



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

March 19, 2024

Carolyn Seeley
Real Estate Specialist II
Smartlink
6 Jasmine Rd
Oxford, MA 01540
carolyn.seeley@smartlinkgroup.com

RE: **EM-ATT-134-240207** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 64 Tolland Avenue, Stafford, Connecticut.
Acknowledgement of Complete Request.

Dear Carolyn Seeley:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 19, 2024, submitted in response to the Council's February 21, 2024 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

A handwritten signature in dark ink, appearing to read "Melanie Bachman".

Melanie Bachman
Executive Director

MAB/ANM/laf

From: Carolyn Seeley <carolyn.seeley@smartlinkgroup.com>
Sent: Tuesday, March 19, 2024 1:01 PM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter - EM-ATT-134-240207 – (Tolland Avenue) Stafford

Hi Lisa,

Attached are the following requested documents.

- Original Zoning or no record memo
- Updated Structural Analysis

Thank you,

Carolyn Seeley
Real Estate Specialist II
Smartlink
c. 978-760-5577



03/19/2024

Memo: No Initial Zoning Decision Found

Upon consulting with the Building Department it was determined that no initial zoning decision for this tower could be found. The Building Dept phone number is (860) 684-1775.

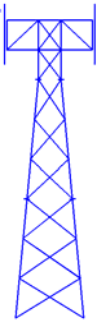
Carolyn Seeley
Real Estate Specialist
Smartlink



FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com



Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
March 18, 2024

Nudd Job Number: 124-23005

Site Location: Tolland Avenue (64 Tolland Avenue, Stafford, CT 06076, Tolland County)

Subject: Structural Analysis of an existing 180 ft Guyed Tower

Fred A. Nudd Corporation has completed a structural analysis of an existing 180 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation. The design loading criteria and strength design are per the ANSI/TIA-222-H standard, which will meet the structural design requirements per the 2021 International Building Code (Sec. 1609 & 3108), , and the 2022 Connecticut State Building Code. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 9898, dated December 29, 2003. Additional foundation dimensions and installation data was provided by Cordless Data Transfer. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new AT&T equipment. The new equipment to be installed, which included antennas, coax, mounts and associated hardware are listed on the following page, along with already installed cellular equipment, in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following page. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 71%. Detailed calculation of the applied forces and member capacities are provided in the following pages.

The tower base foundation and anchor design loads were analyzed considering the aforementioned foundation data and assumed soil properties. Based on this, the base foundation and anchors are adequate to support the existing and new loading.

In conclusion, the tower superstructure and substructure can support the proposed AT&T equipment.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Fred. A. Nudd Corporation

Code Design Criteria

ANSI/TIA-222-H
 Windspeed = 120 mph, 3-second gust, V_{ult}
 Exposure = B
 Radial Ice = 1.5 inch
 Ice Windspeed = 50 mph, 3-second gust
 Structure Class / Risk Category = II
 Topographic Category = 1

Proposed Appurtenance Loading – AT&T

Elevation (ft) ¹	Antenna	Mount	Coax ²
177	(4) CCI OPA65R-BU8D (2) CCI OPA65R-BU4D (2) CCI TPA-65R-LCUUUU-H8 (1) Quintel QS46512-2 (3) Ericsson RRUS-32 B30 (3) Ericsson 8843B2/B66A (3) Ericsson 4449 B5/B12	(3) 12 ft Boom / Frame	(12) 1-5/8 (2) Fiber (2) Squids (4) DC Trunks

¹Note elevation is measured from grade to center of antenna

²Additional coax is to be installed on the same tower face as the existing coax

Maximum Member Usage Results

Member	Usage (%) ¹
Legs	71
Diagonals	65
Horizontals	49
Guy Wires	42
Splice Bolts	28

¹Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening

Foundation Usage Results

Base Reaction	Capacity (kip-ft)	Analysis (kip-ft)	Usage (%) ¹
Base Axial	217.8	137.8	67
Anchor Uplift	93.1	28.8	31
Anchor Shear	52.2	33.8	65

¹ Usage above 100% indicates the applied design load exceeds the foundation strength capacity and requires strengthening

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Tower Input Data

The main tower is a 3x guyed tower with an overall height of 180.00 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 Tolland County, Connecticut.

Tower base elevation above sea level: 653.00 ft.

Basic wind speed of 120 mph.

Risk Category II.

Exposure Category B.

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

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Weld together tower sections have flange connections..

Tension only take-up is 0.0313 in.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

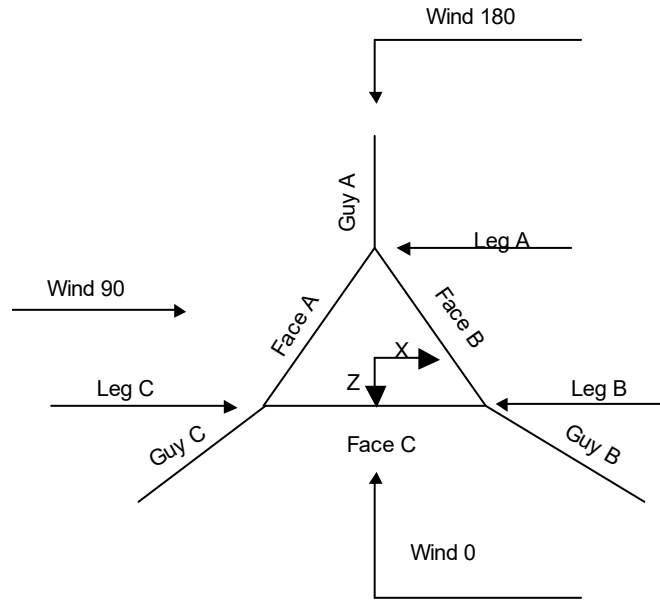
Safety factor used in guy design is 1.

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

Options

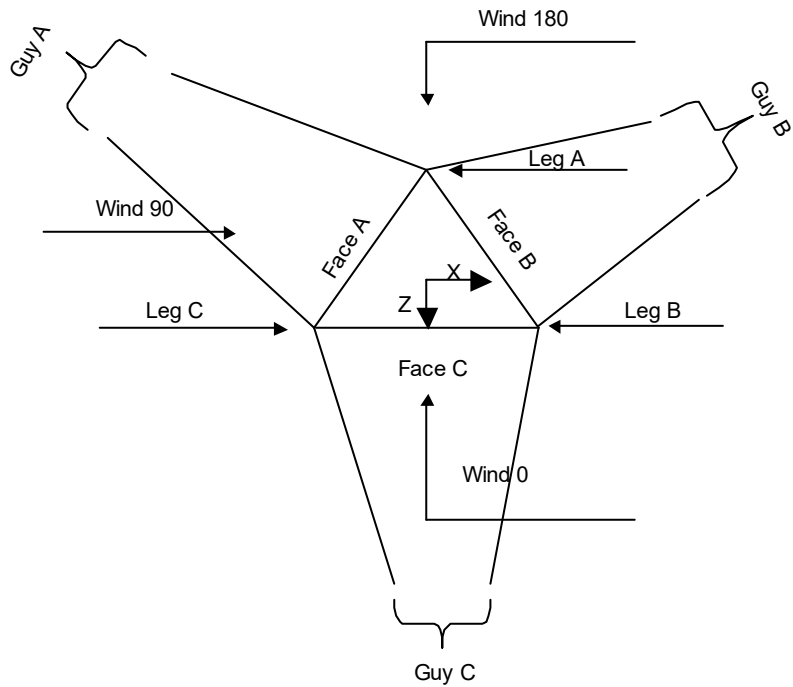
- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|---|

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Corner & Starmount Guyed Tower

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Face Guyed

Tower Section Geometry

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	180.00-160.00			3.50	1	20.00
T2	160.00-140.00			3.50	1	20.00
T3	140.00-120.00			3.50	1	20.00
T4	120.00-100.00			3.50	1	20.00
T5	100.00-80.00			3.50	1	20.00
T6	80.00-60.00			3.50	1	20.00
T7	60.00-40.00			3.50	1	20.00
T8	40.00-20.00			3.50	1	20.00
T9	20.00-5.00			3.50	1	15.00
T10	5.00-0.00			3.50	1	5.00

Tower Section Geometry (cont'd)

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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	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T2	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	20.00-5.00	3.56	TX Brace	No	Yes	4.5000	4.5000
T10	5.00-0.00	1.67	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 180.00-160.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 160.00-140.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 140.00-120.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 100.00-80.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 80.00-60.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 60.00-40.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 40.00-20.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 20.00-5.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 5.00-0.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

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Tower Elevation <i>ft</i>	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T7 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T8 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T9 20.00-5.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T10 5.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 20.00-5.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Gusset Area (per face) <i>ft²</i>	Gusset Thickness <i>in</i>	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals <i>in</i>	Double Angle Stitch Bolt Spacing Horizontals <i>in</i>	Double Angle Stitch Bolt Spacing Redundants <i>in</i>
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000

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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							
140.00-120.00			(36 ksi)						
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
120.00-100.00			(36 ksi)						
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
100.00-80.00			(36 ksi)						
T6 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
80.00-60.00			(36 ksi)						
T7 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
60.00-40.00			(36 ksi)						
T8 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
40.00-20.00			(36 ksi)						
T9 20.00-5.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
20.00-5.00			(36 ksi)						
T10 5.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
5.00-0.00			(36 ksi)						

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹								
			Legs	X Brace Diags		K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X	Y						
T1	No	Yes	1	1	1	1	0.65	0.65	1	1	
180.00-160.00				1	1	1	0.65	0.65	1	1	
T2	No	Yes	1	1	1	1	0.65	0.65	1	1	
160.00-140.00				1	1	1	0.65	0.65	1	1	
T3	No	Yes	1	1	1	1	0.65	0.65	1	1	
140.00-120.00				1	1	1	0.65	0.65	1	1	
T4	No	Yes	1	1	1	1	0.65	0.65	1	1	
120.00-100.00				1	1	1	0.65	0.65	1	1	
T5	No	Yes	1	1	1	1	0.65	0.65	1	1	
100.00-80.00				1	1	1	0.65	0.65	1	1	
T6	No	Yes	1	1	1	1	0.65	0.65	1	1	
80.00-60.00				1	1	1	0.65	0.65	1	1	
T7	No	Yes	1	1	1	1	0.65	0.65	1	1	
60.00-40.00				1	1	1	0.65	0.65	1	1	
T8	No	Yes	1	1	1	1	0.65	0.65	1	1	
40.00-20.00				1	1	1	0.65	0.65	1	1	
T9 20.00-5.00	No	Yes	1	1	1	1	0.65	0.65	1	1	
20.00-5.00				1	1	1	0.65	0.65	1	1	
T10 5.00-0.00	No	Yes	1	1	1	1	0.65	0.65	1	1	
5.00-0.00				1	1	1	0.65	0.65	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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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.
T3 140.00-120.00	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
T4 120.00-100.00	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
T5 100.00-80.00	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
T6 80.00-60.00	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
T7 60.00-40.00	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
T8 40.00-20.00	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
T9 20.00-5.00	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
T10 5.00-0.00	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

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L _u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
170	EHS	A	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	100%
		B	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	100%
		C	5/8	6360.00	15%	21000	0.813	221.88	145.00	0.0000	100%
116.417	EHS	A	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	100%
		B	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	100%
		C	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	100%
60.375	EHS	A	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	100%
		B	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	100%
		C	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
170	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
116.417	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
60.375	Corner						

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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
170.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
116.42	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
60.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16

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
170	180.38	180.38	180.38		3.12	3.12	3.12	
116.417	123.58	123.58	123.58		3.0 sec/pulse 2.15	3.0 sec/pulse 2.15	3.0 sec/pulse 2.15	
60.375	104.01	104.01	104.01		2.5 sec/pulse 1.53	2.5 sec/pulse 1.53	2.5 sec/pulse 1.53	
					2.1 sec/pulse	2.1 sec/pulse	2.1 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
170	No	No	1	1	0.65	0.65	1	1
116.417	No	No	1	1	0.65	0.65	1	1
60.375	No	No			0.65	0.65	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
170	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
116.417	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1

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Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
170	A	85.00	29	5	1.6489
	B	85.00	29	5	1.6489
	C	85.00	29	5	1.6489
116.417	A	58.21	26	4	1.5876
	B	58.21	26	4	1.5876
	C	58.21	26	4	1.5876
60.375	A	30.19	21	4	1.4867
	B	30.19	21	4	1.4867
	C	30.19	21	4	1.4867

