0.39" Fiber Cable	100.00 - 120.00	0.6000	0.6000
T15	1	Safety Line (3/8")	80.00 - 100.00	0.6000	0.6000
T15	2	7/8"x18" SR Steps 6/20'	80.00 - 100.00	0.6000	0.6000
T15	3	Coax Bracket (Af) 3' x 6/20'	80.00 - 100.00	0.6000	0.6000
T15	4	Coax Bracket 6/20' x 12"	80.00 - 100.00	0.6000	0.6000
T15	5	Coax Bracket (Af) 3' x 6/20'	80.00 - 100.00	0.6000	0.6000
T15	9	Lighting Cable	96.00 - 100.00	0.6000	0.6000
T15	10	Lighting Cable	80.00 - 96.00	0.6000	0.6000
T15	13	1-1/2" Coax	80.00 - 100.00	0.6000	0.6000
T15	15	0.957" DC Power	80.00 - 100.00	0.6000	0.6000
T15	16	0.39" Fiber Cable	80.00 - 100.00	0.6000	0.6000
T16	1	Safety Line (3/8")	60.00 - 80.00	0.6000	0.6000
T16	2	7/8"x18" SR Steps 6/20'	60.00 - 80.00	0.6000	0.6000
T16	3	Coax Bracket (Af) 3' x 6/20'	60.00 - 80.00	0.6000	0.6000
T16	4	Coax Bracket 6/20' x 12"	60.00 - 80.00	0.6000	0.6000
T16	5	Coax Bracket (Af) 3' x 6/20'	60.00 - 80.00	0.6000	0.6000
T16	10	Lighting Cable	60.00 - 80.00	0.6000	0.6000
T16	13	1-1/2" Coax	60.00 - 80.00	0.6000	0.6000
T16	15	0.957" DC Power	60.00 - 80.00	0.6000	0.6000
T16	16	0.39" Fiber Cable	60.00 - 80.00	0.6000	0.6000
T17	1	Safety Line (3/8")	40.00 - 60.00	0.6000	0.6000
T17	2	7/8"x18" SR Steps 6/20'	40.00 - 60.00	0.6000	0.6000
T17	3	Coax Bracket (Af) 3' x 6/20'	40.00 - 60.00	0.6000	0.6000
T17	4	Coax Bracket 6/20' x 12"	40.00 - 60.00	0.6000	0.6000
T17	5	Coax Bracket (Af) 3' x 6/20'	40.00 - 60.00	0.6000	0.6000
T17	10	Lighting Cable	40.00 - 60.00	0.6000	0.6000
T17	13	1-1/2" Coax	40.00 - 60.00	0.6000	0.6000
T17	15	0.957" DC Power	40.00 - 60.00	0.6000	0.6000
T17	16	0.39" Fiber Cable	40.00 - 60.00	0.6000	0.6000
T18	1	Safety Line (3/8")	20.00 - 40.00	0.6000	0.6000
T18	2	7/8"x18" SR Steps 6/20'	20.00 - 40.00	0.6000	0.6000
T18	3	Coax Bracket (Af) 3' x 6/20'	20.00 - 40.00	0.6000	0.6000
T18	4	Coax Bracket 6/20' x 12"	20.00 - 40.00	0.6000	0.6000
T18	5	Coax Bracket (Af) 3' x 6/20'	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
T18	10	Lighting Cable	20.00 - 40.00	0.6000	0.6000
T18	13	1-1/2" Coax	20.00 - 40.00	0.6000	0.6000
T18	15	0.957" DC Power	20.00 - 40.00	0.6000	0.6000
T18	16	0.39" Fiber Cable	20.00 - 40.00	0.6000	0.6000
T19	1	Safety Line (3/8")	8.00 - 20.00	0.6000	0.6000
T19	2	7/8"x18" SR Steps 6/20'	8.00 - 20.00	0.6000	0.6000
T19	3	Coax Bracket (Af) 3' x 6/20'	8.00 - 20.00	0.6000	0.6000
T19	4	Coax Bracket 6/20' x 12"	8.00 - 20.00	0.6000	0.6000
T19	5	Coax Bracket (Af) 3' x 6/20'	8.00 - 20.00	0.6000	0.6000
T19	10	Lighting Cable	8.00 - 20.00	0.6000	0.6000
T19	13	1-1/2" Coax	8.00 - 20.00	0.6000	0.6000
T19	15	0.957" DC Power	8.00 - 20.00	0.6000	0.6000
T19	16	0.39" Fiber Cable	8.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Flash Beacon Lighting	B	From Leg	0.00 0.00 1.50	0.0000	380.00	No Ice	2.70	2.70	0.05
8' Lightning Rod	A	From Leg	0.00 0.00 14.00	0.0000	380.00	No Ice	0.60	0.60	0.01
2.375" x 10' Mount Pipe	A	From Leg	0.00 0.00 5.00	0.0000	380.00	No Ice	2.38	2.38	0.07
Beacon Light	A	From Leg	1.00 0.00 0.00	0.0000	292.00	No Ice	2.00	2.00	0.02
Beacon Light	B	From Leg	1.00 0.00 0.00	0.0000	292.00	No Ice	2.00	2.00	0.02
Beacon Light	C	From Leg	1.00 0.00 0.00	0.0000	292.00	No Ice	2.00	2.00	0.02
Flash Beacon Lighting	B	From Leg	0.50 0.00 0.00	0.0000	196.00	No Ice	2.70	2.70	0.05
Flash Beacon Lighting	C	From Leg	0.50 0.00 0.00	0.0000	196.00	No Ice	2.70	2.70	0.05
Beacon Light	A	From Leg	1.00 0.00 0.00	0.0000	96.00	No Ice	2.00	2.00	0.02
Beacon Light	B	From Leg	1.00 0.00 0.00	0.0000	96.00	No Ice	2.00	2.00	0.02
Beacon Light	C	From Leg	1.00 0.00	0.0000	96.00	No Ice	2.00	2.00	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
***									
Dipole	A	From Face	6.00 2.00 9.00	0.0000	378.00	No Ice	3.33	3.33	0.03
18' Omni	B	From Face	6.00 2.00 9.00	0.0000	378.00	No Ice	5.40	5.40	0.02
Sector Mount [SM 501-1]	A	From Face	3.00 0.00 0.00	-30.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	A	From Face	3.00 0.00 0.00	0.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	A	From Face	3.00 0.00 0.00	30.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	-30.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	0.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	30.0000	378.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	-30.0000	377.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	30.0000	377.00	No Ice	13.52	4.64	0.30
***									
18' Omni	A	From Face	6.00 2.00 9.00	0.0000	339.00	No Ice	5.40	5.40	0.02
Sector Mount [SM 501-1]	A	From Face	3.00 0.00 0.00	-30.0000	339.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	A	From Face	3.00 0.00 0.00	30.0000	339.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	-30.0000	339.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	30.0000	339.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	-30.0000	339.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	30.0000	339.00	No Ice	13.52	4.64	0.30
***									
Sector Mount [SM 501-1]	A	From Face	3.00 0.00	-30.0000	302.00	No Ice	13.52	4.64	0.30

