STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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E-Mail: siting.council@ct.gov

www.ct.gov/csc

March 29, 2019

Ryan G. Bailey
Charles Cherundolo Consulting
1280 Route 46 West, Suite 9
Parsippany, NJ 07054

RE: **EM-SPRINT-025-190213 –** Sprint notice of intent to modify an existing telecommunications facility located at 751 Higgins Road, Cheshire, Connecticut.

Dear Mr. Bailey:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on February 13, 2019. On February 15, 2019, the Council issued a letter (enclosed) stating that the request for exempt modification was incomplete because the Structural Analysis Report (SA) did not account for AT&T's latest approved equipment configuration. The Council recommended that Charles Cherundolo Consulting provide an updated Structural Analysis Report for the facility that includes proposed and approved equipment by AT&T and other entities that are located at this facility on or before March 22, 2019. This date was extended to April 22, 2019.

On March 28, 2019, the Council received a SA dated March 28, 2019 which accounts for AT&T's most recently approved equipment configuration; however, staff observed that the revised SA does not include any approved equipment for Verizon. Please see Verizon's last exempt modification request for this facility which may be found on the Council's website under the decisions page in Cheshire under the filing number EM-VER-025-151007 or by following the link:

https://www.ct.gov/csc/lib/csc/ems/cheshire/higginsrd/verizon/em-ver-025-151007_filing_higginsrd.pdf

Therefore, the exempt modification request remains incomplete at this time. The Council recommends that Charles Cherundolo Consulting provide an updated SA for the facility that includes proposed and approved equipment by Verizon and other entities that are located at this facility on or before May 3, 2019. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to May 3, 2019. **Please provide an electronic version and one hard copy of the SA for the incomplete request to be rendered complete and processed.**

This notice of incompletion shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

Enclosure: Incomplete Letter dated February 15, 2019

c: The Honorable Robert Oris, Jr., Chairman, Town of Cheshire
Sean M. Kimball, Town Manager, Town of Cheshire
William S. Voelker, AICP, Town Planner, Town of Cheshire

INFINIGY

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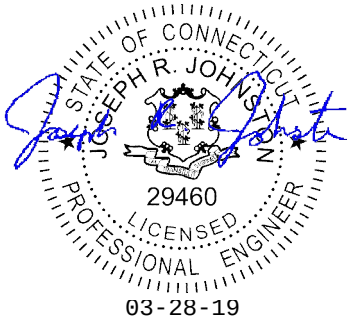
Structural Analysis Report

March 28, 2019

Site Name	Cheshire, CT
Site Number	CT03XC044
Client	Cherundolo
Carrier	Sprint
Infinigy Job Number	1108-B0003-B
Site Location	751 Higgins Road Cheshire, CT 06410 41º 29' 14.9" N NAD83 72º 55' 45.5" W NAD83
Structure Type	237' Self-Supporting Tower
Structural Usage Ratio	**74.0%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and anchor rods are therefore deemed adequate to support the existing and proposed loading as listed in this report.



Brenden Archer
Project Engineer II

Contents

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 237' Self-Supporting tower. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 8.0.4.0 tower analysis software.

Supporting Documentation

Previous Analysis	GPD Engineering Job #2018703.48, dated April 27, 2018
Tower Mapping	Infinigy Engineering Job #185050E, dated January 2, 2019
Site Photos	Infinigy Engineering Job #384-000, dated December 12, 2018
Construction Drawings	Infinigy Engineering Job #384-000, dated January 25, 2019

Analysis Code Requirements

Wind Speed	97 mph (3-Second Gust, V_{asd}) / 125 mph (3-Second Gust, V_{ult})
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 0.75" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC / 2018 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft
Seismic Design Values	S_s=0.187 g, S_1=0.063 g
Soil Type	D - Stiff Soil (Assumed)

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and anchor rods are therefore deemed adequate to support the existing and proposed loading as listed in this report. Due to a lack of information the foundation was not analyzed at this study.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Brenden Archer
Project Engineer II | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (518) 860-7408
barcher@infinigy.com | www.infinigy.com

Existing Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
252.0	1	CCI HPA-65R-BUU-H8	Platform	(18) 1-5/8” (3) 1-1/2” (7) 1” (3) 7/8” (3) 3/8”	AT&T
	2	CCI HPA-65R-BUU-H6			
	2	KMW AM-X-CD-16-65-00T-RET			
	1	Kathrein 800-10966			
	2	Kathrein 800-10965			
	1	Commscope SBNH-1D6565C			
	3	DTMABP7819VG12A			
	3	Ericsson RRUS-4478 B14			
	3	Ericsson RRUS-32			
	3	Ericsson RRUS-11			
	3	Ericsson RRUS-32 B2			
	6	Raycap DC6-48-60-18-8F			
228.0	6	Decibel DB980H65-M	Pipe Mount	(6) 1 5/8”	Sprint
213.0	2	Ericsson Air 21 B2A B4P	T-Frame	(4) 1-5/8” (2) 1 1/4”	-
	2	Ericsson Air 21 B4A B12P-B5P			
	2	6’ Panel Antenna			
	1	26”x26”x2” Panel Antenna			
	4	Ericsson RRUS 11 B12			
188.0	2	6' Omni	Sidearm	(1) 11/16”	-
175.0	1	6' Omni	Sidearm	(1) 11/16”	-
86.0	1	8' Yagi	Sidearm	(1) 11/16”	-
84.0	2	4' Yagi	Sidearm	(1) 11/16”	-
82.0	1	4' Yagi	Sidearm	(1) 11/16”	-
80.0	1	4' Yagi	Sidearm	(1) 11/16”	-
37.0	1	15”x16”x13 1/2” Box	-	(1) 2 1/4” Conduit (1) 1 1/4” Conduit (6) 1” Conduit	-
	1	22 1/2”x14 1/2”x4” Box	-		
	1	19”x14”x13” Box	-		
	1	Vicon V8300H Camera	-		
	1	20” Omni	Pipe Mount		
	1	GPS	Pipe Mount		
35.0	1	GPS	Pipe Mount	(1) 1/2”	-

To Be Removed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
228.0	6	Decibel DB980H65-M	-	(6) 1 5/8”	Sprint

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
225.0	3	Celwave APXVTM14-ALU-120	-	(4) 1” Hybrid Cable	Sprint
	3	Commscope NNVV-65B-R4			
	3	Alcatel Lucent TD-RRH8X25			
	6	Alcatel Lucent 800MHZ 2x50W RRH			
	3	Alcatel Lucent 1900 MHz 4x45 RRH			

Final Configuration

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
252.0	1	CCI HPA-65R-BUU-H8	Platform	(18) 1-5/8” (3) 1-1/2” (7) 1” (3) 7/8” (3) 3/8”	AT&T
	2	CCI HPA-65R-BUU-H6			
	2	KMW AM-X-CD-16-65-00T-RET			
	1	Kathrein 800-10966			
	2	Kathrein 800-10965			
	1	Commscope SBNH-1D6565C			
	3	DTMABP7819VG12A			
	3	Ericsson RRUS-4478 B14			
	3	Ericsson RRUS-32			
	3	Ericsson RRUS-11			
	3	Ericsson RRUS-32 B2			
	6	Raycap DC6-48-60-18-8F			
225.0	3	Celwave APXVTM14-ALU-120	Pipe Mount	(4) 1” Hybrid Cable	Sprint
	3	Commscope NNVV-65B-R4			
	3	Alcatel Lucent TD-RRH8X25			
	6	Alcatel Lucent 800MHZ 2x50W RRH			
	3	Alcatel Lucent 1900 MHz 4x45 RRH			
213.0	2	Ericsson Air 21 B2A B4P	T-Frame	(4) 1-5/8” (2) 1 1/4”	-
	2	Ericsson Air 21 B4A B12P-B5P			
	2	6’ Panel Antenna			
	1	26”x26”x2” Panel Antenna			
	4	Ericsson RRUS 11 B12			
188.0	2	6' Omni	Sidearm	(1) 11/16”	-
175.0	1	6' Omni	Sidearm	(1) 11/16”	-
86.0	1	8' Yagi	Sidearm	(1) 11/16”	-
84.0	2	4' Yagi	Sidearm	(1) 11/16”	-
82.0	1	4' Yagi	Sidearm	(1) 11/16”	-
80.0	1	4' Yagi	Sidearm	(1) 11/16”	-
37.0	1	15”x16”x13 1/2” Box	-	(1) 2 1/4” Conduit (1) 1 1/4” Conduit (6) 1” Conduit	-
	1	22 1/2”x14 1/2”x4” Box	-		
	1	19”x14”x13” Box	-		
	1	Vicon V8300H Camera	-		
	1	20” Omni	Pipe Mount		
	1	GPS	Pipe Mount		
35.0	1	GPS	Pipe Mount	(1) 1/2”	-

Structure Usages

Leg (T6)	74.0	Pass
Diagonal (T6)	59.8	Pass
Horizontal (T8)	52.3	Pass
Top Girt (T1)	16.8	Pass
Redund Horz 1 Bracing (T9)	23.6	Pass
Redund Horz 2 Bracing (T6)	60.7	Pass
Redund Horz 3 Bracing (T6)	15.9	Pass
Redund Diag 1 Bracing (T9)	41.6	Pass
Redund Diag 2 Bracing (T9)	31.3	Pass
Redund Diag 3 Bracing (T6)	11.9	Pass
Redund Hip 1 Bracing (T9)	0.9	Pass
Redund Hip 2 Bracing (T9)	0.8	Pass
Redund Hip Diagonal 1 Bracing (T9)	2.0	Pass
Redund Hip Diagonal 2 Bracing (T9)	3.2	Pass
Inner Bracing (T1)	2.9	Pass
Bolt Checks	74.0	Pass
RATING =	**74.0**	**Pass**

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
228.0	1.716	0.007	0.046

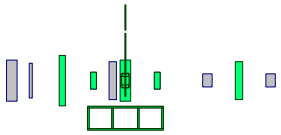
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or cable mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.



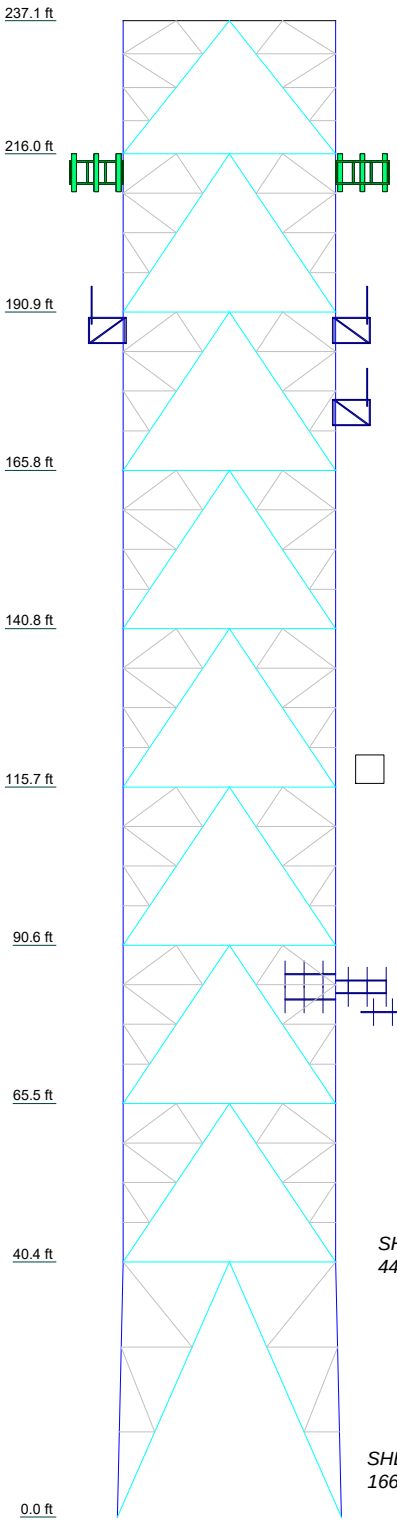
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 74%

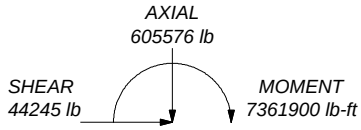
Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	W12x87	W10x77	W10x60	W10x49	W8x40	W8x35		W6x25	
Leg Grade				A36					
Diagonals	2L4x4x1/2x3/8	2L3x4x1/2x3/8	2L3x4x7/16x3/8	2L3x4x3/8x3/8			2L2 1/2x3x1/2x3/8	2L2 1/2x3x3/8x3/8	
Diagonal Grade				A36					
Top Girts				N.A.					2C10x15.3
Horizontals	2L4x3x7/16x3/8			2L3x2 1/2x3/8x3/8				2L2 1/2x3x1/4x3/8	N.A.
Red. Horizontals				L3x3x3/16					
Red. Diagonals	2L2 1/2x2 1/2x3/16x3/8			L3x3x3/16					
Red. Hips	2L2 1/2x2 1/2x1/4x3/8			N.A.					
Inner Bracing	2C4x7.25			2L3x2 1/2x5/16x3/8					
Face Width (ft) 35.5					7 @ 25.0833				33.67
# Panels @ (ft)	1 @ 40.4169								1 @ 21.0833
Weight (lb) 162022.0	34437.1	20685.8	18255.6	16527.0	15605.2	15152.9	14142.3	12633.9	14682.1



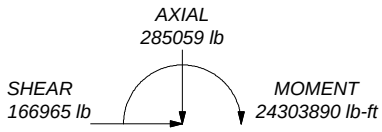
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 555322 lb
SHEAR: 52577 lb

UPLIFT: -429347 lb
SHEAR: 47816 lb



TORQUE 78856 lb-ft
50 mph WIND - 0.7500 in ICE



TORQUE 245410 lb-ft
REACTIONS - 97 mph WIND

Infinigy Engineering PLLC
1033 Watervliet Shaker Rd.
Albany, NY
Phone: (518) 690-0790
FAX: (518) 690-0790

Job: ***1108-B0003-B***			
Project: ***Cheshire, CT***			
Client: Sprint	Drawn by: BArcher	App'd:	
Code: TIA-222-G	Date: 03/28/19	Scale: NTS	
Path: C:\Users\BArcher\Desktop\Archerb\Towers\CT03XC044\CT03XC044.eri		Dwg No. E-1	

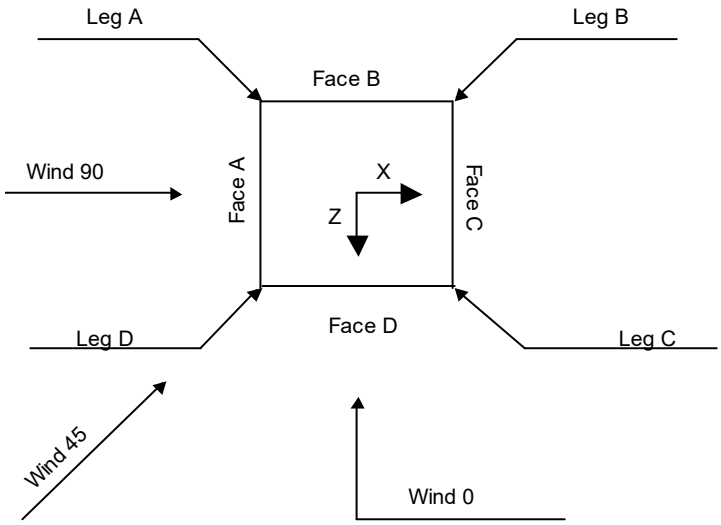
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 237.08 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 33.67 ft at the top and 35.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 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.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	237.08-216.00			33.67	1	21.08
T2	216.00-190.92			33.67	1	25.08
T3	190.92-165.83			33.67	1	25.08
T4	165.83-140.75			33.67	1	25.08
T5	140.75-115.67			33.67	1	25.08
T6	115.67-90.58			33.67	1	25.08
T7	90.58-65.50			33.67	1	25.08
T8	65.50-40.42			33.67	1	25.08
T9	40.42-0.00			33.67	1	40.42

