



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

April 8, 2019

Ryan Bailey
Charles Cherundolo Consulting
1280 Route 46 West, Suite 9
Parisippany, 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) is in receipt of your correspondence of March 28, 2019 and April 5, 2019 submitted in response to the Council's February 15, 2019 and March 29, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr



Robidoux, Evan

From: Ryan Bailey <ryan@mackenzierealtyconsulting.com>
Sent: Friday, April 05, 2019 11:30 AM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; Ryan Bailey
Subject: RE: Council 2nd Incomplete Letter for EM-SPRINT-025-190213-HigginsRd-Cheshire
Attachments: CT03XC044_SA_Pass_S&S_04-05-19.pdf

Attached please find the revised structural with the Verizon equipment accounted for. Please let me know if you need anything else from Sprint in order to consider this application complete.

Thank you

Ryan Bailey
Mackenzie Realty Consulting
3B Prospect Pl
Madison NJ 07940
856-625-1596
973-215-2940 Fax
ryan@mackenzierealtyconsulting.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Tuesday, April 2, 2019 3:22 PM
To: Ryan Bailey <ryan@mackenzierealtyconsulting.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council 2nd Incomplete Letter for EM-SPRINT-025-190213-HigginsRd-Cheshire

Please see the attached correspondence.

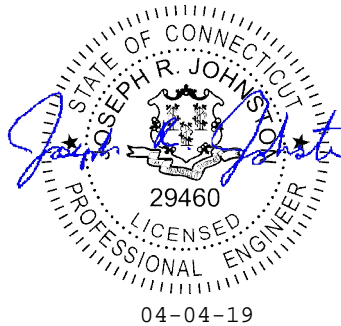
Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Structural Analysis Report

April 5, 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 41° 29' 14.9" N NAD83 72° 55' 45.5" W NAD83
Structure Type	237' Self-Supporting Tower
Structural Usage Ratio	77.3%
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

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April 5, 2019

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

Structural Analysis Report

April 5, 2019

Existing Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
252.0	6	Commscope SBNHH-1D65B	Platform	(18) 1-5/8" (3) 1-1/2" (7) 1" (3) 7/8" (3) 3/8"	Verizon
	2	Antel LPA-80080/6CF			
	4	Antel LPA-80063-6CF			
	9	Alcatel Lucent RRH			
	1	CCI HPA-65R-BUU-H8			
	2	CCI HPA-65R-BUU-H6			AT&T
	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"	-

April 5, 2019

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			

April 5, 2019

Final Configuration

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
252.0	6	Commscope SBNHH-1D65B	Platform	(18) 1-5/8" (3) 1-1/2" (7) 1" (3) 7/8" (3) 3/8"	Verizon
	2	Antel LPA-80080/6CF			
	4	Antel LPA-80063-6CF			
	9	Alcatel Lucent RRH			
	1	CCI HPA-65R-BUU-H8			
	2	CCI HPA-65R-BUU-H6			AT&T
	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)	77.3	Pass
Diagonal (T6)	61.4	Pass
Horizontal (T8)	53.4	Pass
Top Girt (T1)	18.9	Pass
Redund Horz 1 Bracing (T9)	24.4	Pass
Redund Horz 2 Bracing (T6)	63.4	Pass
Redund Horz 3 Bracing (T6)	16.6	Pass
Redund Diag 1 Bracing (T9)	43.1	Pass
Redund Diag 2 Bracing (T9)	32.4	Pass
Redund Diag 3 Bracing (T6)	12.5	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)	3.3	Pass
Inner Bracing (T1)	3.3	Pass
Bolt Checks	77.3	Pass
RATING =	77.3	Pass

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
228.0	1.787	0.006	0.048

*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.

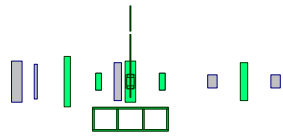
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

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.

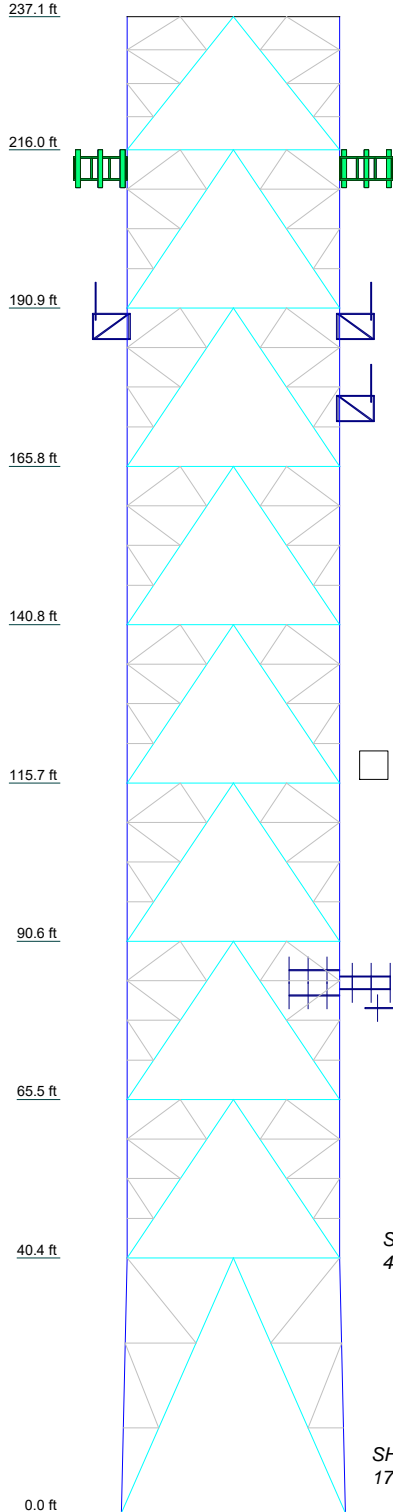


MATERIAL STRENGTH

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: 77.3%

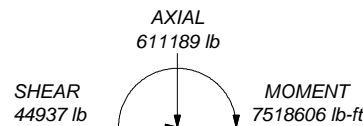


ALL REACTIONS
ARE FACTORED

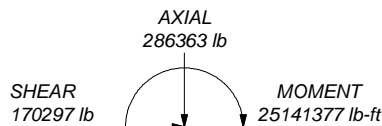
MAX. CORNER REACTIONS AT BASE:

DOWN: 572314 lb
SHEAR: 53685 lb

UPLIFT: -445795 lb
SHEAR: 48948 lb



TORQUE 76340 lb-ft
50 mph WIND - 0.7500 in ICE



TORQUE 233288 lb-ft
REACTIONS - 97 mph WIND

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	W12x87	W10x77	W10x60	W10x49	W8x40	W8x35		W6x25	
Leg Grade	2L4x4x1/2x3/8	2L3x4x1/2x3/8	2L3x4x7/16x3/8	2L3x4x3/8x3/8	A36	2L2 1/2x3x1/2x3/8	2L2 1/2x3x1/2x3/8	2L2 1/2x3x3/8x3/8	
Diagonals	2L4x4x1/2x3/8	2L3x4x1/2x3/8	2L3x4x7/16x3/8	2L3x4x3/8x3/8	A36	2L2 1/2x3x1/2x3/8	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	L3x3x3/16			2L2 1/2x3x1/4x3/8	N.A.
Red. Horizontals					L3x3x3/16				
Red. Diagonals	2L2 1/2x2 1/2x3/16x3/8				N.A.				
Red. Hips	2L2 1/2x2 1/2x1/4x3/8								
Inner Bracing	2C4x7 25				2L3x2 1/2x5/16x3/8				
Face Width (ft)	35.5								33.67
# Panels @ (ft)	1 @ 40.4169				7 @ 25.0833				1 @ 21.0833
Weight (lb)	162022.0	34437.1	18256.6	18827.0	16092.2	15152.9	14442.3	12633.9	14882.1

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: 04/05/19	Scale: NTS
Path:	Dwg No. E-1	

tnxTower Infinigy Engineering PLLC 1033 Watervliet Shaker Rd. Albany, NY Phone: (518) 690-0790 FAX: (518) 690-0790	Job	1108-B0003-B	Page	1 of 39
	Project	Cheshire, CT	Date	10:17:51 04/05/19
	Client	Sprint	Designed by	BArcher

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.

