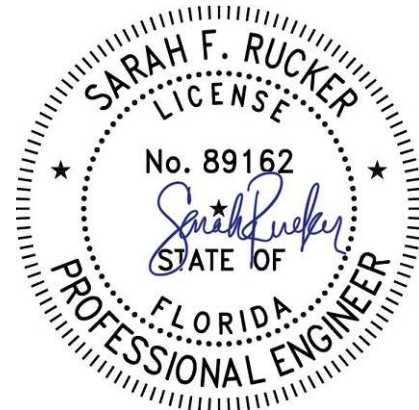




AMERICAN TOWER®
C O R P O R A T I O N

Structural Analysis Report

Structure : 301 ft Guyed Tower
ATC Site Name : BENTON FL, FL
ATC Asset Number : 88417
Engineering Number : OAA763828_C3_01
Proposed Carrier : AT&T MOBILITY
Carrier Site Name : MRTFL004885 / Benton
Carrier Site Number : MRTFL004885
Site Location : 188 NW Baycreek Street
White Springs, FL 32096
30.518200,-82.672900
County : Columbia
Date : March 16, 2021
Max Usage : 73%
Result : Pass



Prepared By:
Garret D. Heath
Structural Engineer II

Reviewed By:

This item has been electronically signed and sealed by
Sarah F. Rucker, PE on the date shown using a digital signature.
Printed copies are not considered signed and sealed and the
signature must be verified on any electronic copies.

cosign

COA: 9053



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 301 ft guyed tower to reflect the change in loading by AT&T MOBILITY.

Supporting Documents

Tower Drawings	TEP mapping Project #53155, dated March 24, 2014
Foundation Drawing	GEI Report #E07-326-F, dated December 31, 2007
Geotechnical Report	GEI Report #E07-326-G, dated December 31, 2007

Analysis

The tower was analyzed using tnxTower v8.0.7.4 tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	116 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	30 mph (3-Second Gust) w/ 1/4" radial ice concurrent
Code:	ANSI/TIA-222-H / 2018 IBC / 7th Ed. (2020) Florida Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
295.0	3	Ericsson RRUS 4449 B5, B12	Sector Frame	(2) 0.39" (10mm) Fiber Trunk (2) 0.78" (19.7mm) 8 AWG 6 (4) 0.92" (23.4mm) Cable (12) 1 5/8" Coax (3) 3/8" (0.38"- 9.5mm) RET Control Cable	AT&T MOBILITY
	3	Ericsson RRUS 32 B30 (53 lbs)			
	6	Ericsson KRY 112 81/2			
	2	Raycap DC2-48-60-0-9E			
	2	Raycap DC6-48-60-18-8F			
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4478 B14			
	6	Commscope NNH4-85B-R6			
	1	Raycap DC6-48-60-18-8C-EV			
107.8	1	Generic 3' Yagi	Leg	(1) 1/2" Coax	OTHER
59.9	1	Generic 3' Yagi	Leg	(1) 1/2" Coax	

Equipment to be Removed

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
295.0	2	Ericsson MLTN6L/2X 143T-64X	Leg	(2) 0.41" (10.3mm) CNT-400	AT&T MOBILITY
	1	Andrew Microwaves UHX8-59			

Proposed Equipment

Elev. ¹ (ft)	Qty	Antenna	Mount Type	Lines	Carrier
174.0	2	Ericsson MLTN6L/2X 143T-64X	Leg	(2) 0.41" (10.3mm) CNT-400	AT&T MOBILITY
	1	Andrew Microwaves UHX8-59			

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed coax in the place of the existing AT&T MOBILITY coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	60%	Pass
Diagonals	59%	Pass
Horizontals	37%	Pass
Guys	29%	Pass
Leg Bolts	35%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Base Axial (kips)	210.0	73%
A1 Uplift (kips)	34.0	13%
A1 Shear (kips)	31.0	21%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
174.0	Andrew Microwaves UHX8-59	AT&T MOBILITY	0.053	0.006	0.022
	Ericsson MLTN6L/2X 143T-64X				

*Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H



Standard Conditions

All engineering services performed by ATC Tower Services LLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of ATC Tower Services LLC

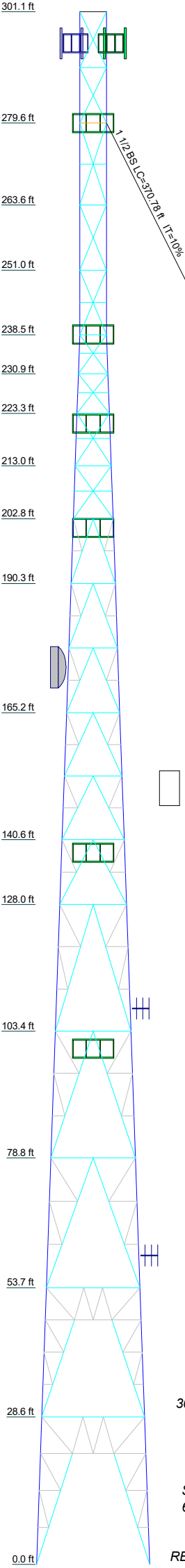
It is the responsibility of the client to ensure that the information provided to ATC Tower Services LLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and ATC Tower Services LLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services LLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

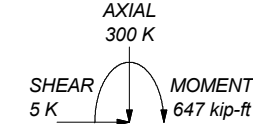
Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	L8x8x1 1/8	L8x8x1	L8x8x7/8	L8x8x3/4	L8x8x3/4	L6x6x7/8	L6x6x3/4	L6x6x3/4	L6x6x7/16	L5x5x1/2	L5x5x1/6	L5x5x5/16	L6x6x3/4				L6x6x1/2
Leg Grade																	
Diagonals	2L3x4x5/16x3/8	2L3x4x1/4x3/8	2L3x3 1/2x1/4x3/8	2L2 1/2x3x1/4	2L2 1/2x2 1/2x1/4x3/8	2L2 1/2x2 1/2x1/4x3/8	A7-33	A7-33									
Diagonal Grade																	
Top Girts																	
Horizontals	2L3 1/2x3x5/16x3/8	2L3x2 1/2x1/4x3/8															
Sec. Horizontals																	
Red. Horizontals																	
Red. Diagonals																	
Red. Sub-Horiz																	
Red. Sub-Diags																	
Top Guy Pull-Offs																	
Face Width (ft)	38.33	34.82	31.74	28.66	25.65	22.63	21.09	18.07	14.99	13.45	12.2	10.95	10.015				
# Panels @ (ft)	1 @ 28.62	1 @ 25.08	1 @ 25.125	2 @ 24.58	2 @ 24.58	1 @ 12.54	1 @ 12.58	2 @ 12.315	2 @ 12.56	2 @ 12.56	2 @ 10.21	2 @ 7.625	1 @ 12.5	1 @ 12.625	1 @ 15.92	2 @ 10.79	
Weight (K)	107.5	18.0	15.9	11.9	10.3	9.6	4.5	8.0	2.9	2.0	2.0	1.1	1.0	3.0	2.8	3.6	4.1



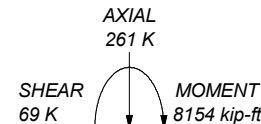
ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 210 K
SHEAR: 26 K

UPLIFT: -91 K
SHEAR: 21 K

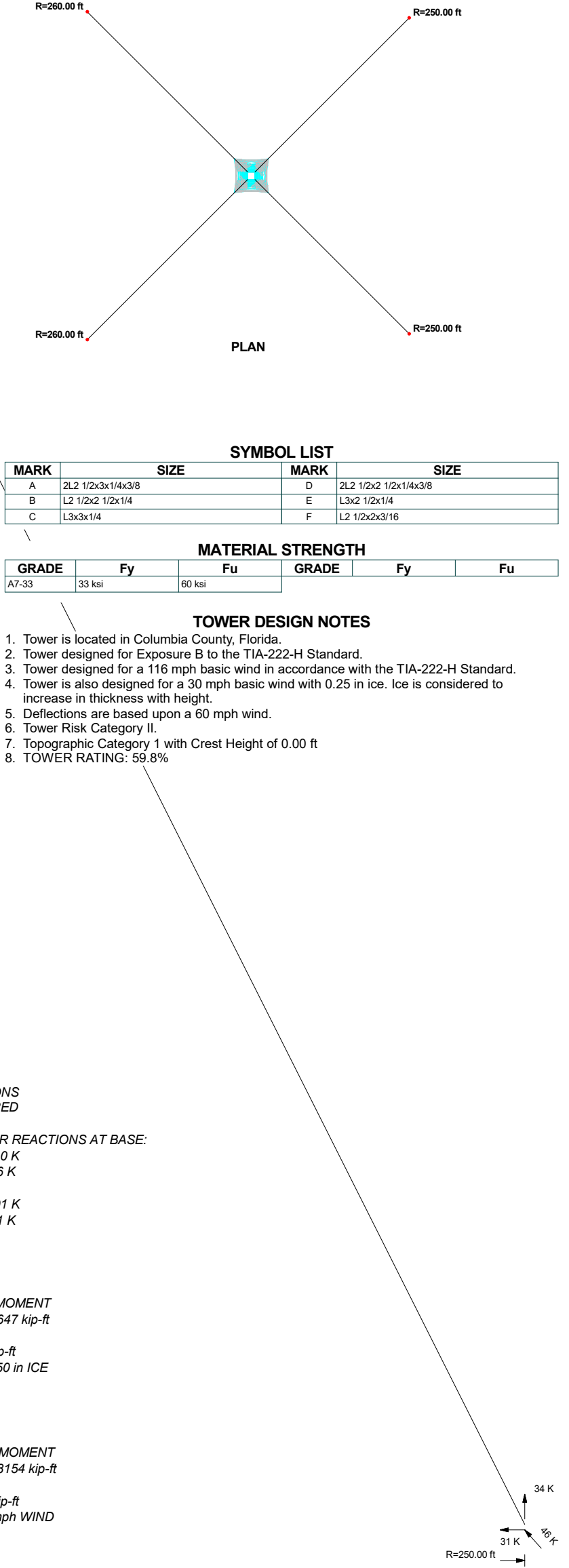


TORQUE 7 kip-ft
30 mph WIND - 0.250 in ICE



TORQUE 83 kip-ft
REACTIONS - 116 mph WIND

ALL REACTIONS ARE FACTORED



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L2 1/2x3x1/4x3/8	D	2L2 1/2x2 1/2x1/4x3/8
B	L2 1/2x2 1/2x1/4	E	L3x2 1/2x1/4
C	L3x3x1/4	F	L2 1/2x2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A7-33	33 ksi	60 ksi			

TOWER DESIGN NOTES

1. Tower is located in Columbia County, Florida.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 59.8%

ATC Engineering 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 466-5258 FAX:	Job: 88417, Benton FL		
	Project: OAA763828_C3_01		
	Client: AT&T MOBILITY	Drawn by: Garret.Heath	App'd:
	Code: TIA-222-H	Date: 03/16/21	Scale: NT
	Path:		Dwg No. E

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	Client AT&T MOBILITY	Designed by Garret.Heath

Tower Input Data

The main tower is a 4x guyed tower with an overall height of 301.13 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 9.08 ft at the top and 38.33 ft at the base.

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

The following design criteria apply:

Tower is located in Columbia County, Florida.

Tower base elevation above sea level: 133.00 ft.

Basic wind speed of 116 mph.

Risk Category II.

Exposure Category B.

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

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 0.250 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 30 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Pressures are calculated at each section.

Safety factor used in guy design is 1.

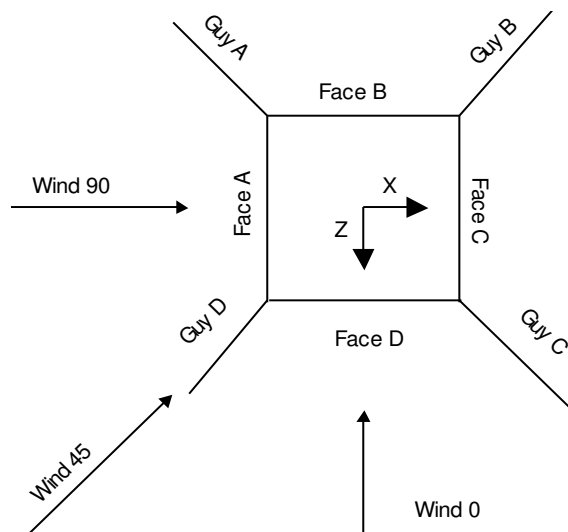
Stress ratio used in tower member design is 1.