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
Sector Mount [SM 501-1]	B	From Face	3.00 0.00 0.00	-30.0000	302.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	30.0000	302.00	No Ice	13.52	4.64	0.30
Sector Mount [SM 501-1]	C	From Face	3.00 0.00 0.00	-30.0000	302.00	No Ice	13.52	4.64	0.30
***									
SABRE C10-841-002C	A	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	9.72	8.16	0.57
SABRE C10-841-002C	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	9.72	8.16	0.57
SABRE C10-841-002C	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	9.72	8.16	0.57
SABRE C10-841-002C	A	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	9.72	8.16	0.57
C10100324	A	From Face	0.50 0.00 0.00	0.0000	250.00	No Ice	18.21	4.48	0.93
C10100324	C	From Face	0.50 0.00 0.00	0.0000	250.00	No Ice	18.21	4.48	0.93
Pipe 2.5 Std x 10'	A	From Leg	4.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
Pipe 2.5 Std x 10'	B	From Leg	4.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
Pipe 2.5 Std x 10'	C	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
Pipe 2.5 Std x 10'	A	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
(2) Pipe 2.5 Std x 10'	A	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
(2) Pipe 2.5 Std x 10'	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
(2) Pipe 2.5 Std x 10'	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
(2) Pipe 2.5 Std x 10'	A	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.88	2.88	0.06
(2) KRE 101 2526/1K w/ 10' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	250.00	No Ice	13.20	7.87	0.15
(2) KRE 101 2526/1K w/ 10'	B	From Leg	4.00	0.0000	250.00	No Ice	13.20	7.87	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00 0.00						
(2) KRE 101 2526/1K w/ 10' Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	13.20	7.87	0.15
(2) KRE 101 2526/1K w/ 10' Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	13.20	7.87	0.15
AIR6472 B77G/B77M w/ 10' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	250.00	No Ice	6.55	4.84	0.13
AIR6472 B77G/B77M w/ 10' Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	250.00	No Ice	6.55	4.84	0.13
AIR6472 B77G/B77M w/ 10' Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	6.55	4.84	0.13
AIR6472 B77G/B77M w/ 10' Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	250.00	No Ice	6.55	4.84	0.13
4890 B25/B66	A	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.19	0.86	0.07
4890 B25/B66	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.19	0.86	0.07
4890 B25/B66	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.19	0.86	0.07
4890 B25/B66	A	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.19	0.86	0.07
4478 B14	A	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	1.96	1.25	0.06
4478 B14	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	1.96	1.25	0.06
4478 B14	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	1.96	1.25	0.06
4478 B14	A	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	1.96	1.25	0.06
4490 B5/B12A	A	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.20	0.85	0.07
4490 B5/B12A	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.20	0.85	0.07
4490 B5/B12A	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.20	0.85	0.07
4490 B5/B12A	A	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.20	0.85	0.07
DC9-48-60-24-8C-EV	A	From Leg	2.00	0.0000	250.00	No Ice	2.74	4.78	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00						
DC9-48-60-24-8C-EV	B	From Leg	2.00 0.00 0.00	0.0000	250.00	No Ice	2.74	4.78	0.03
DC9-48-60-24-8C-EV	C	From Face	2.00 0.00 0.00	0.0000	250.00	No Ice	2.74	4.78	0.03

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 Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	380 - 360	3.597	16	0.0941	0.3553
T2	360 - 340	3.256	16	0.0608	0.3361
T3	340 - 320	3.081	16	0.0466	0.3068
T4	320 - 300	2.913	20	0.0552	0.3191

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	300 - 280	2.744	20	0.0473	0.3337
T6	280 - 260	2.589	20	0.0577	0.3475
T7	260 - 240	2.321	20	0.0846	0.3581
T8	240 - 220	1.887	20	0.1062	0.3723
T9	220 - 200	1.449	20	0.1019	0.3905
T10	200 - 180	1.036	20	0.0884	0.4058
T11	180 - 160	0.720	20	0.0536	0.4080
T12	160 - 140	0.582	20	0.0214	0.4213
T13	140 - 120	0.538	20	0.0048	0.4310
T14	120 - 100	0.546	20	0.0093	0.4330
T15	100 - 80	0.597	20	0.0095	0.4413
T16	80 - 60	0.608	20	0.0064	0.4439
T17	60 - 40	0.549	20	0.0202	0.4383
T18	40 - 20	0.440	20	0.0358	0.4333
T19	20 - 6.67	0.250	20	0.0528	0.4227
T20	6.67 - 0	0.086	20	0.0595	0.3879

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
380.00	Flash Beacon Lighting	16	3.597	0.0941	0.3553	69354
378.00	Dipole	16	3.558	0.0904	0.3536	69354
377.00	Sector Mount [SM 501-1]	16	3.539	0.0886	0.3527	69354
360.38	Guy	16	3.261	0.0613	0.3366	19229
339.00	18' Omni	16	3.073	0.0468	0.3049	35479
302.00	Sector Mount [SM 501-1]	20	2.760	0.0479	0.3323	59341
300.38	Guy	20	2.747	0.0474	0.3334	58581
292.00	Beacon Light	20	2.685	0.0482	0.3393	437205
250.00	SABRE C10-841-002C	20	2.115	0.0980	0.3646	40894
240.38	Guy	20	1.896	0.1060	0.3720	94543
196.00	Flash Beacon Lighting	20	0.962	0.0828	0.4067	42424
180.38	Guy	20	0.724	0.0544	0.4079	22085
120.38	Guy	20	0.545	0.0092	0.4329	75204
96.00	Beacon Light	20	0.605	0.0081	0.4429	75609
60.38	Guy	20	0.551	0.0199	0.4381	129448

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	380 - 360	31.087	10	0.7920	0.9973
T2	360 - 340	27.958	10	0.6751	0.9314
T3	340 - 320	25.425	10	0.6342	0.8337
T4	320 - 300	22.847	6	0.6831	0.7780
T5	300 - 280	20.309	6	0.6633	0.8461
T6	280 - 260	17.902	2	0.6960	0.9115
T7	260 - 240	15.078	2	0.7787	0.9589
T8	240 - 220	11.617	2	0.8304	1.0204
T9	220 - 200	8.485	7	0.7769	1.1071

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T10	200 - 180	5.699	7	0.6565	1.1766
T11	180 - 160	3.859	8	0.4254	1.2178
T12	160 - 140	3.067	8	0.2082	1.2778
T13	140 - 120	2.755	8	0.0880	1.3212
T14	120 - 100	2.720	8	0.0429	1.3452
T15	100 - 80	2.886	8	0.0713	1.3804
T16	80 - 60	2.892	8	0.0372	1.3941
T17	60 - 40	2.599	8	0.1005	1.3837
T18	40 - 20	2.061	8	0.1717	1.3671
T19	20 - 6.67	1.162	8	0.2472	1.3275
T20	6.67 - 0	0.399	8	0.2763	1.2383