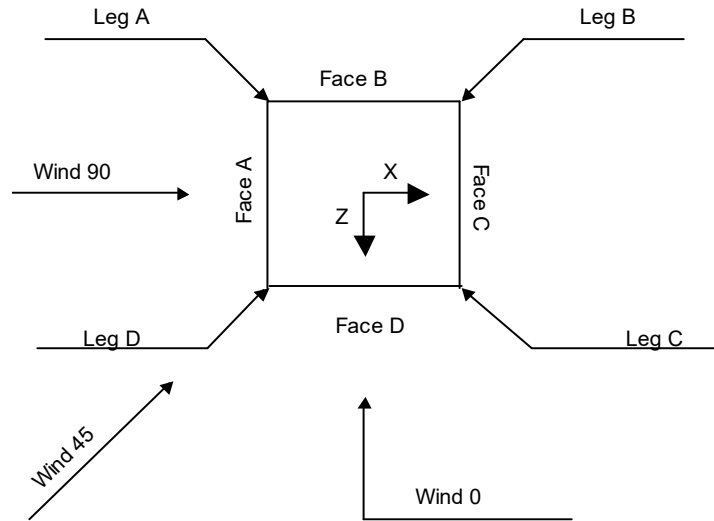
Stress ratio used in tower member design is 1.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) √ SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="background-color: #e0e0e0; text-align: center; padding: 2px;">Poles</div> <ul style="list-style-type: none"> Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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tnxTower Infinigy Engineering PLLC 1033 Watervliet Shaker Rd. Albany, NY Phone: (518) 690-0790 FAX: (518) 690-0790	Job 1108-B0003-B	Page 2 of 39
	Project Cheshire, CT	Date 10:17:51 04/05/19
	Client Sprint	Designed by BArcher



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	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
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
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

<i>tnxTower</i> <i>Infinigy Engineering PLLC</i> 1033 Watervliet Shaker Rd. Albany, NY Phone: (518) 690-0790 FAX: (518) 690-0790	Job	1108-B0003-B	Page	3 of 39
	Project	Cheshire, CT	Date	10:17:51 04/05/19
	Client	Sprint	Designed by	BArcher

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
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)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 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)

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

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

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T1 237.08-216.00	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T2 216.00-190.92	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T3 190.92-165.83	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T4 165.83-140.75	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T5 140.75-115.67	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T6 115.67-90.58	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T7 90.58-65.50	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T8 65.50-40.42	9.17	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000
T9 40.42-0.00	34.36	0.3750	A36 (36 ksi)	1	1	1	24.0000	24.0000	24.0000

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Tower Section Geometry (cont'd)

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

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

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	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 237.08-216.00	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
T2 216.00-190.92	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
T3 190.92-165.83	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
T4 165.83-140.75	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
T5 140.75-115.67	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
T6 115.67-90.58	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
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)

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Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	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.
T1 237.08-216.00	Sleeve DS	0.7500	12	0.7500	4	0.7500	0	0.7500	0	0.7500	0	0.7500	4	0.7500	0
T2 216.00-190.92	Sleeve DS	0.7500	12	0.7500	4	0.7500	0	0.7500	0	0.7500	0	0.7500	4	0.7500	0
T3 190.92-165.83	Sleeve DS	0.7500	16	0.7500	5	0.7500	0	0.7500	0	0.7500	0	0.7500	4	0.7500	0
T4 165.83-140.75	Sleeve DS	1.0000	12	0.7500	5	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	0
T5 140.75-115.67	Sleeve DS	1.0000	16	0.7500	4	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	0
T6 115.67-90.58	Sleeve DS	1.0000	16	0.7500	4	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	0
T7 90.58-65.50	Sleeve DS	1.0000	20	0.7500	5	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	0
T8 65.50-40.42	Sleeve DS	1.0000	20	0.7500	5	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	0
T9 40.42-0.00	Sleeve DS	1.0000	28	0.7500	8	0.7500	0	0.6250	0	0.6250	0	0.7500	4	0.7500	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 Per Spacing in	Width or Diameter in	Perimeter in	Weight plf
Heavy Climbing Rail	C	No	No	Af (CaAa)	216.00 - 0.00	-15.000	0.4	1	1	3.0000	3.0000		3.50
Heavy Climbing Rail	D	No	No	Af (CaAa)	216.00 - 0.00	-15.000	-0.4	1	1	3.0000	3.0000		3.50
Heavy Climbing Ladder	D	No	No	Af (CaAa)	237.08 - 216.00	-30.000	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

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
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 _A A _A In Face ft ²	C _A A _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

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T4	165.83-140.75	D	0.000	0.000	206.658	0.000	971.03
		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
T5	140.75-115.67	D	0.000	0.000	207.957	0.000	978.30
		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
T6	115.67-90.58	D	0.000	0.000	207.957	0.000	978.30
		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
T7	90.58-65.50	D	0.000	0.000	207.957	0.000	978.30
		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
T8	65.50-40.42	D	0.000	0.000	214.064	0.000	1012.46
		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
T9	40.42-0.00	D	0.000	0.000	216.611	0.000	1026.71
		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} In Face ft ²	C _{AA} 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

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T8	65.50-40.42	D		0.000	0.000	334.243	0.000	5867.69
		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
T9	40.42-0.00	D		0.000	0.000	332.935	0.000	5776.40
		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

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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

<p style="text-align: center;"><i>tnxTower</i></p> <p style="text-align: center;">Infinigy Engineering PLLC 1033 Watervliet Shaker Rd. Albany, NY Phone: (518) 690-0790 FAX: (518) 690-0790</p>	<p>Job</p> <p style="text-align: center;">1108-B0003-B</p>	<p>Page</p> <p style="text-align: center;">12 of 39</p>
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	<p>Client</p> <p style="text-align: center;">Sprint</p>	<p>Designed by</p> <p style="text-align: center;">BArcher</p>

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

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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

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

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	Client	Sprint	Designed by	BArcher

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

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

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	Project		Cheshire, CT					Date		10:17:51 04/05/19
	Client		Sprint					Designed by		BArcher

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight					
			Horz	Lateral						Vert	°	ft	ft ²	ft ²
NNVV-65B-R4 w/ Mount Pipe (Sprint)	C	From Face	-3.00		-15.0000	228.00	1" Ice	7.10	4.33	140.34				
			0.50								No Ice	12.75	7.65	106.60
			-15.00								1/2" Ice	13.45	8.94	199.84
APXVTM14-ALU-I20 (Sprint)	C	From Face	-3.00		-15.0000	228.00	1" Ice	14.12	10.07	301.80				
			0.50								No Ice	6.34	3.61	56.22
			15.00								1/2" Ice	6.72	3.97	95.75
NNVV-65B-R4 w/ Mount Pipe (Sprint)	D	From Face	-3.00		-5.0000	228.00	1" Ice	7.10	4.33	140.34				
			0.50								No Ice	12.75	7.65	106.60
			-15.00								1/2" Ice	13.45	8.94	199.84
APXVTM14-ALU-I20 (Sprint)	D	From Face	-3.00		-5.0000	228.00	1" Ice	14.12	10.07	301.80				
			0.50								No Ice	6.34	3.61	56.22
			15.00								1/2" Ice	6.72	3.97	95.75
1900 MHz 4X45 RRH (Sprint)	B	From Face	-3.00		-5.0000	228.00	1" Ice	7.10	4.33	140.34				
			0.50								No Ice	2.32	2.24	60.00
			-15.00								1/2" Ice	2.53	2.44	83.13
TD-RRH8X20-25 BTS (25.4"x17.5"x5.7"x66) (Sprint)	B	From Face	-3.00		-5.0000	228.00	1" Ice	2.74	2.65	109.50				
			0.50								No Ice	3.70	1.29	66.00
			-15.00								1/2" Ice	3.95	1.46	89.94
(2) 800MHZ 2x50W RRH (Sprint)	B	From Face	-3.00		-5.0000	228.00	1" Ice	4.20	1.64	117.22				
			0.50								No Ice	2.13	1.77	53.00
			15.00								1/2" Ice	2.32	1.95	74.19
1900 MHz 4X45 RRH (Sprint)	C	From Face	-3.00		-15.0000	228.00	1" Ice	2.51	2.13	98.39				
			0.50								No Ice	2.32	2.24	60.00
			-15.00								1/2" Ice	2.53	2.44	83.13
TD-RRH8X20-25 BTS (25.4"x17.5"x5.7"x66) (Sprint)	C	From Face	-3.00		-15.0000	228.00	1" Ice	2.74	2.65	109.50				
			0.50								No Ice	3.70	1.29	66.00
			-15.00								1/2" Ice	3.95	1.46	89.94
(2) 800MHZ 2x50W RRH (Sprint)	C	From Face	-3.00		-15.0000	228.00	1" Ice	4.20	1.64	117.22				
			0.50								No Ice	2.13	1.77	53.00
			15.00								1/2" Ice	2.32	1.95	74.19
1900 MHz 4X45 RRH (Sprint)	D	From Face	-3.00		-5.0000	228.00	1" Ice	2.51	2.13	98.39				
			0.50								No Ice	2.32	2.24	60.00
			-15.00								1/2" Ice	2.53	2.44	83.13
TD-RRH8X20-25 BTS (25.4"x17.5"x5.7"x66) (Sprint)	D	From Face	-3.00		-5.0000	228.00	1" Ice	2.74	2.65	109.50				
			0.50								No Ice	3.70	1.29	66.00
			-15.00								1/2" Ice	3.95	1.46	89.94
(2) 800MHZ 2x50W RRH (Sprint)	D	From Face	-3.00		-5.0000	228.00	1" Ice	4.20	1.64	117.22				
			0.50								No Ice	2.13	1.77	53.00
			15.00								1/2" Ice	2.32	1.95	74.19
**														
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				