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

Options

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

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	Client AT&T MOBILITY	Designed by Garret.Heath



Square Corner Mounted Guyed Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	301.13-279.55			9.08	1	21.58
T2	279.55-263.63			9.08	1	15.92
T3	263.63-251.01			9.08	1	12.63
T4	251.01-238.51			9.08	1	12.50
T5	238.51-230.88			9.08	1	7.63
T6	230.88-223.26			10.02	1	7.63
T7	223.26-213.05			10.95	1	10.21
T8	213.05-202.84			12.20	1	10.21
T9	202.84-190.28			13.45	1	12.56
T10	190.28-165.20			14.99	1	25.08
T11	165.20-140.57			18.07	1	24.63
T12	140.57-127.99			21.09	1	12.58
T13	127.99-103.41			22.63	1	24.58
T14	103.41-78.83			25.65	1	24.58
T15	78.83-53.70			28.66	1	25.13
T16	53.70-28.62			31.74	1	25.08
T17	28.62-0.00			34.82	1	28.62

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	301.13-279.55	10.79	X Brace	No	Yes	0.000	0.000

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	Client	AT&T MOBILITY	Designed by	Garret.Heath

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T2	279.55-263.63	15.92	X Brace	No	Yes	0.000	0.000
T3	263.63-251.01	12.63	X Brace	No	Yes	0.000	0.000
T4	251.01-238.51	12.50	X Brace	No	Yes	0.000	0.000
T5	238.51-230.88	7.63	X Brace	No	Yes	0.000	0.000
T6	230.88-223.26	7.63	X Brace	No	Yes	0.000	0.000
T7	223.26-213.05	10.21	X Brace	No	Yes	0.000	0.000
T8	213.05-202.84	10.21	X Brace	No	Yes	0.000	0.000
T9	202.84-190.28	12.56	K1 Down	No	Yes	0.000	0.000
T10	190.28-165.20	12.54	K1 Down	No	Yes	0.000	0.000
T11	165.20-140.57	12.32	K1 Down	No	Yes	0.000	0.000
T12	140.57-127.99	12.58	K1 Down	No	Yes	0.000	0.000
T13	127.99-103.41	24.58	K2 Down	No	Yes	0.000	0.000
T14	103.41-78.83	24.58	K2 Down	No	Yes	0.000	0.000
T15	78.83-53.70	25.13	K2 Down	No	Yes	0.000	0.000
T16	53.70-28.62	25.08	Portal	No	Yes	0.000	0.000
T17	28.62-0.00	28.62	Portal	No	Yes	0.000	0.000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1 301.13-279.55	Equal Angle	L6x6x1/2	A7-33 (33 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T2 279.55-263.63	Equal Angle	L6x6x3/4	A7-33 (33 ksi)	Double Angle	2L2 1/2x3x1/4x3/8	A7-33 (33 ksi)
T3 263.63-251.01	Equal Angle	L6x6x3/4	A7-33 (33 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T4 251.01-238.51	Equal Angle	L6x6x3/4	A7-33 (33 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T5 238.51-230.88	Equal Angle	L5x5x5/16	A7-33 (33 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A7-33 (33 ksi)
T6 230.88-223.26	Equal Angle	L5x5x5/16	A7-33 (33 ksi)	Equal Angle	L3x3x1/4	A7-33 (33 ksi)
T7 223.26-213.05	Equal Angle	L5x5x1/2	A7-33 (33 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A7-33 (33 ksi)
T8 213.05-202.84	Equal Angle	L5x5x1/2	A7-33 (33 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A7-33 (33 ksi)
T9 202.84-190.28	Equal Angle	L6x6x7/16	A7-33 (33 ksi)	Double Angle	2L2 1/2x2x1/4x3/8	A7-33 (33 ksi)
T10 190.28-165.20	Equal Angle	L6x6x9/16	A7-33 (33 ksi)	Double Angle	2L2 1/2x2x1/4x3/8	A7-33 (33 ksi)
T11 165.20-140.57	Equal Angle	L6x6x3/4	A7-33 (33 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T12 140.57-127.99	Equal Angle	L6x6x7/8	A7-33 (33 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T13 127.99-103.41	Equal Angle	L8x8x3/4	A7-33 (33 ksi)	Double Angle	2L2 1/2x3x1/4	A7-33 (33 ksi)
T14 103.41-78.83	Equal Angle	L8x8x3/4	A7-33 (33 ksi)	Double Angle	2L2 1/2x3x1/4	A7-33 (33 ksi)
T15 78.83-53.70	Equal Angle	L8x8x7/8	A7-33 (33 ksi)	Double Angle	2L3x3 1/2x1/4x3/8	A7-33 (33 ksi)
T16 53.70-28.62	Equal Angle	L8x8x1	A7-33 (33 ksi)	Double Angle	2L3x4x1/4x3/8	A7-33 (33 ksi)
T17 28.62-0.00	Single Angle	L8x8x1 1/8	A7-33 (33 ksi)	Double Angle	2L3x4x5/16x3/8	A7-33 (33 ksi)

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	Client	AT&T MOBILITY	Designed by	Garret.Heath

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 301.13-279.55	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T2 279.55-263.63	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T3 263.63-251.01	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T4 251.01-238.51	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T5 238.51-230.88	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A7-33 (33 ksi)
T6 230.88-223.26	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A7-33 (33 ksi)
T7 223.26-213.05	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A7-33 (33 ksi)
T8 213.05-202.84	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A7-33 (33 ksi)
T9 202.84-190.28	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T10 190.28-165.20	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T11 165.20-140.57	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T12 140.57-127.99	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T13 127.99-103.41	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)
T14 103.41-78.83	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A7-33 (33 ksi)
T15 78.83-53.70	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A7-33 (33 ksi)
T16 53.70-28.62	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A7-33 (33 ksi)
T17 28.62-0.00	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3 1/2x3x5/16x3/8	A7-33 (33 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
T2 279.55-263.63	Equal Angle	L2 1/2x2 1/2x1/4	A7-33 (33 ksi)	Solid Round		A572-50 (50 ksi)
T4 251.01-238.51	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A7-33 (33 ksi)	Solid Round		A572-50 (50 ksi)
T5 238.51-230.88	Single Angle	L2 1/2x2x3/16	A7-33 (33 ksi)	Solid Round		A572-50 (50 ksi)
T6 230.88-223.26	Single Angle	L2 1/2x2x3/16	A7-33	Solid Round		A572-50

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<i>Tower Elevation</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
<i>ft</i>						
T7 223.26-213.05	Single Angle	L3x2 1/2x1/4	(33 ksi) A7-33	Solid Round		(50 ksi) A572-50
T8 213.05-202.84	Single Angle	L2 1/2x2x3/16	(33 ksi) A7-33	Solid Round		(50 ksi) A572-50
			(33 ksi)			(50 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Redundant Bracing Grade</i>		<i>Redundant Type</i>	<i>Redundant Size</i>	<i>K Factor</i>
<i>ft</i>					
T9	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
202.84-190.28	(33 ksi)	Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
T10	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
190.28-165.20	(33 ksi)	Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
T11	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
165.20-140.57	(33 ksi)	Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
T12	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
140.57-127.99	(33 ksi)	Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
T13	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
127.99-103.41	(33 ksi)	Horizontal (2)		2L3x2 1/2x3/16x3/8	
		Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
		Diagonal (2)		2L3x3x1/4x3/8	
T14	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
103.41-78.83	(33 ksi)	Horizontal (2)		2L3x2 1/2x3/16x3/8	
		Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
		Diagonal (2)		2L3x3x1/4x3/8	
T15	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
78.83-53.70	(33 ksi)	Horizontal (2)		2L3x2 1/2x3/16x3/8	
		Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
		Diagonal (2)		2L3x3x1/4x3/8	
T16	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
53.70-28.62	(33 ksi)	Horizontal (2)		2L3x2 1/2x3/16x3/8	
		Horizontal (3)		2L3x2 1/2x1/4x3/8	
		Diagonal (1)	Double Equal Angle	2L3x3x1/4x3/8	1
		Diagonal (2)		2L3x3x1/4x3/8	
		Diagonal (3)		2L4x4x1/2	
		Sub-Diagonal	Double Equal Angle	2L3x3x1/4	1
		Sub-Horizontal	Double Equal Angle	2L3x3x1/4	1
		Hip (1)	Double Equal Angle	2L3x3x1/4	1
		Hip (2)		2L3x3x1/4	
		Hip (3)		2L3x3x1/4	
T17	A7-33	Horizontal (1)	Double Angle	2L3x2 1/2x1/4x3/8	1
28.62-0.00	(33 ksi)	Horizontal (2)		2L3x2 1/2x3/16x3/8	
		Horizontal (3)		2L3x2 1/2x1/4x3/8	
		Diagonal (1)	Double Angle	2L3x3x1/4x3/8	1
		Diagonal (2)		2L3x3x1/4x3/8	
		Diagonal (3)		2L3 1/2x2 1/2x1/4x3/8	
		Sub-Diagonal	Double Equal Angle	2L3x3x1/4	1
		Sub-Horizontal	Double Equal Angle	2L3x3x1/4	1
		Hip (1)	Double Equal Angle	2L3x3x1/4	1
		Hip (2)		2L3x3x1/4	
		Hip (3)		2L3x3x1/4	

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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 in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
T1	0.00	0.375	A36	1	1	1	22.000	24.000	36.000
301.13-279.55			(36 ksi)						
T2	0.00	0.375	A36	1	1	1	24.000	17.000	36.000
279.55-263.63			(36 ksi)						
T3	0.00	0.375	A36	1	1	1	20.000	20.000	36.000
263.63-251.01			(36 ksi)						
T4	0.00	0.375	A36	1	1	1	23.000	20.000	36.000
251.01-238.51			(36 ksi)						
T5	0.00	0.375	A36	1	1	1	36.000	36.000	36.000
238.51-230.88			(36 ksi)						
T6	0.00	0.375	A36	1	1	1	36.000	36.000	36.000
230.88-223.26			(36 ksi)						
T7	0.00	0.375	A36	1	1	1	36.000	27.000	36.000
223.26-213.05			(36 ksi)						
T8	0.00	0.375	A36	1	1	1	36.000	18.000	36.000
213.05-202.84			(36 ksi)						
T9	0.00	0.375	A36	1	1	1	15.000	18.000	36.000
202.84-190.28			(36 ksi)						
T10	0.00	0.375	A36	1	1	1	20.000	19.000	36.000
190.28-165.20			(36 ksi)						
T11	0.00	0.375	A36	1	1	1	22.000	26.000	36.000
165.20-140.57			(36 ksi)						
T12	0.00	0.375	A36	1	1	1	17.000	18.000	36.000
140.57-127.99			(36 ksi)						
T13	0.00	0.375	A36	1	1	1	23.000	21.000	36.000
127.99-103.41			(36 ksi)						
T14	0.00	0.375	A36	1	1	1	20.000	23.000	36.000
103.41-78.83			(36 ksi)						
T15	0.00	0.375	A36	1	1	1	19.000	23.000	36.000
78.83-53.70			(36 ksi)						
T16	0.00	0.375	A36	1	1	1	16.000	22.000	36.000
53.70-28.62			(36 ksi)						
T17 28.62-0.00	0.00	0.375	A36	1	1	1	18.500	20.000	36.000
			(36 ksi)						

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
ft										
T1	Yes	Yes	1	1	1	1	1	1	1	1
301.13-279.55				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
279.55-263.63				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
263.63-251.01				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
251.01-238.51				1	1	1	1	1	1	1

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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14	Sleeve DS	0.750	28	0.750	3	0.625	0	0.625	0	0.625	0	0.750	2	0.625	0
103.41-78.83		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Sleeve DS	0.750	32	0.750	3	0.625	0	0.625	0	0.625	0	0.750	2	0.625	0
78.83-53.70		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Sleeve DS	0.750	32	0.750	4	0.625	0	0.625	0	0.625	0	0.750	3	0.625	0
53.70-28.62		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17 28.62-0.00	Sleeve DS	0.875	28	0.750	4	0.625	0	0.625	0	0.625	0	0.750	3	0.625	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 _a ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
279.55	BS	A 1 1/2	27.60	10%	24000	4.730	377.13	260.00	0.000	0.00	100%
		B 1 1/2	27.60	10%	24000	4.730	370.48	250.00	0.000	0.00	100%
		C 1 1/2	27.60	10%	24000	4.730	370.48	250.00	0.000	0.00	100%
		D 1 1/2	27.60	10%	24000	4.730	377.13	260.00	0.000	0.00	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
279.55	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
279.55	A572-50 (50 ksi)	Solid Round			No	A572-50 (50 ksi)	Channel	C6x8.2

Guy Data (cont'd)

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Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	K	K	K	K	ft	ft	ft	ft
279.55	1.78	1.75	1.75	1.78	11.91	11.50	11.50	11.91
					6.0 sec/pulse	5.9 sec/pulse	5.9 sec/pulse	6.0 sec/pulse

Guy Data (cont'd)

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

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
279.55	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
279.55	A	139.78	32	2	0.289
	B	139.78	32	2	0.289
	C	139.78	32	2	0.289
	D	139.78	32	2	0.289

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
Climbing Ladder ***	D	No	No	Af (CaAa)	300.00 - 0.00	-12.000	0.45	1	1	2.000	2.000		6.90
0.78" (19.7mm) 8 AWG 6	D	No	No	Ar (CaAa)	295.00 - 0.00	0.000	-0.34	2	2	0.500	0.780		0.59
0.39" (10mm) Fiber Trunk	D	No	No	Ar (CaAa)	295.00 - 0.00	0.000	-0.33	2	2	0.500	0.390		0.06
1 5/8" Coax	D	No	No	Ar (CaAa)	295.00 - 0.00	0.000	-0.35	12	6	0.500	1.980		0.82