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
380.00	Flash Beacon Lighting	10	31.087	0.7920	0.9973	18225
378.00	Dipole	10	30.757	0.7791	0.9911	18225
377.00	Sector Mount [SM 501-1]	10	30.593	0.7726	0.9880	18225
360.38	Guy	10	28.010	0.6768	0.9328	5058
339.00	18' Omni	10	25.297	0.6356	0.8271	9408
302.00	Sector Mount [SM 501-1]	6	20.557	0.6651	0.8396	15797
300.38	Guy	6	20.355	0.6635	0.8449	15385
292.00	Beacon Light	6	19.336	0.6658	0.8733	43927
250.00	SABRE C10-841-002C	2	13.387	0.8090	0.9859	12564
240.38	Guy	2	11.683	0.8302	1.0189	13024
196.00	Flash Beacon Lighting	7	5.202	0.6174	1.1857	5852
180.38	Guy	8	3.882	0.4301	1.2169	3639
120.38	Guy	8	2.718	0.0421	1.3447	12210
96.00	Beacon Light	8	2.909	0.0671	1.3865	18697
60.38	Guy	8	2.607	0.0990	1.3830	24822

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	380	Leg	A325N	0.7500	4	2.15	30.10	0.071	1	Bolt Tension
T2	360	Leg	A325N	0.7500	4	1.48	30.10	0.049	1	Bolt Tension
T3	340	Leg	A325N	0.7500	4	1.42	30.10	0.047	1	Bolt Tension
T4	320	Leg	A325N	0.7500	4	1.97	30.10	0.065	1	Bolt Tension
T5	300	Leg	A325N	0.7500	4	2.79	30.10	0.093	1	Bolt Tension
T6	280	Leg	A325N	0.7500	4	3.19	30.10	0.106	1	Bolt Tension
T7	260	Leg	A325N	0.7500	4	3.70	30.10	0.123	1	Bolt Tension
T8	240	Leg	A325N	0.7500	4	4.32	30.10	0.144	1	Bolt Tension
T9	220	Leg	A325N	0.7500	4	5.70	30.10	0.189	1	Bolt Tension
T10	200	Leg	A325N	0.7500	4	7.98	30.10	0.265	1	Bolt Tension
T11	180	Leg	A325N	0.7500	4	6.36	30.10	0.211	1	Bolt Tension
T12	160	Leg	A325N	0.7500	4	5.29	30.10	0.176	1	Bolt Tension
T13	140	Leg	A325N	0.7500	4	4.90	30.10	0.163	1	Bolt Tension

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
T14	120	Leg	A325N	0.7500	4	4.14	30.10	0.137	1	Bolt Tension
T15	100	Leg	A325N	0.7500	4	4.63	30.10	0.154	1	Bolt Tension
T16	80	Leg	A325N	0.7500	4	4.52	30.10	0.150	1	Bolt Tension
T17	60	Leg	A325N	0.7500	4	4.94	30.10	0.164	1	Bolt Tension
T18	40	Leg	A325N	0.7500	4	4.71	30.10	0.156	1	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	360.38 (A) (804)	3/4 EHS	5.83	58.30	21.72	34.98	1.000	1.611
	360.38 (B) (803)	3/4 EHS	5.83	58.30	22.04	34.98	1.000	1.587
	360.38 (C) (799)	3/4 EHS	5.83	58.30	22.37	34.98	1.000	1.564
T4	300.38 (A) (810)	5/8 EHS	4.24	42.40	15.36	25.44	1.000	1.656
	300.38 (B) (809)	5/8 EHS	4.24	42.40	15.22	25.44	1.000	1.672
	300.38 (C) (805)	5/8 EHS	4.24	42.40	15.17	25.44	1.000	1.677
T7	240.38 (A) (816)	3/4 EHS	5.83	58.30	19.43	34.98	1.000	1.800
	240.38 (B) (815)	3/4 EHS	5.83	58.30	19.22	34.98	1.000	1.820
	240.38 (C) (811)	3/4 EHS	5.83	58.30	18.59	34.98	1.000	1.881
T10	180.38 (A) (822)	7/8 EHS	7.97	79.70	16.98	47.82	1.000	2.816
	180.38 (B) (821)	7/8 EHS	7.97	79.70	16.72	47.82	1.000	2.861
	180.38 (C) (817)	7/8 EHS	7.97	79.70	16.56	47.82	1.000	2.888
T13	120.38 (A) (828)	5/8 EHS	4.24	42.40	7.98	25.44	1.000	3.186
	120.38 (B) (827)	5/8 EHS	4.24	42.40	7.81	25.44	1.000	3.257
	120.38 (C) (823)	5/8 EHS	4.24	42.40	7.96	25.44	1.000	3.195
T16	60.38 (A) (834)	1/2 EHS	2.69	26.90	5.33	16.14	1.000	3.029
	60.38 (B) (833)	1/2 EHS	2.69	26.90	5.20	16.14	1.000	3.103
	60.38 (C) (829)	1/2 EHS	2.69	26.90	5.30	16.14	1.000	3.044

Compression Checks

Leg 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	380 - 360	1 1/2	20.00	3.21	102.7 K=1.00	1.7672	-22.37	36.79	0.608 [1]
T2	360 - 340	1 1/2	20.00	3.21	102.7 K=1.00	1.7672	-24.37	36.79	0.662 [1]
T3	340 - 320	1 1/2	20.00	3.21	102.7 K=1.00	1.7672	-19.05	36.79	0.518 [1]
T4	320 - 300	1 1/2	20.00	3.21	102.7 K=1.00	1.7672	-21.97	36.79	0.597 [1]
T5	300 - 280	1 3/4	20.00	3.21	88.0 K=1.00	2.4053	-32.49	61.44	0.529 [1]
T6	280 - 260	1 3/4	20.00	3.21	88.0 K=1.00	2.4053	-38.15	61.44	0.621 [1]
T7	260 - 240	1 3/4	20.00	3.21	88.0 K=1.00	2.4053	-39.69	61.44	0.646 [1]
T8	240 - 220	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-51.10	127.03	0.402 [1]
T9	220 - 200	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-66.18	127.03	0.521 [1]
T10	200 - 180	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-92.73	127.03	0.730 [1]
T11	180 - 160	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-93.83	127.03	0.739 [1]
T12	160 - 140	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-75.07	127.03	0.591 [1]
T13	140 - 120	2 1/4	20.00	3.21	68.4 K=1.00	3.9761	-62.65	127.03	0.493 [1]
T14	120 - 100	2	20.00	3.21	77.0 K=1.00	3.1416	-56.96	91.64	0.622 [1]
T15	100 - 80	2	20.00	3.21	77.0 K=1.00	3.1416	-55.25	91.64	0.603 [1]
T16	80 - 60	2	20.00	3.21	77.0 K=1.00	3.1416	-55.50	91.64	0.606 [1]
T17	60 - 40	2	20.00	3.21	77.0 K=1.00	3.1416	-59.17	91.64	0.646 [1]
T18	40 - 20	2	20.00	3.21	77.0 K=1.00	3.1416	-59.28	91.64	0.647 [1]
T19	20 - 6.67	2	13.33	3.15	75.5 K=1.00	3.1416	-55.58	93.21	0.596 [1]
T20	6.67 - 0	2	6.97	3.29	78.9 K=1.00	3.1416	-54.08	89.65	0.603 [1]