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	Project		Cheshire, CT					Date		10:17:51 04/05/19
	Client		Sprint					Designed by		BArcher

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						Vert
			0.00							
			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

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						Vert
**				0.00			1" Ice	2.29	2.29	48.71
4' Side Arm Mount	C	Stand-Off Right	2.00	0.0000	86.00	No Ice	0.98	2.18	42.00	
			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 Right	4.00	0.0000	86.00	No Ice	1.93	2.92	84.00	
			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 Left	2.00	0.0000	84.00	No Ice	0.98	2.18	42.00	
			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 Left	4.00	0.0000	84.00	No Ice	0.30	1.00	10.00	
			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 Left	4.00	0.0000	84.00	No Ice	0.30	1.00	10.00	
			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 Right	2.00	0.0000	82.00	No Ice	0.98	2.18	42.00	
			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 Right	4.00	0.0000	82.00	No Ice	0.30	1.00	10.00	
			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 Right	2.00	0.0000	80.00	No Ice	0.98	2.18	42.00	
			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 Right	4.00	0.0000	80.00	No Ice	0.30	1.00	10.00	
			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 Centroid-Face	15.00	0.0000	37.00	No Ice	2.72	0.84	50.00	
			0.00			1/2" Ice	2.93	0.98	66.73	
			0.00			1" Ice	3.14	1.14	86.31	
15"x16"x13 1/2" Box	C	From Centroid-Face	15.00	0.0000	37.00	No Ice	2.00	1.80	40.00	
			0.00			1/2" Ice	2.18	1.97	62.81	
			0.00			1" Ice	2.36	2.14	88.71	
19"x14"x13" Box	C	From Centroid-Face	15.00	0.0000	37.00	No Ice	2.22	2.06	40.00	
			0.00			1/2" Ice	2.40	2.24	64.05	
			0.00			1" Ice	2.60	2.43	91.27	
(2) RBC-MU2 TMA	C	From Centroid-Face	15.00	0.0000	37.00	No Ice	2.27	1.43	73.00	
			0.00			1/2" Ice	2.46	1.59	92.66	
			0.00			1" Ice	2.65	1.76	115.24	
20" x 1" Omni	B	From Centroid-Face	19.00	0.0000	37.00	No Ice	0.25	0.25	10.00	
			0.00			1/2" Ice	0.38	0.38	12.60	
			1.00			1" Ice	0.51	0.51	16.73	
GPS	B	From Centroid-Face	19.00	0.0000	37.00	No Ice	0.13	0.13	0.87	
			0.00			1/2" Ice	0.21	0.21	3.85	
			0.00			1" Ice	0.28	0.28	7.85	
GPS	D	From Centroid-Face	19.00	0.0000	35.00	No Ice	0.13	0.13	0.87	
			0.00			1/2" Ice	0.21	0.21	3.85	
			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	

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

(2) SBNHH-1D65B (Verizon)	A	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	8.20	5.42	40.60
			0.00	0.00			1/2" Ice	8.66	5.88	91.24
			3.00	0.00			1" Ice	9.13	6.35	148.02
(2) SBNHH-1D65B (Verizon)	B	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	8.20	5.42	40.60
			0.00	0.00			1/2" Ice	8.66	5.88	91.24
			3.00	0.00			1" Ice	9.13	6.35	148.02
(2) SBNHH-1D65B (Verizon)	D	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	8.20	5.42	40.60
			0.00	0.00			1/2" Ice	8.66	5.88	91.24
			3.00	0.00			1" Ice	9.13	6.35	148.02
LPA-80080/6CF (Verizon)	A	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	4.32	8.63	21.00
			0.00	0.00			1/2" Ice	4.76	9.08	69.26
			3.00	0.00			1" Ice	5.21	9.55	123.51
LPA-80080/6CF (Verizon)	B	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	4.32	8.63	21.00
			0.00	0.00			1/2" Ice	4.76	9.08	69.26
			3.00	0.00			1" Ice	5.21	9.55	123.51
LPA-80063-6CF (Verizon)	D	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	13.65	13.31	56.25
			0.00	0.00			1/2" Ice	14.25	14.23	166.85
			3.00	0.00			1" Ice	14.85	15.13	287.10
LPA-80063-6CF (Verizon)	A	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	13.65	13.31	56.25
			0.00	0.00			1/2" Ice	14.25	14.23	166.85
			3.00	0.00			1" Ice	14.85	15.13	287.10
LPA-80063-6CF (Verizon)	B	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	13.65	13.31	56.25
			0.00	0.00			1/2" Ice	14.25	14.23	166.85
			3.00	0.00			1" Ice	14.85	15.13	287.10
LPA-80063-6CF (Verizon)	D	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	13.65	13.31	56.25
			0.00	0.00			1/2" Ice	14.25	14.23	166.85
			3.00	0.00			1" Ice	14.85	15.13	287.10
(3) RRH (Verizon)	A	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	2.34	1.27	64.00
			0.00	0.00			1/2" Ice	2.54	1.43	82.23
			0.00	0.00			1" Ice	2.74	1.59	103.34
(3) RRH (Verizon)	B	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	2.34	1.27	64.00
			0.00	0.00			1/2" Ice	2.54	1.43	82.23
			0.00	0.00			1" Ice	2.74	1.59	103.34
(3) RRH (Verizon)	D	From Centroid-Fa ce	20.00	0.00	0.0000	249.00	No Ice	2.34	1.27	64.00
			0.00	0.00			1/2" Ice	2.54	1.43	82.23
			0.00	0.00			1" Ice	2.74	1.59	103.34

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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
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	1.884	30	0.0479	0.0062
T2	216 - 190.917	1.657	30	0.0475	0.0062
T3	190.917 - 165.833	1.374	30	0.0459	0.0058
T4	165.833 - 140.75	1.112	30	0.0422	0.0054
T5	140.75 - 115.667	0.863	30	0.0379	0.0049
T6	115.667 - 90.5835	0.633	30	0.0322	0.0042
T7	90.5835 - 65.5002	0.428	30	0.0257	0.0034
T8	65.5002 - 40.4169	0.261	30	0.0186	0.0026
T9	40.4169 - 0	0.131	34	0.0116	0.0019

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Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
252.00	Beacon on 15' Extension	30	1.884	0.0479	0.0062	915341
249.00	41.5' Top Square Platform	30	1.884	0.0479	0.0062	915341
243.00	Outside Platform Support Bracing	30	1.884	0.0479	0.0062	915341
239.00	Access Platform	30	1.884	0.0479	0.0062	915341
228.00	10'x2.5" Pipe Mount	30	1.787	0.0478	0.0062	503859
216.00	Rest Platform	30	1.657	0.0475	0.0062	242351
213.00	10'x4" Pipe Mount	30	1.624	0.0474	0.0062	285556
190.00	Corner Rest Platform	30	1.364	0.0458	0.0058	222888
188.00	5' Side Arm Mount	30	1.342	0.0455	0.0058	228284
175.00	5' Side Arm Mount	30	1.205	0.0437	0.0056	416444
140.00	Full Face Walking Platform	30	0.856	0.0377	0.0048	394248
90.00	Corner Rest Platform	30	0.424	0.0255	0.0034	184132
86.00	4' Side Arm Mount	30	0.395	0.0244	0.0033	188189
84.00	4' Side Arm Mount	30	0.380	0.0238	0.0032	191838
82.00	4' Side Arm Mount	30	0.367	0.0233	0.0032	195635
80.00	4' Side Arm Mount	30	0.353	0.0227	0.0031	199585
40.00	Full Face Walking Platform 1/3	34	0.130	0.0114	0.0018	153504
37.00	Vicon V8300H (Security Camera)	34	0.117	0.0106	0.0017	161898
35.00	GPS	34	0.110	0.0100	0.0016	170954