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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
0.92" (23.4mm) Cable	D	No	No	Ar (CaAa)	295.00 - 0.00	0.000	-0.32	4	2	0.500	0.920		0.89
3/8" (0.38"- 9.5mm) RET Control Cable	D	No	No	Ar (CaAa)	295.00 - 0.00	0.000	-0.31	3	3	0.500	0.380		0.23
0.41" (10.3mm) CNT-400 ***	D	No	No	Ar (CaAa)	174.00 - 0.00	0.000	-0.3	2	2	0.500	0.410		0.07
1/2" Coax	A	No	No	Ar (CaAa)	107.00 - 0.00	0.000	-0.45	1	1	0.500	0.630		0.15
1/2" Coax	A	No	No	Ar (CaAa)	59.00 - 0.00	0.000	-0.45	1	1	0.500	0.630		0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	301.13-279.55	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	54.588	0.000	0.38
T2	279.55-263.63	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	54.531	0.000	0.35
T3	263.63-251.01	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	43.245	0.000	0.28
T4	251.01-238.51	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	42.817	0.000	0.28
T5	238.51-230.88	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	26.118	0.000	0.17
T6	230.88-223.26	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	26.118	0.000	0.17
T7	223.26-213.05	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	34.973	0.000	0.23
T8	213.05-202.84	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	34.973	0.000	0.23
T9	202.84-190.28	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	43.022	0.000	0.28

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_{AA}</i> <i>In Face ft²</i>	<i>C_{AA}</i> <i>Out Face ft²</i>	<i>Weight K</i>
T10	190.28-165.20	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	86.629	0.000	0.56
T11	165.20-140.57	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	86.386	0.000	0.55
T12	140.57-127.99	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	44.122	0.000	0.28
T13	127.99-103.41	A	0.000	0.000	0.226	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	86.210	0.000	0.55
T14	103.41-78.83	A	0.000	0.000	1.549	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	86.210	0.000	0.55
T15	78.83-53.70	A	0.000	0.000	1.917	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	88.122	0.000	0.56
T16	53.70-28.62	A	0.000	0.000	3.160	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	87.964	0.000	0.56
T17	28.62-0.00	A	0.000	0.000	3.606	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	100.380	0.000	0.64

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_{AA}</i> <i>In Face ft²</i>	<i>C_{AA}</i> <i>Out Face ft²</i>	<i>Weight K</i>
T1	301.13-279.55	A	0.311	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	62.440	0.000	0.75
T2	279.55-263.63	A	0.309	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	62.240	0.000	0.72
T3	263.63-251.01	A	0.307	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	49.319	0.000	0.57
T4	251.01-238.51	A	0.305	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	48.795	0.000	0.56
T5	238.51-230.88	A	0.304	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	29.747	0.000	0.34

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_{AA} In Face ft²</i>	<i>C_{AA} Out Face ft²</i>	<i>Weight K</i>
T6	230.88-223.26	A	0.303	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	29.733	0.000	0.34
T7	223.26-213.05	A	0.302	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	39.789	0.000	0.46
T8	213.05-202.84	A	0.301	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	39.762	0.000	0.46
T9	202.84-190.28	A	0.299	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	48.874	0.000	0.56
T10	190.28-165.20	A	0.296	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	99.828	0.000	1.12
T11	165.20-140.57	A	0.291	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	102.109	0.000	1.11
T12	140.57-127.99	A	0.288	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	52.049	0.000	0.56
T13	127.99-103.41	A	0.283	0.000	0.000	0.430	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	101.469	0.000	1.10
T14	103.41-78.83	A	0.277	0.000	0.000	2.909	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	101.107	0.000	1.09
T15	78.83-53.70	A	0.268	0.000	0.000	3.548	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	102.870	0.000	1.11
T16	53.70-28.62	A	0.256	0.000	0.000	5.724	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	102.000	0.000	1.09
T17	28.62-0.00	A	0.230	0.000	0.000	6.239	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	134.603	0.000	1.02

Feed Line Center of Pressure

<i>Section</i>	<i>Elevation</i>	<i>CP_x</i>	<i>CP_z</i>	<i>CP_x</i>	<i>CP_z</i>
	<i>ft</i>	<i>in</i>	<i>in</i>	<i>Ice in</i>	<i>Ice in</i>
T1	301.13-279.55	5.073	5.529	5.910	6.803
T2	279.55-263.63	6.656	6.700	7.731	8.276
T3	263.63-251.01	7.121	7.231	8.201	8.851

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
T4	251.01-238.51	6.785	6.847	7.836	8.394
T5	238.51-230.88	6.594	6.611	7.627	8.098
T6	230.88-223.26	6.662	6.652	7.753	8.183
T7	223.26-213.05	7.239	7.251	8.432	8.918
T8	213.05-202.84	7.712	7.731	8.973	9.477
T9	202.84-190.28	8.926	9.025	10.314	10.973
T10	190.28-165.20	9.935	10.066	11.615	12.317
T11	165.20-140.57	11.179	11.351	13.322	14.050
T12	140.57-127.99	12.000	12.175	14.290	15.013
T13	127.99-103.41	12.348	12.647	14.794	15.735
T14	103.41-78.83	12.691	13.913	14.933	17.422
T15	78.83-53.70	13.178	14.672	15.465	18.341
T16	53.70-28.62	12.126	14.285	14.057	17.905
T17	28.62-0.00	13.252	15.627	14.152	19.190

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Climbing Ladder	279.55 - 300.00	0.6000	0.6000
T1	3	0.78" (19.7mm) 8 AWG 6	279.55 - 295.00	0.6000	0.6000
T1	4	0.39" (10mm) Fiber Trunk	279.55 - 295.00	0.6000	0.6000
T1	5	1 5/8" Coax	279.55 - 295.00	0.6000	0.6000
T1	6	0.92" (23.4mm) Cable	279.55 - 295.00	0.6000	0.6000
T1	7	3/8" (0.38"- 9.5mm) RET Control Cable	279.55 - 295.00	0.6000	0.6000
T2	1	Climbing Ladder	263.63 - 279.55	0.6000	0.6000
T2	3	0.78" (19.7mm) 8 AWG 6	263.63 - 279.55	0.6000	0.6000
T2	4	0.39" (10mm) Fiber Trunk	263.63 - 279.55	0.6000	0.6000
T2	5	1 5/8" Coax	263.63 - 279.55	0.6000	0.6000
T2	6	0.92" (23.4mm) Cable	263.63 - 279.55	0.6000	0.6000
T2	7	3/8" (0.38"- 9.5mm) RET Control Cable	263.63 - 279.55	0.6000	0.6000
T3	1	Climbing Ladder	251.01 - 263.63	0.6000	0.6000
T3	3	0.78" (19.7mm) 8 AWG 6	251.01 - 263.63	0.6000	0.6000
T3	4	0.39" (10mm) Fiber Trunk	251.01 - 263.63	0.6000	0.6000
T3	5	1 5/8" Coax	251.01 - 263.63	0.6000	0.6000
T3	6	0.92" (23.4mm) Cable	251.01 - 263.63	0.6000	0.6000
T3	7	3/8" (0.38"- 9.5mm) RET Control Cable	251.01 - 263.63	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T4	1	Climbing Ladder	238.51 - 251.01	0.6000	0.6000
T4	3	0.78" (19.7mm) 8 AWG 6	238.51 - 251.01	0.6000	0.6000
T4	4	0.39" (10mm) Fiber Trunk	238.51 - 251.01	0.6000	0.6000
T4	5	1 5/8" Coax	238.51 - 251.01	0.6000	0.6000
T4	6	0.92" (23.4mm) Cable	238.51 - 251.01	0.6000	0.6000
T4	7	3/8" (0.38"- 9.5mm) RET Control Cable	238.51 - 251.01	0.6000	0.6000
T5	1	Climbing Ladder	230.88 - 238.51	0.6000	0.6000
T5	3	0.78" (19.7mm) 8 AWG 6	230.88 - 238.51	0.6000	0.6000
T5	4	0.39" (10mm) Fiber Trunk	230.88 - 238.51	0.6000	0.6000
T5	5	1 5/8" Coax	230.88 - 238.51	0.6000	0.6000
T5	6	0.92" (23.4mm) Cable	230.88 - 238.51	0.6000	0.6000
T5	7	3/8" (0.38"- 9.5mm) RET Control Cable	230.88 - 238.51	0.6000	0.6000
T6	1	Climbing Ladder	223.26 - 230.88	0.6000	0.6000
T6	3	0.78" (19.7mm) 8 AWG 6	223.26 - 230.88	0.6000	0.6000
T6	4	0.39" (10mm) Fiber Trunk	223.26 - 230.88	0.6000	0.6000
T6	5	1 5/8" Coax	223.26 - 230.88	0.6000	0.6000
T6	6	0.92" (23.4mm) Cable	223.26 - 230.88	0.6000	0.6000
T6	7	3/8" (0.38"- 9.5mm) RET Control Cable	223.26 - 230.88	0.6000	0.6000
T7	1	Climbing Ladder	213.04 - 223.26	0.6000	0.6000
T7	3	0.78" (19.7mm) 8 AWG 6	213.04 - 223.26	0.6000	0.6000
T7	4	0.39" (10mm) Fiber Trunk	213.04 - 223.26	0.6000	0.6000
T7	5	1 5/8" Coax	213.04 - 223.26	0.6000	0.6000
T7	6	0.92" (23.4mm) Cable	213.04 - 223.26	0.6000	0.6000
T7	7	3/8" (0.38"- 9.5mm) RET Control Cable	213.04 - 223.26	0.6000	0.6000
T8	1	Climbing Ladder	202.84 - 213.04	0.6000	0.6000
T8	3	0.78" (19.7mm) 8 AWG 6	202.84 - 213.04	0.6000	0.6000
T8	4	0.39" (10mm) Fiber Trunk	202.84 - 213.04	0.6000	0.6000
T8	5	1 5/8" Coax	202.84 - 213.04	0.6000	0.6000
T8	6	0.92" (23.4mm) Cable	202.84 - 213.04	0.6000	0.6000
T8	7	3/8" (0.38"- 9.5mm) RET Control Cable	202.84 - 213.04	0.6000	0.6000
T9	1	Climbing Ladder	190.28 - 202.84	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T9	3	0.78" (19.7mm) 8 AWG 6	190.28 - 202.84	0.6000	0.6000
T9	4	0.39" (10mm) Fiber Trunk	190.28 - 202.84	0.6000	0.6000
T9	5	1 5/8" Coax	190.28 - 202.84	0.6000	0.6000
T9	6	0.92" (23.4mm) Cable	190.28 - 202.84	0.6000	0.6000
T9	7	3/8" (0.38"- 9.5mm) RET Control Cable	190.28 - 202.84	0.6000	0.6000
T10	1	Climbing Ladder	165.20 - 190.28	0.6000	0.6000
T10	3	0.78" (19.7mm) 8 AWG 6	165.20 - 190.28	0.6000	0.6000
T10	4	0.39" (10mm) Fiber Trunk	165.20 - 190.28	0.6000	0.6000
T10	5	1 5/8" Coax	165.20 - 190.28	0.6000	0.6000
T10	6	0.92" (23.4mm) Cable	165.20 - 190.28	0.6000	0.6000
T10	7	3/8" (0.38"- 9.5mm) RET Control Cable	165.20 - 190.28	0.6000	0.6000
T10	8	0.41" (10.3mm) CNT-400	165.20 - 174.00	0.6000	0.6000
T11	1	Climbing Ladder	140.57 - 165.20	0.6000	0.6000
T11	3	0.78" (19.7mm) 8 AWG 6	140.57 - 165.20	0.6000	0.6000
T11	4	0.39" (10mm) Fiber Trunk	140.57 - 165.20	0.6000	0.6000
T11	5	1 5/8" Coax	140.57 - 165.20	0.6000	0.6000
T11	6	0.92" (23.4mm) Cable	140.57 - 165.20	0.6000	0.6000
T11	7	3/8" (0.38"- 9.5mm) RET Control Cable	140.57 - 165.20	0.6000	0.6000
T11	8	0.41" (10.3mm) CNT-400	140.57 - 165.20	0.6000	0.6000
T12	1	Climbing Ladder	127.99 - 140.57	0.6000	0.6000
T12	3	0.78" (19.7mm) 8 AWG 6	127.99 - 140.57	0.6000	0.6000
T12	4	0.39" (10mm) Fiber Trunk	127.99 - 140.57	0.6000	0.6000
T12	5	1 5/8" Coax	127.99 - 140.57	0.6000	0.6000
T12	6	0.92" (23.4mm) Cable	127.99 - 140.57	0.6000	0.6000
T12	7	3/8" (0.38"- 9.5mm) RET Control Cable	127.99 - 140.57	0.6000	0.6000
T12	8	0.41" (10.3mm) CNT-400	127.99 - 140.57	0.6000	0.6000
T13	1	Climbing Ladder	103.41 - 127.99	0.6000	0.6000
T13	3	0.78" (19.7mm) 8 AWG 6	103.41 - 127.99	0.6000	0.6000
T13	4	0.39" (10mm) Fiber Trunk	103.41 - 127.99	0.6000	0.6000
T13	5	1 5/8" Coax	103.41 - 127.99	0.6000	0.6000
T13	6	0.92" (23.4mm) Cable	103.41 - 127.99	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T13	7	3/8" (0.38"- 9.5mm) RET Control Cable	103.41 - 127.99	0.6000	0.6000
T13	8	0.41" (10.3mm) CNT-400	103.41 - 127.99	0.6000	0.6000
T13	10	1/2" Coax	103.41 - 107.00	0.6000	0.6000
T14	1	Climbing Ladder	78.83 - 103.41	0.6000	0.6000
T14	3	0.78" (19.7mm) 8 AWG 6	78.83 - 103.41	0.6000	0.6000
T14	4	0.39" (10mm) Fiber Trunk	78.83 - 103.41	0.6000	0.6000
T14	5	1 5/8" Coax	78.83 - 103.41	0.6000	0.6000
T14	6	0.92" (23.4mm) Cable	78.83 - 103.41	0.6000	0.6000
T14	7	3/8" (0.38"- 9.5mm) RET Control Cable	78.83 - 103.41	0.6000	0.6000
T14	8	0.41" (10.3mm) CNT-400	78.83 - 103.41	0.6000	0.6000
T14	10	1/2" Coax	78.83 - 103.41	0.6000	0.6000
T15	1	Climbing Ladder	53.70 - 78.83	0.6000	0.6000
T15	3	0.78" (19.7mm) 8 AWG 6	53.70 - 78.83	0.6000	0.6000
T15	4	0.39" (10mm) Fiber Trunk	53.70 - 78.83	0.6000	0.6000
T15	5	1 5/8" Coax	53.70 - 78.83	0.6000	0.6000
T15	6	0.92" (23.4mm) Cable	53.70 - 78.83	0.6000	0.6000
T15	7	3/8" (0.38"- 9.5mm) RET Control Cable	53.70 - 78.83	0.6000	0.6000
T15	8	0.41" (10.3mm) CNT-400	53.70 - 78.83	0.6000	0.6000
T15	10	1/2" Coax	53.70 - 78.83	0.6000	0.6000
T15	11	1/2" Coax	53.70 - 59.00	0.6000	0.6000
T16	1	Climbing Ladder	28.62 - 53.70	0.6000	0.6000
T16	3	0.78" (19.7mm) 8 AWG 6	28.62 - 53.70	0.6000	0.6000
T16	4	0.39" (10mm) Fiber Trunk	28.62 - 53.70	0.6000	0.6000
T16	5	1 5/8" Coax	28.62 - 53.70	0.6000	0.6000
T16	6	0.92" (23.4mm) Cable	28.62 - 53.70	0.6000	0.6000
T16	7	3/8" (0.38"- 9.5mm) RET Control Cable	28.62 - 53.70	0.6000	0.6000
T16	8	0.41" (10.3mm) CNT-400	28.62 - 53.70	0.6000	0.6000
T16	10	1/2" Coax	28.62 - 53.70	0.6000	0.6000
T16	11	1/2" Coax	28.62 - 53.70	0.6000	0.6000
T17	1	Climbing Ladder	0.00 - 28.62	0.6000	0.6000
T17	3	0.78" (19.7mm) 8 AWG 6	0.00 - 28.62	0.6000	0.6000
T17	4	0.39" (10mm) Fiber Trunk	0.00 - 28.62	0.6000	0.6000
T17	5	1 5/8" Coax	0.00 - 28.62	0.6000	0.6000
T17	6	0.92" (23.4mm) Cable	0.00 - 28.62	0.6000	0.6000
T17	7	3/8" (0.38"- 9.5mm) RET Control Cable	0.00 - 28.62	0.6000	0.6000
T17	8	0.41" (10.3mm) CNT-400	0.00 - 28.62	0.6000	0.6000
T17	10	1/2" Coax	0.00 - 28.62	0.6000	0.6000
T17	11	1/2" Coax	0.00 - 28.62	0.6000	0.6000

