



Structural Analysis of a 235 ft Guyed Tower

**Site Number: Dish Wireless SYSYR00275A
EIP 637567**

Site Name: Canandaigua

County: Ontario

Location: Bliss Rd, Canandaigua, NY

Checked By:

A handwritten signature in black ink that reads "Patrick Probert".

Patrick Probert
Structural Design Engineer III

A handwritten signature in blue ink that reads "Kenneth Tang".
5/25/2021

Two Allegheny Ctr
Nova Tower 2, Suite 703
Pittsburg, PA 15212

May 2021



May 25, 2021

Tom Rigg
Everest Infrastructure Partners
Two Allegheny Ctr
Nova Tower 2, Suite 703
Pittsburgh, PA 15212

RE: Dish Wireless – SYSYR00275A – Canandaigua
EIP 637567
Bliss Rd, Canandaigua, NY

Tom:

We have completed the structural analysis of the subject tower and **have found it to be adequate within the scope of this analysis to support the proposed antenna loading.** The tower was analyzed according to the code-specified wind and ice parameters outlined in the *Code Requirements Table* following this letter.

The subject tower is a 235' Allied M42SR guyed tower consisting of all-welded sections with solid rod legs and rod bracing. The tower has been previously reinforced. Tower face dimension is 42" the full height above a 5' tapered base. The mast is laterally supported by four levels of guying attached to two sets of three guy anchors. Foundation capacities were based on normal soil parameters and mapped foundation dimensions.

The loading used in the analysis consisted of the existing antennas/lines as well as the following for Dish Wireless at 195' on (3) Commscope MTC3975 8' antenna frames:

- (3) MX08FRO665-20 antennas
- (3) TA08025-B604 RRU, (3) TA08025-B605 RRU, (1) RDIDC-9181-PF-48 surge protector
- (1) 5/8" OD hybrid cable

The proposed hybrid line is to be located as shown on drawing E-7.

The results of the analysis showed all tower and noted foundation elements to be loaded within allowable limits with a maximum stress rating of 74%. We recommend a post-construction inspection be completed by a structural engineer to document that tower-mounted equipment has been placed in compliance with the requirements of this analysis. For a detailed listing of tower performance, please see pages 38 to 40 of the calculations.

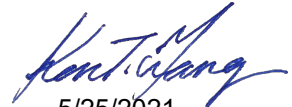
We appreciate the opportunity to provide our professional services to Everest Infrastructure and Dish Wireless and if you have any questions concerning this analysis, please contact us.

Sincerely,

ARMOR TOWER, INC.



Patrick Botimer
Structural Design Engineer V



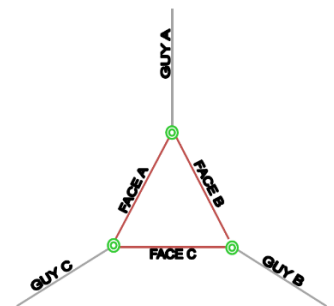
5/25/2021

CODE REQUIREMENTS

Governing code:	2020 NY State Uniform Fire Prevention and Building Code
Code basis/adoption:	2018 International Building Code
Referenced standard:	ANSI/TIA 222-H
Basic wind speed: (3-sec. gust):	V_{ult} : 109 mph with no ice 40 mph with 1" concurrent ice
County of site location:	Ontario
ASCE 7 Special wind region:	No
Structure/Risk Category:	II
Exposure Category:	C
Topographic Category: (Method 1)	1 - no topographic escalation
Crest Height/Tower Base AMSL Elevation:	0 ft/ 980 ft
Site Spectral Response:	$S_s=0.151$, $S_1=0.047$

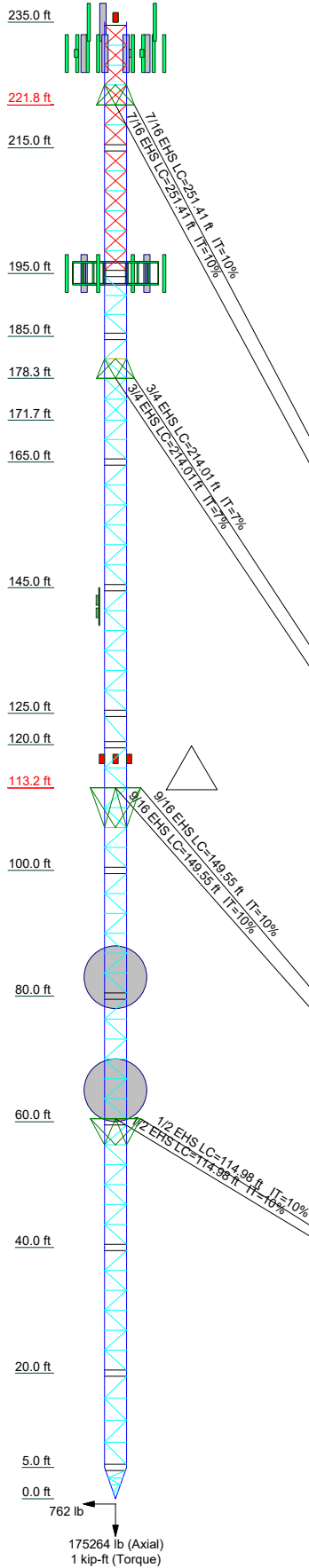
PRIMARY ASSUMPTIONS CONSIDERED IN THIS PROJECT

1. Leg A is assumed to be oriented North.
2. Allowable steel stresses are defined by AISC-LRFD-99/360-16 and all welds conform to AWS D1.1 specification.
3. If reserved antennas/feed lines by other carriers are to be considered in this analysis, it is the responsibility of Everest Infrastructure and its affiliates to provide this information.
4. Any deviation from the analyzed antenna loading will require a re-analysis of the tower for verification of structural integrity. This analysis has considered the proposed feed line to be located as shown on drawing E-7.
5. This analysis assumes all tower members are galvanized adequately to prevent corrosion of the steel and that all tower members are in "like new" condition with no physical deterioration. This analysis also assumes the tower has been maintained properly per TIA 222-H Annex J recommended inspection and maintenance procedures for tower owners and is in a plumb condition. Armor Tower has not completed a condition assessment of the tower.
6. No accounting for residual stresses due to incorrect tower erection can be made. This analysis assumes all bolts are appropriately tightened providing necessary connection continuity and that the installation of the tower was performed by a qualified tower erector.
7. Foundation capacities are based on normal soil parameters in the absence of geotechnical boring logs. If more accurate data for soil properties is required, Armor Tower can assist the client in obtaining the appropriate boring logs.
8. No conclusions, expressed or implied, shall indicate that Armor Tower has made an evaluation of the original design, materials, fabrication, or potential installation or erection deficiencies. Any information contrary to that assumed for the purpose of preparing this analysis could alter the findings and conclusions stated herein.

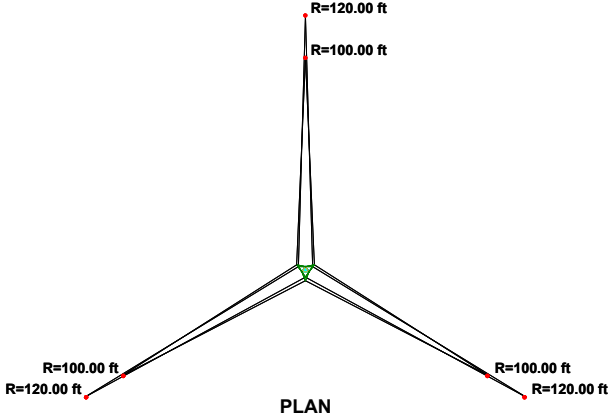


9. Tower member sizes, geometry and existing antenna loading are based on a tower analysis by this office in May 2020. Proposed equipment was outlined in 637567 (*Canandaigua*)_Dish_CA (EIP)_4.29.2021.xlsx
10. The investigation of the load carrying capacities of the antenna supporting frames/mounts is outside the scope of this analysis. Antenna mount certification can be completed under a separate contract.
11. Armor Tower can assist the contractor in providing a Class IV rigging plan for equipment lifting.

Section	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1		
Legs	SR 1 7/8																P 2.875"OD x 0.203"	
Leg Grade	A572-50																A500-50	
Diagonals	SR 1		SR 1 1/8		SR 1		SR 1 1/8										SR 5/8	
Diagonal Grade	A36																	
Top Girts	SR 1 1/8		3 x 3/8		SR 1 1/8		N.A.		SR 1 1/8		L1 1/2x1 1/2x3/16							
Bottom Girts	N.A.	SR 1 1/8		SR 1 1/8		SR 1 1/8		N.A.		SR 1 1/8		L1 1/2x1 1/2x3/16						
Horizontals	SR 7/8		SR 1		SR 7/8		SR 1		N.A.		SR 1		L1 1/2x1 1/2x3/16					
Top Guy Pull-Offs	N.A.																N.A.	
Face Width (ft)	3.5																	
# Panels @ (ft)	D	4 @ 3.5		30 @ 3.16667		1 @ 4		12 @ 3.16667		B		C	B	3 @ 3		12 @ 3.16667		
Weight (lb)	13917.3	276.4	738.5	1094.3	1003.1	1083.3	1084.3	1786.4	273.9	1094.3	1094.3	385.4	894.0	401.7	565.8	676.9	854.4	



ALL REACTIONS ARE FACTORED



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	235	TA08025-B604 RRU (P-DishW-Alpha)	195
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Alpha)	235	TA08025-B604 RRU (P-DishW-Beta)	195
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Beta)	235	TA08025-B604 RRU (P-DishW-Gamma)	195
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Gamma)	235	TA08025-B605 RRU (P-DishW-Alpha)	195
Samsung RFV01U-D1A (P-VZW-Alpha)	230	TA08025-B605 RRU (P-DishW-Beta)	195
Samsung RFV01U-D2A (P-VZW-Alpha)	230	TA08025-B605 RRU (P-DishW-Gamma)	195
(2) LPA-70063-8CF w. Mtg Pipe (E-VZW-Gamma)	230	Commscope MTC3975083 8'SectorFrame (P-DishW-Alpha)	195
(2) LPA-70063-8CF w. Mtg Pipe (E - VZW-Alpha)	230	Commscope MTC3975083 8'SectorFrame (P-DishW-Beta)	195
Samsung RFV01U-D1A (P-VZW-Beta)	230	Commscope MTC3975083 8'SectorFrame (P-DishW-Gamma)	195
Samsung RFV01U-D2A (P-VZW-Beta)	230	RDIDC-9181-PF-48 (P-DishW)	195
(2) WPA-700120-8CF w. MtgPipe (E-VZW-Beta)	230	4-Bay Dipole	142
Nudd 12' booms (set of 3)	230	OB Light	117
Samsung RFV01U-D1A (P-VZW-Gamma)	230	OB Light	117
Samsung RFV01U-D2A (P-VZW-Gamma)	230	OB Light	117
RCMDC-6627-PF-48 (12Circuit OVP) (P-VZW)	230	4"Sch40 x 10ft (Dishmount)	83
MX08FRO665-20 w. Mtg Pipe (P-DishW-Alpha)	195	Andrew D10F-21, T802J	83
MX08FRO665-20 w. Mtg Pipe (P-DishW-Beta)	195	4"Sch40 x 10ft (Dishmount)	65
MX08FRO665-20 w. Mtg Pipe (P-DishW-Gamma)	195	Andrew D10F-21, T802J	65

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/4	C	2 @ 3.33333
B	2 @ 3.08333	D	4 @ 1.125

TOWER DESIGN NOTES

1. Tower is located in Ontario County, New York.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 109 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.50 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. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.
11. (P)roposed/(E)xisting.
12. TOWER RATING: 73.6%

ARMOR
TOWER

Armor Tower Inc

9 North Main

Cortland, NY 13045

Phone: 607-591-5381

FAX: 866-870-0840

Job: 235' GUYED TOWER ANALYSIS

Project: Dish Wireless - SYSYR00275A - Canandaigua

Client: EVEREST INFRASTRUCTURE (637567)

Code: TIA-222-H

Path:

Drawn by: PB

Date: 05/25/21

App'd:

Scale: NTS

Dwg No. E-1

Feed Line Plan
20'