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	237.08-216.00	21.08	K3A Down	No	Yes	0.0000	0.0000
T2	216.00-190.92	25.08	K3A Down	No	Yes	0.0000	0.0000
T3	190.92-165.83	25.08	K3A Down	No	Yes	0.0000	0.0000
T4	165.83-140.75	25.08	K3A Down	No	Yes	0.0000	0.0000
T5	140.75-115.67	25.08	K3A Down	No	Yes	0.0000	0.0000
T6	115.67-90.58	25.08	K3A Down	No	Yes	0.0000	0.0000
T7	90.58-65.50	25.08	K3A Down	No	Yes	0.0000	0.0000
T8	65.50-40.42	25.08	K3A Down	No	Yes	0.0000	0.0000
T9	40.42-0.00	40.42	K2 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 237.08-216.00	Wide Flange	W6x25	A36 (36 ksi)	Double Angle	2L2 1/2x3x3/8x3/8	A36 (36 ksi)
T2 216.00-190.92	Wide Flange	W6x25	A36 (36 ksi)	Double Angle	2L2 1/2x3x3/8x3/8	A36 (36 ksi)
T3 190.92-165.83	Wide Flange	W6x25	A36 (36 ksi)	Double Angle	2L2 1/2x3x1/2x3/8	A36 (36 ksi)
T4 165.83-140.75	Wide Flange	W8x35	A36 (36 ksi)	Double Angle	2L2 1/2x3x1/2x3/8	A36 (36 ksi)
T5 140.75-115.67	Wide Flange	W8x40	A36 (36 ksi)	Double Angle	2L3x4x3/8x3/8	A36 (36 ksi)
T6 115.67-90.58	Wide Flange	W10x49	A36 (36 ksi)	Double Angle	2L3x4x3/8x3/8	A36 (36 ksi)
T7 90.58-65.50	Wide Flange	W10x60	A36 (36 ksi)	Double Angle	2L3x4x7/16x3/8	A36 (36 ksi)
T8 65.50-40.42	Wide Flange	W10x77	A36 (36 ksi)	Double Angle	2L3x4x1/2x3/8	A36 (36 ksi)
T9 40.42-0.00	Wide Flange	W12x87	A36 (36 ksi)	Double Angle	2L4x4x1/2x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 237.08-216.00	None	Single Angle		A36 (36 ksi)	Double Channel	2C10x15.3	A36 (36 ksi)
T2 216.00-190.92	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x3x1/4x3/8	A36 (36 ksi)
T3 190.92-165.83	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T4 165.83-140.75	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T5 140.75-115.67	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T6 115.67-90.58	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T7 90.58-65.50	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T8 65.50-40.42	None	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x3/8x3/8	A36 (36 ksi)
T9 40.42-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L4x3x7/16x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 237.08-216.00	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T2 216.00-190.92	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T3 190.92-165.83	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T4 165.83-140.75	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T5 140.75-115.67	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T6 115.67-90.58	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T7 90.58-65.50	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T8 65.50-40.42	Single Angle		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)
T9 40.42-0.00	Single Angle		A36 (36 ksi)	Double Channel	2C4x7.25	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T1 237.08-216.00	A36 (36 ksi)	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
		Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T2 216.00-190.92	A36 (36 ksi)	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
		Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T3 190.92-165.83	A36 (36 ksi)	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
		Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T4 165.83-140.75	A36 (36 ksi)	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
		Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T5 140.75-115.67	A36 (36 ksi)	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
		Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T6	A36	Horizontal (1)	Arbitrary Shape	L3x3x3/16	1
115.67-90.58	(36 ksi)	Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	1
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T7	A36	Horizontal (1)	Arbitrary Shape	L3x3x3/16	0.65
90.58-65.50	(36 ksi)	Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	0.7
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T8	A36	Horizontal (1)	Arbitrary Shape	L3x3x3/16	0.65
65.50-40.42	(36 ksi)	Horizontal (2)		L2 1/2x2 1/2x3/16	
		Horizontal (3)		2L2 1/2x2 1/2x3/8x3/8	
		Diagonal (1)	Arbitrary Shape	L3x3x3/16	0.7
		Diagonal (2)		2L3x3x3/16x3/8	
		Diagonal (3)		2L2 1/2x2 1/2x3/16x3/8	
T9 40.42-0.00	A36	Horizontal (1)	Arbitrary Shape	L3x3x3/16	0.65
	(36 ksi)	Horizontal (2)		2L2 1/2x2 1/2x1/4x3/8	
		Diagonal (1)	Double Angle	2L2 1/2x2 1/2x3/16x3/8	0.7
		Diagonal (2)		2L2 1/2x2 1/2x1/4x3/8	
		Hip (1)	Double Angle	2L2 1/2x2 1/2x1/4x3/8	0.65
		Hip (2)		2L3x3x3/16x3/8	
		Hip Diagonal (1)	Double Angle	2L3x3x3/16x3/8	0.7
		Hip Diagonal (2)		2L3x3x3/16x3/8	0.7

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	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
T1	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
237.08-216.00			(36 ksi)						
T2	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
216.00-190.92			(36 ksi)						
T3	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
190.92-165.83			(36 ksi)						
T4	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
165.83-140.75			(36 ksi)						
T5	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
140.75-115.67			(36 ksi)						
T6	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
115.67-90.58			(36 ksi)						
T7 90.58-65.50	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
			(36 ksi)						
T8 65.50-40.42	9.17	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
			(36 ksi)						
T9 40.42-0.00	34.36	0.3750	A36	1	1	1	24.0000	24.0000	24.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	1	1	1	1
237.08-216.00				1	0.333	1	1	0.25	1	0.5
T2	No	No	1	1	1	1	1	1	1	1
216.00-190.92				1	0.333	1	1	0.25	1	0.5
T3	No	No	1	1	1	1	1	1	1	1
190.92-165.83				1	0.333	1	1	0.25	1	0.5
T4	No	No	1	1	1	1	1	1	1	1
165.83-140.75				1	0.333	1	1	0.25	1	0.5
T5	No	No	1	1	1	1	1	1	1	1
140.75-115.67				1	0.333	1	1	0.25	1	0.5
T6	No	No	1	1	1	1	1	1	1	1
115.67-90.58				1	0.333	1	1	0.25	1	0.5
T7	No	No	1	1	1	1	1	1	1	1
90.58-65.50				1	0.333	1	1	0.25	1	0.5
T8	No	No	1	1	1	1	1	1	1	1
65.50-40.42				1	0.333	1	1	0.25	1	0.5
T9 40.42-0.00	No	No	1	1	0.5	1	1	0.5	1	1
				1	1	1	1	0.25	1	0.5

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
237.08-216.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
216.00-190.92														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
190.92-165.83														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
165.83-140.75														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
140.75-115.67														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
115.67-90.58														
T7 90.58-65.50	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 65.50-40.42	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.42-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 237.08-216.00	Sleeve DS	0.7500 A325N	12	0.7500 A325N	4	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	4	0.7500 A307	0
T2 216.00-190.92	Sleeve DS	0.7500 A325N	12	0.7500 A325N	4	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	4	0.7500 A307	0
T3 190.92-165.83	Sleeve DS	0.7500 A325N	16	0.7500 A325N	5	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	0	0.7500 A325N	4	0.7500 A307	0
T4 165.83-140.75	Sleeve DS	1.0000 A325N	12	0.7500 A325N	5	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0
T5 140.75-115.67	Sleeve DS	1.0000 A325N	16	0.7500 A325N	4	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0
T6 115.67-90.58	Sleeve DS	1.0000 A325N	16	0.7500 A325N	4	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0
T7 90.58-65.50	Sleeve DS	1.0000 A325N	20	0.7500 A325N	5	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0
T8 65.50-40.42	Sleeve DS	1.0000 A325N	20	0.7500 A325N	5	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0
T9 40.42-0.00	Sleeve DS	1.0000 A325N	28	0.7500 A325N	8	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	4	0.7500 A307	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Heavy Climbing Rail	C	No	No	Af (CaAa)	216.00 - 0.00	-15.0000	0.4	1	1	3.0000	3.0000		3.50
Heavy Climbing Rail	D	No	No	Af (CaAa)	216.00 - 0.00	-15.0000	-0.4	1	1	3.0000	3.0000		3.50
Heavy Climbing Ladder ***	D	No	No	Af (CaAa)	237.08 - 216.00	-30.0000	0	1	1	6.0000	6.0000		7.00
W/G Ladder 6	B	No	No	Af (CaAa)	165.00 - 10.00	0.5000	-0.49	1	1	1.6130	1.6130		1.33
W/G Ladder 1	B	No	No	Af (CaAa)	213.00 - 19.00	0.5000	0.48	1	1	1.5300	1.5300		0.57
LDF6-50A (1-1/4 FOAM)	B	No	No	Ar (CaAa)	213.00 - 6.00	1.0000	0.45	2	2	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM) **	B	No	No	Ar (CaAa)	213.00 - 35.00	1.0000	0.48	4	4	1.0000	1.9800		0.82
W/G Ladder 2	C	No	No	Af (CaAa)	205.00 - 6.00	0.5000	-0.47	1	1	0.3250	0.3250		1.89
1" Rigid Conduit	C	No	No	Ar (CaAa)	19.00 - 0.00	1.0000	-0.47	5	5	1.0000	1.0000		1.20
LDF4-50A (1/2 FOAM)	C	No	No	Ar (CaAa)	19.00 - 0.00	1.0000	-0.45	1	1	0.5000	0.6300		0.15
1" Rigid Conduit	C	No	No	Ar (CaAa)	37.00 - 0.00	1.0000	-0.4	6	6	1.0000	1.0000		1.20
2 1/4" Rigid Conduit	C	No	No	Ar (CaAa)	37.00 - 3.00	1.0000	-0.35	1	1	2.2500	2.2500		1.50
1 1/4" Rigid	C	No	No	Ar (CaAa)	37.00 - 6.00	1.0000	0.45	1	1	1.2500	1.2500		0.70

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Conduit **													
Feedline Ladder (3" Rails) (Af)	D	No	No	Af (CaAa)	237.00 - 3.00	1.0000	0.1	1	1	5.0000	5.0000		6.14
LDF7-50A (1-5/8 FOAM)	D	No	No	Ar (CaAa)	228.00 - 0.00	2.0000	0.1	24	8	1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	D	No	No	Ar (CaAa)	237.08 - 228.00	2.0000	0.1	18	8	1.0000	1.9800		0.82
MLC Hybrid 6Power/12Fiber (1.5" Cable)	D	No	No	Ar (CaAa)	237.08 - 0.00	7.0000	0.07	3	3	1.0000	1.5000		0.50
LDF5-50A (7/8 FOAM)	D	No	No	Ar (CaAa)	237.08 - 0.00	8.0000	0.08	3	3	1.0000	1.0900		0.33
1" Coax	D	No	No	Ar (CaAa)	237.08 - 0.00	8.0000	0.1	7	7	1.0000	1.0000		0.30
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	80.00 - 0.00	6.0000	0.14	7	3	1.0000	0.6900		0.39
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	82.00 - 80.00	6.0000	0.14	6	3	1.0000	0.6900		0.39
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	84.00 - 82.00	6.0000	0.14	5	3	1.0000	0.6900		0.39
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	86.00 - 84.00	6.0000	0.14	3	3	1.0000	0.6900		0.39
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	175.00 - 86.00	6.0000	0.14	2	2	1.0000	0.6900		0.39
HW154 00603 (11/16)	D	No	No	Ar (CaAa)	188.00 - 175.00	6.0000	0.14	1	1	1.0000	0.6900		0.39
LDF2-50A (3/8 FOAM)	D	No	No	Ar (CaAa)	237.08 - 0.00	6.0000	0.13	3	3	0.5000	0.4400		0.08
LDF4-50A (1/2 FOAM)	D	No	No	Ar (CaAa)	35.00 - 0.00	6.0000	0.12	1	1	0.5000	0.6300		0.15
2" Rigid Conduit	D	No	No	Ar (CaAa)	237.08 - 0.00	8.0000	0.14	1	1	2.0000	2.0000		2.80
W/G Ladder 5 **	D	No	No	Af (CaAa)	216.00 - 10.00	0.5000	0.45	1	1	1.5500	1.5500		1.28
Climbing Ladder (Af)	C	No	No	Af (CaAa)	25.00 - 0.00	24.0000	-0.4	1	1	1.8000	1.8000		7.90

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	237.08-216.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	166.120	0.000	807.62
T2	216.00-190.92	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	27.715	0.000	114.28
		C	0.000	0.000	13.304	0.000	114.41
		D	0.000	0.000	204.496	0.000	958.93
T3	190.92-165.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	31.480	0.000	129.81
		C	0.000	0.000	13.900	0.000	135.20

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		D	0.000	0.000	206.658	0.000	971.03
T4	165.83-140.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	37.999	0.000	162.08
		C	0.000	0.000	13.900	0.000	135.20
		D	0.000	0.000	207.957	0.000	978.30
T5	140.75-115.67	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	38.223	0.000	163.19
		C	0.000	0.000	13.900	0.000	135.20
		D	0.000	0.000	207.957	0.000	978.30
T6	115.67-90.58	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	38.223	0.000	163.19
		C	0.000	0.000	13.900	0.000	135.20
		D	0.000	0.000	207.957	0.000	978.30
T7	90.58-65.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	38.223	0.000	163.19
		C	0.000	0.000	13.900	0.000	135.20
		D	0.000	0.000	214.064	0.000	1012.46
T8	65.50-40.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	38.223	0.000	163.19
		C	0.000	0.000	13.900	0.000	135.20
		D	0.000	0.000	216.611	0.000	1026.71
T9	40.42-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	26.413	0.000	116.00
		C	0.000	0.000	73.995	0.000	859.96
		D	0.000	0.000	346.149	0.000	1628.37