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i>	<i>Azimuth Adjustment</i>	<i>Placement</i>	<i>C_AA_A Front</i>	<i>C_AA_A Side</i>	<i>Weight</i>
			<i>ft</i> <i>ft</i> <i>ft</i>	<i>°</i>	<i>ft</i>	<i>ft²</i>	<i>ft²</i>	<i>K</i>

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
Rest Platform	A	None		0.000	279.50	No Ice	15.00	15.00	0.50
20' Platform w/ Handrails	A	None		0.000	238.50	1/2" Ice	0.00	0.00	0.65
						No Ice	80.00	80.00	9.00
Catwalk	A	None		0.000	221.25	1/2" Ice	0.00	0.00	11.70
						No Ice	70.00	70.00	8.00
Access Platform	A	None		0.000	201.00	1/2" Ice	0.00	0.00	10.40
						No Ice	45.00	45.00	5.00
Rest Platform	A	None		0.000	138.00	1/2" Ice	0.00	0.00	6.50
						No Ice	15.00	15.00	0.50
Rest Platform	A	None		0.000	100.00	1/2" Ice	0.00	0.00	0.65
						No Ice	15.00	15.00	0.50
***						1/2" Ice	0.00	0.00	0.65
DC2-48-60-0-9E	A	From Leg	4.00	0.000	295.00	No Ice	0.88	0.53	0.02
			0.00			1/2" Ice	0.97	0.59	0.02
DC2-48-60-0-9E	B	From Leg	4.00	0.000	295.00	No Ice	0.88	0.53	0.02
			0.00			1/2" Ice	0.97	0.59	0.02
(2) KRY 112 81/2	A	From Leg	4.00	0.000	295.00	No Ice	1.03	0.39	0.02
			0.00			1/2" Ice	1.12	0.43	0.02
(2) KRY 112 81/2	B	From Leg	4.00	0.000	295.00	No Ice	1.03	0.39	0.02
			0.00			1/2" Ice	1.12	0.43	0.02
(2) KRY 112 81/2	C	From Leg	4.00	0.000	295.00	No Ice	1.03	0.39	0.02
			0.00			1/2" Ice	1.12	0.43	0.02
DC6-48-60-18-8F	B	From Leg	4.00	0.000	295.00	No Ice	1.26	1.26	0.02
			0.00			1/2" Ice	1.35	1.35	0.03
DC6-48-60-18-8F	C	From Leg	4.00	0.000	295.00	No Ice	1.26	1.26	0.02
			0.00			1/2" Ice	1.35	1.35	0.03
RRUS 8843 B2, B66A	A	From Leg	4.00	0.000	295.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.76	1.45	0.08
RRUS 8843 B2, B66A	B	From Leg	4.00	0.000	295.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.76	1.45	0.08
RRUS 8843 B2, B66A	C	From Leg	4.00	0.000	295.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.76	1.45	0.08
RRUS 4478 B14	A	From Leg	4.00	0.000	295.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	1.97	1.13	0.07
RRUS 4478 B14	B	From Leg	4.00	0.000	295.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	1.97	1.13	0.07
RRUS 4478 B14	C	From Leg	4.00	0.000	295.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	1.97	1.13	0.07
RRUS 4449 B5, B12	A	From Leg	4.00	0.000	295.00	No Ice	1.97	1.40	0.07
			0.00			1/2" Ice	2.10	1.50	0.08
RRUS 4449 B5, B12	B	From Leg	4.00	0.000	295.00	No Ice	1.97	1.40	0.07
			0.00			1/2" Ice	2.10	1.50	0.08

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight K</i>
RRUS 4449 B5, B12	C	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	1.97 2.10	1.40 1.50	0.07 0.08
RRUS 32 B30 (53 lbs)	A	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	2.74 2.91	1.67 1.77	0.05 0.06
RRUS 32 B30 (53 lbs)	B	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	2.74 2.91	1.67 1.77	0.05 0.06
RRUS 32 B30 (53 lbs)	C	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	2.74 2.91	1.67 1.77	0.05 0.06
DC6-48-60-18-8C-EV	A	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	4.79 5.00	2.73 2.85	0.02 0.03
(2) NNH4-85B-R6	A	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	12.27 12.67	3.31 3.42	0.08 0.12
(2) NNH4-85B-R6	B	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	12.27 12.67	3.31 3.42	0.08 0.12
(2) NNH4-85B-R6	C	From Leg	0.00 4.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	12.27 12.67	3.31 3.42	0.08 0.12
Flat Sector Frame	A	From Leg	0.00 2.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	17.90 22.20	8.95 13.00	0.40 0.51
Flat Sector Frame	B	From Leg	0.00 2.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	17.90 22.20	8.95 13.00	0.40 0.51
Flat Sector Frame	C	From Leg	0.00 2.00 0.00 0.00	0.000	295.00	No Ice 1/2" Ice	17.90 22.20	8.95 13.00	0.40 0.51

(2) MLTN6L/2X 143T-64X	A	From Leg	0.00 1.00 0.00 0.00	0.000	174.00	No Ice 1/2" Ice	1.06 1.16	0.40 0.43	0.01 0.01

3' Yagi	B	From Leg	0.00 1.00 0.00 0.00	0.000	107.80	No Ice 1/2" Ice	2.98 3.88	0.32 0.42	0.01 0.02

3' Yagi	B	From Leg	0.00 1.00 0.00 0.00	0.000	59.90	No Ice 1/2" Ice	2.98 3.88	0.32 0.42	0.01 0.02

Dishes

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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
UHX8-59	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	5.000		174.00	8.00	No Ice 1/2" Ice	50.27 51.32 0.65

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 45 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 135 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 225 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 315 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Ice+1.0 Temp+Guy
11	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
12	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp+1.0 Guy
13	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
14	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp+1.0 Guy
15	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	Dead+Wind 0 deg - Service+Guy
20	Dead+Wind 45 deg - Service+Guy
21	Dead+Wind 90 deg - Service+Guy
22	Dead+Wind 135 deg - Service+Guy
23	Dead+Wind 180 deg - Service+Guy
24	Dead+Wind 225 deg - Service+Guy
25	Dead+Wind 270 deg - Service+Guy
26	Dead+Wind 315 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T1	301.13 - 279.55	0.081	26	0.002	0.010
T2	279.55 - 263.63	0.080	26	0.003	0.010
T3	263.63 - 251.005	0.080	26	0.003	0.010
T4	251.005 - 238.505	0.080	26	0.006	0.010
T5	238.505 - 230.88	0.078	26	0.008	0.009
T6	230.88 - 223.255	0.077	26	0.013	0.008
T7	223.255 - 213.045	0.074	26	0.017	0.008
T8	213.045 - 202.835	0.071	26	0.019	0.008
T9	202.835 - 190.275	0.067	26	0.020	0.007
T10	190.275 - 165.195	0.061	26	0.022	0.006
T11	165.195 - 140.565	0.049	26	0.021	0.005
T12	140.565 - 127.985	0.039	26	0.019	0.005
T13	127.985 - 103.405	0.034	26	0.017	0.004

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Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T14	103.405 - 78.825	0.024	26	0.014	0.003
T15	78.825 - 53.7	0.016	26	0.011	0.002
T16	53.7 - 28.62	0.010	26	0.007	0.002
T17	28.62 - 0	0.005	26	0.004	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
295.00	DC2-48-60-0-9E	26	0.081	0.003	0.010	602170
279.55	Guy	26	0.080	0.003	0.010	200718
279.50	Rest Platform	26	0.080	0.003	0.010	201228
238.50	20' Platform w/ Handrails	26	0.078	0.008	0.009	73321
221.25	Catwalk	26	0.074	0.017	0.008	139140
201.00	Access Platform	26	0.066	0.021	0.007	123555
174.00	UHX8-59	26	0.053	0.022	0.006	753350
138.00	Rest Platform	26	0.038	0.018	0.005	605049
107.80	3' Yagi	26	0.026	0.015	0.004	448706
100.00	Rest Platform	26	0.023	0.014	0.003	307878
59.90	3' Yagi	26	0.012	0.008	0.002	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T1	301.13 - 279.55	0.290	6	0.114	0.296
T2	279.55 - 263.63	0.310	9	0.116	0.296
T3	263.63 - 251.005	0.335	9	0.112	0.295
T4	251.005 - 238.505	0.353	9	0.105	0.295
T5	238.505 - 230.88	0.369	7	0.098	0.293
T6	230.88 - 223.255	0.376	7	0.090	0.292
T7	223.255 - 213.045	0.381	7	0.090	0.290
T8	213.045 - 202.835	0.384	7	0.092	0.289
T9	202.835 - 190.275	0.386	7	0.094	0.288
T10	190.275 - 165.195	0.383	7	0.096	0.285
T11	165.195 - 140.565	0.378	7	0.098	0.281
T12	140.565 - 127.985	0.374	7	0.099	0.279
T13	127.985 - 103.405	0.374	7	0.099	0.278
T14	103.405 - 78.825	0.369	7	0.101	0.263
T15	78.825 - 53.7	0.368	7	0.101	0.246
T16	53.7 - 28.62	0.370	7	0.102	0.226
T17	28.62 - 0	0.212	7	0.066	0.078

Critical Deflections and Radius of Curvature - Design Wind

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			ft	°	°	ft
295.00	DC2-48-60-0-9E	6	0.291	0.115	0.296	164716
279.55	Guy	9	0.310	0.116	0.296	55320
279.50	Rest Platform	9	0.310	0.116	0.296	55474
238.50	20' Platform w/ Handrails	7	0.369	0.098	0.293	18772
221.25	Catwalk	7	0.382	0.090	0.290	33190
201.00	Access Platform	7	0.386	0.094	0.287	29568
174.00	UHX8-59	7	0.380	0.097	0.282	235616
138.00	Rest Platform	7	0.374	0.099	0.279	172573
107.80	3' Yagi	7	0.371	0.101	0.267	56502
100.00	Rest Platform	7	0.368	0.101	0.260	106003
59.90	3' Yagi	7	0.381	0.104	0.243	3486