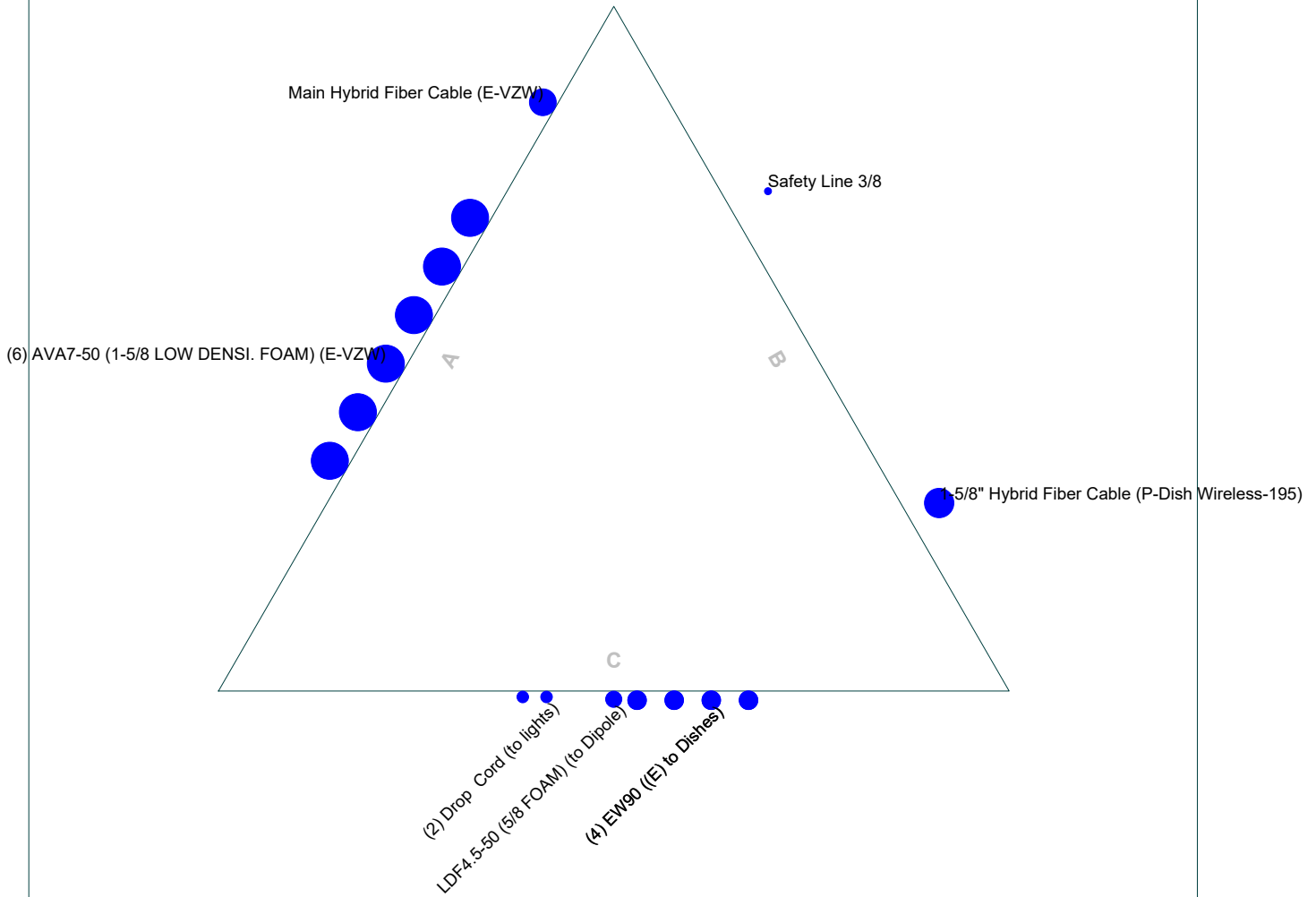
Round

Flat

App In Face

App Out Face

Section @ 20'



ARMOR TOWER
Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Job: 235' GUYED TOWER ANALYSIS			
Project: Dish Wireless - SYSYR00275A - Canandaigua			
Client: EVEREST INFRASTRUCTURE (637567)		Drawn by: PB	App'd:
Code: TIA-222-H		Date: 05/25/21	Scale: NTS
Path:			Dwg No. E-7

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	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 235.00 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 is located in Ontario County, New York.

Tower base elevation above sea level: 980.00 ft.

Basic wind speed of 109 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.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

(P)roposed/(E)xisting..

Tension only take-up is 0.0313 in.

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	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 Knn

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Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	235.00-215.00			3.50	1	20.00
T2	215.00-195.00			3.50	1	20.00
T3	195.00-185.00			3.50	1	10.00
T4	185.00-178.33			3.50	1	6.67
T5	178.33-171.67			3.50	1	6.67
T6	171.67-165.00			3.50	1	6.67
T7	165.00-145.00			3.50	1	20.00
T8	145.00-125.00			3.50	1	20.00
T9	125.00-120.00			3.50	1	5.00
T10	120.00-100.00			3.50	1	20.00
T11	100.00-80.00			3.50	1	20.00
T12	80.00-60.00			3.50	1	20.00
T13	60.00-40.00			3.50	1	20.00
T14	40.00-20.00			3.50	1	20.00
T15	20.00-5.00			3.50	1	15.00
T16	5.00-0.00			3.50	1	5.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	235.00-215.00	3.17	TX Brace	No	Yes	6.0000	6.0000
T2	215.00-195.00	3.17	TX Brace	No	Yes	6.0000	6.0000
T3	195.00-185.00	3.00	K Brace Right	No	Yes	6.0000	6.0000
T4	185.00-178.33	3.08	K Brace Right	No	Yes	6.0000	0.0000
T5	178.33-171.67	3.33	X Brace	No	Yes	0.0000	0.0000
T6	171.67-165.00	3.08	K Brace Right	No	Yes	0.0000	6.0000
T7	165.00-145.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T8	145.00-125.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T9	125.00-120.00	4.00	K Brace Right	No	Yes	6.0000	6.0000
T10	120.00-100.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T11	100.00-80.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T12	80.00-60.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T13	60.00-40.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T14	40.00-20.00	3.17	K Brace Right	No	Yes	6.0000	6.0000
T15	20.00-5.00	3.50	K Brace Right	No	Yes	6.0000	6.0000
T16	5.00-0.00	1.12	K Brace Right	No	Yes	6.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 235.00-215.00	Pipe	P 2.875"OD x 0.203"	A500-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job	235' GUYED TOWER ANALYSIS	Page 3 of 40
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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T2 215.00-195.00	Pipe	P 2.875"OD x 0.203"	A500-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 195.00-185.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 185.00-178.33	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5 178.33-171.67	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T6 171.67-165.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T7 165.00-145.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T8 145.00-125.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T9 125.00-120.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T10 120.00-100.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T11 100.00-80.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T12 80.00-60.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T13 60.00-40.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T14 40.00-20.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T15 20.00-5.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T16 5.00-0.00	Solid Round	1 7/8	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 235.00-215.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 215.00-195.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 195.00-185.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 185.00-178.33	Solid Round	1 1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 171.67-165.00	Solid Round		A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T7 165.00-145.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T8 145.00-125.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T9 125.00-120.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T10 120.00-100.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T11 100.00-80.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job	235' GUYED TOWER ANALYSIS	Page	4 of 40
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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T12 80.00-60.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T13 60.00-40.00	Flat Bar	3 x 3/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T14 40.00-20.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T15 20.00-5.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T16 5.00-0.00	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1 1/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 235.00-215.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 215.00-195.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 195.00-185.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T4 185.00-178.33	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T5 178.33-171.67	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T6 171.67-165.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T7 165.00-145.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T8 145.00-125.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T9 125.00-120.00	1	Solid Round	1 1/8	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T10 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T12 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T13 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T15 20.00-5.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T16 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)

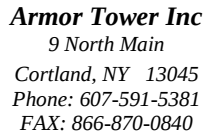
Tower Section Geometry (cont'd)

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job	235' GUYED TOWER ANALYSIS	Page 5 of 40
	Project	Dish Wireless - SYSYR00275A - Canandaigua	Date 08:37:56 05/25/21
	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

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 235.00-215.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T2 215.00-195.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T3 195.00-185.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T4 185.00-178.33	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T5 178.33-171.67	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T6 171.67-165.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T7 165.00-145.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T8 145.00-125.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T9 125.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T10 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T11 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T12 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T13 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T14 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T15 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000
T16 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.03	36.0000	36.0000	36.0000

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
T1 235.00-215.00	No	No	1	0.7 0.7	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T2 215.00-195.00	No	No	1	0.7 0.7	1 1	1 1	0.7 0.7	0.7 0.7	1 1	1 1
T3 195.00-185.00	No	No	0.5	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T4 185.00-178.33	No	No	0.5	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T5 178.33-171.67	No	No	0.5	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T6 171.67-165.00	No	No	0.5	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1
T7 165.00-145.00	No	No	0.5	1 1	0.7 0.7	0.7 0.7	0.7 0.7	0.7 0.7	1 1	1 1



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

Tower Section Geometry (cont'd)



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Job

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Project

Dish Wireless - SYSYR00275A - Canandaigua

Date

08:37:56 05/25/21

Client

EVEREST INFRASTRUCTURE (637567)

Designed by

PB

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
T13 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-5.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 5.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower 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 235.00-215.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 215.00-195.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 195.00-185.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 185.00-178.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 178.33-171.67	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 171.67-165.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 165.00-145.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 145.00-125.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 125.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-5.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 5.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)



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	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 235.00-215.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 215.00-195.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 195.00-185.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 185.00-178.33	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 178.33-171.67	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 171.67-165.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 165.00-145.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 145.00-125.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 125.00-120.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 120.00-100.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 100.00-80.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 80.00-60.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 60.00-40.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 40.00-20.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 20.00-5.00	Flange	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 5.00-0.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L _u	Anchor Radius	Anchor Azimuth Adj. °	Anchor Elevation	End Fitting Efficiency %
ft			lb		ksi	plf	ft	ft		ft	
221.833	EHS	A 7/16	2080	10%	21000	0.399	251.19	120.00	0.0000	0.00	100%
		B 7/16	2080	10%	21000	0.399	251.19	120.00	0.0000	0.00	100%
		C 7/16	2080	10%	21000	0.399	251.19	120.00	0.0000	0.00	100%
178.333	EHS	A 3/4	4081	7%	19000	1.155	213.88	120.00	0.0000	0.00	100%
		B 3/4	4081	7%	19000	1.155	213.88	120.00	0.0000	0.00	100%
		C 3/4	4081	7%	19000	1.155	213.88	120.00	0.0000	0.00	100%
113.167	EHS	A 9/16	3500	10%	21000	0.671	149.43	100.00	0.0000	0.00	100%
		B 9/16	3500	10%	21000	0.671	149.43	100.00	0.0000	0.00	100%
		C 9/16	3500	10%	21000	0.671	149.43	100.00	0.0000	0.00	100%
60.5	EHS	A 1/2	2690	10%	21000	0.517	114.88	100.00	0.0000	0.00	100%
		B 1/2	2690	10%	21000	0.517	114.88	100.00	0.0000	0.00	100%
		C 1/2	2690	10%	21000	0.517	114.88	100.00	0.0000	0.00	100%

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

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
221.833	Torque Arm	6.00	45.0000	Dog Ear	A36 (36 ksi)	Equal Angle	L2x2x1/4 L3x3x1/4
178.333	Torque Arm	6.00	45.0000	Dog Ear	A36 (36 ksi)	Equal Angle	L4x4x3/8
113.167	Torque Arm	8.00	45.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L4x4x3/8
60.5	Torque Arm	8.00	45.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L4x4x3/8

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
221.83	A36 (36 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
178.33	A36 (36 ksi)	Solid Round			Yes	A36 (36 ksi)	Solid Round	1 1/4
113.17	A36 (36 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
60.50	A36 (36 ksi)	Solid Round				A36 (36 ksi)	Solid Round	

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
221.833	100	100	100		5.93	5.93	5.93	
178.333	247	247	247		4.2 sec/pulse 6.32	4.2 sec/pulse 6.32	4.2 sec/pulse 6.32	
113.167	100	100	100		4.3 sec/pulse 2.12	4.3 sec/pulse 2.12	4.3 sec/pulse 2.12	
60.5	59	59	59		2.5 sec/pulse 1.26	2.5 sec/pulse 1.26	2.5 sec/pulse 1.26	
					1.9 sec/pulse	1.9 sec/pulse	1.9 sec/pulse	

Guy Data (cont'd)

Torque Arm	Pull Off	Diagonal
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Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K _x	K _y	K _x	K _y	K _x	K _y
221.833	No	No	1	1	1	1	1	1
178.333	No	No	1	1	1	1	1	1
113.167	No	No	1	1	1	1	1	1
60.5	No	No	1	1	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
221.833	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
178.333	0.0000 A325N	0	0.0000	1	0.6250 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
113.167	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
60.5	0.0000 A325N	0	0.0000	1	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 psf	q _z Ice psf	Ice Thickness in
221.833	A	110.92	32	4	1.6933
	B	110.92	32	4	1.6933
	C	110.92	32	4	1.6933
178.333	A	89.17	31	4	1.6568
	B	89.17	31	4	1.6568
	C	89.17	31	4	1.6568
113.167	A	56.58	28	4	1.5831
	B	56.58	28	4	1.5831
	C	56.58	28	4	1.5831
60.5	A	30.25	25	3	1.4870
	B	30.25	25	3	1.4870
	C	30.25	25	3	1.4870

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
*Verizon Wireless-2020 Main Hybrid Fiber Cable (E-VZW)	A	No	No	Ar (CaAa)	230.00 - 10.00	0.0000	0.35	1	1	1.0000	1.4300		1.63

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

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
AVA7-50 (1-5/8 LOW DENS. FOAM) (E-VZW) * *	A	No	No	Ar (CaAa)	230.00 - 10.00	0.0000	0	6	6	1.0000	1.9800		0.72
EW90 ((E) to Dishes)	C	No	No	Ar (CaAa)	65.00 - 10.00	0.0000	-0.1	4	4	0.9869	0.9869		0.32
EW90 ((E) to Dishes)	C	No	No	Ar (CaAa)	65.00 - 10.00	0.0000	-0.1	4	4	0.9869	0.9869		0.32
EW90 ((E))	C	No	No	Ar (CaAa)	80.00 - 65.00	0.0000	-0.1	2	2	0.9869	0.9869		0.32
LDF4.5-50 (5/8 FOAM) (to Dipole)	C	No	No	Ar (CaAa)	142.00 - 10.00	0.0000	0	1	1	0.8700	0.8700		0.15
Drop Cord (to lights)	C	No	No	Ar (CaAa)	117.00 - 10.00	0.0000	0.1	2	2	0.6300	0.6300		0.15
Drop Cord (to lights)	C	No	No	Ar (CaAa)	235.00 - 117.00	0.0000	0.1	1	1	0.6300	0.6300		0.15
Safety Line 3/8 *	B	No	No	Ar (CaAa)	235.00 - 10.00	2.0000	-0.2	1	1	0.3750	0.3750		0.22
*DishWireless -2021 1-5/8" Hybrid Fiber Cable (P-Dish Wireless-195)	B	No	No	Ar (CaAa)	195.00 - 5.00	1.0000	0.25	1	1	1.5600	1.5600		1.78