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_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	237.08-216.00	A	1.819	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	263.003	0.000	4800.83
T2	216.00-190.92	A	1.799	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	81.099	0.000	1082.67
		C		0.000	0.000	27.398	0.000	469.95
		D		0.000	0.000	314.883	0.000	5898.88
T3	190.92-165.83	A	1.776	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	91.605	0.000	1212.72
		C		0.000	0.000	31.717	0.000	549.94
		D		0.000	0.000	327.302	0.000	5992.33
T4	165.83-140.75	A	1.749	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	106.026	0.000	1448.07
		C		0.000	0.000	31.449	0.000	540.25
		D		0.000	0.000	334.417	0.000	5983.55
T5	140.75-115.67	A	1.718	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	105.713	0.000	1428.69
		C		0.000	0.000	31.138	0.000	529.14
		D		0.000	0.000	332.238	0.000	5898.65
T6	115.67-90.58	A	1.681	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	104.724	0.000	1395.42
		C		0.000	0.000	30.767	0.000	516.07
		D		0.000	0.000	329.638	0.000	5798.05
T7	90.58-65.50	A	1.635	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	103.490	0.000	1354.39
		C		0.000	0.000	30.303	0.000	500.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		D		0.000	0.000	334.243	0.000	5867.69
T8	65.50-40.42	A	1.573	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	101.830	0.000	1300.10
		C		0.000	0.000	29.679	0.000	478.93
		D		0.000	0.000	332.935	0.000	5776.40
T9	40.42-0.00	A	1.428	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	73.593	0.000	864.13
		C		0.000	0.000	190.938	0.000	2860.48
		D		0.000	0.000	523.532	0.000	8675.51

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	237.08-216.00	-6.4734	18.4184	-8.9821	31.6406
T2	216.00-190.92	2.2132	20.8883	7.8423	29.9160
T3	190.92-165.83	3.1869	20.3739	9.4811	29.2225
T4	165.83-140.75	1.6232	17.5958	6.1825	25.3711
T5	140.75-115.67	1.5497	17.1717	5.9962	24.8715
T6	115.67-90.58	1.4873	16.3896	5.8200	24.1173
T7	90.58-65.50	1.0378	18.0913	5.5186	25.1552
T8	65.50-40.42	0.8482	18.8141	5.3614	25.4763
T9	40.42-0.00	0.6185	15.1603	7.3737	18.6626

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	3	Heavy Climbing Ladder	216.00 - 237.08	0.6000	0.6000
T1	17	Feedline Ladder (3" Rails) (Af)	216.00 - 237.00	0.6000	0.6000
T1	18	LDF7-50A (1-5/8 FOAM)	216.00 - 228.00	0.6000	0.6000
T1	19	LDF7-50A (1-5/8 FOAM)	228.00 - 237.08	0.6000	0.6000
T1	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	216.00 - 237.08	0.6000	0.6000
T1	21	LDF5-50A (7/8 FOAM)	216.00 - 237.08	0.6000	0.6000
T1	22	1" Coax	216.00 - 237.08	0.6000	0.6000
T1	29	LDF2-50A (3/8 FOAM)	216.00 - 237.08	0.6000	0.6000
T1	31	2" Rigid Conduit	216.00 - 237.08	0.6000	0.6000
T2	1	Heavy Climbing Rail	190.92 - 216.00	0.6000	0.6000
T2	2	Heavy Climbing Rail	190.92 - 216.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	6	W/G Ladder 1	190.92 - 213.00	0.6000	0.6000
T2	7	LDF6-50A (1-1/4 FOAM)	190.92 - 213.00	0.6000	0.6000
T2	8	LDF7-50A (1-5/8 FOAM)	190.92 - 213.00	0.6000	0.6000
T2	10	W/G Ladder 2	190.92 - 205.00	0.6000	0.6000
T2	17	Feedline Ladder (3" Rails) (Af)	190.92 - 216.00	0.6000	0.6000
T2	18	LDF7-50A (1-5/8 FOAM)	190.92 - 216.00	0.6000	0.6000
T2	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	190.92 - 216.00	0.6000	0.6000
T2	21	LDF5-50A (7/8 FOAM)	190.92 - 216.00	0.6000	0.6000
T2	22	1" Coax	190.92 - 216.00	0.6000	0.6000
T2	29	LDF2-50A (3/8 FOAM)	190.92 - 216.00	0.6000	0.6000
T2	31	2" Rigid Conduit	190.92 - 216.00	0.6000	0.6000
T2	32	W/G Ladder 5	190.92 - 216.00	0.6000	0.6000
T3	1	Heavy Climbing Rail	165.83 - 190.92	0.6000	0.6000
T3	2	Heavy Climbing Rail	165.83 - 190.92	0.6000	0.6000
T3	6	W/G Ladder 1	165.83 - 190.92	0.6000	0.6000
T3	7	LDF6-50A (1-1/4 FOAM)	165.83 - 190.92	0.6000	0.6000
T3	8	LDF7-50A (1-5/8 FOAM)	165.83 - 190.92	0.6000	0.6000
T3	10	W/G Ladder 2	165.83 - 190.92	0.6000	0.6000
T3	17	Feedline Ladder (3" Rails) (Af)	165.83 - 190.92	0.6000	0.6000
T3	18	LDF7-50A (1-5/8 FOAM)	165.83 - 190.92	0.6000	0.6000
T3	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	165.83 - 190.92	0.6000	0.6000
T3	21	LDF5-50A (7/8 FOAM)	165.83 - 190.92	0.6000	0.6000
T3	22	1" Coax	165.83 - 190.92	0.6000	0.6000
T3	27	HW154 00603 (11/16)	165.83 - 175.00	0.6000	0.6000
T3	28	HW154 00603 (11/16)	175.00 - 188.00	0.6000	0.6000
T3	29	LDF2-50A (3/8 FOAM)	165.83 - 190.92	0.6000	0.6000
T3	31	2" Rigid Conduit	165.83 - 190.92	0.6000	0.6000
T3	32	W/G Ladder 5	165.83 - 190.92	0.6000	0.6000
T4	1	Heavy Climbing Rail	140.75 - 165.83	0.6000	0.6000
T4	2	Heavy Climbing Rail	140.75 - 165.83	0.6000	0.6000
T4	5	W/G Ladder 6	140.75 - 165.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	6	W/G Ladder 1	140.75 - 165.83	0.6000	0.6000
T4	7	LDF6-50A (1-1/4 FOAM)	140.75 - 165.83	0.6000	0.6000
T4	8	LDF7-50A (1-5/8 FOAM)	140.75 - 165.83	0.6000	0.6000
T4	10	W/G Ladder 2	140.75 - 165.83	0.6000	0.6000
T4	17	Feedline Ladder (3" Rails) (Af)	140.75 - 165.83	0.6000	0.6000
T4	18	LDF7-50A (1-5/8 FOAM)	140.75 - 165.83	0.6000	0.6000
T4	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	140.75 - 165.83	0.6000	0.6000
T4	21	LDF5-50A (7/8 FOAM)	140.75 - 165.83	0.6000	0.6000
T4	22	1" Coax	140.75 - 165.83	0.6000	0.6000
T4	27	HW154 00603 (11/16)	140.75 - 165.83	0.6000	0.6000
T4	29	LDF2-50A (3/8 FOAM)	140.75 - 165.83	0.6000	0.6000
T4	31	2" Rigid Conduit	140.75 - 165.83	0.6000	0.6000
T4	32	W/G Ladder 5	140.75 - 165.83	0.6000	0.6000
T5	1	Heavy Climbing Rail	115.67 - 140.75	0.6000	0.6000
T5	2	Heavy Climbing Rail	115.67 - 140.75	0.6000	0.6000
T5	5	W/G Ladder 6	115.67 - 140.75	0.6000	0.6000
T5	6	W/G Ladder 1	115.67 - 140.75	0.6000	0.6000
T5	7	LDF6-50A (1-1/4 FOAM)	115.67 - 140.75	0.6000	0.6000
T5	8	LDF7-50A (1-5/8 FOAM)	115.67 - 140.75	0.6000	0.6000
T5	10	W/G Ladder 2	115.67 - 140.75	0.6000	0.6000
T5	17	Feedline Ladder (3" Rails) (Af)	115.67 - 140.75	0.6000	0.6000
T5	18	LDF7-50A (1-5/8 FOAM)	115.67 - 140.75	0.6000	0.6000
T5	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	115.67 - 140.75	0.6000	0.6000
T5	21	LDF5-50A (7/8 FOAM)	115.67 - 140.75	0.6000	0.6000
T5	22	1" Coax	115.67 - 140.75	0.6000	0.6000
T5	27	HW154 00603 (11/16)	115.67 - 140.75	0.6000	0.6000
T5	29	LDF2-50A (3/8 FOAM)	115.67 - 140.75	0.6000	0.6000
T5	31	2" Rigid Conduit	115.67 - 140.75	0.6000	0.6000
T5	32	W/G Ladder 5	115.67 - 140.75	0.6000	0.6000
T6	1	Heavy Climbing Rail	90.58 - 115.67	0.6000	0.6000
T6	2	Heavy Climbing Rail	90.58 - 115.67	0.6000	0.6000
T6	5	W/G Ladder 6	90.58 - 115.67	0.6000	0.6000
T6	6	W/G Ladder 1	90.58 - 115.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	7	LDF6-50A (1-1/4 FOAM)	90.58 - 115.67	0.6000	0.6000
T6	8	LDF7-50A (1-5/8 FOAM)	90.58 - 115.67	0.6000	0.6000
T6	10	W/G Ladder 2	90.58 - 115.67	0.6000	0.6000
T6	17	Feedline Ladder (3" Rails) (Af)	90.58 - 115.67	0.6000	0.6000
T6	18	LDF7-50A (1-5/8 FOAM)	90.58 - 115.67	0.6000	0.6000
T6	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	90.58 - 115.67	0.6000	0.6000
T6	21	LDF5-50A (7/8 FOAM)	90.58 - 115.67	0.6000	0.6000
T6	22	1" Coax	90.58 - 115.67	0.6000	0.6000
T6	27	HW154 00603 (11/16)	90.58 - 115.67	0.6000	0.6000
T6	29	LDF2-50A (3/8 FOAM)	90.58 - 115.67	0.6000	0.6000
T6	31	2" Rigid Conduit	90.58 - 115.67	0.6000	0.6000
T6	32	W/G Ladder 5	90.58 - 115.67	0.6000	0.6000
T7	1	Heavy Climbing Rail	65.50 - 90.58	0.6000	0.6000
T7	2	Heavy Climbing Rail	65.50 - 90.58	0.6000	0.6000
T7	5	W/G Ladder 6	65.50 - 90.58	0.6000	0.6000
T7	6	W/G Ladder 1	65.50 - 90.58	0.6000	0.6000
T7	7	LDF6-50A (1-1/4 FOAM)	65.50 - 90.58	0.6000	0.6000
T7	8	LDF7-50A (1-5/8 FOAM)	65.50 - 90.58	0.6000	0.6000
T7	10	W/G Ladder 2	65.50 - 90.58	0.6000	0.6000
T7	17	Feedline Ladder (3" Rails) (Af)	65.50 - 90.58	0.6000	0.6000
T7	18	LDF7-50A (1-5/8 FOAM)	65.50 - 90.58	0.6000	0.6000
T7	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	65.50 - 90.58	0.6000	0.6000
T7	21	LDF5-50A (7/8 FOAM)	65.50 - 90.58	0.6000	0.6000
T7	22	1" Coax	65.50 - 90.58	0.6000	0.6000
T7	23	HW154 00603 (11/16)	65.50 - 80.00	0.6000	0.6000
T7	24	HW154 00603 (11/16)	80.00 - 82.00	0.6000	0.6000
T7	25	HW154 00603 (11/16)	82.00 - 84.00	0.6000	0.6000
T7	26	HW154 00603 (11/16)	84.00 - 86.00	0.6000	0.6000
T7	27	HW154 00603 (11/16)	86.00 - 90.58	0.6000	0.6000
T7	29	LDF2-50A (3/8 FOAM)	65.50 - 90.58	0.6000	0.6000
T7	31	2" Rigid Conduit	65.50 - 90.58	0.6000	0.6000
T7	32	W/G Ladder 5	65.50 - 90.58	0.6000	0.6000
T8	1	Heavy Climbing Rail	40.42 - 65.50	0.6000	0.6000
T8	2	Heavy Climbing Rail	40.42 - 65.50	0.6000	0.6000
T8	5	W/G Ladder 6	40.42 - 65.50	0.6000	0.6000
T8	6	W/G Ladder 1	40.42 - 65.50	0.6000	0.6000
T8	7	LDF6-50A (1-1/4 FOAM)	40.42 - 65.50	0.6000	0.6000
T8	8	LDF7-50A (1-5/8 FOAM)	40.42 - 65.50	0.6000	0.6000
T8	10	W/G Ladder 2	40.42 - 65.50	0.6000	0.6000
T8	17	Feedline Ladder (3" Rails) (Af)	40.42 - 65.50	0.6000	0.6000
T8	18	LDF7-50A (1-5/8 FOAM)	40.42 - 65.50	0.6000	0.6000
T8	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	40.42 - 65.50	0.6000	0.6000
T8	21	LDF5-50A (7/8 FOAM)	40.42 - 65.50	0.6000	0.6000
T8	22	1" Coax	40.42 - 65.50	0.6000	0.6000
T8	23	HW154 00603 (11/16)	40.42 - 65.50	0.6000	0.6000
T8	29	LDF2-50A (3/8 FOAM)	40.42 - 65.50	0.6000	0.6000
T8	31	2" Rigid Conduit	40.42 - 65.50	0.6000	0.6000
T8	32	W/G Ladder 5	40.42 - 65.50	0.6000	0.6000
T9	1	Heavy Climbing Rail	0.00 - 40.42	0.6000	0.6000
T9	2	Heavy Climbing Rail	0.00 - 40.42	0.6000	0.6000
T9	5	W/G Ladder 6	10.00 - 40.42	0.6000	0.6000
T9	6	W/G Ladder 1	19.00 - 40.42	0.6000	0.6000
T9	7	LDF6-50A (1-1/4 FOAM)	6.00 - 40.42	0.6000	0.6000
T9	8	LDF7-50A (1-5/8 FOAM)	35.00 - 40.42	0.6000	0.6000
T9	10	W/G Ladder 2	6.00 - 40.42	0.6000	0.6000
T9	11	1" Rigid Conduit	0.00 - 19.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	12	LDF4-50A (1/2 FOAM)	0.00 - 19.00	0.6000	0.6000
T9	13	1" Rigid Conduit	0.00 - 37.00	0.6000	0.6000
T9	14	2 1/4" Rigid Conduit	3.00 - 37.00	0.6000	0.6000
T9	15	1 1/4" Rigid Conduit	6.00 - 37.00	0.6000	0.6000
T9	17	Feedline Ladder (3" Rails) (Af)	3.00 - 40.42	0.6000	0.6000
T9	18	LDF7-50A (1-5/8 FOAM)	0.00 - 40.42	0.6000	0.6000
T9	20	MLC Hybrid 6Power/12Fiber (1.5" Cable)	0.00 - 40.42	0.6000	0.6000
T9	21	LDF5-50A (7/8 FOAM)	0.00 - 40.42	0.6000	0.6000
T9	22	1" Coax	0.00 - 40.42	0.6000	0.6000
T9	23	HW154 00603 (11/16)	0.00 - 40.42	0.6000	0.6000
T9	29	LDF2-50A (3/8 FOAM)	0.00 - 40.42	0.6000	0.6000
T9	30	LDF4-50A (1/2 FOAM)	0.00 - 35.00	0.6000	0.6000
T9	31	2" Rigid Conduit	0.00 - 40.42	0.6000	0.6000
T9	32	W/G Ladder 5	10.00 - 40.42	0.6000	0.6000
T9	34	Climbing Ladder (Af)	0.00 - 25.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Beacon on 15' Extension	C	From Centroid-Leg	0.00 0.00 5.50	0.0000	252.00	No Ice 1/2" Ice 1" Ice	15.00 20.00 25.00	15.00 20.00 25.00	500.00 650.00 800.00
Lightning Rod 5/8x4' **	C	From Centroid-Leg	0.00 0.00 13.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	6.00 8.00 10.00
41.5' Top Square Platform	D	None		0.0000	249.00	No Ice 1/2" Ice 1" Ice	382.00 465.00 548.00	382.00 462.00 542.00	27555.00 37198.00 46841.00
HPA-65R-BUU-H8 w/ Mount Pipe (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	13.05 13.66 14.27	9.42 10.82 12.07	97.20 192.07 296.65
AM-X-CD-16-65-00T-RET (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	8.02 8.48 8.94	4.64 5.09 5.54	48.50 95.00 147.50
800-10966 (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	13.61 14.21 14.82	7.35 7.94 8.54	81.90 155.92 237.75
(2) RRUS-11 (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
RRUS 32B2 (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	53.00 74.11 98.42
RRUS- 32 (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS 4478 (AT&T)	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	60.00 75.88 94.39
11"x10 1/2"x3 5/8" TMA	A	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.34 0.42 0.51	15.00 22.12 31.05
(2) DC6-48-60-18-8F (AT&T)	A	From Centroid-Face	10.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.90 3.13 3.37	2.90 3.13 3.37	32.80 60.76 92.36
HPA-65R-BUU-H6 (AT&T)	B	From Centroid-Face	20.00 -2.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38
AM-X-CD-17-65-00T-RET (AT&T)	B	From Centroid-Face	20.00 -15.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	4.62 5.03 5.46	4.89 5.61 6.34	48.25 90.32 139.11
800-10965 (AT&T)	B	From Centroid-Face	20.00 -18.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	13.81 14.35 14.89	5.83 6.32 6.82	108.60 185.13 268.71
(2) RRUS-11 (AT&T)	B	From Centroid-Face	20.00 18.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
RRUS 32B2 (AT&T)	B	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	53.00 74.11 98.42
RRUS- 32 (AT&T)	B	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05
RRUS 4478 (AT&T)	B	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	60.00 75.88 94.39
11"x10 1/2"x3 5/8" TMA (AT&T)	B	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.34 0.42 0.51	15.00 22.12 31.05
(2) DC6-48-60-18-8F (AT&T)	B	From Centroid-Face	10.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.90 3.13 3.37	2.90 3.13 3.37	32.80 60.76 92.36
4.5' Side Arm Mount	C	From Centroid-Face	20.00 10.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.22 1.85 2.48	6.30 8.61 10.92	158.70 196.52 234.34
4.5' Side Arm Mount	C	From Centroid-Face	20.00 -18.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.22 1.85 2.48	6.30 8.61 10.92	158.70 196.52 234.34
RRUS 4478 (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	60.00 75.88 94.39
4.5' Side Arm Mount	D	From Centroid-Face	20.00 10.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.22 1.85 2.48	6.30 8.61 10.92	158.70 196.52 234.34
4.5' Side Arm Mount	D	From Centroid-Face	20.00 -18.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	1.22 1.85 2.48	6.30 8.61 10.92	158.70 196.52 234.34
HPA-65R-BUU-H6 (AT&T)	D	From Centroid-Face	20.00 -18.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38
SBNH-1D6565C (AT&T)	D	From Centroid-Face	20.00 10.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	11.45 12.06 12.69	7.70 8.29 8.89	66.10 131.97 205.51