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	237.083 - 216	7.731	8	0.1938	0.0260
T2	216 - 190.917	6.812	8	0.1923	0.0259
T3	190.917 - 165.833	5.658	8	0.1860	0.0243
T4	165.833 - 140.75	4.586	8	0.1718	0.0225
T5	140.75 - 115.667	3.568	8	0.1544	0.0202
T6	115.667 - 90.5835	2.621	8	0.1313	0.0175
T7	90.5835 - 65.5002	1.778	8	0.1049	0.0143
T8	65.5002 - 40.4169	1.086	8	0.0761	0.0110
T9	40.4169 - 0	0.548	16	0.0473	0.0077

Critical Deflections and Radius of Curvature - Design Wind

<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
252.00	Beacon on 15' Extension	8	7.731	0.1938	0.0260	225606
249.00	41.5' Top Square Platform	8	7.731	0.1938	0.0260	225606
243.00	Outside Platform Support Bracing	8	7.731	0.1938	0.0260	225606
239.00	Access Platform	8	7.731	0.1938	0.0260	225606
228.00	10'x2.5" Pipe Mount	8	7.340	0.1934	0.0260	124188
216.00	Rest Platform	8	6.812	0.1923	0.0259	59888
213.00	10'x4" Pipe Mount	8	6.675	0.1919	0.0258	71176

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Corner Rest Platform	8	5.617	0.1856	0.0242	55332
188.00	5' Side Arm Mount	8	5.528	0.1847	0.0241	56688
175.00	5' Side Arm Mount	8	4.968	0.1775	0.0232	104991
140.00	Full Face Walking Platform	8	3.539	0.1538	0.0202	100019
90.00	Corner Rest Platform	8	1.760	0.1043	0.0142	45154
86.00	4' Side Arm Mount	8	1.640	0.0997	0.0137	46095
84.00	4' Side Arm Mount	8	1.581	0.0975	0.0134	46961
82.00	4' Side Arm Mount	8	1.524	0.0952	0.0132	47861
80.00	4' Side Arm Mount	8	1.468	0.0929	0.0129	48795
40.00	Full Face Walking Platform 1/3	16	0.540	0.0468	0.0076	37978
37.00	Vicon V8300H (Security Camera)	16	0.489	0.0434	0.0071	40067
35.00	GPS	16	0.456	0.0411	0.0068	42309

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	7288.90	24963.20	0.292	1	Bearing
		Diagonal	A325N	0.7500	4	4001.95	31320.00	0.128	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	3313.26	19439.10	0.170	1	Member Block Shear
T2	216	Leg	A325N	0.7500	12	10284.30	24963.20	0.412	1	Bearing
		Diagonal	A325N	0.7500	4	5940.27	28220.60	0.210	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	3313.26	19439.10	0.170	1	Member Block Shear
T3	190.917	Leg	A325N	0.7500	16	10060.60	25404.00	0.396	1	Bearing
		Diagonal	A325N	0.7500	5	6683.08	31320.00	0.213	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	4288.23	28220.60	0.152	1	Gusset Bearing
T4	165.833	Leg	A325N	1.0000	12	19426.90	32274.10	0.602	1	Bearing
		Diagonal	A325N	0.7500	5	8052.38	31320.00	0.257	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	5116.55	28220.60	0.181	1	Gusset Bearing
T5	140.75	Leg	A325N	1.0000	16	20656.00	38132.10	0.542	1	Bearing
		Diagonal	A325N	0.7500	4	11476.80	28220.60	0.407	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	6302.10	28220.60	0.223	1	Gusset Bearing
T6	115.667	Leg	A325N	1.0000	16	27829.60	36013.60	0.773	1	Bearing
		Diagonal	A325N	0.7500	4	13019.20	28220.60	0.461	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	7132.71	28220.60	0.253	1	Gusset Bearing
T7	90.5835	Leg	A325N	1.0000	20	28818.30	44944.20	0.641	1	Bearing
		Diagonal	A325N	0.7500	5	12708.00	31320.00	0.406	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	7942.18	28220.60	0.281	1	Gusset Bearing
T8	65.5002	Leg	A325N	1.0000	20	36152.80	56715.30	0.637	1	Bearing
		Diagonal	A325N	0.7500	5	14089.60	31320.00	0.450	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	8616.95	28220.60	0.305	1	Gusset Bearing
T9	40.4169	Leg	A325N	1.0000	28	32205.30	55750.20	0.578	1	Bearing
		Diagonal	A325N	0.7500	8	11013.50	31320.00	0.352	1	Gusset Bearing
		Horizontal	A325N	0.7500	4	7850.68	28220.60	0.278	1	Gusset Bearing

Compression Checks

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Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	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	-43733.40	217096.00	0.201 ¹
T2	216 - 190.917	W6x25	25.08	6.27	49.5 K=1.00	7.3400	-61705.60	209029.00	0.295 ¹
T3	190.917 - 165.833	W6x25	25.08	6.27	49.5 K=1.00	7.3400	-81193.00	209029.00	0.388 ¹
T4	165.833 - 140.75	W8x35	25.08	6.27	37.1 K=1.00	10.3000	-118997.00	310432.00	0.383 ¹
T5	140.75 - 115.667	W8x40	25.08	6.27	36.9 K=1.00	11.7000	-169316.00	352876.00	0.480 ¹
T6	115.667 - 90.5835	W10x49	25.08	6.27	29.6 K=1.00	14.4000	-228926.00	445493.00	0.514 ¹
T7	90.5835 - 65.5002	W10x60	25.08	6.27	29.3 K=1.00	17.6000	-296513.00	545075.00	0.544 ¹
T8	65.5002 - 40.4169	W10x77	25.08	6.27	28.9 K=1.00	22.6000	-372020.00	700651.00	0.531 ¹
T9	40.4169 - 0	W12x87	40.44	13.48	52.7 K=1.00	25.6000	-454843.00	716667.00	0.635 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	-16007.80	65821.40	0.243 ¹
T2	216 - 190.917	2L2 1/2x3x3/8x3/8	30.21	7.55	123.1 K=1.00	3.8400	-25910.50	56004.10	0.463 ¹
T3	190.917 - 165.833	2L2 1/2x3x1/2x3/8	30.21	7.55	125.6 K=1.00	5.0000	-33415.40	70627.40	0.473 ¹
T4	165.833 - 140.75	2L2 1/2x3x1/2x3/8	30.21	7.55	125.6 K=1.00	5.0000	-40261.90	70627.40	0.570 ¹
T5	140.75 - 115.667	2L3x4x3/8x3/8	30.21	7.55	103.1 K=1.00	4.9688	-49838.90	92007.50	0.542 ¹
T6	115.667 - 90.5835	2L3x4x3/8x3/8	30.21	7.55	103.1 K=1.00	4.9688	-56492.20	92007.50	0.614 ¹
T7	90.5835 - 65.5002	2L3x4x7/16x3/8	30.21	7.55	104.0 K=1.00	5.7422	-63539.80	105240.00	0.604 ¹
T8	65.5002 - 40.4169	2L3x4x1/2x3/8	30.21	7.55	104.9 K=1.00	6.5000	-70447.90	118007.00	0.597 ¹
T9	40.4169 - 0	2L4x4x1/2x3/8	44.15	14.72	101.3 K=1.00	7.5000	-84125.50	141622.00	0.594 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	216 - 190.917	2L2 1/2x3x1/4x3/8	33.67	8.42	134.1 K=1.00	2.6300	-13019.00	33018.50	0.394 ¹
T3	190.917 - 165.833	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-17057.70	66680.80	0.256 ¹
T4	165.833 - 140.75	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-20536.80	66680.80	0.308 ¹
T5	140.75 - 115.667	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-25535.40	66680.80	0.383 ¹
T6	115.667 - 90.5835	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-28990.00	66680.80	0.435 ¹
T7	90.5835 - 65.5002	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-32498.00	66680.80	0.487 ¹
T8	65.5002 - 40.4169	2L3x2 1/2x3/8x3/8	33.67	8.42	108.8 K=1.00	3.8400	-35584.10	66680.80	0.534 ¹
T9	40.4169 - 0	2L4x3x7/16x3/8	33.67	16.39	78.4 K=0.50	5.7422	-34307.10	134617.00	0.255 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 K=1.00	8.9800	-8830.99	46684.80	0.189 ¹