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F _x lb	F _y lb	F _z lb	M _x lb-ft	M _y lb-ft	M _z lb-ft
170	A	49.9259	6498.03 6360.00	-101.28	5009.66	-4137.32	-10123.16	14685.27	-17533.82
	A	49.9259	6498.03 6360.00	101.28	5009.66	-4137.32	-10123.16	-14685.27	17533.82
	B	49.9259	6498.03 6360.00	3633.66	5009.66	1980.95	20246.31	14685.27	0.00
	B	49.9259	6498.03 6360.00	3532.39	5009.66	2156.37	-10123.16	-14685.27	-17533.82
	C	49.9259	6498.03 6360.00	-3532.39	5009.66	2156.37	-10123.16	14685.27	17533.82
	C	49.9259	6498.03 6360.00	-3633.66	5009.66	1980.95	20246.31	-14685.27	0.00
116.417			Sum:	0.00	30057.98	0.00	-0.00	0.00	0.00
	A	39.1448	5328.01 5250.00	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11
	A	39.1448	5328.01 5250.00	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11
	B	39.1448	5328.01 5250.00	3601.27	3400.60	1963.29	13743.37	14554.35	0.00
	B	39.1448	5328.01 5250.00	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11
	C	39.1448	5328.01 5250.00	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11
60.375	C	39.1448	5328.01 5250.00	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00
			Sum:	0.00	20403.61	-0.00	-0.00	0.00	0.00
	A	22.8926	5290.46 5250.00	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
	B	22.8926	5290.46 5250.00	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00
	C	22.8926	5290.46 5250.00	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71

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Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
170	A	49.9259	9832.30 8916.83	-147.45	7769.83	-6023.46	-15700.69	21380.07	-27194.40
	A	49.9259	9832.30 8916.83	147.45	7769.83	-6023.46	-15700.69	-21380.07	27194.40
	B	49.9259	9832.30 8916.83	5290.19	7769.83	2884.04	31401.38	21380.07	0.00
	B	49.9259	9832.30 8916.83	5142.75	7769.83	3139.42	-15700.69	-21380.07	-27194.40
	C	49.9259	9832.30 8916.83	-5142.75	7769.83	3139.42	-15700.69	21380.07	27194.40
	C	49.9259	9832.30 8916.83	-5290.19	7769.83	2884.04	31401.38	-21380.07	0.00
116.417			Sum:	0.00	46618.96	0.00	-0.00	0.00	0.00
	A	39.1448	8161.99 7599.28	-149.36	5419.13	-6101.54	-10950.57	21657.20	-18966.95
	A	39.1448	8161.99 7599.28	149.36	5419.13	-6101.54	-10950.57	-21657.20	18966.95
	B	39.1448	8161.99 7599.28	5358.77	5419.13	2921.42	21901.14	21657.20	0.00
	B	39.1448	8161.99 7599.28	5209.41	5419.13	3180.12	-10950.57	-21657.20	-18966.95
	C	39.1448	8161.99 7599.28	-5209.41	5419.13	3180.12	-10950.57	21657.20	18966.95
60.375			Sum:	0.00	32514.76	-0.00	-0.00	0.00	0.00
	A	22.8926	7815.32 7550.50	0.00	3328.32	-7071.17	-6725.63	0.00	0.00
	B	22.8926	7815.32 7550.50	6123.81	3328.32	3535.58	3362.82	0.00	-5824.57
	C	22.8926	7815.32 7550.50	-6123.81	3328.32	3535.58	3362.82	-0.00	5824.57
			Sum:	0.00	9984.97	-0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
170	A	49.9259	6498.03 6360.00	-101.28	5009.66	-4137.32	-10123.16	14685.27	-17533.82
	A	49.9259	6498.03 6360.00	101.28	5009.66	-4137.32	-10123.16	-14685.27	17533.82
	B	49.9259	6498.03 6360.00	3633.66	5009.66	1980.95	20246.31	14685.27	0.00
	B	49.9259	6498.03 6360.00	3532.39	5009.66	2156.37	-10123.16	-14685.27	-17533.82
	C	49.9259	6498.03	-3532.39	5009.66	2156.37	-10123.16	14685.27	17533.82

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	Bottom lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
116.417	C	49.9259	6360.00 6498.03 6360.00	-3633.66	5009.66	1980.95	20246.31	-14685.27	0.00
			Sum:	0.00	30057.98	0.00	-0.00	0.00	0.00
	A	39.1448	5328.01 5250.00	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11
	A	39.1448	5328.01 5250.00	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11
	B	39.1448	5328.01 5250.00	3601.27	3400.60	1963.29	13743.37	14554.35	0.00
	B	39.1448	5328.01 5250.00	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11
	C	39.1448	5328.01 5250.00	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11
60.375	C	39.1448	5328.01 5250.00	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00
			Sum:	0.00	20403.61	-0.00	-0.00	0.00	0.00
	A	22.8926	5290.46 5250.00	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
	B	22.8926	5290.46 5250.00	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
	C	22.8926	5290.46 5250.00	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00

Guy-Tensioning Information

Temperature At Time Of Tensioning																	
Guy Elevation	H	V	0 F		20 F		40 F		60 F		80 F		100 F		120 F		
			Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	
ft	ft	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	
170	A	143.02	170.00	7147	2.78	6884	2.88	6622	2.99	6360	3.12	6099	3.25	5839	3.39	5579	3.55
	B	143.02	170.00	7147	2.78	6884	2.88	6622	2.99	6360	3.12	6099	3.25	5839	3.39	5579	3.55
	C	143.02	170.00	7147	2.78	6884	2.88	6622	2.99	6360	3.12	6099	3.25	5839	3.39	5579	3.55
116.417	A	143.02	116.42	6193	1.83	5878	1.93	5563	2.03	5250	2.15	4938	2.29	4627	2.44	4319	2.62
	B	143.02	116.42	6193	1.83	5878	1.93	5563	2.03	5250	2.15	4938	2.29	4627	2.44	4319	2.62
	C	143.02	116.42	6193	1.83	5878	1.93	5563	2.03	5250	2.15	4938	2.29	4627	2.44	4319	2.62
60.375	A	142.98	60.38	6582	1.22	6137	1.31	5692	1.41	5250	1.53	4810	1.67	4373	1.84	3942	2.04
	B	142.98	60.38	6582	1.22	6137	1.31	5692	1.41	5250	1.53	4810	1.67	4373	1.84	3942	2.04
	C	142.98	60.38	6582	1.22	6137	1.31	5692	1.41	5250	1.53	4810	1.67	4373	1.84	3942	2.04

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
					ft			in	in	in	plf
1 5/8 (AT&T)	C	No	No	Ar (CaAa)	178.00 - 0.00	12	12	1.9800	1.9800		1.04
1 5/8 Fiber (AT&T)	C	No	No	Ar (CaAa)	178.00 - 0.00	2	2	1.9800	1.9800		1.04

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	No	Ar (CaAa)	180.00 - 0.00	1	1	0.3750	0.3750		0.22
Fiber (AT&T)	C	No	No	Ar (CaAa)	178.00 - 0.00	2	2	0.3750	0.3750		0.22
DC (AT&T)	C	No	No	Ar (CaAa)	178.00 - 0.00	4	4	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	180.00-160.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	55.422	0.000	288.00
T2	160.00-140.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T3	140.00-120.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T4	120.00-100.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T5	100.00-80.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T6	80.00-60.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T7	60.00-40.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T8	40.00-20.00	A	0.000	0.000	0.750	0.000	4.40
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	61.580	0.000	320.00
T9	20.00-5.00	A	0.000	0.000	0.563	0.000	3.30
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	46.185	0.000	240.00
T10	5.00-0.00	A	0.000	0.000	0.188	0.000	1.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.395	0.000	80.00

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	180.00-160.00	A	1.767	0.000	0.000	7.819	0.000	96.90
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	168.896	0.000	2443.82
T2	160.00-140.00	A	1.745	0.000	0.000	7.731	0.000	94.81
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	187.087	0.000	2687.47
T3	140.00-120.00	A	1.720	0.000	0.000	7.632	0.000	92.49

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	186.438	0.000	2656.13
T4	120.00-100.00	A	1.692	0.000	0.000	7.518	0.000	89.85
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	185.693	0.000	2620.26
T5	100.00-80.00	A	1.658	0.000	0.000	7.383	0.000	86.79
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	184.814	0.000	2578.16
T6	80.00-60.00	A	1.617	0.000	0.000	7.219	0.000	83.12
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	183.739	0.000	2526.91
T7	60.00-40.00	A	1.564	0.000	0.000	7.005	0.000	78.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	182.343	0.000	2460.78
T8	40.00-20.00	A	1.486	0.000	0.000	6.693	0.000	71.95
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	180.314	0.000	2365.53
T9	20.00-5.00	A	1.361	0.000	0.000	4.646	0.000	46.61
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	132.807	0.000	1661.75
T10	5.00-0.00	A	1.159	0.000	0.000	1.346	0.000	11.96
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	42.960	0.000	494.65

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	180.00-160.00	-0.0807	7.3878	-0.2372	6.1304
T2	160.00-140.00	-0.0760	7.7246	-0.2255	6.5418
T3	140.00-120.00	-0.0760	7.7246	-0.2257	6.6123
T4	120.00-100.00	-0.0760	7.7246	-0.2259	6.6926
T5	100.00-80.00	-0.0760	7.7246	-0.2259	6.7864
T6	80.00-60.00	-0.0760	7.7246	-0.2258	6.8998
T7	60.00-40.00	-0.0760	7.7246	-0.2253	7.0450
T8	40.00-20.00	-0.0760	7.7246	-0.2239	7.2518
T9	20.00-5.00	-0.0766	7.7821	-0.2259	7.7742
T10	5.00-0.00	-0.0794	8.0615	-0.1030	3.9823

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	1 5/8	160.00 - 178.00	0.6000	0.3885
T1	2	1 5/8 Fiber	160.00 - 178.00	0.6000	0.3885
T1	3	Safety Line 3/8	160.00 - 180.00	0.6000	0.3885
T1	4	Fiber	160.00 -	0.6000	0.3885

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			178.00		
T1	5	DC	160.00 - 178.00	0.6000	0.3885
T2	1	1 5/8	140.00 - 160.00	0.6000	0.3932
T2	2	1 5/8 Fiber	140.00 - 160.00	0.6000	0.3932
T2	3	Safety Line 3/8	140.00 - 160.00	0.6000	0.3932
T2	4	Fiber	140.00 - 160.00	0.6000	0.3932
T2	5	DC	140.00 - 160.00	0.6000	0.3932
T3	1	1 5/8	120.00 - 140.00	0.6000	0.3985
T3	2	1 5/8 Fiber	120.00 - 140.00	0.6000	0.3985
T3	3	Safety Line 3/8	120.00 - 140.00	0.6000	0.3985
T3	4	Fiber	120.00 - 140.00	0.6000	0.3985
T3	5	DC	120.00 - 140.00	0.6000	0.3985
T4	1	1 5/8	100.00 - 120.00	0.6000	0.4047
T4	2	1 5/8 Fiber	100.00 - 120.00	0.6000	0.4047
T4	3	Safety Line 3/8	100.00 - 120.00	0.6000	0.4047
T4	4	Fiber	100.00 - 120.00	0.6000	0.4047
T4	5	DC	100.00 - 120.00	0.6000	0.4047
T5	1	1 5/8	80.00 - 100.00	0.6000	0.4119
T5	2	1 5/8 Fiber	80.00 - 100.00	0.6000	0.4119
T5	3	Safety Line 3/8	80.00 - 100.00	0.6000	0.4119
T5	4	Fiber	80.00 - 100.00	0.6000	0.4119
T5	5	DC	80.00 - 100.00	0.6000	0.4119
T6	1	1 5/8	60.00 - 80.00	0.6000	0.4208
T6	2	1 5/8 Fiber	60.00 - 80.00	0.6000	0.4208
T6	3	Safety Line 3/8	60.00 - 80.00	0.6000	0.4208
T6	4	Fiber	60.00 - 80.00	0.6000	0.4208
T6	5	DC	60.00 - 80.00	0.6000	0.4208
T7	1	1 5/8	40.00 - 60.00	0.6000	0.4325
T7	2	1 5/8 Fiber	40.00 - 60.00	0.6000	0.4325
T7	3	Safety Line 3/8	40.00 - 60.00	0.6000	0.4325
T7	4	Fiber	40.00 - 60.00	0.6000	0.4325
T7	5	DC	40.00 - 60.00	0.6000	0.4325
T8	1	1 5/8	20.00 - 40.00	0.6000	0.4495
T8	2	1 5/8 Fiber	20.00 - 40.00	0.6000	0.4495
T8	3	Safety Line 3/8	20.00 - 40.00	0.6000	0.4495
T8	4	Fiber	20.00 - 40.00	0.6000	0.4495
T8	5	DC	20.00 - 40.00	0.6000	0.4495
T9	1	1 5/8	5.00 - 20.00	0.6000	0.4939
T9	2	1 5/8 Fiber	5.00 - 20.00	0.6000	0.4939
T9	3	Safety Line 3/8	5.00 - 20.00	0.6000	0.4939
T9	4	Fiber	5.00 - 20.00	0.6000	0.4939
T9	5	DC	5.00 - 20.00	0.6000	0.4939
T10	1	1 5/8	0.00 - 5.00	0.6000	0.1648
T10	2	1 5/8 Fiber	0.00 - 5.00	0.6000	0.1648
T10	3	Safety Line 3/8	0.00 - 5.00	0.6000	0.1648
T10	4	Fiber	0.00 - 5.00	0.6000	0.1648