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
800-10965 (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	13.81 14.35 14.89	5.83 6.32 6.82	108.60 185.13 268.71
RRUS-11 (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
RRUS 32B2 (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	53.00 74.11 98.42
RRUS- 32 (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05
11"x10 1/2"x3 5/8" TMA (AT&T)	D	From Centroid-Face	20.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	0.96 1.09 1.22	0.34 0.42 0.51	15.00 22.12 31.05
(2) DC6-48-60-18-8F (AT&T)	D	From Centroid-Face	10.00 0.00 3.00	0.0000	252.00	No Ice 1/2" Ice 1" Ice	2.90 3.13 3.37	2.90 3.13 3.37	32.80 60.76 92.36
**									
Outside Platform Support Bracing	C	None		0.0000	243.00	No Ice 1/2" Ice 1" Ice	84.50 114.10 143.70	84.50 114.10 143.70	5825.00 7864.00 9903.00
Inside Platform Support Bracing	C	None		0.0000	243.00	No Ice 1/2" Ice 1" Ice	79.71 107.61 135.51	79.71 107.61 135.51	4248.00 5735.00 7222.00
**									
Access Platform	C	None		0.0000	239.00	No Ice 1/2" Ice 1" Ice	99.50 134.30 169.10	99.50 134.30 169.10	12772.00 17242.00 21712.00
**									
10'x2.5" Pipe Mount	B	From Face	0.50 -15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	2.88 3.91 4.96	2.88 3.91 4.96	57.90 78.90 106.45
**									
20' x 2 1/2" Pipe Mount (Sprint)	B	From Face	0.50 15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
20' x 2 1/2" Pipe Mount (Sprint)	B	From Face	0.50 15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
20' x 2 1/2" Pipe Mount (Sprint)	C	From Face	0.50 -15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
20' x 2 1/2" Pipe Mount (Sprint)	C	From Face	0.50 15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
20' x 2 1/2" Pipe Mount (Sprint)	D	From Face	0.50 -15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
20' x 2 1/2" Pipe Mount (Sprint)	D	From Face	0.50 15.00 0.00	0.0000	228.00	No Ice 1/2" Ice 1" Ice	5.75 7.78 9.83	5.75 7.78 9.83	115.80 157.42 211.69
NNVV-65B-R4 w/ Mount Pipe (Sprint)	B	From Face	0.50 -15.00 -3.00	-5.0000	228.00	No Ice 1/2" Ice 1" Ice	12.75 13.45 14.12	7.65 8.94 10.07	106.60 199.84 301.80
APXVTM14-ALU-I20 (Sprint)	B	From Face	0.50 15.00	-5.0000	228.00	No Ice 1/2" Ice	6.34 6.72	3.61 3.97	56.22 95.75

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			-3.00			1" Ice	7.10	4.33	140.34
NNVV-65B-R4 w/ Mount Pipe	C	From Face	0.50	-15.0000	228.00	No Ice	12.75	7.65	106.60
			-15.00			1/2" Ice	13.45	8.94	199.84
(Sprint)			-3.00			1" Ice	14.12	10.07	301.80
APXVTM14-ALU-I20	C	From Face	0.50	-15.0000	228.00	No Ice	6.34	3.61	56.22
(Sprint)			15.00			1/2" Ice	6.72	3.97	95.75
			-3.00			1" Ice	7.10	4.33	140.34
NNVV-65B-R4 w/ Mount Pipe	D	From Face	0.50	-5.0000	228.00	No Ice	12.75	7.65	106.60
			-15.00			1/2" Ice	13.45	8.94	199.84
(Sprint)			-3.00			1" Ice	14.12	10.07	301.80
APXVTM14-ALU-I20	D	From Face	0.50	-5.0000	228.00	No Ice	6.34	3.61	56.22
(Sprint)			15.00			1/2" Ice	6.72	3.97	95.75
			-3.00			1" Ice	7.10	4.33	140.34
1900 MHz 4X45 RRH	B	From Face	0.50	-5.0000	228.00	No Ice	2.32	2.24	60.00
(Sprint)			-15.00			1/2" Ice	2.53	2.44	83.13
			-3.00			1" Ice	2.74	2.65	109.50
TD-RRH8X20-25 BTS	B	From Face	0.50	-5.0000	228.00	No Ice	3.70	1.29	66.00
(25.4"x17.5"x5.7"x66)			-15.00			1/2" Ice	3.95	1.46	89.94
(Sprint)			-3.00			1" Ice	4.20	1.64	117.22
(2) 800MHZ 2x50W RRH	B	From Face	0.50	-5.0000	228.00	No Ice	2.13	1.77	53.00
(Sprint)			15.00			1/2" Ice	2.32	1.95	74.19
			-3.00			1" Ice	2.51	2.13	98.39
1900 MHz 4X45 RRH	C	From Face	0.50	-15.0000	228.00	No Ice	2.32	2.24	60.00
(Sprint)			-15.00			1/2" Ice	2.53	2.44	83.13
			-3.00			1" Ice	2.74	2.65	109.50
TD-RRH8X20-25 BTS	C	From Face	0.50	-15.0000	228.00	No Ice	3.70	1.29	66.00
(25.4"x17.5"x5.7"x66)			-15.00			1/2" Ice	3.95	1.46	89.94
(Sprint)			-3.00			1" Ice	4.20	1.64	117.22
(2) 800MHZ 2x50W RRH	C	From Face	0.50	-15.0000	228.00	No Ice	2.13	1.77	53.00
(Sprint)			15.00			1/2" Ice	2.32	1.95	74.19
			-3.00			1" Ice	2.51	2.13	98.39
1900 MHz 4X45 RRH	D	From Face	0.50	-5.0000	228.00	No Ice	2.32	2.24	60.00
(Sprint)			-15.00			1/2" Ice	2.53	2.44	83.13
			-3.00			1" Ice	2.74	2.65	109.50
TD-RRH8X20-25 BTS	D	From Face	0.50	-5.0000	228.00	No Ice	3.70	1.29	66.00
(25.4"x17.5"x5.7"x66)			-15.00			1/2" Ice	3.95	1.46	89.94
(Sprint)			-3.00			1" Ice	4.20	1.64	117.22
(2) 800MHZ 2x50W RRH	D	From Face	0.50	-5.0000	228.00	No Ice	2.13	1.77	53.00
(Sprint)			15.00			1/2" Ice	2.32	1.95	74.19
			-3.00			1" Ice	2.51	2.13	98.39
**									
10'x4" Pipe Mount	B	From Leg	0.50	0.0000	213.00	No Ice	3.58	3.58	109.00
			0.00			1/2" Ice	5.24	5.24	140.31
			0.00			1" Ice	5.85	5.85	178.35
10'x4" Pipe Mount	C	From Leg	0.50	0.0000	213.00	No Ice	3.58	3.58	109.00
			0.00			1/2" Ice	5.24	5.24	140.31
			0.00			1" Ice	5.85	5.85	178.35
15.5' T-Frame	B	From Leg	1.00	10.0000	213.00	No Ice	25.00	0.50	307.00
			0.00			1/2" Ice	32.00	1.00	415.00
			0.00			1" Ice	39.00	1.50	523.00
15.5' T-Frame	C	From Leg	1.00	10.0000	213.00	No Ice	25.00	0.50	307.00
			0.00			1/2" Ice	32.00	1.00	415.00
			0.00			1" Ice	39.00	1.50	523.00
(2) 8'x2" Antenna Mount Pipe	B	From Leg	1.00	0.0000	213.00	No Ice	1.90	1.90	26.00
			0.00			1/2" Ice	2.73	2.73	40.34
			0.00			1" Ice	3.40	3.40	59.96
(2) 8'x2" Antenna Mount Pipe	C	From Leg	1.00	0.0000	213.00	No Ice	1.90	1.90	26.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	2.73	2.73	40.34
			0.00			1" Ice	3.40	3.40	59.96
AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	1.00	10.0000	213.00	No Ice	6.65	5.96	117.05
			0.00			1/2" Ice	7.26	7.04	177.37
			0.00			1" Ice	7.78	7.83	244.68
AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	1.00	10.0000	213.00	No Ice	6.65	5.96	117.05
			0.00			1/2" Ice	7.26	7.04	177.37
			0.00			1" Ice	7.78	7.83	244.68
Air 21 B4A B12P-B5P w/ Mount Pipe	B	From Leg	1.00	10.0000	213.00	No Ice	11.54	10.80	155.20
			0.00			1/2" Ice	12.16	12.23	248.24
			0.00			1" Ice	12.79	13.51	351.12
Air 21 B4A B12P-B5P w/ Mount Pipe	C	From Leg	1.00	10.0000	213.00	No Ice	11.54	10.80	155.20
			0.00			1/2" Ice	12.16	12.23	248.24
			0.00			1" Ice	12.79	13.51	351.12
72"x14"x3" Panel w/ Mount Pipe	B	From Leg	1.00	10.0000	213.00	No Ice	9.46	4.61	55.55
			0.00			1/2" Ice	10.03	5.77	117.99
			0.00			1" Ice	10.57	6.64	188.27
72"x14"x3" Panel w/ Mount Pipe	C	From Leg	1.00	10.0000	213.00	No Ice	9.46	4.61	55.55
			0.00			1/2" Ice	10.03	5.77	117.99
			0.00			1" Ice	10.57	6.64	188.27
26"x26"x2" Panel	C	From Leg	1.00	10.0000	213.00	No Ice	5.63	0.58	25.00
			0.00			1/2" Ice	5.93	0.74	52.06
			-3.00			1" Ice	6.23	0.91	82.81
(2) RRUS 11 B12 BTS	B	From Leg	1.00	10.0000	213.00	No Ice	2.83	1.18	50.70
			0.00			1/2" Ice	3.04	1.33	71.57
			0.00			1" Ice	3.26	1.48	95.49
(2) RRUS 11 B12 BTS	C	From Leg	1.00	10.0000	213.00	No Ice	2.83	1.18	50.70
			0.00			1/2" Ice	3.04	1.33	71.57
			0.00			1" Ice	3.26	1.48	95.49
**									
5' Side Arm Mount	B	Stand-Off Left	2.50	0.0000	188.00	No Ice	0.98	2.60	48.00
			0.00			1/2" Ice	1.70	4.50	70.36
			0.00			1" Ice	2.42	6.40	92.72
6' Omni	B	Stand-Off Left	5.00	0.0000	188.00	No Ice	0.82	0.82	10.00
			0.00			1/2" Ice	1.44	1.44	17.02
			4.00			1" Ice	1.96	1.96	27.99
5' Side Arm Mount	B	Stand-Off Right	2.50	0.0000	188.00	No Ice	0.98	2.60	48.00
			0.00			1/2" Ice	1.70	4.50	70.36
			0.00			1" Ice	2.42	6.40	92.72
6' Omni	B	Stand-Off Right	5.00	0.0000	188.00	No Ice	0.82	0.82	10.00
			0.00			1/2" Ice	1.44	1.44	17.02
			4.00			1" Ice	1.96	1.96	27.99
6' x 2" Antenna Mount Pipe	B	Stand-Off Left	5.00	0.0000	188.00	No Ice	1.43	1.43	23.00
			0.00			1/2" Ice	1.92	1.92	33.83
			0.00			1" Ice	2.29	2.29	48.71
6' x 2" Antenna Mount Pipe	B	Stand-Off Right	5.00	0.0000	188.00	No Ice	1.43	1.43	23.00
			0.00			1/2" Ice	1.92	1.92	33.83
			0.00			1" Ice	2.29	2.29	48.71
**									
5' Side Arm Mount	B	Stand-Off Right	2.50	0.0000	175.00	No Ice	0.98	2.60	48.00
			0.00			1/2" Ice	1.70	4.50	70.36
			0.00			1" Ice	2.42	6.40	92.72
6' Omni	B	Stand-Off Right	5.00	0.0000	175.00	No Ice	0.82	0.82	10.00
			0.00			1/2" Ice	1.44	1.44	17.02
			4.00			1" Ice	1.96	1.96	27.99
6' x 2" Antenna Mount Pipe	B	Stand-Off Left	5.00	0.0000	175.00	No Ice	1.43	1.43	23.00
			0.00			1/2" Ice	1.92	1.92	33.83