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
* *Hide lines ONLY for printing E-7!*									
3/4" Secondaries (FA)	A	No	No	CaAa (In Face)	125.00 - 100.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.70 0.19 0.29 0.49	1.75 2.64 4.24 8.87
3/4" Secondaries (FB)	B	No	No	CaAa (In Face)	125.00 - 100.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.70 0.19 0.29 0.49	1.75 2.64 4.24 8.87
3/4" Secondaries (FC)	C	No	No	CaAa (In Face)	125.00 - 100.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.70 0.19 0.29 0.49	1.75 2.64 4.24 8.87
3/4" Secondaries (FA)	A	No	No	CaAa (In Face)	195.00 - 145.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.70 0.19 0.29 0.49	1.75 2.64 4.24 8.87
3/4" Secondaries	B	No	No	CaAa (In	195.00 - 145.00	1	No Ice	0.70	1.75

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA} ft ² /ft	Weight plf
(FB)				Face)		1/2" Ice	0.19	2.64
						1" Ice	0.29	4.24
						2" Ice	0.49	8.87
3/4" Secondaries (FC)	C	No	No	CaAa (In Face)	195.00 - 145.00	1	No Ice	0.70
						1/2" Ice	0.19	2.64
						1" Ice	0.29	4.24
						2" Ice	0.49	8.87
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	235.00-215.00	A	0.000	0.000	19.965	0.000	89
		B	0.000	0.000	0.750	0.000	4
		C	0.000	0.000	1.260	0.000	3
T2	215.00-195.00	A	0.000	0.000	26.620	0.000	119
		B	0.000	0.000	0.750	0.000	4
		C	0.000	0.000	1.260	0.000	3
T3	195.00-185.00	A	0.000	0.000	20.310	0.000	77
		B	0.000	0.000	8.935	0.000	38
		C	0.000	0.000	7.630	0.000	19
T4	185.00-178.33	A	0.000	0.000	13.540	0.000	51
		B	0.000	0.000	5.957	0.000	25
		C	0.000	0.000	5.087	0.000	13
T5	178.33-171.67	A	0.000	0.000	13.540	0.000	51
		B	0.000	0.000	5.957	0.000	25
		C	0.000	0.000	5.087	0.000	13
T6	171.67-165.00	A	0.000	0.000	13.540	0.000	51
		B	0.000	0.000	5.957	0.000	25
		C	0.000	0.000	5.087	0.000	13
T7	165.00-145.00	A	0.000	0.000	40.620	0.000	154
		B	0.000	0.000	17.870	0.000	75
		C	0.000	0.000	15.260	0.000	38
T8	145.00-125.00	A	0.000	0.000	26.620	0.000	119
		B	0.000	0.000	3.870	0.000	40
		C	0.000	0.000	2.739	0.000	6
T9	125.00-120.00	A	0.000	0.000	10.155	0.000	39
		B	0.000	0.000	4.467	0.000	19
		C	0.000	0.000	4.250	0.000	10
T10	120.00-100.00	A	0.000	0.000	40.620	0.000	154
		B	0.000	0.000	17.870	0.000	75
		C	0.000	0.000	18.071	0.000	44
T11	100.00-80.00	A	0.000	0.000	26.620	0.000	119
		B	0.000	0.000	3.870	0.000	40
		C	0.000	0.000	4.260	0.000	9
T12	80.00-60.00	A	0.000	0.000	26.620	0.000	119
		B	0.000	0.000	3.870	0.000	40
		C	0.000	0.000	11.169	0.000	31
T13	60.00-40.00	A	0.000	0.000	26.620	0.000	119
		B	0.000	0.000	3.870	0.000	40
		C	0.000	0.000	20.051	0.000	60
T14	40.00-20.00	A	0.000	0.000	26.620	0.000	119



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Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

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 lb
T15	20.00-5.00	B	0.000	0.000	3.870	0.000	40
		C	0.000	0.000	20.051	0.000	60
		A	0.000	0.000	13.310	0.000	60
		B	0.000	0.000	2.715	0.000	29
		C	0.000	0.000	10.026	0.000	30
T16	5.00-0.00	A	0.000	0.000	0.000	0.000	0
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.000	0.000	0

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	235.00-215.00	A	1.817	0.000	0.000	47.477	0.000	722
		B		0.000	0.000	8.020	0.000	102
		C		0.000	0.000	8.530	0.000	112
T2	215.00-195.00	A	1.801	0.000	0.000	63.132	0.000	955
		B		0.000	0.000	7.952	0.000	100
		C		0.000	0.000	8.462	0.000	110
T3	195.00-185.00	A	1.787	0.000	0.000	35.946	0.000	553
		B		0.000	0.000	13.532	0.000	219
		C		0.000	0.000	8.653	0.000	133
T4	185.00-178.33	A	1.779	0.000	0.000	23.926	0.000	367
		B		0.000	0.000	8.989	0.000	145
		C		0.000	0.000	5.747	0.000	88
T5	178.33-171.67	A	1.772	0.000	0.000	23.895	0.000	366
		B		0.000	0.000	8.963	0.000	145
		C		0.000	0.000	5.730	0.000	88
T6	171.67-165.00	A	1.765	0.000	0.000	23.863	0.000	364
		B		0.000	0.000	8.935	0.000	144
		C		0.000	0.000	5.711	0.000	87
T7	165.00-145.00	A	1.751	0.000	0.000	71.383	0.000	1085
		B		0.000	0.000	26.631	0.000	427
		C		0.000	0.000	17.018	0.000	259
T8	145.00-125.00	A	1.727	0.000	0.000	62.386	0.000	919
		B		0.000	0.000	17.685	0.000	267
		C		0.000	0.000	15.518	0.000	198
T9	125.00-120.00	A	1.710	0.000	0.000	17.702	0.000	265
		B		0.000	0.000	6.536	0.000	104
		C		0.000	0.000	6.318	0.000	91
T10	120.00-100.00	A	1.692	0.000	0.000	70.550	0.000	1051
		B		0.000	0.000	25.923	0.000	409
		C		0.000	0.000	32.313	0.000	391
T11	100.00-80.00	A	1.658	0.000	0.000	61.692	0.000	886
		B		0.000	0.000	17.136	0.000	253
		C		0.000	0.000	24.707	0.000	240
T12	80.00-60.00	A	1.617	0.000	0.000	61.277	0.000	866
		B		0.000	0.000	16.807	0.000	244
		C		0.000	0.000	52.043	0.000	515
T13	60.00-40.00	A	1.564	0.000	0.000	60.737	0.000	841
		B		0.000	0.000	16.379	0.000	233
		C		0.000	0.000	77.898	0.000	810
T14	40.00-20.00	A	1.486	0.000	0.000	59.952	0.000	805
		B		0.000	0.000	15.756	0.000	218
		C		0.000	0.000	76.027	0.000	764
T15	20.00-5.00	A	1.361	0.000	0.000	29.351	0.000	374
		B		0.000	0.000	9.521	0.000	131

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	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 lb
T16	5.00-0.00	C		0.000	0.000	36.522	0.000	347
		A	1.159	0.000	0.000	0.000	0.000	0
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	0

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	235.00-215.00	-2.1871	-2.3913	-0.7924	-1.3848
T2	215.00-195.00	-2.7229	-2.9111	-1.0750	-1.7671
T3	195.00-185.00	-1.2580	-1.9274	-0.4937	-2.1638
T4	185.00-178.33	-1.2437	-1.9075	-0.4734	-2.0762
T5	178.33-171.67	-1.2012	-1.8480	-0.3680	-1.6413
T6	171.67-165.00	-1.2498	-1.9160	-0.4815	-2.0983
T7	165.00-145.00	-1.2668	-1.9396	-0.5232	-2.2508
T8	145.00-125.00	-2.2427	-2.9063	-0.5943	-1.9854
T9	125.00-120.00	-1.2479	-1.7033	-0.5290	-1.6971
T10	120.00-100.00	-1.2766	-1.6617	-0.6065	-1.5453
T11	100.00-80.00	-2.2775	-2.7647	-0.7346	-1.7654
T12	80.00-60.00	-1.5442	-2.0432	-0.0875	-0.7644
T13	60.00-40.00	-0.7929	-1.6112	0.4557	-0.2425
T14	40.00-20.00	-0.8143	-1.6419	0.4560	-0.2885
T15	20.00-5.00	-0.3579	-1.3228	0.7222	-0.2607
T16	5.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	2	Main Hybrid Fiber Cable	215.00 - 230.00	0.6000	0.3533
T1	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	215.00 - 230.00	0.6000	0.3533
T1	11	Drop Cord	215.00 - 235.00	0.6000	0.3533
T1	12	Safety Line 3/8	215.00 - 235.00	0.6000	0.3533
T2	2	Main Hybrid Fiber Cable	195.00 - 215.00	0.6000	0.3570
T2	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	195.00 - 215.00	0.6000	0.3570
T2	11	Drop Cord	195.00 - 215.00	0.6000	0.3570
T2	12	Safety Line 3/8	195.00 - 215.00	0.6000	0.3570
T3	2	Main Hybrid Fiber Cable	185.00 - 195.00	0.6000	0.4966
T3	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	185.00 - 195.00	0.6000	0.4966



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Client

EVEREST INFRASTRUCTURE (637567)

Designed by

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	11	Drop Cord	185.00 - 195.00	0.6000	0.4966
T3	12	Safety Line 3/8	185.00 - 195.00	0.6000	0.4966
T3	20	3/4" Secondaries (FA)	185.00 - 195.00	0.6000	0.4966
T3	21	3/4" Secondaries (FB)	185.00 - 195.00	0.6000	0.4966
T3	22	3/4" Secondaries (FC)	185.00 - 195.00	0.6000	0.4966
T3	25	1-5/8" Hybrid Fiber Cable	185.00 - 195.00	0.6000	0.4966
T4	2	Main Hybrid Fiber Cable	178.33 - 185.00	0.6000	0.4773
T4	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	178.33 - 185.00	0.6000	0.4773
T4	11	Drop Cord	178.33 - 185.00	0.6000	0.4773
T4	12	Safety Line 3/8	178.33 - 185.00	0.6000	0.4773
T4	20	3/4" Secondaries (FA)	178.33 - 185.00	0.6000	0.4773
T4	21	3/4" Secondaries (FB)	178.33 - 185.00	0.6000	0.4773
T4	22	3/4" Secondaries (FC)	178.33 - 185.00	0.6000	0.4773
T4	25	1-5/8" Hybrid Fiber Cable	178.33 - 185.00	0.6000	0.4773
T5	2	Main Hybrid Fiber Cable	171.67 - 178.33	0.6000	0.3852
T5	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	171.67 - 178.33	0.6000	0.3852
T5	11	Drop Cord	171.67 - 178.33	0.6000	0.3852
T5	12	Safety Line 3/8	171.67 - 178.33	0.6000	0.3852
T5	20	3/4" Secondaries (FA)	171.67 - 178.33	0.6000	0.3852
T5	21	3/4" Secondaries (FB)	171.67 - 178.33	0.6000	0.3852
T5	22	3/4" Secondaries (FC)	171.67 - 178.33	0.6000	0.3852
T5	25	1-5/8" Hybrid Fiber Cable	171.67 - 178.33	0.6000	0.3852
T6	2	Main Hybrid Fiber Cable	165.00 - 171.67	0.6000	0.4826
T6	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	165.00 - 171.67	0.6000	0.4826
T6	11	Drop Cord	165.00 - 171.67	0.6000	0.4826
T6	12	Safety Line 3/8	165.00 - 171.67	0.6000	0.4826
T6	20	3/4" Secondaries (FA)	165.00 - 171.67	0.6000	0.4826
T6	21	3/4" Secondaries (FB)	165.00 - 171.67	0.6000	0.4826
T6	22	3/4" Secondaries (FC)	165.00 - 171.67	0.6000	0.4826
T6	25	1-5/8" Hybrid Fiber Cable	165.00 - 171.67	0.6000	0.4826
T7	2	Main Hybrid Fiber Cable	145.00 - 165.00	0.6000	0.5174



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Date

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Client

EVEREST INFRASTRUCTURE (637567)

Designed by

PB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	145.00 - 165.00	0.6000	0.5174
T7	11	Drop Cord	145.00 - 165.00	0.6000	0.5174
T7	12	Safety Line 3/8	145.00 - 165.00	0.6000	0.5174
T7	20	3/4" Secondaries (FA)	145.00 - 165.00	0.6000	0.5174
T7	21	3/4" Secondaries (FB)	145.00 - 165.00	0.6000	0.5174
T7	22	3/4" Secondaries (FC)	145.00 - 165.00	0.6000	0.5174
T7	25	1-5/8" Hybrid Fiber Cable	145.00 - 165.00	0.6000	0.5174
T8	2	Main Hybrid Fiber Cable	125.00 - 145.00	0.6000	0.5216
T8	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	125.00 - 145.00	0.6000	0.5216
T8	9	LDF4.5-50 (5/8 FOAM)	125.00 - 142.00	0.6000	0.5216
T8	11	Drop Cord	125.00 - 145.00	0.6000	0.5216
T8	12	Safety Line 3/8	125.00 - 145.00	0.6000	0.5216
T8	25	1-5/8" Hybrid Fiber Cable	125.00 - 145.00	0.6000	0.5216
T9	2	Main Hybrid Fiber Cable	120.00 - 125.00	0.6000	0.5394
T9	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	120.00 - 125.00	0.6000	0.5394
T9	9	LDF4.5-50 (5/8 FOAM)	120.00 - 125.00	0.6000	0.5394
T9	11	Drop Cord	120.00 - 125.00	0.6000	0.5394
T9	12	Safety Line 3/8	120.00 - 125.00	0.6000	0.5394
T9	17	3/4" Secondaries (FA)	120.00 - 125.00	0.6000	0.5394
T9	18	3/4" Secondaries (FB)	120.00 - 125.00	0.6000	0.5394
T9	19	3/4" Secondaries (FC)	120.00 - 125.00	0.6000	0.5394
T9	25	1-5/8" Hybrid Fiber Cable	120.00 - 125.00	0.6000	0.5394
T10	2	Main Hybrid Fiber Cable	100.00 - 120.00	0.6000	0.5278
T10	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	100.00 - 120.00	0.6000	0.5278
T10	9	LDF4.5-50 (5/8 FOAM)	100.00 - 120.00	0.6000	0.5278
T10	10	Drop Cord	100.00 - 117.00	0.6000	0.5278
T10	11	Drop Cord	117.00 - 120.00	0.6000	0.5278
T10	12	Safety Line 3/8	100.00 - 120.00	0.6000	0.5278
T10	17	3/4" Secondaries (FA)	100.00 - 120.00	0.6000	0.5278
T10	18	3/4" Secondaries (FB)	100.00 - 120.00	0.6000	0.5278
T10	19	3/4" Secondaries (FC)	100.00 - 120.00	0.6000	0.5278