KL/R > 200 (C) - 8

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	-656.00	25344.20	0.026 ¹
T2	216 - 190.917	L3x3x3/16	4.21	3.94	79.4 K=1.00	1.0900	-925.58	25344.20	0.037 ¹
T3	190.917 - 165.833	L3x3x3/16	4.21	3.94	79.4 K=1.00	1.0900	-1217.90	25344.20	0.048 ¹
T4	165.833 - 140.75	L3x3x3/16	4.21	3.87	77.9 K=1.00	1.0900	-1784.95	25652.50	0.070 ¹
T5	140.75 - 115.667	L3x3x3/16	4.21	3.87	77.8 K=1.00	1.0900	-2539.73	25675.40	0.099 ¹
T6	115.667 - 90.5835	L3x3x3/16	4.21	3.79	76.4 K=1.00	1.0900	-3433.89	25979.70	0.132 ¹
T7	90.5835 - 65.5002	L3x3x3/16	4.21	3.78	49.5 K=0.65	1.0900	-4447.70	31040.80	0.143 ¹
T8	65.5002 - 40.4169	L3x3x3/16	4.21	3.77	49.3 K=0.65	1.0900	-5580.30	31074.30	0.180 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	L3x3x3/16	5.61	5.09	66.6 K=0.65	1.0900	-6824.39	27959.80	0.244 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	-749.56	5217.97	0.144 ¹
T2	216 - 190.917	L2 1/2x2 1/2x3/16	8.42	8.15	197.6 K=1.00	0.9020	-925.58	5217.97	0.177 ¹
T3	190.917 - 165.833	L2 1/2x2 1/2x3/16	8.42	8.15	197.6 K=1.00	0.9020	-1217.90	5217.97	0.233 ¹
T4	165.833 - 140.75	L2 1/2x2 1/2x3/16	8.42	8.08	195.9 K=1.00	0.9020	-1784.95	5312.04	0.336 ¹
T5	140.75 - 115.667	L2 1/2x2 1/2x3/16	8.42	8.07	195.7 K=1.00	0.9020	-2539.73	5319.17	0.477 ¹
T6	115.667 - 90.5835	L2 1/2x2 1/2x3/16	8.42	8.00	194.0 K=1.00	0.9020	-3433.89	5415.44	0.634 ¹
T7	90.5835 - 65.5002	L2 1/2x2 1/2x3/16	8.42	7.99	125.9 K=0.65	0.9020	-4447.70	12681.90	0.351 ¹
T8	65.5002 - 40.4169	L2 1/2x2 1/2x3/16	8.42	7.98	125.7 K=0.65	0.9020	-5580.30	12723.80	0.439 ¹
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	11.22	10.70	108.5 K=0.65	2.3800	-6824.39	41472.10	0.165 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	-656.00	20203.70	0.032 ¹
T2	216 - 190.917	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0 K=1.00	3.4700	-925.58	20203.70	0.046 ¹
T3	190.917 - 165.833	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0 K=1.00	3.4700	-1217.90	20203.70	0.060 ¹
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/8x3/8	12.63	12.29	195.8 K=1.00	3.4700	-1784.95	20442.80	0.087 ¹
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/8x3/8	12.63	12.28	195.7 K=1.00	3.4700	-2539.73	20460.80	0.124 ¹
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/8x3/8	12.63	12.21	194.6 K=1.00	3.4700	-3433.89	20703.10	0.166 ¹
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/8x3/8	12.63	12.20	126.4 K=0.65	3.4700	-4447.70	48496.80	0.092 ¹
T8	65.5002 -	2L2 1/2x2 1/2x3/8x3/8	12.63	12.18	126.2	3.4700	-5580.30	48602.60	0.115 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	40.4169				K=0.65				

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	-675.82	15062.10	0.045 ¹
T2	216 - 190.917	L3x3x3/16	7.55	7.08	142.5 K=1.00	1.0900	-927.05	12134.20	0.076 ¹
T3	190.917 - 165.833	L3x3x3/16	7.55	7.08	142.5 K=1.00	1.0900	-1469.91	12134.20	0.121 ¹
T4	165.833 - 140.75	L3x3x3/16	7.55	6.95	139.8 K=1.00	1.0900	-2185.86	12593.10	0.174 ¹
T5	140.75 - 115.667	L3x3x3/16	7.55	6.94	139.6 K=1.00	1.0900	-2778.60	12628.40	0.220 ¹
T6	115.667 - 90.5835	L3x3x3/16	7.55	6.81	137.0 K=1.00	1.0900	-3890.47	13113.00	0.297 ¹
T7	90.5835 - 65.5002	L3x3x3/16	7.55	6.79	95.7 K=0.70	1.0900	-4712.65	21812.30	0.216 ¹
T8	65.5002 - 40.4169	L3x3x3/16	7.55	6.76	95.3 K=0.70	1.0900	-5514.42	21900.30	0.252 ¹
T9	40.4169 - 0	2L2 1/2x2 1/2x3/16x3/8	14.48	13.06	141.0 K=0.70	1.8000	-8806.43	20450.20	0.431 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	-574.56	31885.70	0.018 ¹
T2	216 - 190.917	2L3x3x3/16x3/8	10.50	10.17	129.9 K=1.00	2.1800	-577.10	29052.20	0.020 ¹
T3	190.917 - 165.833	2L3x3x3/16x3/8	10.50	10.17	129.9 K=1.00	2.1800	-759.35	29052.20	0.026 ¹
T4	165.833 - 140.75	2L3x3x3/16x3/8	10.50	10.07	128.8 K=1.00	2.1800	-1112.91	29512.90	0.038 ¹
T5	140.75 - 115.667	2L3x3x3/16x3/8	10.50	10.07	128.7 K=1.00	2.1800	-1583.51	29547.40	0.054 ¹
T6	115.667 - 90.5835	2L3x3x3/16x3/8	10.50	9.98	127.5 K=1.00	2.1800	-2141.01	30008.70	0.071 ¹
T7	90.5835 - 65.5002	2L3x3x3/16x3/8	10.50	9.97	89.1 K=0.70	2.1800	-2773.12	46483.30	0.060 ¹
T8	65.5002 - 40.4169	2L3x3x3/16x3/8	10.50	9.95	89.0 K=0.70	2.1800	-3479.30	46560.40	0.075 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	17.34	16.64	181.8 K=0.70	2.3800	-5272.97	16269.60	0.324 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	-1344.69	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	-763.63	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	-759.35	16549.50	0.046 ¹
T4	165.833 - 140.75	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.4 K=1.00	1.8000	-1112.91	16847.80	0.066 ¹
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.3 K=1.00	1.8000	-1583.51	16870.40	0.094 ¹
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/16x3/8	10.50	9.98	153.9 K=1.00	1.8000	-2141.01	17175.80	0.125 ¹
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/16x3/8	10.50	9.97	107.6 K=0.70	1.8000	-2773.12	31713.60	0.087 ¹
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/16x3/8	10.50	9.95	107.4 K=0.70	1.8000	-3479.30	31790.20	0.109 ¹