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.29	2.29	48.71
**									
4' Side Arm Mount	C	Stand-Off	2.00	0.0000	86.00	No Ice	0.98	2.18	42.00
		Right	0.00			1/2" Ice	1.70	3.80	62.37
			0.00			1" Ice	2.42	5.42	82.75
8' Yagi	C	Stand-Off	4.00	0.0000	86.00	No Ice	1.93	2.92	84.00
		Right	0.00			1/2" Ice	4.28	3.99	118.00
			0.00			1" Ice	6.63	5.06	152.00
4' Side Arm Mount	C	Stand-Off	2.00	0.0000	84.00	No Ice	0.98	2.18	42.00
		Left	0.00			1/2" Ice	1.70	3.80	62.37
			0.00			1" Ice	2.42	5.42	82.75
4' Yagi	C	Stand-Off	4.00	0.0000	84.00	No Ice	0.30	1.00	10.00
		Left	0.00			1/2" Ice	1.50	3.50	18.00
			1.00			1" Ice	2.70	6.00	26.00
4' Yagi	C	Stand-Off	4.00	0.0000	84.00	No Ice	0.30	1.00	10.00
		Left	0.00			1/2" Ice	1.50	3.50	18.00
			-1.00			1" Ice	2.70	6.00	26.00
4' Side Arm Mount	C	Stand-Off	2.00	0.0000	82.00	No Ice	0.98	2.18	42.00
		Right	0.00			1/2" Ice	1.70	3.80	62.37
			0.00			1" Ice	2.42	5.42	82.75
4' Yagi	C	Stand-Off	4.00	0.0000	82.00	No Ice	0.30	1.00	10.00
		Right	0.00			1/2" Ice	1.50	3.50	18.00
			0.00			1" Ice	2.70	6.00	26.00
4' Side Arm Mount	B	Stand-Off	2.00	0.0000	80.00	No Ice	0.98	2.18	42.00
		Right	0.00			1/2" Ice	1.70	3.80	62.37
			0.00			1" Ice	2.42	5.42	82.75
4' Yagi	B	Stand-Off	4.00	0.0000	80.00	No Ice	0.30	1.00	10.00
		Right	0.00			1/2" Ice	1.50	3.50	18.00
			0.00			1" Ice	2.70	6.00	26.00
**									
Vicon V8300H (Security Camera)	B	From Leg	1.00	0.0000	37.00	No Ice	1.00	1.00	45.00
			0.00			1/2" Ice	2.00	2.00	65.00
			0.00			1" Ice	3.00	3.00	85.00
22 1/2"x14 1/2"x4" Box	C	From	15.00	0.0000	37.00	No Ice	2.72	0.84	50.00
		Centroid-Fa	0.00			1/2" Ice	2.93	0.98	66.73
		ce	0.00			1" Ice	3.14	1.14	86.31
15"x16"x13 1/2" Box	C	From	15.00	0.0000	37.00	No Ice	2.00	1.80	40.00
		Centroid-Fa	0.00			1/2" Ice	2.18	1.97	62.81
		ce	0.00			1" Ice	2.36	2.14	88.71
19"x14"x13" Box	C	From	15.00	0.0000	37.00	No Ice	2.22	2.06	40.00
		Centroid-Fa	0.00			1/2" Ice	2.40	2.24	64.05
		ce	0.00			1" Ice	2.60	2.43	91.27
(2) RBC-MU2 TMA	C	From	15.00	0.0000	37.00	No Ice	2.27	1.43	73.00
		Centroid-Fa	0.00			1/2" Ice	2.46	1.59	92.66
		ce	0.00			1" Ice	2.65	1.76	115.24
20" x 1" Omni	B	From	19.00	0.0000	37.00	No Ice	0.25	0.25	10.00
		Centroid-Fa	0.00			1/2" Ice	0.38	0.38	12.60
		ce	1.00			1" Ice	0.51	0.51	16.73
GPS	B	From	19.00	0.0000	37.00	No Ice	0.13	0.13	0.87
		Centroid-Fa	0.00			1/2" Ice	0.21	0.21	3.85
		ce	0.00			1" Ice	0.28	0.28	7.85
GPS	D	From	19.00	0.0000	35.00	No Ice	0.13	0.13	0.87
		Centroid-Fa	0.00			1/2" Ice	0.21	0.21	3.85
		ce	0.00			1" Ice	0.28	0.28	7.85
**									
Full Face Walking Platform	B	From Face	0.00	0.0000	140.00	No Ice	133.60	42.50	1930.00
			0.00			1/2" Ice	186.80	57.60	2960.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			1.50			1" Ice	240.00	72.70	3990.00
Full Face Walking Platform	C	From Face	0.00	0.0000	140.00	No Ice	133.60	42.50	1930.00
			0.00			1/2" Ice	186.80	57.60	2960.00
			1.50			1" Ice	240.00	72.70	3990.00
Corner Rest Platform	C	From	10.00	0.0000	190.00	No Ice	4.20	4.20	180.00
		Centroid-Le	0.00			1/2" Ice	5.80	5.80	250.00
		g	0.00			1" Ice	7.40	7.40	320.00
Corner Rest Platform	C	From	10.00	0.0000	140.00	No Ice	4.20	4.20	180.00
		Centroid-Le	0.00			1/2" Ice	5.80	5.80	250.00
		g	0.00			1" Ice	7.40	7.40	320.00
Corner Rest Platform	C	From	10.00	0.0000	90.00	No Ice	4.20	4.20	180.00
		Centroid-Le	0.00			1/2" Ice	5.80	5.80	250.00
		g	0.00			1" Ice	7.40	7.40	320.00
Rest Platform	D	From	15.00	0.0000	216.00	No Ice	14.70	11.00	300.00
		Centroid-Fa	0.00			1/2" Ice	20.60	15.20	455.00
		ce	1.50			1" Ice	26.50	19.40	610.00
Full Face Walking Platform 1/3	B	From Face	0.00	0.0000	40.00	No Ice	44.50	14.20	643.00
			0.00			1/2" Ice	62.30	19.20	987.00
			1.50			1" Ice	80.10	24.20	1331.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	1.2 Dead+1.6 Wind 135 deg - No Ice
9	0.9 Dead+1.6 Wind 135 deg - No Ice
10	1.2 Dead+1.6 Wind 180 deg - No Ice
11	0.9 Dead+1.6 Wind 180 deg - No Ice
12	1.2 Dead+1.6 Wind 225 deg - No Ice
13	0.9 Dead+1.6 Wind 225 deg - No Ice
14	1.2 Dead+1.6 Wind 270 deg - No Ice
15	0.9 Dead+1.6 Wind 270 deg - No Ice
16	1.2 Dead+1.6 Wind 315 deg - No Ice
17	0.9 Dead+1.6 Wind 315 deg - No Ice
18	1.2 Dead+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
21	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
22	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
23	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
24	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
25	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
26	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
27	Dead+Wind 0 deg - Service

Comb. No.	Description
28	Dead+Wind 45 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 135 deg - Service
31	Dead+Wind 180 deg - Service
32	Dead+Wind 225 deg - Service
33	Dead+Wind 270 deg - Service
34	Dead+Wind 315 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	237.083 - 216	1.808	30	0.0456	0.0068
T2	216 - 190.917	1.593	30	0.0452	0.0067
T3	190.917 - 165.833	1.324	30	0.0437	0.0063
T4	165.833 - 140.75	1.073	30	0.0403	0.0058
T5	140.75 - 115.667	0.835	30	0.0363	0.0052
T6	115.667 - 90.5835	0.614	30	0.0309	0.0045
T7	90.5835 - 65.5002	0.416	30	0.0247	0.0036
T8	65.5002 - 40.4169	0.254	30	0.0179	0.0028
T9	40.4169 - 0	0.129	34	0.0111	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
252.00	Beacon on 15' Extension	30	1.808	0.0456	0.0068	923682
249.00	41.5' Top Square Platform	30	1.808	0.0456	0.0068	923682
243.00	Outside Platform Support Bracing	30	1.808	0.0456	0.0068	923682
239.00	Access Platform	30	1.808	0.0456	0.0068	923682
228.00	10'x2.5" Pipe Mount	30	1.716	0.0455	0.0068	508454
216.00	Rest Platform	30	1.593	0.0452	0.0067	243798
213.00	10'x4" Pipe Mount	30	1.561	0.0451	0.0067	284321
190.00	Corner Rest Platform	30	1.314	0.0436	0.0062	242656
188.00	5' Side Arm Mount	30	1.293	0.0434	0.0062	248473
175.00	5' Side Arm Mount	30	1.162	0.0417	0.0060	458334
140.00	Full Face Walking Platform	30	0.828	0.0361	0.0052	434277
90.00	Corner Rest Platform	30	0.412	0.0245	0.0036	193446
86.00	4' Side Arm Mount	30	0.384	0.0234	0.0035	197447
84.00	4' Side Arm Mount	30	0.370	0.0229	0.0034	201136
82.00	4' Side Arm Mount	30	0.357	0.0224	0.0033	204970
80.00	4' Side Arm Mount	30	0.344	0.0218	0.0033	208953
40.00	Full Face Walking Platform 1/3	34	0.127	0.0110	0.0019	161541
37.00	Vicon V8300H (Security Camera)	34	0.115	0.0102	0.0018	170407
35.00	GPS	34	0.108	0.0097	0.0017	179941

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	237.083 - 216	7.404	8	0.1836	0.0284
T2	216 - 190.917	6.536	8	0.1823	0.0280
T3	190.917 - 165.833	5.443	8	0.1767	0.0261
T4	165.833 - 140.75	4.421	8	0.1636	0.0241
T5	140.75 - 115.667	3.449	8	0.1474	0.0216
T6	115.667 - 90.5835	2.540	8	0.1257	0.0186
T7	90.5835 - 65.5002	1.728	8	0.1006	0.0151
T8	65.5002 - 40.4169	1.060	8	0.0731	0.0116
T9	40.4169 - 0	0.538	16	0.0455	0.0081

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
252.00	Beacon on 15' Extension	8	7.404	0.1836	0.0284	228633
249.00	41.5' Top Square Platform	8	7.404	0.1836	0.0284	228633
243.00	Outside Platform Support Bracing	8	7.404	0.1836	0.0284	228633
239.00	Access Platform	8	7.404	0.1836	0.0284	228633
228.00	10'x2.5" Pipe Mount	8	7.036	0.1832	0.0283	125853
216.00	Rest Platform	8	6.536	0.1823	0.0280	60512
213.00	10'x4" Pipe Mount	8	6.407	0.1820	0.0279	71211
190.00	Corner Rest Platform	8	5.404	0.1763	0.0260	60644
188.00	5' Side Arm Mount	8	5.319	0.1755	0.0259	62115
175.00	5' Side Arm Mount	8	4.786	0.1689	0.0248	117527
140.00	Full Face Walking Platform	8	3.421	0.1468	0.0215	111308
90.00	Corner Rest Platform	8	1.711	0.1000	0.0150	47556
86.00	4' Side Arm Mount	8	1.595	0.0957	0.0145	48476
84.00	4' Side Arm Mount	8	1.538	0.0935	0.0142	49348
82.00	4' Side Arm Mount	8	1.483	0.0913	0.0139	50253
80.00	4' Side Arm Mount	8	1.428	0.0891	0.0136	51192
40.00	Full Face Walking Platform 1/3	16	0.531	0.0450	0.0080	40099
37.00	Vicon V8300H (Security Camera)	16	0.480	0.0417	0.0075	42314
35.00	GPS	16	0.448	0.0395	0.0072	44682

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	237.083	Leg	A325N	0.7500	12	6929.45	24963.20	0.278	1	Bearing
		Diagonal	A325N	0.7500	4	3602.16	31320.00	0.115	1	Gusset Bearing
T2	216	Leg	A325N	0.7500	12	10044.50	24963.20	0.402	1	Bearing
		Diagonal	A325N	0.7500	4	5615.82	28220.60	0.199	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	3125.45	19439.10	0.161	1	Member Block Shear
T3	190.917	Leg	A325N	0.7500	16	9837.28	25404.00	0.387	1	Bearing
		Diagonal	A325N	0.7500	5	6413.15	31320.00	0.205	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	4107.23	28220.60	0.146	1	Gusset Bearing
T4	165.833	Leg	A325N	1.0000	12	18422.20	32274.10	0.571	1	Bearing
		Diagonal	A325N	0.7500	5	7776.40	31320.00	0.248	1	Gusset Bearing