[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	380 - 360	1 1/8	4.75	4.58	136.7 K=0.70	0.9940	-4.34	12.01	0.361 [1]
T2	360 - 340	1 1/8	4.75	4.58	136.7 K=0.70	0.9940	-4.08	12.01	0.340 [1]
T3	340 - 320	1 1/8	4.75	4.58	136.7	0.9940	-2.06	12.01	0.171 [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	320 - 300	1 1/8	4.75	4.58	K=0.70 136.7	0.9940	-2.88	12.01	0.240 [1]
T5	300 - 280	1 1/8	4.75	4.55	K=0.70 135.9	0.9940	-3.51	12.16	0.289 [1]
T6	280 - 260	1 1/8	4.75	4.55	K=0.70 135.9	0.9940	-2.02	12.16	0.166 [1]
T7	260 - 240	1 1/8	4.75	4.55	K=0.70 135.9	0.9940	-9.63	12.16	0.792 [1]
T8	240 - 220	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-3.22	18.45	0.174 [1]
T9	220 - 200	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-4.24	18.45	0.230 [1]
T10	200 - 180	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-4.75	18.45	0.257 [1]
T11	180 - 160	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-4.02	18.45	0.218 [1]
T12	160 - 140	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-2.99	18.45	0.162 [1]
T13	140 - 120	1 1/4	4.75	4.49	K=0.70 120.8	1.2272	-1.82	18.45	0.099 [1]
T14	120 - 100	1 1/8	4.75	4.52	K=0.70 135.1	0.9940	-3.28	12.31	0.266 [1]
T15	100 - 80	1 1/8	4.75	4.52	K=0.70 135.1	0.9940	-2.13	12.31	0.173 [1]
T16	80 - 60	1 1/8	4.75	4.52	K=0.70 135.1	0.9940	-1.21	12.31	0.098 [1]
T17	60 - 40	1	4.75	4.52	K=0.70 151.9	0.7854	-1.73	7.69	0.224 [1]
T18	40 - 20	1	4.75	4.52	K=0.70 151.9	0.7854	-1.35	7.69	0.176 [1]
T19	20 - 6.67	1	4.71	4.48	K=0.70 150.6	0.7854	-2.00	7.83	0.256 [1]
T20	6.67 - 0	1	4.03	3.77	K=0.70 126.6	0.7854	-1.31	10.95	0.119 [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	380 - 360	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.97	8.05	0.121 [1]
T2	360 - 340	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.66	8.05	0.082 [1]
T3	340 - 320	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.49	8.05	0.060 [1]
T4	320 - 300	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.60	8.05	0.075 [1]
T5	300 - 280	7/8	3.50	3.35	K=0.70 128.8	0.6013	-0.76	8.14	0.093 [1]
T6	280 - 260	7/8	3.50	3.35	K=0.70 128.8	0.6013	-0.87	8.14	0.107 [1]
T7	260 - 240	7/8	3.50	3.35	K=0.70 128.8	0.6013	-3.28	8.14	0.403 [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	240 - 220	7/8	3.50	3.31	K=0.70 127.2	0.6013	-0.98	8.31	0.118 [1]
T9	220 - 200	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.30	8.31	0.156 [1]
T10	200 - 180	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.81	8.31	0.218 [1]
T11	180 - 160	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.81	8.31	0.218 [1]
T12	160 - 140	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.45	8.31	0.174 [1]
T13	140 - 120	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.20	8.31	0.145 [1]
T14	120 - 100	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.21	8.22	0.147 [1]
T15	100 - 80	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.14	8.22	0.139 [1]
T16	80 - 60	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.14	8.22	0.139 [1]
T17	60 - 40	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.22	8.22	0.149 [1]
T18	40 - 20	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.22	8.22	0.149 [1]
T19	20 - 6.67	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.15	8.22	0.140 [1]
T20	6.67 - 0	7/8	1.65	1.48	K=0.70 80.6 K=0.99	0.6013	-1.17	13.84	0.085 [1]