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
	ft			in						
T1	301.13	Leg	A325N	0.750	24	0.68	39.76	0.017 ✓	1	Bolt DS
		Diagonal	A325N	0.750	2	2.54	20.26	0.125 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	0.90	31.32	0.029 ✓	1	Gusset Bearing
T2	279.55	Diagonal	A325N	0.750	2	3.88	31.32	0.124 ✓	1	Gusset Bearing
T3	263.63	Leg	A325N	0.750	24	3.61	39.76	0.091 ✓	1	Bolt DS
		Diagonal	A325N	0.750	2	3.37	31.32	0.108 ✓	1	Gusset Bearing
		Horizontal	A325N	0.750	2	2.23	20.26	0.110 ✓	1	Member Block Shear
T4	251.005	Leg	A325N	0.750	14	7.04	39.76	0.177 ✓	1	Bolt DS
		Diagonal	A325N	0.750	2	3.17	31.32	0.101 ✓	1	Gusset Bearing
		Horizontal	A325N	0.750	2	2.85	20.26	0.141 ✓	1	Member Block Shear
T5	238.505	Diagonal	A325N	0.750	2	2.75	19.88	0.138 ✓	1	Bolt Shear
		Horizontal	A325N	0.750	3	1.11	10.01	0.111 ✓	1	Member Block Shear
T6	230.88	Leg	A325N	0.750	12	8.83	25.22	0.350 ✓	1	Bearing
		Diagonal	A325N	0.750	2	2.72	19.88	0.137 ✓	1	Bolt Shear
		Horizontal	A325N	0.750	2	3.07	10.84	0.283 ✓	1	Member Block Shear
T7	223.255	Diagonal	A325N	0.750	2	3.60	19.88	0.181 ✓	1	Bolt Shear
		Horizontal	A325N	0.750	2	3.02	21.67	0.140 ✓	1	Member Block Shear
T8	213.045	Leg	A325N	0.750	12	7.38	39.76	0.186 ✓	1	Bolt DS
		Diagonal	A325N	0.750	2	3.66	19.88	0.184 ✓	1	Bolt Shear
		Horizontal	A325N	0.750	2	2.93	21.67	0.135 ✓	1	Member Block Shear
T9	202.835	Leg	A325N	0.750	12	7.85	35.31	0.222 ✓	1	Bearing
		Diagonal	A325N	0.750	2	3.84	20.26	0.190 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	3.01	20.26	0.149 ✓	1	Member Block

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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
T10	190.275	Leg	A325N	0.750	16	6.01	39.76	0.151 ✓	1	Shear Bolt DS
		Diagonal	A325N	0.750	2	4.29	20.26	0.212 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	2.52	20.26	0.124 ✓	1	Member Block Shear
T11	165.195	Leg	A325N	0.750	20	6.93	39.76	0.174 ✓	1	Bolt DS
		Diagonal	A325N	0.750	2	4.52	20.26	0.223 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	2.96	20.26	0.146 ✓	1	Member Block Shear
T12	140.565	Leg	A325N	0.750	24	6.72	39.76	0.169 ✓	1	Bolt DS
		Diagonal	A325N	0.750	3	3.17	19.08	0.166 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	3.20	20.26	0.158 ✓	1	Member Block Shear
T13	127.985	Leg	A325N	0.750	24	7.71	39.76	0.194 ✓	1	Bolt DS
		Diagonal	A325N	0.750	3	5.04	19.08	0.264 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	3.47	20.26	0.171 ✓	1	Member Block Shear
T14	103.405	Leg	A325N	0.750	28	8.16	39.76	0.205 ✓	1	Bolt DS
		Diagonal	A325N	0.750	3	5.29	19.08	0.277 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	3.97	21.67	0.183 ✓	1	Member Block Shear
T15	78.825	Leg	A325N	0.750	32	8.40	39.76	0.211 ✓	1	Bolt DS
		Diagonal	A325N	0.750	3	6.13	20.02	0.306 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	2	4.49	21.67	0.207 ✓	1	Member Block Shear
T16	53.7	Leg	A325N	0.750	32	9.84	39.76	0.247 ✓	1	Bolt DS
		Diagonal	A325N	0.750	4	4.74	19.19	0.247 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	3	6.25	20.02	0.312 ✓	1	Member Block Shear
T17	28.62	Leg	A325N	0.875	28	13.37	54.12	0.247 ✓	1	Bolt DS
		Diagonal	A325N	0.750	4	5.29	23.99	0.221 ✓	1	Member Block Shear
		Horizontal	A325N	0.750	3	5.98	27.19	0.220 ✓	1	Gusset Bearing

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.
T2	279.55 (A) (712)	1 1/2 BS	27.60	276.00	46.95	165.60	1.000	3.527 ✓
	279.55 (B) (711)	1 1/2 BS	27.60	276.00	47.11	165.60	1.000	3.515 ✓

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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.
	279.55 (C) (710)	1 1/2 BS	27.60	276.00	47.59	165.60	1.000	3.480 ✓
	279.55 (D) (709)	1 1/2 BS	27.60	276.00	46.44	165.60	1.000	3.566 ✓

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	301.13 - 279.55	L6x6x1/2	21.58	10.79	109.7 K=1.00	5.750	-8.21	123.90	0.066 ¹ ✓
T2	279.55 - 263.63	L6x6x3/4	15.92	7.96	81.6 K=1.00	8.440	-33.80	225.01	0.150 ¹ ✓
T3	263.63 - 251.005	L6x6x3/4	12.63	12.63	129.5 K=1.00	8.440	-43.35	143.91	0.301 ¹ ✓
T4	251.005 - 238.505	L6x6x3/4	12.50	6.25	64.1 K=1.00	8.440	-49.27	245.53	0.201 ¹ ✓
T5	238.505 - 230.88	L5x5x5/16	7.65	4.01	48.5 K=1.00	3.030	-55.59	92.91	0.598 ¹ ✓
T6	230.88 - 223.255	L5x5x5/16	7.65	4.00	48.3 K=1.00	3.030	-52.99	92.97	0.570 ¹ ✓
T7	223.255 - 213.045	L5x5x1/2	10.25	5.40	65.9 K=1.00	4.750	-49.78	137.11	0.363 ¹ ✓
T8	213.045 - 202.835	L5x5x1/2	10.25	5.37	65.6 K=1.00	4.750	-44.26	137.31	0.322 ¹ ✓
T9	202.835 - 190.275	L6x6x7/16	12.61	6.30	63.6 K=1.00	5.060	-47.09	147.53	0.319 ¹ ✓
T10	190.275 - 165.195	L6x6x9/16	25.17	6.29	64.0 K=1.00	6.430	-48.10	187.14	0.257 ¹ ✓
T11	165.195 - 140.565	L6x6x3/4	24.72	6.18	63.4 K=1.00	8.440	-69.34	246.26	0.282 ¹ ✓
T12	140.565 - 127.985	L6x6x7/8	12.63	6.31	64.8 K=1.00	9.730	-80.70	282.28	0.286 ¹ ✓
T13	127.985 - 103.405	L8x8x3/4	24.67	8.22	62.5 K=1.00	11.400	-92.57	333.89	0.277 ¹ ✓
T14	103.405 - 78.825	L8x8x3/4	24.67	8.22	62.5 K=1.00	11.400	-114.34	333.89	0.342 ¹ ✓
T15	78.825 - 53.7	L8x8x7/8	25.22	8.41	64.3 K=1.00	13.200	-136.21	383.76	0.355 ¹ ✓
T16	53.7 - 28.62	L8x8x1	25.17	6.29	48.4 K=1.00	15.000	-158.42	461.56	0.343 ¹ ✓
T17	28.62 - 0	L8x8x1 1/8	28.73	7.18	55.2 K=1.00	16.700	-187.16	502.62	0.372 ¹ ✓

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¹ $P_u / \phi P_n$ 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	301.13 - 279.55	2L2 1/2x2 1/2x1/4x3/8	14.10	6.43	100.4 K=1.00	2.380	-1.99	55.72	0.036 ¹ ✓
T2	279.55 - 263.63	2L2 1/2x3x1/4x3/8	18.33	8.43	131.0 K=0.97	2.630	-7.77	43.88	0.177 ¹ ✓
T3	263.63 - 251.005	2L2 1/2x2 1/2x1/4x3/8	15.55	7.12	111.1 K=1.00	2.380	-6.74	50.61	0.133 ¹ ✓
T4	251.005 - 238.505	2L2 1/2x2 1/2x1/4x3/8	15.45	7.07	110.3 K=1.00	2.380	-6.33	50.98	0.124 ¹ ✓
T5	238.505 - 230.88	L2 1/2x2 1/2x1/4	12.23	5.92	138.8 K=0.96	1.190	-5.51	17.68	0.311 ¹ ✓
T6	230.88 - 223.255	L3x3x1/4	12.97	6.29	125.7 K=0.99	1.440	-5.45	25.87	0.211 ¹ ✓
T7	223.255 - 213.045	L3 1/2x3 1/2x1/4	15.45	7.63	129.2 K=0.98	1.690	-7.20	28.94	0.249 ¹ ✓
T8	213.045 - 202.835	L3 1/2x3 1/2x1/4	16.40	8.11	135.4 K=0.97	1.690	-7.31	26.38	0.277 ¹ ✓
T9	202.835 - 190.275	2L2 1/2x2x1/4x3/8	14.65	13.70	179.4 K=1.00	2.130	-8.19	18.62	0.440 ¹ ✓
T10	190.275 - 165.195	2L2 1/2x2x1/4x3/8	15.47	14.59	193.1 K=1.00	2.130	-9.09	16.10	0.565 ¹ ✓
T11	165.195 - 140.565	2L2 1/2x2 1/2x1/4x3/8	16.23	15.39	161.5 K=1.00	2.380	-9.34	25.65	0.364 ¹ ✓
T12	140.565 - 127.985	2L2 1/2x2 1/2x1/4x3/8	16.94	15.92	164.2 K=1.00	2.380	-9.81	24.83	0.395 ¹ ✓
T13	127.985 - 103.405	2L2 1/2x3x1/4	27.77	17.47	160.0 K=1.00	2.630	-15.67	29.39	0.533 ¹ ✓
T14	103.405 - 78.825	2L2 1/2x3x1/4	28.49	18.01	165.0 K=1.00	2.630	-16.36	27.65	0.592 ¹ ✓
T15	78.825 - 53.7	2L3x3 1/2x1/4x3/8	29.76	18.89	140.7 K=1.00	3.130	-20.56	43.77	0.470 ¹ ✓
T16	53.7 - 28.62	2L3x4x1/4x3/8	21.85	20.36	129.6 K=1.00	3.380	-23.62	55.37	0.427 ¹ ✓
T17	28.62 - 0	2L3x4x5/16x3/8	24.73	23.22	147.2 K=1.00	4.180	-23.82	54.37	0.438 ¹ ✓

¹ $P_u / \phi P_n$ 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	301.13 -	2L2 1/2x2 1/2x1/4x3/8	9.08	8.12	124.1	2.380	-1.81	43.65	0.041 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T9	279.55 - 202.835	2L2 1/2x2 1/2x1/4x3/8	13.45	6.25	K=0.98 97.5 K=1.00	2.380	-1.90	57.04	0.033 ¹ ✓
T10	190.275 - 165.195	2L2 1/2x2 1/2x1/4x3/8	16.53	7.79	121.2 K=1.00	2.380	-5.07	45.30	0.112 ¹ ✓
T11	165.195 - 140.565	2L2 1/2x2 1/2x1/4x3/8	19.58	9.31	139.3 K=0.96	2.380	-5.95	35.10	0.169 ¹ ✓
T12	140.565 - 127.985	2L2 1/2x2 1/2x1/4x3/8	21.09	10.07	148.3 K=0.94	2.380	-6.42	30.98	0.207 ¹ ✓
T13	127.985 - 103.405	2L2 1/2x2 1/2x1/4x3/8	22.63	10.75	156.5 K=0.93	2.380	-7.15	27.83	0.257 ¹ ✓
T14	103.405 - 78.825	2L3x2 1/2x1/4x3/8	25.65	12.26	147.3 K=0.95	2.630	-8.19	34.72	0.236 ¹ ✓
T15	78.825 - 53.7	2L3x2 1/2x1/4x3/8	28.66	13.77	161.8 K=0.93	2.630	-9.48	28.75	0.330 ¹ ✓
T16	53.7 - 28.62	2L3x2 1/2x1/4x3/8	31.74	12.04	145.1 K=0.95	2.630	-13.32	35.75	0.373 ¹ ✓
T17	28.62 - 0	2L3 1/2x3x5/16x3/8	34.82	13.27	138.9 K=0.96	3.870	-15.00	57.39	0.261 ¹ ✓

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T2	279.55 - 263.63	L2 1/2x2 1/2x1/4	9.08	8.58	128.5 K=0.96	1.190	-0.51	20.57	0.025 ¹ ✓
T4	251.005 - 238.505	2L2 1/2x2 1/2x1/4x3/8	9.08	8.58	95.6 K=1.00	2.380	-0.74	56.54	0.013 ¹ ✓
T5	238.505 - 230.88	L2 1/2x2x3/16	9.52	9.11	158.3 K=0.87	0.809	-0.84	9.24	0.090 ¹ ✓
T6	230.88 - 223.255	L2 1/2x2x3/16	10.46	10.05	169.8 K=0.84	0.809	-0.80	8.03	0.099 ¹ ✓
T7	223.255 - 213.045	L3x2 1/2x1/4	11.54	11.12	155.4 K=0.88	1.310	-0.75	15.52	0.048 ¹ ✓
T8	213.045 - 202.835	L2 1/2x2x3/16	12.79	12.38	198.5 K=0.80	0.809	-0.67	5.88	0.113 ¹ ✓