¹ P_u / φP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u 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	-509.56	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	-159.41	28187.90	0.006 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
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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	-357.69	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	-338.66	10352.00	0.033 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	33.67	33.67	431.3 K=1.00	3.2422	-128.28	3937.14	0.033 ¹
T2	216 - 190.917	KL/R > 250 (C) - 13 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-16.66	7874.28	0.002 ¹
T3	190.917 - 165.833	KL/R > 250 (C) - 156 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-8.14	7874.28	0.001 ¹
T4	165.833 - 140.75	KL/R > 250 (C) - 237 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-8.31	7874.28	0.001 ¹
T5	140.75 - 115.667	KL/R > 250 (C) - 318 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-14.53	7874.28	0.002 ¹
T6	115.667 - 90.5835	KL/R > 250 (C) - 397 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-27.96	7874.28	0.004 ¹
T7	90.5835 -	KL/R > 250 (C) - 478 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	-54.88	7874.28	0.007 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
	65.5002				K=1.00				
T8	65.5002 - 40.4169	KL/R > 250 (C) - 559 2L3x2 1/2x5/16x3/8	23.81	23.81	305.0 K=1.00	3.2422	-80.80	7874.28	0.010 ¹
T9	40.4169 - 0	KL/R > 250 (C) - 640 2C4x7.25	23.81	23.81	222.0 K=0.50	4.2600	-265.62	19523.50	0.014 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	5625.13	237816.00	0.024 ¹
T3	190.917 - 165.833	W6x25	25.08	6.27	49.5	7.3400	30818.20	237816.00	0.130 ¹
T4	165.833 - 140.75	W8x35	25.08	6.27	37.1	10.3000	63660.10	333720.00	0.191 ¹
T5	140.75 - 115.667	W8x40	25.08	6.27	36.9	11.7000	103949.00	379080.00	0.274 ¹
T6	115.667 - 90.5835	W10x49	25.08	6.27	29.6	14.4000	153858.00	466560.00	0.330 ¹
T7	90.5835 - 65.5002	W10x60	25.08	6.27	29.3	17.6000	211755.00	570240.00	0.371 ¹
T8	65.5002 - 40.4169	W10x77	25.08	6.27	28.9	22.6000	276816.00	732240.00	0.378 ¹
T9	40.4169 - 0	W12x87	40.44	13.48	52.7	25.6000	344745.00	829440.00	0.416 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	13592.80	103870.00	0.131 ¹
T2	216 - 190.917	2L2 1/2x3x3/8x3/8	30.21	7.55	242.7	2.3878	23825.70	103870.00	0.229 ¹
T3	190.917 - 165.833	2L2 1/2x3x1/2x3/8	30.21	7.55	238.2	3.0938	30587.00	134578.00	0.227 ¹
T4	165.833 - 140.75	2L2 1/2x3x1/2x3/8	30.21	7.55	237.2	3.0938	36926.30	134578.00	0.274 ¹
T5	140.75 - 115.667	2L3x4x3/8x3/8	30.21	7.55	183.3	3.2344	45907.30	140695.00	0.326 ¹
T6	115.667 - 90.5835	2L3x4x3/8x3/8	30.21	7.55	182.5	3.2344	52076.70	140695.00	0.370 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	90.5835 - 65.5002	2L3x4x7/16x3/8	30.21	7.55	181.3	3.7324	58301.80	162360.00	0.359 ¹
T8	65.5002 - 40.4169	2L3x4x1/2x3/8	30.21	7.55	180.1	4.2188	64410.70	183516.00	0.351 ¹
T9	40.4169 - 0	2L4x4x1/2x3/8	44.15	13.42	144.8	4.9688	83330.60	216141.00	0.386 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	13787.60	71530.30	0.193 ¹
T3	190.917 - 165.833	2L3x2 1/2x3/8x3/8	33.67	8.42	171.4	2.3878	17310.00	103870.00	0.167 ¹
T4	165.833 - 140.75	2L3x2 1/2x3/8x3/8	33.67	8.42	171.4	2.3878	20913.30	103870.00	0.201 ¹
T5	140.75 - 115.667	2L3x2 1/2x3/8x3/8	33.67	8.42	170.7	2.3878	25919.90	103870.00	0.250 ¹
T6	115.667 - 90.5835	2L3x2 1/2x3/8x3/8	33.67	8.42	170.6	2.3878	29334.90	103870.00	0.282 ¹
T7	90.5835 - 65.5002	2L3x2 1/2x3/8x3/8	33.67	8.42	169.9	2.3878	32708.60	103870.00	0.315 ¹
T8	65.5002 - 40.4169	2L3x2 1/2x3/8x3/8	33.67	8.42	169.8	2.3878	35894.00	103870.00	0.346 ¹
T9	40.4169 - 0	2L4x3x7/16x3/8	33.67	16.39	156.8	3.7324	31402.70	162360.00	0.193 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u 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	8256.33	290952.00	0.028 ¹

¹ P_u / φP_n controls

Redundant Horizontal (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 $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	L3x3x3/16	4.21	3.94	79.4	1.0900	1036.64	35316.00	0.029 ¹
T2	216 - 190.917	L3x3x3/16	4.21	3.94	79.4	1.0900	1210.94	35316.00	0.034 ¹
T3	190.917 -	L3x3x3/16	4.21	3.94	79.4	1.0900	1835.49	35316.00	0.052 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	165.833 - 140.75	L3x3x3/16	4.21	3.87	77.9	1.0900	2638.81	35316.00	0.075 ¹
T5	140.75 - 115.667	L3x3x3/16	4.21	3.87	77.8	1.0900	3302.23	35316.00	0.094 ¹
T6	115.667 - 90.5835	L3x3x3/16	4.21	3.79	76.4	1.0900	4428.27	35316.00	0.125 ¹
T7	90.5835 - 65.5002	L3x3x3/16	4.21	3.78	76.2	1.0900	5399.24	35316.00	0.153 ¹
T8	65.5002 - 40.4169	L3x3x3/16	4.21	3.77	75.8	1.0900	6317.42	35316.00	0.179 ¹
T9	40.4169 - 0	L3x3x3/16	5.61	5.09	102.5	1.0900	6824.39	35316.00	0.193 ¹

¹ P_u / φP_n controls

Redundant Horizontal (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	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	809.55	29224.80	0.028 ¹
T2	216 - 190.917	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	925.58	29224.80	0.032 ¹
T3	190.917 - 165.833	L2 1/2x2 1/2x3/16	8.42	8.15	197.6	0.9020	1217.90	29224.80	0.042 ¹
T4	165.833 - 140.75	L2 1/2x2 1/2x3/16	8.42	8.08	195.9	0.9020	1784.95	29224.80	0.061 ¹
T5	140.75 - 115.667	L2 1/2x2 1/2x3/16	8.42	8.07	195.7	0.9020	2539.73	29224.80	0.087 ¹
T6	115.667 - 90.5835	L2 1/2x2 1/2x3/16	8.42	8.00	194.0	0.9020	3433.89	29224.80	0.117 ¹
T7	90.5835 - 65.5002	L2 1/2x2 1/2x3/16	8.42	7.99	193.7	0.9020	4447.70	29224.80	0.152 ¹
T8	65.5002 - 40.4169	L2 1/2x2 1/2x3/16	8.42	7.98	193.4	0.9020	5580.30	29224.80	0.191 ¹
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	11.22	10.70	167.0	2.3800	6824.39	77112.00	0.088 ¹

¹ P_u / φP_n controls

Redundant Horizontal (3) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u 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	3.4700	1046.84	112428.00	0.009 ¹
T2	216 - 190.917	2L2 1/2x2 1/2x3/8x3/8	12.63	12.36	197.0	3.4700	925.58	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	1217.90	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	1784.95	112428.00	0.016 ¹
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/8x3/8	12.63	12.28	195.7	3.4700	2539.73	112428.00	0.023 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/8x3/8	12.63	12.21	194.6	3.4700	3433.89	112428.00	0.031 ¹
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/8x3/8	12.63	12.20	194.4	3.4700	4447.70	112428.00	0.040 ¹
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/8x3/8	12.63	12.18	194.2	3.4700	5580.30	112428.00	0.050 ¹

¹ P_u / φP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	237.083 - 216	L3x3x3/16	6.75	6.32	127.2	1.0900	525.66	35316.00	0.015 ¹
T2	216 - 190.917	L3x3x3/16	7.55	7.08	142.5	1.0900	830.44	35316.00	0.024 ¹
T3	190.917 - 165.833	L3x3x3/16	7.55	7.08	142.5	1.0900	1092.71	35316.00	0.031 ¹
T4	165.833 - 140.75	L3x3x3/16	7.55	6.95	139.8	1.0900	1601.48	35316.00	0.045 ¹
T5	140.75 - 115.667	L3x3x3/16	7.55	6.94	139.6	1.0900	2278.68	35316.00	0.065 ¹
T6	115.667 - 90.5835	L3x3x3/16	7.55	6.81	137.0	1.0900	3080.92	35316.00	0.087 ¹
T7	90.5835 - 65.5002	L3x3x3/16	7.55	6.79	136.7	1.0900	3990.53	35316.00	0.113 ¹
T8	65.5002 - 40.4169	L3x3x3/16	7.55	6.76	136.1	1.0900	5006.71	35316.00	0.142 ¹
T9	40.4169 - 0	2L2 1/2x2 1/2x3/16x3/8	14.48	13.06	201.4	1.8000	8806.43	58320.00	0.151 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	711.23	70632.00	0.010 ¹
T2	216 - 190.917	2L3x3x3/16x3/8	10.50	10.17	129.9	2.1800	577.10	70632.00	0.008 ¹
T3	190.917 - 165.833	2L3x3x3/16x3/8	10.50	10.17	129.9	2.1800	759.35	70632.00	0.011 ¹
T4	165.833 - 140.75	2L3x3x3/16x3/8	10.50	10.07	128.8	2.1800	1112.91	70632.00	0.016 ¹
T5	140.75 - 115.667	2L3x3x3/16x3/8	10.50	10.07	128.7	2.1800	1583.51	70632.00	0.022 ¹
T6	115.667 - 90.5835	2L3x3x3/16x3/8	10.50	9.98	127.5	2.1800	2141.01	70632.00	0.030 ¹
T7	90.5835 - 65.5002	2L3x3x3/16x3/8	10.50	9.97	127.4	2.1800	2773.12	70632.00	0.039 ¹
T8	65.5002 - 40.4169	2L3x3x3/16x3/8	10.50	9.95	127.1	2.1800	3479.30	70632.00	0.049 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.4169 - 0	2L2 1/2x2 1/2x1/4x3/8	17.34	16.64	259.7	2.3800	5272.97	77112.00	0.068 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	425.86	58320.00	0.007 ¹
T2	216 - 190.917	2L2 1/2x2 1/2x3/16x3/8	10.50	10.17	156.8	1.8000	577.10	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	759.35	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	1112.91	58320.00	0.019 ¹
T5	140.75 - 115.667	2L2 1/2x2 1/2x3/16x3/8	10.50	10.07	155.3	1.8000	1583.51	58320.00	0.027 ¹
T6	115.667 - 90.5835	2L2 1/2x2 1/2x3/16x3/8	10.50	9.98	153.9	1.8000	2141.01	58320.00	0.037 ¹
T7	90.5835 - 65.5002	2L2 1/2x2 1/2x3/16x3/8	10.50	9.97	153.7	1.8000	2773.12	58320.00	0.048 ¹
T8	65.5002 - 40.4169	2L2 1/2x2 1/2x3/16x3/8	10.50	9.95	153.4	1.8000	3479.30	58320.00	0.060 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	103.22	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	73.38	70632.00	0.001 ¹