[1] P_u / ϕP_n controls

Top Girt 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	380 - 360	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.77	8.05	0.096 [1]
T2	360 - 340	7/8	3.50	3.38	K=0.70 129.6	0.6013	-1.52	8.05	0.189 [1]
T3	340 - 320	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.70	8.05	0.087 [1]
T4	320 - 300	7/8	3.50	3.38	K=0.70 129.6	0.6013	-0.84	8.05	0.105 [1]
T5	300 - 280	7/8	3.50	3.35	K=0.70 128.8	0.6013	-1.24	8.14	0.152 [1]
T6	280 - 260	7/8	3.50	3.35	K=0.70 128.8	0.6013	-0.87	8.14	0.107 [1]
T7	260 - 240	7/8	3.50	3.35	K=0.70 128.8	0.6013	-1.01	8.14	0.124 [1]
T8	240 - 220	7/8	3.50	3.31	K=0.70 127.2	0.6013	-0.98	8.31	0.118 [1]
T9	220 - 200	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.30	8.31	0.156 [1]
T10	200 - 180	7/8	3.50	3.31	K=0.70 127.2	0.6013	-1.81	8.31	0.218 [1]
T11	180 - 160	7/8	3.50	3.31	127.2	0.6013	-1.81	8.31	0.218 [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	160 - 140	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.45	8.31	0.174 [1]
T13	140 - 120	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.20	8.31	0.145 [1]
T14	120 - 100	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.21	8.22	0.147 [1]
T15	100 - 80	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.14	8.22	0.139 [1]
T16	80 - 60	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.14	8.22	0.139 [1]
T17	60 - 40	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.22	8.22	0.149 [1]
T18	40 - 20	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.22	8.22	0.149 [1]
T19	20 - 6.67	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.15	8.22	0.140 [1]
T20	6.67 - 0	7/8	3.30	3.14	120.4 K=0.70	0.6013	-1.17	9.08	0.129 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt 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	380 - 360	7/8	3.50	3.38	129.6 K=0.70	0.6013	-0.66	8.05	0.082 [1]
T2	360 - 340	7/8	3.50	3.38	129.6 K=0.70	0.6013	-1.27	8.05	0.158 [1]
T3	340 - 320	7/8	3.50	3.38	129.6 K=0.70	0.6013	-0.78	8.05	0.097 [1]
T4	320 - 300	7/8	3.50	3.38	129.6 K=0.70	0.6013	-0.60	8.05	0.075 [1]
T5	300 - 280	7/8	3.50	3.35	128.8 K=0.70	0.6013	-0.76	8.14	0.093 [1]
T6	280 - 260	7/8	3.50	3.35	128.8 K=0.70	0.6013	-0.87	8.14	0.107 [1]
T7	260 - 240	7/8	3.50	3.35	128.8 K=0.70	0.6013	-1.01	8.14	0.124 [1]
T8	240 - 220	7/8	3.50	3.31	127.2 K=0.70	0.6013	-0.98	8.31	0.118 [1]
T9	220 - 200	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.30	8.31	0.156 [1]
T10	200 - 180	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.81	8.31	0.218 [1]
T11	180 - 160	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.81	8.31	0.218 [1]
T12	160 - 140	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.45	8.31	0.174 [1]
T13	140 - 120	7/8	3.50	3.31	127.2 K=0.70	0.6013	-1.20	8.31	0.145 [1]
T14	120 - 100	7/8	3.50	3.33	128.0 K=0.70	0.6013	-1.21	8.22	0.147 [1]
T15	100 - 80	7/8	3.50	3.33	128.0	0.6013	-1.14	8.22	0.139 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T16	80 - 60	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.14	8.22	0.139 [1]
T17	60 - 40	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.22	8.22	0.149 [1]
T18	40 - 20	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.22	8.22	0.149 [1]
T19	20 - 6.67	7/8	3.50	3.33	K=0.70 128.0	0.6013	-1.15	8.22	0.140 [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	380 - 360	1 1/2	20.00	3.21	102.7	1.7672	20.21	79.52	0.254 [1]
T2	360 - 340	1 1/2	20.00	0.38	12.0	1.7672	3.02	79.52	0.038 [1]
T10	200 - 180	2 1/4	20.00	3.21	68.4	3.9761	11.36	178.92	0.063 [1]
T11	180 - 160	2 1/4	20.00	0.38	8.0	3.9761	2.41	178.92	0.013 [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	380 - 360	1 1/8	4.75	4.58	195.3	0.9940	4.33	32.21	0.134 [1]
T2	360 - 340	1 1/8	4.75	4.58	195.3	0.9940	4.06	32.21	0.126 [1]
T3	340 - 320	1 1/8	4.75	4.58	195.3	0.9940	2.06	32.21	0.064 [1]
T4	320 - 300	1 1/8	4.75	4.58	195.3	0.9940	2.88	32.21	0.089 [1]
T5	300 - 280	1 1/8	4.75	4.55	194.1	0.9940	3.38	32.21	0.105 [1]
T6	280 - 260	1 1/8	4.75	4.55	194.1	0.9940	1.83	32.21	0.057 [1]
T7	260 - 240	1 1/8	4.75	4.55	194.1	0.9940	9.42	32.21	0.292 [1]
T8	240 - 220	1 1/4	4.75	4.49	172.6	1.2272	2.63	39.76	0.066 [1]
T9	220 - 200	1 1/4	4.75	4.49	172.6	1.2272	3.77	39.76	0.095 [1]
T10	200 - 180	1 1/4	4.75	4.49	172.6	1.2272	4.07	39.76	0.102 [1]
T11	180 - 160	1 1/4	4.75	4.49	172.6	1.2272	3.42	39.76	0.086 [1]
T12	160 - 140	1 1/4	4.75	4.49	172.6	1.2272	2.43	39.76	0.061 [1]
T13	140 - 120	1 1/4	4.75	4.49	172.6	1.2272	1.31	39.76	0.033 [1]
T14	120 - 100	1 1/8	4.75	4.52	192.9	0.9940	2.73	32.21	0.085 [1]
T15	100 - 80	1 1/8	4.75	4.52	192.9	0.9940	1.59	32.21	0.049 [1]
T16	80 - 60	1 1/8	4.75	4.52	192.9	0.9940	0.64	32.21	0.020 [1]
T17	60 - 40	1	4.75	4.52	217.1	0.7854	1.15	25.45	0.045 [1]
T18	40 - 20	1	4.75	4.52	217.1	0.7854	1.00	25.45	0.039 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	20 - 6.67	1	4.71	4.48	215.1	0.7854	1.71	25.45	0.067 [1]
T20	6.67 - 0	1	4.03	3.77	180.8	0.7854	0.57	25.45	0.023 [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	380 - 360	7/8	3.50	3.38	185.1	0.6013	0.98	19.48	0.050 [1]
T2	360 - 340	7/8	3.50	3.38	185.1	0.6013	0.66	19.48	0.034 [1]
T3	340 - 320	7/8	3.50	3.38	185.1	0.6013	0.52	19.48	0.027 [1]
T4	320 - 300	7/8	3.50	3.38	185.1	0.6013	0.60	19.48	0.031 [1]
T5	300 - 280	7/8	3.50	3.35	184.0	0.6013	0.76	19.48	0.039 [1]
T6	280 - 260	7/8	3.50	3.35	184.0	0.6013	0.87	19.48	0.045 [1]