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
		Horizontal	A325N	0.7500	4	4940.63	28220.60	0.175	1	Gusset Bearing
T5	140.75	Leg	A325N	1.0000	16	19691.80	38132.10	0.516	1	Bearing
		Diagonal	A325N	0.7500	4	11151.50	28220.60	0.395	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	6128.03	28220.60	0.217	1	Gusset Bearing
T6	115.667	Leg	A325N	1.0000	16	26657.40	36013.60	0.740	1	Bearing
		Diagonal	A325N	0.7500	4	12694.70	28220.60	0.450	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	6962.47	28220.60	0.247	1	Gusset Bearing
T7	90.5835	Leg	A325N	1.0000	20	27710.90	44944.20	0.617	1	Bearing
		Diagonal	A325N	0.7500	5	12414.10	31320.00	0.396	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	7774.48	28220.60	0.275	1	Gusset Bearing
T8	65.5002	Leg	A325N	1.0000	20	34876.10	56715.30	0.615	1	Bearing
		Diagonal	A325N	0.7500	5	13786.60	31320.00	0.440	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	8453.48	28220.60	0.300	1	Gusset Bearing
T9	40.4169	Leg	A325N	1.0000	28	31146.20	55750.20	0.559	1	Bearing
		Diagonal	A325N	0.7500	8	10852.40	31320.00	0.347	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	7741.98	28220.60	0.274	1	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	W6x25	21.08	5.27	41.6 K=1.00	7.3400	-41576.70	217096.00	0.192 [1]
T2	216 - 190.917	W6x25	25.08	6.27	49.5 K=1.00	7.3400	-60267.30	209029.00	0.288 [1]
T3	190.917 - 165.833	W6x25	25.08	6.27	49.5 K=1.00	7.3400	-79352.10	209029.00	0.380 [1]
T4	165.833 - 140.75	W8x35	25.08	6.27	37.1 K=1.00	10.3000	-112795.00	310432.00	0.363 [1]
T5	140.75 - 115.667	W8x40	25.08	6.27	36.9 K=1.00	11.7000	-161304.00	352876.00	0.457 [1]
T6	115.667 - 90.5835	W10x49	25.08	6.27	29.6 K=1.00	14.4000	-219144.00	445493.00	0.492 [1]
T7	90.5835 - 65.5002	W10x60	25.08	6.27	29.3 K=1.00	17.6000	-284967.00	545075.00	0.523 [1]
T8	65.5002 - 40.4169	W10x77	25.08	6.27	28.9 K=1.00	22.6000	-358711.00	700651.00	0.512 [1]
T9	40.4169 - 0	W12x87	40.44	13.48	52.7 K=1.00	25.6000	-439803.00	716667.00	0.614 [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 $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	2L2 1/2x3x3/8x3/8	26.98	6.75	110.0 K=1.00	3.8400	-14408.60	65821.40	0.219 [1]
T2	216 - 190.917	2L2 1/2x3x3/8x3/8	30.21	7.55	123.1 K=1.00	3.8400	-24605.60	56004.10	0.439 [1]
T3	190.917 - 165.833	2L2 1/2x3x1/2x3/8	30.21	7.55	125.6 K=1.00	5.0000	-32065.80	70627.40	0.454 [1]
T4	165.833 - 140.75	2L2 1/2x3x1/2x3/8	30.21	7.55	125.6 K=1.00	5.0000	-38882.00	70627.40	0.551 [1]
T5	140.75 - 115.667	2L3x4x3/8x3/8	30.21	7.55	103.1 K=1.00	4.9688	-48427.30	92007.50	0.526 [1]
T6	115.667 - 90.5835	2L3x4x3/8x3/8	30.21	7.55	103.1 K=1.00	4.9688	-55050.40	92007.50	0.598 [1]
T7	90.5835 - 65.5002	2L3x4x7/16x3/8	30.21	7.55	104.0 K=1.00	5.7422	-62070.40	105240.00	0.590 [1]
T8	65.5002 - 40.4169	2L3x4x1/2x3/8	30.21	7.55	104.9 K=1.00	6.5000	-68933.20	118007.00	0.584 [1]
T9	40.4169 - 0	2L4x4x1/2x3/8	44.15	14.72	101.3 K=1.00	7.5000	-82947.20	141622.00	0.586 [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 $\frac{P_u}{\phi P_n}$
T2	216 - 190.917	2L2 1/2x3x1/4x3/8	33.67	8.42	134.1 K=1.00	2.6300	-12297.60	33018.50	0.372 [1]
T3	190.917 - 165.833	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-16331.00	66680.80	0.245 [1]
T4	165.833 - 140.75	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-19812.10	66680.80	0.297 [1]
T5	140.75 - 115.667	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-24808.50	66680.80	0.372 [1]
T6	115.667 - 90.5835	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-28263.30	66680.80	0.424 [1]
T7	90.5835 - 65.5002	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-31767.70	66680.80	0.476 [1]
T8	65.5002 - 40.4169	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-34852.60	66680.80	0.523 [1]
T9	40.4169 - 0	2L4x3x7/16x3/8	33.67	16.39	78.4 K=0.50	5.7422	-33818.90	134617.00	0.251 [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	237.083 - 216	2C10x15.3	33.67	16.57	208.5	8.9800	-7831.03	46684.80	0.168 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
		KL/R > 200 (C) - 8			K=1.00				

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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	237.083 - 216	L3x3x3/16	4.21	3.94	79.4 K=1.00	1.0900	-623.65	25344.20	0.025 [1]
T2	216 - 190.917	L3x3x3/16	4.21	3.94	79.4 K=1.00	1.0900	-904.01	25344.20	0.036 [1]
T3	190.917 - 165.833	L3x3x3/16	4.21	3.94	79.4 K=1.00	1.0900	-1190.28	25344.20	0.047 [1]
T4	165.833 - 140.75	L3x3x3/16	4.21	3.87	77.9 K=1.00	1.0900	-1691.93	25652.50	0.066 [1]
T5	140.75 - 115.667	L3x3x3/16	4.21	3.87	77.8 K=1.00	1.0900	-2419.56	25675.40	0.094 [1]
T6	115.667 - 90.5835	L3x3x3/16	4.21	3.79	76.4 K=1.00	1.0900	-3287.16	25979.70	0.127 [1]
T7	90.5835 - 65.5002	L3x3x3/16	4.21	3.78	49.5 K=0.65	1.0900	-4274.51	31040.80	0.138 [1]
T8	65.5002 - 40.4169	L3x3x3/16	4.21	3.77	49.3 K=0.65	1.0900	-5380.67	31074.30	0.173 [1]
T9	40.4169 - 0	L3x3x3/16	5.61	5.09	66.6 K=0.65	1.0900	-6598.74	27959.80	0.236 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	L2 1/2x2 1/2x3/16	8.42	8.15	197.6 K=1.00	0.9020	-755.03	5217.97	0.145 [1]
T2	216 - 190.917	L2 1/2x2 1/2x3/16	8.42	8.15	197.6 K=1.00	0.9020	-904.01	5217.97	0.173 [1]
T3	190.917 - 165.833	L2 1/2x2 1/2x3/16	8.42	8.15	197.6 K=1.00	0.9020	-1190.28	5217.97	0.228 [1]
T4	165.833 - 140.75	L2 1/2x2 1/2x3/16	8.42	8.08	195.9 K=1.00	0.9020	-1691.93	5312.04	0.319 [1]
T5	140.75 - 115.667	L2 1/2x2 1/2x3/16	8.42	8.07	195.7 K=1.00	0.9020	-2419.56	5319.17	0.455 [1]
T6	115.667 - 90.5835	L2 1/2x2 1/2x3/16	8.42	8.00	194.0 K=1.00	0.9020	-3287.16	5415.44	0.607 [1]
T7	90.5835 - 65.5002	L2 1/2x2 1/2x3/16	8.42	7.99	125.9 K=0.65	0.9020	-4274.51	12681.90	0.337 [1]
T8	65.5002 -	L2 1/2x2 1/2x3/16	8.42	7.98	125.7	0.9020	-5380.67	12723.80	0.423 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	11.22	10.70	K=0.65 108.5 K=0.65	2.3800	-6598.74	41472.10	0.159 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (3) 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	237.083 - 216	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0 K=1.00	3.4700	-623.65	20203.70	0.031 [1]
T2	216 - 190.917	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0 K=1.00	3.4700	-904.01	20203.70	0.045 [1]
T3	190.917 - 165.833	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0 K=1.00	3.4700	-1190.28	20203.70	0.059 [1]
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/8x3/8	12.63	12.29	195.8 K=1.00	3.4700	-1691.93	20442.80	0.083 [1]
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/8x3/8	12.63	12.28	195.7 K=1.00	3.4700	-2419.56	20460.80	0.118 [1]
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/8x3/8	12.63	12.21	194.6 K=1.00	3.4700	-3287.16	20703.10	0.159 [1]
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/8x3/8	12.63	12.20	126.4 K=0.65	3.4700	-4274.51	48496.80	0.088 [1]
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/8x3/8	12.63	12.18	126.2 K=0.65	3.4700	-5380.67	48602.60	0.111 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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	237.083 - 216	L3x3x3/16	6.75	6.32	127.2 K=1.00	1.0900	-656.23	15062.10	0.044 [1]
T2	216 - 190.917	L3x3x3/16	7.55	7.08	142.5 K=1.00	1.0900	-905.34	12134.20	0.075 [1]
T3	190.917 - 165.833	L3x3x3/16	7.55	7.08	142.5 K=1.00	1.0900	-1436.96	12134.20	0.118 [1]
T4	165.833 - 140.75	L3x3x3/16	7.55	6.95	139.8 K=1.00	1.0900	-2140.37	12593.10	0.170 [1]
T5	140.75 - 115.667	L3x3x3/16	7.55	6.94	139.6 K=1.00	1.0900	-2728.34	12628.40	0.216 [1]
T6	115.667 - 90.5835	L3x3x3/16	7.55	6.81	137.0 K=1.00	1.0900	-3734.08	13113.00	0.285 [1]
T7	90.5835 - 65.5002	L3x3x3/16	7.55	6.79	95.7 K=0.70	1.0900	-4537.54	21812.30	0.208 [1]
T8	65.5002 - 40.4169	L3x3x3/16	7.55	6.76	95.3 K=0.70	1.0900	-5289.89	21900.30	0.242 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L2 1/2x2 1/2x3/16x3/8	14.48	13.06	141.0 K=0.70	1.8000	-8515.24	20450.20	0.416 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (2) 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	237.083 - 216	2L3x3x3/16x3/8	9.93	9.62	122.9 K=1.00	2.1800	-577.26	31885.70	0.018 [1]
T2	216 - 190.917	2L3x3x3/16x3/8	10.50	10.17	129.9 K=1.00	2.1800	-563.65	29052.20	0.019 [1]
T3	190.917 - 165.833	2L3x3x3/16x3/8	10.50	10.17	129.9 K=1.00	2.1800	-742.14	29052.20	0.026 [1]
T4	165.833 - 140.75	2L3x3x3/16x3/8	10.50	10.07	128.8 K=1.00	2.1800	-1054.91	29512.90	0.036 [1]
T5	140.75 - 115.667	2L3x3x3/16x3/8	10.50	10.07	128.7 K=1.00	2.1800	-1508.58	29547.40	0.051 [1]
T6	115.667 - 90.5835	2L3x3x3/16x3/8	10.50	9.98	127.5 K=1.00	2.1800	-2049.53	30008.70	0.068 [1]
T7	90.5835 - 65.5002	2L3x3x3/16x3/8	10.50	9.97	89.1 K=0.70	2.1800	-2665.14	46483.30	0.057 [1]
T8	65.5002 - 40.4169	2L3x3x3/16x3/8	10.50	9.95	89.0 K=0.70	2.1800	-3354.82	46560.40	0.072 [1]
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	17.34	16.64	181.8 K=0.70	2.3800	-5098.61	16269.60	0.313 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (3) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	2L2 1/2x2 1/2x3/16x3/8	9.93	9.62	148.3 K=1.00	1.8000	-1351.50	18486.00	0.073 [1]
T2	216 - 190.917	2L2 1/2x2 1/2x3/16x3/8	10.50	10.17	156.8 K=1.00	1.8000	-768.53	16549.50	0.046 [1]
T3	190.917 - 165.833	2L2 1/2x2 1/2x3/16x3/8	10.50	10.17	156.8 K=1.00	1.8000	-742.14	16549.50	0.045 [1]
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.4 K=1.00	1.8000	-1054.91	16847.80	0.063 [1]
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.3 K=1.00	1.8000	-1508.58	16870.40	0.089 [1]
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/16x3/8	10.50	9.98	153.9 K=1.00	1.8000	-2049.53	17175.80	0.119 [1]
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/16x3/8	10.50	9.97	107.6 K=0.70	1.8000	-2665.14	31713.60	0.084 [1]
T8	65.5002 -	2L2 1/2x2 1/2x3/16x3/8	10.50	9.95	107.4	1.8000	-3354.82	31790.20	0.106 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
	40.4169				K=0.70				

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	7.94	7.94	80.5 K=0.65	2.3800	-492.35	54824.80	0.009 [1]

[1] P_u / ϕP_n controls

Redundant Hip (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	15.87	15.87	131.8 K=0.65	2.1800	-154.15	28187.90	0.005 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	18.51	18.51	165.6 K=0.70	2.1800	-354.27	17964.90	0.020 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (2) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	24.38	24.38	218.1 K=0.70	2.1800	-329.92	10352.00	0.032 [1]

[1] P_u / ϕP_n controls

Inner Bracing 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	237.083 - 216	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 13	33.67	33.67	431.3 K=1.00	3.2422	-116.11	3937.14	0.029 [1]
T2	216 - 190.917	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 156	23.81	23.81	305.0 K=1.00	3.2422	-15.47	7874.28	0.002 [1]
T3	190.917 - 165.833	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 235	23.81	23.81	305.0 K=1.00	3.2422	-7.68	7874.28	0.001 [1]
T4	165.833 - 140.75	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 316	23.81	23.81	305.0 K=1.00	3.2422	-8.13	7874.28	0.001 [1]
T5	140.75 - 115.667	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 397	23.81	23.81	305.0 K=1.00	3.2422	-12.54	7874.28	0.002 [1]
T6	115.667 - 90.5835	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 478	23.81	23.81	305.0 K=1.00	3.2422	-25.12	7874.28	0.003 [1]
T7	90.5835 - 65.5002	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 559	23.81	23.81	305.0 K=1.00	3.2422	-50.40	7874.28	0.006 [1]
T8	65.5002 - 40.4169	2L3x2 1/2x5/16x3/8 KL/R > 250 (C) - 640	23.81	23.81	305.0 K=1.00	3.2422	-74.42	7874.28	0.009 [1]
T9	40.4169 - 0	2C4x7.25	23.81	23.81	222.0 K=0.50	4.2600	-245.12	19523.50	0.013 [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 $\frac{P_u}{\phi P_n}$
T2	216 - 190.917	W6x25	25.08	6.27	49.5	7.3400	3444.48	237816.00	0.014 [1]
T3	190.917 - 165.833	W6x25	25.08	6.27	49.5	7.3400	26879.30	237816.00	0.113 [1]
T4	165.833 - 140.75	W8x35	25.08	6.27	37.1	10.3000	57946.90	333720.00	0.174 [1]
T5	140.75 - 115.667	W8x40	25.08	6.27	36.9	11.7000	96466.50	379080.00	0.254 [1]
T6	115.667 - 90.5835	W10x49	25.08	6.27	29.6	14.4000	144603.00	466560.00	0.310 [1]
T7	90.5835 -	W10x60	25.08	6.27	29.3	17.6000	200731.00	570240.00	0.352 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	65.5002 - 40.4169	W10x77	25.08	6.27	28.9	22.6000	264017.00	732240.00	0.361 [1]
T9	40.4169 - 0	W12x87	40.44	13.48	52.7	25.6000	330332.00	829440.00	0.398 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	2L2 1/2x3x3/8x3/8	26.98	6.75	216.8	2.3878	11976.10	103870.00	0.115 [1]
T2	216 - 190.917	2L2 1/2x3x3/8x3/8	30.21	7.55	242.7	2.3878	22530.40	103870.00	0.217 [1]
T3	190.917 - 165.833	2L2 1/2x3x1/2x3/8	30.21	7.55	238.2	3.0938	29283.40	134578.00	0.218 [1]
T4	165.833 - 140.75	2L2 1/2x3x1/2x3/8	30.21	7.55	237.2	3.0938	35626.90	134578.00	0.265 [1]
T5	140.75 - 115.667	2L3x4x3/8x3/8	30.21	7.55	183.3	3.2344	44606.10	140695.00	0.317 [1]
T6	115.667 - 90.5835	2L3x4x3/8x3/8	30.21	7.55	182.5	3.2344	50778.70	140695.00	0.361 [1]
T7	90.5835 - 65.5002	2L3x4x7/16x3/8	30.21	7.55	181.3	3.7324	56963.50	162360.00	0.351 [1]
T8	65.5002 - 40.4169	2L3x4x1/2x3/8	30.21	7.55	180.1	4.2188	62920.70	183516.00	0.343 [1]
T9	40.4169 - 0	2L4x4x1/2x3/8	44.15	13.42	144.8	4.9688	82000.80	216141.00	0.379 [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 $\frac{P_u}{\phi P_n}$
T2	216 - 190.917	2L2 1/2x3x1/4x3/8	33.67	8.42	137.1	1.6444	13062.10	71530.30	0.183 [1]
T3	190.917 - 165.833	2L3x2 1/2x3/8x3/8	33.67	8.42	171.4	2.3878	16583.30	103870.00	0.160 [1]
T4	165.833 - 140.75	2L3x2 1/2x3/8x3/8	33.67	8.42	171.4	2.3878	20189.30	103870.00	0.194 [1]
T5	140.75 - 115.667	2L3x2 1/2x3/8x3/8	33.67	8.42	170.7	2.3878	25195.80	103870.00	0.243 [1]
T6	115.667 - 90.5835	2L3x2 1/2x3/8x3/8	33.67	8.42	170.6	2.3878	28614.60	103870.00	0.275 [1]
T7	90.5835 - 65.5002	2L3x2 1/2x3/8x3/8	33.67	8.42	169.9	2.3878	31990.80	103870.00	0.308 [1]
T8	65.5002 - 40.4169	2L3x2 1/2x3/8x3/8	33.67	8.42	169.8	2.3878	35174.40	103870.00	0.339 [1]
T9	40.4169 - 0	2L4x3x7/16x3/8	33.67	16.39	156.8	3.7324	30967.90	162360.00	0.191 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	237.083 - 216	2C10x15.3	33.67	16.57	208.5	8.9800	7246.96	290952.00	0.025 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	237.083 - 216	L3x3x3/16	4.21	3.94	79.4	1.0900	1012.67	35316.00	0.029 [1]
T2	216 - 190.917	L3x3x3/16	4.21	3.94	79.4	1.0900	1186.87	35316.00	0.034 [1]
T3	190.917 - 165.833	L3x3x3/16	4.21	3.94	79.4	1.0900	1798.80	35316.00	0.051 [1]
T4	165.833 - 140.75	L3x3x3/16	4.21	3.87	77.9	1.0900	2588.06	35316.00	0.073 [1]
T5	140.75 - 115.667	L3x3x3/16	4.21	3.87	77.8	1.0900	3242.52	35316.00	0.092 [1]
T6	115.667 - 90.5835	L3x3x3/16	4.21	3.79	76.4	1.0900	4254.51	35316.00	0.120 [1]
T7	90.5835 - 65.5002	L3x3x3/16	4.21	3.78	76.2	1.0900	5167.93	35316.00	0.146 [1]
T8	65.5002 - 40.4169	L3x3x3/16	4.21	3.77	75.8	1.0900	6065.66	35316.00	0.172 [1]
T9	40.4169 - 0	L3x3x3/16	5.61	5.09	102.5	1.0900	6598.74	35316.00	0.187 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (2) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	237.083 - 216	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	813.23	29224.80	0.028 [1]
T2	216 - 190.917	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	904.01	29224.80	0.031 [1]
T3	190.917 - 165.833	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	1190.28	29224.80	0.041 [1]
T4	165.833 - 140.75	L2 1/2x2 1/2x3/16	8.42	8.08	195.9	0.9020	1691.93	29224.80	0.058 [1]
T5	140.75 - 115.667	L2 1/2x2 1/2x3/16	8.42	8.07	195.7	0.9020	2419.56	29224.80	0.083 [1]
T6	115.667 - 90.5835	L2 1/2x2 1/2x3/16	8.42	8.00	194.0	0.9020	3287.16	29224.80	0.112 [1]
T7	90.5835 - 65.5002	L2 1/2x2 1/2x3/16	8.42	7.99	193.7	0.9020	4274.51	29224.80	0.146 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T8	65.5002 - 40.4169	L2 1/2x2 1/2x3/16	8.42	7.98	193.4	0.9020	5380.67	29224.80	0.184 [1]
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	11.22	10.70	167.0	2.3800	6598.74	77112.00	0.086 [1]