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	5	DC	0.00 - 5.00	0.6000	0.1648

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight
			Horz	Vert	Lateral					
Sector Frame Mount (AT&T)	A	From Leg	1.50	0.0000	177.00	No Ice	18.00	9.00	465.00	
			0.00			1/2" Ice	22.00	11.00	600.00	
			0.00			1" Ice	23.20	23.20	735.00	
						2" Ice	32.80	32.80	1005.00	
Sector Frame Mount (AT&T)	B	From Leg	1.50	0.0000	177.00	No Ice	18.00	9.00	465.00	
			0.00			1/2" Ice	22.00	11.00	600.00	
			0.00			1" Ice	23.20	23.20	735.00	
						2" Ice	32.80	32.80	1005.00	
Sector Frame Mount (AT&T)	C	From Leg	1.50	0.0000	177.00	No Ice	18.00	9.00	465.00	
			0.00			1/2" Ice	22.00	11.00	600.00	
			0.00			1" Ice	23.20	23.20	735.00	
						2" Ice	32.80	32.80	1005.00	
Lightning Rod	C	None		0.0000	180.00	No Ice	1.00	1.00	40.00	
						1/2" Ice	2.02	2.02	49.26	
						1" Ice	3.05	3.05	64.89	
						2" Ice	5.15	5.15	115.85	
(2) CCI OPA-65R-BU8D	A	From Leg	1.50	0.0000	177.00	No Ice	18.09	8.20	77.00	
			0.00			1/2" Ice	18.70	8.85	175.00	
			0.00			1" Ice	19.31	9.47	283.00	
						2" Ice	20.55	10.69	523.00	
(2) CCI OPA-65R-BU8D	B	From Leg	1.50	0.0000	177.00	No Ice	18.09	8.20	77.00	
			0.00			1/2" Ice	18.70	8.85	175.00	
			0.00			1" Ice	19.31	9.47	283.00	
						2" Ice	20.55	10.69	523.00	
(2) CCI OPA-65R-BU4D	C	From Leg	1.50	0.0000	177.00	No Ice	8.40	3.54	53.00	
			0.00			1/2" Ice	8.74	3.85	105.00	
			0.00			1" Ice	9.09	4.15	163.00	
						2" Ice	9.82	4.78	295.00	
CCI TPA-65R-LCUUUU-H8	A	From Leg	1.50	0.0000	177.00	No Ice	7.61	5.12	75.00	
			0.00			1/2" Ice	8.22	5.75	154.00	
			0.00			1" Ice	8.82	6.38	242.00	
						2" Ice	10.04	7.59	441.00	
CCI TPA-65R-LCUUUU-H8	B	From Leg	1.50	0.0000	177.00	No Ice	7.61	5.12	75.00	
			0.00			1/2" Ice	8.22	5.75	154.00	
			0.00			1" Ice	8.82	6.38	242.00	
						2" Ice	10.04	7.59	441.00	
Quintel QS46512-2	C	From Leg	1.50	0.0000	177.00	No Ice	5.55	4.61	54.00	
			0.00			1/2" Ice	5.88	4.94	97.00	
			0.00			1" Ice	6.22	5.27	144.00	
						2" Ice	6.92	5.95	255.00	
Ericsson RUSS-32	A	From Leg	1.50	0.0000	177.00	No Ice	2.02	1.25	59.00	
			0.00			1/2" Ice	2.18	1.38	77.00	
			0.00			1" Ice	2.35	1.52	97.00	
						2" Ice	2.71	1.84	147.00	

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	lb
Ericsson RUSS-32	B	From Leg	1.50	0.0000	177.00	No Ice	2.02	1.25	59.00
			0.00			1/2" Ice	2.18	1.38	77.00
			0.00			1" Ice	2.35	1.52	97.00
						2" Ice	2.71	1.84	147.00
Ericsson RUSS-32	C	From Leg	1.50	0.0000	177.00	No Ice	2.02	1.25	59.00
			0.00			1/2" Ice	2.18	1.38	77.00
			0.00			1" Ice	2.35	1.52	97.00
						2" Ice	2.71	1.84	147.00
Ericsson 8843	A	From Leg	1.50	0.0000	177.00	No Ice	1.65	1.16	50.00
			0.00			1/2" Ice	1.79	1.29	66.00
			0.00			1" Ice	1.94	1.42	85.00
						2" Ice	2.28	1.71	131.00
Ericsson 8843	B	From Leg	1.50	0.0000	177.00	No Ice	1.65	1.16	50.00
			0.00			1/2" Ice	1.79	1.29	66.00
			0.00			1" Ice	1.94	1.42	85.00
						2" Ice	2.28	1.71	131.00
Ericsson 8843	C	From Leg	1.50	0.0000	177.00	No Ice	1.65	1.16	50.00
			0.00			1/2" Ice	1.79	1.29	66.00
			0.00			1" Ice	1.94	1.42	85.00
						2" Ice	2.28	1.71	131.00
Ericsson 4449	A	From Leg	1.50	0.0000	177.00	No Ice	1.79	1.41	71.00
			0.00			1/2" Ice	2.12	1.55	90.00
			0.00			1" Ice	2.29	1.69	111.00
						2" Ice	2.65	2.02	163.00
Ericsson 4449	B	From Leg	1.50	0.0000	177.00	No Ice	1.79	1.41	71.00
			0.00			1/2" Ice	2.12	1.55	90.00
			0.00			1" Ice	2.29	1.69	111.00
						2" Ice	2.65	2.02	163.00
Ericsson 4449	C	From Leg	1.50	0.0000	177.00	No Ice	1.79	1.41	71.00
			0.00			1/2" Ice	2.12	1.55	90.00
			0.00			1" Ice	2.29	1.69	111.00
						2" Ice	2.65	2.02	163.00

Tower Pressures - No Ice

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face	
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²	
T1 180.00-160.00	170.00	1.15	35	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000	
					B	2.853	12.348			0.000	0.000	
					C	2.853	12.348			63.05	55.422	0.000
T2 160.00-140.00	150.00	1.11	34	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000	
					B	2.853	12.348			0.000	0.000	
					C	2.853	12.348			63.05	61.580	0.000
T3 140.00-120.00	130.00	1.065	33	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000	
					B	2.853	12.348			63.05	0.000	0.000
					C	2.853	12.348			63.05	61.580	0.000

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Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{A A₁} In Face ft ²	C _{A A₁} Out Face ft ²
T4 120.00-100.00	110.00	1.016	31	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	61.580	0.000
T5 100.00-80.00	90.00	0.959	29	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	61.580	0.000
T6 80.00-60.00	70.00	0.892	27	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	61.580	0.000
T7 60.00-40.00	50.00	0.811	25	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	61.580	0.000
T8 40.00-20.00	30.00	0.701	21	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	61.580	0.000
T9 20.00-5.00	12.50	0.7	21	56.094	A	2.038	9.126	7.188	64.38	0.563	0.000
					B	2.038	9.126		64.38	0.000	0.000
					C	2.038	9.126		64.38	46.185	0.000
T10 5.00-0.00	2.50	0.7	21	10.019	A	0.785	3.127	2.584	66.05	0.188	0.000
					B	0.785	3.127		66.05	0.000	0.000
					C	0.785	3.127		66.05	15.395	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{A A₁} In Face ft ²	C _{A A₁} Out Face ft ²
T1 180.00-160.00	170.00	1.15	6	1.7672	80.682	A	2.853	46.484	21.365	43.30	7.819	0.000
						B	2.853	46.484		43.30	0.000	0.000
						C	2.853	46.484		43.30	168.896	0.000
T2 160.00-140.00	150.00	1.11	6	1.7452	80.609	A	2.853	46.059	21.218	43.38	7.731	0.000
						B	2.853	46.059		43.38	0.000	0.000
						C	2.853	46.059		43.38	187.087	0.000
T3 140.00-120.00	130.00	1.065	6	1.7204	80.526	A	2.853	45.580	21.053	43.47	7.632	0.000
						B	2.853	45.580		43.47	0.000	0.000
						C	2.853	45.580		43.47	186.438	0.000
T4 120.00-100.00	110.00	1.016	5	1.6919	80.431	A	2.853	45.030	20.863	43.57	7.518	0.000
						B	2.853	45.030		43.57	0.000	0.000
						C	2.853	45.030		43.57	185.693	0.000
T5 100.00-80.00	90.00	0.959	5	1.6583	80.319	A	2.853	44.380	20.639	43.70	7.383	0.000
						B	2.853	44.380		43.70	0.000	0.000
						C	2.853	44.380		43.70	184.814	0.000
T6 80.00-60.00	70.00	0.892	5	1.6171	80.182	A	2.853	43.585	20.364	43.85	7.219	0.000
						B	2.853	43.585		43.85	0.000	0.000
						C	2.853	43.585		43.85	183.739	0.000
T7 60.00-40.00	50.00	0.811	4	1.5636	80.004	A	2.853	42.552	20.008	44.07	7.005	0.000
						B	2.853	42.552		44.07	0.000	0.000
						C	2.853	42.552		44.07	182.343	0.000
T8 40.00-20.00	30.00	0.701	4	1.4858	79.744	A	2.853	41.048	19.488	44.39	6.693	0.000
						B	2.853	41.048		44.39	0.000	0.000
						C	2.853	41.048		44.39	180.314	0.000
T9 20.00-5.00	12.50	0.7	4	1.3612	59.497	A	2.038	28.074	13.994	46.47	4.646	0.000
						B	2.038	28.074		46.47	0.000	0.000
						C	2.038	28.074		46.47	0.000	0.000

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Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T10 5.00-0.00	2.50	0.7	4	1.1589	11.042	C	2.038	28.074	4.667	46.47	132.807	0.000
						A	0.785	8.437			1.346	0.000
						B	0.785	8.437			0.000	0.000
						C	0.785	8.437			42.960	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 180.00-160.00	170.00	1.15	9	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			55.422	0.000
T2 160.00-140.00	150.00	1.11	8	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T3 140.00-120.00	130.00	1.065	8	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T4 120.00-100.00	110.00	1.016	8	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T5 100.00-80.00	90.00	0.959	7	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T6 80.00-60.00	70.00	0.892	7	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T7 60.00-40.00	50.00	0.811	6	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T8 40.00-20.00	30.00	0.701	5	74.792	A	2.853	12.348	9.583	63.05	0.750	0.000
					B	2.853	12.348			0.000	0.000
					C	2.853	12.348			61.580	0.000
T9 20.00-5.00	12.50	0.7	5	56.094	A	2.038	9.126	7.188	64.38	0.563	0.000
					B	2.038	9.126			0.000	0.000
					C	2.038	9.126			64.38	0.000
T10 5.00-0.00	2.50	0.7	5	10.019	A	0.785	3.127	2.584	66.05	0.188	0.000
					B	0.785	3.127			0.000	0.000
					C	0.785	3.127			66.05	0.000
										15.395	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	292.40	658.24	A	0.203	2.585	35	1	1	9.953	1777.94	88.90	C
			TA 214.38	B	0.203							