¹ P_u / φP_n controls

Redundant Horizontal (1) Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T9	202.835 - 190.275	2L3x2 1/2x1/4x3/8	3.36	3.11	75.8 K=1.00	2.630	-0.71	69.35	0.010 ¹ ✓
T10	190.275 - 165.195	2L 'a' > 15.651 in - 171 2L3x2 1/2x1/4x3/8	4.13	3.88	79.7 K=1.00	2.630	-0.72	67.97	0.011 ¹ ✓
T11	165.195 - 140.565	2L 'a' > 19.523 in - 220 2L3x2 1/2x1/4x3/8	4.90	4.65	84.2 K=1.00	2.630	-1.04	66.26	0.016 ¹ ✓
T12	140.565 - 127.985	2L 'a' > 23.358 in - 266 2L3x2 1/2x1/4x3/8	5.27	5.02	86.6 K=1.00	2.630	-1.21	65.29	0.019 ¹ ✓
T13	127.985 - 103.405	2L 'a' > 25.256 in - 326 2L3x2 1/2x1/4x3/8	3.77	3.44	77.3 K=1.00	2.630	-1.39	68.81	0.020 ¹ ✓
T14	103.405 - 78.825	2L 'a' > 17.290 in - 360 2L3x2 1/2x1/4x3/8	4.27	3.94	80.0 K=1.00	2.630	-1.72	67.85	0.025 ¹ ✓
T15	78.825 - 53.7	2L 'a' > 19.821 in - 416 2L3x2 1/2x1/4x3/8	4.78	4.44	82.9 K=1.00	2.630	-5.56	66.75	0.083 ¹ ✓
T16	53.7 - 28.62	2L 'a' > 22.344 in - 472 2L3x2 1/2x1/4x3/8	3.30	2.97	74.5 K=1.00	2.630	-3.90	69.79	0.056 ¹ ✓
T17	28.62 - 0	2L 'a' > 14.930 in - 589 2L3x2 1/2x1/4x3/8	3.63	3.29	76.6 K=1.00	2.630	-2.81	69.06	0.041 ¹ ✓
		2L 'a' > 16.569 in - 626							✓

¹ P_u / φP_n controls

Redundant Horizontal (2) 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 $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x2 1/2x3/16x3/8	7.54	7.21	102.6 K=1.00	1.990	-1.39	41.56	0.033 ¹ ✓
T14	103.405 - 78.825	2L3x2 1/2x3/16x3/8	8.55	8.22	111.0 K=1.00	1.990	-1.72	38.47	0.045 ¹ ✓
T15	78.825 - 53.7	2L3x2 1/2x3/16x3/8	9.55	9.22	119.7 K=1.00	1.990	-2.05	34.90	0.059 ¹ ✓
T16	53.7 - 28.62	2L3x2 1/2x3/16x3/8	6.60	6.27	95.3 K=1.00	1.990	-2.38	44.00	0.054 ¹ ✓
T17	28.62 - 0	2L 'a' > 31.534 in - 531 2L3x2 1/2x3/16x3/8	7.26	6.92	100.3 K=1.00	1.990	-2.81	42.35	0.066 ¹ ✓
		2L 'a' > 34.812 in - 627							✓

¹ P_u / φP_n controls

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Redundant Horizontal (3) Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x2 1/2x1/4x3/8	9.91	9.57	122.4 K=1.00	2.630	-8.96	47.02	0.191 ¹ ✓
T17	28.62 - 0	2L3x2 1/2x1/4x3/8	10.88	10.55	134.0 K=1.00	2.630	-3.23	41.60	0.078 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T9	202.835 - 190.275	2L3x3x1/4x3/8	6.96	6.38	82.3 K=1.00	2.880	-0.73	73.50	0.010 ¹ ✓
T10	190.275 - 165.195	2L3x3x1/4x3/8	7.31	6.83	88.1 K=1.00	2.880	-0.76	72.41	0.010 ¹ ✓
T11	165.195 - 140.565	2L3x3x1/4x3/8	7.43	7.01	90.4 K=1.00	2.880	-0.86	71.94	0.012 ¹ ✓
T12	140.565 - 127.985	2L3x3x1/4x3/8	7.97	7.57	97.7 K=1.00	2.880	-0.92	68.92	0.013 ¹ ✓
T13	127.985 - 103.405	2L3x3x1/4x3/8	8.84	7.94	102.5 K=1.00	2.880	-1.63	66.25	0.025 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4x3/8	9.03	8.24	106.4 K=1.00	2.880	-1.82	64.05	0.028 ¹ ✓
T15	78.825 - 53.7	2L3x3x1/4x3/8	9.41	8.68	112.0 K=1.00	2.880	-3.76	60.67	0.062 ¹ ✓
T16	53.7 - 28.62	2L3x3x1/4x3/8	6.93	6.14	80.7 K=1.00	2.880	-3.55	74.05	0.048 ¹ ✓
T17	28.62 - 0	2L 'a' > 35.185 in - 532 2L3x3x1/4x3/8	7.85	7.03	90.8 K=1.00	2.880	-3.04	71.88	0.042 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (2) Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x3x1/4x3/8	10.81	10.30	132.9 K=1.00	2.880	-1.00	46.64	0.021 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4x3/8	11.50	11.02	142.2 K=1.00	2.880	-1.16	40.76	0.028 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T15	78.825 - 53.7	2L3x3x1/4x3/8	12.33	11.88	153.3 K=1.00	2.880	-1.32	35.08	0.038 ¹ ✓
T16	53.7 - 28.62	2L3x3x1/4x3/8	8.84	8.37	108.0 K=1.00	2.880	-1.59	63.11	0.025 ¹ ✓
T17	28.62 - 0	2L3x3x1/4x3/8	9.89	9.41	121.4 K=1.00	2.880	-1.92	54.65	0.035 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (3) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L4x4x1/2	11.41	11.01	108.3 K=1.00	7.500	-11.33	163.86	0.069 ¹ ✓
T17	28.62 - 0	2L3 1/2x2 1/2x1/4x3/8	12.67	12.27	150.4 K=1.00	2.880	-5.78	34.37	0.168 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	4.67	4.67	60.3 K=1.00	2.880	-0.04	85.08	0.001 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	5.13	5.13	66.2 K=1.00	2.880	-0.05	83.03	0.001 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip (2) 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 $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x3x1/4	10.67	10.67	137.6 K=1.00	2.880	-0.04	43.50	0.001 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4	12.09	12.09	156.0 K=1.00	2.880	-0.05	33.86	0.001 ¹ ✓
T15	78.825 - 53.7	2L3x3x1/4	13.51	13.51	174.3 K=1.00	2.880	-0.05	27.12	0.002 ¹ ✓

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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	53.7 - 28.62	2L3x3x1/4	9.34	9.34	120.5 K=1.00	2.880	-0.20	55.25	0.004 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	10.26	10.26	132.4 K=1.00	2.880	-0.15	47.01	0.003 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip (3) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	14.01	14.01	180.8 K=1.00	2.880	-2.17	25.22	0.086 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	15.39	15.39	198.6 K=1.00	2.880	-0.98	20.89	0.047 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip Diagonal (2) 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 $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x3x1/4	16.01	16.01	206.6 K=1.00	2.880	-0.59	19.31	0.031 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4	17.59	17.59	227.0 K=1.00	2.880	-0.54	16.00	0.034 ¹ ✓
T15	78.825 - 53.7	2L3x3x1/4	19.29	19.29	248.9 K=1.00	2.880	-0.89	13.30	0.067 ¹ ✓

¹ P_u / φP_n controls

Redundant Sub-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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	12.70	12.70	120.9 K=1.00	2.880	-13.41	54.99	0.244 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	13.93	13.93	132.6 K=1.00	2.880	-8.85	46.85	0.189 ¹ ✓

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

Redundant Sub 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	7.04	7.04	90.8 K=1.00	2.880	-15.61	72.45	0.216 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	7.97	7.97	102.8 K=1.00	2.880	-18.51	66.07	0.280 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	301.13 - 279.55	L6x6x1/2	21.58	10.79	69.6	5.750	1.06	170.78	0.006 ¹ ✓
T4	251.005 - 238.505	L6x6x3/4	12.50	6.25	41.0	8.440	3.67	250.67	0.015 ¹ ✓
T5	238.505 - 230.88	L5x5x5/16	7.65	3.64	27.8	3.030	2.92	89.99	0.032 ¹ ✓
T13	127.985 - 103.405	L8x8x3/4	24.67	8.22	40.0	11.400	4.68	338.58	0.014 ¹ ✓
T14	103.405 - 78.825	L8x8x3/4	24.67	8.22	40.0	11.400	21.22	338.58	0.063 ¹ ✓
T15	78.825 - 53.7	L8x8x7/8	25.22	8.41	41.2	13.200	37.68	392.04	0.096 ¹ ✓
T16	53.7 - 28.62	L8x8x1	25.17	6.29	31.0	15.000	51.21	445.50	0.115 ¹ ✓
T17	28.62 - 0	L8x8x1 1/8	28.73	7.18	35.6	16.700	63.70	495.99	0.128 ¹ ✓

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

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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	301.13 - 279.55	2L2 1/2x2 1/2x1/4x3/8	14.10	6.43	104.0	1.457	5.07	65.56	0.077 ¹
T2	279.55 - 263.63	2L2 1/2x3x1/4x3/8	18.33	8.43	138.0	1.644	2.84	74.00	0.038 ¹
T3	263.63 - 251.005	2L2 1/2x2 1/2x1/4x3/8	15.55	7.12	114.7	1.457	1.06	65.56	0.016 ¹
T4	251.005 - 238.505	2L2 1/2x2 1/2x1/4x3/8	15.45	7.07	113.9	1.457	0.59	65.56	0.009 ¹
T5	238.505 - 230.88	L2 1/2x2 1/2x1/4	12.23	5.92	95.9	0.728	0.27	32.78	0.008 ¹
T6	230.88 - 223.255	L3x3x1/4	12.97	6.29	84.1	0.916	0.50	41.22	0.012 ¹
T7	223.255 - 213.045	L3 1/2x3 1/2x1/4	15.45	7.63	86.6	1.103	0.92	49.65	0.018 ¹
T8	213.045 - 202.835	L3 1/2x3 1/2x1/4	16.40	8.11	91.8	1.103	1.30	49.65	0.026 ¹
T9	202.835 - 190.275	2L2 1/2x2x1/4x3/8	14.65	13.70	181.7	1.269	7.68	57.12	0.135 ¹
T10	190.275 - 165.195	2L2 1/2x2x1/4x3/8	15.47	14.59	193.1	1.269	8.59	57.12	0.150 ¹
T11	165.195 - 140.565	2L2 1/2x2 1/2x1/4x3/8	16.23	15.39	159.8	1.457	9.04	65.56	0.138 ¹
T12	140.565 - 127.985	2L2 1/2x2 1/2x1/4x3/8	16.94	15.92	167.0	1.457	9.50	65.56	0.145 ¹
T13	127.985 - 103.405	2L2 1/2x3x1/4	27.77	17.47	163.0	1.644	15.11	74.00	0.204 ¹
T14	103.405 - 78.825	2L2 1/2x3x1/4	28.49	18.01	168.0	1.644	15.86	74.00	0.214 ¹
T15	78.825 - 53.7	2L3x3 1/2x1/4x3/8	29.76	18.89	139.8	2.019	18.39	90.87	0.202 ¹
T16	53.7 - 28.62	2L3x4x1/4x3/8	21.85	20.36	132.5	2.207	18.96	99.31	0.191 ¹
T17	28.62 - 0	2L3x4x5/16x3/8	24.73	23.22	149.6	2.725	21.35	122.62	0.174 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	301.13 - 279.55	2L2 1/2x2 1/2x1/4x3/8	9.08	8.12	133.9	1.457	0.03	65.56	0.000 ¹
T3	263.63 - 251.005	2L2 1/2x2 1/2x1/4x3/8	9.08	8.12	133.9	1.457	4.47	65.56	0.068 ¹
T4	251.005 - 238.505	2L2 1/2x2 1/2x1/4x3/8	9.08	8.12	133.9	1.457	5.71	65.56	0.087 ¹
T5	238.505 -	L3x2 1/2x1/4	9.08	8.02	138.3	0.818	3.34	36.83	0.091 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T6	230.88 - 223.255	L3x2 1/2x1/4	10.02	9.14	153.2	0.818	6.13	36.83	0.167 ¹ ✓
T7	223.255 - 213.045	2L3x2 1/2x1/4x3/8	10.95	10.08	133.8	1.644	6.05	74.00	0.082 ¹ ✓
T8	213.045 - 202.835	2L3x2 1/2x1/4x3/8	12.20	11.32	149.6	1.644	5.86	74.00	0.079 ¹ ✓
T9	202.835 - 190.275	2L2 1/2x2 1/2x1/4x3/8	13.45	6.25	101.0	1.457	6.02	65.56	0.092 ¹ ✓
T10	190.275 - 165.195	2L2 1/2x2 1/2x1/4x3/8	16.53	7.79	125.1	1.457	5.04	65.56	0.077 ¹ ✓
T11	165.195 - 140.565	2L2 1/2x2 1/2x1/4x3/8	19.58	9.31	148.9	1.457	5.92	65.56	0.090 ¹ ✓
T12	140.565 - 127.985	2L2 1/2x2 1/2x1/4x3/8	21.09	10.07	160.6	1.457	6.41	65.56	0.098 ¹ ✓
T13	127.985 - 103.405	2L2 1/2x2 1/2x1/4x3/8	22.63	10.75	171.4	1.457	6.95	65.56	0.106 ¹ ✓
T14	103.405 - 78.825	2L3x2 1/2x1/4x3/8	25.65	12.26	199.0	1.644	7.94	74.00	0.107 ¹ ✓
T15	78.825 - 53.7	2L3x2 1/2x1/4x3/8	28.66	13.77	223.0	1.644	8.98	74.00	0.121 ¹ ✓
T16	53.7 - 28.62	2L3x2 1/2x1/4x3/8	31.74	12.04	247.5	1.644	18.75	74.00	0.253 ¹ ✓
T17	28.62 - 0	2L3 1/2x3x5/16x3/8	34.82	13.27	227.7	2.492	17.94	112.16	0.160 ¹ ✓