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	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	25	1-5/8" Hybrid Fiber Cable	100.00 - 120.00	0.6000	0.5278
T11	2	Main Hybrid Fiber Cable	80.00 - 100.00	0.6000	0.5337
T11	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	80.00 - 100.00	0.6000	0.5337
T11	9	LDF4.5-50 (5/8 FOAM)	80.00 - 100.00	0.6000	0.5337
T11	10	Drop Cord	80.00 - 100.00	0.6000	0.5337
T11	12	Safety Line 3/8	80.00 - 100.00	0.6000	0.5337
T11	25	1-5/8" Hybrid Fiber Cable	80.00 - 100.00	0.6000	0.5337
T12	2	Main Hybrid Fiber Cable	60.00 - 80.00	0.6000	0.5410
T12	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	60.00 - 80.00	0.6000	0.5410
T12	6	EW90	60.00 - 65.00	0.6000	0.5410
T12	7	EW90	60.00 - 65.00	0.6000	0.5410
T12	8	EW90	65.00 - 80.00	0.6000	0.5410
T12	9	LDF4.5-50 (5/8 FOAM)	60.00 - 80.00	0.6000	0.5410
T12	10	Drop Cord	60.00 - 80.00	0.6000	0.5410
T12	12	Safety Line 3/8	60.00 - 80.00	0.6000	0.5410
T12	25	1-5/8" Hybrid Fiber Cable	60.00 - 80.00	0.6000	0.5410
T13	2	Main Hybrid Fiber Cable	40.00 - 60.00	0.6000	0.5497
T13	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	40.00 - 60.00	0.6000	0.5497
T13	6	EW90	40.00 - 60.00	0.6000	0.5497
T13	7	EW90	40.00 - 60.00	0.6000	0.5497
T13	9	LDF4.5-50 (5/8 FOAM)	40.00 - 60.00	0.6000	0.5497
T13	10	Drop Cord	40.00 - 60.00	0.6000	0.5497
T13	12	Safety Line 3/8	40.00 - 60.00	0.6000	0.5497
T13	25	1-5/8" Hybrid Fiber Cable	40.00 - 60.00	0.6000	0.5497
T14	2	Main Hybrid Fiber Cable	20.00 - 40.00	0.6000	0.5645
T14	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	20.00 - 40.00	0.6000	0.5645
T14	6	EW90	20.00 - 40.00	0.6000	0.5645
T14	7	EW90	20.00 - 40.00	0.6000	0.5645
T14	9	LDF4.5-50 (5/8 FOAM)	20.00 - 40.00	0.6000	0.5645
T14	10	Drop Cord	20.00 - 40.00	0.6000	0.5645
T14	12	Safety Line 3/8	20.00 - 40.00	0.6000	0.5645
T14	25	1-5/8" Hybrid Fiber Cable	20.00 - 40.00	0.6000	0.5645
T15	2	Main Hybrid Fiber Cable	10.00 - 20.00	0.6000	0.6000
T15	3	AVA7-50 (1-5/8 LOW DENS. FOAM)	10.00 - 20.00	0.6000	0.6000
T15	6	EW90	10.00 - 20.00	0.6000	0.6000
T15	7	EW90	10.00 - 20.00	0.6000	0.6000
T15	9	LDF4.5-50 (5/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T15	10	Drop Cord	10.00 - 20.00	0.6000	0.6000
T15	12	Safety Line 3/8	10.00 - 20.00	0.6000	0.6000
T15	25	1-5/8" Hybrid Fiber Cable	5.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job 235' GUYED TOWER ANALYSIS	Page 18 of 40
	Project Dish Wireless - SYSYR00275A - Canandaigua	Date 08:37:56 05/25/21
	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
Flash Beacon Lighting	C	None		0.0000	235.00	No Ice	2.70	2.70	50
						1/2" Ice	3.10	3.10	70
						1" Ice	3.50	3.50	90
						2" Ice	4.30	4.30	130
** Verizon - 2020** Nudd 12' booms (set of 3)	A	None		0.0000	230.00	No Ice	24.41	24.41	770
						1/2" Ice	31.39	31.39	1201
						1" Ice	38.37	38.37	1632
						2" Ice	52.33	52.33	2494
(2) LPA-70063-8CF w. Mtg Pipe (E- VZW-Alpha)	A	From Leg	4.00 0.00 0.00	0.0000	230.00	No Ice	13.99	14.85	67
						1/2" Ice	14.72	16.39	189
						1" Ice	15.46	17.78	321
						2" Ice	16.95	20.24	620
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Alpha)	A	From Leg	4.00 -2.00 0.00	0.0000	235.00	No Ice	11.39	9.56	81
						1/2" Ice	12.01	10.97	168
						1" Ice	12.63	12.24	264
						2" Ice	13.87	14.46	490
Samsung RFV01U-D1A (P-VZW-Alpha)	A	From Leg	4.00 2.00 0.00	0.0000	230.00	No Ice	1.88	1.25	97
						1/2" Ice	2.05	1.39	115
						1" Ice	2.22	1.54	136
						2" Ice	2.60	1.86	188
Samsung RFV01U-D2A (P-VZW-Alpha)	A	From Leg	4.00 2.00 0.00	0.0000	230.00	No Ice	1.88	1.01	82
						1/2" Ice	2.05	1.14	98
						1" Ice	2.22	1.28	118
						2" Ice	2.60	1.59	164

(2) LPA-70063-8CF w. Mtg Pipe (E-VZW-Gamma)	C	From Leg	4.00 0.00 0.00	0.0000	230.00	No Ice	13.99	14.85	67
						1/2" Ice	14.72	16.39	189
						1" Ice	15.46	17.78	321
						2" Ice	16.95	20.24	620
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Beta)	B	From Leg	4.00 -2.00 0.00	0.0000	235.00	No Ice	11.39	9.56	81
						1/2" Ice	12.01	10.97	168
						1" Ice	12.63	12.24	264
						2" Ice	13.87	14.46	490
Samsung RFV01U-D1A (P-VZW-Beta)	B	From Leg	4.00 2.00 0.00	0.0000	230.00	No Ice	1.88	1.25	97
						1/2" Ice	2.05	1.39	115
						1" Ice	2.22	1.54	136
						2" Ice	2.60	1.86	188
Samsung RFV01U-D2A (P-VZW-Beta)	B	From Leg	4.00 2.00 0.00	0.0000	230.00	No Ice	1.88	1.01	82
						1/2" Ice	2.05	1.14	98
						1" Ice	2.22	1.28	118
						2" Ice	2.60	1.59	164

(2) WPA-700120-8CF w. MtgPipe (E-VZW-Beta)	B	From Leg	4.00 0.00 0.00	0.0000	230.00	No Ice	6.47	8.35	46
						1/2" Ice	7.06	9.75	107
						1" Ice	7.65	11.01	176
						2" Ice	8.85	13.19	347
(2) NHH-65C-R2B w. Mtg Pipe (P - VZW - Gamma)	C	From Leg	4.00 -2.00 0.00	0.0000	235.00	No Ice	11.39	9.56	81
						1/2" Ice	12.01	10.97	168
						1" Ice	12.63	12.24	264
						2" Ice	13.87	14.46	490
Samsung RFV01U-D1A (P-VZW-Gamma)	C	From Leg	4.00 2.00 0.00	0.0000	230.00	No Ice	1.88	1.25	97
						1/2" Ice	2.05	1.39	115
						1" Ice	2.22	1.54	136
						2" Ice	2.60	1.86	188
Samsung RFV01U-D2A (P-VZW-Gamma)	C	From Leg	4.00 2.00	0.0000	230.00	No Ice	1.88	1.01	82
						1/2" Ice	2.05	1.14	98

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
RCMDC-6627-PF-48 (12Circuit OVP) (P-VZW)	C	None	0.00	0.0000	230.00	1" Ice	2.22	1.28	118
						2" Ice	2.60	1.59	164
						No Ice	3.79	2.51	32
						1/2" Ice	4.04	2.73	63
						1" Ice	4.30	2.95	99
						2" Ice	4.84	3.42	181

** Existing ** 4-Bay Dipole	C	From Leg	1.00	0.0000	142.00	No Ice	1.00	0.60	30
			0.00			1/2" Ice	1.50	0.75	40
			0.00			1" Ice	2.00	0.90	50
						2" Ice	3.00	1.20	70
OB Light	A	From Leg	0.50	0.0000	117.00	No Ice	0.89	0.89	17
			0.00			1/2" Ice	0.89	0.89	17
			0.00			1" Ice	0.89	0.89	17
						2" Ice	0.89	0.89	17
OB Light	B	From Leg	0.50	0.0000	117.00	No Ice	0.89	0.89	17
			0.00			1/2" Ice	0.89	0.89	17
			0.00			1" Ice	0.89	0.89	17
						2" Ice	0.89	0.89	17
OB Light	C	From Leg	0.50	0.0000	117.00	No Ice	0.89	0.89	17
			0.00			1/2" Ice	0.89	0.89	17
			0.00			1" Ice	0.89	0.89	17
						2" Ice	0.89	0.89	17
**									
4"Sch40 x 10ft (Dishmount)	A	From Leg	0.00	0.0000	83.00	No Ice	3.96	3.96	108
			0.00			1/2" Ice	5.24	5.24	139
			0.00			1" Ice	5.85	5.85	177
						2" Ice	7.09	7.09	274
4"Sch40 x 10ft (Dishmount)	A	From Leg	0.00	0.0000	65.00	No Ice	4.07	4.07	108
			0.00			1/2" Ice	5.24	5.24	139
			0.00			1" Ice	5.85	5.85	177
						2" Ice	7.09	7.09	274

*Dish Wireless-May2021 MX08FRO665-20 w. Mtg Pipe (P-DishW-Alpha)	A	From Leg	4.00	0.0000	195.00	No Ice	12.49	7.29	94
			0.00			1/2" Ice	12.99	8.25	184
			0.00			1" Ice	13.49	9.08	282
						2" Ice	14.52	10.80	506
MX08FRO665-20 w. Mtg Pipe (P-DishW-Beta)	B	From Leg	4.00	0.0000	195.00	No Ice	12.49	7.29	94
			0.00			1/2" Ice	12.99	8.25	184
			0.00			1" Ice	13.49	9.08	282
						2" Ice	14.52	10.80	506
MX08FRO665-20 w. Mtg Pipe (P-DishW-Gamma)	C	From Leg	4.00	0.0000	195.00	No Ice	12.49	7.29	94
			0.00			1/2" Ice	12.99	8.25	184
			0.00			1" Ice	13.49	9.08	282
						2" Ice	14.52	10.80	506
TA08025-B604 RRU (P-DishW-Alpha)	A	From Leg	4.00	0.0000	195.00	No Ice	1.98	1.04	64
			-3.00			1/2" Ice	2.15	1.18	81
			0.00			1" Ice	2.33	1.32	100
						2" Ice	2.72	1.63	148
TA08025-B604 RRU (P-DishW-Beta)	B	From Leg	4.00	0.0000	195.00	No Ice	1.98	1.04	64
			-3.00			1/2" Ice	2.15	1.18	81
			0.00			1" Ice	2.33	1.32	100
						2" Ice	2.72	1.63	148
TA08025-B604 RRU (P-DishW-Gamma)	C	From Leg	4.00	0.0000	195.00	No Ice	1.98	1.04	64
			-3.00			1/2" Ice	2.15	1.18	81



Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

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	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
TA08025-B605 RRU (P-DishW-Alpha)	A	From Leg	0.00	0.0000	195.00	1" Ice 2.33	1.32	100
						2" Ice 2.72	1.63	148
			4.00			No Ice 1.98	1.20	75
			3.00			1/2" Ice 2.15	1.34	93
			0.00			1" Ice 2.33	1.49	114
TA08025-B605 RRU (P-DishW-Beta)	B	From Leg		0.0000	195.00	2" Ice 2.72	1.81	165
			4.00			No Ice 1.98	1.20	75
			3.00			1/2" Ice 2.15	1.34	93
			0.00			1" Ice 2.33	1.49	114
						2" Ice 2.72	1.81	165
TA08025-B605 RRU (P-DishW-Gamma)	C	From Leg	4.00	0.0000	195.00	No Ice 1.98	1.20	75
			3.00			1/2" Ice 2.15	1.34	93
			0.00			1" Ice 2.33	1.49	114
						2" Ice 2.72	1.81	165
						No Ice 10.80	6.50	352
Commscope MTC3975083 8'SectorFrame (P-DishW-Alpha)	A	From Leg	3.00	0.0000	195.00	1/2" Ice 13.60	8.20	440
			0.00			1" Ice 16.40	9.90	528
			0.00			2" Ice 22.00	13.30	704
						No Ice 10.80	6.50	352
						1/2" Ice 13.60	8.20	440
Commscope MTC3975083 8'SectorFrame (P-DishW-Beta)	B	From Leg	3.00	0.0000	195.00	1" Ice 16.40	9.90	528
			0.00			2" Ice 22.00	13.30	704
						No Ice 10.80	6.50	352
						1/2" Ice 13.60	8.20	440
						1" Ice 16.40	9.90	528
Commscope MTC3975083 8'SectorFrame (P-DishW-Gamma)	C	From Leg	3.00	0.0000	195.00	2" Ice 22.00	13.30	704
			0.00			No Ice 10.80	6.50	352
			0.00			1/2" Ice 13.60	8.20	440
			0.00			1" Ice 16.40	9.90	528
						2" Ice 22.00	13.30	704
RDIDC-9181-PF-48 (P-DishW)	C	None		0.0000	195.00	No Ice 3.79	2.51	32
						1/2" Ice 4.04	2.73	63
						1" Ice 4.30	2.95	99
						2" Ice 4.84	3.42	181

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight lb
Andrew D10F-21, T802J	A	Paraboloid w/Shroud (HP)	From Leg	1.50	8.0000		83.00	10.00	No Ice 80.00	470
				0.00					1/2" Ice 81.34	870
				0.00					1" Ice 82.68	1270
									2" Ice 85.36	2070
									No Ice 80.00	470
Andrew D10F-21, T802J	A	Paraboloid w/Shroud (HP)	From Leg	1.50	10.0000		65.00	10.00	1/2" Ice 81.34	870
				0.00					1" Ice 82.68	1270
				0.00					2" Ice 85.36	2070

Load Combinations

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job	235' GUYED TOWER ANALYSIS	Page	21 of 40
	Project	Dish Wireless - SYSYR00275A - Canandaigua	Date	08:37:56 05/25/21
	Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

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	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	175264	-253	-208
	Max. H _x	12	104735	672	351
	Max. H _z	2	113905	3	640
	Max. M _x	1	0	0	-21
	Max. M _z	1	0	0	-21
	Max. Torsion	5	1	-619	5
	Min. Vert	1	79763	0	-21
	Min. H _x	5	111667	-619	5
	Min. H _z	8	104143	2	-748
	Min. M _x	1	0	0	-21
	Min. M _z	1	0	0	-21
	Min. Torsion	11	0	613	3
	Max. Vert	10	-2349	-867	500
Guy C @ 120 ft Elev 0 ft					

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Azimuth 240 deg					
	Max. H _x	10	-2349	-867	500
	Max. H _z	4	-34267	-18983	10978
	Min. Vert	5	-35264	-19717	10898
	Min. H _x	5	-35264	-19717	10898
	Min. H _z	10	-2349	-867	500
Guy B @ 120 ft Elev 0 ft	Max. Vert	6	-2271	825	476
Azimuth 120 deg					
	Max. H _x	11	-35308	19743	10909
	Max. H _z	13	-35273	19300	11636
	Min. Vert	11	-35308	19743	10909
	Min. H _x	6	-2271	825	476
	Min. H _z	6	-2271	825	476
Guy A @ 120 ft Elev 0 ft	Max. Vert	2	-2349	0	-1001
Azimuth 0 deg					
	Max. H _x	11	-19130	805	-12011
	Max. H _z	2	-2349	0	-1001
	Min. Vert	7	-35162	-427	-22464
	Min. H _x	5	-19053	-807	-11963
	Min. H _z	7	-35162	-427	-22464
Guy C @ 100 ft Elev 0 ft	Max. Vert	10	-1698	-1641	926
Azimuth 240 deg					
	Max. H _x	10	-1698	-1641	926
	Max. H _z	4	-14651	-14714	8560
	Min. Vert	4	-14651	-14714	8560
	Min. H _x	4	-14651	-14714	8560
	Min. H _z	10	-1698	-1641	926
Guy B @ 100 ft Elev 0 ft	Max. Vert	6	-1653	1666	945
Azimuth 120 deg					
	Max. H _x	12	-14977	14986	8711
	Max. H _z	12	-14977	14986	8711
	Min. Vert	12	-14977	14986	8711
	Min. H _x	6	-1653	1666	945
	Min. H _z	6	-1653	1666	945
Guy A @ 100 ft Elev 0 ft	Max. Vert	2	-1479	-2	-1600
Azimuth 0 deg					
	Max. H _x	11	-8848	379	-10011
	Max. H _z	2	-1479	-2	-1600
	Min. Vert	8	-15724	21	-18452
	Min. H _x	5	-8090	-377	-9035
	Min. H _z	8	-15724	21	-18452

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	79763	0	21	0	0	0
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	113905	-3	-640	0	0	0
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	108516	331	-503	0	0	0

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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by PB

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	104022	603	-321	0	0	0
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	111667	619	-5	0	0	-1
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	115795	607	350	0	0	0
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	111937	347	678	0	0	0
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	104143	-2	748	0	0	0
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	108590	-301	561	0	0	0
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	113805	-556	322	0	0	0
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	111819	-613	-3	0	0	0
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	104735	-672	-351	0	0	0
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	112343	-417	-597	0	0	0
1.2 Dead+1.0 Ice+1.0 Temp+Guy	173549	5	72	0	0	0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	175254	4	-222	0	0	0
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	175164	132	-163	0	0	0
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	175117	219	-46	0	0	0
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	175206	261	84	0	0	0
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	175264	253	208	0	0	0
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	175205	163	315	0	0	0
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	175117	6	348	0	0	0
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	175170	-139	294	0	0	0
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	175258	-221	193	0	0	0
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	175227	-252	81	0	0	0
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	175208	-231	-58	0	0	0
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	175226	-138	-184	0	0	0
Dead+Wind 0 deg - Service+Guy	80524	0	-227	0	0	0
Dead+Wind 30 deg - Service+Guy	80780	108	-169	0	0	0
Dead+Wind 60 deg - Service+Guy	81023	197	-92	0	0	0
Dead+Wind 90 deg - Service+Guy	80813	225	24	0	0	0
Dead+Wind 120 deg - Service+Guy	80517	227	149	0	0	0
Dead+Wind 150 deg - Service+Guy	80819	138	252	0	0	0
Dead+Wind 180 deg - Service+Guy	81029	0	261	0	0	0
Dead+Wind 210 deg -	80790	-112	208	0	0	0

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Service+Guy						
Dead+Wind 240 deg -	80533	-203	137	0	0	0
Service+Guy						
Dead+Wind 270 deg -	80824	-224	26	0	0	0
Service+Guy						
Dead+Wind 300 deg -	81062	-219	-104	0	0	0
Service+Guy						
Dead+Wind 330 deg -	80813	-132	-213	0	0	0
Service+Guy						

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	235 - 215	4.355	37	0.2930	0.1650
T2	215 - 195	3.146	37	0.2667	0.1488
T3	195 - 185	2.120	37	0.2078	0.1225
T4	185 - 178.333	1.685	37	0.1748	0.0924
T5	178.333 - 171.667	1.441	37	0.1462	0.0941
T6	171.667 - 165	1.258	37	0.1215	0.0957
T7	165 - 145	1.116	37	0.1010	0.0965
T8	145 - 125	0.806	37	0.0606	0.1125
T9	125 - 120	0.616	37	0.0345	0.1151
T10	120 - 100	0.588	32	0.0282	0.0872
T11	100 - 80	0.578	32	0.0109	0.1102
T12	80 - 60	0.561	32	0.0205	0.1540
T13	60 - 40	0.455	33	0.0254	0.0954
T14	40 - 20	0.362	32	0.0293	0.1256
T15	20 - 5	0.210	32	0.0433	0.1199
T16	5 - 0	0.054	32	0.0501	0.1053

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
235.00	Flash Beacon Lighting	37	4.355	0.2930	0.1650	85136
230.00	Nudd 12' booms (set of 3)	37	4.044	0.2885	0.1604	85136
221.83	Guy	37	3.545	0.2790	0.1534	32330
195.00	MX08FRO665-20 w. Mtg Pipe	37	2.120	0.2078	0.1225	23085
178.33	Guy	37	1.441	0.1462	0.0941	8279
142.00	4-Bay Dipole	37	0.772	0.0563	0.1227	37682
117.00	OB Light	32	0.579	0.0245	0.1071	27088
113.17	Guy	32	0.573	0.0200	0.1186	35999
83.00	Andrew D10F-21, T802J	32	0.570	0.0188	0.1580	35510
65.00	Andrew D10F-21, T802J	33	0.483	0.0251	0.1043	118135
60.50	Guy	33	0.458	0.0254	0.0958	62133

Maximum Tower Deflections - Design Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	235 - 215	28.101	6	1.6585	0.6540
T2	215 - 195	21.201	6	1.5706	0.5953
T3	195 - 185	14.982	6	1.3177	0.4958
T4	185 - 178.333	12.235	6	1.1726	0.4120
T5	178.333 - 171.667	10.601	6	1.0504	0.3942
T6	171.667 - 165	9.222	6	0.9402	0.3956
T7	165 - 145	8.016	6	0.8399	0.3971
T8	145 - 125	5.087	6	0.5940	0.4194
T9	125 - 120	3.089	13	0.3807	0.4102
T10	120 - 100	2.800	13	0.3270	0.3444
T11	100 - 80	2.169	13	0.1501	0.4466
T12	80 - 60	1.997	8	0.0992	0.5798
T13	60 - 40	1.588	8	0.0929	0.3301
T14	40 - 20	1.228	8	0.1050	0.3591
T15	20 - 5	0.700	8	0.1471	0.3327
T16	5 - 0	0.179	8	0.1670	0.2862

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
235.00	Flash Beacon Lighting	6	28.101	1.6585	0.6540	23829
230.00	Nudd 12' booms (set of 3)	6	26.346	1.6469	0.6397	23829
221.83	Guy	6	23.510	1.6172	0.6160	9048
195.00	MX08FRO665-20 w. Mtg Pipe	6	14.982	1.3177	0.4958	4698
178.33	Guy	6	10.601	1.0504	0.3942	2000
142.00	4-Bay Dipole	6	4.729	0.5614	0.4357	5293
117.00	OB Light	13	2.657	0.2952	0.3754	4080
113.17	Guy	13	2.505	0.2561	0.3977	4782
83.00	Andrew D10F-21, T802J	8	2.035	0.1009	0.5911	11503
65.00	Andrew D10F-21, T802J	8	1.695	0.0954	0.3792	25015
60.50	Guy	8	1.599	0.0931	0.3329	17696

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	235	Leg	A325N	0.7500	4	2005	30101	0.067 ✓	1	Bolt Tension
T2	215	Leg	A325N	0.7500	3	6281	30101	0.209 ✓	1	Bolt Tension
T3	195	Leg	A325N	0.7500	3	11084	30101	0.368 ✓	1	Bolt Tension
T4	185	Leg	A325N	0.7500	3	8092	30101	0.269 ✓	1	Bolt Tension
		Top Guy Pull-Off@178.33	A325N	0.6250	2	1255	13806	0.091 ✓	1	Bolt Shear
T7	165	Leg	A325N	0.7500	3	6285	30101	0.209 ✓	1	Bolt Tension



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EVEREST INFRASTRUCTURE (637567)

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T8	145	Leg	A325N	0.7500	3	6224	30101	0.207 ✓	1	Bolt Tension
T9	125	Leg	A325N	0.7500	3	6320	30101	0.210 ✓	1	Bolt Tension
T10	120	Leg	A325N	0.7500	3	5163	30101	0.172 ✓	1	Bolt Tension
T11	100	Leg	A325N	0.7500	3	5457	30101	0.181 ✓	1	Bolt Tension
T12	80	Leg	A325N	0.7500	3	5714	30101	0.190 ✓	1	Bolt Tension
T13	60	Leg	A325N	0.7500	3	6643	30101	0.221 ✓	1	Bolt Tension
T14	40	Leg	A325N	0.7500	3	6705	30101	0.223 ✓	1	Bolt Tension
T15	20	Leg	A325N	0.7500	3	6560	30101	0.218 ✓	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	221.83 (A) (571)	7/16 EHS	2080	20800	7760	12480	1.000	1.608 ✓
	221.83 (A) (572)	7/16 EHS	2080	20800	8276	12480	1.000	1.508 ✓
	221.83 (B) (565)	7/16 EHS	2080	20800	8313	12480	1.000	1.501 ✓
	221.83 (B) (566)	7/16 EHS	2080	20800	8355	12480	1.000	1.494 ✓
	221.83 (C) (559)	7/16 EHS	2080	20800	8361	12480	1.000	1.493 ✓
	221.83 (C) (560)	7/16 EHS	2080	20800	7752	12480	1.000	1.610 ✓
T5	178.33 (A) (592)	3/4 EHS	4081	58300	12715	34980	1.000	2.751 ✓
	178.33 (A) (593)	3/4 EHS	4081	58300	13969	34980	1.000	2.504 ✓
	178.33 (B) (586)	3/4 EHS	4081	58300	14026	34980	1.000	2.494 ✓
	178.33 (B) (587)	3/4 EHS	4081	58300	14121	34980	1.000	2.477 ✓
	178.33 (C) (577)	3/4 EHS	4081	58300	14176	34980	1.000	2.467 ✓
	178.33 (C) (578)	3/4 EHS	4081	58300	12661	34980	1.000	2.763 ✓
T10	113.17 (A) (610)	9/16 EHS	3500	35000	6477	21000	1.000	3.242 ✓
	113.17 (A) (611)	9/16 EHS	3500	35000	6803	21000	1.000	3.087 ✓
	113.17 (B) (604)	9/16 EHS	3500	35000	6281	21000	1.000	3.344 ✓
	113.17 (B) (605)	9/16 EHS	3500	35000	6865	21000	1.000	3.059 ✓
	113.17 (C) (598)	9/16 EHS	3500	35000	6752	21000	1.000	3.110 ✓
	113.17 (C) (599)	9/16 EHS	3500	35000	6004	21000	1.000	3.497 ✓