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	Client		CDT		Designed by			

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T2 160.00-140.00	324.40	658.24	C	0.203	2.585	34	1	1	9.953	1822.13	91.11	C
			A	0.203	2.585		1	1	9.953			
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3 140.00-120.00	324.40	658.24	A	0.203	2.585	33	1	1	9.953	1749.13	87.46	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T4 120.00-100.00	324.40	658.24 TA 214.38	A	0.203	2.585	31	1	1	9.953	1667.61	83.38	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T5 100.00-80.00	324.40	658.24	A	0.203	2.585	29	1	1	9.953	1574.69	78.73	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6 80.00-60.00	324.40	658.24	A	0.203	2.585	27	1	1	9.953	1465.58	73.28	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7 60.00-40.00	324.40	658.24	A	0.203	2.585	25	1	1	9.953	1331.25	66.56	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T8 40.00-20.00	324.40	658.24	A	0.203	2.585	21	1	1	9.953	1150.47	57.52	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	21	1	1	7.279	855.22	57.01	C
			B	0.199	2.599		1	1	7.279			
			C	0.199	2.599		1	1	7.279			
			C	0.199	2.599		1	1	7.279			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	21	1	1	2.762	275.01	55.00	C
			B	0.39	2.083		1	1	2.762			
			C	0.39	2.083		1	1	2.762			
			C	0.39	2.083		1	1	2.762			
Sum Weight:	2887.60	6342.91								13669.03		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	292.40	658.24 TA 214.38	A	0.203	2.585	35	0.8	1	9.383	1733.82	86.69	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T2 160.00-140.00	324.40	658.24	A	0.203	2.585	34	0.8	1	9.383	1779.56	88.98	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3 140.00-120.00	324.40	658.24	A	0.203	2.585	33	0.8	1	9.383	1708.26	85.41	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4 120.00-100.00	324.40	658.24 TA 214.38	A	0.203	2.585	31	0.8	1	9.383	1628.64	81.43	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T5 100.00-80.00	324.40	658.24	A	0.203	2.585	29	0.8	1	9.383	1537.89	76.89	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6 80.00-60.00	324.40	658.24	A	0.203	2.585	27	0.8	1	9.383	1431.34	71.57	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T7 60.00-40.00	324.40	658.24	A	0.203	2.585	25	0.8	1	9.383	1300.14	65.01	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8 40.00-20.00	324.40	658.24	A	0.203	2.585	21	0.8	1	9.383	1123.59	56.18	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	21	0.8	1	6.871	835.93	55.73	C
			B	0.199	2.599		0.8	1	6.871			
			C	0.199	2.599		0.8	1	6.871			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	21	0.8	1	2.605	269.05	53.81	C
			B	0.39	2.083		0.8	1	2.605			
			C	0.39	2.083		0.8	1	2.605			
Sum Weight:	2887.60	6342.91								13348.22		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	292.40	658.24	A	0.203	2.585	35	0.85	1	9.526	1744.85	87.24	C
		TA 214.38	B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T2 160.00-140.00	324.40	658.24	A	0.203	2.585	34	0.85	1	9.526	1790.20	89.51	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3 140.00-120.00	324.40	658.24	A	0.203	2.585	33	0.85	1	9.526	1718.48	85.92	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T4 120.00-100.00	324.40	658.24	A	0.203	2.585	31	0.85	1	9.526	1638.39	81.92	C
		TA 214.38	B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T5 100.00-80.00	324.40	658.24	A	0.203	2.585	29	0.85	1	9.526	1547.09	77.35	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6 80.00-60.00	324.40	658.24	A	0.203	2.585	27	0.85	1	9.526	1439.90	71.99	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T7 60.00-40.00	324.40	658.24	A	0.203	2.585	25	0.85	1	9.526	1307.92	65.40	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T8 40.00-20.00	324.40	658.24	A	0.203	2.585	21	0.85	1	9.526	1130.31	56.52	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	21	0.85	1	6.973	840.75	56.05	C
			B	0.199	2.599		0.85	1	6.973			
			C	0.199	2.599		0.85	1	6.973			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	21	0.85	1	2.644	270.54	54.11	C
			B	0.39	2.083		0.85	1	2.644			
			C	0.39	2.083		0.85	1	2.644			
Sum Weight:	2887.60	6342.91								13428.42		

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Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	2540.72	2759.48 TA 769.52	A B C	0.611 0.611 0.611	1.797 1.797 1.797	6	1 1 1	1 1 1	37.766 37.766 37.766	709.07	35.45	C
T2 160.00-140.00	2782.28	2719.08	A B C	0.607 0.607 0.607	1.8 1.8 1.8	6	1 1 1	1 1 1	37.308 37.308 37.308	720.38	36.02	C
T3 140.00-120.00	2748.62	2673.93	A B C	0.601 0.601 0.601	1.803 1.803 1.803	6	1 1 1	1 1 1	36.795 36.795 36.795	691.19	34.56	C
T4 120.00-100.00	2710.11	2622.61 TA 738.18	A B C	0.595 0.595 0.595	1.807 1.807 1.807	5	1 1 1	1 1 1	36.211 36.211 36.211	658.65	32.93	C
T5 100.00-80.00	2664.95	2562.85	A B C	0.588 0.588 0.588	1.812 1.812 1.812	5	1 1 1	1 1 1	35.529 35.529 35.529	621.63	31.08	C
T6 80.00-60.00	2610.03	2490.82	A B C	0.579 0.579 0.579	1.818 1.818 1.818	5	1 1 1	1 1 1	34.703 34.703 34.703	578.24	28.91	C
T7 60.00-40.00	2539.24	2399.07	A B C	0.568 0.568 0.568	1.828 1.828 1.828	4	1 1 1	1 1 1	33.646 33.646 33.646	524.93	26.25	C
T8 40.00-20.00	2437.48	2269.35	A B C	0.551 0.551 0.551	1.843 1.843 1.843	4	1 1 1	1 1 1	32.141 32.141 32.141	453.36	22.67	C
T9 20.00-5.00	1708.36	1497.28	A B C	0.506 0.506 0.506	1.892 1.892 1.892	4	1 1 1	1 1 1	21.362 21.362 21.362	342.38	22.83	C
T10 5.00-0.00	506.61	445.99	A B C	0.835 0.835 0.835	1.846 1.846 1.846	4	1 1 1	1 1 1	8.489 8.489 8.489	72.63	14.53	C
Sum Weight:	23248.41	23948.17								5372.45		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 180.00-160.00	2540.72	2759.48 TA 769.52	A B C	0.611 0.611 0.611	1.797 1.797 1.797	6	0.8 0.8 0.8	1 1 1	37.196 37.196 37.196	703.75	35.19	C
T2 160.00-140.00	2782.28	2719.08	A B C	0.607 0.607 0.607	1.8 1.8 1.8	6	0.8 0.8 0.8	1 1 1	36.738 36.738 36.738	715.23	35.76	C
T3 140.00-120.00	2748.62	2673.93	A B C	0.601 0.601 0.601	1.803 1.803 1.803	6	0.8 0.8 0.8	1 1 1	36.225 36.225 36.225	686.24	34.31	C
T4 120.00-100.00	2710.11	2622.61 TA 738.18	A B	0.595 0.595	1.807 1.807	5	0.8 0.8	1 1	35.641 35.641	653.92	32.70	C

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T5 100.00-80.00	2664.95	2562.85	C	0.595	1.807	5	0.8	1	35.641	617.15	30.86	C
			A	0.588	1.812		0.8	1	34.958			
			B	0.588	1.812		0.8	1	34.958			
T6 80.00-60.00	2610.03	2490.82	C	0.588	1.812	5	0.8	1	34.958	574.06	28.70	C
			A	0.579	1.818		0.8	1	34.133			
			B	0.579	1.818		0.8	1	34.133			
T7 60.00-40.00	2539.24	2399.07	C	0.579	1.818	4	0.8	1	34.133	521.11	26.06	C
			A	0.568	1.828		0.8	1	33.076			
			B	0.568	1.828		0.8	1	33.076			
T8 40.00-20.00	2437.48	2269.35	C	0.568	1.828	4	0.8	1	33.076	450.03	22.50	C
			A	0.551	1.843		0.8	1	31.571			
			B	0.551	1.843		0.8	1	31.571			
T9 20.00-5.00	1708.36	1497.28	C	0.551	1.843	4	0.8	1	31.571	339.94	22.66	C
			A	0.506	1.892		0.8	1	20.954			
			B	0.506	1.892		0.8	1	20.954			
T10 5.00-0.00	506.61	445.99	C	0.506	1.892	4	0.8	1	20.954	71.72	14.34	C
			A	0.835	1.846		0.8	1	8.332			
			B	0.835	1.846		0.8	1	8.332			
Sum Weight:	23248.41	23948.17								5333.15		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T1 180.00-160.00	2540.72	2759.48 TA 769.52	A	0.611	1.797	6	0.85	1	37.338	705.08	35.25	C
			B	0.611	1.797		0.85	1	37.338			
			C	0.611	1.797		0.85	1	37.338			
T2 160.00-140.00	2782.28	2719.08	A	0.607	1.8	6	0.85	1	36.880	716.52	35.83	C
			B	0.607	1.8		0.85	1	36.880			
			C	0.607	1.8		0.85	1	36.880			
T3 140.00-120.00	2748.62	2673.93	A	0.601	1.803	6	0.85	1	36.368	687.48	34.37	C
			B	0.601	1.803		0.85	1	36.368			
			C	0.601	1.803		0.85	1	36.368			
T4 120.00-100.00	2710.11	2622.61 TA 738.18	A	0.595	1.807	5	0.85	1	35.783	655.10	32.76	C
			B	0.595	1.807		0.85	1	35.783			
			C	0.595	1.807		0.85	1	35.783			
T5 100.00-80.00	2664.95	2562.85	A	0.588	1.812	5	0.85	1	35.101	618.27	30.91	C
			B	0.588	1.812		0.85	1	35.101			
			C	0.588	1.812		0.85	1	35.101			
T6 80.00-60.00	2610.03	2490.82	A	0.579	1.818	5	0.85	1	34.275	575.10	28.76	C
			B	0.579	1.818		0.85	1	34.275			
			C	0.579	1.818		0.85	1	34.275			
T7 60.00-40.00	2539.24	2399.07	A	0.568	1.828	4	0.85	1	33.218	522.06	26.10	C
			B	0.568	1.828		0.85	1	33.218			
			C	0.568	1.828		0.85	1	33.218			
T8 40.00-20.00	2437.48	2269.35	A	0.551	1.843	4	0.85	1	31.713	450.86	22.54	C
			B	0.551	1.843		0.85	1	31.713			
			C	0.551	1.843		0.85	1	31.713			
T9 20.00-5.00	1708.36	1497.28	A	0.506	1.892	4	0.85	1	21.056	340.55	22.70	C
			B	0.506	1.892		0.85	1	21.056			
			C	0.506	1.892		0.85	1	21.056			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T10 5.00-0.00	506.61	445.99	A	0.835	1.846	4	0.85	1	8.371	71.94	14.39	C
			B	0.835	1.846		0.85	1	8.371			
			C	0.835	1.846		0.85	1	8.371			
Sum Weight:	23248.41	23948.17								5342.97		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1	292.40	658.24	A	0.203	2.585	9	1	1	9.953	444.49	22.22	C
180.00-160.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T2	324.40	658.24	A	0.203	2.585	8	1	1	9.953	455.53	22.78	C
160.00-140.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3	324.40	658.24	A	0.203	2.585	8	1	1	9.953	437.28	21.86	C
140.00-120.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T4	324.40	658.24	A	0.203	2.585	8	1	1	9.953	416.90	20.85	C
120.00-100.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T5	324.40	658.24	A	0.203	2.585	7	1	1	9.953	393.67	19.68	C
100.00-80.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6	324.40	658.24	A	0.203	2.585	7	1	1	9.953	366.40	18.32	C
80.00-60.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7	324.40	658.24	A	0.203	2.585	6	1	1	9.953	332.81	16.64	C
60.00-40.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T8	324.40	658.24	A	0.203	2.585	5	1	1	9.953	287.62	14.38	C
40.00-20.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	5	1	1	7.279	213.80	14.25	C
			B	0.199	2.599		1	1	7.279			
			C	0.199	2.599		1	1	7.279			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	5	1	1	2.762	68.75	13.75	C
			B	0.39	2.083		1	1	2.762			
			C	0.39	2.083		1	1	2.762			
Sum Weight:	2887.60	6342.91								3417.26		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	

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	Client		CDT		Designed by			

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T1 180.00-160.00	292.40	658.24 TA 214.38	A	0.203	2.585	9	0.8	1	9.383	433.45	21.67	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T2 160.00-140.00	324.40	658.24	A	0.203	2.585	8	0.8	1	9.383	444.89	22.24	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3 140.00-120.00	324.40	658.24	A	0.203	2.585	8	0.8	1	9.383	427.07	21.35	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4 120.00-100.00	324.40	658.24 TA 214.38	A	0.203	2.585	8	0.8	1	9.383	407.16	20.36	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T5 100.00-80.00	324.40	658.24	A	0.203	2.585	7	0.8	1	9.383	384.47	19.22	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6 80.00-60.00	324.40	658.24	A	0.203	2.585	7	0.8	1	9.383	357.83	17.89	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T7 60.00-40.00	324.40	658.24	A	0.203	2.585	6	0.8	1	9.383	325.04	16.25	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8 40.00-20.00	324.40	658.24	A	0.203	2.585	5	0.8	1	9.383	280.90	14.04	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	5	0.8	1	6.871	208.98	13.93	C
			B	0.199	2.599		0.8	1	6.871			
			C	0.199	2.599		0.8	1	6.871			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	5	0.8	1	2.605	67.26	13.45	C
			B	0.39	2.083		0.8	1	2.605			
			C	0.39	2.083		0.8	1	2.605			
Sum Weight:	2887.60	6342.91								3337.06		