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T2	279.55 - 263.63	L2 1/2x2 1/2x1/4	9.08	8.58	133.9	1.190	0.51	35.34	0.014 ¹ ✓
T4	251.005 - 238.505	2L2 1/2x2 1/2x1/4x3/8	9.08	8.58	86.5	2.380	0.74	70.69	0.010 ¹ ✓
T5	238.505 - 230.88	L2 1/2x2x3/16	9.52	9.11	182.2	0.809	0.84	24.03	0.035 ¹ ✓
T6	230.88 - 223.255	L2 1/2x2x3/16	10.46	10.05	201.0	0.809	0.80	24.03	0.033 ¹ ✓
T7	223.255 - 213.045	L3x2 1/2x1/4	11.54	11.12	177.6	1.310	0.75	38.91	0.019 ¹ ✓
T8	213.045 - 202.835	L2 1/2x2x3/16	12.79	12.38	247.7	0.809	0.67	24.03	0.028 ¹ ✓

¹ P_u / φP_n controls

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Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	$\frac{\phi P_n}{P_u}$
T1	301.13 - 279.55	2L2 1/2x2 1/2x1/4x3/8	9.08	8.58	133.9	2.380	0.15	70.69	0.002 ¹ ✓

¹ P_u / φP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	$\frac{\phi P_n}{P_u}$
T9	202.835 - 190.275	2L3x2 1/2x1/4x3/8	3.36	3.11	39.5	2.630	0.71	78.11	0.009 ¹ ✓
T10	190.275 - 165.195	2L 'a' > 15.651 in - 195 2L3x2 1/2x1/4x3/8	4.13	3.88	49.3	2.630	0.91	78.11	0.012 ¹ ✓
T11	165.195 - 140.565	2L 'a' > 19.523 in - 206 2L3x2 1/2x1/4x3/8	4.90	4.65	59.0	2.630	1.04	78.11	0.013 ¹ ✓
T12	140.565 - 127.985	2L 'a' > 23.358 in - 266 2L3x2 1/2x1/4x3/8	5.27	5.02	63.8	2.630	1.21	78.11	0.016 ¹ ✓
T13	127.985 - 103.405	2L 'a' > 25.256 in - 330 2L3x2 1/2x1/4x3/8	3.77	3.44	43.7	2.630	1.39	78.11	0.018 ¹ ✓
T14	103.405 - 78.825	2L 'a' > 17.290 in - 360 2L3x2 1/2x1/4x3/8	4.27	3.94	50.1	2.630	1.72	78.11	0.022 ¹ ✓
T15	78.825 - 53.7	2L 'a' > 19.821 in - 422 2L3x2 1/2x1/4x3/8	4.78	4.44	56.4	2.630	3.91	78.11	0.050 ¹ ✓
T16	53.7 - 28.62	2L 'a' > 22.344 in - 478 2L3x2 1/2x1/4x3/8	3.30	2.97	37.7	2.630	3.35	78.11	0.043 ¹ ✓
T17	28.62 - 0	2L 'a' > 14.930 in - 530 2L3x2 1/2x1/4x3/8	3.63	3.29	41.8	2.630	2.81	78.11	0.036 ¹ ✓
		2L 'a' > 16.569 in - 639							✓

¹ P_u / φP_n controls

Redundant Horizontal (2) Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x2 1/2x3/16x3/8	7.54	7.21	90.7	1.990	1.39	59.10	0.024 ¹
T14	103.405 - 78.825	2L3x2 1/2x3/16x3/8	8.55	8.22	103.4	1.990	1.72	59.10	0.029 ¹
T15	78.825 - 53.7	2L3x2 1/2x3/16x3/8	9.55	9.22	116.0	1.990	2.05	59.10	0.035 ¹
T16	53.7 - 28.62	2L3x2 1/2x3/16x3/8	6.60	6.27	78.9	1.990	2.38	59.10	0.040 ¹
T17	28.62 - 0	2L 'a' > 31.534 in - 544 2L3x2 1/2x3/16x3/8 2L 'a' > 34.812 in - 640	7.26	6.92	87.1	1.990	2.81	59.10	0.048 ¹

¹ P_u / φP_n controls

Redundant Horizontal (3) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x2 1/2x1/4x3/8	9.91	9.57	121.6	2.630	6.33	78.11	0.081 ¹
T17	28.62 - 0	2L3x2 1/2x1/4x3/8	10.88	10.55	134.0	2.630	3.13	78.11	0.040 ¹

¹ P_u / φP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T9	202.835 - 190.275	2L3x3x1/4x3/8	6.96	6.38	82.3	2.880	0.73	85.54	0.009 ¹
T10	190.275 - 165.195	2L3x3x1/4x3/8	7.13	6.64	85.7	2.880	0.69	85.54	0.008 ¹
T11	165.195 - 140.565	2L3x3x1/4x3/8	7.43	7.01	90.4	2.880	0.86	85.54	0.010 ¹
T12	140.565 - 127.985	2L3x3x1/4x3/8	7.97	7.57	97.7	2.880	0.92	85.54	0.011 ¹
T13	127.985 - 103.405	2L3x3x1/4x3/8	8.84	7.94	102.5	2.880	1.63	85.54	0.019 ¹
T14	103.405 - 78.825	2L3x3x1/4x3/8	9.03	8.24	106.4	2.880	1.82	85.54	0.021 ¹
T15	78.825 - 53.7	2L3x3x1/4x3/8	9.41	8.68	112.0	2.880	5.62	85.54	0.066 ¹
T16	53.7 - 28.62	2L3x3x1/4x3/8	6.93	6.14	79.2	2.880	4.11	85.54	0.048 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T17	28.62 - 0	2L 'a' > 35.185 in - 591 2L3x3x1/4x3/8	7.85	7.03	90.8	2.880	3.04	85.54	0.036 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (2) 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 $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x3x1/4x3/8	10.81	10.30	132.9	2.880	1.00	85.54	0.012 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4x3/8	11.50	11.02	142.2	2.880	1.16	85.54	0.014 ¹ ✓
T15	78.825 - 53.7	2L3x3x1/4x3/8	12.33	11.88	153.3	2.880	1.40	85.54	0.016 ¹ ✓
T16	53.7 - 28.62	2L3x3x1/4x3/8	8.84	8.37	108.0	2.880	1.59	85.54	0.019 ¹ ✓
T17	28.62 - 0	2L3x3x1/4x3/8	9.89	9.41	121.4	2.880	1.92	85.54	0.022 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (3) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L4x4x1/2	11.41	11.01	108.3	7.500	10.65	222.75	0.048 ¹ ✓
T17	28.62 - 0	2L3 1/2x2 1/2x1/4x3/8	12.67	12.27	135.0	2.880	12.47	85.54	0.146 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip (1) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	4.67	4.67	60.3	2.880	0.21	85.54	0.002 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T17	28.62 - 0	2L3x3x1/4	5.13	5.13	66.2	2.880	0.18	85.54	0.002 ¹ ✓✓

¹ P_u / φP_n controls

Redundant Hip (2) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	9.34	9.34	120.5	2.880	0.00	85.54	0.000 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip (3) 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 $\frac{P_u}{\phi P_n}$
T16	53.7 - 28.62	2L3x3x1/4	14.01	14.01	180.8	2.880	1.28	85.54	0.015 ¹ ✓
T17	28.62 - 0	2L3x3x1/4	15.39	15.39	198.6	2.880	1.33	85.54	0.016 ¹ ✓

¹ P_u / φP_n controls

Redundant Hip Diagonal (2) 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 $\frac{P_u}{\phi P_n}$
T13	127.985 - 103.405	2L3x3x1/4	16.01	16.01	206.6	2.880	0.56	85.54	0.007 ¹ ✓
T14	103.405 - 78.825	2L3x3x1/4	17.59	17.59	227.0	2.880	0.52	85.54	0.006 ¹ ✓
T15	78.825 - 53.7	2L3x3x1/4	19.29	19.29	248.9	2.880	0.86	85.54	0.010 ¹ ✓