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.	
T12	60.50 (A) (628)	1/2 EHS	2690	26900	5582	16140	1.000	2.891	✓
	60.50 (A) (629)	1/2 EHS	2690	26900	5876	16140	1.000	2.747	✓
	60.50 (B) (622)	1/2 EHS	2690	26900	4901	16140	1.000	3.293	✓
	60.50 (B) (623)	1/2 EHS	2690	26900	5549	16140	1.000	2.908	✓
	60.50 (C) (616)	1/2 EHS	2690	26900	5526	16140	1.000	2.921	✓
	60.50 (C) (617)	1/2 EHS	2690	26900	4883	16140	1.000	3.305	✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	P 2.875"OD x 0.203"	20.00	3.17	40.1 K=1.00	1.7040	-27260	68173	0.400 ¹ ✓
T2	215 - 195	P 2.875"OD x 0.203"	20.00	3.17	40.1 K=1.00	1.7040	-44374	68173	0.651 ¹ ✓
T3	195 - 185	1 7/8	10.00	3.00	38.4 K=0.50	2.7612	-61074	111553	0.547 ¹ ✓
T4	185 - 178.333	1 7/8	6.67	3.08	39.5 K=0.50	2.7612	-72616	110878	0.655 ¹ ✓
T5	178.333 - 171.667	1 7/8	6.67	3.33	42.7 K=0.50	2.7612	-70302	108767	0.646 ¹ ✓
T6	171.667 - 165	1 7/8	6.67	3.08	39.5 K=0.50	2.7612	-68774	110878	0.620 ¹ ✓
T7	165 - 145	1 7/8	20.00	3.17	40.5 K=0.50	2.7612	-64878	110188	0.589 ¹ ✓
T8	145 - 125	1 7/8	20.00	3.17	81.1 K=1.00	2.7612	-56569	76846	0.736 ¹ ✓
T9	125 - 120	1 7/8	5.00	4.00	51.2 K=0.50	2.7612	-56878	102580	0.554 ¹ ✓
T10	120 - 100	1 7/8	20.00	3.17	40.5 K=0.50	2.7612	-58258	110188	0.529 ¹ ✓
T11	100 - 80	1 7/8	20.00	3.17	81.1 K=1.00	2.7612	-49110	76846	0.639 ¹ ✓
T12	80 - 60	1 7/8	20.00	3.17	40.5 K=0.50	2.7612	-51475	110188	0.467 ¹ ✓
T13	60 - 40	1 7/8	20.00	3.17	40.5 K=0.50	2.7612	-59785	110188	0.543 ¹ ✓
T14	40 - 20	1 7/8	20.00	3.17	40.5 K=0.50	2.7612	-60347	110188	0.548 ¹ ✓
T15	20 - 5	1 7/8	15.00	3.50	44.8 K=0.50	2.7612	-60355	107293	0.563 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T16	5 - 0	1 7/8	5.39	1.21	31.1 K=1.00	2.7612	-64248	115788	0.555 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	195 - 185	1 1/8	4.61	4.40	131.5 K=0.70	0.9940	-6433	12954	0.497 ¹ ✓
T4	185 - 178.333	1 1/8	4.66	4.46	133.1 K=0.70	0.9940	-6482	12675	0.511 ¹ ✓
T5	178.333 - 171.667	1 1/8	4.83	2.31	98.5 K=1.00	0.9940	-4787	19323	0.248 ¹ ✓
T6	171.667 - 165	1 1/8	4.66	4.46	133.1 K=0.70	0.9940	-3056	12675	0.241 ¹ ✓
T7	165 - 145	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-2765	12381	0.223 ¹ ✓
T8	145 - 125	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-1178	12381	0.095 ¹ ✓
T9	125 - 120	1 1/8	5.32	5.08	151.7 K=0.70	0.9940	-1009	9764	0.103 ¹ ✓
T10	120 - 100	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-4691	12381	0.379 ¹ ✓
T11	100 - 80	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-4031	12381	0.326 ¹ ✓
T12	80 - 60	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-6444	12381	0.520 ¹ ✓
T13	60 - 40	1	4.72	4.51	151.5 K=0.70	0.7854	-1612	7729	0.209 ¹ ✓
T14	40 - 20	1 1/8	4.72	4.51	134.7 K=0.70	0.9940	-1009	12381	0.082 ¹ ✓
T15	20 - 5	1	4.95	4.73	158.9 K=0.70	0.7854	-1120	7028	0.159 ¹ ✓
T16	5 - 0	1	1.65	1.43	48.2 K=0.70	0.7854	-2389	22523	0.106 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	L1 1/2x1 1/2x3/16	3.50	3.26	93.4	0.5273	-8153	13781	0.592 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.70 93.4	0.5273	-5931	13781	0.430 ¹ ✓
T3	195 - 185	1	3.50	3.34	K=0.70 112.3	0.7854	-1058	13093	0.081 ¹ ✓
T4	185 - 178.333	1	3.50	3.34	K=0.70 112.3	0.7854	-1548	13093	0.118 ¹ ✓
T5	178.333 - 171.667	1	3.50	3.34	K=0.70 112.3	0.7854	-1218	13093	0.093 ¹ ✓
T6	171.667 - 165	1	3.50	3.34	K=0.70 112.3	0.7854	-1191	13093	0.091 ¹ ✓
T7	165 - 145	1	3.50	3.34	K=0.70 112.3	0.7854	-1124	13093	0.086 ¹ ✓
T8	145 - 125	1	3.50	3.34	K=0.70 112.3	0.7854	-1209	13093	0.092 ¹ ✓
T10	120 - 100	1	3.50	3.34	K=0.70 112.3	0.7854	-4104	13093	0.313 ¹ ✓
T11	100 - 80	1	3.50	3.34	K=0.70 112.3	0.7854	-1539	13093	0.118 ¹ ✓
T12	80 - 60	1	3.50	3.34	K=0.70 112.3	0.7854	-974	13093	0.074 ¹ ✓
T13	60 - 40	7/8	3.50	3.34	K=0.70 128.4	0.6013	-1118	8179	0.137 ¹ ✓
T14	40 - 20	1	3.50	3.34	K=0.70 112.3	0.7854	-1045	13093	0.080 ¹ ✓
T15	20 - 5	7/8	3.50	3.34	K=0.70 128.4	0.6013	-1045	8179	0.128 ¹ ✓
T16	5 - 0	7/8	2.36	2.21	K=0.70 84.7	0.6013	-1176	13352	0.088 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.70 93.4	0.5273	-3291	13781	0.239 ¹ ✓
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.70 93.4	0.5273	-2723	13781	0.198 ¹ ✓
T3	195 - 185	1 1/8	3.50	3.34	K=0.70 99.9	0.9940	-2508	19051	0.132 ¹ ✓
T4	185 - 178.333	1 1/8	3.50	3.34	K=0.70 99.9	0.9940	-3196	19051	0.168 ¹ ✓
T7	165 - 145	1 1/8	3.50	3.34	K=0.70 99.9	0.9940	-1124	19051	0.059 ¹ ✓
T8	145 - 125	1 1/8	3.50	3.34	K=0.70 99.9	0.9940	-1209	19051	0.063 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	125 - 120	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-985	19051	0.052 ¹
T10	120 - 100	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1009	19051	0.053 ¹
T11	100 - 80	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1648	19051	0.087 ¹
T12	80 - 60	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-892	19051	0.047 ¹
T13	60 - 40	3 x 3/8	3.50	3.34	259.5 K=0.70	1.1250	-1036	3775	0.274 ¹
T14	40 - 20	KL/R > 200 (C) - 425 1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1045	19051	0.055 ¹
T15	20 - 5	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1045	19051	0.055 ¹
T16	5 - 0	1 1/8	3.15	2.99	89.4 K=0.70	0.9940	-1176	21142	0.056 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	L1 1/2x1 1/2x3/16	3.50	3.26	93.4 K=0.70	0.5273	-3294	13781	0.239 ¹
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	93.4 K=0.70	0.5273	-3863	13781	0.280 ¹
T3	195 - 185	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-2327	19051	0.122 ¹
T6	171.667 - 165	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1191	19051	0.063 ¹
T7	165 - 145	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1124	19051	0.059 ¹
T8	145 - 125	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1209	19051	0.063 ¹
T9	125 - 120	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-985	19051	0.052 ¹
T10	120 - 100	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1646	19051	0.086 ¹
T11	100 - 80	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1050	19051	0.055 ¹
T12	80 - 60	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-3378	19051	0.177 ¹
T13	60 - 40	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1036	19051	0.054 ¹
T14	40 - 20	1 1/8	3.50	3.34	99.9 K=0.70	0.9940	-1045	19051	0.055 ¹
T15	20 - 5	1 1/8	3.50	3.34	99.9	0.9940	-1045	19051	0.055 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
K=0.70									✓

¹ P_u / φP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	185 - 178.333	1 1/4	3.50	3.34	128.4 K=1.00	1.2272	-2419	16692	0.145 ¹ ✓

¹ P_u / φP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T10	120 - 100 (607)	L4x4x3/8	4.01	3.93	59.9 K=1.00	2.8600	-180	91351	0.002 ¹ ✓

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215 (563)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5216	46230	0.113 ¹ ✓
T1	235 - 215 (564)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5159	46230	0.112 ¹ ✓
T1	235 - 215 (569)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5199	46230	0.112 ¹ ✓
T1	235 - 215 (570)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5065	46230	0.110 ¹ ✓
T1	235 - 215 (575)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5221	46230	0.113 ¹ ✓
T1	235 - 215 (576)	L3x3x1/4	3.01	2.89	58.7 K=1.00	1.4400	-5063	46230	0.110 ¹ ✓
T5	178.333 - 171.667 (584)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-9590	96489	0.099 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	178.333 - 171.667 (585)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-10030	96489	0.104 ¹ ✓
T5	178.333 - 171.667 (590)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-10569	96489	0.110 ¹ ✓
T5	178.333 - 171.667 (591)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-9768	96489	0.101 ¹ ✓
T5	178.333 - 171.667 (596)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-10751	96489	0.111 ¹ ✓
T5	178.333 - 171.667 (597)	L4x4x3/8	3.01	2.94	44.7 K=1.00	2.8600	-9731	96489	0.101 ¹ ✓
T10	120 - 100 (602)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-6421	62397	0.103 ¹ ✓
T10	120 - 100 (603)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-6475	62397	0.104 ¹ ✓
T10	120 - 100 (608)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-5547	62397	0.089 ¹ ✓
T10	120 - 100 (609)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-5560	62397	0.089 ¹ ✓
T10	120 - 100 (614)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-6397	62397	0.103 ¹ ✓
T10	120 - 100 (615)	L4x4x3/8	7.50	7.35	111.9 K=1.00	2.8600	-5708	62397	0.091 ¹ ✓
T12	80 - 60 (620)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-5868	77850	0.075 ¹ ✓
T12	80 - 60 (621)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-6058	77850	0.078 ¹ ✓
T12	80 - 60 (626)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-5516	77850	0.071 ¹ ✓
T12	80 - 60 (627)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-5963	77850	0.077 ¹ ✓
T12	80 - 60 (632)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-5644	77850	0.073 ¹ ✓
T12	80 - 60 (633)	L4x4x3/8	5.78	5.78	88.1 K=1.00	2.8600	-6581	77850	0.085 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	P 2.875"OD x 0.203"	20.00	3.17	40.1	1.7040	5659	76682	0.074 ¹ ✓
T2	215 - 195	P 2.875"OD x 0.203"	20.00	3.17	40.1	1.7040	18843	76682	0.246 ¹ ✓



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Job

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Client

EVEREST INFRASTRUCTURE (637567)

Designed by

PB

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	195 - 185	1 7/8	10.00	3.00	76.8	2.7612	33253	124252	0.268 ¹
T4	185 - 178.333	1 7/8	6.67	3.08	78.9	2.7612	36442	124252	0.293 ¹
T5	178.333 - 171.667	1 7/8	6.67	3.33	85.3	2.7612	23288	124252	0.187 ¹
T6	171.667 - 165	1 7/8	6.67	3.08	78.9	2.7612	15550	124252	0.125 ¹
T7	165 - 145	1 7/8	20.00	3.17	81.1	2.7612	11123	124252	0.090 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	5/8	4.72	4.40	337.7	0.3068	6521	9940	0.656 ¹
T2	215 - 195	5/8	4.72	4.40	337.7	0.3068	5702	9940	0.574 ¹
T3	195 - 185	1 1/8	4.61	4.40	187.9	0.9940	6257	32206	0.194 ¹
T4	185 - 178.333	1 1/8	4.66	4.46	190.1	0.9940	6517	32206	0.202 ¹
T5	178.333 - 171.667	1 1/8	4.83	2.31	98.5	0.9940	862	32206	0.027 ¹
T6	171.667 - 165	1 1/8	4.66	4.46	190.1	0.9940	2772	32206	0.086 ¹
T7	165 - 145	1 1/8	4.72	4.51	192.4	0.9940	2638	32206	0.082 ¹
T8	145 - 125	1 1/8	4.72	4.51	192.4	0.9940	1186	32206	0.037 ¹
T9	125 - 120	1 1/8	5.32	5.08	216.7	0.9940	858	32206	0.027 ¹
T10	120 - 100	1 1/8	4.72	4.51	192.4	0.9940	4557	32206	0.141 ¹
T11	100 - 80	1 1/8	4.72	4.51	192.4	0.9940	3772	32206	0.117 ¹
T12	80 - 60	1 1/8	4.72	4.51	192.4	0.9940	6774	32206	0.210 ¹
T13	60 - 40	1	4.72	4.51	216.4	0.7854	1074	25447	0.042 ¹
T14	40 - 20	1 1/8	4.72	4.51	192.4	0.9940	645	32206	0.020 ¹
T15	20 - 5	1	4.95	4.73	227.0	0.7854	920	25447	0.036 ¹