T7	260 - 240	7/8	3.50	3.35	184.0	0.6013	3.41	19.48	0.175 [1]
T8	240 - 220	7/8	3.50	3.31	181.7	0.6013	0.98	19.48	0.050 [1]
T9	220 - 200	7/8	3.50	3.31	181.7	0.6013	1.30	19.48	0.066 [1]
T10	200 - 180	7/8	3.50	3.31	181.7	0.6013	1.81	19.48	0.093 [1]
T11	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.81	19.48	0.093 [1]
T12	160 - 140	7/8	3.50	3.31	181.7	0.6013	1.45	19.48	0.074 [1]
T13	140 - 120	7/8	3.50	3.31	181.7	0.6013	1.20	19.48	0.062 [1]
T14	120 - 100	7/8	3.50	3.33	182.9	0.6013	1.21	19.48	0.062 [1]
T15	100 - 80	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T16	80 - 60	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T17	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T18	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T19	20 - 6.67	7/8	3.50	3.33	182.9	0.6013	1.15	19.48	0.059 [1]
T20	6.67 - 0	7/8	1.65	1.48	81.5	0.6013	1.17	19.48	0.060 [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	380 - 360	7/8	3.50	3.38	185.1	0.6013	0.78	19.48	0.040 [1]
T2	360 - 340	7/8	3.50	3.38	185.1	0.6013	1.78	19.48	0.091 [1]
T3	340 - 320	7/8	3.50	3.38	185.1	0.6013	0.66	19.48	0.034 [1]
T4	320 - 300	7/8	3.50	3.38	185.1	0.6013	0.88	19.48	0.045 [1]
T5	300 - 280	7/8	3.50	3.35	184.0	0.6013	1.28	19.48	0.066 [1]
T6	280 - 260	7/8	3.50	3.35	184.0	0.6013	0.87	19.48	0.045 [1]
T7	260 - 240	7/8	3.50	3.35	184.0	0.6013	1.01	19.48	0.052 [1]
T8	240 - 220	7/8	3.50	3.31	181.7	0.6013	0.98	19.48	0.050 [1]
T9	220 - 200	7/8	3.50	3.31	181.7	0.6013	1.30	19.48	0.066 [1]
T10	200 - 180	7/8	3.50	3.31	181.7	0.6013	1.81	19.48	0.093 [1]
T11	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.81	19.48	0.093 [1]
T12	160 - 140	7/8	3.50	3.31	181.7	0.6013	1.45	19.48	0.074 [1]
T13	140 - 120	7/8	3.50	3.31	181.7	0.6013	1.20	19.48	0.062 [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	120 - 100	7/8	3.50	3.33	182.9	0.6013	1.38	19.48	0.071 [1]
T15	100 - 80	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T16	80 - 60	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T17	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T18	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T19	20 - 6.67	7/8	3.50	3.33	182.9	0.6013	1.15	19.48	0.059 [1]
T20	6.67 - 0	7/8	3.30	3.14	172.1	0.6013	4.79	19.48	0.246 [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	380 - 360	7/8	3.50	3.38	185.1	0.6013	2.63	19.48	0.135 [1]
T2	360 - 340	7/8	3.50	3.38	185.1	0.6013	1.31	19.48	0.067 [1]
T3	340 - 320	7/8	3.50	3.38	185.1	0.6013	0.80	19.48	0.041 [1]
T4	320 - 300	7/8	3.50	3.38	185.1	0.6013	2.03	19.48	0.104 [1]
T5	300 - 280	7/8	3.50	3.35	184.0	0.6013	0.80	19.48	0.041 [1]
T6	280 - 260	7/8	3.50	3.35	184.0	0.6013	0.87	19.48	0.045 [1]
T7	260 - 240	7/8	3.50	3.35	184.0	0.6013	2.72	19.48	0.140 [1]
T8	240 - 220	7/8	3.50	3.31	181.7	0.6013	1.14	19.48	0.059 [1]
T9	220 - 200	7/8	3.50	3.31	181.7	0.6013	1.52	19.48	0.078 [1]
T10	200 - 180	7/8	3.50	3.31	181.7	0.6013	2.50	19.48	0.128 [1]
T11	180 - 160	7/8	3.50	3.31	181.7	0.6013	1.81	19.48	0.093 [1]
T12	160 - 140	7/8	3.50	3.31	181.7	0.6013	1.45	19.48	0.074 [1]
T13	140 - 120	7/8	3.50	3.31	181.7	0.6013	1.38	19.48	0.071 [1]
T14	120 - 100	7/8	3.50	3.33	182.9	0.6013	1.21	19.48	0.062 [1]
T15	100 - 80	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T16	80 - 60	7/8	3.50	3.33	182.9	0.6013	1.14	19.48	0.059 [1]
T17	60 - 40	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T18	40 - 20	7/8	3.50	3.33	182.9	0.6013	1.22	19.48	0.063 [1]
T19	20 - 6.67	7/8	3.50	3.33	182.9	0.6013	4.96	19.48	0.255 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off 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	380 - 360	3x3/8	3.50	3.38	374.1	1.1250	4.92	36.45	0.135 [1]
T4	320 - 300	3x3/8	3.50	3.38	374.1	1.1250	3.80	36.45	0.104 [1]
T7	260 - 240	3x3/8	3.50	3.35	371.8	1.1250	5.09	36.45	0.140 [1]
T10	200 - 180	3x3/8	3.50	3.31	367.2	1.1250	4.68	36.45	0.128 [1]
T13	140 - 120	3x3/8	3.50	3.31	367.2	1.1250	2.58	36.45	0.071 [1]
T16	80 - 60	3x3/8	3.50	3.33	369.5	1.1250	1.90	36.45	0.052 [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	380 - 360	Leg	1 1/2	1	-22.37	36.79	60.8	Pass
T2	360 - 340	Leg	1 1/2	44	-24.37	36.79	66.2	Pass
T3	340 - 320	Leg	1 1/2	87	-19.05	36.79	51.8	Pass
T4	320 - 300	Leg	1 1/2	127	-21.97	36.79	59.7	Pass
T5	300 - 280	Leg	1 3/4	171	-32.49	61.44	52.9	Pass
T6	280 - 260	Leg	1 3/4	213	-38.15	61.44	62.1	Pass
T7	260 - 240	Leg	1 3/4	253	-39.69	61.44	64.6	Pass
T8	240 - 220	Leg	2 1/4	295	-51.10	127.03	40.2	Pass
T9	220 - 200	Leg	2 1/4	337	-66.18	127.03	52.1	Pass
T10	200 - 180	Leg	2 1/4	381	-92.73	127.03	73.0	Pass
T11	180 - 160	Leg	2 1/4	422	-93.83	127.03	73.9	Pass
T12	160 - 140	Leg	2 1/4	464	-75.07	127.03	59.1	Pass
T13	140 - 120	Leg	2 1/4	506	-62.65	127.03	49.3	Pass
T14	120 - 100	Leg	2	548	-56.96	91.64	62.2	Pass
T15	100 - 80	Leg	2	591	-55.25	91.64	60.3	Pass
T16	80 - 60	Leg	2	633	-55.50	91.64	60.6	Pass
T17	60 - 40	Leg	2	675	-59.17	91.64	64.6	Pass
T18	40 - 20	Leg	2	717	-59.28	91.64	64.7	Pass
T19	20 - 6.67	Leg	2	758	-55.58	93.21	59.6	Pass
T20	6.67 - 0	Leg	2	788	-54.08	89.65	60.3	Pass
T1	380 - 360	Diagonal	1 1/8	17	-4.34	12.01	36.1	Pass
T2	360 - 340	Diagonal	1 1/8	82	-4.08	12.01	34.0	Pass
T3	340 - 320	Diagonal	1 1/8	96	-2.06	12.01	17.1	Pass
T4	320 - 300	Diagonal	1 1/8	138	-2.88	12.01	24.0	Pass
T5	300 - 280	Diagonal	1 1/8	208	-3.51	12.16	28.9	Pass
T6	280 - 260	Diagonal	1 1/8	250	-2.02	12.16	16.6	Pass
T7	260 - 240	Diagonal	1 1/8	263	-9.63	12.16	79.2	Pass