Tower Forces - Service - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	<i>C_F</i>	<i>q_z</i> <i>psf</i>	<i>D_F</i>	<i>D_R</i>	<i>A_E</i> <i>ft²</i>	<i>F</i> <i>lb</i>	<i>w</i> <i>plf</i>	Ctrl. Face
T1 180.00-160.00	292.40	658.24 TA 214.38	A	0.203	2.585	9	0.85	1	9.526	436.21	21.81	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T2 160.00-140.00	324.40	658.24	A	0.203	2.585	8	0.85	1	9.526	447.55	22.38	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3 140.00-120.00	324.40	658.24	A	0.203	2.585	8	0.85	1	9.526	429.62	21.48	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T4 120.00-100.00	324.40	658.24 TA 214.38	A	0.203	2.585	8	0.85	1	9.526	409.60	20.48	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T5 100.00-80.00	324.40	658.24	A	0.203	2.585	7	0.85	1	9.526	386.77	19.34	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6	324.40	658.24	A	0.203	2.585	7	0.85	1	9.526	359.97	18.00	C

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	e	C _F	q _z <i>psf</i>	D _F	D _R	A _E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
80.00-60.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T7 60.00-40.00	324.40	658.24	A	0.203	2.585	6	0.85	1	9.526	326.98	16.35	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T8 40.00-20.00	324.40	658.24	A	0.203	2.585	5	0.85	1	9.526	282.58	14.13	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T9 20.00-5.00	243.30	480.27	A	0.199	2.599	5	0.85	1	6.973	210.19	14.01	C
			B	0.199	2.599		0.85	1	6.973			
			C	0.199	2.599		0.85	1	6.973			
T10 5.00-0.00	81.10	167.93	A	0.39	2.083	5	0.85	1	2.644	67.63	13.53	C
			B	0.39	2.083		0.85	1	2.644			
			C	0.39	2.083		0.85	1	2.644			
Sum Weight:	2887.60	6342.91								3357.11		

Discrete Appurtenance Pressures - No Ice *G_H = 0.850*

Description	Aiming Azimuth <i>°</i>	Weight <i>lb</i>	Offset _x <i>ft</i>	Offset _z <i>ft</i>	z <i>ft</i>	K _z	q _z <i>psf</i>	C _A A _C Front <i>ft²</i>	C _A A _C Side <i>ft²</i>
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	35	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	35	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	35	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	32	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	32	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	32	3.54	5.32
Sector Frame Mount	0.0000	465.00	0.00	-3.52	177.00	1.163	36	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	177.00	1.163	36	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	177.00	1.163	36	18.00	9.00
Lightning Rod	0.0000	40.00	0.00	0.00	180.00	1.169	36	1.00	1.00
CCI OPA-65R-BU8D	0.0000	154.00	0.00	-3.52	177.00	1.163	36	36.18	16.40
CCI OPA-65R-BU8D	120.0000	154.00	3.05	1.76	177.00	1.163	36	36.18	16.40
CCI OPA-65R-BU4D	240.0000	106.00	-3.05	1.76	177.00	1.163	36	16.80	7.08
CCI	0.0000	75.00	0.00	-3.52	177.00	1.163	36	7.61	5.12
TPA-65R-LCUUUU-H8									
CCI	120.0000	75.00	3.05	1.76	177.00	1.163	36	7.61	5.12
TPA-65R-LCUUUU-H8									
Quintel QS46512-2	240.0000	54.00	-3.05	1.76	177.00	1.163	36	5.55	4.61
Ericsson RUSS-32	0.0000	59.00	0.00	-3.52	177.00	1.163	36	2.02	1.25
Ericsson RUSS-32	120.0000	59.00	3.05	1.76	177.00	1.163	36	2.02	1.25
Ericsson RUSS-32	240.0000	59.00	-3.05	1.76	177.00	1.163	36	2.02	1.25
Ericsson 8843	0.0000	50.00	0.00	-3.52	177.00	1.163	36	1.65	1.16
Ericsson 8843	120.0000	50.00	3.05	1.76	177.00	1.163	36	1.65	1.16
Ericsson 8843	240.0000	50.00	-3.05	1.76	177.00	1.163	36	1.65	1.16
Ericsson 4449	0.0000	71.00	0.00	-3.52	177.00	1.163	36	1.79	1.41
Ericsson 4449	120.0000	71.00	3.05	1.76	177.00	1.163	36	1.79	1.41
Ericsson 4449	240.0000	71.00	-3.05	1.76	177.00	1.163	36	1.79	1.41
Sum Weight:		2593.00							

Discrete Appurtenance Pressures - With Ice *G_H = 0.850*

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²	t _z in
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	6	6.04	8.90	1.7672
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	6	6.04	8.90	1.7672
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	6	6.04	8.90	1.7672
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	5	5.93	8.75	1.6919
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	5	5.93	8.75	1.6919
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	5	5.93	8.75	1.6919
Sector Frame Mount	0.0000	944.07	0.00	-3.52	177.00	1.163	6	30.63	30.63	1.7743
Sector Frame Mount	120.0000	944.07	3.05	1.76	177.00	1.163	6	30.63	30.63	1.7743
Sector Frame Mount	240.0000	944.07	-3.05	1.76	177.00	1.163	6	30.63	30.63	1.7743
Lightning Rod	0.0000	104.50	0.00	0.00	180.00	1.169	6	4.68	4.68	1.7773
CCI OPA-65R-BU8D	0.0000	937.68	0.00	-3.52	177.00	1.163	6	40.54	20.83	1.7743
CCI OPA-65R-BU8D	120.0000	937.68	3.05	1.76	177.00	1.163	6	40.54	20.83	1.7743
CCI OPA-65R-BU4D	240.0000	530.43	-3.05	1.76	177.00	1.163	6	19.31	9.28	1.7743
CCI	0.0000	396.09	0.00	-3.52	177.00	1.163	6	9.76	7.32	1.7743
TPA-65R-LCUUUU-H8										
CCI	120.0000	396.09	3.05	1.76	177.00	1.163	6	9.76	7.32	1.7743
TPA-65R-LCUUUU-H8										
Quintel QS46512-2	240.0000	229.95	-3.05	1.76	177.00	1.163	6	6.76	5.80	1.7743
Ericsson RUSS-32	0.0000	135.72	0.00	-3.52	177.00	1.163	6	2.63	1.77	1.7743
Ericsson RUSS-32	120.0000	135.72	3.05	1.76	177.00	1.163	6	2.63	1.77	1.7743
Ericsson RUSS-32	240.0000	135.72	-3.05	1.76	177.00	1.163	6	2.63	1.77	1.7743
Ericsson 8843	0.0000	120.62	0.00	-3.52	177.00	1.163	6	2.20	1.64	1.7743
Ericsson 8843	120.0000	120.62	3.05	1.76	177.00	1.163	6	2.20	1.64	1.7743
Ericsson 8843	240.0000	120.62	-3.05	1.76	177.00	1.163	6	2.20	1.64	1.7743
Ericsson 4449	0.0000	151.27	0.00	-3.52	177.00	1.163	6	2.57	1.95	1.7743
Ericsson 4449	120.0000	151.27	3.05	1.76	177.00	1.163	6	2.57	1.95	1.7743
Ericsson 4449	240.0000	151.27	-3.05	1.76	177.00	1.163	6	2.57	1.95	1.7743
Sum		7587.46								
Weight:										

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Torque Arm Face C	180.0000	0.00	0.00	2.53	170.89	1.152	9	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	170.89	1.152	9	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	170.89	1.152	9	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	117.30	1.034	8	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	117.30	1.034	8	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	117.30	1.034	8	3.54	5.32
Sector Frame Mount	0.0000	465.00	0.00	-3.52	177.00	1.163	9	18.00	9.00
Sector Frame Mount	120.0000	465.00	3.05	1.76	177.00	1.163	9	18.00	9.00
Sector Frame Mount	240.0000	465.00	-3.05	1.76	177.00	1.163	9	18.00	9.00
Lightning Rod	0.0000	40.00	0.00	0.00	180.00	1.169	9	1.00	1.00
CCI OPA-65R-BU8D	0.0000	154.00	0.00	-3.52	177.00	1.163	9	36.18	16.40
CCI OPA-65R-BU8D	120.0000	154.00	3.05	1.76	177.00	1.163	9	36.18	16.40
CCI OPA-65R-BU4D	240.0000	106.00	-3.05	1.76	177.00	1.163	9	16.80	7.08
CCI	0.0000	75.00	0.00	-3.52	177.00	1.163	9	7.61	5.12
TPA-65R-LCUUUU-H8									
CCI	120.0000	75.00	3.05	1.76	177.00	1.163	9	7.61	5.12
TPA-65R-LCUUUU-H8									
Quintel QS46512-2	240.0000	54.00	-3.05	1.76	177.00	1.163	9	5.55	4.61
Ericsson RUSS-32	0.0000	59.00	0.00	-3.52	177.00	1.163	9	2.02	1.25
Ericsson RUSS-32	120.0000	59.00	3.05	1.76	177.00	1.163	9	2.02	1.25
Ericsson RUSS-32	240.0000	59.00	-3.05	1.76	177.00	1.163	9	2.02	1.25
Ericsson 8843	0.0000	50.00	0.00	-3.52	177.00	1.163	9	1.65	1.16

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAc} Front ft ²	C _{AAc} Side ft ²
Ericsson 8843	120.0000	50.00	3.05	1.76	177.00	1.163	9	1.65	1.16
Ericsson 8843	240.0000	50.00	-3.05	1.76	177.00	1.163	9	1.65	1.16
Ericsson 4449	0.0000	71.00	0.00	-3.52	177.00	1.163	9	1.79	1.41
Ericsson 4449	120.0000	71.00	3.05	1.76	177.00	1.163	9	1.79	1.41
Ericsson 4449	240.0000	71.00	-3.05	1.76	177.00	1.163	9	1.79	1.41
Sum Weight:		2593.00							

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	3138.04			
Bracing Weight	3204.87			
Total Member Self-Weight	6342.91			
Guy Weight	2135.83			
Total Weight	13959.34			
Wind 0 deg - No Ice		-121.70	-17774.66	638.19
Wind 30 deg - No Ice		8591.37	-15124.09	4646.61
Wind 60 deg - No Ice		14932.93	-8621.53	7409.97
Wind 90 deg - No Ice		17393.53	121.70	8187.84
Wind 120 deg - No Ice		15332.46	8992.73	6771.79
Wind 150 deg - No Ice		8802.16	15245.79	3541.23
Wind 180 deg - No Ice		121.70	17453.86	-638.19
Wind 210 deg - No Ice		-8591.37	15124.09	-4646.61
Wind 240 deg - No Ice		-15210.75	8781.93	-7409.97
Wind 270 deg - No Ice		-17393.53	-121.70	-8187.84
Wind 300 deg - No Ice		-15054.63	-8832.33	-6771.79
Wind 330 deg - No Ice		-8802.16	-15245.79	-3541.23
Member Ice	17605.26			
Guy Ice	12437.17			
Total Weight Ice	69357.04			
Wind 0 deg - Ice		-20.31	-6487.09	66.63
Wind 30 deg - Ice		3199.49	-5582.30	1508.73
Wind 60 deg - Ice		5553.48	-3206.30	2546.56
Wind 90 deg - Ice		6434.16	20.31	2902.05
Wind 120 deg - Ice		5607.83	3261.13	2479.93
Wind 150 deg - Ice		3234.67	5602.61	1393.32
Wind 180 deg - Ice		20.31	6447.78	-66.63
Wind 210 deg - Ice		-3199.49	5582.30	-1508.73
Wind 240 deg - Ice		-5587.52	3225.96	-2546.56
Wind 270 deg - Ice		-6434.16	-20.31	-2902.05
Wind 300 deg - Ice		-5573.79	-3241.48	-2479.93
Wind 330 deg - Ice		-3234.67	-5602.61	-1393.32
Total Weight	13959.34			
Wind 0 deg - Service		-30.43	-4443.67	159.55
Wind 30 deg - Service		2147.84	-3781.02	1161.65
Wind 60 deg - Service		3733.23	-2155.38	1852.49
Wind 90 deg - Service		4348.38	30.43	2046.96
Wind 120 deg - Service		3833.11	2248.18	1692.95
Wind 150 deg - Service		2200.54	3811.45	885.31
Wind 180 deg - Service		30.43	4363.46	-159.55
Wind 210 deg - Service		-2147.84	3781.02	-1161.65
Wind 240 deg - Service		-3802.69	2195.48	-1852.49
Wind 270 deg - Service		-4348.38	-30.43	-2046.96
Wind 300 deg - Service		-3763.66	-2208.08	-1692.95

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Load Case	Vertical Forces <i>lb</i>	Sum of Forces <i>X</i> <i>lb</i>	Sum of Forces <i>Z</i> <i>lb</i>	Sum of Torques <i>lb-ft</i>
Wind 330 deg - Service		-2200.54	-3811.45	-885.31

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
14	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 <i>lb</i>	Horizontal, X <i>lb</i>	Horizontal, Z <i>lb</i>
Mast	Max. Vert	15	137774.56	-5.17	620.81