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (3) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	237.083 - 216	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0	3.4700	1043.64	112428.00	0.009 [1]
T2	216 - 190.917	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0	3.4700	904.01	112428.00	0.008 [1]
T3	190.917 - 165.833	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0	3.4700	1190.28	112428.00	0.011 [1]
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/8x3/8	12.63	12.29	195.8	3.4700	1691.93	112428.00	0.015 [1]
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/8x3/8	12.63	12.28	195.7	3.4700	2419.56	112428.00	0.022 [1]
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/8x3/8	12.63	12.21	194.6	3.4700	3287.16	112428.00	0.029 [1]
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/8x3/8	12.63	12.20	194.4	3.4700	4274.51	112428.00	0.038 [1]
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/8x3/8	12.63	12.18	194.2	3.4700	5380.67	112428.00	0.048 [1]

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	237.083 - 216	L3x3x3/16	6.75	6.32	127.2	1.0900	499.74	35316.00	0.014 [1]
T2	216 - 190.917	L3x3x3/16	7.55	7.08	142.5	1.0900	811.09	35316.00	0.023 [1]
T3	190.917 - 165.833	L3x3x3/16	7.55	7.08	142.5	1.0900	1067.93	35316.00	0.030 [1]
T4	165.833 - 140.75	L3x3x3/16	7.55	6.95	139.8	1.0900	1518.02	35316.00	0.043 [1]
T5	140.75 - 115.667	L3x3x3/16	7.55	6.94	139.6	1.0900	2170.85	35316.00	0.061 [1]
T6	115.667 - 90.5835	L3x3x3/16	7.55	6.81	137.0	1.0900	2949.28	35316.00	0.084 [1]
T7	90.5835 - 65.5002	L3x3x3/16	7.55	6.79	136.7	1.0900	3835.14	35316.00	0.109 [1]
T8	65.5002 - 40.4169	L3x3x3/16	7.55	6.76	136.1	1.0900	4827.60	35316.00	0.137 [1]
T9	40.4169 - 0	2L2 1/2x2 1/2x3/16x3/8	14.48	13.06	201.4	1.8000	8515.24	58320.00	0.146 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (2) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	2L3x3x3/16x3/8	9.93	9.62	122.9	2.1800	715.74	70632.00	0.010 [1]
T2	216 - 190.917	2L3x3x3/16x3/8	10.50	10.17	129.9	2.1800	563.65	70632.00	0.008 [1]
T3	190.917 - 165.833	2L3x3x3/16x3/8	10.50	10.17	129.9	2.1800	742.14	70632.00	0.011 [1]
T4	165.833 - 140.75	2L3x3x3/16x3/8	10.50	10.07	128.8	2.1800	1054.91	70632.00	0.015 [1]
T5	140.75 - 115.667	2L3x3x3/16x3/8	10.50	10.07	128.7	2.1800	1508.58	70632.00	0.021 [1]
T6	115.667 - 90.5835	2L3x3x3/16x3/8	10.50	9.98	127.5	2.1800	2049.53	70632.00	0.029 [1]
T7	90.5835 - 65.5002	2L3x3x3/16x3/8	10.50	9.97	127.4	2.1800	2665.14	70632.00	0.038 [1]
T8	65.5002 - 40.4169	2L3x3x3/16x3/8	10.50	9.95	127.1	2.1800	3354.82	70632.00	0.047 [1]
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	17.34	16.64	259.7	2.3800	5098.61	77112.00	0.066 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (3) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	2L2 1/2x2 1/2x3/16x3/8	6.75	6.43	99.2	1.8000	417.13	58320.00	0.007 [1]
T2	216 - 190.917	2L2 1/2x2 1/2x3/16x3/8	10.50	10.17	156.8	1.8000	563.65	58320.00	0.010 [1]
T3	190.917 - 165.833	2L2 1/2x2 1/2x3/16x3/8	10.50	10.17	156.8	1.8000	742.14	58320.00	0.013 [1]
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.4	1.8000	1054.91	58320.00	0.018 [1]
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.3	1.8000	1508.58	58320.00	0.026 [1]
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/16x3/8	10.50	9.98	153.9	1.8000	2049.53	58320.00	0.035 [1]
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/16x3/8	10.50	9.97	153.7	1.8000	2665.14	58320.00	0.046 [1]
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/16x3/8	10.50	9.95	153.4	1.8000	3354.82	58320.00	0.058 [1]

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	7.94	7.94	123.8	2.3800	104.55	77112.00	0.001 [1]

[1] P_u / ϕP_n controls

Redundant Hip (2) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	15.87	15.87	202.8	2.1800	73.52	70632.00	0.001 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	18.51	18.51	236.5	2.1800	742.38	70632.00	0.011 [1]

[1] P_u / ϕP_n controls

Redundant Hip Diagonal (2) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L3x3x3/16x3/8	24.38	24.38	311.6	2.1800	254.65	70632.00	0.004 [1]

[1] P_u / ϕP_n controls

Inner Bracing 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	237.083 - 216	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	166.12	105047.00	0.002 [1]
T2	216 - 190.917	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	8.75	105047.00	0.000 [1]
T3	190.917 - 165.833	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	13.44	105047.00	0.000 [1]
T4	165.833 - 140.75	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	11.88	105047.00	0.000 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	140.75 - 115.667	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	19.04	105047.00	0.000 [1]
T6	115.667 - 90.5835	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	30.18	105047.00	0.000 [1]
T7	90.5835 - 65.5002	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	54.66	105047.00	0.001 [1]
T8	65.5002 - 40.4169	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	80.24	105047.00	0.001 [1]
T9	40.4169 - 0	2C4x7.25	23.81	23.81	444.0	4.2600	322.52	138024.00	0.002 [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	237.083 - 216	Leg	W6x25	1	-41576.70	217096.00	19.2 27.8 (b)	Pass
T2	216 - 190.917	Leg	W6x25	83	-60267.30	209029.00	28.8 40.2 (b)	Pass
T3	190.917 - 165.833	Leg	W6x25	164	-79352.10	209029.00	38.0 38.7 (b)	Pass
T4	165.833 - 140.75	Leg	W8x35	245	-112795.00	310432.00	36.3 57.1 (b)	Pass
T5	140.75 - 115.667	Leg	W8x40	326	-161304.00	352876.00	45.7 51.6 (b)	Pass
T6	115.667 - 90.5835	Leg	W10x49	407	-219144.00	445493.00	49.2 74.0 (b)	Pass
T7	90.5835 - 65.5002	Leg	W10x60	488	-284967.00	545075.00	52.3 61.7 (b)	Pass
T8	65.5002 - 40.4169	Leg	W10x77	569	-358711.00	700651.00	51.2 61.5 (b)	Pass
T9	40.4169 - 0	Leg	W12x87	650	-439803.00	716667.00	61.4	Pass
T1	237.083 - 216	Diagonal	2L2 1/2x3x3/8x3/8	22	-14408.60	65821.40	21.9	Pass
T2	216 - 190.917	Diagonal	2L2 1/2x3x3/8x3/8	104	-24605.60	56004.10	43.9	Pass
T3	190.917 - 165.833	Diagonal	2L2 1/2x3x1/2x3/8	185	-32065.80	70627.40	45.4	Pass
T4	165.833 - 140.75	Diagonal	2L2 1/2x3x1/2x3/8	266	-38882.00	70627.40	55.1	Pass
T5	140.75 - 115.667	Diagonal	2L3x4x3/8x3/8	347	-48427.30	92007.50	52.6	Pass
T6	115.667 - 90.5835	Diagonal	2L3x4x3/8x3/8	428	-55050.40	92007.50	59.8	Pass
T7	90.5835 - 65.5002	Diagonal	2L3x4x7/16x3/8	509	-62070.40	105240.00	59.0	Pass
T8	65.5002 - 40.4169	Diagonal	2L3x4x1/2x3/8	590	-68933.20	118007.00	58.4	Pass
T9	40.4169 - 0	Diagonal	2L4x4x1/2x3/8	670	-82947.20	141622.00	58.6	Pass
T2	216 - 190.917	Horizontal	2L2 1/2x3x1/4x3/8	103	-12297.60	33018.50	37.2	Pass
T3	190.917 - 165.833	Horizontal	2L3x2 1/2x3/8x3/8	184	-16331.00	66680.80	24.5	Pass
T4	165.833 - 140.75	Horizontal	2L3x2 1/2x3/8x3/8	265	-19812.10	66680.80	29.7	Pass
T5	140.75 - 115.667	Horizontal	2L3x2 1/2x3/8x3/8	346	-24808.50	66680.80	37.2	Pass
T6	115.667 - 90.5835	Horizontal	2L3x2 1/2x3/8x3/8	427	-28263.30	66680.80	42.4	Pass
T7	90.5835 - 65.5002	Horizontal	2L3x2 1/2x3/8x3/8	508	-31767.70	66680.80	47.6	Pass
T8	65.5002 -	Horizontal	2L3x2 1/2x3/8x3/8	589	-34852.60	66680.80	52.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
	40.4169							
T9	40.4169 - 0	Horizontal	2L4x3x7/16x3/8	664	-33818.90	134617.00	25.1 27.4 (b)	Pass
T1	237.083 - 216	Top Girt	2C10x15.3	8	-7831.03	46684.80	16.8	Pass
T1	237.083 - 216	Redund Horz 1 Bracing	L3x3x3/16	31	1012.67	35316.00	2.9	Pass
T2	216 - 190.917	Redund Horz 1 Bracing	L3x3x3/16	96	-904.01	25344.20	3.6	Pass
T3	190.917 - 165.833	Redund Horz 1 Bracing	L3x3x3/16	177	1798.80	35316.00	5.1	Pass
T4	165.833 - 140.75	Redund Horz 1 Bracing	L3x3x3/16	258	2588.06	35316.00	7.3	Pass
T5	140.75 - 115.667	Redund Horz 1 Bracing	L3x3x3/16	348	-2419.56	25675.40	9.4	Pass
T6	115.667 - 90.5835	Redund Horz 1 Bracing	L3x3x3/16	429	-3287.16	25979.70	12.7	Pass
T7	90.5835 - 65.5002	Redund Horz 1 Bracing	L3x3x3/16	501	5167.93	35316.00	14.6	Pass
T8	65.5002 - 40.4169	Redund Horz 1 Bracing	L3x3x3/16	582	-5380.67	31074.30	17.3	Pass
T9	40.4169 - 0	Redund Horz 1 Bracing	L3x3x3/16	660	-6598.74	27959.80	23.6	Pass
T1	237.083 - 216	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	40	-755.03	5217.97	14.5	Pass
T2	216 - 190.917	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	97	-904.01	5217.97	17.3	Pass
T3	190.917 - 165.833	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	187	-1190.28	5217.97	22.8	Pass
T4	165.833 - 140.75	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	259	-1691.93	5312.04	31.9	Pass
T5	140.75 - 115.667	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	340	-2419.56	5319.17	45.5	Pass
T6	115.667 - 90.5835	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	421	-3287.16	5415.44	60.7	Pass
T7	90.5835 - 65.5002	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	502	-4274.51	12681.90	33.7	Pass
T8	65.5002 - 40.4169	Redund Horz 2 Bracing	L2 1/2x2 1/2x3/16	583	-5380.67	12723.80	42.3	Pass
T9	40.4169 - 0	Redund Horz 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	661	-6598.74	41472.10	15.9	Pass
T1	237.083 - 216	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	74	-623.65	20203.70	3.1	Pass
T2	216 - 190.917	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	99	-904.01	20203.70	4.5	Pass
T3	190.917 - 165.833	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	189	-1190.28	20203.70	5.9	Pass
T4	165.833 - 140.75	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	261	-1691.93	20442.80	8.3	Pass
T5	140.75 - 115.667	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	342	-2419.56	20460.80	11.8	Pass
T6	115.667 - 90.5835	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	423	-3287.16	20703.10	15.9	Pass
T7	90.5835 - 65.5002	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	513	-4274.51	48496.80	8.8	Pass
T8	65.5002 - 40.4169	Redund Horz 3 Bracing	2L2 1/2x2 1/2x3/8x3/8	585	-5380.67	48602.60	11.1	Pass
T1	237.083 - 216	Redund Diag 1 Bracing	L3x3x3/16	33	-656.23	15062.10	4.4	Pass
T2	216 - 190.917	Redund Diag 1 Bracing	L3x3x3/16	98	-905.34	12134.20	7.5	Pass
T3	190.917 -	Redund Diag 1	L3x3x3/16	179	-1436.96	12134.20	11.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
	165.833	Bracing						
T4	165.833 - 140.75	Redund Diag 1 Bracing	L3x3x3/16	260	-2140.37	12593.10	17.0	Pass
T5	140.75 - 115.667	Redund Diag 1 Bracing	L3x3x3/16	341	-2728.34	12628.40	21.6	Pass
T6	115.667 - 90.5835	Redund Diag 1 Bracing	L3x3x3/16	422	-3734.08	13113.00	28.5	Pass
T7	90.5835 - 65.5002	Redund Diag 1 Bracing	L3x3x3/16	503	-4537.54	21812.30	20.8	Pass
T8	65.5002 - 40.4169	Redund Diag 1 Bracing	L3x3x3/16	593	-5289.89	21900.30	24.2	Pass
T9	40.4169 - 0	Redund Diag 1 Bracing	2L2 1/2x2 1/2x3/16x3/8	662	-8515.24	20450.20	41.6	Pass
T1	237.083 - 216	Redund Diag 2 Bracing	2L3x3x3/16x3/8	35	-577.26	31885.70	1.8	Pass
T2	216 - 190.917	Redund Diag 2 Bracing	2L3x3x3/16x3/8	100	-563.65	29052.20	1.9	Pass
T3	190.917 - 165.833	Redund Diag 2 Bracing	2L3x3x3/16x3/8	190	-742.14	29052.20	2.6	Pass
T4	165.833 - 140.75	Redund Diag 2 Bracing	2L3x3x3/16x3/8	262	-1054.91	29512.90	3.6	Pass
T5	140.75 - 115.667	Redund Diag 2 Bracing	2L3x3x3/16x3/8	343	-1508.58	29547.40	5.1	Pass
T6	115.667 - 90.5835	Redund Diag 2 Bracing	2L3x3x3/16x3/8	424	-2049.53	30008.70	6.8	Pass
T7	90.5835 - 65.5002	Redund Diag 2 Bracing	2L3x3x3/16x3/8	505	-2665.14	46483.30	5.7	Pass
T8	65.5002 - 40.4169	Redund Diag 2 Bracing	2L3x3x3/16x3/8	586	-3354.82	46560.40	7.2	Pass
T9	40.4169 - 0	Redund Diag 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	663	-5098.61	16269.60	31.3	Pass
T1	237.083 - 216	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	20	-1351.50	18486.00	7.3	Pass
T2	216 - 190.917	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	118	-768.53	16549.50	4.6	Pass
T3	190.917 - 165.833	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	182	-742.14	16549.50	4.5	Pass
T4	165.833 - 140.75	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	263	-1054.91	16847.80	6.3	Pass
T5	140.75 - 115.667	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	344	-1508.58	16870.40	8.9	Pass
T6	115.667 - 90.5835	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	425	-2049.53	17175.80	11.9	Pass
T7	90.5835 - 65.5002	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	506	-2665.14	31713.60	8.4	Pass
T8	65.5002 - 40.4169	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	587	-3354.82	31790.20	10.6	Pass
T9	40.4169 - 0	Redund Hip 1 Bracing	2L2 1/2x2 1/2x1/4x3/8	675	-492.35	54824.80	0.9	Pass
T9	40.4169 - 0	Redund Hip 2 Bracing	2L3x3x3/16x3/8	706	-143.77	28187.90	0.8	Pass
T9	40.4169 - 0	Redund Hip Diagonal 1 Bracing	2L3x3x3/16x3/8	677	-354.27	17964.90	2.0	Pass
T9	40.4169 - 0	Redund Hip Diagonal 2 Bracing	2L3x3x3/16x3/8	678	-329.92	10352.00	3.2	Pass
T1	237.083 - 216	Inner Bracing	2L3x2 1/2x5/16x3/8	13	-116.11	3937.14	2.9	Pass
T2	216 - 190.917	Inner Bracing	2L3x2 1/2x5/16x3/8	158	-0.62	3937.14	1.7	Pass
T3	190.917 - 165.833	Inner Bracing	2L3x2 1/2x5/16x3/8	239	-0.52	3937.14	1.7	Pass
T4	165.833 - 140.75	Inner Bracing	2L3x2 1/2x5/16x3/8	320	-0.47	3937.14	1.7	Pass
T5	140.75 - 115.667	Inner Bracing	2L3x2 1/2x5/16x3/8	401	-0.46	3937.14	1.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T6	115.667 - 90.5835	Inner Bracing	2L3x2 1/2x5/16x3/8	482	-0.39	3937.14	1.7	Pass
T7	90.5835 - 65.5002	Inner Bracing	2L3x2 1/2x5/16x3/8	563	-0.30	3937.14	1.6	Pass
T8	65.5002 - 40.4169	Inner Bracing	2L3x2 1/2x5/16x3/8	644	-1.72	3937.14	1.6	Pass
T9	40.4169 - 0	Inner Bracing	2C4x7.25	717	-13.58	9761.73	2.9	Pass
							Summary	
							Leg (T6) 74.0	Pass
							Diagonal (T6) 59.8	Pass
							Horizontal (T8) 52.3	Pass
							Top Girt (T1) 16.8	Pass
							Redund Horz 1 Bracing (T9) 23.6	Pass
							Redund Horz 2 Bracing (T6) 60.7	Pass
							Redund Horz 3 Bracing (T6) 15.9	Pass
							Redund Diag 1 Bracing (T9) 41.6	Pass
							Redund Diag 2 Bracing (T9) 31.3	Pass
							Redund Diag 3 Bracing (T6) 11.9	Pass
							Redund Hip 1 Bracing (T9) 0.9	Pass
							Redund Hip 2 Bracing (T9) 0.8	Pass
							Redund Hip Diagonal 1 Bracing (T9) 2.0	Pass
							Redund Hip Diagonal 2 Bracing (T9) 3.2	Pass
							Inner Bracing (T1) 2.9	Pass
							Bolt Checks 74.0	Pass
							RATING = 74.0	**Pass**