¹ P_u / φP_n controls

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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	761.27	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	259.22	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	187.33	105047.00	0.002 ¹
T2	216 - 190.917	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	9.12	105047.00	0.000 ¹
T3	190.917 - 165.833	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	15.01	105047.00	0.000 ¹
T4	165.833 - 140.75	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	13.42	105047.00	0.000 ¹
T5	140.75 - 115.667	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	21.53	105047.00	0.000 ¹
T6	115.667 - 90.5835	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	33.38	105047.00	0.000 ¹
T7	90.5835 - 65.5002	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	59.45	105047.00	0.001 ¹
T8	65.5002 - 40.4169	2L3x2 1/2x5/16x3/8	23.81	23.81	305.0	3.2422	87.02	105047.00	0.001 ¹
T9	40.4169 - 0	2C4x7.25	23.81	23.81	444.0	4.2600	347.67	138024.00	0.003 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	-43733.40	217096.00	20.1 29.2 (b)	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T2	216 - 190.917	Leg	W6x25	83	-61705.60	209029.00	29.5	Pass
T3	190.917 - 165.833	Leg	W6x25	164	-81193.00	209029.00	41.2 (b) 38.8	Pass
T4	165.833 - 140.75	Leg	W8x35	245	-118997.00	310432.00	39.6 (b) 38.3	Pass
T5	140.75 - 115.667	Leg	W8x40	326	-169316.00	352876.00	60.2 (b) 48.0	Pass
T6	115.667 - 90.5835	Leg	W10x49	407	-228926.00	445493.00	54.2 (b) 51.4	Pass
T7	90.5835 - 65.5002	Leg	W10x60	488	-296513.00	545075.00	77.3 (b) 54.4	Pass
T8	65.5002 - 40.4169	Leg	W10x77	569	-372020.00	700651.00	64.1 (b) 53.1	Pass
T9	40.4169 - 0	Leg	W12x87	650	-454843.00	716667.00	63.7 (b) 63.5	Pass
T1	237.083 - 216	Diagonal	2L2 1/2x3x3/8x3/8	70	-16007.80	65821.40	24.3	Pass
T2	216 - 190.917	Diagonal	2L2 1/2x3x3/8x3/8	104	-25910.50	56004.10	46.3	Pass
T3	190.917 - 165.833	Diagonal	2L2 1/2x3x1/2x3/8	185	-33415.40	70627.40	47.3	Pass
T4	165.833 - 140.75	Diagonal	2L2 1/2x3x1/2x3/8	266	-40261.90	70627.40	57.0	Pass
T5	140.75 - 115.667	Diagonal	2L3x4x3/8x3/8	347	-49838.90	92007.50	54.2	Pass
T6	115.667 - 90.5835	Diagonal	2L3x4x3/8x3/8	428	-56492.20	92007.50	61.4	Pass
T7	90.5835 - 65.5002	Diagonal	2L3x4x7/16x3/8	509	-63539.80	105240.00	60.4	Pass
T8	65.5002 - 40.4169	Diagonal	2L3x4x1/2x3/8	590	-70447.90	118007.00	59.7	Pass
T9	40.4169 - 0	Diagonal	2L4x4x1/2x3/8	670	-84125.50	141622.00	59.4	Pass
T2	216 - 190.917	Horizontal	2L2 1/2x3x1/4x3/8	103	-13019.00	33018.50	39.4	Pass
T3	190.917 - 165.833	Horizontal	2L3x2 1/2x3/8x3/8	184	-17057.70	66680.80	25.6	Pass
T4	165.833 - 140.75	Horizontal	2L3x2 1/2x3/8x3/8	265	-20536.80	66680.80	30.8	Pass
T5	140.75 - 115.667	Horizontal	2L3x2 1/2x3/8x3/8	346	-25535.40	66680.80	38.3	Pass
T6	115.667 - 90.5835	Horizontal	2L3x2 1/2x3/8x3/8	427	-28990.00	66680.80	43.5	Pass
T7	90.5835 - 65.5002	Horizontal	2L3x2 1/2x3/8x3/8	508	-32498.00	66680.80	48.7	Pass
T8	65.5002 - 40.4169	Horizontal	2L3x2 1/2x3/8x3/8	589	-35584.10	66680.80	53.4	Pass
T9	40.4169 - 0	Horizontal	2L4x3x7/16x3/8	664	-34307.10	134617.00	25.5 27.8 (b)	Pass
T1	237.083 - 216	Top Girt	2C10x15.3	8	-8830.99	46684.80	18.9	Pass
T1	237.083 - 216	Redund Horz 1 Bracing	L3x3x3/16	31	1036.64	35316.00	2.9	Pass
T2	216 - 190.917	Redund Horz 1 Bracing	L3x3x3/16	105	-925.58	25344.20	3.7	Pass
T3	190.917 - 165.833	Redund Horz 1 Bracing	L3x3x3/16	177	1835.49	35316.00	5.2	Pass
T4	165.833 - 140.75	Redund Horz 1 Bracing	L3x3x3/16	258	2638.81	35316.00	7.5	Pass
T5	140.75 - 115.667	Redund Horz 1 Bracing	L3x3x3/16	339	-2539.73	25675.40	9.9	Pass
T6	115.667 - 90.5835	Redund Horz 1 Bracing	L3x3x3/16	420	-3433.89	25979.70	13.2	Pass
T7	90.5835 - 65.5002	Redund Horz 1 Bracing	L3x3x3/16	510	5399.24	35316.00	15.3	Pass
T8	65.5002 - 40.4169	Redund Horz 1 Bracing	L3x3x3/16	582	-5580.30	31074.30	18.0	Pass
T9	40.4169 - 0	Redund Horz 1 Bracing	L3x3x3/16	660	-6824.39	27959.80	24.4	Pass
T1	237.083 - 216	Redund Horz 2	L2 1/2x2 1/2x3/16	40	-749.56	5217.97	14.4	Pass

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	Client	Sprint	Designed by	BArcher