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¹ $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	472	17086	0.028 ¹
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	769	17086	0.045 ¹
T3	195 - 185	1	3.50	3.34	160.5	0.7854	1058	25447	0.042 ¹
T4	185 - 178.333	1	3.50	3.34	160.5	0.7854	1606	25447	0.063 ¹
T5	178.333 - 171.667	1	3.50	3.34	160.5	0.7854	5685	25447	0.223 ¹
T6	171.667 - 165	1	3.50	3.34	160.5	0.7854	3004	25447	0.118 ¹
T7	165 - 145	1	3.50	3.34	160.5	0.7854	1124	25447	0.044 ¹
T8	145 - 125	1	3.50	3.34	160.5	0.7854	1209	25447	0.048 ¹
T10	120 - 100	1	3.50	3.34	160.5	0.7854	4999	25447	0.196 ¹
T11	100 - 80	1	3.50	3.34	160.5	0.7854	1779	25447	0.070 ¹
T12	80 - 60	1	3.50	3.34	160.5	0.7854	1064	25447	0.042 ¹
T13	60 - 40	7/8	3.50	3.34	183.4	0.6013	1819	19483	0.093 ¹
T14	40 - 20	1	3.50	3.34	160.5	0.7854	1045	25447	0.041 ¹
T15	20 - 5	7/8	3.50	3.34	183.4	0.6013	1045	19483	0.054 ¹
T16	5 - 0	7/8	1.57	1.42	77.8	0.6013	1414	19483	0.073 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	769	17086	0.045 ¹
T3	195 - 185	1 1/8	3.50	3.34	142.7	0.9940	2007	32206	0.062 ¹
T4	185 - 178.333	1 1/8	3.50	3.34	142.7	0.9940	2382	32206	0.074 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	165 - 145	1 1/8	3.50	3.34	142.7	0.9940	1124	32206	0.035 ¹ ✓
T8	145 - 125	1 1/8	3.50	3.34	142.7	0.9940	1209	32206	0.038 ¹ ✓
T9	125 - 120	1 1/8	3.50	3.34	142.7	0.9940	985	32206	0.031 ¹ ✓
T10	120 - 100	1 1/8	3.50	3.34	142.7	0.9940	1009	32206	0.031 ¹ ✓
T11	100 - 80	1 1/8	3.50	3.34	142.7	0.9940	1681	32206	0.052 ¹ ✓
T12	80 - 60	1 1/8	3.50	3.34	142.7	0.9940	987	32206	0.031 ¹ ✓
T13	60 - 40	3 x 3/8	3.50	3.34	370.7	1.1250	1036	36450	0.028 ¹ ✓
T14	40 - 20	1 1/8	3.50	3.34	142.7	0.9940	1045	32206	0.032 ¹ ✓
T15	20 - 5	1 1/8	3.50	3.34	142.7	0.9940	1045	32206	0.032 ¹ ✓
T16	5 - 0	1 1/8	3.15	2.99	127.7	0.9940	8954	32206	0.278 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	472	17086	0.028 ¹ ✓
T2	215 - 195	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	769	17086	0.045 ¹ ✓
T3	195 - 185	1 1/8	3.50	3.34	142.7	0.9940	3161	32206	0.098 ¹ ✓
T6	171.667 - 165	1 1/8	3.50	3.34	142.7	0.9940	1204	32206	0.037 ¹ ✓
T7	165 - 145	1 1/8	3.50	3.34	142.7	0.9940	1124	32206	0.035 ¹ ✓
T8	145 - 125	1 1/8	3.50	3.34	142.7	0.9940	1209	32206	0.038 ¹ ✓
T9	125 - 120	1 1/8	3.50	3.34	142.7	0.9940	985	32206	0.031 ¹ ✓
T10	120 - 100	1 1/8	3.50	3.34	142.7	0.9940	1829	32206	0.057 ¹ ✓
T11	100 - 80	1 1/8	3.50	3.34	142.7	0.9940	1050	32206	0.033 ¹ ✓
T12	80 - 60	1 1/8	3.50	3.34	142.7	0.9940	3559	32206	0.111 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T13	60 - 40	1 1/8	3.50	3.34	142.7	0.9940	1036	32206	0.032 ¹
T14	40 - 20	1 1/8	3.50	3.34	142.7	0.9940	1045	32206	0.032 ¹
T15	20 - 5	1 1/8	3.50	3.34	142.7	0.9940	6609	32206	0.205 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	185 - 178.333	1 1/4	3.50	3.34	128.4	1.2272	2510	39761	0.063 ¹

¹ P_u / φP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215 (561)	L2x2x1/4	4.37	4.20	82.7	0.9380	8724	30391	0.287 ¹
T1	235 - 215 (562)	L2x2x1/4	4.37	4.20	82.7	0.9380	8739	30391	0.288 ¹
T1	235 - 215 (567)	L2x2x1/4	4.37	4.20	82.7	0.9380	8248	30391	0.271 ¹
T1	235 - 215 (568)	L2x2x1/4	4.37	4.20	82.7	0.9380	8776	30391	0.289 ¹
T1	235 - 215 (573)	L2x2x1/4	4.37	4.20	82.7	0.9380	8259	30391	0.272 ¹
T1	235 - 215 (574)	L2x2x1/4	4.37	4.20	82.7	0.9380	8780	30391	0.289 ¹
T5	178.333 - 171.667 (579)	L4x4x3/8	4.31	4.31	42.1	2.8600	15059	92664	0.163 ¹
T5	178.333 - 171.667 (580)	L4x4x3/8	4.31	4.31	42.1	2.8600	14050	92664	0.152 ¹
T5	178.333 - 171.667 (588)	L4x4x3/8	4.31	4.31	42.1	2.8600	13744	92664	0.148 ¹
T5	178.333 - 171.667 (589)	L4x4x3/8	4.31	4.31	42.1	2.8600	14550	92664	0.157 ¹
T5	178.333 - 171.667 (594)	L4x4x3/8	4.31	4.31	42.1	2.8600	13688	92664	0.148 ¹
T5	178.333 -	L4x4x3/8	4.31	4.31	42.1	2.8600	14924	92664	0.161 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	171.667 (595)								✓
T10	120 - 100 (600)	L4x4x3/8	4.01	3.93	38.4	2.8600	5447	92664	0.059 ¹ ✓
T10	120 - 100 (601)	L4x4x3/8	4.01	3.93	38.4	2.8600	5604	92664	0.060 ¹ ✓
T10	120 - 100 (606)	L4x4x3/8	4.01	3.93	38.4	2.8600	5480	92664	0.059 ¹ ✓
T10	120 - 100 (607)	L4x4x3/8	4.01	3.93	38.4	2.8600	5444	92664	0.059 ¹ ✓
T10	120 - 100 (612)	L4x4x3/8	4.01	3.93	38.4	2.8600	5702	92664	0.062 ¹ ✓
T10	120 - 100 (613)	L4x4x3/8	4.01	3.93	38.4	2.8600	5529	92664	0.060 ¹ ✓
T12	80 - 60 (618)	L4x4x3/8	4.01	3.93	38.4	2.8600	5059	92664	0.055 ¹ ✓
T12	80 - 60 (619)	L4x4x3/8	4.01	3.93	38.4	2.8600	4835	92664	0.052 ¹ ✓
T12	80 - 60 (624)	L4x4x3/8	4.01	3.93	38.4	2.8600	4449	92664	0.048 ¹ ✓
T12	80 - 60 (625)	L4x4x3/8	4.01	3.93	38.4	2.8600	4881	92664	0.053 ¹ ✓
T12	80 - 60 (630)	L4x4x3/8	4.01	3.93	38.4	2.8600	4571	92664	0.049 ¹ ✓
T12	80 - 60 (631)	L4x4x3/8	4.01	3.93	38.4	2.8600	4907	92664	0.053 ¹ ✓

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	235 - 215 (563)	L3x3x1/4	3.01	2.89	37.3	1.4400	6	46656	0.000 ¹ ✓
T1	235 - 215 (564)	L3x3x1/4	3.01	2.89	37.3	1.4400	10	46656	0.000 ¹ ✓
T1	235 - 215 (569)	L3x3x1/4	3.01	2.89	37.3	1.4400	159	46656	0.003 ¹ ✓
T1	235 - 215 (570)	L3x3x1/4	3.01	2.89	37.3	1.4400	249	46656	0.005 ¹ ✓
T1	235 - 215 (575)	L3x3x1/4	3.01	2.89	37.3	1.4400	163	46656	0.003 ¹ ✓
T1	235 - 215 (576)	L3x3x1/4	3.01	2.89	37.3	1.4400	242	46656	0.005 ¹ ✓
T5	178.333 - 171.667 (584)	L4x4x3/8	3.01	2.94	28.6	2.8600	4010	92664	0.043 ¹ ✓
T5	178.333 - 171.667 (585)	L4x4x3/8	3.01	2.94	28.6	2.8600	2369	92664	0.026 ¹ ✓

 Armor Tower Inc 9 North Main Cortland, NY 13045 Phone: 607-591-5381 FAX: 866-870-0840	Job 235' GUYED TOWER ANALYSIS	Page 38 of 40
	Project Dish Wireless - SYSYR00275A - Canandaigua	Date 08:37:56 05/25/21
	Client EVEREST INFRASTRUCTURE (637567)	Designed by PB

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	178.333 - 171.667 (590)	L4x4x3/8	3.01	2.94	28.6	2.8600	2744	92664	0.030 ¹ ✓
T5	178.333 - 171.667 (591)	L4x4x3/8	3.01	2.94	28.6	2.8600	4156	92664	0.045 ¹ ✓
T5	178.333 - 171.667 (596)	L4x4x3/8	3.01	2.94	28.6	2.8600	2772	92664	0.030 ¹ ✓
T5	178.333 - 171.667 (597)	L4x4x3/8	3.01	2.94	28.6	2.8600	4087	92664	0.044 ¹ ✓
T12	80 - 60 (620)	L4x4x3/8	5.78	5.78	56.4	2.8600	1086	92664	0.012 ¹ ✓
T12	80 - 60 (621)	L4x4x3/8	5.78	5.78	56.4	2.8600	1661	92664	0.018 ¹ ✓
T12	80 - 60 (626)	L4x4x3/8	5.78	5.78	56.4	2.8600	1447	92664	0.016 ¹ ✓
T12	80 - 60 (627)	L4x4x3/8	5.78	5.78	56.4	2.8600	1047	92664	0.011 ¹ ✓
T12	80 - 60 (632)	L4x4x3/8	5.78	5.78	56.4	2.8600	1734	92664	0.019 ¹ ✓
T12	80 - 60 (633)	L4x4x3/8	5.78	5.78	56.4	2.8600	1474	92664	0.016 ¹ ✓

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail
T1	235 - 215	Leg	P 2.875"OD x 0.203"	3	-27260	68173	40.0	Pass
T2	215 - 195	Leg	P 2.875"OD x 0.203"	63	-44374	68173	65.1	Pass
T3	195 - 185	Leg	1 7/8	122	-61074	111553	54.7	Pass
T4	185 - 178.333	Leg	1 7/8	146	-72616	110878	65.5	Pass
T5	178.333 - 171.667	Leg	1 7/8	161	-70302	108767	64.6	Pass
T6	171.667 - 165	Leg	1 7/8	182	-68774	110878	62.0	Pass
T7	165 - 145	Leg	1 7/8	200	-64878	110188	58.9	Pass
T8	145 - 125	Leg	1 7/8	242	-56569	76846	73.6	Pass
T9	125 - 120	Leg	1 7/8	284	-56878	102580	55.4	Pass
T10	120 - 100	Leg	1 7/8	296	-58258	110188	52.9	Pass
T11	100 - 80	Leg	1 7/8	339	-49110	76846	63.9	Pass
T12	80 - 60	Leg	1 7/8	381	-51475	110188	46.7	Pass
T13	60 - 40	Leg	1 7/8	423	-59785	110188	54.3	Pass
T14	40 - 20	Leg	1 7/8	465	-60347	110188	54.8	Pass
T15	20 - 5	Leg	1 7/8	507	-60355	107293	56.3	Pass
T16	5 - 0	Leg	1 7/8	537	-64248	115788	55.5	Pass
T1	235 - 215	Diagonal	5/8	41	6521	9940	65.6	Pass
T2	215 - 195	Diagonal	5/8	74	5702	9940	57.4	Pass
T3	195 - 185	Diagonal	1 1/8	132	-6433	12954	49.7	Pass
T4	185 - 178.333	Diagonal	1 1/8	159	-6482	12675	51.1	Pass
T5	178.333 - 171.667	Diagonal	1 1/8	169	-4787	19323	24.8	Pass
T6	171.667 - 165	Diagonal	1 1/8	191	-3056	12675	24.1	Pass
T7	165 - 145	Diagonal	1 1/8	239	-2765	12381	22.3	Pass
T8	145 - 125	Diagonal	1 1/8	281	-1178	12381	9.5	Pass