Project Information

Site Name	Cheshire, CT

Tower Information

Tower Type	Self Support
TIA-222 Rev	G

Applied Loads

	Comp.	Uplift
Axial (k)	555.32	429.35
Shear (k)	52.58	47.82

Anchor Rod Data

Quantity:	12	
Diameter (in):	2.25	
Material Grade:	A36	Fy=36 ksi Fu=58 ksi
Grout Considered:	No	Grout Considered
l_{ar} (in):	0	Bending Interaction Not Considered
Eta Factor, η:	0.7	
Thread Type:	N-Included	
Configuration:	Symmetrical	

Anchor Rod Results

Axial, Pu_t (kips)	35.78	
Shear, Vu (kips)	3.99	
Moment, Mu (kip-in)	-	
Axial Cap., φPn_t (kips)	150.80	
Shear Cap., ϕVn (kips)	-	
Moment Cap., ϕMn (kip-in)	-	
Stress Rating	27.5%	**Pass**

INFINIGY
FROM ZERO TO INFINIGY
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REDUNDANT MEMBER END CONNECTION CALCULATIONS

Customer: Sprint
Site Name: 1108-B0003-B
Job Number: Cheshire, CT
Tower Model: 237' AT&T Self-Supporting Tower
Date: 3/28/2019

Redundant Horizontals (1)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	L3x3x3/16	A325N	0.75	2	1040.9	1040.9	17637.9	31320.0	35784.7	5.9%
T2	216-190.9	L3x3x3/16	A325N	0.75	2	1289.2	1289.2	17637.9	31320.0	35784.7	7.3%
T3	190.9-165.8	L3x3x3/16	A325N	0.75	2	1864.4	1864.4	17637.9	31320.0	35784.7	10.6%
T4	165.8-140.8	L3x3x3/16	A325N	0.75	2	2637.3	2637.3	17637.9	31320.0	35784.7	15.0%
T5	140.8-115.7	L3x3x3/16	A325N	0.75	2	2560.7	-2560.7	17637.9	31320.0	35784.7	14.5%
T6	115.7-90.6	L3x3x3/16	A325N	0.75	2	3733.4	-3733.4	17637.9	31320.0	35784.7	21.2%
T7	90.6-65.5	L3x3x3/16	A325N	0.75	2	4678.2	-4678.2	17637.9	31320.0	35784.7	26.5%
T8	65.5-40.4	L3x3x3/16	A325N	0.75	2	5455.8	-5455.8	17637.9	31320.0	35784.7	30.9%
T9	40.4-0	L3x3x3/16	A325N	0.75	2	6699.6	-6699.6	17637.9	31320.0	35784.7	38.0%

Redundant Horizontals (2)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	L2 1/2x2 1/2x3/16	A325N	0.75	2	1050.8	-1050.8	16618.4	31320.0	35784.7	6.3%
T2	216-190.9	L2 1/2x2 1/2x3/16	A325N	0.75	2	915.3	-915.3	16618.4	31320.0	35784.7	5.5%
T3	190.9-165.8	L2 1/2x2 1/2x3/16	A325N	0.75	2	1202.8	-1202.8	16618.4	31320.0	35784.7	7.2%
T4	165.8-140.8	L2 1/2x2 1/2x3/16	A325N	0.75	2	1734.8	-1734.8	16618.4	31320.0	35784.7	10.4%
T5	140.8-115.7	L2 1/2x2 1/2x3/16	A325N	0.75	2	2471.9	-2471.9	16618.4	31320.0	35784.7	14.9%
T6	115.7-90.6	L2 1/2x2 1/2x3/16	A325N	0.75	2	3345.4	-3345.4	16618.4	31320.0	35784.7	20.1%
T7	90.6-65.5	L2 1/2x2 1/2x3/16	A325N	0.75	2	4342.4	-4342.4	16618.4	31320.0	35784.7	26.1%
T8	65.5-40.4	L2 1/2x2 1/2x3/16	A325N	0.75	2	5455.8	-5455.8	16618.4	31320.0	35784.7	32.8%
T9	40.4-0	2L2 1/2x2 1/2x1/4x3/8	A325N	0.75	2	6699.6	-6699.6	44315.6	83520.0	71569.4	15.1%

Redundant Horizontals (3)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	924.5	-924.5	66473.4	125280.0	71569.4	1.4%
T2	216-190.9	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	933.2	-933.2	66473.4	125280.0	71569.4	1.4%
T3	190.9-165.8	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	1202.8	-1202.8	66473.4	125280.0	71569.4	1.8%
T4	165.8-140.8	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	1734.8	-1734.8	66473.4	125280.0	71569.4	2.6%
T5	140.8-115.7	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	2471.9	-2471.9	66473.4	125280.0	71569.4	3.7%
T6	115.7-90.6	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	3345.4	-3345.4	66473.4	125280.0	71569.4	5.0%
T7	90.6-65.5	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	4342.4	-4342.4	66473.4	125280.0	71569.4	6.5%
T8	65.5-40.4	2L2 1/2x2 1/2x3/8x3/8	A325N	0.75	2	5455.8	-5455.8	66473.4	125280.0	71569.4	8.2%

Redundant Diagonals (1)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	L3x3x3/16	A325N	0.75	2	678.8	-678.8	17637.9	31320.0	35784.7	3.8%
T2	216-190.9	L3x3x3/16	A325N	0.75	2	1002.6	-1002.6	17637.9	31320.0	35784.7	5.7%
T3	190.9-165.8	L3x3x3/16	A325N	0.75	2	1502.3	-1502.3	17637.9	31320.0	35784.7	8.5%
T4	165.8-140.8	L3x3x3/16	A325N	0.75	2	2193.9	-2193.9	17637.9	31320.0	35784.7	12.4%
T5	140.8-115.7	L3x3x3/16	A325N	0.75	2	2793.8	-2793.8	17637.9	31320.0	35784.7	15.8%
T6	115.7-90.6	L3x3x3/16	A325N	0.75	2	3906.9	-3906.9	17637.9	31320.0	35784.7	22.2%
T7	90.6-65.5	L3x3x3/16	A325N	0.75	2	4714.7	-4714.7	17637.9	31320.0	35784.7	26.7%
T8	65.5-40.4	L3x3x3/16	A325N	0.75	2	5419.2	-5419.2	17637.9	31320.0	35784.7	30.7%
T9	40.4-0	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	8645.4	-8645.4	33236.7	62640.0	71569.4	26.0%

Redundant Diagonals (2)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	2L3x3x3/16x3/8	A325N	0.75	2	774.8	-774.8	35275.8	62640.0	71569.4	2.2%
T2	216-190.9	2L3x3x3/16x3/8	A325N	0.75	2	570.7	-570.7	35275.8	62640.0	71569.4	1.6%
T3	190.9-165.8	2L3x3x3/16x3/8	A325N	0.75	2	749.9	-749.9	35275.8	62640.0	71569.4	2.1%
T4	165.8-140.8	2L3x3x3/16x3/8	A325N	0.75	2	1081.6	-1081.6	35275.8	62640.0	71569.4	3.1%
T5	140.8-115.7	2L3x3x3/16x3/8	A325N	0.75	2	1541.2	-1541.2	35275.8	62640.0	71569.4	4.4%
T6	115.7-90.6	2L3x3x3/16x3/8	A325N	0.75	2	2085.8	-2085.8	35275.8	62640.0	71569.4	5.9%
T7	90.6-65.5	2L3x3x3/16x3/8	A325N	0.75	2	2707.5	-2707.5	35275.8	62640.0	71569.4	7.7%
T8	65.5-40.4	2L3x3x3/16x3/8	A325N	0.75	2	3401.7	-3401.7	35275.8	62640.0	71569.4	9.6%
T9	40.4-0	2L2 1/2x2 1/2x1/4x3/8	A325N	0.75	2	5176.5	-5176.5	44315.6	83520.0	71569.4	11.7%

Redundant Diagonals (3)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size in	Number Of Bolts	Connection Tensile Load lb	Connection Compressive Load lb	Connection Tensile Capacity lb	Connection Compressive Capacity lb	Bolt Shear Capacity lb	Member % Capacity
T1	237.1-216	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	1353.3	-1353.3	33236.7	62640.0	71569.4	4.1%
T2	216-190.9	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	765.4	-765.4	33236.7	62640.0	71569.4	2.3%
T3	190.9-165.8	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	749.9	-749.9	33236.7	62640.0	71569.4	2.3%
T4	165.8-140.8	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	1081.6	-1081.6	33236.7	62640.0	71569.4	3.3%
T5	140.8-115.7	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	1541.2	-1541.2	33236.7	62640.0	71569.4	4.6%
T6	115.7-90.6	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	2085.8	-2085.8	33236.7	62640.0	71569.4	6.3%
T7	90.6-65.5	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	2707.5	-2707.5	33236.7	62640.0	71569.4	8.1%
T8	65.5-40.4	2L2 1/2x2 1/2x3/16x3/8	A325N	0.75	2	3401.7	-3401.7	33236.7	62640.0	71569.4	10.2%