T8	240 - 220	Diagonal	1 1/4	305	-3.22	18.45	17.4	Pass
T9	220 - 200	Diagonal	1 1/4	347	-4.24	18.45	23.0	Pass
T10	200 - 180	Diagonal	1 1/4	395	-4.75	18.45	25.7	Pass
T11	180 - 160	Diagonal	1 1/4	460	-4.02	18.45	21.8	Pass
T12	160 - 140	Diagonal	1 1/4	502	-2.99	18.45	16.2	Pass
T13	140 - 120	Diagonal	1 1/4	546	-1.82	18.45	9.9	Pass
T14	120 - 100	Diagonal	1 1/8	586	-3.28	12.31	26.6	Pass
T15	100 - 80	Diagonal	1 1/8	628	-2.13	12.31	17.3	Pass
T16	80 - 60	Diagonal	1 1/8	648	-1.21	12.31	9.8	Pass
T17	60 - 40	Diagonal	1	713	-1.73	7.69	22.4	Pass
T18	40 - 20	Diagonal	1	726	-1.35	7.69	17.6	Pass
T19	20 - 6.67	Diagonal	1	768	-2.00	7.83	25.6	Pass
T20	6.67 - 0	Diagonal	1	798	-1.31	10.95	11.9	Pass
T1	380 - 360	Horizontal	7/8	39	-0.97	8.05	12.1	Pass
T2	360 - 340	Horizontal	7/8	55	-0.66	8.05	8.2	Pass
T3	340 - 320	Horizontal	7/8	98	-0.49	8.05	6.0	Pass
T4	320 - 300	Horizontal	7/8	145	-0.60	8.05	7.5	Pass
T5	300 - 280	Horizontal	7/8	188	-0.76	8.14	9.3	Pass
T6	280 - 260	Horizontal	7/8	230	-0.87	8.14	10.7	Pass
T7	260 - 240	Horizontal	7/8	278	-3.28	8.14	40.3	Pass
T8	240 - 220	Horizontal	7/8	307	-0.98	8.31	11.8	Pass
T9	220 - 200	Horizontal	7/8	349	-1.30	8.31	15.6	Pass
T10	200 - 180	Horizontal	7/8	398	-1.81	8.31	21.8	Pass
T11	180 - 160	Horizontal	7/8	435	-1.81	8.31	21.8	Pass
T12	160 - 140	Horizontal	7/8	476	-1.45	8.31	17.4	Pass
T13	140 - 120	Horizontal	7/8	517	-1.20	8.31	14.5	Pass
T14	120 - 100	Horizontal	7/8	560	-1.21	8.22	14.7	Pass
T15	100 - 80	Horizontal	7/8	602	-1.14	8.22	13.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T16	80 - 60	Horizontal	7/8	644	-1.14	8.22	13.9	Pass
T17	60 - 40	Horizontal	7/8	692	-1.22	8.22	14.9	Pass
T18	40 - 20	Horizontal	7/8	729	-1.22	8.22	14.9	Pass
T19	20 - 6.67	Horizontal	7/8	776	-1.15	8.22	14.0	Pass
T20	6.67 - 0	Horizontal	7/8	793	-1.17	13.84	8.5	Pass
T1	380 - 360	Top Girt	7/8	5	-0.77	8.05	9.6	Pass
T2	360 - 340	Top Girt	7/8	48	-1.52	8.05	18.9	Pass
T3	340 - 320	Top Girt	7/8	88	-0.70	8.05	8.7	Pass
T4	320 - 300	Top Girt	7/8	131	-0.84	8.05	10.5	Pass
T5	300 - 280	Top Girt	7/8	172	-1.24	8.14	15.2	Pass
T6	280 - 260	Top Girt	7/8	215	-0.87	8.14	10.7	Pass
T7	260 - 240	Top Girt	7/8	256	-1.01	8.14	12.4	Pass
T8	240 - 220	Top Girt	7/8	298	-0.98	8.31	11.8	Pass
T9	220 - 200	Top Girt	7/8	340	-1.30	8.31	15.6	Pass
T10	200 - 180	Top Girt	7/8	383	-1.81	8.31	21.8	Pass
T11	180 - 160	Top Girt	7/8	426	-1.81	8.31	21.8	Pass
T12	160 - 140	Top Girt	7/8	467	-1.45	8.31	17.4	Pass
T13	140 - 120	Top Girt	7/8	508	-1.20	8.31	14.5	Pass
T14	120 - 100	Top Girt	7/8	551	-1.21	8.22	14.7	Pass
T15	100 - 80	Top Girt	7/8	593	-1.14	8.22	13.9	Pass
T16	80 - 60	Top Girt	7/8	635	-1.14	8.22	13.9	Pass
T17	60 - 40	Top Girt	7/8	677	-1.22	8.22	14.9	Pass
T18	40 - 20	Top Girt	7/8	720	-1.22	8.22	14.9	Pass
T19	20 - 6.67	Top Girt	7/8	761	-1.15	8.22	14.0	Pass
T20	6.67 - 0	Top Girt	7/8	792	4.79	19.48	24.6	Pass
T1	380 - 360	Bottom Girt	7/8	9	2.63	19.48	13.5	Pass
T2	360 - 340	Bottom Girt	7/8	51	-1.27	8.05	15.8	Pass
T3	340 - 320	Bottom Girt	7/8	92	-0.78	8.05	9.7	Pass
T4	320 - 300	Bottom Girt	7/8	135	2.03	19.48	10.4	Pass
T5	300 - 280	Bottom Girt	7/8	177	-0.76	8.14	9.3	Pass
T6	280 - 260	Bottom Girt	7/8	218	-0.87	8.14	10.7	Pass
T7	260 - 240	Bottom Girt	7/8	260	2.72	19.48	14.0	Pass
T8	240 - 220	Bottom Girt	7/8	301	-0.98	8.31	11.8	Pass
T9	220 - 200	Bottom Girt	7/8	343	-1.30	8.31	15.6	Pass
T10	200 - 180	Bottom Girt	7/8	387	-1.81	8.31	21.8	Pass
T11	180 - 160	Bottom Girt	7/8	429	-1.81	8.31	21.8	Pass
T12	160 - 140	Bottom Girt	7/8	470	-1.45	8.31	17.4	Pass
T13	140 - 120	Bottom Girt	7/8	511	-1.20	8.31	14.5	Pass
T14	120 - 100	Bottom Girt	7/8	554	-1.21	8.22	14.7	Pass
T15	100 - 80	Bottom Girt	7/8	596	-1.14	8.22	13.9	Pass
T16	80 - 60	Bottom Girt	7/8	638	-1.14	8.22	13.9	Pass
T17	60 - 40	Bottom Girt	7/8	680	-1.22	8.22	14.9	Pass
T18	40 - 20	Bottom Girt	7/8	723	-1.22	8.22	14.9	Pass
T19	20 - 6.67	Bottom Girt	7/8	763	4.96	19.48	25.5	Pass
T1	380 - 360	Guy A@360.375	3/4	804	21.72	34.98	62.1	Pass
T4	320 - 300	Guy A@300.375	5/8	810	15.36	25.44	60.4	Pass
T7	260 - 240	Guy A@240.375	3/4	816	19.43	34.98	55.6	Pass
T10	200 - 180	Guy A@180.375	7/8	822	16.98	47.82	35.5	Pass
T13	140 - 120	Guy A@120.375	5/8	828	7.98	25.44	31.4	Pass
T16	80 - 60	Guy A@60.375	1/2	834	5.33	16.14	33.0	Pass
T1	380 - 360	Guy B@360.375	3/4	803	22.04	34.98	63.0	Pass
T4	320 - 300	Guy B@300.375	5/8	809	15.22	25.44	59.8	Pass
T7	260 - 240	Guy B@240.375	3/4	815	19.22	34.98	54.9	Pass
T10	200 - 180	Guy B@180.375	7/8	821	16.72	47.82	35.0	Pass
T13	140 - 120	Guy B@120.375	5/8	827	7.81	25.44	30.7	Pass
T16	80 - 60	Guy B@60.375	1/2	833	5.20	16.14	32.2	Pass
T1	380 - 360	Guy C@360.375	3/4	799	22.37	34.98	64.0	Pass
T4	320 - 300	Guy C@300.375	5/8	805	15.17	25.44	59.6	Pass
T7	260 - 240	Guy C@240.375	3/4	811	18.59	34.98	53.2	Pass
T10	200 - 180	Guy C@180.375	7/8	817	16.56	47.82	34.6	Pass
T13	140 - 120	Guy C@120.375	5/8	823	7.96	25.44	31.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T16	80 - 60	Guy C@60.375	1/2	829	5.30	16.14	32.9	Pass
T1	380 - 360	Top Guy Pull-Off@360.375	3x3/8	802	4.92	36.45	13.5	Pass
T4	320 - 300	Top Guy Pull-Off@300.375	3x3/8	808	3.80	36.45	10.4	Pass
T7	260 - 240	Top Guy Pull-Off@240.375	3x3/8	813	5.09	36.45	14.0	Pass
T10	200 - 180	Top Guy Pull-Off@180.375	3x3/8	818	4.68	36.45	12.8	Pass
T13	140 - 120	Top Guy Pull-Off@120.375	3x3/8	826	2.58	36.45	7.1	Pass
T16	80 - 60	Top Guy Pull-Off@60.375	3x3/8	830	1.90	36.45	5.2	Pass