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing						
T2	216 - 190.917	Redund Horz 2	L2 1/2x2 1/2x3/16	97	-925.58	5217.97	17.7	Pass
		Bracing						
T3	190.917 - 165.833	Redund Horz 2	L2 1/2x2 1/2x3/16	178	-1217.90	5217.97	23.3	Pass
		Bracing						
T4	165.833 - 140.75	Redund Horz 2	L2 1/2x2 1/2x3/16	259	-1784.95	5312.04	33.6	Pass
		Bracing						
T5	140.75 - 115.667	Redund Horz 2	L2 1/2x2 1/2x3/16	340	-2539.73	5319.17	47.7	Pass
		Bracing						
T6	115.667 - 90.5835	Redund Horz 2	L2 1/2x2 1/2x3/16	421	-3433.89	5415.44	63.4	Pass
		Bracing						
T7	90.5835 - 65.5002	Redund Horz 2	L2 1/2x2 1/2x3/16	502	-4447.70	12681.90	35.1	Pass
		Bracing						
T8	65.5002 - 40.4169	Redund Horz 2	L2 1/2x2 1/2x3/16	583	-5580.30	12723.80	43.9	Pass
		Bracing						
T9	40.4169 - 0	Redund Horz 2	2L2 1/2x2 1/2x1/4x3/8	661	-6824.39	41472.10	16.5	Pass
		Bracing						
T1	237.083 - 216	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	18	-656.00	20203.70	3.2	Pass
		Bracing						
T2	216 - 190.917	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	99	-925.58	20203.70	4.6	Pass
		Bracing						
T3	190.917 - 165.833	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	189	-1217.90	20203.70	6.0	Pass
		Bracing						
T4	165.833 - 140.75	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	261	-1784.95	20442.80	8.7	Pass
		Bracing						
T5	140.75 - 115.667	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	342	-2539.73	20460.80	12.4	Pass
		Bracing						
T6	115.667 - 90.5835	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	432	-3433.89	20703.10	16.6	Pass
		Bracing						
T7	90.5835 - 65.5002	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	504	-4447.70	48496.80	9.2	Pass
		Bracing						
T8	65.5002 - 40.4169	Redund Horz 3	2L2 1/2x2 1/2x3/8x3/8	585	-5580.30	48602.60	11.5	Pass
		Bracing						
T1	237.083 - 216	Redund Diag 1	L3x3x3/16	33	-675.82	15062.10	4.5	Pass
		Bracing						
T2	216 - 190.917	Redund Diag 1	L3x3x3/16	98	-927.05	12134.20	7.6	Pass
		Bracing						
T3	190.917 - 165.833	Redund Diag 1	L3x3x3/16	179	-1469.91	12134.20	12.1	Pass
		Bracing						
T4	165.833 - 140.75	Redund Diag 1	L3x3x3/16	260	-2185.86	12593.10	17.4	Pass
		Bracing						
T5	140.75 - 115.667	Redund Diag 1	L3x3x3/16	341	-2778.60	12628.40	22.0	Pass
		Bracing						
T6	115.667 - 90.5835	Redund Diag 1	L3x3x3/16	422	-3890.47	13113.00	29.7	Pass
		Bracing						
T7	90.5835 - 65.5002	Redund Diag 1	L3x3x3/16	503	-4712.65	21812.30	21.6	Pass
		Bracing						
T8	65.5002 - 40.4169	Redund Diag 1	L3x3x3/16	593	-5514.42	21900.30	25.2	Pass
		Bracing						
T9	40.4169 - 0	Redund Diag 1	2L2 1/2x2 1/2x3/16x3/8	662	-8806.43	20450.20	43.1	Pass
		Bracing						
T1	237.083 - 216	Redund Diag 2	2L3x3x3/16x3/8	35	-574.56	31885.70	1.8	Pass
		Bracing						
T2	216 - 190.917	Redund Diag 2	2L3x3x3/16x3/8	100	-577.10	29052.20	2.0	Pass
		Bracing						
T3	190.917 - 165.833	Redund Diag 2	2L3x3x3/16x3/8	181	-759.35	29052.20	2.6	Pass
		Bracing						
T4	165.833 - 140.75	Redund Diag 2	2L3x3x3/16x3/8	271	-1112.91	29512.90	3.8	Pass
		Bracing						
T5	140.75 - 115.667	Redund Diag 2	2L3x3x3/16x3/8	343	-1583.51	29547.40	5.4	Pass
		Bracing						

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	Client	Sprint	Designed by	BArcher

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
T6	115.667 - 90.5835	Redund Diag 2 Bracing	2L3x3x3/16x3/8	424	-2141.01	30008.70	7.1	Pass	
T7	90.5835 - 65.5002	Redund Diag 2 Bracing	2L3x3x3/16x3/8	505	-2773.12	46483.30	6.0	Pass	
T8	65.5002 - 40.4169	Redund Diag 2 Bracing	2L3x3x3/16x3/8	586	-3479.30	46560.40	7.5	Pass	
T9	40.4169 - 0	Redund Diag 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	663	-5272.97	16269.60	32.4	Pass	
T1	237.083 - 216	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	20	-1344.69	18486.00	7.3	Pass	
T2	216 - 190.917	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	118	-763.63	16549.50	4.6	Pass	
T3	190.917 - 165.833	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	182	-759.35	16549.50	4.6	Pass	
T4	165.833 - 140.75	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	263	-1112.91	16847.80	6.6	Pass	
T5	140.75 - 115.667	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	353	-1583.51	16870.40	9.4	Pass	
T6	115.667 - 90.5835	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	434	-2141.01	17175.80	12.5	Pass	
T7	90.5835 - 65.5002	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	506	-2773.12	31713.60	8.7	Pass	
T8	65.5002 - 40.4169	Redund Diag 3 Bracing	2L2 1/2x2 1/2x3/16x3/8	587	-3479.30	31790.20	10.9	Pass	
T9	40.4169 - 0	Redund Hip 1 Bracing	2L2 1/2x2 1/2x1/4x3/8	675	-509.56	54824.80	0.9	Pass	
T9	40.4169 - 0	Redund Hip 2 Bracing	2L3x3x3/16x3/8	706	-146.95	28187.90	0.8	Pass	
T9	40.4169 - 0	Redund Hip Diagonal 1 Bracing	2L3x3x3/16x3/8	677	-357.69	17964.90	2.0	Pass	
T9	40.4169 - 0	Redund Hip Diagonal 2 Bracing	2L3x3x3/16x3/8	678	-338.66	10352.00	3.3	Pass	
T1	237.083 - 216	Inner Bracing	2L3x2 1/2x5/16x3/8	13	-128.28	3937.14	3.3	Pass	
T2	216 - 190.917	Inner Bracing	2L3x2 1/2x5/16x3/8	158	-0.63	3937.14	1.7	Pass	
T3	190.917 - 165.833	Inner Bracing	2L3x2 1/2x5/16x3/8	239	-0.54	3937.14	1.7	Pass	
T4	165.833 - 140.75	Inner Bracing	2L3x2 1/2x5/16x3/8	320	-0.50	3937.14	1.7	Pass	
T5	140.75 - 115.667	Inner Bracing	2L3x2 1/2x5/16x3/8	401	-0.51	3937.14	1.7	Pass	
T6	115.667 - 90.5835	Inner Bracing	2L3x2 1/2x5/16x3/8	482	-0.42	3937.14	1.7	Pass	
T7	90.5835 - 65.5002	Inner Bracing	2L3x2 1/2x5/16x3/8	563	-0.32	3937.14	1.6	Pass	
T8	65.5002 - 40.4169	Inner Bracing	2L3x2 1/2x5/16x3/8	644	-1.81	3937.14	1.6	Pass	
T9	40.4169 - 0	Inner Bracing	2C4x7.25	717	-13.52	9761.73	2.9	Pass	
							Summary		
							Leg (T6)	77.3	Pass
							Diagonal (T6)	61.4	Pass
							Horizontal (T8)	53.4	Pass
							Top Girt (T1)	18.9	Pass
							Redund Horz 1 Bracing (T9)	24.4	Pass
							Redund Horz 2 Bracing (T6)	63.4	Pass
							Redund Horz 3	16.6	Pass

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	Client	Sprint	Designed by	BArcher

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Bracing (T6)		
						Redund	43.1	Pass
						Diag 1		
						Bracing (T9)		
						Redund	32.4	Pass
						Diag 2		
						Bracing (T9)		
						Redund	12.5	Pass
						Diag 3		
						Bracing (T6)		
						Redund Hip	0.9	Pass
						1 Bracing (T9)		
						Redund Hip	0.8	Pass
						2 Bracing (T9)		
						Redund Hip	2.0	Pass
						Diagonal 1		
						Bracing (T9)		
						Redund Hip	3.3	Pass
						Diagonal 2		
						Bracing (T9)		
						Inner	3.3	Pass
						Bracing (T1)		
						Bolt Checks	77.3	Pass
						RATING =	77.3	Pass

Project Information	
Site Name	Cheshire, CT

Tower Information	
Tower Type	Self Support
TIA-222 Rev	G

Applied Loads		
	Comp.	Uplift
Axial (k)	572.31	445.80
Shear (k)	53.69	48.95

Anchor Rod Data	
Quantity:	12
Diameter (in):	2.25
Material Grade:	A36
Grout Considered:	No
l_{ar} (in):	0
Eta Factor, η :	0.7
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=36 ksi Fu=58 ksi
 Grout Considered
 Bending Interaction Not Considered

Anchor Rod Results	
Axial, Pu_t (kips)	37.15
Shear, Vu (kips)	4.08
Moment, Mu (kip-in)	-
Axial Cap., ϕPn_t (kips)	150.80
Shear Cap., ϕVn (kips)	-
Moment Cap., ϕMn (kip-in)	-
Stress Rating	28.5%

Pass

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: 4/5/2019

Redundant Horizontals (1)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size	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	6099.6	-6099.6	17637.9	31320.0	35784.7	38.0%

Redundant Horizontals (2)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size	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	6099.6	-6099.6	44315.6	83520.0	71569.4	15.1%

Redundant Horizontals (3)

Section No.	Elevation (ft)	Size	Bolt Grade	Bolt Size	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	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	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	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%