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	Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T9	125 - 120	Diagonal	1 1/8	292	-1009	9764	10.3	Pass
T10	120 - 100	Diagonal	1 1/8	323	-4691	12381	37.9	Pass
T11	100 - 80	Diagonal	1 1/8	377	-4031	12381	32.6	Pass
T12	80 - 60	Diagonal	1 1/8	389	-6444	12381	52.0	Pass
T13	60 - 40	Diagonal	1	461	-1612	7729	20.9	Pass
T14	40 - 20	Diagonal	1 1/8	502	-1009	12381	8.2	Pass
T15	20 - 5	Diagonal	1	515	-1120	7028	15.9	Pass
T16	5 - 0	Diagonal	1	546	-2389	22523	10.6	Pass
T1	235 - 215	Horizontal	L1 1/2x1 1/2x3/16	36	-8153	13781	59.2	Pass
T2	215 - 195	Horizontal	L1 1/2x1 1/2x3/16	76	-5931	13781	43.0	Pass
T3	195 - 185	Horizontal	1	133	-1058	13093	8.1	Pass
T4	185 - 178.333	Horizontal	1	155	-1548	13093	11.8	Pass
T5	178.333 - 171.667	Horizontal	1	165	5685	25447	22.3	Pass
T6	171.667 - 165	Horizontal	1	186	3004	25447	11.8	Pass
T7	165 - 145	Horizontal	1	211	-1124	13093	8.6	Pass
T8	145 - 125	Horizontal	1	253	-1209	13093	9.2	Pass
T10	120 - 100	Horizontal	1	325	-4104	13093	31.3	Pass
T11	100 - 80	Horizontal	1	351	-1539	13093	11.8	Pass
T12	80 - 60	Horizontal	1	392	-974	13093	7.4	Pass
T13	60 - 40	Horizontal	7/8	459	-1118	8179	13.7	Pass
T14	40 - 20	Horizontal	1	476	-1045	13093	8.0	Pass
T15	20 - 5	Horizontal	7/8	530	-1045	8179	12.8	Pass
T16	5 - 0	Horizontal	7/8	554	-1176	13352	8.8	Pass
T1	235 - 215	Top Girt	L1 1/2x1 1/2x3/16	6	-3291	13781	23.9	Pass
T2	215 - 195	Top Girt	L1 1/2x1 1/2x3/16	64	-2723	13781	19.8	Pass
T3	195 - 185	Top Girt	1 1/8	126	-2508	19051	13.2	Pass
T4	185 - 178.333	Top Girt	1 1/8	150	-3196	19051	16.8	Pass
T7	165 - 145	Top Girt	1 1/8	202	-1124	19051	5.9	Pass
T8	145 - 125	Top Girt	1 1/8	244	-1209	19051	6.3	Pass
T9	125 - 120	Top Girt	1 1/8	286	-985	19051	5.2	Pass
T10	120 - 100	Top Girt	1 1/8	298	-1009	19051	5.3	Pass
T11	100 - 80	Top Girt	1 1/8	342	-1648	19051	8.7	Pass
T12	80 - 60	Top Girt	1 1/8	383	-892	19051	4.7	Pass
T13	60 - 40	Top Girt	3 x 3/8	425	-1036	3775	27.4	Pass
T14	40 - 20	Top Girt	1 1/8	467	-1045	19051	5.5	Pass
T15	20 - 5	Top Girt	1 1/8	509	-1045	19051	5.5	Pass
T16	5 - 0	Top Girt	1 1/8	540	8954	32206	27.8	Pass
T1	235 - 215	Bottom Girt	L1 1/2x1 1/2x3/16	7	-3294	13781	23.9	Pass
T2	215 - 195	Bottom Girt	L1 1/2x1 1/2x3/16	67	-3863	13781	28.0	Pass
T3	195 - 185	Bottom Girt	1 1/8	129	-2327	19051	12.2	Pass
T6	171.667 - 165	Bottom Girt	1 1/8	187	-1191	19051	6.3	Pass
T7	165 - 145	Bottom Girt	1 1/8	205	-1124	19051	5.9	Pass
T8	145 - 125	Bottom Girt	1 1/8	247	-1209	19051	6.3	Pass
T9	125 - 120	Bottom Girt	1 1/8	289	-985	19051	5.2	Pass
T10	120 - 100	Bottom Girt	1 1/8	303	-1646	19051	8.6	Pass
T11	100 - 80	Bottom Girt	1 1/8	344	-1050	19051	5.5	Pass
T12	80 - 60	Bottom Girt	1 1/8	387	-3378	19051	17.7	Pass
T13	60 - 40	Bottom Girt	1 1/8	428	-1036	19051	5.4	Pass
T14	40 - 20	Bottom Girt	1 1/8	470	-1045	19051	5.5	Pass
T15	20 - 5	Bottom Girt	1 1/8	513	6609	32206	20.5	Pass
T1	235 - 215	Guy A@221.833	7/16	572	8276	12480	66.3	Pass
T5	178.333 - 171.667	Guy A@178.333	3/4	593	13969	34980	39.9	Pass
T10	120 - 100	Guy A@113.167	9/16	611	6803	21000	32.4	Pass
T12	80 - 60	Guy A@60.5	1/2	629	5876	16140	36.4	Pass
T1	235 - 215	Guy B@221.833	7/16	566	8355	12480	66.9	Pass
T5	178.333 - 171.667	Guy B@178.333	3/4	587	14121	34980	40.4	Pass
T10	120 - 100	Guy B@113.167	9/16	605	6865	21000	32.7	Pass
T12	80 - 60	Guy B@60.5	1/2	623	5549	16140	34.4	Pass



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Client	EVEREST INFRASTRUCTURE (637567)	Designed by	PB

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	235 - 215	Guy C@221.833	7/16	559	8361	12480	67.0	Pass
T5	178.333 - 171.667	Guy C@178.333	3/4	577	14176	34980	40.5	Pass
T10	120 - 100	Guy C@113.167	9/16	598	6752	21000	32.2	Pass
T12	80 - 60	Guy C@60.5	1/2	616	5526	16140	34.2	Pass
T4	185 - 178.333	Top Guy Pull-Off@178.333	1 1/4	582	-2419	16692	14.5	Pass
T1	235 - 215	Torque Arm Top@221.833	L2x2x1/4	574	8780	30391	28.9	Pass
T5	178.333 - 171.667	Torque Arm Top@178.333	L4x4x3/8	579	15059	92664	16.3	Pass
T10	120 - 100	Torque Arm Top@113.167	L4x4x3/8	612	5702	92664	6.2	Pass
T12	80 - 60	Torque Arm Top@60.5	L4x4x3/8	618	5059	92664	5.5	Pass
T1	235 - 215	Torque Arm Bottom@221.833	L3x3x1/4	575	-5221	46230	11.3	Pass
T5	178.333 - 171.667	Torque Arm Bottom@178.333	L4x4x3/8	596	-10751	96489	11.1	Pass
T10	120 - 100	Torque Arm Bottom@113.167	L4x4x3/8	603	-6475	62397	10.4	Pass
T12	80 - 60	Torque Arm Bottom@60.5	L4x4x3/8	633	-6581	77850	8.5	Pass
						Summary		
						Leg (T8)	73.6	Pass
						Diagonal (T1)	65.6	Pass
						Horizontal (T1)	59.2	Pass
						Top Girt (T16)	27.8	Pass
						Bottom Girt (T2)	28.0	Pass
						Guy A (T1)	66.3	Pass
						Guy B (T1)	66.9	Pass
						Guy C (T1)	67.0	Pass
						Top Guy Pull-Off (T4)	14.5	Pass
						Torque Arm Top (T1)	28.9	Pass
						Torque Arm Bottom (T1)	11.3	Pass
						Bolt Checks	36.8	Pass
						RATING =	73.6	Pass

Inner GUY ANCHOR ANALYSIS

Customer: Everest Infrastructure
Project: DishWireless- Canandaigua
5/25/21 8:44 AM

FACTORED REACTIONS:

Vertical: 15.7 kips
Horizontal: 18.5 kips
Resultant: 24.3 kips
Hor. Angle ϕ : 40.3 °
Submerged? No
Depth to Water: 7.5 ft

Soil Unit Wt 110 lb/ft³
Soil Gs: 2.65
Sub.Soil Wt 68.5 lb/ft³

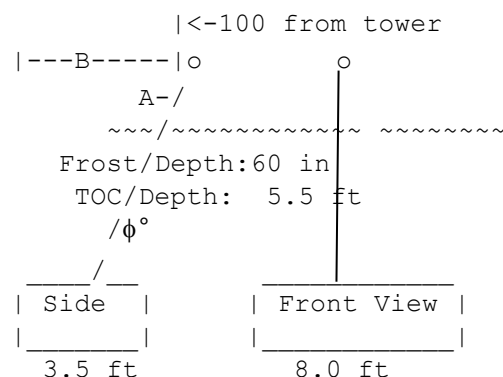
Conc. Wt: 150 lb/ft³
Rebar Fy: 60000 psi
Conc. f'c: 3000 psi

CONCRETE WEIGHT:

Block Volume 2.1 cu yds
Block Wt 8.4 kips
3-block Volume: 6.2 cu yds

SOIL FRUSTUM WEIGHT:

Frustum: 30 °
Block: 16.9 kips
Edges: 22.1 kips
Corners: 8.1 kips
Total Wt: 47.2 kips
Excavatn: 210 cuft



HORIZONTAL CAPACITY:

Check anchor shaft embedment? OK

Based on Normal Soils

Load @	6.5 ft	Vertical	Horizontal
Stress:	5200 psf	Design Loads: 15.7	18.5 kips
Load:	83.2 kip	TIA 9.4.1- ϕ Rn: 41.7	62.4 kips
		% Loaded: 38%	30% OK

GUY ANCHOR SHAFT:

Hole QTY 5 holes
Bar Qty: (1) S6x12.5
Fy/Fu: 36/58 ksi
Shaft Ag: 3.66 in²
Capacity 105.4 kips TIA 4.6.3
% Loaded 23.0% OK

ANCHOR ROD LENGTH:

Minimum: 12.8 ft
Maximum: 14.7 ft
Recommend: 13.0 ft
Actual: 10 ft

Codes: ACI 318, TIA 222-H

Outer GUY ANCHOR ANALYSIS

Customer: Everest Infrastructure
Project: DishWireless- Canandaigua
5/25/21 8:45 AM

FACTORED REACTIONS:

Vertical: 35.3 kips
Horizontal: 22.6 kips
Resultant: 41.9 kips
Hor. Angle ϕ : 57.4 °

Submerged? No
Depth to Water: 8 ft

Soil Unit Wt 110 lb/ft³
Soil Gs: 2.65
Sub.Soil Wt 68.5 lb/ft³

Conc. Wt: 150 lb/ft³
Rebar Fy: 60000 psi
Conc. f'c: 3000 psi

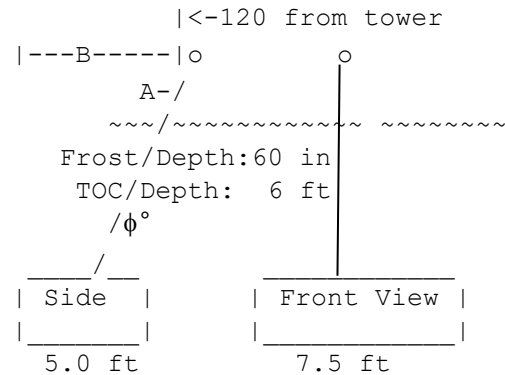
CONCRETE WEIGHT:

Block Volume 2.8 cu yds
Block Wt 11.3 kips
3-block Volume: 8.3 cu yds

SOIL FRUSTUM WEIGHT:

Frustum: 30 °
Block: 24.8 kips
Edges: 28.6 kips
Corners: 10.6 kips
Total Wt: 63.9 kips

Excavatn: 300 cuft

**HORIZONTAL CAPACITY:**

Check anchor shaft embedment? OK

Based on Normal Soils

Load @	7 ft	Vertical	Horizontal
Stress:	5600 psf	Design Loads: 35.3	22.6 kips
Load:	84.0 kip	TIA 9.4.1- ϕ Rn: 56.4	63.0 kips
		% Loaded: 63%	36% OK

GUY ANCHOR SHAFT:

Hole QTY 5 holes
Bar Qty: (1) 1.5" Rod
Fy/Fu: 48/85 ksi
Shaft Ag: 1.77 in²
Capacity 67.9 kips TIA 4.6.3
% Loaded 61.8% OK

ANCHOR ROD LENGTH:

Minimum: 10.9 ft
Maximum: 11.9 ft
Recommend: 11.0 ft
Actual: 10 ft

Codes: ACI 318, TIA 222-H

SQUARE FOOTING AND PIER ANALYSIS

Customer: Everest Infrastructure

Project: DishWireless- Canandaigua

5/25/21 8:45 AM

Factored Axial Load: 175.3 kips

Base Shear: 0.8 kips

DIMENSIONS:

Round Pier

.00ft

Frost Depth:

5.ft

3.50ft

8.00ft

.00ft

3'-6"

.ft

CONCRETE PROPERTIES:

f'c: 3000 psi

Fy: 60000 psi

SOIL PROPERTIES:

Dry Unit Wt: 100 pcf

Saturated Unit Wt: 120 pcf

Depth to Watertable: 6 ft

BEARING CALCULATIONS

EIA-F Normal soil: TIA 15.5.1

Concrete Wt: 33.60 kip

Qu: 5.40 ksf

Soil Wt: 0.00 kip

TIA 9.4.1

5.40 ksf

$\phi_s = 1.0$

Total Overburden: 33.60 kip

Total Bearing Stress:

3 ksf

%Loaded: 62.4%

Codes: ACI 318, TIA 222-H