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb	
Guy C @ 145 ft Elev 0 ft Azimuth 240 deg	Max. H _x	11	72465.21	1416.90	10.80	
	Max. H _z	2	71932.09	0.08	1478.52	
	Max. M _x	1	0.00	-0.35	17.35	
	Max. M _z	1	0.00	-0.35	17.35	
	Max. Torsion	1	0.00	-0.35	17.35	
	Min. Vert	1	68588.41	-0.35	17.35	
	Min. H _x	5	72459.98	-1417.82	9.70	
	Min. H _z	8	72963.32	-1.05	-1378.31	
	Min. M _x	1	0.00	-0.35	17.35	
	Min. M _z	1	0.00	-0.35	17.35	
	Min. Torsion	1	0.00	-0.35	17.35	
	Max. Vert	10	-8649.21	-8551.98	4956.53	
	Guy B @ 145 ft Elev 0 ft Azimuth 120 deg	Max. H _x	10	-8649.21	-8551.98	4956.53
		Max. H _z	4	-28604.46	-29132.67	16797.13
Min. Vert		4	-28604.46	-29132.67	16797.13	
Min. H _x		4	-28604.46	-29132.67	16797.13	
Min. H _z		10	-8649.21	-8551.98	4956.53	
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Max. Vert	6	-8476.28	8432.45	4885.99	
	Max. H _x	12	-28783.47	29259.96	16872.78	
	Max. H _z	12	-28783.47	29259.96	16872.78	
	Min. Vert	12	-28783.47	29259.96	16872.78	
	Min. H _x	6	-8476.28	8432.45	4885.99	
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Min. H _z	6	-8476.28	8432.45	4885.99	
	Max. Vert	2	-8498.38	1.27	-9760.54	
	Max. H _x	24	-21974.11	719.84	-28370.96	
	Max. H _z	2	-8498.38	1.27	-9760.54	
	Min. Vert	8	-28804.71	-1.88	-33789.27	
	Min. H _x	18	-22005.62	-719.54	-28396.01	
Min. H _z	8	-28804.71	-1.88	-33789.27		

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	68588.41	0.35	-17.35	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	71932.09	-0.08	-1478.52	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	72453.10	701.65	-1252.45	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	72948.09	1211.62	-718.09	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	72459.98	1417.82	-9.70	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	71942.14	1261.75	709.59	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	72478.34	716.30	1203.61	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	72963.32	1.05	1378.31	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	72462.75	-714.34	1203.04	0.00	0.00	0.00

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<i>Load Combination</i>	<i>Vertical lb</i>	<i>Shear_x lb</i>	<i>Shear_z lb</i>	<i>Overturning Moment, M_x lb-ft</i>	<i>Overturning Moment, M_z lb-ft</i>	<i>Torque lb-ft</i>
No Ice+1.0 Guy						
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	71940.92	-1260.28	708.63	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	72465.21	-1416.90	-10.80	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	72975.17	-1211.24	-719.09	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	72474.45	-701.66	-1253.08	0.00	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp+Guy	136606.10	4.86	-128.71	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	137774.56	5.17	-620.81	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	137380.54	236.16	-551.23	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	137005.65	413.83	-362.89	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	137369.20	487.29	-114.62	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	137764.72	431.54	120.20	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	137375.34	256.31	285.44	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	137009.58	5.52	345.41	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	137380.01	-245.28	285.30	0.00	0.00	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	137770.61	-420.64	119.91	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	137373.97	-476.60	-114.96	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	137007.49	-403.32	-363.20	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	137380.76	-225.75	-551.42	0.00	0.00	0.00
Dead+Wind 0 deg - Service+Guy	68725.02	0.25	-381.64	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	68685.58	178.32	-327.09	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	68647.37	307.40	-194.52	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	68685.71	357.58	-16.44	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	68725.08	315.70	165.02	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	68684.88	179.63	292.00	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	68646.55	0.52	337.51	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	68685.74	-178.62	291.86	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	68726.05	-314.80	164.77	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	68686.19	-356.82	-16.72	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	68647.14	-306.78	-194.76	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	68685.21	-177.80	-327.23	0.00	0.00	0.00

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Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-13958.88	0.00	0.01	13958.88	0.01	0.000%
2	-121.70	-16477.43	-20295.77	121.74	16477.41	20291.35	0.017%
3	9848.96	-16323.59	-17302.31	-9848.43	16323.53	17296.64	0.022%
4	17116.27	-16169.75	-9882.08	-17111.90	16169.63	9879.18	0.021%
5	19908.72	-16323.59	121.70	-19903.56	16323.44	-119.82	0.021%
6	17515.80	-16477.43	10253.28	-17511.86	16477.31	-10251.32	0.017%
7	10059.76	-16323.59	17424.02	-10055.02	16323.53	-17420.75	0.022%
8	121.70	-16169.75	19974.97	-121.56	16169.71	-19969.80	0.020%
9	-9848.96	-16323.59	17302.31	9844.41	16323.53	-17299.10	0.022%
10	-17394.10	-16477.43	10042.49	17390.18	16477.31	-10040.50	0.017%
11	-19908.72	-16323.59	-121.70	19903.70	16323.44	123.52	0.021%
12	-17237.98	-16169.75	-10092.88	17233.70	16169.63	10089.85	0.020%
13	-10059.76	-16323.59	-17424.02	10059.28	16323.53	17418.31	0.022%
14	0.00	-71718.65	0.00	-0.09	71718.56	0.32	0.000%
15	-20.31	-71890.47	-9287.63	20.21	71890.29	9262.08	0.035%
16	4596.47	-71718.65	-8001.94	-4587.31	71718.48	7982.44	0.030%
17	7978.82	-71546.83	-4606.57	-7962.19	71546.66	4596.91	0.027%
18	9228.12	-71718.65	20.31	-9206.65	71718.48	-18.62	0.030%
19	8033.17	-71890.47	4661.40	-8011.05	71890.29	-4648.65	0.035%
20	4631.65	-71718.65	8022.25	-4619.47	71718.48	-8004.39	0.030%
21	20.31	-71546.83	9248.32	-20.44	71546.67	-9228.86	0.027%
22	-4596.47	-71718.65	8001.94	4583.99	71718.48	-7984.02	0.030%
23	-8012.86	-71890.47	4626.23	7990.42	71890.28	-4613.39	0.036%
24	-9228.12	-71718.65	-20.31	9206.37	71718.47	22.05	0.030%
25	-7999.13	-71546.83	-4641.75	7982.28	71546.66	4632.13	0.027%
26	-4631.65	-71718.65	-8022.25	4622.28	71718.48	8002.80	0.030%
27	-30.43	-13997.34	-5073.94	30.43	13997.34	5073.23	0.005%
28	2462.24	-13958.88	-4325.58	-2461.91	13958.88	4325.00	0.005%
29	4279.07	-13920.42	-2470.52	-4278.50	13920.42	2470.17	0.005%
30	4977.18	-13958.88	30.43	-4976.52	13958.88	-30.45	0.004%
31	4378.95	-13997.34	2563.32	-4378.33	13997.34	-2562.99	0.005%
32	2514.94	-13958.88	4356.00	-2514.61	13958.88	-4355.44	0.004%
33	30.43	-13920.42	4993.74	-30.43	13920.42	-4993.08	0.004%
34	-2462.24	-13958.88	4325.58	2461.90	13958.88	-4325.01	0.004%
35	-4348.52	-13997.34	2510.62	4347.90	13997.34	-2510.28	0.005%
36	-4977.18	-13958.88	-30.43	4976.52	13958.88	30.41	0.004%
37	-4309.49	-13920.42	-2523.22	4308.93	13920.42	2522.88	0.004%
38	-2514.94	-13958.88	-4356.00	2514.61	13958.88	4355.43	0.004%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	13	0.00000001	0.00000001
2	Yes	13	0.00000001	0.00006011
3	Yes	13	0.00000001	0.00005856
4	Yes	13	0.00000001	0.00005698
5	Yes	13	0.00000001	0.00006071
6	Yes	13	0.00000001	0.00006254
7	Yes	13	0.00000001	0.00005890
8	Yes	13	0.00000001	0.00005343
9	Yes	13	0.00000001	0.00005734

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10	Yes	13	0.00000001	0.00006520
11	Yes	13	0.00000001	0.00005879
12	Yes	13	0.00000001	0.00005630
13	Yes	13	0.00000001	0.00005861
14	Yes	13	0.00000001	0.00002752
15	Yes	13	0.00115772	0.00017635
16	Yes	13	0.00095992	0.00014321
17	Yes	13	0.00081933	0.00010573
18	Yes	13	0.00093672	0.00012944
19	Yes	13	0.00113382	0.00016288
20	Yes	13	0.00094459	0.00013257
21	Yes	13	0.00082531	0.00010420
22	Yes	13	0.00095990	0.00013730
23	Yes	13	0.00115209	0.00016782
24	Yes	13	0.00094926	0.00013302
25	Yes	13	0.00082272	0.00010614
26	Yes	13	0.00095768	0.00014233
27	Yes	13	0.00000001	0.00001420
28	Yes	13	0.00000001	0.00001287
29	Yes	13	0.00000001	0.00001250
30	Yes	13	0.00000001	0.00001353
31	Yes	13	0.00000001	0.00001444
32	Yes	13	0.00000001	0.00001239
33	Yes	13	0.00000001	0.00001128
34	Yes	13	0.00000001	0.00001275
35	Yes	13	0.00000001	0.00001478
36	Yes	13	0.00000001	0.00001357
37	Yes	13	0.00000001	0.00001220
38	Yes	13	0.00000001	0.00001256

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	0.815	33	0.0296	0.0446
T2	160 - 140	0.706	33	0.0246	0.0580
T3	140 - 120	0.593	33	0.0301	0.0752
T4	120 - 100	0.465	33	0.0198	0.0740
T5	100 - 80	0.439	35	0.0040	0.1261
T6	80 - 60	0.420	35	0.0102	0.1787
T7	60 - 40	0.366	35	0.0103	0.2162
T8	40 - 20	0.327	35	0.0179	0.2469
T9	20 - 5	0.207	35	0.0399	0.2648
T10	5 - 0	0.056	35	0.0514	0.2709

Critical Deflections and Radius of Curvature - Service Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt °	Twist °	Radius of Curvature <i>ft</i>
180.00	Lightning Rod	33	0.815	0.0296	0.0446	Inf
177.00	Sector Frame Mount	33	0.798	0.0283	0.0460	Inf
170.00	Guy	33	0.760	0.0257	0.0495	799786
116.42	Guy	33	0.453	0.0163	0.0795	35309

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
60.38	Guy	35	0.367	0.0103	0.2155	90190

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	3.608	8	0.1330	0.2012
T2	160 - 140	3.101	8	0.1145	0.2473
T3	140 - 120	2.578	8	0.1357	0.3128
T4	120 - 100	2.007	12	0.0917	0.3078
T5	100 - 80	1.850	4	0.0255	0.5159
T6	80 - 60	1.725	4	0.0474	0.7261
T7	60 - 40	1.482	4	0.0461	0.8754
T8	40 - 20	1.310	10	0.0743	0.9984
T9	20 - 5	0.833	10	0.1600	1.0704
T10	5 - 0	0.226	10	0.2063	1.0948

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Lightning Rod	8	3.608	0.1330	0.2012	256046
177.00	Sector Frame Mount	8	3.531	0.1281	0.2067	256046
170.00	Guy	8	3.352	0.1183	0.2205	128023
116.42	Guy	12	1.949	0.0772	0.3297	8544
60.38	Guy	4	1.486	0.0462	0.8729	21959

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	180	Leg	A325N	0.7500	4	4.38	30101.40	0.000	✓	1 Bolt Tension
		Torque Arm Top@170	A325N	0.7500	2	5576.35	19880.40	0.280	✓	1 Bolt Shear
		Torque Arm Bottom@170	A325N	0.7500	2	3449.34	19880.40	0.174	✓	1 Bolt Shear
T2	160	Leg	A325N	0.7500	4	1679.07	30101.40	0.056	✓	1 Bolt Tension
T3	140	Leg	A325N	0.7500	4	1822.56	30101.40	0.061	✓	1 Bolt Tension
T4	120	Leg	A325N	0.7500	4	2141.05	30101.40	0.071	✓	1 Bolt Tension
		Torque Arm Top@116.417	A325N	0.7500	2	4039.10	19880.40	0.203	✓	1 Bolt Shear
		Torque Arm	A325N	0.7500	2	2304.78	19880.40	0.116	✓	1 Bolt Shear