¹ P_u / φP_n controls

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Guy A@279.55	1 1/2	712	46.95	165.60	28.4	Pass
		Guy B@279.55	1 1/2	711	47.11	165.60	28.4	Pass
		Guy C@279.55	1 1/2	710	47.59	165.60	28.7	Pass
		Guy D@279.55	1 1/2	709	46.44	165.60	28.0	Pass
		Top Guy	C6x8.2	35	19.16	87.75	21.8	Pass
		Pull-Off@279.55						
T3	263.63 - 251.005	Leg	L6x6x3/4	51	-43.35	143.91	30.1	Pass
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	64	-6.74	50.61	13.3	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	55	4.47	65.56	6.8	Pass
							11.0 (b)	
T4	251.005 - 238.505	Leg	L6x6x3/4	67	-49.27	245.53	20.1	Pass
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	80	-6.33	50.98	12.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	71	5.71	65.56	8.7	Pass
							14.1 (b)	
T5	238.505 - 230.88	Secondary Horizontal	2L2 1/2x2 1/2x1/4x3/8	82	-0.74	56.54	1.3	Pass
		Leg	L5x5x5/16	87	-55.59	92.91	59.8	Pass
		Diagonal	L2 1/2x2 1/2x1/4	95	-5.51	17.68	31.1	Pass
		Horizontal	L3x2 1/2x1/4	91	3.34	36.83	9.1	Pass
							11.1 (b)	
T6	230.88 - 223.255	Secondary Horizontal	L2 1/2x2x3/16	102	-0.84	9.24	9.0	Pass
		Leg	L5x5x5/16	107	-52.99	92.97	57.0	Pass
		Diagonal	L3x3x1/4	115	-5.45	25.87	21.1	Pass
		Horizontal	L3x2 1/2x1/4	111	6.13	36.83	16.7	Pass
							28.3 (b)	
T7	223.255 - 213.045	Secondary Horizontal	L2 1/2x2x3/16	122	-0.80	8.03	9.9	Pass
		Leg	L5x5x1/2	127	-49.78	137.11	36.3	Pass
		Diagonal	L3 1/2x3 1/2x1/4	135	-7.20	28.94	24.9	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	131	6.05	74.00	8.2	Pass
							14.0 (b)	
T8	213.045 - 202.835	Secondary Horizontal	L3x2 1/2x1/4	142	-0.75	15.52	4.8	Pass
		Leg	L5x5x1/2	147	-44.26	137.31	32.2	Pass
		Diagonal	L3 1/2x3 1/2x1/4	156	-7.31	26.38	27.7	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	151	5.86	74.00	7.9	Pass
							13.5 (b)	
T9	202.835 - 190.275	Secondary Horizontal	L2 1/2x2x3/16	162	-0.67	5.88	11.3	Pass
		Leg	L6x6x7/16	165	-47.09	147.53	31.9	Pass
		Diagonal	2L2 1/2x2x1/4x3/8	180	-8.19	18.62	44.0	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	176	6.02	65.56	9.2	Pass
							14.9 (b)	
		Redund Horiz 1	2L3x2 1/2x1/4x3/8	171	-0.71	69.35	1.0	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	172	-0.73	73.50	1.0	Pass
		Bracing						
T10	190.275 - 165.195	Leg	L6x6x9/16	200	-48.10	187.14	25.7	Pass
		Diagonal	2L2 1/2x2x1/4x3/8	209	-9.09	16.10	56.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	208	-5.07	45.30	11.2	Pass
							12.4 (b)	
		Redund Horiz 1	2L3x2 1/2x1/4x3/8	206	0.91	78.11	1.2	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	207	-0.76	72.41	1.0	Pass
		Bracing						
T11	165.195 - 140.565	Leg	L6x6x3/4	258	-69.34	246.26	28.2	Pass
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	269	-9.34	25.65	36.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	268	-5.95	35.10	16.9	Pass
		Redund Horiz 1	2L3x2 1/2x1/4x3/8	270	-1.04	66.26	1.6	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T12	140.565 - 127.985	Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	295	-0.86	71.94	1.2	Pass
		Bracing						
		Leg	L6x6x7/8	318	-80.70	282.28	28.6	Pass
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	329	-9.81	24.83	39.5	Pass
T13	127.985 - 103.405	Horizontal	2L2 1/2x2 1/2x1/4x3/8	328	-6.42	30.98	20.7	Pass
		Redund Horz 1	2L3x2 1/2x1/4x3/8	326	-1.21	65.29	1.9	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	327	-0.92	68.92	1.3	Pass
		Bracing						
		Leg	L8x8x3/4	350	-92.57	333.89	27.7	Pass
		Diagonal	2L2 1/2x3x1/4	365	-15.67	29.39	53.3	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	364	-7.15	27.83	25.7	Pass
		Redund Horz 1	2L3x2 1/2x1/4x3/8	366	-1.39	68.81	2.0	Pass
		Bracing						
		Redund Horz 2	2L3x2 1/2x3/16x3/8	367	-1.39	41.56	3.3	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	362	-1.63	66.25	2.5	Pass
		Bracing						
		Redund Diag 2	2L3x3x1/4x3/8	363	-1.00	46.64	2.1	Pass
T14	103.405 - 78.825	Bracing						
		Redund Hip 2	2L3x3x1/4	388	-0.04	43.50	0.3	Pass
		Bracing						
		Redund Hip Diagonal	2L3x3x1/4	389	-0.59	19.31	3.1	Pass
		2 Bracing						
		Leg	L8x8x3/4	406	-114.34	333.89	34.2	Pass
		Diagonal	2L2 1/2x3x1/4	421	-16.36	27.65	59.2	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	420	-8.19	34.72	23.6	Pass
		Redund Horz 1	2L3x2 1/2x1/4x3/8	416	-1.72	67.85	2.5	Pass
		Bracing						
		Redund Horz 2	2L3x2 1/2x3/16x3/8	417	-1.72	38.47	4.5	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	424	-1.82	64.05	2.8	Pass
		Bracing						
		Redund Diag 2	2L3x3x1/4x3/8	419	-1.16	40.76	2.8	Pass
T15	78.825 - 53.7	Bracing						
		Redund Hip 2	2L3x3x1/4	444	-0.05	33.86	0.3	Pass
		Bracing						
		Redund Hip Diagonal	2L3x3x1/4	460	-0.54	16.00	3.4	Pass
		2 Bracing						
		Leg	L8x8x7/8	462	-136.21	383.76	35.5	Pass
		Diagonal	2L3x3 1/2x1/4x3/8	471	-20.56	43.77	47.0	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	476	-9.48	28.75	33.0	Pass
		Redund Horz 1	2L3x2 1/2x1/4x3/8	472	-5.56	66.75	8.3	Pass
		Bracing						
		Redund Horz 2	2L3x2 1/2x3/16x3/8	473	-2.05	34.90	5.9	Pass
		Bracing						
		Redund Diag 1	2L3x3x1/4x3/8	474	5.62	85.54	6.6	Pass
		Bracing						
		Redund Diag 2	2L3x3x1/4x3/8	481	-1.32	35.08	3.8	Pass
T16	53.7 - 28.62	Bracing						
		Redund Hip 2	2L3x3x1/4	487	-0.05	27.12	0.3	Pass
		Bracing						
		Redund Hip Diagonal	2L3x3x1/4	516	-0.89	13.30	6.7	Pass
		2 Bracing						
		Leg	L8x8x1	518	-158.42	461.56	34.3	Pass
		Diagonal	2L3x4x1/4x3/8	549	-23.62	55.37	42.7	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	541	-13.32	35.75	37.3	Pass
		Redund Horz 1	2L3x2 1/2x1/4x3/8	589	-3.90	69.79	5.6	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
T17	28.62 - 0	Bracing							
		Redund Horz 2	2L3x2 1/2x3/16x3/8	531	-2.38	44.00	5.4	Pass	
		Bracing							
		Redund Horz 3	2L3x2 1/2x1/4x3/8	533	-8.96	47.02	19.1	Pass	
		Bracing							
		Redund Diag 1	2L3x3x1/4x3/8	591	4.11	85.54	4.8	Pass	
		Bracing							
		Redund Diag 2	2L3x3x1/4x3/8	534	-1.59	63.11	2.5	Pass	
		Bracing							
		Redund Diag 3	2L4x4x1/2	555	-11.33	163.86	6.9	Pass	
		Bracing							
		Redund Hip 1	2L3x3x1/4	580	0.21	85.54	0.2	Pass	
		Bracing							
		Redund Hip 2	2L3x3x1/4	581	-0.20	55.25	0.4	Pass	
		Bracing							
		Redund Hip 3	2L3x3x1/4	582	-2.17	25.22	8.6	Pass	
		Bracing							
		Redund Sub Horz	2L3x3x1/4	556	-13.41	54.99	24.4	Pass	
		Bracing							
		Redund Sub	2L3x3x1/4	562	-15.61	72.45	21.6	Pass	
		Diagonal Bracing							
		Leg	L8x8x1 1/8	614	-187.16	502.62	37.2	Pass	
		Diagonal	2L3x4x5/16x3/8	645	-23.82	54.37	43.8	Pass	
		Horizontal	2L3 1/2x3x5/16x3/8	637	-15.00	57.39	26.1	Pass	
		Redund Horz 1	2L3x2 1/2x1/4x3/8	626	-2.81	69.06	4.1	Pass	
		Bracing							
		Redund Horz 2	2L3x2 1/2x3/16x3/8	627	-2.81	42.35	6.6	Pass	
		Bracing							
		Redund Horz 3	2L3x2 1/2x1/4x3/8	622	-2.75	41.60	10.1	Pass	
		Bracing							
		Redund Diag 1	2L3x3x1/4x3/8	628	-3.04	71.88	4.2	Pass	
		Bracing							
		Redund Diag 2	2L3x3x1/4x3/8	630	-1.92	54.65	3.5	Pass	
		Bracing							
		Redund Diag 3	2L3 1/2x2 1/2x1/4x3/8	644	-5.78	34.37	16.8	Pass	
		Bracing							
Redund Hip 1	2L3x3x1/4	653	0.18	85.54	0.2	Pass			
Bracing									
Redund Hip 2	2L3x3x1/4	654	-0.15	47.01	0.3	Pass			
Bracing									
Redund Hip 3	2L3x3x1/4	655	-0.98	20.89	4.7	Pass			
Bracing									
Redund Sub Horz	2L3x3x1/4	652	-8.85	46.85	18.9	Pass			
Bracing									
Redund Sub	2L3x3x1/4	658	-18.51	66.07	28.0	Pass			
Diagonal Bracing									
							Summary		
							Leg (T5)	59.8	Pass
							Diagonal (T14)	59.2	Pass
							Horizontal (T16)	37.3	Pass
							Secondary Horizontal (T8)	11.3	Pass
							Top Girt (T1)	0.2	Pass
							Redund Horz 1 Bracing (T15)	8.3	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Redund Horz 2 Bracing (T17)	6.6	Pass
						Redund Horz 3 Bracing (T16)	19.1	Pass
						Redund Diag 1 Bracing (T15)	6.6	Pass
						Redund Diag 2 Bracing (T15)	3.8	Pass
						Redund Diag 3 Bracing (T17)	16.8	Pass
						Redund Hip 1 Bracing (T16)	0.2	Pass
						Redund Hip 2 Bracing (T16)	0.4	Pass
						Redund Hip 3 Bracing (T16)	8.6	Pass
						Redund Hip Diagonal 2 Bracing (T15)	6.7	Pass
						Redund Sub Horz Bracing (T16)	24.4	Pass
						Redund Sub Diagonal Bracing (T17)	28.0	Pass
						Guy A (T2)	28.4	Pass
						Guy B (T2)	28.4	Pass
						Guy C (T2)	28.7	Pass
						Guy D (T2)	28.0	Pass
						Top Guy Pull-Off (T2)	21.8	Pass
						Bolt Checks	35.0	Pass
						RATING =	59.8	Pass

Site Name: Benton FL, FL
 Site Number: 88417
 Design Base Loads (Factored) per TIA-222-H

Individual Pad & Pier Foundation Analysis

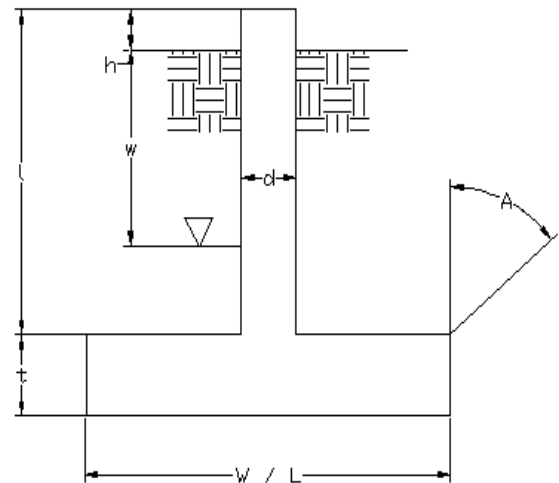
Foundation Analysis Parameters

Foundation Mapped:	Y	-
Moment (M_u):	0	k-ft
Shear/Leg (V_u):	20	k
Compression/Leg (P_u):	210	k
Uplift/Leg (T_u):	91	k
Tower Type:	GT	-
Pier Shape	Square	-
Diameter/Width of Prismatic Portion of Pier (d):	4	ft
Depth to Base of Foundation:	8.5	ft
Pier Height Above Ground (h):	0.5	ft
Length / Width of Pad (w):	12	ft
Thickness of Pad (t):	2	ft
Depth Below Ground Surface to Water Table (w):	99	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Above Water Table:	115	pcf
Unit Weight of Soil Below Water Table:	52.6	pcf
Friction Angle of Uplift from Top of Pad:	30	°
Friction Angle of Uplift from Base of Pad:	30	°
Uplift Angle Started at Top or Base of Pad (T/B):	T	-
Ultimate Skin Friction:	0	psf
Ultimate Compressive Bearing Pressure:	3,600	psf
Capacity Increase (Due to Transient Loads):	1	-
Bearing Strength Reduction Factor (f_s):	0.6	-
Uplift Strength Reduction Factor (f_s):	0.75	-

Depth (ft)		Ultimate Lateral	Increment	γ_{Soil}	Cu	ϕ
Top	Bottom	Bearing Pressure (psf)	(psf/ft)	(pcf)	(psf)	(°)
0	6.5	0	100	100	0	0
6.5	8.5	1,800	319	115	0	28

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	56.39	k
Weight of Soil (Bouyancy Considered):	179.61	k
Ultimate Skin Friction Resistance:	0.00	k
Controlling Failure Mode (Top / Base):	Top	-
Nominal Uplift Capacity per Leg ($f_s T_n$):	177.00	k
$T_u / f_s T_n$:	51%	Pass
P_u :	226.66	k
Nominal Compressive Capacity per Leg ($f_s P_n$):	311.04	k
$P_u / f_s P_n$:	73%	Pass
Inflection Point (Below Ground Surface):	7.92	ft
Factored Design Moment At Inflection Point (M_u):	121.44	k-ft



Site Name: Benton FL, FL

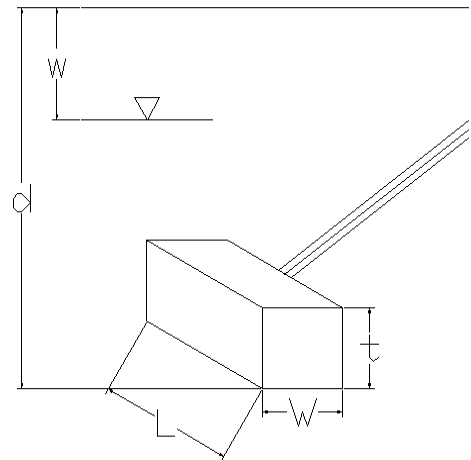
Site Number: 88417

Design Standard per TIA-222-H

Guy Anchor Block Analysis

Anchor Block Analysis Parameters

Anchor Radius:	250	ft
Uplift (Factored - P_u):	34	k
Shear (Factored - V_u):	31	k
Berm Present:	N	
Design Anchor Rod:	N	
Mapped Foundation:	Y	
Anchor Base Depth (d):	7	ft
Width of Anchor (W):	16	ft
Length of Anchor (L):	18	ft
Thickness of Anchor (t):	3	ft
Depth Below Ground Surface to Water Table (w):	99	ft
Soil Uplift at Base / Top of Anchor (B/T):	T	
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	115	pcf
Unit Weight of Water:	62.4	pcf
Submerged Soil Unit Weight:	52.6	pcf
Internal Angle of Friction:	28	°
Cohesion:	0	psf
Ultimate Skin Friction of Pad Sides to Soil:	0	psf
Coefficient of Shear Friction:	0.53	
Maximum Top Conical Failure Angle:	30	°
Maximum Base Conical Failure Angle:	30	°
Allowable Capacity Increase (Transient Loads):	1	
Uplift Strength Reduction Factor (ϕ_u):	0.75	
Shear Strength Reduction Factor (ϕ_v):	0.75	
Dead Load Factor (DLF):	0.9	



Design Anchor Shaft? N

Soil Uplift Capacity

Ultimate Uplift Resistance from Skin Friction and Soil Shear	0.0	k
Nominal Factored Uplift Resistance ($\phi_u P_n$):	264.9	k
$P_u / \phi_u P_n$:	13%	Pass

Soil Shear Capacity

Ultimate Shear Resistance from Skin Friction:	0.0	k
Ultimate Shear Friction Resistance Due to Normal Force:	107.0	k
Passive Pressure:	1,752	psf
Ultimate Passive Pressure Resistance:	94.6	k
Nominal Shear Resistance ($\phi_v V_n$):	151.2	k
$V_u / \phi_v V_n$:	21%	Pass