Summary		
Leg (T11)	73.9	Pass
Diagonal (T7)	79.2	Pass
Horizontal (T7)	40.3	Pass
Top Girt (T20)	24.6	Pass
Bottom Girt (T19)	25.5	Pass
Guy A (T1)	62.1	Pass
Guy B (T1)	63.0	Pass
Guy C (T1)	64.0	Pass
Top Guy Pull-Off (T7)	14.0	Pass
Bolt Checks	26.5	Pass
RATING =	**79.2**	**Pass**

ADDITIONAL CALCULATIONS

Pier and Pad Foundation

TIA-222 Revision:	H
Tower Type:	Guyed

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	144	kips
Base Shear, Vu_comp:	1	kips
Moment, M_u:		ft-kips
Tower Height, **H**:	380	ft
BP Dist. Above Fdn, bp_{dist}:		in
Bolt Circle / Bearing Plate Width, **BC**:		in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	8	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	9.5	ft
Pad Thickness, **T**:	1.33	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	10	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	105	pcf
Ultimate Net Bearing, Qnet:	7.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:		
Neglected Depth, **N**:	1.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	1.5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	39.24	1.00	**2.5%**	**Pass**
Bearing Pressure (ksf)	4.38	2.09	**47.6%**	**Pass**
*Overturning (kip*ft)*	402.05	6.00	**1.5%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	519.27	4.67	**0.9%**	**Pass**
Pier Compression (kip)	3374.26	148.79	**4.4%**	**Pass**
*Pad Flexure (kip*ft)*	297.76	83.16	**27.9%**	**Pass**
Pad Shear - 1-way (kips)	109.09	35.88	**32.9%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.059	**36.1%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	420.67	2.80	**0.7%**	**Pass**

Structural Rating:	**36.1%**
Soil Rating:	**47.6%**

Guyed Tower Anchor Foundation
FL09335-A / Lake City 4 FL
2024778.09335.01

Guy Anchor Location	
Azimuth/Leg	All
Radius (ft)	250'
Tower Height (ft)	380'

Tower Reactions		
Vertical	56	k
Horizontal	62	k

Capacity Summary		
Soil Capacity=	40.1%	OK
Reinforcing Capacity=	55.9%	OK
Controlling Capacity=	**55.9%**	**OK**

Anchor Block Geometry		
Width	3	ft
Height	4	ft
Length	32	ft
Depth	12	ft

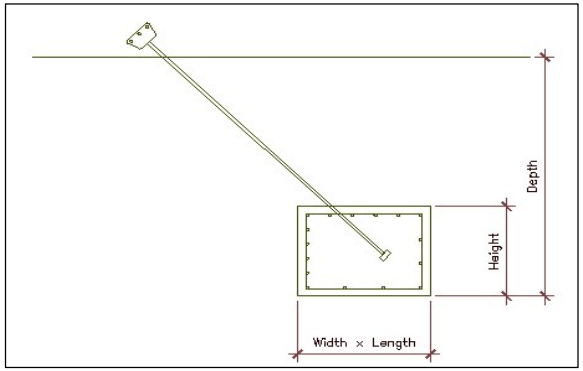
General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Soil	105%
Reinforcement/Steel	105%
Apply TIA-222-H Section 15.5?	No

Soil Properties

Layer	C_u, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	Thickness, ft	$P_{p,top}$, psf	$P_{p,bot}$, psf	f_s,psf
1		28.5	110	150	12			
2								
3								
4								
5								
6								

Ignored Depth	1.5	ft	Consider soil for uplift	User Input Angle (°)	
Water Table	1.5	ft	Granular	Angle for Uplift (°)	28.5

Soil Capacity Calculations			
W_s	144.63	k	
W_c	33.64	k	
Uplift Resistance	145.58	k	
Horizontal Resistance	154.49	k	
Uplift Capacity=	38.5%		OK
Horizontal Capacity=	40.1%		OK



Anchor Block Reinforcement		
Is Reinforcement Known?	yes	
fc'	3	ksi
Fy	60	ksi
ϕ (shear)	0.75	
Clear Cover	3	in
Top Bar Size	# 8	
Top Bar Quantity	4	
Front Bar Size	# 8	
Front Bar Quantity	4	
Back & Bottom Bar Size	# 8	
Back & Bottom Bar Quantity	0	
Tie Size	# 4	

Block Moment and Shear Calculations

Moment Check						
M_{ux}=	224.00	k-ft	M_{uy}=	248.00	k-ft	
ϕM_{nx}=	611.00	k-ft	ϕM_{ny}=	444.03	k-ft	
Capacity	36.7%	OK	Capacity	55.9%		OK
Shear Check						
V_{ux}=	28.00	k	V_{uy}=	31.00	k	
ϕV_{nx}=	130.14	k	ϕV_{ny}=	126.20	k	
Capacity	21.5%	OK	Capacity	24.6%		OK

Guy Anchor Shaft Calculations		
Shape of Anchor Shaft	Other	
Anchor Shaft Size	Other	
Quantity of Members	Single	
Anchor Shaft Grade	A36	
Guy Anchor Shaft to Fan Plate	Weld	
Gross Area	7.450	in^2
Effective Net Area	7.450	in^2
Capacity	38.9%	OK