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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
Bottom@116.41										
T5	100	Leg	A325N	0.7500	4	2917.43	30101.40	0.097 ✓	1	Bolt Tension
T6	80	Leg	A325N	0.7500	4	3144.45	30101.40	0.104 ✓	1	Bolt Tension
T7	60	Leg	A325N	0.7500	4	3456.89	30101.40	0.115 ✓	1	Bolt Tension
T8	40	Leg	A325N	0.7500	4	3823.77	30101.40	0.127 ✓	1	Bolt Tension
T9	20	Leg	A325N	0.7500	4	3973.13	30101.40	0.132 ✓	1	Bolt Tension
T10	5	Leg	A325N	0.7500	4	4130.69	30101.40	0.137 ✓	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	170.00 (A) (559)	5/8 EHS	6360.00	42399.99	10571.80	25440.00	1.000	2.406 ✓
	170.00 (A) (560)	5/8 EHS	6360.00	42399.99	10510.30	25440.00	1.000	2.420 ✓
	170.00 (B) (553)	5/8 EHS	6360.00	42399.99	10662.20	25440.00	1.000	2.386 ✓
	170.00 (B) (554)	5/8 EHS	6360.00	42399.99	10385.90	25440.00	1.000	2.449 ✓
	170.00 (C) (547)	5/8 EHS	6360.00	42399.99	10241.70	25440.00	1.000	2.484 ✓
	170.00 (C) (548)	5/8 EHS	6360.00	42399.99	10578.60	25440.00	1.000	2.405 ✓
T4	116.42 (A) (577)	9/16 EHS	5250.00	35000.04	8556.69	21000.00	1.000	2.454 ✓
	116.42 (A) (578)	9/16 EHS	5250.00	35000.04	8557.82	21000.00	1.000	2.454 ✓
	116.42 (B) (571)	9/16 EHS	5250.00	35000.04	8647.13	21000.00	1.000	2.429 ✓
	116.42 (B) (572)	9/16 EHS	5250.00	35000.04	8465.70	21000.00	1.000	2.481 ✓
	116.42 (C) (565)	9/16 EHS	5250.00	35000.04	8443.89	21000.00	1.000	2.487 ✓
	116.42 (C) (566)	9/16 EHS	5250.00	35000.04	8622.86	21000.00	1.000	2.435 ✓
T6	60.38 (A) (585)	9/16 EHS	5250.00	35000.04	8731.74	21000.00	1.000	2.405 ✓
	60.38 (B) (584)	9/16 EHS	5250.00	35000.04	8765.80	21000.00	1.000	2.396 ✓
	60.38 (C) (583)	9/16 EHS	5250.00	35000.04	8763.58	21000.00	1.000	2.396 ✓

Compression Checks

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Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	Mast Stability Index	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-23814.80	72691.90	0.328 ¹
T2	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-25820.70	72691.90	0.355 ¹
T3	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-28694.20	72691.90	0.395 ¹
T4	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-38828.80	72691.90	0.534 ¹
T5	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-40367.30	72691.90	0.555 ¹
T6	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-41468.10	72691.90	0.570 ¹
T7	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-47703.20	71507.70	0.667 ¹
T8	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-49706.10	71516.70	0.695 ¹
T9	20 - 5	P2.5x.203	15.00	3.56	45.1 K=1.00	1.7040	1.00	-49108.70	70516.80	0.696 ¹
T10	5 - 0	P2.5x.203	5.39	1.80	22.8 K=1.00	1.7040	0.90	-50517.60	71625.90	0.705 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 $\frac{P_u}{\phi P_n}$
T10	5 - 0	5/8	2.44	1.46	105.4 K=0.94	0.3068	-3606.02	5538.29	0.651 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	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-6273.90	14497.90	0.433 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4867.14	14497.90	0.336 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7	0.5273	-4864.68	14497.90	0.336 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 $\frac{P_u}{\phi P_n}$
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-4176.30	14497.90	0.288 ¹ ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-4208.96	14497.90	0.290 ¹ ✓
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-4389.45	14497.90	0.303 ¹ ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-4043.16	14497.90	0.279 ¹ ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-4149.67	14497.90	0.286 ¹ ✓
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-3604.49	14497.90	0.249 ¹ ✓
T10	5 - 0	L1 1/2x1 1/2x3/16	2.33	2.09	K=0.65 55.7	0.5273	-925.05	17134.20	0.054 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	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-3015.61	14497.90	0.208 ¹ ✓
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2576.71	14497.90	0.178 ¹ ✓
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2636.51	14497.90	0.182 ¹ ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2313.36	14497.90	0.160 ¹ ✓
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2253.10	14497.90	0.155 ¹ ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2055.92	14497.90	0.142 ¹ ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-2061.16	14497.90	0.142 ¹ ✓
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-1940.12	14497.90	0.134 ¹ ✓
T10	5 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	K=0.65 86.7	0.5273	-925.05	14497.90	0.064 ¹ ✓

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

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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 $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2649.88	14497.90	0.183 ¹ ✓
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2558.32	14497.90	0.176 ¹ ✓
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3176.25	14497.90	0.219 ¹ ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2319.51	14497.90	0.160 ¹ ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2157.14	14497.90	0.149 ¹ ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2266.45	14497.90	0.156 ¹ ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2082.31	14497.90	0.144 ¹ ✓
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-850.59	14497.90	0.059 ¹ ✓

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 $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-7077.30	14497.90	0.488 ¹ ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3236.62	14497.90	0.223 ¹ ✓
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-615.16	14497.90	0.042 ¹ ✓

¹ P_u / φP_n controls

Bottom 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 $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5407.57	14497.90	0.373 ¹ ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5819.96	14497.90	0.401 ¹ ✓

¹ P_u / φP_n controls

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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	180 - 160 (551)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6467.22	44187.30	0.146 ¹ ✓
T1	180 - 160 (552)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6748.30	44187.30	0.153 ¹ ✓
T1	180 - 160 (557)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6898.68	44187.30	0.156 ¹ ✓
T1	180 - 160 (558)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6808.15	44187.30	0.154 ¹ ✓
T1	180 - 160 (563)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6551.11	44187.30	0.148 ¹ ✓
T1	180 - 160 (564)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6741.87	44187.30	0.153 ¹ ✓
T4	120 - 100 (569)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4002.79	44187.30	0.091 ¹ ✓
T4	120 - 100 (570)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4088.46	44187.30	0.093 ¹ ✓
T4	120 - 100 (575)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4609.56	44187.30	0.104 ¹ ✓
T4	120 - 100 (576)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4606.35	44187.30	0.104 ¹ ✓
T4	120 - 100 (581)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4010.57	44187.30	0.091 ¹ ✓
T4	120 - 100 (582)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-4083.18	44187.30	0.092 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	180 - 160	P2.5x.203	20.00	3.21	40.6	1.7040	0.00	82816.80	0.000 ¹ ✓

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	5/8	4.75	4.42	339.7	0.3068	5637.40	9940.20	0.567 ¹
T2	160 - 140	5/8	4.75	4.42	339.7	0.3068	4167.90	9940.20	0.419 ¹
T3	140 - 120	5/8	4.75	4.42	339.7	0.3068	4730.85	9940.20	0.476 ¹
T4	120 - 100	5/8	4.75	4.42	339.7	0.3068	4748.06	9940.20	0.478 ¹
T5	100 - 80	5/8	4.75	4.42	339.7	0.3068	4421.67	9940.20	0.445 ¹
T6	80 - 60	5/8	4.75	4.42	339.7	0.3068	4255.61	9940.20	0.428 ¹
T7	60 - 40	5/8	4.75	4.42	339.7	0.3068	4354.44	9940.20	0.438 ¹
T8	40 - 20	5/8	4.75	4.42	339.7	0.3068	3442.49	9940.20	0.346 ¹
T9	20 - 5	5/8	4.99	4.65	357.3	0.3068	3252.94	9940.20	0.327 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	412.48	17085.90	0.024 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	447.23	17085.90	0.026 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	497.00	17085.90	0.029 ¹
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	672.53	17085.90	0.039 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	699.18	17085.90	0.041 ¹
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	718.25	17085.90	0.042 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	826.24	17085.90	0.048 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	860.93	17085.90	0.050 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	850.59	17085.90	0.050 ¹
T10	5 - 0	L1 1/2x1 1/2x3/16	2.33	2.09	55.0	0.5273	3025.88	17085.90	0.177 ¹

¹ P_u / φP_n controls

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Top Girt Design Data (Tension)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>lb</i>	ϕP_n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	447.23	17085.90	0.026 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	497.00	17085.90	0.029 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	699.18	17085.90	0.041 ¹
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	718.25	17085.90	0.042 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	826.24	17085.90	0.048 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	860.93	17085.90	0.050 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	850.59	17085.90	0.050 ¹
T10	5 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	7487.62	17085.90	0.438 ¹

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>lb</i>	ϕP_n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	412.48	17085.90	0.024 ¹
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	447.23	17085.90	0.026 ¹
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	497.00	17085.90	0.029 ¹
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	672.53	17085.90	0.039 ¹
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	699.18	17085.90	0.041 ¹
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	826.24	17085.90	0.048 ¹
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	860.93	17085.90	0.050 ¹
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	2152.69	17085.90	0.126 ¹

¹ $P_u / \phi P_n$ controls

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Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>lb</i>	ϕP_n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	2354.43	17085.90	0.138 ¹

¹ $P_u / \phi P_n$ controls

Torque-Arm Top Design Data

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>lb</i>	ϕP_n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160 (549)	L2x2x5/16	4.75	4.59	91.6	1.1500	11152.70	37260.00	0.299 ¹
T1	180 - 160 (550)	L2x2x5/16	4.75	4.59	91.6	1.1500	11152.50	37260.00	0.299 ¹
T1	180 - 160 (555)	L2x2x5/16	4.75	4.59	91.6	1.1500	11058.90	37260.00	0.297 ¹
T1	180 - 160 (556)	L2x2x5/16	4.75	4.59	91.6	1.1500	11097.70	37260.00	0.298 ¹
T1	180 - 160 (561)	L2x2x5/16	4.75	4.59	91.6	1.1500	11098.80	37260.00	0.298 ¹
T1	180 - 160 (562)	L2x2x5/16	4.75	4.59	91.6	1.1500	11137.30	37260.00	0.299 ¹
T4	120 - 100 (567)	L2x2x5/16	4.75	4.59	91.6	1.1500	8007.46	37260.00	0.215 ¹
T4	120 - 100 (568)	L2x2x5/16	4.75	4.59	91.6	1.1500	8064.29	37260.00	0.216 ¹
T4	120 - 100 (573)	L2x2x5/16	4.75	4.59	91.6	1.1500	8036.82	37260.00	0.216 ¹
T4	120 - 100 (574)	L2x2x5/16	4.75	4.59	91.6	1.1500	8024.86	37260.00	0.215 ¹
T4	120 - 100 (579)	L2x2x5/16	4.75	4.59	91.6	1.1500	8011.64	37260.00	0.215 ¹
T4	120 - 100 (580)	L2x2x5/16	4.75	4.59	91.6	1.1500	8078.21	37260.00	0.217 ¹

¹ $P_u / \phi P_n$ controls

Torque-Arm Bottom Design Data

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>A</i> <i>in²</i>	<i>P_u</i> <i>lb</i>	ϕP_n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160 (552)	L3x3x1/4	3.50	3.38	43.6	1.4400	132.88	46656.00	0.003 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 $\frac{P_u}{\phi P_n}$
T1	180 - 160 (557)	L3x3x1/4	3.50	3.38	43.6	1.4400	296.53	46656.00	0.006 ¹ ✓
T1	180 - 160 (558)	L3x3x1/4	3.50	3.38	43.6	1.4400	186.48	46656.00	0.004 ¹ ✓
T1	180 - 160 (564)	L3x3x1/4	3.50	3.38	43.6	1.4400	113.50	46656.00	0.002 ¹ ✓
T4	120 - 100 (569)	L3x3x1/4	3.50	3.38	43.6	1.4400	1057.45	46656.00	0.023 ¹ ✓
T4	120 - 100 (570)	L3x3x1/4	3.50	3.38	43.6	1.4400	1155.35	46656.00	0.025 ¹ ✓
T4	120 - 100 (575)	L3x3x1/4	3.50	3.38	43.6	1.4400	1611.80	46656.00	0.035 ¹ ✓
T4	120 - 100 (576)	L3x3x1/4	3.50	3.38	43.6	1.4400	1610.28	46656.00	0.035 ¹ ✓
T4	120 - 100 (581)	L3x3x1/4	3.50	3.38	43.6	1.4400	1062.79	46656.00	0.023 ¹ ✓
T4	120 - 100 (582)	L3x3x1/4	3.50	3.38	43.6	1.4400	1150.07	46656.00	0.025 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	180 - 160	Leg	P2.5x.203	2	-23814.80	72691.90	32.8	Pass	
		Diagonal	5/8	49	5637.40	9940.20	56.7	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	54	-6273.90	14497.90	43.3	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	6	-3015.61	14497.90	20.8	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	8	-2649.88	14497.90	18.3	Pass	
		Guy A@170	5/8	559	10571.80	25440.00	41.6	Pass	
		Guy B@170	5/8	553	10662.20	25440.00	41.9	Pass	
		Guy C@170	5/8	548	10578.60	25440.00	41.6	Pass	
		Top Guy	L1 1/2x1 1/2x3/16	45	-7077.30	14497.90	48.8	Pass	
		Pull-Off@170							
		Bottom Guy	L1 1/2x1 1/2x3/16	36	-5407.57	14497.90	37.3	Pass	
		Pull-Off@170							
		Torque Arm Top@170	L2x2x5/16	549	11152.70	37260.00	29.9	Pass	
		Torque Arm Bottom@170	L3x3x1/4	557	-6898.68	44187.30	15.6	Pass	
T2	160 - 140	Leg	P2.5x.203	62	-25820.70	72691.90	35.5	Pass	
		Diagonal	5/8	115	4167.90	9940.20	41.9	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	113	-4867.14	14497.90	33.6	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	66	-2576.71	14497.90	17.8	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	67	-2558.32	14497.90	17.6	Pass	
		T3	140 - 120	Leg	P2.5x.203	122	-28694.20	72691.90	39.5
Diagonal	5/8			131	4730.85	9940.20	47.6	Pass	
Horizontal	L1 1/2x1 1/2x3/16			138	-4864.68	14497.90	33.6	Pass	
Top Girt	L1 1/2x1 1/2x3/16			125	-2636.51	14497.90	18.2	Pass	
Bottom Girt	L1 1/2x1 1/2x3/16			127	-3176.25	14497.90	21.9	Pass	
T4	120 - 100	Leg	P2.5x.203	182	-38828.80	72691.90	53.4	Pass	

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
		Diagonal	5/8	226	4748.06	9940.20	47.8	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	198	-4176.30	14497.90	28.8	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	187	-2319.51	14497.90	16.0	Pass	
		Guy A@116.417	9/16	578	8557.82	21000.00	40.8	Pass	
		Guy B@116.417	9/16	571	8647.13	21000.00	41.2	Pass	
		Guy C@116.417	9/16	566	8622.86	21000.00	41.1	Pass	
		Top Guy	L1 1/2x1 1/2x3/16	184	-3236.62	14497.90	22.3	Pass	
		Pull-Off@116.417							
		Bottom Guy	L1 1/2x1 1/2x3/16	234	-5819.96	14497.90	40.1	Pass	
		Pull-Off@116.417							
		Torque Arm	L2x2x5/16	580	8078.21	37260.00	21.7	Pass	
		Top@116.417							
		Torque Arm	L3x3x1/4	575	-4609.56	44187.30	10.4	Pass	
		Bottom@116.417					11.6 (b)		
T5	100 - 80	Leg	P2.5x.203	241	-40367.30	72691.90	55.5	Pass	
		Diagonal	5/8	295	4421.67	9940.20	44.5	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	257	-4208.96	14497.90	29.0	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	246	-2313.36	14497.90	16.0	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	247	-2157.14	14497.90	14.9	Pass	
T6	80 - 60	Leg	P2.5x.203	301	-41468.10	72691.90	57.0	Pass	
		Diagonal	5/8	315	4255.61	9940.20	42.8	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	317	-4389.45	14497.90	30.3	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	305	-2253.10	14497.90	15.5	Pass	
		Guy A@60.375	9/16	585	8731.74	21000.00	41.6	Pass	
		Guy B@60.375	9/16	584	8765.80	21000.00	41.7	Pass	
		Guy C@60.375	9/16	583	8763.58	21000.00	41.7	Pass	
		Top Guy	L1 1/2x1 1/2x3/16	308	2354.43	17085.90	13.8	Pass	
		Pull-Off@60.375							
T7	60 - 40	Leg	P2.5x.203	361	-47703.20	71507.70	66.7	Pass	
		Diagonal	5/8	415	4354.44	9940.20	43.8	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	377	-4043.16	14497.90	27.9	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	366	-2055.92	14497.90	14.2	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	367	-2266.45	14497.90	15.6	Pass	
T8	40 - 20	Leg	P2.5x.203	421	-49706.10	71516.70	69.5	Pass	
		Diagonal	5/8	476	3442.49	9940.20	34.6	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	472	-4149.67	14497.90	28.6	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	425	-2061.16	14497.90	14.2	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	427	-2082.31	14497.90	14.4	Pass	
T9	20 - 5	Leg	P2.5x.203	481	-49108.70	70516.80	69.6	Pass	
		Diagonal	5/8	493	3252.94	9940.20	32.7	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	497	-3604.49	14497.90	24.9	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	485	-1940.12	14497.90	13.4	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	489	2152.69	17085.90	12.6	Pass	
T10	5 - 0	Leg	P2.5x.203	523	-50517.60	71625.90	70.5	Pass	
		Diagonal	5/8	536	-3606.02	5538.29	65.1	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	538	3025.88	17085.90	17.7	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	526	7487.62	17085.90	43.8	Pass	
							Summary		
							Leg (T10)	70.5	Pass
							Diagonal (T10)	65.1	Pass
							Horizontal (T1)	43.3	Pass
							Top Girt (T10)	43.8	Pass
							Bottom Girt (T3)	21.9	Pass
							Guy A (T6)	41.6	Pass
							Guy B (T1)	41.9	Pass
							Guy C (T6)	41.7	Pass
							Top Guy	48.8	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Pull-Off (T1)		
						Bottom Guy	40.1	Pass
						Pull-Off (T4)		
						Torque Arm Top (T1)	29.9	Pass
						Torque Arm Bottom (T1)	17.4	Pass
						Bolt Checks	28.0	Pass
						RATING =	70.5	Pass

Site Name: **Stafford Tolland Ave.**
 Job Number: **124-23005**
 Date: **3/18/2024**

Design Base Loads (Factored) per TIA-222-H

Moment (M_u):	0.0 k-ft	Concrete Compressive Strength (f'_c):	3000 psi
Shear/Leg (V_u):	1.5 k	Vertical Steel Rebar Size #:	5
Compression/Leg (P_u):	137.8 k	Vertical Steel Rebar Area:	0.31 in ²
Uplift/Leg (T_u):	0.0 k	# of Vertical Steel Rebars:	5
Tower Type (GT / SST):	GT	Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Diameter of Prismatic Portion of Pier (d):	1.0 ft	Tie / Stirrup Size #:	4
Depth to Base of Foundation:	5.0 ft	Tie / Stirrup Area:	0.20 in ²
Pier Height Above Ground (h):	0.25 ft	Tie / Stirrup Spacing:	10.0 in
Length / Width of Pad (w):	5.5 ft	Tie / Stirrup Steel Yield Strength (F_y):	40 ksi
Thickness of Pad (t):	5.5 ft	Rebar Cage Diameter:	4.0 in
Depth Below Ground Surface to Water Table (w):	10.0 ft	Bending/Tension Reduction Factor (ϕ_B):	0.90
Unit Weight of Concrete:	150.0 pcf	Shear Reduction Factor (ϕ_V):	0.75
Unit Weight of Water:	62.4 pcf	Compression Reduction Factor (ϕ_C):	0.65
Unit Weight of Soil Above Water Table:	110.0 pcf	Steel Elastic Modulus:	29000 ksi
Unit Weight of Soil Below Water Table:	55.0 pcf	Pad Steel Rebar Size #:	5
Friction Angle of Uplift from Top of Pad:	30 Degrees	Pad Steel Rebar Area:	0.31 in ²
Friction Angle of Uplift from Base of Pad:	30 Degrees	Pad Steel Rebar Yield Strength (F_y):	60 ksi
Uplift Angle Started at Top or Base of Pad (T/B):	T	# of Rebar in Top of Pad:	0
Ultimate Skin Friction:	0 psf	# of Rebar in Base of Pad:	5
Ultimate Compressive Bearing Pressure:	12000 psf	Pad Clear Cover:	3 in
Capacity Increase (Due to Transient Loads):	1.00		
Bearing Strength Reduction Factor (ϕ_s):	0.60		
Uplift Strength Reduction Factor (ϕ_s):	0.75		

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	24.9 k
Weight of Soil (Bouyancy Considered):	0.0 k
Ultimate Skin Friction Resistance:	0.0 k
Controlling Failure Mode (Top / Base):	Top

Nominal Uplift Capacity per Leg ($\phi_s T_n$):	17.6 k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	217.8 k
P_u :	145.8 k
$T_u / \phi_s T_n$:	0.00 Result: OK
$P_u / \phi_s P_n$:	0.67 Result: OK

Depth (ft)		Ultimate Lateral Bearing Pressure (psf)	Increment (psf/ft)	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)
Top	Bottom					
0.0	2.0	0.0	110.0	110	0	0
2	-0.5	660.0	330.0	110	0	30

Inflection Point (Below Ground Surface):	0.0 ft
Factored Design Moment At Inflection Point (M_u):	0.0 k-ft

Pad Strength Capacity

β :	0.85 ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0004 OK - Minimum Reinforcement Ratio Met - A
Upper Pad Flexural Reinforcement Ratio:	0.0000 OK - Minimum Reinforcement Ratio Met - A
Lower Pad Flexural Reinforcement Spacing:	15 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	0.0 k
One Way Shear Capacity (ϕV_c):	341.5 k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.00 Result: OK
Punching Design Shear (V_u):	0.0 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	2416.9 k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.00 Result: OK
Flexural Loading Due to Soil Pressure (M_u):	66.5 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	435.3 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.15 Result: OK
Flexural Loading Due to Uplift (M_u):	0.0 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.00 Result: OK

Site Name: **Stafford Tolland Ave.**
 Site Number: **124-23005**
 Date: **3/18/2024**

Design Standard per TIA-222-H

Anchor Radius:	145.0 ft
Uplift (Factored - P_u):	28.8 k
Shear (Factored - V_u):	33.8 k
Anchor Base Depth (d):	8.5 ft
Width of Anchor (W):	5.5 ft
Length of Anchor (L):	11.5 ft
Thickness of Anchor (t):	2.0 ft
Depth Below Ground Surface to Water Table (w):	10.0 ft
Soil Uplift at Base / Top of Anchor (B/T):	T
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil Above Water Table:	110.0 pcf
Unit Weight of Water:	62.4 pcf
Submerged Soil Unit Weight:	50.0 pcf
Internal Angle of Friction:	30 Degrees
Cohesion:	0 psf
Ultimate Skin Friction of Pad Sides to Soil:	0 psf
Ultimate Coefficient of Shear Friction:	0.30
Maximum Top Conical Failure Angle:	30 Degrees
Maximum Base Conical Failure Angle:	30 Degrees
Uplift Strength Reduction Factor (ϕ_u):	0.75
Shear Strength Reduction Factor (ϕ_v):	0.75
Concrete Uplift Strength Reduction Factor (ϕ_{uc}):	0.90

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0 k
Weight of Soil (Buoyancy Effect Considered):	101.4 k
Ultimate Uplift Resistance from Skin Friction:	0.0 k
Nominal Factored Uplift Resistance ($\phi_u P_n$):	93.1 k
$P_u / \phi_u P_n$:	0.31 Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	12.8 k
Passive Pressure:	2475 psf
Ultimate Passure Pressure Resistance:	56.9 k
Nominal Shear Resistance ($\phi_v V_n$):	52.3 k
$V_u / \phi_v V_n$:	0.65 Result: OK

Anchor Rod Capacity

# of Anchor Rods:	1	Rod F_y :	49 ksi
Anchor Rod Gross Area:	1.77 in ²	Rod F_u :	62 ksi
Anchor Rod Net Area:	1.77 in ²	ϕ_y :	0.80
Resultant Tensile Load (T_u):	44.4 k	ϕ_t :	0.65
Anchor Rod Tensile Resistance (ϕT_n):	69.3 k		
$T_u / \phi T_n$:	0.64 Result: OK		

Strength Analysis of Reinforced Concrete

Concrete Compressive Strength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	9
# Longitudinal Rebar (1 Side):	3
Rebar Size:	4
Strength Reduction Factor for Shear (ϕ_v):	0.75
Strength Reduction Factor for Flexure (ϕ_b):	0.9
Compression Zone Factor (β_1):	0.85
Area of Single Rebar:	0.20 in ²
One Way Shear due to Shear Load (V_u):	9.3 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3 k
$V_u/\phi_v V_n$:	0.08 Result: OK
One Way Shear due to Uplift (V_u):	12.3 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4 k
$V_u/\phi_v V_n$:	0.11 Result: OK
Pad Flexure due to Shear Load (M_u):	48.6 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	167.4 k-ft
Pad Flexure due to Uplift (M_u):	41.4 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	161.9 k-ft
$M_u/\phi_b M_n$ (Max.):	0.29 Result: OK